CALIFORNIA PORTABLE CLASSROOMS STUDY
PHASE I: MAILED SURVEY

FINAL REPORT, VOLUME I
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ABSTRACT

The purpose of this California Portable Classrooms Study was to assess environmental conditions in California's portable classrooms. This report documents results from a mailed survey to a probability sample of all public California K-12 schools with at least one portable classroom. Two questionnaires, a Facilities Questionnaire and a Teacher Questionnaire, and passive formaldehyde samplers were mailed to the sample of schools selected to participate in the survey. This report describes the sample design, the survey instruments, the data collection process, the data analysis procedures, and the results that show and compare the major characteristics of the populations of eligible public schools as well as portable and traditional classrooms. Response rates were between 40 and 45% for school-level responses. However, for schools that responded, response rates at the classroom-level were about 95% for teacher questionnaires and for formaldehyde monitoring. The population of schools with one or more portable classrooms is estimated to consist of about 6,900 schools, with a total of about 145,000 traditional classrooms and about 85,000 portable classrooms.

Key results include:

(a) characterization of the target population:
- the majority of the schools are in the suburbs (73.8%); only about 9% are in the rural areas
- nearly 60% of the schools were elementary; the others were split evenly between middle and high schools.

(b) construction:
- over half (54.4%) of the schools are estimated to have 10 or fewer portable classrooms; only 4.4% are estimated to have more than 30 portable classrooms
- over half of the portable classrooms (55.3%) are 10 years old or less; only 12.4% of the traditional classrooms are that new
- about 29% of the schools are less than 30 years old.

(c) complaints/symptoms:
- 52% of the facility managers received some environmental related complaints in the previous school year (2000-2001)
- most common complaints in portable classrooms, ranked in order of prevalence, were: roof leaks, air quality/odor, temperature, plumbing leaks, mold, and noise, respectively
- most common complaints for traditional classrooms were: roof leaks, temperature, air quality/odor, plumbing leaks, mold and noise, respectively.
- most problems and complaints, except plumbing leaks, were more prevalent in portable classrooms.

(d) formaldehyde:
- a number of factors appear to be associated with formaldehyde levels in both types of classrooms, including: age of classroom, geographic region, season of the year, age of carpet, and age of new flooring.

- formaldehyde levels were higher in the portable classrooms than in the traditional classrooms (mean of 32 vs. 24 ppb; median of 27 versus 20 ppb).
- fifty percent of the portable classrooms were estimated to exceed 27 ppb, the Draft 8-hour Indoor Reference Exposure Level (REL) (Broadwin, 2000; OEHHA, 2000), as compared to 29% of the traditional classrooms. Four percent of the portables and 0.4% of the traditional classrooms had average concentrations above 76 ppb, the 1-hour California Acute REL for formaldehyde.

Results from this survey suggest that there are major issues associated with environmental conditions in California K-12 schools that deserve appropriate attention. Furthermore the environmental factors, complaints, and health symptoms reported by the teachers and facility managers in the sampled schools are often different between the traditional and portable classrooms. Measured levels of formaldehyde are significantly higher in the portable classrooms than in the traditional classrooms. However, more extensive monitoring and classroom assessment are required before meaningful recommendations can be formulated to improve the environmental conditions reported to exist in the California public classrooms. This information is forthcoming in the Phase II study that is being conducted in the school year 2001-2002.

EXECUTIVE SUMMARY

BACKGROUND

There are many reasons to study the school indoor environment. While in school buildings, the children and staff may be exposed to a number of chemicals and biological materials. Children are also more likely to suffer health consequences from indoor pollution. School buildings by design are densely populated, making the task of maintaining an acceptable indoor air quality much more difficult than in many other types of facilities.

Concerns over indoor environmental quality in California's schools have risen recently as the demand for classrooms has resulted in increased reliance on portable classrooms. Portable classrooms are of special concern—inadequate, noisy ventilation systems and mold problems have been reported in portable classrooms. Also, manufactured buildings may emit many chemicals from the particleboard, plywood, fiberglass, carpets, glues and other materials used in their construction, especially formaldehyde. Formaldehyde is an irritant and probable human carcinogen. The California Air Resources Board (ARB, 1992, 1997) has identified it as a Toxic Air Contaminant, and the Office of Environmental Health Hazard Assessment (OEHHA, 2002) has listed it as a carcinogen requiring Proposition 65 warnings.

To address increasing concerns about portable classrooms, the California Portable Classrooms Study (PCS) was requested by Governor Davis and mandated by the State Legislature. It was endorsed by the Superintendent of Public Instruction, Ms. Delaine Eastin. The Legislative mandate with milestones and requirements is specified in AB 2872, Shelley, and California Health and Safety Code (HSC) Section 39619.6. The PCS is being conducted in response to this legislative mandate. The final report to the Legislature is due by June 30, 2002. The findings from the PCS will form part of the basis for recommendations that ARB and DHS must make to the Legislature regarding ways to "…remedy and prevent unhealthful conditions found in portable classrooms…" (AB 2872).

Until this study, there has not been a systematic or comprehensive statewide survey or measurement of indoor environmental conditions in California public schools. This study consists of two major parts. Phase I is a mailed survey in which questionnaires and passive formaldehyde monitors were sent to a probability sample of all public schools with at least one portable classroom, and Phase II is a monitoring study of environmental conditions in a smaller sample of classrooms in California.

Once the PCS is completed, results will be used by ARB, DHS and interested stakeholders to assess the potential for adverse health impacts from environmental conditions and toxic pollutants that may be present in portable classrooms and, where necessary, to identify and implement effective actions that can be taken to remedy or prevent any unhealthful conditions found. This report documents results only from the first phase of the study, the mailed survey. This report describes the sampling design, the survey instruments, the data collection process, the data analysis procedures and programs, and the results that show and compare the major characteristics of the populations of eligible schools as well as portable and traditional classrooms.

METHODS

ARB and DHS held public workshops and meetings across the state to receive input on study design from the public, industry, and government agencies. The information obtained proved valuable in recruiting schools to participate in the study and in designing the questionnaires.

Two questionnaires, a Facilities Questionnaire and a Teacher Questionnaire, were collaboratively created with CA Air Resources Board (ARB) and CA Department of Health Services (DHS) for this study. Materials developed to describe and convey the study objectives and procedures to the school superintendents, school districts and schools include: a study brochure, introductory letters to superintendents and principals, and introductory letters to principals, teachers, facility managers, and study coordinators. As part of this material, a web site was created to facilitate access by schools and districts to study materials.

The sample of schools selected for the Phase I mailed survey is statistically representative of all California public schools that had portable classrooms in the Spring of 2001 because the sample was randomly selected from all schools on the California Public Schools Directory 2000. DHS staff selected an initial systematic sample of 1,216 schools. They conducted a preliminary survey which determined that 177 (14.6%) of these schools were ineligible for the study because they had no portable classrooms. A random sample of 1,000 of the remaining 1,039 schools was selected for the mail survey, but 48 (4.8%) of them were determined to also be ineligible. Therefore, about 19.4% (14.6% + 4.8%) of California's public schools had no portable classrooms in the Spring of 2001 and are not represented by this study.

The Phase I study was a mail survey which was conducted in the spring of 2001 with data receipt continuing through the summer of 2001. It was based on a probability sample of California public schools (and classrooms) having one or more portable classrooms. Facility managers provided school-level data (n = 384) and classroom-level data (n=1,133), via a Facilities Questionnaire (FQ). Teachers provided additional classroom level data (n = 1,181), via a Teacher Questionnaire (TQ). The classroom data were collected for three classrooms, usually two portable classrooms and one traditional classroom at each school. For a subsample of the classrooms, passive formaldehyde samplers (small glass tubes) were placed in the classrooms for approximately 10 days to collect indoor air samples that were analyzed to determine formaldehyde concentration levels (n = 911).

For quality control purposes, several formaldehyde samplers were pre-tested, and protocols were developed to optimize the limit of detection and the precision of the samplers in the field. Fifteen percent of the schools received a field blank (i.e., the tube was not to be opened during the sampling period) and 30% received a duplicate monitoring tube.[1] The duplicate tube was to be handled exactly like the original sampling tube (i.e., uncap one end to allow air to flow into the tube and hang it in the designated classroom for 7 to 10 days), except that it was to be positioned next to the primary sampling tube. Analysis of the laboratory blanks resulted in an

[1] Because each school had three sample classrooms, the classroom-level QC sampling rates were 5% for blanks and 10% for duplicates, or 15% overall.

estimated detection limit of 6 ppb. Analysis of the duplicate samples verified that analytical precision was good (10% to 15% median RSD).

The formaldehyde samplers and lab analyses were provided by Air Quality Research. The 1,181 completed Teacher Questionnaires and the 384 completed Facilities Questionnaires were scanned and compiled into Excel spreadsheets. Two SAS[2] files were then prepared for use in data analysis—a school-level file and a classroom-level file. School-level sampling weights and classroom-level sampling weights, each adjusted for nonresponse, were included on the respective SAS files.

Statistical estimates of population parameters such as means and proportions were carried out using weighted data analysis techniques. SUDAAN software (RTI, 2001) was used to generate the estimates and to properly account for features of the sampling design in the estimation of precision of such estimates (e.g., confidence intervals). Approximate t-tests were employed to compare portable and traditional classrooms with respect to formaldehyde levels. Wald chi-square tests were used to test for associations and Wald F tests were used to test for significance in analysis of variance models (RTI, 2001).

RESULTS

The target population of K-12 public schools with one or more portables is estimated to consist of 230,000 classrooms, 37.1% of which are estimated to be portable classrooms. (Estimates based on the preliminary sample were 225,000 classrooms, with 36% portable.) Response rates between 40 and 45% (for questionnaires and formaldehyde monitoring) were characteristic of school level responses. However, for schools that responded, response rates at the classroom level were about 95% for the teacher questionnaire and school handling of the formaldehyde tubes. This response rate indicates the overwhelming interest of the participating schools in complying with the survey requirements and supplying responses to the requested information.

Significant differences in the building characteristics, environmental complaints, and teacher symptoms were found in portable classrooms compared to traditional classrooms. Portable classrooms were more prevalent for elementary schools than for middle or high schools. When compared with traditional classrooms, portables were more likely to be newer in age and have more carpet, more tackable wallboard, more exterior doors, more opening of windows, and more air conditioning with thermostat control. Teachers in traditional classrooms have a strong preference for traditional classrooms, but most teachers in portable classrooms do not prefer to be in traditional classrooms. Most reported problems and complaints, except plumbing leaks, were more prevalent in portable classrooms (i.e., roof leaks, air quality/odor, mold, temperature, and noise).

Valid indoor-air formaldehyde concentration data were obtained from 911 classrooms (644 portable and 267 traditional). Concentrations are based on ~10-day passive monitoring measures. Only about 3% of the classrooms had non-detectable concentration levels, i.e., less than 6 ppb. Hence, nearly all of the classrooms had indoor formaldehyde levels greater than

[2] SAS is the registered trademark of SAS Institute, Inc., Cary, NC.

typical outdoor levels in California (3 ppb), the Proposition 65 notification level equivalent for air (1.3 ppb), and the OEHHA Chronic Reference Exposure Level (REL) of 2.4 ppb for long-term exposure (ARB, 2001; OEHHA, 2002; OEHHA, 2001). The latter level is based on protecting sensitive individuals from nasal and eye irritation and nasal/upper airway injury.

The short-term health-based guidelines for formaldehyde in California are 27 ppb (Draft 8-hour Indoor REL) and 76 ppb (1-hour level Acute REL) (Broadwin, 2000; OEHHA, 1999). These guidelines are designed to protect sensitive individuals against eye irritation and effects on the respiratory and immune systems. The 10-day average levels of formaldehyde are designed as screening estimates, and do not directly compare to standards and guidelines based on shorter time periods. However, because they are longer-term averages, they are probably conservative estimates of 1- and 8-hour levels of formaldehyde reached in classrooms.

As can be seen in the following table and figure, the formaldehyde concentrations were significantly higher for portable classrooms than for traditional classrooms. For example, 50% of the portables had concentrations above 27 ppb, whereas only 29% of the traditional classrooms were higher than 27 ppb. Also, 4% of the portables had concentrations above 76 ppb, whereas only 0.4% of the traditional classrooms were higher than 76 ppb. The mean levels were 32 ppb in portables and 24 ppb in traditional classrooms and 27 ppb across all classrooms.

Table ES-1. Formaldehyde Concentrations in All, Portable, and Traditional Classrooms

	All Rooms	Portable Classrooms	Traditional Classrooms
% of Rooms > 27 ppb	36.9	50.3	29.0
% of Rooms > 76 ppb	1.8	4.0	0.4

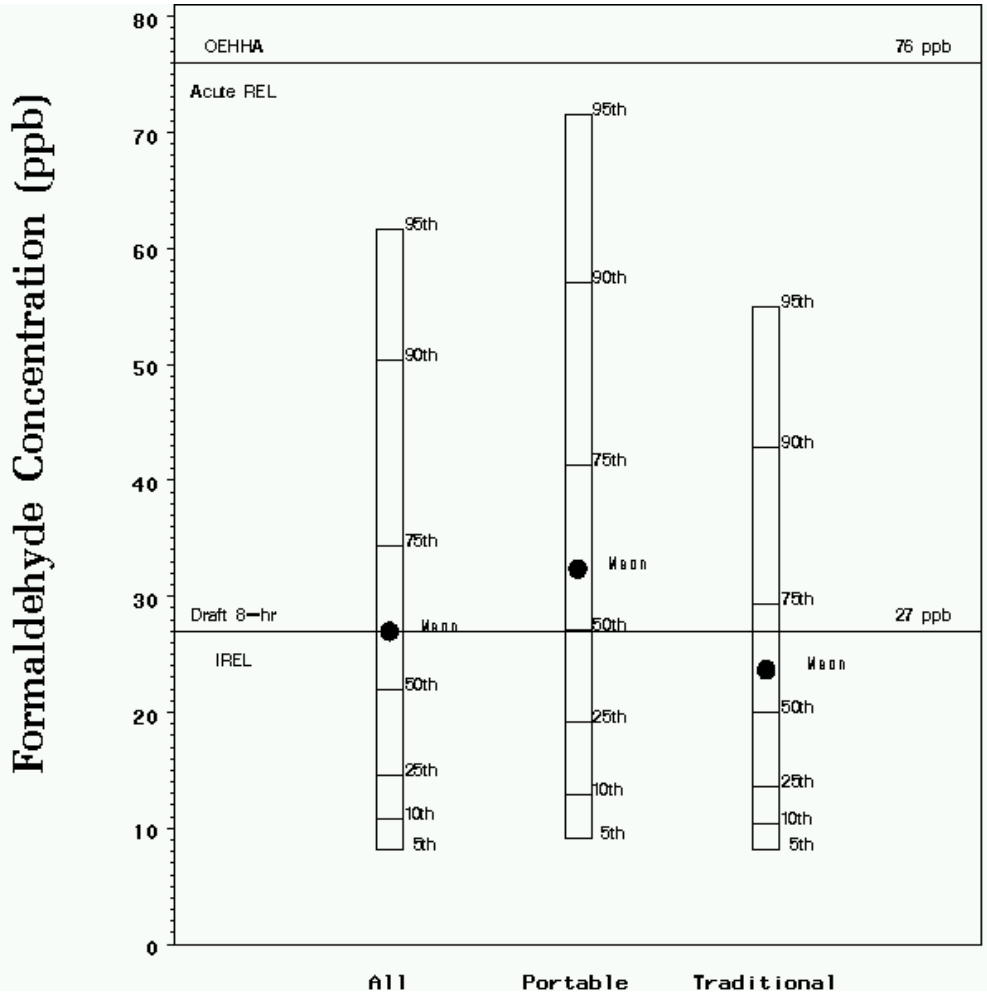
A number of factors appear to be significantly ($p < 0.05$) associated with high formaldehyde levels in portable classrooms. These include:

- Classroom age—higher formaldehyde in newer classrooms
- Date of formaldehyde sample—higher formaldehyde levels in warmer season
- Presence of pressed wood cabinets
- Chemical present in room
- Larger classroom size

Factors which appear to be significantly ($p < 0.05$) associated with higher formaldehyde levels in traditional classrooms include:

- Classroom age
- Geographic region—higher levels in the southern region
- Date of formaldehyde sample—higher levels in the summer months
- New flooring—higher levels in rooms with new flooring
- Odor—higher levels in rooms with new furnishing odor
- School construction this year
- Vinyl tackable wallboard
- New pressed wood last year.

Figure ES-1. Estimated Distributions of 10-Day Formaldehyde Concentrations in California Classrooms



[1]76 ppb is the OEHHA Acute REL.
[2]27 ppb is the draft 8-hour Indoor REL.

CONCLUSIONS

This is the largest, most comprehensive study of indoor environmental quality in California schools to date. The mail survey was successful in providing school-level and classroom-level environmental information regarding California public schools over two seasons and by school type (elementary, middle, and high school). Once the schools granted the teachers and facility managers permission to participate (and supplied them with the survey questionnaires and formaldehyde samplers), overall participation exceeded 90%. However, about half of the selected schools elected not to participate, in part due to Spring breaks, end-of-year testing, competing studies and surveys, and other factors.

Key results include:

1. The target population was estimated to be about 230,000 classrooms, of which about 37% are estimated to be portable classrooms;
2. Complaints to facility managers are fairly common; more than 50% of the facility managers received a school complaint last year; many of these complaints may be interrelated, e.g., noise, temperature, mold, and air quality/odor are all affected by ventilation;
3. Most types of environmental complaints were more prevalent for portable classrooms;
4. Higher formaldehyde levels occurred in the southern half of the state and in the warmer months sampled (possibly because formaldehyde emissions increase under higher temperature and humidity levels);
5. Higher formaldehyde levels were found in those rooms where teachers reported frequent nasal problems;
6. Higher formaldehyde levels were found in those rooms with new carpet in the past year and with those rooms with new flooring in the past year;
7. Higher formaldehyde levels were found in larger portable classrooms (>1100 square feet) than in smaller portable classrooms; and
8. Portable classrooms tend to have higher formaldehyde levels than traditional classrooms in the newest age group (0 to 3 years); for the other age groups, there was little difference between the two types of classrooms.

In addition to the above factors and perceptions, measurements of formaldehyde in the classrooms indicated that formaldehyde levels were indeed higher in the portable classrooms than in the traditional classrooms. The long-term (7-10 day) measurements at 4.0% of the portables and 0.4% of the traditional classrooms had values above 76 ppb, the CA acute REL (reference exposure level) for one-hour exposure. This means that sensitive individuals might experience symptoms at exposures above that level.

From the above list of significant results, it is clear that there are differences in environmental factors and perceptions between portable and traditional classrooms. However, further analyses are needed to identify which of the interrelated factors are most significant in determining indoor sources and measures to be taken to reduce these sources. Phase II will provide additional data to assistant in these analyses.

1. INTRODUCTION

The California Air Resources Board (ARB) and the California Department of Health Services (DHS) provided funding to address indoor environmental concerns resulting from use of portable classrooms. These concerns have included problems associated with contamination from formaldehyde and other VOCs, carbon monoxide (CO) and other combustion pollutants, microbial growth, odors, and excessive temperature and noise. Problems have been attributed to inadequate or deferred maintenance, poorly designed and noisy heating, ventilating and air conditioning (HVAC) systems, and the use of pollutant-emitting materials, products, or equipment in or near buildings. Health symptoms reported in schools are similar to those which are reported in "sick buildings." Of noted concern are asthma-like symptoms, since asthma is one of the upward trending respiratory diseases in the U.S.

The purpose of this study is to assess environmental conditions in California's portable classrooms. The results will be used by ARB, DHS and other stakeholders to assess the potential for adverse health impacts from environmental conditions and toxic pollutants that may be present in portable classrooms, and identify effective actions that can be taken to remedy or prevent any unhealthful conditions found.

To generate the required data, a study was conducted consisting of three parts—a mailed survey, a pilot field study of the proposed methodology, and the environmental assessment field study of a sample of portable and traditional classrooms. Results from each of these aspects of the study will be presented in a separate project report. This is the first of these reports, focused on documenting the materials and methods and presenting the results of Phase I, the mail survey.

1.1 Background

There are many reasons to study the school indoor environment. Children in California spend, on average, about 5.5 hours/school day. A large percentage of that time is spent indoors (Robinson and Thomas, 1991; Jenkins et al., 1992; Phillips et al, 1991). Teachers and other school staff typically spend even more time in school buildings. While in these buildings, the children and staff may be exposed to a number of chemicals and biological materials. For example, children are more likely to suffer the consequences of indoor pollution. School buildings by design are densely populated, making the task of maintaining an acceptable indoor air quality much more difficult than in many other types of facilities. Yet there have been few, if any, studies of the effects of the school environment on the learning process.

As noted above, problems have been associated with inadequate or deferred maintenance, HVAC problems, and the use of pollutant-emitting materials, products, or equipment in or near buildings (Bayer, et al., 1991). Concerns over indoor environmental quality in California's schools have risen recently as the demand for classrooms has resulted in use of portable classrooms. Portable classrooms are usually constructed with materials and HVAC systems different from those used in the traditional classrooms. Manufactured buildings emit hundreds of chemicals which are emitted from the particle board, plywood, fiberglass, carpets, glues and other materials used in the construction. Adding to potential problems and environmental factors influencing the physical classroom are the specific activities which may be ongoing during the

day that could add to already significant "background" concentrations. For example, VOC emissions of arts and crafts can add to levels of 1,1,1-trichloroethylene, toluene, xylenes, and formaldehyde.

Limited information indicates that some indoor environmental conditions in portable classrooms potentially put children at risk of serious health impacts. It has been reported that 63% of a total of 144 school districts responding to a California survey have experienced health complaints which may be associated with the classroom environment. These problems were attributed to moisture, fungal contamination, poor ventilation, and maintenance issues (CASH, 1999). Until the present study, referred to as the California Portable Classroom Study (PCS), there has not been a systematic or comprehensive statewide survey or measurement of indoor environmental conditions in California schools. California currently requires warning labels on art supplies used in schools, and prohibits those supplies that contain certain toxins (California Education Code §32060−32066. (See references for relevant web sites.)

1.2 Objectives of Phase I Report

Specific objectives of this report are the following:

- To document the Phase I sampling design and associated sampling weights
- To describe the survey instruments and data collection process
- To describe the formaldehyde sampling and analysis procedures
- To document the data processing, including adjustments to sampling weights
- To document the data analysis procedures and programs
- To present data analysis results that show the major characteristics of the populations of eligible schools and classrooms, including the formaldehyde concentration levels, and to compare portable and traditional classrooms.

Section 2 of this report discusses the materials and methods and Section 3 presents the data analysis results. Section 4 provides a brief discussion of the results. Section 5 contains our summary and conclusions; Section 6 contains our and recommendations. References can be found in Section 7.

2. MATERIALS AND METHODS

2.1 Questionnaire Development

Two questionnaires were created, edited, and formatted as Teleform or "scannable" instruments: a Facilities Questionnaire (FQ) and a Teacher Questionnaire (TQ). Copies of each are provided in Appendix A. ARB and DHS supplied the content for the two questionnaires, primarily a reconstruction of relevant questions asked in other indoor air quality surveys. Substantial changes included editing the instruments to address conditions in schools rather than commercial buildings, categorizing items under common headings, and adding columns for the three sampled classrooms. Formatting the questionnaires required the services of Teleform programmers. Programmers added instructions for marking boxes, bar codes, and boundary markers to the questionnaires. Programmers were also responsible for testing the two instruments before they could be used in the field. Testing the questionnaires involved printing copies of the questionnaires, "marking up" the questionnaires, and using the scanning equipment to "read" the marked up questionnaires. The latter was a quality assurance procedure to determine if the scanning equipment and Teleform program were interpreting the data properly.

2.2 Development of Introductory Letters and Other Survey Materials

Letters, postcards, a brochure, and all the survey instructions were developed to accompany the questionnaires. Draft versions of each letter and other materials were sent to ARB and DHS for review. Additional iterations were made until all parties were satisfied with the final version. Final versions of all materials, including the two questionnaires, were approved by RTI's Institutional Review Board before the mailings were conducted. Copies of all the supporting survey materials also are provided in Appendix A.

2.2.1 Introductory Letters to Superintendents and Principals

Introductory letters, often called "lead letters", were developed to make the superintendents and school principals aware of the research study and to encourage their support. A letterhead was designed that depicted the study as a joint project of ARB and DHS. The letters were drafted by a survey specialist with expertise regarding mail surveys. Both letters strongly encouraged support by stating that the survey was mandated by the state of California and that the survey was endorsed by the California Superintendent of Public Instruction, Ms. Delaine Eastin. Participating districts and schools were assured that survey results would remain confidential. The school superintendents were given the opportunity to request the survey results for schools that participated from their district. A web site link was developed to make it easier for superintendents and other district staff to review the survey materials.

Superintendent and principal names were available from the California Public School Directory 2000. However, only the superintendent names were used for the mailing because the year-old principal names were not considered current enough. The lack of principal names may have had an effect on the manner in which letters and other survey materials were delivered to school principals—for example, secretaries may be more likely to pass along letters or packages

that are addressed to the principal by name. This lack of principal names also restricted our access to the principals during the call back to non-responding schools, as discussed below.

2.2.2 Postcards to Superintendents and Principals

Postcards were created on colored stock and inserted in the superintendent "lead letter" mailings. Postcards were addressed to superintendents for two reasons: to inform the superintendents of the schools in their district that would be contacted and to give the superintendents the opportunity to request the formaldehyde results for schools in their district.

Principals received postcards too, but they were included in the main school package. The purpose of principal's postcard was also twofold: to determine if the schools intended to participate, and to obtain the name and contact information of the person at each school responsible for coordinating the study.

2.2.3 Introductory Letters to Principals, Teachers, Facility Managers, and Study Coordinators

Within the main survey package, introductory letters were enclosed in white envelopes addressed to teachers, facility managers, and study coordinators. The principal letters were placed on top of the survey envelopes because the package was addressed to the principal.

The principal's letter reiterated the importance of the study, asked that the principal assign a study coordinator to facilitate distribution and collection of study materials, and asked the principal to return the enclosed postcard or fax transmittal sheet identifying that person. In the first batch of letters mailed in early April (Wave 1), the letters said that the study was voluntary, but that provision was edited out of the Wave 2 letters (mailed the end of April) to improve response rates.

Teachers were sent letters explaining the purpose for the study and asking them to participate by completing and returning the enclosed questionnaire. Their letters did say that their participation was voluntary.

Facility manager letters were directed to the school or district staff responsible for maintenance in the school and portable classrooms. It was not possible to determine in advance if the facility manager was at the school site or at the school's district office. The letters explained the importance of the study, and made two requests: to complete and return the enclosed Facilities Questionnaire, and to assist the study coordinator as he/she selected classrooms and hung the formaldehyde tubes. Moreover, the letter stated that the facility manager's participation was voluntary.

Study Coordinator letters were addressed to the person assigned by the school principal to coordinate all study activities at the school. The letter also explained the importance of the study, and suggested the most efficient method to go about distributing and completing the study materials.

2.2.4 Instructions for Selecting Classrooms, Formaldehyde Tube Placement, and a Procedure Checklist

Simplifying the instructions for all the survey materials proved to be a difficult task. The methods and materials involved in the survey were foreign to most school staff. It was necessary to break procedures down into steps and to clarify without adding too many lengthy instructions. Detailed instructions were successfully developed for the study coordinator to carry out all the required survey tasks in an efficient manner.

The study coordinator was responsible for following the instructions outlined in the procedure checklist by distributing questionnaires, selecting classrooms, and placing (or hanging) the formaldehyde tubes.

Instructions for randomly selecting classrooms. RTI's Project Director, a senior statistician, developed the method for randomly selecting traditional and portable classrooms in the schools. The instructions included definitions (for study purposes) of classrooms, portable classrooms, and traditional classrooms. The preliminary steps were to obtain a site map and number the portable and traditional classrooms with the enclosed green and red leaded pencils. Once the classrooms were numbered on the site map, the numbers of portable and traditional classrooms were counted. These counts were then used to reference the first column of the classroom selection table at the end of the instructions. The study coordinator was asked to select classrooms by using the room numbers in the adjacent columns of the table. If possible, two portable classrooms and one traditional classroom were selected.

Instructions for formaldehyde tube placement. Instructions were developed to simplify the process of labeling the formaldehyde tubes, hanging them properly in the correct classrooms, and documenting the times and dates the tubes were hung and retrieved on the Analysis Request Form. The instructions were clarified to make sure the reader understood that the classrooms associated with the questionnaires were the same classrooms that received formaldehyde tubes.

Procedure checklist. A step-by-step checklist for the study coordinator provided details on distributing and completing the survey materials in the most efficient manner. This checklist, called the "study coordinator checklist", helped the study coordinator follow the other instructions in the right chronological order. Separate checklists were developed for schools that did and did not receive formaldehyde tubes.

2.2.5 Study Brochure

A study brochure was developed to emphasize the importance of the mail survey and to promote participation. The brochure was developed in a question and answer format for the most commonly asked questions about the survey. For example, participants may have asked "why was my school chosen, how long will it take, or how will the study benefit me and my school?" These types of questions are all answered in detail. The study web site also was cited in the brochure, http://www.arb.ca.gov/research/indoor/pcs/pcs.htm.

The brochure's colors, logos, and formatting were developed by a graphic artist. The attractive brochure has blue school logos and headings with black text on a white background. The graphic artist went through several iterations of format and text changes.

2.3 Formaldehyde Sampling and Analysis

2.3.1 Sampler Pre-Testing

ARB staff pre-tested the formaldehyde samplers in a new office building to evaluate method performance and potential shipping effects. Two sets of 5 samplers were opened and placed side by side in a new office building in downtown Sacramento, CA. The samplers were uncapped for 7 days and 14 days, respectively, in January 2001. The indoor location was an unoccupied cubicle in general office space. For field blanks and two field blanks, respectively, were placed along side the two sets of open samplers. All samplers and field blanks were from the same manufacturing batch.

The samplers and matching blanks were sent to the Air Quality Research (AQR) lab by express mail immediately after the exposure periods ended. The results of these tests, and of previous tests by the manufacturer, indicated that better precision was achieved for the longer sampling period (14 days). The results also showed that lab blanks varied among the batches, but that most of them were below 0.65 μg.

Based on these findings, ARB staff specified the following formaldehyde sampler protocols:

- Initial lab blank values for each batch must be no more than 0.75 μg.
- The number of batches was limited to one or two batches.
- The target sampling period was set at 10 days.
- Lab blank drift must be tested by AQR in 20 blanks per batch during each month of school sampling, and reported to ARB.

2.3.2 Sample Collection

Formaldehyde samples were collected over 7-to-10-day periods using the PF-1 passive sampling device developed by AQR. The device was suspended from the designated classroom ceilings according to specific instructions provided (see Appendix A). The tubes are shipped with a cap on each end. Once the tube is hung from the ceiling of the room, the cap is removed from one end. After the designated sampling period is completed, the cap is placed over the open end of the tube, and the sampling device is placed into the specially prepared package and shipped to the AQR laboratory for analysis. When exposure dates and/or times were missing callbacks were made to school study coordinators to acquire this information.

2.3.3 Sample Analysis

Analysis of the PF-1 tubes was performed by the AQR laboratory following NIOSH standard laboratory reference method 3500. The published minimum detection limit is " 10 ppb. The established shelf life of the PF-1 tubes prior to exposure is 6 months, with a shelf life after

exposure of 1 month. Care was taken to be sure that all PF-1 tubes were deployed, returned, and analyzed within the 6 month shelf life. Also, a check was made to be sure that the sample after collection was analyzed within the 30 day shelf life.

2.4 Statistical Sampling Design

2.4.1 Selection of Sample Schools

The ARB and DHS decided that the Phase I PCS should be designed to provide approximately equal probabilities of selection for all public schools in CA using portable classrooms in Spring 2001, rather than approximately equal probabilities of selection for all *classrooms* in the public schools. One reason for this decision was concern that differences between portable and traditional classrooms might be primarily a function of differences between schools, rather than differences between individual classrooms. Hence, schools were selected with approximately equal probabilities, rather than with probabilities proportional to a measure of size correlated with the number of classrooms at each school. This sampling strategy produces an oversampling of classrooms in elementary schools because those schools usually have fewer rooms and students than middle schools and high schools.

The sampling frame for Phase I of the PCS was the California Public School Directory 2000 which was published by the California Department of Education Press. CA DHS staff sorted this frame by the county/district/school (CDS) code and selected a 1-in-7 systematic sample from the sorted frame, which resulted in an initial sample of 1,216 schools. Hence, the sample was implicitly stratified by county and district, ensuring representation of these geographic areas proportionate to the number of public schools in each area.

DHS then conducted a preliminary survey of the school districts with at least one school in this sample and identified 177 schools that did not have any portable classrooms. These schools were deleted from further consideration for the PCS, leaving 1,039 schools that were eligible for Phase I of the PCS. From these 1,039 eligible schools, 1,000 were randomly selected for Phase I of the PCS. Each school was sent a questionnaire for their facility manager and another for the primary teacher in each of three classrooms that were selected as described below.

The ARB and DHS wanted to conduct Phase I data collection during both cold and warm months because formaldehyde levels are known to depend on ambient temperatures. Hence, the sample was randomly assigned, by district, to two waves for mailout to the schools. The first (Wave 1) mailout went to a subsample of 600 randomly selected schools early in April 2001. The second (Wave 2) mailout went to the remaining 400 schools late in April 2001. Our initial plan was to send the first mailout earlier, but development of questionnaires and other survey materials forced the first mailing to be delayed until early April.

2.4.2 Selection of Schools to Receive Formaldehyde Monitors

For each wave of the Phase I sample, 80% of the sample schools were randomly selected to receive formaldehyde monitors (due to budget limitations affecting the number of formaldehyde samples). Hence, 480 of the 600 Wave 1 schools received formaldehyde monitors, and 320 of the 400 Wave 2 schools received formaldehyde monitors. Each school received passive formaldehyde monitors (and instructions for their use) to be deployed in three classrooms: two portable classrooms and one traditional classroom (unless the school had only one portable classroom or had no traditional classrooms).

2.4.3 Selection of Schools to Receive Quality Control (QC) Monitors

For each wave of the Phase I sample, 45% of the schools that had been selected to receive formaldehyde monitors were randomly selected to receive one additional formaldehyde monitor for QC sampling (blank and duplicate samples). Hence, 216 of the Wave 1 schools and 144 of the Wave 2 schools received an additional formaldehyde monitor for QC sampling. Within each wave, one-third of the schools in the QC sample (72 schools in Wave 1 and 48 schools in Wave 2) were randomly selected to receive one field blank formaldehyde monitor. The remaining two-thirds of the schools (144 in Wave 1 and 96 in Wave 2) were randomly selected to receive one duplicate monitor.[3] The sample classroom in which the duplicate monitor was to be placed was randomly assigned, subject to the restriction that the numbers of selections of Classrooms designated as A, B, and C by the sampling algorithm, were equal. Detailed instructions were provided regarding proper handling and deployment of the QC monitors (Appendix A).

2.4.4 Selection of Sample Classrooms

Both project time and budget limitations required that classroom samples be selected by school staff, rather than having the schools send classroom lists to RTI, having RTI select the samples, and communicating the sampling results back to the schools. Therefore, step-by-step instructions were developed for the schools to use to select sample classrooms, using stratified random sampling. Each school with two or more portable classrooms was led through the process of randomly selecting two portable classrooms (designated Classrooms A and B) and one traditional classroom (designated Classroom C). If the school had only one portable classroom, the allocations were reversed so that two traditional classrooms were selected in addition to the one portable classroom. If the school had no traditional classrooms, the school was led through random selection of three portable classrooms.

[3] Because each school had three sample classrooms, the classroom-level QC sampling rates were 5% for blanks and 10% for duplicates, or 15% overall.

2.5 Development of a Control System

A Microsoft Access survey control system was designed to monitor study progress. Before the control system was implemented, school IDs and other IDs were created. Every lead letter, postcard, questionnaire, and formaldehyde tube had an assigned ID. Every school had a four-digit numeric "school ID". Each survey item was identified by the school ID followed by a three-character alpha suffix. School codes began with a leading 1 or 2, depending on whether the school was in Wave 1 or 2. The control system contained contact information from the district and schools obtained from the California Public School Directory 2000. Status codes were continuously updated for all schools that responded by postcard, phone call, or fax. Status codes included mailed, ineligible, returned postcard, refused, returned questionnaire (complete), returned questionnaire (blank), and referred to ARB.

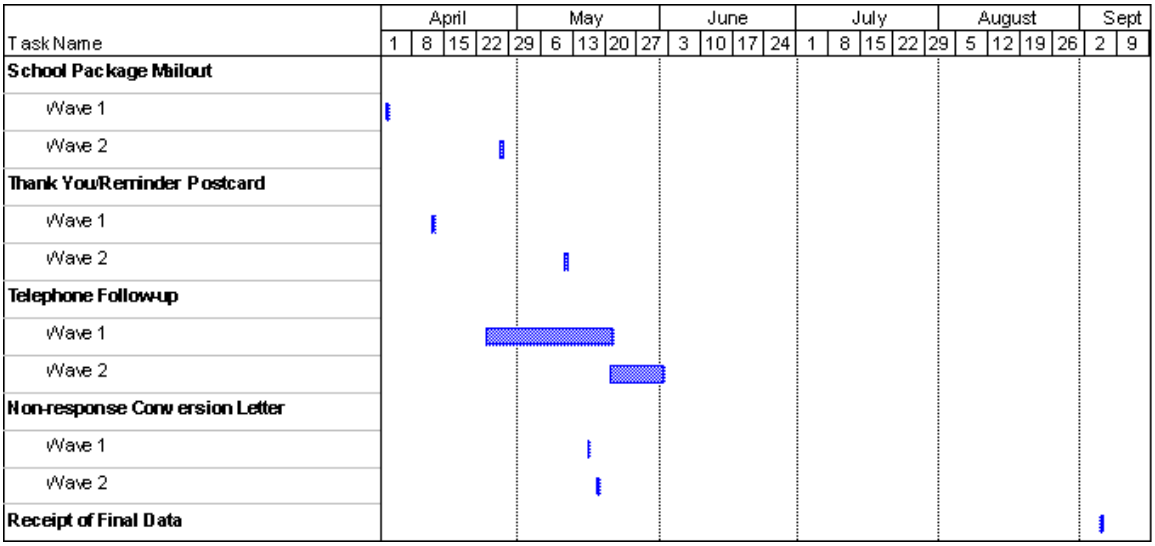
2.6 Data Collection

Once the survey materials were finalized, data collection activities (assembling the survey packages, mailing the materials, monitoring survey progress using the control system, and responding to telephone inquiries) began. The same data collection activities were carried out during both Waves 1 and 2. Exhibit 2-1 shows the overall timeline for data collection activities.

2.6.1 School Package Mailout

Preparation of the mailing packets took a great deal of organization and labor. For each wave, Federal Express boxes were obtained and labeled with the school name, ID, and whether or not the school received formaldehyde tubes. Survey materials such as the questionnaires, formaldehyde tube labels, analysis request forms, and principal postcards were organized and assembled by IDs. White envelopes were labeled with study coordinator; teachers A, B, and C; and facility manager to separate survey materials and ensure that the correct school staff person received each item. The instructions for preparing the survey packets are found in Appendix A.

Exhibit 2-1. Data Collection Timeline



2.6.2 Monitoring Progress with Control System

The control system was developed to manage the progress of the study. Each step in the mail survey process was associated with a status code. For example, Wave 1 sent out 600 principal lead letters on 3/23/2001, and subsequently the status codes were updated for those 600 IDs in the control system to "mailed".

The control system also allowed record sub-setting to search for particular districts, schools, survey materials, and status codes. This feature was helpful in reviewing and/or updating responses of many large school districts. Refusals were passed along to ARB for an attempt at refusal conversion. Reports were ran with the control system to measure favorable responses, such as returned principal postcards, agreed to participate after telephone follow-up, or returned questionnaires. The control system proved to be a valuable tool for managing data collection activities.

2.6.3 Call Log

The project director and survey manager developed a "call log" to manage all incoming phone calls about the mail survey. Study participants called in by using the 1-800 number from the survey materials. The "call log" was a Microsoft Excel spreadsheet with fields for date, district and/or school, person who called, phone number, comments, and response. Study participants had a variety of questions and other concerns about the survey. Most of the calls were made regarding eligibility, questions about the instructions, refusals, and lost or discarded survey materials. Responses to phone calls were made as quickly as possible. Three hundred forty phone calls were entered and responded to as noted in the "call log."

2.7 Efforts to Increase Participation

Participation rates are typically quite low for the initial round of mail surveys and there was a clear need to conduct follow-up with non-responding schools. To increase participation, five follow-up methods were used to prompt schools to participate in the survey. As a result, all non-respondents were contacted several times by postcards, letters, phone calls, emails, and/or faxes, as described below.

2.7.1 Thank You/Reminder Postcards

Postcards with the study letterhead were printed on plain white stock. The postcards were addressed to the principal with the intention of prompting the principal to begin work on the survey. Postcards were mailed ten to thirteen days after the school package was initially mailed.

2.7.2 Telephone Follow-up

RTI's Telephone Survey Department conducted telephone follow-up with survey non-respondents. The purpose of this telephone call to the school principal was to prompt his/her school to participate.

A telephone interviewer's manual was developed and a training session was conducted with several telephone interviewers. Telephone interviewers were provided background information about the study and a copy of all the survey materials. Tracing control forms were utilized to track the calls and responses from each school. Interviewers were trained before beginning follow-up calls.

Telephone follow-up began about three weeks after the survey materials were mailed. During Wave 1 telephone follow-up, both non-responding schools and those that had returned postcards were called and prompted to return the survey materials. School principal names were not available, and this impeded our telephone follow-up efforts. Many school secretaries simply did not allow the telephone interviewers to speak with the principal. Multiple attempts were made for non-responding schools and this extended the time period in which follow-up was necessary. For Wave 2, non-respondents were given priority over those that had returned postcards and not all the Wave 2 schools that had returned postcards were prompted because of time limitations. At least three to four attempts were made to follow-up all non-responding schools that did not return the principal postcard from Waves 1 and 2.

Many schools responded that staff were simply too busy to complete the survey at the end of the school year. Some schools responded that they were currently undergoing aptitude testing and their teachers could not be involved. Often the superintendent would ask district facility managers or facilities staff to coordinate the survey activities of all the selected schools in their district. This became a difficult task for districts with four or more selected schools when the responsibility went to one person. Small schools had a difficult time completing the materials because the principal often wanted to assume all the responsibility of coordinating the survey activities at his/her school.

2.7.3 Non-response Conversion Letter

During telephone follow-up for Waves 1 and 2, a non-response conversion letter was sent to all non-respondents. This letter was addressed to the principal and copies were also sent to the facility manager. The letter reemphasized the importance of the study, encouraged participation, and established a deadline for the return of survey materials.

2.7.4 Replacement Mailings

Several schools responded that they had lost or thrown away the original survey materials but may be willing to participate if another package of the materials were mailed. The replacement mailing process involved reprinting questionnaires and other survey materials with the appropriate ID linkage and preparing the materials in the same manner as the original survey package. More than one hundred replacement mailings were made but only about thirty percent of those surveys were completed and returned.

2.7.5 District Level Follow-up

ARB and DHS wanted to monitor response rates in the large school districts like Los Angeles and San Diego. A list of the selected schools was supplied from those districts and the current response rate. ARB and DHS followed-up by contacting facility managers at these two districts and encouraging support.

Several large districts were contacted by phone or email to encourage support of the survey. This proved to be somewhat successful once the district facility manager was identified and contacted.

2.8 Data Processing

The data processing activities are described below for the formaldehyde data, the TQ data and the FQ data. An overview of the data processing steps is provided in Table 2-1. The result of these processing activities is the following set of data files that can be subjected to data analysis:

- Lab blank formaldehyde data—used for quality control (QC) data analyses and for background corrections for other formaldehyde data
- Field blank formaldehyde data—used for QC data analyses
- Duplicate sample formaldehyde data—used for QC data analyses
- School-level data from FQ (denoted as SCHOOL1 in Table 2-1)—used for school-level data analyses
- All classroom-level data (denoted as COMBIN4 in Table 2-1)—used for classroom-level data analyses.

Details on the processing steps are provided in the subsections below.

Table 2-1. Data Processing Overview

Task	Subtask*
A. Develop initial sampling weights (see Section 2.9)	A1. Develop file of school-level sampling weights, WTS A2. Develop file of classroom-level sampling weights, WTC
B. Process Formaldehyde data	B1. Extract QC data (field blanks, lab blanks, and field duplicates) from the overall file and save as 3 separate files B2. Take the balance of the file and confirm that it consists only of field data (call this file FD1) B3. Check FD1 to be sure that it includes only eligible schools/classrooms, modify if necessary to produce file FD2 B4. Review comments in FD2 data and examine concentrations for extreme values, flag suspect data and non-detects to produce FD3 file
C. Process Teacher Questionnaire data	C1. Check schools/classrooms for eligibility, include eligibles in file TC1, one record per classroom
D. Process Facility Manager Questionnaire data	D1. Extract variables associated with schools and create Facility Manager School data file FMS1, one record per school D2. Check schools in FMS1 for eligibility, merge with WTS, create adjusted school-level sampling weights and add them to create file SCHOOL1 D3. Extract variables associated with classrooms and create Facility Manager Classroom file FMC1, one record per classroom D4. Check schools/classrooms in FMC1 for eligibility, modify if necessary to form file FMC2
E. Create combined classroom-level analysis file	E1. Merge data from FD3 and FMC2 onto TC1 file to form file COMBIN1 E2. Merge COMBIN1 with WTC, create adjusted classroom-level sampling weights and add them to COMBIN1 file to form file COMBIN2 E3. Add other data (e.g., geographic identifiers) and recode variables where necessary (e.g., to handle multiple responses) to form file COMBIN3 E4. Recode data in COMBIN3 to properly handle skip patterns and to create analysis variables to form file COMBIN4

* File name abbreviations, other than SCHOOL1, COMBIN3, and COMBIN4, do not correspond to actual files, but are used to indicate the process.

2.8.1 Process Formaldehyde Data

The formaldehyde data were provided by AQR in Excel spreadsheets. The data included the instrument response, denoted as y, along with the pertinent identifying information, the pertinent calibration data, and the start and stop dates and times of the exposure period. Comments were provided by AQR whenever unusual circumstances occurred. The calibration model was estimated by AQR by regressing Y on X, where Y is the instrument response that corresponds to known levels of formaldehyde mass, X (in μg). If the calibration model is

denoted as $Y = a + bX$, where a and b are the intercept and slope estimates, respectively, then the formaldehyde mass for a sample yielding response y was determined by AQR as

$$\hat{X} = 2\frac{y - a}{b},$$

where the constant "2" appearing in the above is a dilution factor.

Formaldehyde concentrations were then computed by AQR as

$$Z^* = \frac{\hat{X} - \overline{X}_b}{0.31T}$$

where Z is the concentration in ppm, $\hat{X}$ is the mass (µg)obtained from the above equation, $\overline{X}_b$ is the average mass (µg) of laboratory blank samples associated with the measurement, and T is the duration in hours that the vial was exposed. The time T was determined from the start and stop dates and times. The constant 0.31 is a diffusion rate (g air/hr) associated with the tubes.[4] The percentage distribution of sampling durations is given below:

No. sampling days*	Percent
4-8	11
9-10	71
11-14	14
15-18	3
>18	1

* Days were determined as the difference in sampling stop date and start date.

Data from the spreadsheets were originally partitioned into two SAS files: one containing the lab blank data and one containing all of the other data. For the latter file, the comments provided by the laboratory were reviewed and each analysis result was assigned a data quality flag (DQFLAG) of 0, 1, or 2. Values of 2 were assigned when a severe problem with the analysis occurred or when the integrity of the sample could not be assured. Less severe problems (e.g., exact start and stop times not available) were flagged with a value of 1. All other cases were assigned a value of 0. The distribution of the data quality flags across the observations (including field blanks and duplicate samples) was as follows:

		Frequency Counts				
DQFLAG Value	**Meaning**	**Field Obs.**	**Dup Samples**	**Blank Samples**	**Total**	**Freq. (%)**
0	Data considered okay	796	60	34	890	77.3
1	Data considered suspect	115	7	7	129	11.2
0 or 1	Data considered usable	911	67	41	1019	88.5
2	Data considered invalid	97	23	12	132	11.5

Three different versions of concentration variates were constructed:

1. Z = 1000 Z* (the factor 1000 was used to convert the results from ppm to ppb)
2. Z_0 = max(Z,0) (convert negative values to 0)
3. Z_1 = max(Z,0.1) (convert negative, zero, and small positives to 0.1)

[4] Note that this approach for computing Z* can yield negative concentration values.

In general, Z_1 was used in all data analyses, except for those dealing with field blanks, for which only Z was used. A non-detect indicator was set equal to 0 if Z exceeded 6 ppb, and equal to 1, otherwise.

The file containing the field data was then partitioned into three separate files; each file contained only those records having DQFLAG=0 or 1. These files were:

- File of field observations (911 records). This file includes 6 observations originally designated as a field duplicate but for which the original sample was not obtained or was deemed invalid. After augmentation of some school-specific data (e.g., school location, school type), some classroom-specific data (portable versus traditional indicator), and adjusted sampling weights (see Section 2.9), this file was used for all formaldehyde-related data analyses.
- File of duplicate field observations (67 x 2 = 134 records)
- File of field blank observations (41 observations).

The last two of these files were used for QC purposes.

2.8.2 Process Teacher Questionnaire (TQ) Data

The teacher questionnaires were scanned and compiled in a Microsoft Excel Comma Separated Values (CSV) file. Data were compiled on three separate dates: June 28, July 17, and August 28, 2001. This file contained a total of 1208 records. Three records were deleted because they contained no data (1219TQC, 1402TQA, and 2184TQC) and 24 records were deleted because the original questionnaire was scanned twice. The final TQ file therefore contained 1181 records.

These data were cleaned to correct for the following:

- Invalid or missing date information in the DATE field,
- Deletion of duplicate or empty records (as indicated above),
- Input of missing TQ_ID information per LINK field or hard copy of questionnaire, and
- Miscellaneous corrections made to data per hard copy.

Fields with invalid multiple responses were originally given a missing value. These records were later reviewed and the following adjustments were made:

- A value of '8' was given to records with multiple responses in the following fields: TQ2 and TQ11
- A value of '12' was given to records with multiple responses to TQ5
- A special missing value of '.M' was given to records with multiple response in the following fields: TQ3A, TQ7, TQ15, TQ16A, TQ16B, TQ28, TQ30A, TQ30B, TQ30F, TQ33, TQ36, TQ37, TQ41, and TQ43
- New variables were created due to multiple responses in TQ18B. These variables are TQ18B_1, TQ18B_2, and TQ18B_3. Values of 'Yes' = 1 and values of 'No' = 2

- New variables were created due to multiple responses in TQ38B. These variables are TQ38B_1 to TQ38B_5. Values of 'Yes' = 1 and values of 'No' = 2.

2.8.3 Process Facility Questionnaire (FQ) Data

The facility questionnaires were scanned and compiled in a Microsoft Excel CSV file. Data were compiled on three separate dates: June 28, July 17, and August 28, 2001. There were a total of 386 records. Two records were deleted because the original questionnaire was scanned twice (1051FMQ and 1520FMQ). The final FQ file therefore contained 384 records.

The data were cleaned to correct the following issues like those indicated above for the TQ. In addition, fields with invalid multiple responses that were originally given a missing value were later reviewed and the following adjustments were made:

- A value of '8' was given to records with multiple response in the following fields: FQ1 and FQ14
- A special missing value of '.M' was given to records with multiple response in the following fields: FQ2, FQ3, FQ8, FQ15AA, FQ15AB, FQ15AD, FQ15AE, FQ16B, FQ16C, FQ18, FQ19B, FQ24, FQ25, FQ25AD, FQ25BA, FQ25BC, FQ25BE, FQ27AC, FQ31B, FQ32A, FQ32B, FQ32C, FQ33A, FQ33C, FQ34AA, FQ34AC, FQ34BA, FQ34CA, FQ35B, FQ36A, FQ36B, FQ36C, FQ37A, FQ37B, FQ37C, FQ38A, FQ38B, FQ41A, FQ42A, FQ42B, FQ42C, FQ43A, FQ45A, FQ46A, FQ46B, FQ46C, FQ47A, FQ58CA, FQ59A, and FQ61A
- New variables were created due to multiple responses in FQ44A. These variables are FQ44A1 to FQ44A6. Values of 'Yes' = 1 and values of 'No' = 2
- New variables were created due to multiple responses in FQ44B. These variables are FQ44B1 to FQ44B6. Values of 'Yes' = 1 and values of 'No' = 2
- New variables were created due to multiple responses in FQ44C. These variables are FQ44C1 to FQ44C6. Values of 'Yes' = 1 and values of 'No' = 2
- New variables were created due to multiple responses in FQ52A. These variables are FQ52A1 to FQ52A6. Values of 'Yes' = 1 and values of 'No' = 2
- New variables were created due to multiple responses in FQ52B. These variables are FQ52B1 to FQ52B6. Values of 'Yes' = 1 and values of 'No' = 2
- New variables were created due to multiple responses in FQ52C. These variables are FQ52C1 to FQ52C6. Values of 'Yes' = 1 and values of 'No' = 2

After making the above changes, the FQ was partitioned into two files—one at the school level and one at the classroom level. The former retained data on items 1 through 26. The latter involved transposing questions 27 to 64 so each classroom was associated with a record (i.e., usually three records per school) in the FQ classroom file. These records were matched with the teacher classroom records by ROOM name/number (see Section 2.8.4). The records were linked by a variable named FQ_RMKEY. This file was used to create the classroom level file.

The final school-level file contains a separate record for each school. This file contains:

- the pertinent identifiers (e.g., school ID)
- school-specific data from the FQ

- sampling weights associated with schools (see Section 2.9)
- other classification variables based on information from CA ARB and DHS:
  - School level: elementary, middle, high schools (based on highest grade)
  - School location: urban (cities with 250,000+ population)
    rural (including towns under 25,000 population
    suburban (all other)
  - Region: the southern boundaries of Monterey, Fresno, and Mono Counties were used to partition Northern and Southern California (see Figure 2-1)
  - Percent of children receiving Aid to Families with Dependent Children (AFDC)
  - Percent of children receiving Federal meals assistance
  - Expenditure per student.

2.8.4 Creation of Combined Classroom-Level Analysis File

As with the school file, pertinent transformations and combinations of the classroom-level response variables that were needed for data analysis were developed as a part of the file construction processes. These analysis variables are described in Section 2.10. As a part of the file creation process, preliminary data summaries and analyse*s* (e.g., scatter plots, tabulations, and basic summary statistics) were performed on the primary variables to identify anomalies and to determine if additional data transformations and recoding (e.g., collapsing of response categories) were necessary for subsequent analyses.

The final classroom-level file contains a separate data record for each classroom. This file contains

- the pertinent identifiers and classification variables (e.g., area [north or south], school ID, classroom type and ID)
- questionnaire data from the TQ
- classroom-specific questionnaire data from the FQ
- formaldehyde concentration data and associated lab results, including data quality status and measurability status indicators
- sampling weights associated with schools and classrooms (see Section 2.9).

One of the major efforts in the data processing related to properly identifying classrooms so that the various types of data (formaldehyde, TQ , and FQ) could be linked at the classroom level. The initial intent of the classroom selection process was that there would be three rooms per school: two portable classrooms, designated as A and B, and one traditional classroom, designated as C. These procedures were not always followed by both the teachers and the facility managers, which resulted in some inconsistencies between the two. The following rules were developed in order to match the FQ and TQ data at the classroom level as accurately as possible and to construct a consistent room type variable (called ROOMTYPE) from the room numbers appearing in the TQ and in the FQ:

- If two of the three room numbers at a school are matches or near matches (like B-4 and 4), then consider the third room to be matched also, even if the room numbers reported are different (like 205 and 12).

Figure 2-1. Definition of Northern and Southern California for the Portable Classrooms Study

- If only one or none of the three room numbers are matches, keep the FQ data only for the matching room (if any) and disregard the remainder of the FQ data (This assumes that the FQ data have not been provided for the same rooms as the TQ and the formaldehyde tubes. Such FQ data are retained in the data files with room designations of D, E, or F, which will not match the TQ or formaldehyde data records.).
- If the Room ID for the TQ ends in A or B:
  - If either the TQ or the FQ classifies the room as portable, then classify the room as portable.
  - Otherwise, if either classifies the room as permanent, classify the room as permanent.
  - Otherwise, classify the room as portable.
- If the Room ID for the TQ ends in C:
  - If either the TQ or the FQ classifies the room as permanent, then classify the room as permanent.
  - Otherwise, if either classifies the room as portable, classify the room as portable.
  - Otherwise, classify the room as permanent.
- If no TQ is available, but a FQ is available:
  - Use the FQ, if provided, to classify Rooms A, B, and C as portable or permanent.
  - Otherwise, assume that Rooms A and B are portable and C is permanent.
- If neither a TQ or FQ is available, but formaldehyde monitor results are available, assume that Rooms A and B are portable and that room C is permanent.

2.8.5 Preparation of Data for Analysis

School-Level File. Additional processing of the school level file (called SCHOOL) was needed prior to conducting statistical analyses. This included the following two main types of activities: recoding of selected variables, and creation of analysis variables, as indicated in Tables 2-2 and 2-3, respectively.

The final file, called SHCOOL1, included all of the original variables on the SCHOOL file plus the newly created variables; the SCHOOL1 file serves as the basis for all school-level analyses.

Table 2-2. Final Processing Activities for SCHOOL File

Item	Activity	New Item
FQ15A	Item was inadvertently not scanned; value inferred from subsequent parts of item (1=yes, 2=no or NA)	RFQ15
FQ12A FQ12B	Temperatures below 60 or above 85 degrees recoded as bad data	RFQ12A RFQ12B
P_CALWORKS	Create categorical variable to indicate if value is <=25% (1=yes, 2=no)	P_CALWOR
P_MEALS	Create categorical variable to indicate if value is <=55% (1=yes, 2=no)	P_MEAL
AVGCOSTA	Create categorical variable to indicate if value is <=$5500 (1=yes, 2=no)	PAVGCOST
POPSTATUS	Character values converted to numeric	POPSTAT
SCH_TYPE	Character values converted to numeric	SCHTYPE
NORTHSOUTH	Character values converted to numeric (1=N,2=S)	REGION

Table 2-3. School-Level Analysis Variables

Variable	Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Source
POPSTAT	School location	Urban	Suburb	Rural					O
REGION	Geographic region	North	South						O
SCHTYPE	School type	Elem	Middle	High					O
P_CALWOR	Percent students on AFDC	<=25%	>25%						O
P_MEAL	Percent students on Meal Assistance	<=55%	>55%						O
PAVGCOST	Avg Student Expenditure	<=$5500	>$5500						O
SCHAGE	School age (yrs)	<=10yr	11-20yr	21-30yr	31-40yr	41-50yr	50+yr	Unspec	FQ6
NUMPORT	Number of portable classrooms	1-10	11-20	21-30	>30				FQ7a
NUMTRAD	Number of traditional classrooms	1-20	21-40	41-60	>60				FQ7b
NUMTOT	Total number classrooms	1-30	31-60	61-100	>100				FQ7a,b
HVACLOG	HVAC maintenance logs kept	Yes	No	DK					FQ11a-g
RFQ15	Regular HVAC inspection/maintenance	Yes	No/NA						FQ15*
FQ15AA	HVAC I&M: outdr damper setting	Monthly	Quarterly	Yearly	>Year	Never	DK	NA	FQ15aa
FQ15AB	HVAC I&M: coils cleaned	Monthly	Quarterly	Yearly	>Year	Never	DK	NA	FQ15ab
FQ15AC	HVAC I&M: condensate pan/drain	Monthly	Quarterly	Yearly	>Year	Never	DK	NA	FQ15ac
FQ15AD	HVAC I&M: filter replaced	Monthly	Quarterly	Yearly	>Year	Never	DK	NA	FQ15ad
FQ15AE	HVAC I&M: exchanger checked	Monthly	Quarterly	Yearly	>Year	Never	DK	NA	FQ15ae
FQ16A	Freq of trash removal	5/wk	3-4/wk	1-2/wk	1-2/mo	<1/mo			FQ16a
FQ16B	Freq of vacuuming/sweeping/dusting	5/wk	3-4/wk	1-2/wk	1-2/mo	<1/mo			FQ16b
FQ16C	Freq of carpet steam/dry cleaning	5/wk	3-4/wk	1-2/wk	1-2/mo	<1/mo			FQ16c
FQ19A	Aware of EPA IAQ Tools for Schools Pgm	Yes	No						FQ19a
USETOL	Awareness/use of EPA IAQ Tools	Aware/yes	Aware/no	Aware/DK	Unaware				FQ19a,b
FQ25	Any major complaints of envir cond	Yes	No	DK					FQ25
RFQ25AA	Roof leak complaint last yr: Port	None	1	2-4	5-9	10+			FQ25,FQ25aa
RFQ25AB	Plumbing leak complaint last yr: Port	None	1	2-4	5-9	10+			FQ25,FQ25ab
RFQ25AC	Air/odor complaint last yr: Port	None	1	2-4	5-9	10+			FQ25,FQ25ac

Variable	Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Source
RFQ25AD	Mold complaint last yr: Port	None	1	2-4	5-9	10+			FQ25,FQ25ad
RFQ25AE	Temperature complaint last yr: Port	None	1	2-4	5-9	10+			FQ25,FQ25ae
RFQ25AF	Noise complaint last yr: Port	None	1	2-4	5-9	10+			FQ25,FQ25af
RFQ25BA	Roof leak complaint last yr: Trad	None	1	2-4	5-9	10+			FQ25,FQ25ba
RFQ25BB	Plumbing leak complaint last yr: Trad	None	1	2-4	5-9	10+			FQ25,FQ25bb
RFQ25BC	Air/odor complaint last yr: Trad	None	1	2-4	5-9	10+			FQ25,FQ25bc
RFQ25BD	Mold complaint last yr: Trad	None	1	2-4	5-9	10+			FQ25,FQ25bd
RFQ25BE	Temperature complaint last yr: Trad	None	1	2-4	5-9	10+			FQ25,FQ25be
RFQ25BF	Noise complaint last yr: Trad	None	1	2-4	5-9	10+			FQ25,FQ25bf
PORTCP	Port classroom envir complaints	Yes	No	DK					FQ25,aa-af
TRADCP	Trad classroom envir complaints	Yes	No	DK					FQ25,ba-bf

"Source" identifies the questionnaire item(s) from which the variable was derived. The "0" cases were from sources other than a questionnaire.

The percent of children in the school who receive AFDC assistance, P_CALWORKS, was recoded into P_CALWOR as shown in Table 2-2 by defining the first category to be the schools with either zero or very low AFDC assistance. The percent of children receiving Federal meals assistance, P_MEALS, and the average expenditure per student, AVGCOST, were recoded as shown by reviewing the distributions of these variables and choosing natural breakpoints near the middle of the distributions.

Classroom-Level File. Additional processing of the combined classroom level file (called COMBIN3) was needed prior to conducting statistical analyses. This included the following two main types of activities: recoding of selected variables, and creation of analysis variables. Table 2-4 summarizes the recoding activities, and Table 2-5, the creation of analysis variables. The final file, called COMBIN4, included all of the original variables on the COMBIN3 file plus the newly created variables; the COMBIN4 file serves as the basis for all classroom-level analyses. The next to last column indicates the source of the analysis variable (0=other). The last column of Table 2-5 indicates how the particular analysis variables are used:

M = multiple use
F = formaldehyde analyses
P = population-characterization analyses
B = both F and P.

Table 2-4. Final Recoding Activities for COMBIN3 File

Item	Activity	New Item
TQ15	Reorder levels into logical sequence	RTQ15
TQ16A TQ16B	Force skip-pattern consistency between items; reorder levels of TQ16B into logical sequence	RTQ16A RTQ16B
TQ18A TQ18B	Force skip-pattern consistency between items	TQ18A TQ18B
TQ31 (all parts)	Force skip-pattern consistency between items	RQ31 (all parts)
TQ32 (all parts)	Force skip-pattern consistency between items	RQ32 (all parts)
TQ33	Reorder levels into logical sequence	RTQ33
TQ34A TQ34B	Force skip-pattern consistency between items	RT34A RTQ34B
TQ38A TQ38B_1,2,3,4,5	Force skip-pattern consistency between items; convert levels for RTQ38_x items (1=yes, 2=no, 3=NA)	RTQ38A RTQ38B_1,2,3,4,5
TQ40B_A,B,C,D	Force skip-pattern consistency with TQ40A_B; recode for multiple responses and combine into one variable	RTQ40B

Table 2-5. Classroom-Level Analysis Variables

Variable	Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Source	Analysis Type
ROOMTYPE	Classroom type	Portable	Traditional					O	M
OVERALL	All classrooms	All						O	B
POPSTAT	School location	Urban	Suburb	Rural				O	B
REGION	Geographic region	North	South					O	B
SCHTYPE	School type	Elem	Middle	High				O	B
SAMPMO	Month of formaldehyde sample	April	May	June/July*				H2CO data	F
SAMPTIME	Time of formaldehyde sample	Early_April	Late_April	Early_May	Late_May	June/July		H2CO data	F
PWDXPOSC	<25% non-weekday in samp period	Yes	No					H2CO data	F
GENINST	General instruction classroom	Yes	No					TQ5	B
NUMSTUD	Typical number students in class	0-9	10-19	20-29	30-39	>40		TQ8	P
FLRTYP	Type of flooring	Carpet_only	Vinyl/linol	Both	Carpet_comb	Other		TQ10a-i	P
CARPET	Carpeted classroom	Full	Partial	None				TQ10a/b	B
VINYLFL	Vinyl/linoleum floor	Yes	No					TQ10e	B
VINYLWL	Vinyl tackable wallboard	Yes	No					TQ11	B
TQ11	Primary wall material	Sh_rock/pls	vinyl_tack	cinderblk	other/DK			TQ11	P
WINDOPEN	Open windows	Never	Infrequent	Frequent				TQ15	B
RTQ15	Freq of open windows	Unopenable	Rarely	Occasional	Frequently	Most_time	Always	TQ15	P
DOOROPEN	Open door to outside	Infreq	Freq	NA				TQ16b	B
RTQ16B	Freq of open exterior door	NA	Rarely	Occasional	Frequently	Most_time	Always	TQ16b	P
TQ17	Air conditioning in room	Yes	No					TQ17	P
TQ18A	Thermostat in room	Yes	No	DK				TQ18A	P
RTQ18B	Thermostat adjustment	Adjustable	Locked_up	Not_working	Unspecified	NA/DK		TQ18b	P
PRESWOOD	Pressed wood furniture	Yes	No					TQ19	B
PRESWOD1	Pressed wood table/desks	Yes	No					TQ19a	B
PRESWOD2	Pressed wood bookcases	Yes	No					TQ19b	B
PRESWOD3	Pressed wood cabinets	Yes	No					TQ19c	B
PLASTIC	Plastic furniture	Yes	No					TQ19	P

Variable	Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Source	Analysis Type
NEWFURN	New furnishings this school yr	Yes	No	DK				TQ20	B
COPIERS	Copiers present in room	Yes	No					TQ22a	P
APPLIAN	Type appliances in room	Stove/burnr	Other	None				TQ22b	B
CHEMPRES	Chemical present in room	Yes	No					TQ22c	B
PAINTPEN	Paints/pens used	Yes	No					TQ23a	P
PAINTS	Oil/acrylic paints used	Yes	No					TQ23a_b	F
PMARKER	Permanent marker/pen used	Yes	No					TQ23a_c	F
WBMARKER	Whiteboard marker used	Yes	No					TQ23a_d	F
GLUFLU	Glues/fluids used	Yes	No					TQ23b	B
CORFLU	Correction fluid used	Yes	No					TQ23b_c	F
GLUES	Epoxy/rubber cement used	Yes	No					TQ23b_b/d	F
AFRESH	Air freshener used	Yes	No					TQ23c	B
AFRESHP	Air freshener used - plug-in	Yes	No					TQ23c_c	F
AFRESHS	Air freshener used - spray	Yes	No					TQ23c_d	F
CANDLES	Candles used	Yes	No					TQ23d	P
AIRCLEAN	Air cleaners used	Yes	No					TQ23e	P
AIRPURF	Portable air purifier used	Yes	No					TQ23e_b	P
PESTUSE	Pesticide use past yr (teacher)	Current	Previous	Never				TQ24	P
PESTSPR	Pesticide spray use past yr	Yes	No					TQ24a	P
PESTPOW	Pesticide powder use past yr	Yes	No					TQ24b	P
PESTTRP	Pesticide trap use past yr	Yes	No					TQ24c	P
CLASPREF	Teacher classroom preference	Permanent	Portable	No_Opinion				TQ25	P
TEMP	Classroom temperature	Okay	Cold	Hot				TQ26a	P
HUMID	Classroom humidity	Okay	Humid	Dry				TQ26b	P
CAIR	Classroom air	Okay	Drafty	Stuffy				TQ26c	P
LIGHT	Classroom light	Okay	Dim	Bright				TQ26d	P
INNOISE	Disruptive inside noise	Yes	No					TQ27a	P

Variable	Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Source	Analysis Type
OUTNOISE	Disruptive outside noise	Yes	No					TQ27b	P
TURNOFF	Turn off heat/AC due to noise	Yes	No					TQ28	P
BUGPROB	Bug problems in room	Current	Previous	Never				TQ29a	P
RODPROB	Rodent problems in room	Current	Previous	Never				TQ29b	P
MUSTODOR	Musty odor	Never	Sometimes	Often				TQ30a	P
NEWODOR	New furnishings odor	Never	Sometimes	Often				TQ30d	B
RTQ30A	Musty odor at times	Yes	No					TQ30a	P
RTQ30B	Cleaning products odor at times	Yes	No					TQ30b	P
RTQ30C	Vehicle exhaust odor at times	Yes	No					TQ30c	P
RTQ30D	New carpet/furniture odor at times	Yes	No					TQ30d	P
RTQ30E	Fresh paint odor at times	Yes	No					TQ30e	P
RTQ30F	Cooking odor at times	Yes	No					TQ30f	P
RTQ30G	Pesticide odor at times	Yes	No					TQ30g	P
RTQ30H	Asphalt/tar odor at times	Yes	No					TQ30h	P
RTQ30I	Tobacco smoke odor at times	Yes	No					TQ30i	P
RTQ30J	Trash/dumpster odor at times	Yes	No					TQ30j	P
RTQ30K	Sewer/compost odor at times	Yes	No					TQ30k	P
RTQ30L	Fire/smoke odor at times	Yes	No					TQ30l	P
CONST	Construction activity this yr	Current	Previous	Never	Unknown			TQ31a	B
RTQ31C_B	Carpentry activity this yr	Yes	No					TQ31c_b	B
RTQ31B_A	In-room construction this yr	Yes	No					TQ31b_a	B
OTHCONST	Other school construction this yr	Yes	No					TQ31b_b-e	B
RTQ31B_B	Same building construction this yr	Yes	No					TQ31b_b	P
WATRPRB	Evidence of water problems (teacher)	Current	Previous	Never	Unknown			TQ32	P
WATRLEK	Leak or flood in room	Current	Previous	Never	Unknown			TQ32a	P
TYPLEK	Type leak or flood	Roof	Other	Both	No_Leaks			TQ32b	P
WATRSTN	Water stains in room	Current	Previous	Never	Unknown			TQ32c	P

Variable	Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Source	Analysis Type
TYPSTN	Type water stains	Ceiling	Floor	Both	Other	No_Stains		TQ32d	P
VISMOLT	Visible mold in room (teacher)	Current	Previous	Never	Unknown			TQ32e	P
MOLDLOC	No. locations with mold	No mold	1-2_loc	3+loc				TQ32f	P
FLSWEP	Freq of floor cleaning	Daily	2-3/wk	1/wk	Other	DK		TQ33	P
RTQ34B	Custodial services needed	More_freq	More_effctv	Both	Unspecified	NA		TQ34a/b	P
COMPLAN	# teacher complaints in school yr	0	1-5	>5				TQ36	B
TQ37	Overall air quality (teacher)	Excellent	Good	Adequate	Poor	Very_poor		TQ37	B
AIRQUAL	Overall air quality (teacher)	Excel/Good	Adequate	Poor				TQ37	P
ABSENT	Days absent last 2 weeks	None	1-2_days	>2_days				TQ38a	P
CAUSE	Reason for absence	Cold/flu	Allerg/resp	NA				TQ38b	P
NOSESYM	Nose symptoms past 2 weeks	None	Occasional	Frequent				TQ39a_n/o/f	B
THRTSYM	Throat symptoms past 2 weeks	None	Occasional	Frequent				TQ39b_n/o/f	B
EYESSYM	Eyes symptoms past 2 weeks	None	Occasional	Frequent				TQ39c_n/o/f	B
SKINSYM	Skin symptoms past 2 weeks	None	Occasional	Frequent				TQ39d_n/o/f	P
HEADSYM	Headache/sinus pain past 2 weeks	None	Occasional	Frequent				TQ39e_n/o/f	P
DROWSYM	Drowsiness past 2 weeks	None	Occasional	Frequent				TQ39f_n/o/f	P
DIZZSYM	Dizziness/faintness past 2 weeks	None	Occasional	Frequent				TQ39g_n/o/f	P
LUNGSYM	Lung symptoms past 2 weeks	None	Occasional	Frequent				TQ39h_n/o/f	P
STOMSYM	Upset stomach past 2 weeks	None	Occasional	Frequent				TQ39i_n/o/f	P
NOSESYMI	Nose symptoms at home	Same/worse	Improves	NA				TQ39a_s/i	B
THRTSYMI	Throat symptoms at home	Same/worse	Improves	NA				TQ39b_s/i	B
EYESSYMI	Eyes symptoms at home	Same/worse	Improves	NA				TQ39c_s/i	B
SKINSYMI	Skin symptoms at home	Same/worse	Improves	NA				TQ39d_s/i	P
HEADSYMI	Headache/sinus pain at home	Same/worse	Improves	NA				TQ39e_s/i	P
DROWSYMI	Drowsiness at home	Same/worse	Improves	NA				TQ39f_s/i	P
DIZZSYMI	Dizziness/faintness at home	Same/worse	Improves	NA				TQ39g_s/i	P
LUNGSYMI	Lung symptoms at home	Same/worse	Improves	NA				TQ39h_s/i	P

Variable	Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Source	Analysis Type
STOMSYMI	Upset stomach at home	Same/worse	Improves	NA				TQ39i_s/i	P
NUMSYM	No. health symptoms past 2 weeks	None	1-2	3+				TQ39	P
ALLERG	Chronic hay fever/allergies	Yes	No					TQ40a_a	P
LUNGPRB	Chronic asthma/bronchitis	Yes	No					TQ40a_b/c	P
CIRCPRB	Chronic hypertension/heart disease	Yes	No					TQ40a_d/e	P
ASMED	Inhaled asthma med past 2 weeks	Never	Some	NA				TQ40a/b	P
STUASMA	No. students taking asthma med	DK	None	1-2	3-5	6+		TQ41	P
PORTTYP	Type of Classroom	Port-DSA	Port-DOH	Port-Unk	Trad	Trad?		FtypePort	P
CLRAGE	Classroom age (yrs)	<=10yr	11-20yr	21-30yr	31-40yr	41+yr		Fyrconst	B
CLRAGEX	Classroom age (yrs)	0-3yr	4-5yr	6-10yr	11-15yr	16+yr		Fyrconst	B
CLRAGEU	Classroom age (known/unknown)	Known	Unknown					Fyrconst	B
RENOVAT	Major renovations/additions	Yes	No					FQ29	B
RENOVMAJ	Addition/wall/floor renovations	Yes	No					FQ29_a/e/f	B
RENOVELE	HVAC or lighting renovations	Yes	No					FQ29_b/c	B
RENOVRUF	Roof renovations	Yes	No					FQ29_d	B
CLRSIZ	Classroom size (sq. ft.)	<600	600-1100	>1100				FQ31	B
BLDGFON	Building foundation type	<Grade	Slab	Raised_Flr				FQ34_a	P
RFQ34C	Floor Height (in)	<6	6-11	12-17	18+	NA/Unk		FQ34c	P
RUFTYP	Roof type	Membrane	Composite	Tar/gravel	Metal	Other		FQ36	P
FQ37	Roof pitch	Flat	Sloped	Both				FQ37	P
FQ38	Suspended ceilings	Yes	No					FQ38	P
LDDOCK	Load dock/parking/road in 50ft	Yes	No					FQ39_a/b	P
DUMPSTR	Dumpster within 50ft	Yes	No					FQ39_d	P
SPROOMS	Spec purpose rooms within 50ft	Yes	No					FQ39	P
PELPANI	Peeling paint inside	Yes	No					FQ40_a	P
PELPANO	Peeling paint outside	Yes	No					FQ40_b	P
PELPANT	Peeling paint in or out	Yes	No					FQ40_a/b	P

Variable	Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Source	Analysis Type
PACHVAC	Packaged HVAC	Yes	No	DK	NA			FQ41	P
AHULOC	Main AHU Location	Wall	Roof	Floor/Othr	DK	NA		FQ42	P
CENTAC	Central cooling system	Yes	No	DK	NA			FQ45	P
FANOP	HVAC supply fan operation	Auto	Always_on	Other/unspe				FQ46	P
DAMPSET	Outdoor damper min setting	<=10%	11-20%	21-40%	>40%	Unknown		FQ48	B
PLENOPEN	Plenum open	Yes	No					FQ49_a	P
FGLFILT	HVAC fiberglass mesh filter	Yes	No					FQ50_a	P
PLEFILT	HVAC pleated filter	Yes	No					FQ50_b	P
HIEFILT	HVAC high efficiency filter	Yes	No					FQ50_c	P
TCNTL	Thermostat control	Teacher	Others	Both	DK	NA		FQ52	P
SPHEAT	Space heaters used	Yes	No					FQ53_a-f	P
WATRDAM	Water damage past 3 yrs (FM)	Yes	No	DK				FQ56	P
RUFLEAK	Roof leaks last 3 yrs (FM)	Yes	No					FQ56_a	P
VISMOLD	Visible mold past 3 yrs (FM)	Yes	No	DK				FQ57	P
STDWATR	Standing water within 50ft	Yes	No	DK				FQ59	P
NEWWOOD	New pressed wood last yr	Yes	No	DK				FQ60	B
FQ61	Paint/caulk/seal last yr	Yes	No	DK				FQ61	P
NEWCARP	New carpet past yr	Yes	No					FQ62_a	B
NEWFLOOR	New flooring past yr	Yes	No	DK				FQ62	B
PESTUSEF	Pesticide use past yr (FM)	Yes	No	DK				FQ63	P
CCPEST	Crack/crevice pesticides last yr	Yes	No					FQ63_a	P
SPPEST	Spray can pesticides last yr	Yes	No					FQ63_d	P
FLUBULB	Fluorescent bulbs	T8	T12	Both	No/DK			FQ64_a/b	P

* Includes classrooms (4 cases) where the sample time was unknown.
"Source" identifies the questionnaire item(s) from which the variable was derived. The "0" cases were from sources other than a questionnaire.
Analysis type codes:
P = population characterization analyses
F = formaldehyde concentration analyses
B = both
M = multiple.

2.9 Statistical Analysis Weights

2.9.1 Initial School-level Weights

Whenever units are selected from a population with known probabilities, unbiased estimates of population totals (e.g., total number of CA public schools with portable classrooms in Spring 2001) are achieved by weighting the survey responses by the reciprocals of their probabilities of selection, including appropriate adjustments for survey nonresponse. Hence, the initial sampling weight for each of the 1,000 CA public schools randomly selected for Phase I is the product of 7 and 1.039 (i.e., initial weight = 7.273) to account for selection of a 1-in-7 systematic sample and a random subsample of 1,000 schools of the 1,039 eligible schools initially selected. Likewise, the initial sampling weight for the 800 schools randomly selected to receive formaldehyde monitors is the product of this weight and 1000/800 (i.e., initial weight = 9.09125) to account for randomly selecting a subsample of 800 schools from the 1,000 selected to receive questionnaires.

All of the ineligible schools in the sample (those schools without any portable classrooms) were identified during data collection or follow-up of non-responding schools by telephone contact. Hence, the initial weight for each school found to be ineligible for the study because it had no portable classrooms was set to zero. This process resulted in setting the initial weight to zero for 48 of the 1,000 schools in the Phase I sample, including 36 of the 800 schools in the formaldehyde monitoring subsample. Hence, the CA PCS sample of 1,000 schools included 952 eligible schools, and the formaldehyde monitoring subsample of 800 schools included 764 eligible schools.

2.9.2 Adjustment for School-level Nonresponse

The first stage of nonresponse to the CA PCS occurred when eligible sample schools failed to provide the requested data. The numbers of schools that provided at least some of the requested questionnaire data was 426. We used the following information that was known for all 952 eligible sample schools to develop weighting classes to compensate for total questionnaire nonresponse at the school level:

1. School level (elementary/middle school/high school)
2. School location (urban/suburban/rural)
3. Northern vs southern California
4. Percent of children receiving AFDC
5. Percent of children receiving Federal meals assistance
6. Expenditure per student.

We performed a Chi-squared automatic interaction detection (CHAID) analysis using these data to determine the most significant predictors of whether or not the school provided questionnaire data. This tree algorithm partitioned the sample of 952 eligible schools into eight clusters that were most predictive of the school's questionnaire response status. Those clusters are defined in Table 2.6 and were used as weighting classes to adjust for school-level nonresponse.

Table 2.6. Weighting Classes

Weighting Class	Description	Number of Eligible Schools	Percent Responding Schools
1	School level = Elementary or High School; Percent on AFDC ≤ 0.481541	68	57.35
2	School level = Elementary or High School; Percent on AFDC > 29.5633	75	58.67
3	School level = Elementary or High School; 0.481541 < Percent on AFDC ≤ 29.5633 or missing; Expenditure per student < $5326.13	192	45.83
4	School level = Elementary or High School; 0.481541 < Percent on AFDC ≤ 29.5633 or missing; $5326.13 < Expenditure per student ≤ $5548.68	143	55.24
5	School level = Elementary or High School; 0.481541 < Percent on AFDC ≤ 29.5633 or missing; Expenditure per student > $5548.68	281	39.15
6	School level = Middle School; Expenditure per student ≤ $5447.39	82	31.71
7	School level = Middle School; Expenditure per student > $5447.39 or missing; Percent on federal meals assistance ≤ 55.7932 or missing	66	37.88
8	School level = Middle School; Expenditure per student > $5447.39 or missing; Percent on federal meals assistance > 55.7932	45	55.56

For each school in weighting class "c" the adjustment for questionnaire nonresponse was calculated as follows:

$$Adj(c) = \frac{\sum_{i \in c} w_1(i)\, I_e(i)}{\sum_{i \in c} w_1(i)\, I_r(i)}$$

where the summation is over all schools in weighting class "c," $w_1(i)$ is the initial weight for the i-th school, $I_e(i)$ is a (0,1)-indicator of whether or not the i-th school was eligible for the CA PCS, and $I_r(i)$ is a (0,1)-indicator of whether or not the i-th school provided any questionnaire data. When the initial weights are multiplied by these adjustment factors, the sum of the adjusted weights (P1WT6) for the responding schools in each weighting class is identical to the sum of the initial sampling weights (P1WT4) of all eligible schools.

For the formaldehyde subsample, formaldehyde data were obtained for at least one sample classroom for 320 of the 764 eligible schools. The same type of weighting class adjustment for school-level nonresponse was implemented for the formaldehyde subsample using the same weighting classes described in Table 2.6.

Of the 426 schools that provided some questionnaire data, 384 provided a completed FQ. Since the FQ includes school-level data, a statistical analysis weight was needed for these 384 schools that preserved the full sample totals. Hence, a further adjustment for school-level nonresponse was implemented using the same weighting classes described above but treating

only the 384 schools with a completed FQ as the respondents. This resulted in the analysis weight, P1WT6FAC, which should be used for analysis of the school-level FQ data, Items 1-26 (Sections A and B).

2.9.3 Initial Classroom-level Weights

The initial classroom-level weights are the products of the school-level weights adjusted for school-level nonresponse and the reciprocals of the conditional classroom-level probabilities of selection. Since classrooms were selected using stratified simple random sampling (as implemented by the schools using instructions provided), the conditional weight for selecting classrooms was computed as

$$\begin{aligned} P1WT7 &= N_p / n_p \text{ for portable classrooms} \\ &= N_t / n_t \text{ for traditional classrooms} \end{aligned}$$

where N_p and n_p are the total and sample numbers of portable classrooms at the school, respectively, and where N_t and n_t are the total and sample numbers of traditional classrooms at the school.

Initial sampling weights were calculated for the 1,272 sample classrooms selected at the 426 Phase I sample schools that provided at least some portion of the requested data. Likewise, among the 320 participating Phase I schools in the formaldehyde subsample, initial sampling weights were calculated for 956 sample classrooms.

2.9.4 Adjustment for Classroom-level Nonresponse

Among the 426 schools with some Phase I data, all possible patterns of classroom-level response occurred from completion of only one type of data (e.g., one Teacher Questionnaire) to completion of all types of data requested (i.e., the questionnaires and, if applicable, formaldehyde monitoring for all sample classrooms). Because some analyses will rely on data from only one source (e.g., Teacher Questionnaires) and others will require data from multiple sources (e.g., Facilities Questionnaire and formaldehyde monitoring), separate analysis weights were computed for each of the available sets of data sources. Weighting class weight adjustment procedures were used to adjust for classroom-level nonresponse. The adjustments were calculated using the same weighting classes described in Table 2.6 for school-level nonresponse, except that the adjustments were calculated separately for portable and traditional classrooms, which effectively doubled the number of weighting classes from eight to 16.

The final classroom-level statistical analysis weights and the set of respondents with which each weight variable should be used are summarized in Table 2.7.

Table 2.7. Classroom-level Analysis Weights

Analysis Weight	Type of Data Represented	Number of Respondents
P1WT10_1	Teacher Questionnaires	1,176
P1WT10_2	Facility Questionnaires	1,129
P1WT10_3	Formaldehyde Monitors	905
P1WT10_12	Both Teacher and Facility Questionnaires	1,072
P1WT10_13	Both Teacher Questionnaires and Formaldehyde Monitors	839
P1WT10_23	Both Facility Questionnaires and Formaldehyde Monitors	805
P1WT10_123	All three types of data	777

2.10 Statistical Analysis Methods

2.10.1 Formaldehyde Quality Control Analyses

Three types of QC data were obtained as a part of the formaldehyde sampling:

- Laboratory blanks
- Field blanks
- Duplicate field samples

Summary statistics were computed for the lab blanks—for both mass and uncorrected concentration measures (the latter assumed a one week exposure duration). The summary statistics included the mean, the standard deviation, and a limit of detection (LOD) based on the standard deviation. Summary statistics for the field blanks—for lab-blank corrected concentrations—included the mean, the standard deviation, and an LOD based on the standard deviation. For each pair of duplicate field measurements, a standard deviation (SD) and a relative standard deviation (RSD, expressed as SD/Mean x 100%) were determined. The distributions of these SDs and RSDs were then summarized using the following statistics:

- Pooled SD
- Median SD
- Maximum SD
- Mean RSD
- Median RSD
- Maximum RSD

These statistics were computed for all pairs and for all pairs where both measurements exceeded 6 ppb, the lab-based LOD.

The above statistics were computed using SAS macros (based on the SAS MEANS procedure). The results are discussed in Section 3.1.

2.10.2 Determination of Response Rates

Nonresponse to the CA PCS Phase I study occurs at two levels: schools and classrooms. Therefore, response rates were calculated at those same two levels. Since each sample unit has an analysis weight associated with it based on its probability of selection, both weighted and unweighted response rates were calculated. The weighted response rates are estimates of the response rates that would have been obtained if we had conducted a census of the population instead of a sample survey.

Within each level of study (schools and classrooms), nonresponse can occur for one or more types of data that were being collected. For example, for either a school or an individual classroom we may obtain TQs but not the FQ. Hence, at each level of study, response rates were calculated for each of the different types of data being collected and combinations thereof.

Each unweighted response rate is the number of schools or classrooms for which the particular response is obtained (e.g., Teacher Questionnaire) divided by the number of sample schools or classrooms that were eligible to provide those data. Hence, ineligible schools were removed from the denominator of the response rates, and formaldehyde monitoring response rates were calculated within the subsample of schools selected for formaldehyde monitoring.

Each weighted response rate is the sum of the initial sampling rates of the respondents divided by the sum of the same initial sampling weights over all eligible schools or classrooms. The sampling weights used to calculate the weighted response rates were the following:

1. P1WT4 = initial sampling weight for the 952 eligible schools in the full sample of 1,000 schools.
2. P1WT4PF1 = initial sampling weight for the 764 eligible schools in the subsample of 800 schools selected for formaldehyde monitoring.
3. P1WT8 = initial sampling weight for the 1,272 sample classrooms in the 426 schools with some questionnaire data.
4. P1WT8PF1 = initial sampling weight for the 956 sample classrooms in the 320 schools in the formaldehyde subsample with formaldehyde data for at least one classroom.

Using these weights, Table 2.8 describes how the weighted and unweighted school- and classroom-level response rates were calculated. The results are discussed in Section 3.2.

Table 2.8. Response Rate Calculations

Response Rate	Numerator	Denominator	Weight
Percent of eligible schools with TQ or FQ data	All sample schools with TQ or FQ data	All 952 eligible sample schools	P1WT4
Percent of eligible schools with FQ data	All sample schools with FQ data	All 952 eligible sample schools	P1WT4
Percent of eligible schools in the formaldehyde subsample with formaldehyde data	All sample schools with formaldehyde data for at least one classroom	All 764 eligible schools in the formaldehyde subsample	P1WT4PF1
Percent of classrooms with TQ data	All sample classrooms with TQ data	All 1,272 sample classrooms in the 426 schools that provided some questionnaire data	P1WT8
Percent of classrooms with FQ data	All sample classrooms with FQ data	All 1,272 sample classrooms in the 426 schools that provided some questionnaire data	P1WT8
Percent of classrooms with both TQ and FQ data	All sample classrooms with both TQ and FQ data	All 1,272 sample classrooms in the 426 schools that provided some questionnaire data	P1WT8
Percent of classrooms in the formaldehyde subsample with valid formaldehyde data	All sample classrooms with valid formaldehyde data	All 956 sample classrooms in the 320 schools in the formaldehyde subsample that provided formaldehyde data for at least one classroom	P1WT8PF1
Percent of classrooms in the formaldehyde subsample with valid formaldehyde and TQ data	All sample classrooms with valid formaldehyde and TQ data	All 956 sample classrooms in the 320 schools in the formaldehyde subsample that provided formaldehyde data for at least one classroom	P1WT8PF1
Percent of classrooms in the formaldehyde subsample with valid formaldehyde and FQ data	All sample classrooms with valid formaldehyde and FQ data	All 956 sample classrooms in the 320 schools in the formaldehyde subsample that provided formaldehyde data for at least one classroom	P1WT8PF1
Percent of classrooms in the formaldehyde subsample with valid formaldehyde, TQ, and FQ data	All sample classrooms with valid formaldehyde, TQ, and FQ data	All 956 sample classrooms in the 320 schools in the formaldehyde subsample that provided formaldehyde data for at least one classroom	P1WT8PF1

2.10.3 Estimation and Hypothesis Testing

Proper analysis of data collected for members of a probability sample requires that all observations be weighted inversely to their probabilities of selection. These sampling weights enable design-unbiased estimation of linear population parameters, such as population totals. As described in Section 2.9 above, initial sampling weights were developed as a part of the sample design activities, and, after data collection, these sampling weights were adjusted to compensate (at least partially) for the potential bias resulting from survey nonresponse. Weighting class adjustment procedures, for instance, were used in this study to make the adjustments. The paragraphs below indicate how the adjusted sampling weights were employed in making estimates of various population parameters.

A common example requiring weighted data analysis is estimation of a population proportion. For instance, for estimating a proportion P_x, the general form of the estimate is

$$\hat{P}_x = \sum w_i X_i / \sum w_i$$

where the summations are over all sample participants, where w_i denotes the sampling weight associated with classroom (or school) i, and where X_i is an indicator variable with a value of 1 if classroom (or school) i has the characteristic of interest and with a value of 0 otherwise. Note that the numerator is an estimate of the total number of classrooms (or schools) in the population having the characteristic, and the denominator is an estimate of the total number of classrooms (or schools) in the population. This type of estimate is used to characterize the population of eligible schools or classrooms. For instance, if X is set to 1 for all classrooms less than 3 years old, and to 0 otherwise, then the resultant estimated proportion is the proportion of the population estimated to be in that subgroup. Such estimates can also be used to characterize the population distribution of concentration levels over classrooms (e.g., by defining x to be 1 when a classroom has concentration exceeding some given threshold level).

If Y_i denotes a measured quantity for classroom (or school) i (e.g., the formaldehyde concentration), then a similar expression is used to estimate the target population's mean:

$$\overline{Y} = \sum w_i Y_i / \sum w_i$$

The numerator estimates the total of the Y variable that would have been obtained if all members of the target population had been observed, and, as before, the denominator estimates the total size of the target population.

Other study objectives involve estimating and comparing classroom concentrations for various domains (subpopulations) of the target population. Such domains are defined in terms of characteristics of the classrooms (or schools)—for example, classrooms in suburban areas. If proportions are to be estimated and compared, then the form of an estimated proportion for a domain d is

$$\hat{P}_x(d) = \sum w_i d_i X_i / \sum w_i d_i$$

where $d_i = 1$ if classroom i is in the domain d and $d_i = 0$ otherwise. Analogously, if means are to be estimated for such domains, then the form of the estimate is

$$\overline{Y}(d) = \sum w_i d_i Y_i / \sum w_i d_i$$

(Note that if the d_i are identically 1, then the domain of interest is the entire target population.)

A large portion of the data analysis for this study is based upon the above four estimation formulae. Estimates for all of the following, for example, were obtained either directly from one of the formulae or through application of some simple function to the estimates derived from the formulae (e.g., exponentiation of a log-scale mean to produce an estimated geometric mean):

- All tabulations and cross-tabulations of questionnaire items (from the same or different forms)
- Characteristics of overall formaldehyde concentration distributions
  - percent of population with levels > limit of detection (LOD)
  - proportion or percent of population with levels > specified guideline levels
  - overall arithmetic means and geometric means
  - selected percentiles (10^{th}, 25^{th}, 50^{th} [median], 75^{th}, 90^{th}, 95^{th}, 99^{th})
- Characteristics of formaldehyde concentration distributions for specific domains
  - percent of subpopulation with levels > limit of detection (LOD)
  - proportion or percent of subpopulation with levels > specified guideline levels
  - arithmetic means and geometric means for the domain
  - selected percentiles (10^{th}, 25^{th}, 50^{th} [median], 75^{th}, 90^{th}, 95^{th}, 99^{th}) for the domain.

In addition to estimating such population and domain parameters (e.g., proportions, means), it is important to estimate the precision of the estimate, which is usually expressed in terms of its variance or standard error. The estimation of sampling variances and standard errors for statistics calculated from probability sampling data should be based on the randomization distribution induced by the sampling design (i.e., they should account for all features of the sampling design, such as stratification and multistage sampling). Such an approach is robust because it makes no assumptions regarding the distribution of occurrence (e.g., normality) of the survey items. Hence, analyses based on the design-induced distribution provide the most defensible basis for making inferences from the sample to the target population.

The classic approach to estimating standard errors for nonlinear statistics, such as means and proportions, from complex probability sampling designs is a first-order Taylor Series linearization method, which was the method employed in this study. Alternative variance estimation techniques for such designs include jackknifing and balanced repeated replication. Standard statistical software packages (e.g., SAS, SPSS, BMDP, IMSL, etc.) do not typically include any of these algorithms for variance estimation. Therefore, special-purpose Survey Data Analysis (SUDAAN) software was used to analyze the survey data (RTI, 2001). SUDAAN estimates standard errors using the classical Taylor Series method because such estimates are both computationally and statistically efficient. The software includes procedures for survey-based estimation of standard errors of population totals, means, proportions, and ratios as well as linear and logistic regression relationships. RTI software for analysis of complex sample survey data has been reviewed by several non-RTI researchers and generally found to be the most efficient such software currently available. For means, proportions, differences in means, or differences in proportions, the precision is generally reported as an approximate 95% confidence interval calculated as the estimate +-2 times the standard error of the estimate.

The method for calculating measures of precision for percentiles is somewhat different. First, the percentile estimate (say, for the p^{th} percentile) is determined by forming a weighted

cumulative empirical distribution and determining the point (say, X_p) at which the sum of the weights is 100p% of the total sum of the weights. A domain consisting of all observations with observed values less than X_p is then formed and the proportion of the population falling into this domain (approximately equal to p) is estimated as $\hat{p}$. The standard error of $\hat{p}$ is formed via the Taylor's Series method and a confidence interval for p is formed as $[\hat{p} - t_\alpha s.e.(\hat{p}), \hat{p} + t_\alpha s.e.(\hat{p})]$, where t_α is an appropriate tabulated t value. An inverse interpolation of the empirical cumulative distribution is then used to translate this interval into one for the percentile. That is, the lower confidence limit is that point L_p at which $100(\hat{p} - t_a s.e.(\hat{p}))$% of the total sum of the weights occurs, and the upper confidence limit is that point U_p at which $100(\hat{p} + t_\alpha s.e.(\hat{p}))$% of the total sum of the weights occurs. This interval, $[L_p, U_p]$, forms an interval estimate for the p^{th} percentile; it is typically asymmetric about X_p,. The interval can be translated into a standard error by dividing the interval length (U_p-L_p) by $2t_\alpha$. Although such a standard error statistic cannot be used along with the estimated percentile to directly construct a confidence interval, it can be used to indicate the precision of one estimated percentile relative to another.

Approximate tests for certain types of hypotheses were also made using SUDAAN; such tests make use of the estimated proportions and their standard errors. For instance, to test that the proportion of portable classrooms in the target population with formaldehyde concentrations in excess of some threshold level C is the same as for traditional classrooms, we employed a t statistic such as:

$$t = \frac{\hat{P}_P - \hat{P}_T}{s.e.[\hat{P}_P - \hat{P}_T]}$$

where the numerator is the difference in the estimated proportions for portable (subscript P) and traditional (subscript T) classrooms and s.e. denotes the standard error of the estimated difference. A similar formula is used for comparing log-scale concentration means (where the difference in the Ps is replaced with the difference in the log-scale concentration means for portable and traditional classrooms). These types of tests assume that the estimate appearing in the numerator is approximately normally distributed.

In addition to the above types of tests, tests of association based on Wald chi-square statistics were also performed. In particular, these tests were used to determine if a particular factor was related to formaldehyde levels. In this case, weighted percentages (denoted as Ps below) estimated from the data are visualized in the form of a two-way table in which the factor of interest forms the rows, as illustrated below for a factor with three levels:

Factor of Interest	Classrooms with concentration<=C	Classrooms with concentration>C	Total
Level 1	P11	100-P11	100
Level 2	P21	100-P21	100
Level 3	P31	100-P31	100
Total	P1	P2	100

The test statistic performs a test of the hypothesis that the pair of proportions appearing in each row do not vary by row—that is, that the factor has no effect on the formaldehyde levels (as

defined by the columns). Tests were performed both for all classrooms and for portable classrooms.

All of the above described estimates and tests were performed utilizing the SUDAAN procedures DESCRIPT and CROSSTAB.

Additional analyses involving modeling of the formaldehyde levels as functions of the questionnaire variates were performed using the SUDAAN procedure REGRESS. These analyses provide weighted analysis of variance (ANOVA) tests for the log-scale formaldehyde concentrations (variable LNMEAS). Two different types of models were fit:

Interaction model: LNMEAS=(Variable X) + ROOMTYPE + (Variable X)*ROOMTYPE

Main effects model: LNMEAS=(Variable X) + ROOMTYPE

The first model provides for a test of the interaction between ROOMTYPE (i.e., portable vs. traditional) and a given variable X (e.g., classroom age). The second model is appropriate if the interaction effect can be ignored; it provides for the tests of the main effects of the two variables appearing in the model. Results of these ANOVA tests are summarized by providing the p-values associated with the adjusted Wald F tests (see *SUDAAN User's Manual, Release 8.0* (2001)). These tests are analogous to the usual F tests used in classical ANOVAs.

The programs used to prepare the data for analysis and to perform the analyses are listed in Table 2.9. Documentation of the basic analysis files (SCHOOL1 and COMBIN4) is given in Appendix B and listings of the analysis programs are given in Appendix C. Details of SUDAAN procedures can be found in the *SUDAAN User's Manual, Release 8.0* (2001).

The results are discussed in Section 3.3.

Table 2-9. Summary of Programs Used to Analyze SCHOOL1 and COMBIN4 Data

Program	Input Files	Description	Output Files	Print Files (RTF)
1. RECODSCH	SCHOOL	Recode selected variables on SCHOOL file and create school-level analysis variables	SCHOOL1	
2. RECOD3_4	COMBIN3	Recode selected variables on COMBIN3 file and create classroom-level analysis variables	COMBIN4	
3. CRSLABVR	SLABVAR.TXT (user-supplied labels/formats)	Create file of labels and formats for school-level analysis variables	SLABVAR	SCHLABL
4. CRLABVAR	(user-supplied labels/formats)	Create file of labels and formats for classroom-level analysis variables	LABVAR	VARDEFS
5. RESPRATE	SCHOOL1 COMBIN4	Generate counts of eligible and responding schools and classrooms, and generate response rates		RESP_RAT
6. POPCHAR2	SCHOOL1	Generate population percentages for selected school level variables using SUDAAN PROC DESCRIPT	SCHPCT	POPCHAR2 (Appendix D)
7. POPCHAR1	COMBIN4 LABVAR	Generate population percentages for selected classroom level variables, overall and by classroom type, using SUDAAN PROC CROSSTAB; perform Wald chi-square tests to test for association of room type with selected variables	CLASPCT	POPCHAR1 (Appendix D)
8. WTDSTAT1	COMBIN4 LABVAR	Generate population estimates, via SUDAAN PROC DESCRIPT, for characterizing formaldehyde distributions, overall, by classroom type, and for domains defined by selected classroom level variables	OUTPCTL	POPESTS1 (Appendix E)
9. WTDSTATX	COMBIN4	Generate population estimates, via SUDAAN PROC DESCRIPT, for characterizing formaldehyde distributions, overall and by classroom type		POPESTSX (Table 3-12)
10. CDFPLOT	COMBIN4	Produce plots of distribution functions for formaldehyde concentrations, by classroom type		CDFPLOT
11. WTDTEST2	COMBIN4 LABVAR	Generate population percentages for selected classroom level variables for the subpopulation of portable classrooms and for all classrooms, using SUDAAN PROC CROSSTAB; perform Wald chi-square tests to test for association of variables with formaldehyde levels	PORTPCT ALLCPCT	POPTES2 (Appendix G)
12. PRNTAB1	PORTPC ALLCPCT	Print summary results from WTDTEST2 output		PRNTAB1 (Table 3-14)
13. COMPAR1	COMBIN4 LABVAR	Perform t tests, via SUDAAN PROC DESCRIPT, to compare portable versus traditional classrooms with respect to log(formaldehyde conc), overall and for domains defined by selected variables	COMPAR	COMPAR1 (Appendix F)
14. PRNTAB2	COMPAR	Print results from COMPAR1 output		PRNTAB2 (Table 3-13)
15. WTEDREG	COMBIN4	Perform regressions (ANOVAs) of log(conc) on room type and selected classroom level variables; generate adjusted Wald F statistics and p-values to test for association of variables with formaldehyde levels	WTDREG	
16. PRNTAB3	OUTPCTL WTDREG	Print results from WTEDTREG output		PRNTAB3 (Table 3-15)

3. RESULTS

Objectives of the Phase I data analysis are listed below, along with the subsection where results addressing each objective are presented:

1. To assess the quality of the formaldehyde concentration data (Section 3.1).
2. To assess quality of the survey data in terms of response rates (Section 3.2).
3. To characterize the population of Phase-I eligible schools (Section 3.3.1).
4. To characterize the population of Phase-I eligible classrooms, and to determine how characteristics of portable and traditional classrooms differ (Section 3.3.2).
5. To estimate distributions of classroom indoor-air formaldehyde concentrations, for portable and traditional classrooms, for the overall population of such classrooms and for selected subpopulations (domains) of such classrooms. (Section 3.4.1).
6. To compare portable and traditional classrooms with respect to indoor-air formaldehyde concentrations, for the overall population of such classrooms and for selected subpopulations (domains) of such classrooms. (Section 3.4.2).
7. To assess what factors (e.g., school type, school location) affect formaldehyde concentration levels in portable classrooms and in all classrooms (Section 3.4.3).

Weighted data analysis techniques are used in the analyses for objectives 3 through 7. Both weighted and unweighted response rate estimates (objective 2) were determined.

3.1 Formaldehyde QC Data

3.1.1 Limit of Detection and Laboratory Blanks

The sample masses and concentrations for the lab blanks (unexposed vials) are shown in the Table 3-1. The concentrations shown are not corrected for the mean of the lab blanks. Also shown is a non-detect (ND) indicator, which is 1 if the sample is considered a non-detect and is equal to 0, otherwise. The concentrations were generated under the assumption that T=168 hours (i.e., one week) and therefore are considered conservative (i.e., high) relative to the field samples which had a nominal sampling period of 240 hours. The 60 lab-blank analyses are grouped by lot number (i.e., two different groups of vials) and calibration date to form 6 groups of 10 runs; the listing within groups is sorted by concentration level. Only one of the 60 blanks resulted in a corrected concentration above 6 ppb, the detection limit reported by the laboratory.

Table 3-2 provides a summary of these data. It shows the mean ($\overline{X}_b$) and standard deviation of 10 blank-sample analyses for each of six cases. Note that drift over time did not appear to be significant.

Laboratory detection limits (in ppb) based on the standard deviations in Table 3-2 are as follows:

Calibration Date	Lot 180	Lot 181
4/24/01	6	4
5/23/01	13	6
6/15/01	8	4

These appear to be consistent with the lab-reported value of 6 ppb. They were computed by multiplying the standard deviations by 2.821, the 99th percentile of the t distribution having 9 degrees of freedom.

Table 3-1. Listing of Lab Blank Formaldehyde Data

	Lot Number 180			Lot Number 181		
Analysis Date	Sample ND Ind	Sample Mass (ug)	Uncorr. Conc (ppb)	Sample ND Ind	Sample Mass (ug)	Uncorr. Conc (ppb)
4/24/01	1	0.60	11.5	1	0.46	8.9
	1	0.67	12.8	1	0.49	9.5
	1	0.74	14.2	1	0.49	9.5
	1	0.75	14.6	1	0.52	10.0
	1	0.77	14.9	1	0.53	10.1
	1	0.80	15.4	1	0.53	10.3
	1	0.89	17.0	1	0.60	11.5
	1	0.89	17.2	1	0.61	11.8
	1	0.90	17.3	1	0.62	11.9
	1	0.99	19.1	1	0.71	13.6
5/23/01	1	0.60	11.5	1	0.37	7.0
	1	0.63	12.2	1	0.43	8.3
	1	0.66	12.7	1	0.44	8.5
	1	0.69	13.3	1	0.48	9.2
	1	0.73	13.9	1	0.49	9.5
	1	0.75	14.5	1	0.51	9.9
	1	0.84	16.1	1	0.54	10.4
	1	0.89	17.1	1	0.56	10.7
	1	0.91	17.5	1	0.61	11.8
	0	1.42	27.4	1	0.78	14.9
6/15/01	1	0.52	10.0	1	0.34	6.6
	1	0.53	10.2	1	0.38	7.2
	1	0.63	12.2	1	0.42	8.0
	1	0.70	13.4	1	0.47	9.0
	1	0.70	13.5	1	0.47	9.0
	1	0.76	14.6	1	0.50	9.5
	1	0.80	15.3	1	0.51	9.8
	1	0.90	17.3	1	0.52	10.0
	1	0.93	17.9	1	0.54	10.3
	1	0.96	18.5	1	0.57	10.8

Sample ND Indicator = 1 is sample is considered a non-detect.

Table 3-2. Summary of Laboratory Blanks

Lot Number	Analysis Date	Formaldehyde Mass in Blanks (μg)			Formaldehyde Uncorrected Concentration in Blanks (ppb)		
		Median	Mean	Std. Dev.	Median	Mean	Std. Dev.
180	4/24/01	0.79	0.80	0.12	15	15	2
180	5/23/01	0.74	0.81	0.24	14	16	5
180	6/15/01	0.73	0.74	0.16	14	14	3
181	4/24/01	0.53	0.56	0.08	10	11	1
181	5/23/01	0.50	0.52	0.11	10	10	2
181	6/15/01	0.48	0.47	0.07	9	9	1

Statistics in each row are based on 10 blank analyses. Concentrations are uncorrected.

3.1.2 Field Blanks

The sample masses and concentrations for the field blanks (unexposed vials sent to the field and returned without exposure) are shown in the Table 3-3, along with the ND indicators and data quality flags; rows are sorted by concentration level. Field blank data were obtained for 41 of 320 schools with formaldehyde data. Hence, the achieved rate was 12.8%, instead of the intended 15% rate.

The concentrations were generated under the assumption that the exposure times were equal to the exposure times reported for exposed tubes at the same school. Three of the 41 concentrations (7.3%) exceeded the 6ppb detection limit. The data for the 41 field blanks are summarized in Table 3-4. Note that the standard deviation for mass is 0.42, as compared to lab-blank standard deviations in the range of 0.07 to 0.24 (see Table 3-2). The detection limit based on the field blanks is 12 ppb, which is obtained by multiplying the field-blank standard deviation by 2.423, the 99^{th} percentile of the t distribution having 40 degrees of freedom.

3.1.3 Duplicate Field Samples

Some schools were asked to provide duplicate samples for a given classroom. These duplicate sample data are listed in Table 3-5. Duplicate samples were obtained for one classroom in 67 of the 320 schools with formaldehyde data. Hence, the achieved rate was 20.9% instead of the intended 30% rate.

Table 3-5 includes the ND indicator, the data quality flag, and the concentrations for the field sample and its duplicate sample. The last two columns of Table 3-5 give, respectively, the standard deviation (SD) and relative standard deviation (RSD) of the paired measurements. These statistics can be used to characterize the overall measurement-error precision. Table 3-6 provides a summary of the distributions of these SDs and RSDs. Two situations are considered: all pairs (n=67), and all pairs where both members yielded a detectable amount (n=55). The median RSD is regarded as the most meaningful summary statistic among those shown. It indicates a 13.4% error for the first case and a 9.6% error for the second. A number of the cases

Table 3-3. Listing of Field Blank Formaldehyde Data

Study ID	Sample ND Ind	Sample Mass (ug)	Sample Conc (ppb)	Sample Data Quality Ind
2060	1	0.31	-4.0	0
2267	1	0.34	-3.4	0
2018	1	0.31	-2.8	0
2178	1	0.34	-2.4	0
1059	1	0.66	-2.2	1
1326	1	0.58	-2.2	0
2191	1	0.37	-2.1	0
1319	1	0.33	-2.1	1
1406	1	0.36	-2.1	0
2099	1	0.37	-2.1	0
2474	1	0.32	-2.0	0
1371	1	0.43	-1.9	0
1492	1	0.35	-1.9	0
1274	1	0.40	-1.8	1
2294	1	0.43	-1.6	1
1130	1	0.70	-1.6	0
2248	1	0.40	-1.6	0
2226	1	0.33	-1.5	0
1185	1	0.71	-1.5	0
1496	1	0.41	-1.1	0
1203	1	0.70	-0.9	0
1374	1	0.41	-0.8	0
2495	1	0.39	-0.8	0
1491	1	0.78	-0.2	0
1144	1	0.78	-0.2	0
1052	1	0.83	0.2	0
1281	1	0.84	0.6	0
1127	1	0.89	1.1	0
1507	1	0.92	1.6	0
1500	1	0.91	1.9	0
1021	1	0.94	2.0	0
2101	1	0.66	2.0	0
1026	1	0.96	2.3	1
1005	1	0.93	2.9	0
1155	1	1.02	3.0	0
1170	1	1.08	3.5	0
2213	1	0.74	3.9	0
1573	1	0.83	4.7	1
2139	0	1.03	8.7	0
1506	0	1.95	17.1	0
1078	0	2.33	20.6	1

Sample ND Indicator = 1 when result is considered a non-detect.
Data quality Indicator = 1 if some problems encountered in field or lab, = 0 otherwise.

Table 3-4. Summary of Formaldehyde Mass and Concentration in Field Blanks

Variable	n	Mean	Median	Std Dev	Minimum	Maximum
Formaldehyde Mass (ug)	41	0.69	0.66	0.42	0.31	2.33
Formaldehyde Conc. (ppb)	41	0.77	-0.85	4.89	-3.95	20.65

Table 3-5. Listing of Duplicate Field Sample Formaldehyde Concentrations (ppb)

Study ID	Class ID	Field Sample ND Ind	Dup Sample ND Ind	Field Sample Conc (ppb)	Dup Sample Conc (ppb)	Field Sample Data Quality Ind	Dup Sample Data Quality Ind	Std. Dev. (ppb)	Rel. Std. Dev. (%)
1007	B	0	0	9.064	16.619	0	1	5.3421	41.599
1009	C	0	0	27.905	31.978	0	0	2.8803	9.620
1028	C	0	0	47.843	21.412	0	0	18.6892	53.972
1031	B	0	1	47.555	0.100	1	1	33.5561	140.828
1041	B	0	0	58.254	60.546	0	0	1.6204	2.728
1050	C	0	0	16.704	13.398	0	0	2.3378	15.533
1058	A	0	0	15.300	15.300	0	0	0.0000	0.000
1073	C	0	0	37.929	37.308	0	1	0.4391	1.167
1075	B	0	0	27.438	23.644	0	0	2.6824	10.502
1106	B	0	0	23.557	29.932	0	0	4.5080	16.856
1125	A	0	0	21.463	26.568	0	0	3.6100	15.032
1132	A	0	0	18.530	12.778	0	0	4.0670	25.981
1142	B	0	0	20.303	24.506	0	0	2.9722	13.266
1143	A	0	0	11.207	15.663	0	0	3.1512	23.455
1146	A	0	0	46.030	41.578	0	0	3.1477	7.186
1174	B	0	0	28.999	39.227	0	0	7.2319	21.200
1183	B	0	0	41.323	39.566	1	0	1.2420	3.071
1189	A	0	0	29.230	27.486	0	0	1.2329	4.348
1201	A	0	1	41.073	2.101	0	0	27.5577	127.660
1225	C	0	1	17.899	2.196	0	0	11.1034	110.509
1227	A	1	0	5.854	8.350	0	0	1.7650	24.852
1231	A	0	0	97.133	92.660	0	0	3.1629	3.333
1239	A	0	0	23.034	25.590	0	0	1.8068	7.432
1252	A	0	1	64.072	3.187	0	1	43.0526	128.021
1264	B	0	1	58.141	0.100	0	0	41.0412	140.936
1277	B	0	0	26.130	21.940	1	1	2.9629	12.327
1284	C	0	0	26.200	27.963	0	0	1.2464	4.602
1285	C	0	0	34.467	65.492	0	0	21.9380	43.894
1290	C	0	0	21.131	12.227	0	0	6.2967	37.752
1364	A	0	0	77.632	77.308	0	0	0.2292	0.296
1383	B	0	0	12.972	17.338	0	0	3.0877	20.375
1402	C	0	0	10.584	13.347	0	0	1.9544	16.333
1429	A	0	1	27.238	1.866	0	0	17.9404	123.287
1435	A	0	0	17.827	21.329	0	0	2.4764	12.649
1442	C	0	1	40.952	0.100	0	0	28.8866	140.732
1457	C	0	0	16.286	11.987	0	0	3.0399	21.504
1459	B	0	0	19.782	18.220	0	0	1.1050	5.815
1460	B	0	0	23.086	25.496	0	0	1.7039	7.015
1463	B	0	0	33.225	25.083	0	0	5.7573	19.748
1479	C	0	0	10.345	16.328	0	0	4.2307	31.722
1484	A	0	0	48.438	32.467	0	1	11.2932	27.917
1494	C	0	0	40.080	51.110	0	0	7.8000	17.107
1504	C	0	0	11.562	13.982	0	0	1.7114	13.399
1508	A	0	0	70.260	53.916	0	0	11.5573	18.614
1527	A	0	0	16.696	18.574	0	0	1.3274	7.527
1584	A	0	0	101.266	109.386	0	0	5.7417	5.451
1585	B	0	1	27.117	2.220	0	0	17.6042	120.013
2002	B	0	0	16.007	16.758	0	0	0.5310	3.241
2022	B	0	0	32.568	38.075	0	0	3.8939	11.024
2047	B	0	1	38.035	1.036	0	0	26.1624	133.920
2051	A	0	0	25.010	14.362	0	0	7.5294	38.248
2065	A	0	0	20.710	20.594	0	0	0.0820	0.397
2104	B	0	0	39.517	34.930	0	0	3.2431	8.713

Study ID	Class ID	Field Sample ND Ind	Dup Sample ND Ind	Field Sample Conc (ppb)	Dup Sample Conc (ppb)	Field Sample Data Quality Ind	Dup Sample Data Quality Ind	Std. Dev. (ppb)	Rel. Std. Dev. (%)
2165	A	0	0	30.909	31.809	0	0	0.6366	2.030
2166	B	0	0	74.018	75.299	1	0	0.9057	1.213
2167	B	0	0	61.188	63.869	0	0	1.8958	3.032
2172	C	0	0	39.148	38.421	0	0	0.5145	1.327
2193	A	0	0	86.565	78.500	1	0	5.7028	6.910
2251	C	0	0	36.414	33.567	0	0	2.0134	5.754
2284	C	0	1	38.661	0.100	0	0	27.2671	140.692
2288	A	0	0	51.575	67.117	0	0	10.9900	18.518
2335	A	0	0	49.387	54.094	0	0	3.3281	6.432
2369	B	0	1	21.270	0.100	0	0	14.9693	140.098
2411	C	0	0	37.614	38.627	0	0	0.7165	1.880
2422	A	0	0	41.174	37.877	0	0	2.3313	5.898
2441	A	0	0	39.046	39.875	0	0	0.5859	1.485
2449	C	0	0	40.998	50.936	0	1	7.0276	15.288

Sample ND Indicator = 1 when result is considered a non-detect.
Data quality Indicator = 1 if some problems encountered in field or lab, = 0 otherwise.

Table 3-6. Summary of Standard Deviations and RSDs for Duplicate Field Samples

Cases	No. Pairs	Pooled Std. Dev.	Median Std. Dev.	Maximum Std. Dev.	Mean RSD(%)	Median RSD(%)	Maximum RSD(%)
All pairs	67	12.52	3.151	43.05	32.9	13.4	140.9
All pairs with both detected	55	5.777	2.963	21.94	13.3	9.6	54.0

where large RSDs occur (see Table 3-5) appear to be cases in which one member of the pair might not have been exposed. Another possible explanation for a large RSD is that the duplicate vial might not actually have been exposed in the same room as the primary sample.

A more intensive review of the 10 data pairs when at least one of the concentration values was above 60 ppb and both values were above the LOD indicates that 9 pairs (90%) had differences less than 20 ppb. (20 ppb is the highest field blank observed, taken from Table 3.3.) In addition, 7 of the 10 pairs (70%) had an RSD less than 10%, which is extremely good for a passive monitor. This suggests that decisions based on which classrooms had relatively high formaldehyde concentrations during the sampling period are based on good QC information. A similar review of the 29 data pairs when at least one of the concentration values was above 30 ppb and both values were above the LOD indicates that 27 pairs (93%) had differences less than 20 ppb. In addition, 19 of the 29 data pairs (66%) had an RSD less than 10%. Again, the good QC results provide a measure of confidence when performing further statistical analysis of the data.

3.2 Response Rates

School-level response rates for Phase I of the CA PCS are shown in Table 3-7 by school characteristics known for both responding and nonresponding schools:

1. School level (elementary/middle school/high school)
2. School location (urban/suburban/rural)
3. Northern vs. southern California
4. Percent of children receiving AFDC
5. Percent of children receiving Federal meals assistance
6. Expenditure per student.

Of the full sample of 1,000 CA public schools, 952 were eligible for the study (i.e., had at least one portable classroom), and 426 of these schools provided at least some questionnaire data, resulting in a overall school-level response rate of 44.7%. Of the categories shown in Table 3-7, the lowest response rate (38.9%) occurred for middle schools and the highest (48.8%) occurred school-level for schools with over 25% of their students receiving AFDC support.

Since some Facilities Questionnaire data items are school-level items (namely Items 1-26, Sections A and B), it is also informative to note that Facilities Questionnaires were received for 384 of the 952 eligible schools, resulting in a 40.3% response rate for the Facilities Questionnaire.

In the formaldehyde subsample of 800 schools, 764 were eligible for the study. Of these schools, 320 completed formaldehyde monitoring for at least one classroom, producing a school-level response rate of 41.9%.

Table 3-8 provides the raw numbers of sample classrooms and classrooms with questionnaire data among the 426 participating schools in the full sample. It also provides the numbers of classrooms with formaldehyde and questionnaire data among the 320 schools with at least some formaldehyde data. We see that the 426 participating schools in the full sample

Table 3-7. Number of Eligible and Responding Schools and School-Level Response Rates

Classification	Category	No. Eligible Schools	No. Responses TQ or FQ Data	School Level Response Rate	No. Responses FQ Data	FQ School Response Rate	No. Eligible Schools H2CO Subsample	No. Responses H2CO Data	H2CO Subsample School Response Rate
Overall		952	426	44.7	384	40.3	764	320	41.9
School Type	Elem	565	261	46.2	232	41.1	456	205	45.0
	Middle	193	75	38.9	68	35.2	151	54	35.8
	High	194	90	46.4	84	43.3	157	61	38.9
School Location	Urban	164	72	43.9	59	36.0	124	51	41.1
	Suburb	703	315	44.8	287	40.8	572	239	41.8
	Rural	85	39	45.9	38	44.7	68	30	44.1
Geographic Region	North	430	189	44.0	178	41.4	348	141	40.5
	South	522	237	45.4	206	39.5	416	179	43.0
% AFDC	<=25%	804	354	44.0	316	39.3	650	267	41.1
	>25%	127	62	48.8	58	45.7	96	44	45.8
% Meal Assist	<=55%	554	240	43.3	214	38.6	451	178	39.5
	>55%	377	176	46.7	160	42.4	295	133	45.1
Per Student Expend	<=$5500	427	200	46.8	180	42.2	342	148	43.3
	>$5500	525	226	43.0	204	38.9	422	172	40.8

Table 3-8. Number of Eligible and Responding Classrooms

Classification	Category	No. Eligible Clrooms	No. Responses TQ Data	No. Responses FQ Data	No. Responses TQ & FQ Data	No. Eligible Clrooms H2CO Subsample	No. Responses H2CO Data	No. Responses H2CO & TQ Data	No. Responses H2CO & FQ Data	No. Responses H2CO & TQ & FQ Data
Overall		1272	1181	1133	1077	956	911	844	810	782
School Type	Elem	783	738	691	666	615	592	539	515	495
	Middle	224	203	201	187	161	149	138	133	127
	High	265	240	241	224	180	170	167	162	160
School Location	Urban	216	196	175	168	153	147	121	110	104
	Suburb	942	877	851	804	716	684	645	620	600
	Rural	114	108	107	105	87	80	78	80	78
Geographic Region	North	561	504	516	477	419	397	371	368	351
	South	711	677	617	600	537	514	473	442	431
% AFDC	<=25%	1058	984	932	890	799	762	716	677	660
	>25%	184	171	171	161	130	123	103	107	97
% Meal Assist	<=55%	714	658	624	597	530	509	480	459	448
	>55%	528	497	479	454	399	376	339	325	309
Per Student Expend	<=$5500	600	563	535	512	444	421	402	380	372
	>$5500	672	618	598	565	512	490	442	430	410
Room Type	Port	907	844	812	767	676	644	598	574	555
	Trad	365	337	321	310	280	267	246	236	227

generated 1,272 sample classrooms and that both Teacher and Facilities Questionnaire data are available for 1,077 of these classrooms. Likewise, we see that the 320 schools in the formaldehyde subsample with formaldehyde data for at least one classroom generated 956 sample classrooms and that formaldehyde data were obtained in addition to Teacher and Facilities Questionnaires for 782 of these classrooms. We also see that the full sample contained 907 portable classrooms and 365 traditional classrooms. Moreover, formaldehyde data were obtained for 644 portable classrooms and 267 traditional classrooms.

The ratios of the numbers of classrooms with data divided by the corresponding numbers of eligible classrooms in Table 3-8 result in the unweighted conditional classroom-level response rates shown in Table 3-9. However, the sample classrooms do not all have the same initial sampling rate because of random selection of a fixed number of classrooms from each school. Hence, weighted conditional response rates also were calculated by summing the initial sampling weights of the participating classrooms and dividing by the sum of the initial sampling weights for all sample classrooms. Those weighted conditional classroom-level response rates are shown in Table 3-10. The weighted response rates can be interpreted as the predicted response rate that would have occurred if all classrooms had been selected at the participating schools (and the additional school-level participant burden was not a factor).[5] We see that the weighted conditional response rates, given school-level participation, are quite good: 93.6% for the Teacher Questionnaire; 87.3% for the Facilities Questionnaire; and 95.6% for formaldehyde monitoring. The conditional response rate shrinks to 82.5% for provision of all three types of data (Teacher Questionnaire, Facilities Questionnaire, and formaldehyde data) in the formaldehyde subsample. In addition, we see that the response rate is essentially the same for portable and traditional classrooms. For example, the conditional Teacher Questionnaire response rates are 93.8% and 93.5% for portable and traditional classrooms, respectively.

Table 3-11 shows the products of the school-level response rates from Table 3-7 and weighted conditional classroom-level response rates in Table 3-10, which are the overall study response rates. That is, these are the proportions of the classrooms in the full target population of CA public classrooms in schools with portable classrooms in Spring 2001 that are directly represented by the responding classrooms. We see that the overall response rate is 41.9% for the Teacher Questionnaire, 39.1% for the Facilities Questionnaire, and 40.1% for formaldehyde data. However, the overall response rate drops to 34.5% for joint response to both questionnaires and formaldehyde monitoring. These relatively low response rates introduce some potential for nonresponse bias. However, the weight adjustments described in Section 2.9 were implemented to reduce the nonresponse bias using data known for both responding and nonresponding schools.

These response rates are not atypical for mail surveys. Dillman (2000, pg. 323) reports that a review of 183 business surveys conducted by mail (based on publications between 1990 and 1992) revealed an average response rate of 21%. However, Dillman (2000, p. 331) also cites five mail surveys of businesses with telephone follow-up of nonrespondents that achieved response rates from 67% to 83%.

[5] The unweighted response rates are only sample statistics and have no direct interpretation regarding the population.

Table 3-9. Unweighted Conditional Classroom-Level Response Rates

Classification	Category	Clroom TQ Response Rate	Clroom FQ Response Rate	Clroom TQ&FQ Response Rate	Clroom H2CO Response Rate	Clroom H2CO&TQ Response Rate	Clroom H2CO&FQ Response Rate	Clroom H2CO& TQ&FQ Response Rate
Overall		92.8	89.1	84.7	95.3	88.3	84.7	81.8
School Type	Elem	94.3	88.3	85.1	96.3	87.6	83.7	80.5
	Middle	90.6	89.7	83.5	92.5	85.7	82.6	78.9
	High	90.6	90.9	84.5	94.4	92.8	90.0	88.9
School Location	Urban	90.7	81.0	77.8	96.1	79.1	71.9	68.0
	Suburb	93.1	90.3	85.4	95.5	90.1	86.6	83.8
	Rural	94.7	93.9	92.1	92.0	89.7	92.0	89.7
Geographic Region	North	89.8	92.0	85.0	94.7	88.5	87.8	83.8
	South	95.2	86.8	84.4	95.7	88.1	82.3	80.3
% AFDC	<=25%	93.0	88.1	84.1	95.4	89.6	84.7	82.6
	>25%	92.9	92.9	87.5	94.6	79.2	82.3	74.6
% Meal Assist	<=55%	92.2	87.4	83.6	96.0	90.6	86.6	84.5
	>55%	94.1	90.7	86.0	94.2	85.0	81.5	77.4
Per Student Expend	<=$5500	93.8	89.2	85.3	94.8	90.5	85.6	83.8
	>$5500	92.0	89.0	84.1	95.7	86.3	84.0	80.1
Room Type	Port	93.1	89.5	84.6	95.3	88.5	84.9	82.1
	Trad	92.3	87.9	84.9	95.4	87.9	84.3	81.1

Table 3-10. Weighted Conditional Classroom-Level Response Rates

Classification	Category	Clroom TQ Response Rate	Clroom FQ Response Rate	Clroom TQ&FQ Response Rate	Clroom H2CO Response Rate	Clroom H2CO&TQ Response Rate	Clroom H2CO&FQ Response Rate	Clroom H2CO& TQ&FQ Response Rate
Overall		93.6	87.3	84.2	95.6	88.7	85.2	82.5
School Type	Elem	93.5	86.8	83.8	95.7	86.6	82.4	79.0
	Middle	88.7	87.0	81.5	91.4	81.1	78.8	73.9
	High	97.2	88.5	86.8	98.4	98.0	95.3	95.2
School Location	Urban	88.8	79.9	75.9	94.9	73.4	67.8	61.1
	Suburb	95.0	89.0	85.9	96.2	92.1	88.7	86.7
	Rural	93.8	92.3	91.4	91.1	90.1	91.1	90.1
Geographic Region	North	90.9	90.6	85.0	95.8	87.9	88.8	83.3
	South	95.2	85.4	83.7	95.5	89.2	83.1	82.0
% AFDC	<=25%	93.4	86.1	83.2	95.6	89.4	85.2	82.9
	>25%	93.9	93.0	88.5	95.0	80.4	82.5	75.4
% Meal Assist	<=55%	92.8	85.0	82.5	97.4	91.7	88.7	86.6
	>55%	94.5	90.0	86.1	92.7	83.4	79.0	75.1
Per Student Expend	<=$5500	93.6	87.6	84.7	93.9	89.8	85.8	83.9
	>$5500	93.6	87.1	83.8	97.1	87.7	84.8	81.3
Room Type	Port	93.8	89.0	85.0	95.5	88.1	85.1	82.7
	Trad	93.5	86.4	83.8	95.7	89.0	85.3	82.4

Table 3-11. Weighted Overall Classroom-Level Response Rates

Classification	Category	Clroom TQ Response Rate	Clroom FQ Response Rate	Clroom TQ&FQ Response Rate	Clroom H2CO Response Rate	Clroom H2CO&TQ Response Rate	Clroom H2CO&FQ Response Rate	Clroom H2CO& TQ&FQ Response Rate
Overall		41.9	39.1	37.7	40.1	37.1	35.7	34.5
School Type	Elem	43.2	40.1	38.7	43.0	39.0	37.0	35.5
	Middle	34.5	33.8	31.7	32.7	29.0	28.2	26.4
	High	45.1	41.1	40.3	38.2	38.1	37.0	37.0
School Location	Urban	39.0	35.1	33.3	39.0	30.2	27.9	25.1
	Suburb	42.5	39.9	38.5	40.2	38.5	37.1	36.2
	Rural	43.0	42.3	42.0	40.2	39.7	40.2	39.7
Geographic Region	North	40.0	39.8	37.4	38.8	35.6	36.0	33.8
	South	43.2	38.8	38.0	41.1	38.4	35.8	35.3
% AFDC	<=25%	41.1	37.9	36.6	39.3	36.7	35.0	34.0
	>25%	45.8	45.4	43.2	43.5	36.9	37.8	34.5
% Meal Assist	<=55%	40.2	36.8	35.7	38.4	36.2	35.0	34.2
	>55%	44.1	42.0	40.2	41.8	37.6	35.6	33.9
Per Student Expend	<=$5500	43.8	41.1	39.7	40.6	38.9	37.1	36.3
	>$5500	40.3	37.5	36.1	39.6	35.8	34.6	33.1
Room Type	Port	42.0	39.8	38.0	40.0	36.9	35.7	34.6
	Trad	41.8	38.7	37.5	40.1	37.3	35.7	34.5

3.3 Characterization of the Target Population

As discussed in Section 2.4.1, the target population for this study consists of all of California's K-12 public schools with at least one portable classroom in the Spring of 2001, including special districts operated by the counties. Hence, all portable classrooms being used in the Spring of 2001 are included, but traditional classrooms at schools with no portable classrooms are not included.

The target population for the Phase I study is estimated to consist of 6,924 schools and 230,156 classrooms.[6] Of these classrooms, 85,416 (or 37.1%) are estimated to be portable classrooms. Section 3.3.1 highlights some of the characteristics of the school population, while Section 3.3.2 highlights characteristics of the classroom population. Detailed summary statistics upon which these results are based are given in Appendix D.

The sample of 1,000 schools selected for the Phase I mailed survey is representative of all schools in the target population described above because the sample was randomly selected from all schools on the California Public Schools Directory 2000. The California Department of Health Services selected an initial systematic sample of 1,216 schools. They conducted a preliminary survey which determined that 177 schools (14.6%) were ineligible for the study (had no portable classrooms). In addition, 48 of the 1,000 schools which were randomly selected for Phase I were ineligible. Therefore, about 19.4% (14.6% + 4.8%) of California public schools had no portable classrooms in the Spring of 2001, and those schools are not represented in this study.

3.3.1 School-Level Results

The distributions of the target population schools showed the following:

- The majority of schools are in the suburbs (73.8%); only 8.9% are in rural areas.
- The southern region[7] accounted for 54.8% of the schools.
- 59.3% of the schools were elementary; the remaining 40.7% were split equally among middle and high schools.
- A minority (13.6%) of the schools has more than 25% of their students on AFDC, but about 40.5% of the schools have 55% or more of their students on Federal meal assistance programs.
- 55.1% of the schools are estimated to spend more the $5500 per student.

Based on responses to the FQ, the following additional characteristics were estimated:

- Over half (54.4%) of the schools are estimated to have 10 or fewer portable classrooms, but 4.4% are estimated to have over 30 portable classrooms.
- Less than 35% of the facility managers (FMs) were aware of the EPA IAQ Tools for Schools Program and less than 11% actually made use of the program.

[6] In comparison, the estimate from the DHS preliminary survey of all districts in the state is approximately 80,500 portable classrooms.
[7] See Figure 2-1.

- Among schools for which an age was known (90.4%), about 29% were reported to be less than 30 years old.
- 52.1% of the FMs received some major environmentally-related complaints in the past year.
- The percentages of schools with one or more reported complaints in the past year were as follows:

Classroom Type	Roof Leaks	Plumbing Leaks	Air Quality/Odor	Mold	Temperature	Noise
Portable	60.9	20.4	51.2	25.5	50.0	19.7
Traditional	44.2	30.1	31.0	16.3	40.9	14.8

These school-based results must be interpreted with caution because of differences in the numbers of portable and traditional classrooms in the schools and because of differences in the reported frequencies of complaints for the two types of classrooms. It is more appropriate to compare the classrooms using the classroom-level data.

3.3.2 Classroom-Level Results

About 2/3 of the classrooms in the target population were in suburban areas, with 6.8% in rural areas and 15.9% in urban areas. There was not a statistically significant difference[8] in this distribution for portable versus traditional rooms. The same was true for the north-versus-south regions. However, a larger percentage of elementary school classrooms in the target population are portable: 57.5% of the portable classrooms were in elementary schools, as compared to 45.9% of the traditional classrooms.

TQ Data. There were 1181 responses to the teacher questionnaire; 1169 of these provided a room type description, distributed as follows:

Room description	Portable	Traditional	Total
General instruction class	754	285	1039
Art room	2	3	5
Science lab	14	17	31
Computer lab	10	6	16
Wood shop	0	4	4
Library	10	4	14
Auto/metal shop	0	1	1
Music room	8	1	9
Office	5	3	8
None of above	26	7	33
Multiple responses	6	3	9

[8] A difference is declared to be statistically significant at a given significance level if the observed difference is larger than would be expected to occur by chance when the null hypothesis of no difference is true. Significance probabilities are reported as p-values. A small p value thus indicates a significant difference.

Thus, the vast majority of the rooms are general instruction classrooms. The weighted percentages of classrooms that are general instruction classrooms were 90.4% and 75.1%, for portable and traditional rooms, respectively, a statistically significant difference.

Portable versus traditional classroom differences were detected as statistically significant for a number of the TQ items (see Appendix D for a complete listing); a significance level of 0.01 applies unless otherwise indicated:

- Floor type: portable classrooms had a higher percentage of carpeted floors (70.7% full carpet, versus 34.3% for traditional classrooms) and a lower percentage of vinyl/linoleum floors (29.3% vs. 55.3%)
- Wall materials: A much higher percentage portable classrooms had vinyl tackable wallboard. (78.6% vs. 28.4%)
- Open windows and exterior doors: A smaller percentage of portable classrooms have windows that will not open than do traditional classrooms (13.0% vs. 34.1%), but portable classrooms have exterior doors that open more often than do traditional classrooms (99.9% vs. 76.8%).
- HVAC use: A higher percentage of portable classrooms are air conditioned (95.4% vs. 77.1%) and have a thermostat (that is adjustable) in the room (77.4% vs. 49.9%).
- A higher percentage of the portable rooms make use of the following: paints/pens ($p=0.03$), air fresheners ($p=0.04$), and pesticide powders ($p=0.01$). Candles were used more frequently in traditional classrooms ($p=0.01$).
- Teachers from traditional classrooms show a high preference for traditional over portable classrooms, with 84% preferring the former, but only 34.7% of the teachers from portable classrooms prefer traditional classrooms and 30.1% of these teachers actually prefer portable classrooms.
- Teachers in portable classrooms are more often satisfied with air temperatures than those in traditional rooms (78.1% vs. 65.1%), but they also more frequently found the air to be stuffy (44.7% vs. 33.4%) and the lighting to be poor (27.5% vs. 13.0%).
- Portable-classroom teachers more often reported disruptive noise inside ($p=0.03$), and they more often (60.1 vs. 23.0%) reported that they turned off HVAC systems due to excessive noise.
- Portable-classroom teachers reported more musty odors and more new carpet/furnishing odors than did traditional-classroom teachers; they reported fewer cleaning products ($p=0.03$), cooking, and new paint odors.
- Portable-classroom teachers reported less construction within the same building, probably because portable classrooms are newer, and the building envelope is more confined, i.e., there is less area, in the case of the portable classroom.
- Roof leaks or floods appeared more prevalent for portable classrooms, while other types of leaks appeared more prevalent for traditional rooms ($p = 0.01$).

	Type of Leak		
	Roof	Other	Both
Portable	26.9	8.3	7.1
Traditional	20.1	17.6	8.0

Some important factors for which no differences between portable and traditional rooms were reported by teachers are the following: class size, types of furniture and appliances, pest problems (rodents and bugs) and pesticide use (by teacher) and odors, most other types of odors (except for those noted above), construction activity, water problems (except as noted above), and frequency of cleaning activities. In addition, teacher satisfaction with custodial activities and environmental air quality was about the same for both types of teachers. Both types complained about the same amount regarding odors, temperature, and hygiene in their rooms. Both types reported about the same amount of teacher absenteeism and health-related symptoms, although there was some indication of slightly higher levels of nose-, throat-, and skin-related symptoms for portable-classroom teachers ($p=0.05$, 0.06, and 0.06, respectively).

Some other TQ items were marginally significant (see Appendix D). Also several other important indoor environmental quality factors from the TQ were not significantly different between portable and traditional classrooms, but their general prevalence rates are notable. For example:

- various indicators of potential moisture problems were in about 20% of the rooms, but visible mold in only 3%
- indoor pollutant sources such as new pressed wood, paint, and flooring, and pesticide use were each present in about 20-30% of the rooms.

FQ Data. Facility manager data on classrooms revealed some important differences between the portable and traditional rooms. Age of the room is one major difference. The age is known (for both types) for only about 2/3 of the rooms, but among those for which it is known, an estimated 55.3% of the portables are 10 years old or less, while only 12.4% of the traditional rooms are that new. On the other hand, major renovations/additions have occurred more often in the traditional rooms (47.7% vs 23.7% in portables). Size of the classrooms is another major difference: only 23.5% of the portable rooms exceed 1100 square feet, whereas 36.7% of the traditional rooms do. Portables and traditionals differ in several structural ways: floor height, roof type, and ceiling style (dropped ceiling). HVAC differences also occur:

Type: 80.8% packaged HVAC in portables; 62.9% in traditionals
Location: 81.4% wall air handling units (AHUs) in portables; 31.6% in traditionals
Supply Fan Operation: 78.1% automatic in portables; 65.2% in traditionals
Plenum: 28.4% open in portables; 16.2% in traditionals
Thermostat control: 45.1% via teachers in portables; 26.8% in traditionals.

Estimated frequencies of classroom problems reported by Facility Managers for the past 3 years were as follows (no statistically significant differences between portables and traditionals):

	Water Damage	Roof Leaks	Visible Mold
Portable	22.9%	19.4%	4.9%
Traditional	23.9%	19.9%	3.1%

3.4 Analysis of Formaldehyde Concentration Data

Classroom concentrations of formaldehyde generally cannot be lower than the concentration in ambient outdoor air because of indoor sources. Outdoor air levels of formaldehyde average about 3 ppb in California cities based on 24-hour measurements from 1997 through 2000 (ARB, 2001). Outdoor levels over 24 hours can reach as much as 20 ppb in areas near outdoor sources, such as heavy traffic locations. Hence, classroom concentrations from 3 ppb to 20 ppb may not be elevated above outdoor levels.

3.4.1 Distribution of Concentrations

Usable Phase I H_2CO concentration data were available for 911 classrooms—644 portable classrooms and 267 traditional classrooms. These data, coupled with appropriate sampling weights, were used to generate estimates of population parameters that characterize the distributions of H_2CO levels. Estimates were generated for all eligible classrooms and for two subpopulations of these: portable and traditional. The distributions were characterized in terms of the statistics shown in the left-most column of Table 3-12; in addition to the sample size and the estimated population size, these included:

- percentage of population with H_2CO concentration >6, 27, and 76 ppb
- measures of central tendency (mean, median, geometric mean)
- selected percentiles (5^{th}, 10^{th}, 25^{th}, 50^{th} [median], 75^{th}, 90^{th}, 95^{th})

Table 3-12 also provides approximate 95% confidence interval estimates for these population parameters. Figure 3-1 presents the cumulative distributions estimated for the population of portable and traditional classrooms.

Nearly all of the classrooms had indoor formaldehyde levels greater than typical outdoor levels in California (3 ppb), the Proposition 65 notification level equivalent for air (1.3 ppb), and the OEHHA Chronic Reference Exposure Level (REL) of 2.4 ppb for long-term exposure (ARB, 2001; OEHHA, 2002; OEHHA, 2001). The latter level is based on nasal and eye irritation and nasal/upper airway injury.

The short-term health-based guidelines for formaldehyde in California are 27 ppb (Draft 8-hour Indoor REL) and 76 ppb (1-hour level Acute REL) (Broadwin 2000; OEHHA, 1999). These guidelines are designed to protect against eye irritation and effects on the respiratory and immune systems. The 10-day average levels of formaldehyde are designed as screening estimates, and do not directly compare to standards and guidelines based on shorter time periods. However, because they are longer-term averages, they are probably conservative estimates of 1- and 8-hour levels of formaldehyde reached in classrooms.

The median 10-day H_2CO level for the overall classroom population was 22.0 ppb, but 10% of the classrooms were estimated to have levels above 50.3 ppb. The overall mean level was 27.0 ppb.

The results in Table 3-12 show a significant difference in the distribution of formaldehyde levels for portable classrooms, as compared to traditional classrooms. The levels

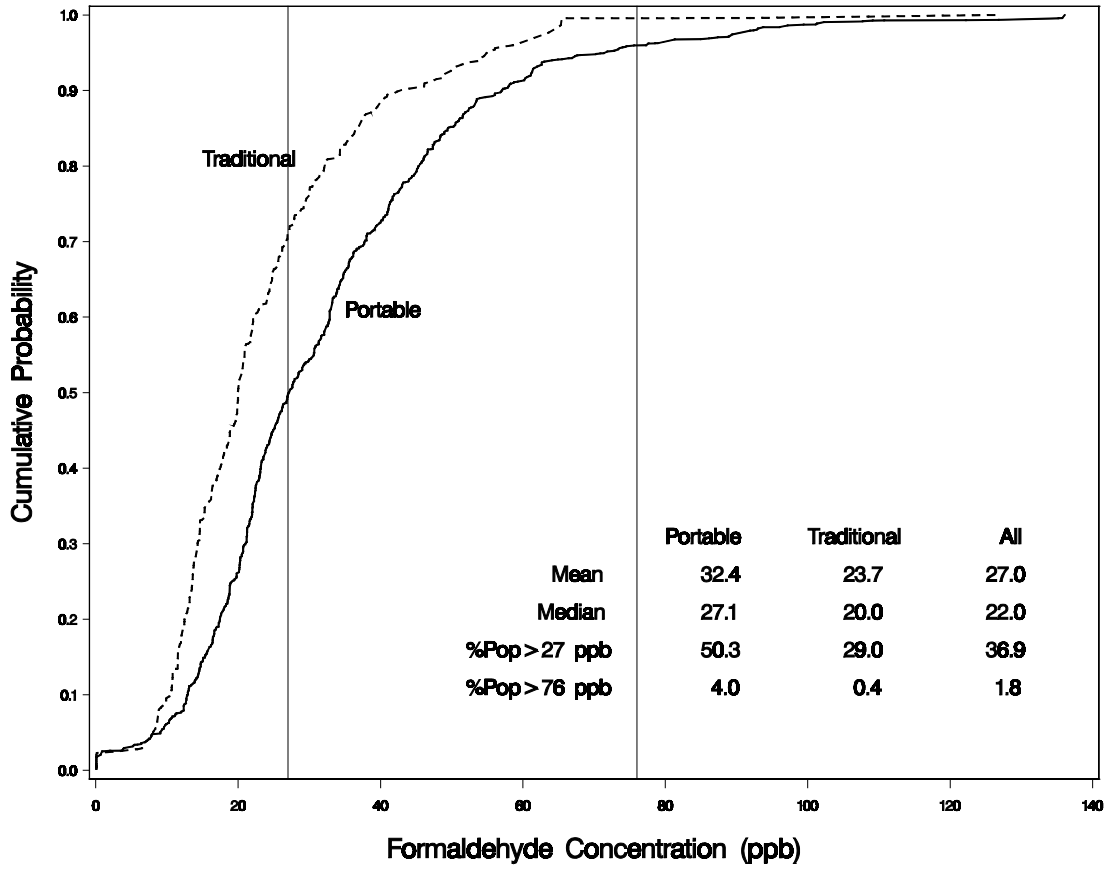
in portable classrooms tend to be higher (numbers in parentheses are 95% confidence intervals) as evidenced by:

- a mean level of 32.4 ppb (30.0, 34.8) for portable classrooms versus 23.7 ppb (21.3, 26.2) for traditional classrooms
- a geometric mean of 24.9 ppb (22.4, 27.8) for portable classrooms versus 18.4 (16.0, 21.3) for traditional classrooms
- a median of 27.1 ppb (24.9, 30.6) for portable classrooms versus 20.0 ppb (18.3, 21.7) for traditional classrooms
- 50.3% (45.1, 55.6) of portable classrooms were estimated to exceed the 27 ppb guideline level, as compared to 29% (21.8, 36.2) of the traditional classrooms
- 4.0% (2.1, 6.0) of portable classrooms were estimated to exceed the 76 ppb guideline level, as compared to 0.4% (0.0, 0.9) of the traditional classrooms.

Table 3-12. Summary of Formaldehyde Levels

Statistic	Estimate for All Clrooms	Approx. Lower 95% CL for All Clrooms	Approx. Upper 95% CL for All Clrooms	Estimate for Port Clrooms	Approx. Lower 95% CL for Port Clrooms	Approx. Upper 95% CL for Port Clrooms	Estimate for Trad Clrooms	Approx. Lower 95% CL for Trad Clrooms	Approx. Upper 95% CL for Trad Clrooms
No. Obs	911			644			267		
Est. Pop. Size	230156			85416			144740		
% Pop. > LOD	97.0	95.3	98.7	96.6	94.7	98.5	97.2	94.9	99.5
% Pop. > 27ppb	36.9	31.3	42.5	50.3	45.1	55.6	29.0	21.8	36.2
% Pop. > 76ppb	1.8	0.9	2.6	4.0	2.1	6.0	0.4	0.0	0.9
Pop. Mean	27.0	24.9	29.0	32.4	30.0	34.8	23.7	21.3	26.2
Pop. Geom. Mean	20.6	18.5	23.1	24.9	22.4	27.8	18.4	16.0	21.3
5th Percentile	8.1	3.5	9.8	9.1	4.6	11.5	8.1	2.0	10.3
10th Percentile	10.8	9.1	12.3	12.9	10.7	14.8	10.4	8.9	11.9
25th Percentile	14.6	13.5	16.8	19.2	17.8	21.0	13.6	12.3	15.3
50th Percentile	22.0	20.7	24.3	27.1	24.9	30.6	20.0	18.3	21.7
75th Percentile	34.3	31.0	37.8	41.3	37.9	45.0	29.3	25.9	33.5
90th Percentile	50.3	44.7	57.3	57.1	51.5	63.2	42.8	36.1	53.6
95th Percentile	61.7	54.5	86.3	71.5	62.5	91.5	55.0	43.8	72.7

Figure 3-1. Cumulative Distributions of Formaldehyde Levels (~10-Day Passive Monitors) in Portable and Traditional Classrooms



Vertical lines are shown at 27 ppb, the draft 8-hour IREL, and at 76 ppb, the OEHHA Acute REL.

3.4.2 Comparison of Formaldehyde Levels in Portable and Traditional Classrooms

To compare portable and traditional classrooms' formaldehyde levels, formal hypothesis tests for differences in H_2CO levels were made, as indicated in Section 2.10, for the following:

- Difference in mean of log-scaled concentrations
- Difference in the percentage of rooms with levels exceeding 27 ppb
- Difference in the percentage of rooms with levels exceeding 76 ppb.

These comparisons were made over all classrooms and for designated subsets of classrooms. Detailed test results appear in Appendix F. Table 3-15 summarizes the test results by providing the p-values of the tests (last three columns). The Wald chi-square test results shown in the table will be discussed further in Section 3.4.3. Note that some of the categories have small sample sizes.

Based on the overall sample of 911 classrooms for which valid formaldehyde data were available, the estimates and estimated differences are shown in Table 3-13.

Table 3-13. Estimated Differences Between Portable and Traditional Classroom Formaldehyde Levels

Estimated H_2CO Statistic	Portable Classrooms	Traditional Classrooms	Difference	p-Value for t Test
Population mean of log-scaled concentrations	3.215	2.912	0.302	<0.001
Population percentage of rooms with levels > 27 ppb	50.3	29.0	21.4	<0.001
Population percentage of rooms with levels > 76 ppb	4.0	0.4	3.6	<0.001

Thus the two types of classrooms appear to be quite different ($p < 0.001$) in terms of geometric means and the percentages exceeding both the 27 and 76 ppb guidelines.

The overall population of classrooms was partitioned to form various subgroups and t tests were used to compare the two types of classrooms within each such subgroup. Table 3-15 summarizes the results. Due to the large *overall* differences in formaldehyde levels between portable and traditional classrooms, examination of Table 3-15 shows that most of the subgroups also show statistically significant differences between portable and traditional classrooms.

Some of the more important subgroups of Table 3-15 for which statistically significant differences were *not* found ($p > 0.05$) are shown in Table 3-14 (includes only cases where the total sample size [across both types of rooms] was 100 or more).

Table 3-14. Important Subgroup with No Significant Difference Between Portable and Traditional Classrooms Over 27 ppb

Variable Description	Category	Total n	Portable vs. Traditional Diff in % >27ppb
Time of formaldehyde sample	June/July	195	6.5
TQ ITEMS:			
Permanent marker pen used	No	154	15.5
Whiteboard marker used	No	131	17.9
Epoxy/rubber cement used	Yes	126	13.1
Carpentry activity this year	Yes	263	10.0
In-room construction this year	Yes	117	3.7
Overall air quality (teacher)	Adequate Poor	277 100	11.3 22.3
Nose symptoms at home	Improves	166	10.5
Throat symptoms past 2 weeks	Occasional Frequent	250 129	12.8 15.7
Throat symptoms at home	Improves	167	8.9
Eye symptoms past 2 weeks	Frequent	121	15.8
Eye symptoms at home	Improves	139	-4.1
FQ ITEMS:			
Classroom age	11-20 years	123	-1.5
Classroom age	16+ years	201	-0.1
Major renovations/additions	Yes	233	9.1
HVAC or lighting renovations	Yes	167	0.1
New flooring past year	Don't know	144	15.6

Table 3-15. Summary of Formaldehyde Tests[#]

Description	p-Value Wald Chi^2 Portable Clrooms	p-Value Wald Chi^2 All Clrooms	Category	p-values for t tests (Portable vs. Traditional)		
				log-scale mean	prop. >27 ppb	prop. >76 ppb
All classrooms	N	N	All	0.00	0.00	0.00
School location	0.68	0.49	Urban	0.07	0.01	0.19
			Suburb	0.00	0.00	0.00
			Rural	0.00	0.02	0.20
Geographic region	0.09	0.00	North	0.00	0.00	0.02
			South	0.01	0.00	0.00
School type	0.19	0.20	Elem	0.00	0.00	0.01
			Middle	0.36	0.00	0.09
			High	0.02	0.10	0.03
Month of formaldehyde sample	0.00	0.00	April	0.04	0.00	N
			May	0.00	0.00	0.00
			June/July	0.30	0.41	0.05
Time of formaldehyde sample	0.00	0.00	Early_April	0.93	0.06	N
			Late_April	0.03	0.00	N
			Early_May	0.10	0.12	0.04
			Late_May	0.01	0.00	0.01
			June/July	0.34	0.46	0.05
<25% non-weekday in samp period	0.19	0.25	Yes	0.01	0.00	0.02
			No	0.01	0.00	0.00
General instruction classroom	0.46	0.79	Yes	0.00	0.00	0.00
			No	0.04	0.08	0.16
Carpeted classroom	0.45	0.88	Full	0.01	0.00	0.00
			Partial	0.06	0.00	0.09
			None	0.02	0.07	0.20
Vinyl/linoleum floor	0.20	0.29	Yes	0.01	0.00	0.04
			No	0.02	0.02	0.00
Vinyl tackable wallboard	0.77	0.00	Yes	0.27	0.06	0.00
			No	0.00	0.00	0.07
Open windows	0.67	0.21	Never	0.13	0.02	0.06
			Infrequent	0.04	0.01	0.00
			Frequent	0.00	0.02	0.08
Open door to outside	0.16	0.07	Infreq	0.00	0.02	0.00
			Freq	0.78	0.01	0.04
			NA	0.00	0.00	0.03
Pressed wood furniture	0.15	0.65	Yes	0.00	0.00	0.00
			No	0.01	0.04	0.06

Description	p-Value Wald Chi^2 Portable Clrooms	p-Value Wald Chi^2 All Clrooms	Category	p-values for t tests (Portable vs. Traditional)		
				log-scale mean	prop. >27 ppb	prop. >76 ppb
Pressed wood table/desks	0.25	0.80	Yes	0.00	0.00	0.00
			No	0.02	0.01	0.02
Pressed wood bookcases	0.39	0.35	Yes	0.01	0.00	0.00
			No	0.02	0.00	0.00
Pressed wood cabinets	0.04	0.75	Yes	0.00	0.00	0.01
			No	0.03	0.03	0.00
New furnishings this school yr	0.28	0.48	Yes	0.00	0.00	0.07
			No	0.03	0.00	0.00
			DK	0.00	0.15	0.32
Type appliances in room	0.10	0.56	Stove/burnr	0.55	0.24	0.28
			Other	0.78	0.02	0.04
			None	0.00	0.00	0.00
Chemical present in room	0.04	0.59	Yes	0.00	0.00	0.00
			No	0.03	0.02	0.02
Oil/acrylic paints used	0.43	0.09	Yes	0.28	0.00	0.01
			No	0.00	0.00	0.01
Permanent marker/pen used	0.77	0.45	Yes	0.00	0.00	0.00
			No	0.11	0.13	0.06
Whiteboard marker used	0.48	0.53	Yes	0.00	0.00	0.00
			No	0.32	0.09	0.19
Glues/fluids used	0.56	0.51	Yes	0.00	0.00	0.00
			No	0.02	0.00	0.02
Correction fluid used	0.84	0.50	Yes	0.00	0.00	0.00
			No	0.03	0.00	0.01
Epoxy/rubber cement used	0.27	0.87	Yes	0.64	0.25	0.11
			No	0.00	0.00	0.00
Air freshener used	0.34	0.12	Yes	0.74	0.02	0.01
			No	0.00	0.00	0.00
Air freshener used - plug-in	0.55	0.66	Yes	0.96	0.17	0.05
			No	0.00	0.00	0.00
Air freshener used - spray	0.31	0.19	Yes	0.80	0.09	0.06
			No	0.00	0.00	0.00
New furnishings odor	0.08	0.03	Never	0.00	0.00	0.00
			Sometimes	0.01	0.00	0.05
			Often	0.77	0.03	N

Description	p-Value Wald Chi^2 Portable Clrooms	p-Value Wald Chi^2 All Clrooms	Category	p-values for t tests (Portable vs. Traditional)		
				log-scale mean	prop. >27 ppb	prop. >76 ppb
Construction activity this yr	0.58	0.06	Current	0.10	0.20	0.04
			Previous	0.01	0.01	0.00
			Never	0.00	0.00	0.03
			Unknown	0.38	0.00	N
Carpentry activity this yr	0.52	0.36	Yes	0.06	0.24	0.08
			No	0.00	0.00	0.00
In-room construction this yr	0.45	0.38	Yes	0.83	0.76	0.19
			No	0.00	0.00	0.00
Other school construction this yr	0.87	0.01	Yes	0.00	0.01	0.00
			No	0.07	0.00	0.01
# teacher complaints in school yr	0.54	0.96	0	0.10	0.02	0.00
			1-5	0.00	0.00	0.01
			>5	0.20	0.31	0.47
Overall air quality (teacher)	0.97	0.45	Excellent	0.00	0.02	0.08
			Good	0.00	0.00	0.01
			Adequate	0.84	0.16	0.07
			Poor	0.26	0.06	0.13
			Very_poor	0.74	0.39	N
Nose symptoms past 2 weeks	0.77	0.42	None	0.02	0.00	0.01
			Occasional	0.02	0.01	0.02
			Frequent	0.37	0.05	0.45
Nose symptoms at home	0.29	0.57	Same/worse	0.01	0.00	0.01
			Improves	0.89	0.34	0.64
			NA	0.02	0.00	0.01
Throat symptoms past 2 weeks	0.87	0.48	None	0.00	0.00	0.00
			Occasional	0.25	0.12	0.06
			Frequent	0.42	0.15	0.13
Throat symptoms at home	0.87	0.50	Same/worse	0.02	0.13	0.08
			Improves	0.39	0.46	0.21
			NA	0.00	0.00	0.00
Eyes symptoms past 2 weeks	0.32	0.56	None	0.01	0.00	0.00
			Occasional	0.01	0.02	0.14
			Frequent	0.82	0.10	0.08
Eyes symptoms at home	0.36	0.28	Same/worse	0.00	0.00	0.58
			Improves	0.50	0.75	0.07
			NA	0.01	0.00	0.00

Description	p-Value Wald Chi^2 Portable Clrooms	p-Value Wald Chi^2 All Clrooms	Category	p-values for t tests (Portable vs. Traditional)		
				log-scale mean	prop. >27 ppb	prop. >76 ppb
Classroom age (yrs)	0.01	0.00	<=10yr	0.00	0.00	0.01
			11-20yr	0.65	0.94	0.09
			21-30yr	0.47	0.24	0.17
			31-40yr	0.65	0.27	N
			41+yr	0.02	0.23	0.32
Classroom age (yrs)	0.00	0.00	0-3yr	0.00	0.00	0.06
			4-5yr	0.93	0.04	0.07
			6-10yr	0.87	0.00	0.31
			11-15yr	0.67	0.91	0.08
			16+yr	0.16	0.99	0.20
Classroom age (known/unknown)	0.95	0.29	Known	0.01	0.00	0.00
			Unknown	0.00	0.00	0.08
Major renovations/additions	0.13	0.68	Yes	0.14	0.21	0.56
			No	0.00	0.00	0.00
Addition/wall/floor renovations	0.72	0.69	Yes	0.03	0.03	0.32
			No	0.00	0.00	0.00
HVAC or lighting renovations	0.06	0.96	Yes	0.38	0.99	0.32
			No	0.00	0.00	0.00
Roof renovations	0.37	0.55	Yes	0.32	0.34	0.33
			No	0.00	0.00	0.00
Classroom size (sq. ft.)	0.04	0.18	<600	0.85	0.00	0.12
			600-1100	0.06	0.02	0.01
			>1100	0.00	0.00	0.02
Outdoor damper min setting	0.21	0.42	<=10%	0.31	0.40	0.34
			11-20%	0.00	0.06	0.12
			21-40%	0.21	0.17	N
			>40%	0.32	0.99	0.09
			Unknown	0.03	0.00	0.00
New pressed wood last yr	0.09	0.05	Yes	0.05	0.01	0.03
			No	0.00	0.00	0.01
			DK	0.47	0.77	0.11
New carpet past yr	0.18	0.19	Yes	0.03	0.03	0.05
			No	0.00	0.00	0.00

Description	p-Value Wald Chi^2 Portable Clrooms	p-Value Wald Chi^2 All Clrooms	Category	p-values for t tests (Portable vs. Traditional)		
				log-scale mean	prop. >27 ppb	prop. >76 ppb
New flooring past yr	0.17	0.41	Yes	0.00	0.03	0.03
			No	0.00	0.00	0.00
			DK	0.76	0.11	0.16

[#] Detailed results associated with the Wald Chi-square tests are given in Table 3-14 and Appendix G. Detailed results associated with the t tests are given in Appendix F. The latter tests compare portables and traditionals and apply to *each* category, while the Chi-square tests provide an indication of whether different formaldehyde levels occur for the different categories (e.g., for urban, suburban, and rural schools).

Classroom age appears as one of the categories with the most distinct effect. For the newer classrooms (10 years old or less) even larger differences in formaldehyde levels occur, as compared to the general population of classrooms, as shown in Table 3-16.

Table 3-16. Estimated Formaldehyde Differences for Portable and Traditional Classrooms That are 10 Years Old or Less

Estimated H_2CO Statistic For Classrooms ≤ 10 yrs	Portable Classrooms	Traditional Classrooms	Difference	p-Value for t Test
Number of Observations	250	23		
Subpopulation mean of log-scaled concentrations	3.2672	2.7852	0.4820	<0.001
Subpopulation percentage of rooms with levels > 27 ppb	57.3	12.8	44.5	<0.001
Subpopulation percentage of rooms with levels > 76 ppb	4.0	0.2	3.8	<0.001

3.4.3 Examination of Factors Associated with Increased Formaldehyde Levels

Factors affecting formaldehyde levels were examined in two ways: using Wald Chi-square tests and using ANOVA tests. These are addressed below.

Wald Chi-Square Tests. Table 3-17 provides statistics that allow an examination of whether a given factor (e.g., school type) is associated with the percentage of classrooms with formaldehyde levels exceeding 27 ppb. The objective of this table is to characterize classrooms with respect to formaldehyde levels, rather than to compare the two types of classrooms (which is done via ANOVA tests). Hence, statistics are shown for both portable classrooms and all classrooms. These statistics are:

- for each factor: the value of the p-value associated with a Wald chi-square statistic that tests if the percentage of the population exceeding 27 ppb differs from level to level of the factor. (Null hypothesis for a 3-level factor, for instance, is that $P_1=P_2=P_3$ where P_j = percent of eligible classrooms with H_2CO levels > 27 ppb. The p values shown are the same as those given in Table 3-13.)
- for each level (j) of each factor:
  - n_j = number of sample classrooms in category j
  - estimate $\left(\hat{P}_j\right)$ of the population percentage with levels above 27 ppb
  - estimate $\left(100 - \hat{P}_j\right)$ of the population percentage with levels less than or equal to 27 ppb.

Appendix G provides confidence interval estimates for the P_j, in addition to the statistics given in Table 3-17.

For portable classrooms, the factors showing significant differences ($p < 0.05$) in H_2CO levels were the following (see Table 2-5 for variable definitions):

- month of formaldehyde sample (highest H_2CO level in June/July; lowest in April)
- presence of pressed wood cabinets (higher levels when present)
- presence of chemicals (higher levels when present)
- classroom age (higher levels for newer rooms [≤ 5 years old])
- classroom size (higher levels for large rooms [> 1,100 sq. ft.].

Table 3-17. Classification of Classrooms, by Formaldehyde Level and Other Selected Variables

Classification Variable	Category	Portable Classrooms				All Classrooms			
		p-Value Wald Chi^2	n	Est. Pop. Percent <=27ppb	Est. Pop. Percent >27ppb	p-Value Wald Chi^2	n	Est. Pop. Percent <=27ppb	Est. Pop. Percent >27ppb
All classrooms	All		644	49.7	50.3		911	63.1	36.9
School location	Urban	0.68	102	48.2	51.8	0.49	147	62.9	37.1
	Suburb		487	49.2	50.8		684	62.2	37.8
	Rural		55	57.8	42.2		80	72.8	27.2
Geographic region	North	0.09	283	55.4	44.6	0.00	397	74.1	25.9
	South		361	46.1	53.9		514	56.4	43.6
School type	Elem	0.19	419	45.8	54.2	0.20	592	58.3	41.7
	Middle		103	52.1	47.9		149	68.6	31.4
	High		122	57.7	42.3		170	68.0	32.0
Month of formaldehyde sample	April	0.00	165	69.2	30.8	0.00	241	86.1	13.9
	May		335	46.0	54.0		471	59.7	40.3
	June/July		144	32.6	67.4		199	37.0	63.0
Time of formaldehyde sample	Early_April	0.00	43	90.6	9.4	0.00	64	96.5	3.5
	Late_April		122	63.7	36.3		177	83.4	16.6
	Early_May		154	44.9	55.1		219	52.6	47.4
	Late_May		181	46.9	53.1		252	65.5	34.5
	June/July		141	32.5	67.5		195	36.4	63.6
<25% non-weekday in samp period	Yes	0.19	332	52.9	47.1	0.25	475	65.9	34.1
	No		309	45.9	54.1		432	59.5	40.5
General instruction classroom	Yes	0.46	529	51.6	48.4	0.79	744	64.7	35.3
	No		64	45.1	54.9		93	62.2	37.8
Carpeted classroom	Full	0.45	433	53.2	46.8	0.88	528	62.5	37.5
	Partial		128	45.7	54.3		221	64.0	36.0
	None		37	45.1	54.9		95	66.0	34.0
Vinyl/linoleum floor	Yes	0.20	171	45.6	54.4	0.29	305	66.7	33.3
	No		427	53.3	46.7		539	61.2	38.8
Vinyl tackable wallboard	Yes	0.77	464	50.3	49.7	0.00	541	56.0	44.0
	No		128	52.1	47.9		292	71.5	28.5
Open windows	Never	0.67	63	50.6	49.4	0.21	145	69.0	31.0
	Infrequent		349	49.3	50.7		447	58.5	41.5
	Frequent		179	54.5	45.5		238	66.4	33.6
Open door to outside	Infreq	0.16	308	52.6	47.4	0.07	427	61.1	38.9
	Freq		268	48.7	51.3		356	60.3	39.7
	NA		3	0.0	100.0		36	83.4	16.6

Classification Variable	Category	Portable Classrooms				All Classrooms			
		p-Value Wald Chi^2	n	Est. Pop. Percent <=27ppb	Est. Pop. Percent >27ppb	p-Value Wald Chi^2	n	Est. Pop. Percent <=27ppb	Est. Pop. Percent >27ppb
Pressed wood furniture	Yes	0.15	548	52.0	48.0	0.65	769	64.3	35.7
	No		50	39.3	60.7		75	60.2	39.8
Pressed wood table/desks	Yes	0.25	489	52.1	47.9	0.80	681	64.2	35.8
	No		109	44.9	55.1		163	62.5	37.5
Pressed wood bookcases	Yes	0.39	353	48.9	51.1	0.35	492	61.4	38.6
	No		245	53.8	46.2		352	66.6	33.4
Pressed wood cabinets	Yes	0.04	296	45.0	55.0	0.75	403	62.9	37.1
	No		302	56.5	43.5		441	64.6	35.4
New furnishings this school yr	Yes	0.28	162	44.4	55.6	0.48	214	61.5	38.5
	No		406	52.8	47.2		591	64.1	35.9
	DK		22	58.5	41.5		28	75.8	24.2
Type appliances in room	Stove/burnr	0.10	19	30.3	69.7	0.56	27	47.7	52.3
	Other		194	53.5	46.5		254	64.8	35.2
	None		329	52.6	47.4		475	65.2	34.8
Chemical present in room	Yes	0.04	285	45.0	55.0	0.59	407	62.4	37.6
	No		313	56.0	44.0		437	65.1	34.9
Oil/acrylic paints used	Yes	0.43	86	45.7	54.3	0.09	119	73.9	26.1
	No		512	51.6	48.4		725	62.4	37.6
Permanent marker/pen used	Yes	0.77	493	51.4	48.6	0.45	690	65.1	34.9
	No		105	49.2	50.8		154	59.6	40.4
Whiteboard marker used	Yes	0.48	507	50.0	50.0	0.53	713	63.0	37.0
	No		91	55.7	44.3		131	67.6	32.4
Glues/fluids used	Yes	0.56	410	51.9	48.1	0.51	570	65.1	34.9
	No		188	48.8	51.2		274	61.3	38.7
Correction fluid used	Yes	0.84	378	51.3	48.7	0.50	526	65.3	34.7
	No		220	50.3	49.7		318	61.5	38.5
Epoxy/rubber cement used	Yes	0.27	93	57.4	42.6	0.87	126	64.8	35.2
	No		505	49.8	50.2		718	63.7	36.3
Air freshener used	Yes	0.34	238	47.7	52.3	0.12	311	57.7	42.3
	No		360	53.0	47.0		533	66.8	33.2
Air freshener used - plug-in	Yes	0.55	123	53.8	46.2	0.66	161	61.4	38.6
	No		475	50.2	49.8		683	64.3	35.7
Air freshener used - spray	Yes	0.31	132	45.4	54.6	0.19	172	56.8	43.2
	No		466	52.5	47.5		672	65.6	34.4

Classification Variable	Category	Portable Classrooms				All Classrooms			
		p-Value Wald Chi^2	n	Est. Pop. Percent <=27ppb	Est. Pop. Percent >27ppb	p-Value Wald Chi^2	n	Est. Pop. Percent <=27ppb	Est. Pop. Percent >27ppb
New furnishings odor	Never	0.08	481	53.7	46.3	0.03	699	65.0	35.0
	Sometimes		78	40.9	59.1		102	58.3	41.7
	Often		16	26.9	73.1		17	23.1	76.9
Construction activity this yr	Current	0.58	136	44.9	55.1	0.06	186	53.0	47.0
	Previous		287	53.6	46.4		404	64.0	36.0
	Never		155	50.6	49.4		227	71.2	28.8
	Unknown		13	56.8	43.2		16	80.8	19.2
Carpentry activity this yr	Yes	0.52	185	53.5	46.5	0.36	263	60.0	40.0
	No		413	49.7	50.3		581	65.7	34.3
In-room construction this yr	Yes	0.45	77	55.4	44.6	0.38	117	57.9	42.1
	No		516	50.0	50.0		721	64.8	35.2
Other school construction this yr	Yes	0.87	409	50.6	49.4	0.01	568	59.6	40.4
	No		189	51.7	48.3		276	73.0	27.0
# teacher complaints in school yr	0	0.54	232	54.0	46.0	0.96	335	63.3	36.7
	1-5		308	48.3	51.7		430	63.6	36.4
	>5		47	54.6	45.4		62	66.5	33.5
Overall air quality (teacher)	Excellent	0.97	87	49.3	50.7	0.45	132	63.3	36.7
	Good		206	51.8	48.2		307	69.5	30.5
	Adequate		204	49.5	50.5		277	56.4	43.6
	Poor		78	51.9	48.1		100	65.0	35.0
	Very_poor		14	58.4	41.6		17	70.2	29.8
Nose symptoms past 2 weeks	None	0.77	239	52.8	47.2	0.42	342	67.5	32.5
	Occasional		194	49.7	50.3		291	61.6	38.4
	Frequent		150	48.2	51.8		194	59.3	40.7
Nose symptoms at home	Same/worse	0.29	179	45.5	54.5	0.57	264	62.3	37.7
	Improves		129	55.3	44.7		166	61.0	39.0
	NA		239	52.8	47.2		342	67.5	32.5
Throat symptoms past 2 weeks	None	0.87	302	50.1	49.9	0.48	436	67.0	33.0
	Occasional		175	51.4	48.6		250	59.5	40.5
	Frequent		99	54.2	45.8		129	62.2	37.8
Throat symptoms at home	Same/worse	0.87	117	52.8	47.2	0.50	167	62.0	38.0
	Improves		128	53.8	46.2		167	58.6	41.4
	NA		302	50.1	49.9		436	67.0	33.0
Eyes symptoms past 2 weeks	None	0.32	320	50.8	49.2	0.56	458	64.9	35.1
	Occasional		152	45.6	54.4		224	59.2	40.8
	Frequent		91	59.5	40.5		121	68.1	31.9

Classification Variable	Category	Portable Classrooms				All Classrooms			
		p-Value Wald Chi^2	n	Est. Pop. Percent <=27ppb	Est. Pop. Percent >27ppb	p-Value Wald Chi^2	n	Est. Pop. Percent <=27ppb	Est. Pop. Percent >27ppb
Eyes symptoms at home	Same/worse	0.36	101	44.3	55.7	0.28	158	68.8	31.2
	Improves		108	56.3	43.7		139	54.2	45.8
	NA		320	50.8	49.2		458	64.9	35.1
Classroom age (yrs)	<=10yr	0.01	250	42.7	57.3	0.00	273	54.5	45.5
	11-20yr		110	51.7	48.3		123	51.3	48.7
	21-30yr		28	84.9	15.1		50	92.8	7.2
	31-40yr		20	72.2	27.8		50	55.5	44.5
	41+yr		4	34.0	66.0		69	66.1	33.9
	0-3yr	0.00	113	34.3	65.7	0.00	119	48.3	51.7
	4-5yr		73	40.1	59.9		77	36.4	63.6
	6-10yr		64	60.9	39.1		77	76.8	23.2
	11-15yr		82	50.4	49.6		91	51.2	48.8
	16+yr		80	70.4	29.6		201	70.3	29.7
Classroom age (known/unknown)	Known	0.95	412	50.7	49.3	0.29	565	63.1	36.9
	Unknown		162	51.1	48.9		245	69.2	30.8
Major renovations/additions	Yes	0.13	124	59.9	40.1	0.68	233	66.8	33.2
	No		421	49.5	50.5		535	64.4	35.6
Addition/wall/floor renovations	Yes	0.72	42	49.7	50.3	0.69	87	68.0	32.0
	No		503	52.3	47.7		681	64.9	35.1
HVAC or lighting renovations	Yes	0.06	79	65.0	35.0	0.96	167	65.1	34.9
	No		466	49.5	50.5		601	65.5	34.5
Roof renovations	Yes	0.37	36	60.3	39.7	0.55	92	69.1	30.9
	No		509	51.3	48.7		676	64.4	35.6
Classroom size (sq. ft.)	<600	0.04	44	52.0	48.0	0.18	66	76.2	23.8
	600-1100		401	54.6	45.4		538	61.4	38.6
	>1100		129	39.3	60.7		206	68.7	31.3
Outdoor damper min setting	<=10%	0.21	36	65.2	34.8	0.42	48	71.3	28.7
	11-20%		80	58.2	41.8		122	70.4	29.6
	21-40%		16	74.1	25.9		22	87.8	12.2
	>40%		16	43.4	56.6		22	43.3	56.7
	Unknown		351	49.8	50.2		484	64.8	35.2
New pressed wood last yr	Yes	0.09	167	42.9	57.1	0.05	228	54.7	45.3
	No		303	56.0	44.0		429	71.6	28.4
	DK		57	56.8	43.2		81	59.5	40.5
New carpet past yr	Yes	0.18	108	44.2	55.8	0.19	138	57.5	42.5
	No		437	53.9	46.1		630	66.6	33.4

Classification Variable	Category	Portable Classrooms				All Classrooms			
		p-Value Wald Chi^2	n	Est. Pop. Percent <=27ppb	Est. Pop. Percent >27ppb	p-Value Wald Chi^2	n	Est. Pop. Percent <=27ppb	Est. Pop. Percent >27ppb
New flooring past yr	Yes	0.17	135	46.2	53.8	0.41	183	59.3	40.7
	No		303	50.9	49.1		441	65.6	34.4
	DK		107	61.9	38.1		144	71.2	28.8

The classroom size effect may indicate that different types of activities or ventilation occur in the larger rooms. A number of other factors are marginally significant for portables (e.g., new furnishings odor, new pressed wood last year), perhaps due to small sample sizes.

For all classrooms, the significant factors (see Table 2-5 for variable definitions) were:

- geographic region (higher H_2CO levels in the South)
- month of formaldehyde sample (highest H_2CO level in June/July; lowest in April)
- presence of vinyl tackable wallboard (higher levels when present)
- classroom age (higher levels for newer rooms)
- new pressed wood last year (higher levels when present)
- new furnishings odor (higher levels when present)
- other school construction (higher levels when present).

It should be noted that several variables were significant (or marginally so) for portables but not for all classrooms—e.g., pressed wood cabinets, chemicals present in room, new furnishings odor, HVAC or lighting renovations, and classroom size. Several potentially important variables were not found to be statistically significant in either portable or all classrooms: teacher complaints, teacher symptoms (eye, nose, and throat), outdoor air minimum setting, new carpet, and new flooring.

ANOVA Tests. An alternative to the Wald chi-square tests described above, which examined the homogeneity of the percentages above 27 ppb, is the analysis of variance approach. As described in Section 2.10, these analyses provide weighted ANOVA tests for the log-scale formaldehyde concentrations, using both an interaction and a main effects model. Illustrative output from the SUDAAN REGRESS procedure is shown in Exhibits 3-1 and 3-2. The first of these shows results for the models involving the ROOMTYPE and POPSTAT (urban, suburban, rural) variables; the second shows outputs for the ROOMTYPE and CLRAGE (classroom age) variables. Each of the exhibits presents the results of two models: the first part of the output shows the test of the interaction between ROOMTYPE (i.e., portable vs. traditional) and the given variable X (e.g., classroom age). The second part, which is only appropriate if the interaction effect can be ignored, shows the tests of the main effects of the two variables appearing in the model.

Table 3-18 summarizes the results of the ANOVA tests by providing the p-values associated with the adjusted Wald F tests for selected factors, for room type (portable vs. traditional), and for the interaction of these two factors. Also shown are the relevant population-

weighted cell counts, log-scale means, and associated geometric means (in ppb). Based on the results in this table, the following factors appeared to interact with room type ($p \leq 0.05$):

- Open door to outside: There is little difference in formaldehyde levels between portable and traditional classrooms for rooms with exterior doors frequently open; otherwise, portables tend to have higher levels.
- Air freshener used: Portable classrooms tend to have higher formaldehyde levels than traditional classrooms in rooms where air fresheners are not used but comparable levels when air fresheners are used.
- New furnishing odor: Higher formaldehyde levels are observed for rooms in which new furnishing odors are present; this effect is more pronounced for the portables than for the traditional classrooms.
- Throat symptoms at home: A different pattern is observed for portable and traditional classrooms; sample sizes for the traditional classrooms are small.
- Classroom age (2^{nd} version): Portable classrooms tend to have higher formaldehyde levels than traditional classrooms in the newest age group (0 to 3 years); for the other age groups, there is not much difference between the two types of rooms.
- Classroom size: A larger difference in formaldehyde levels between portable classrooms and traditional classrooms occurs for larger rooms (>1100 square feet).

Among the remaining factors, the following showed statistically significant main effects ($p \leq 0.05$) – that is, effects that were prevalent for both types of rooms:

- Geographic region: Higher formaldehyde levels occur in the southern region.
- Time of formaldehyde sample: Higher formaldehyde levels occur in the summer months.
- Overall air quality rating: There are differences between the levels of this variable, but there is not a logical pattern to them.
- Nose symptoms past 2 weeks: Higher formaldehyde levels are found in those rooms where teachers reported frequent nasal problems.
- New carpet: Higher formaldehyde levels are found in those rooms with new carpet in the past year.
- New flooring: Higher formaldehyde levels are found in those rooms with new flooring in the past year.

Among all the models, the room type variable, adjusted for the other variable appearing in the model, is always highly significant—with one exception. This exception occurs for the models involving classroom age (both versions of the variable, CLRAGE and CLRAGEX). For these models the effect of room type, after adjustment, is non-significant, suggesting that at least part of the overall differences between the room types is due to the disparity in their age distributions.

Exhibit 3-1. Analysis of Variance Models Involving Type of Room and Popstat

```
Number of observations read       :    911    Weighted count:   230156
Observations used in the analysis :    911    Weighted count:   230156
Denominator degrees of freedom    :    319
File _CCC contains  320 Clusters; 320 clusters were used to fit the model
Maximum cluster size = 3 records      Minimum cluster size = 1 records
Weighted mean response is 3.026986

INTERACTION MODEL RESULTS
Multiple R-Square for the dependent variable LNMEAS: 0.022718
```

Contrast	Degrees of Freedom	Wald F	P-value Wald F	Adj Wald F	P-value Adj Wald F
OVERALL MODEL	6	904.87	0.0000	890.69	0.0000
MODEL MINUS INTERCEPT	5	4.74	0.0003	4.68	0.0004
INTERCEPT	.	.	.	.	.
ROOMTYPE	.	.	.	.	.
POPSTAT	.	.	.	.	.
ROOMTYPE * POPSTAT	2	0.14	0.8658	0.14	0.8662

```
MAIN EFFECTS MODEL RESULTS
Multiple R-Square for the dependent variable LNMEAS: 0.022609
```

Contrast	Degrees of Freedom	Wald F	P-value Wald F	Adj Wald F	P-value Adj Wald F
OVERALL MODEL	4	1310.20	0.0000	1297.88	0.0000
MODEL MINUS INTERCEPT	3	5.71	0.0008	5.68	0.0008
INTERCEPT	.	.	.	.	.
ROOMTYPE	1	15.19	0.0001	15.19	0.0001
POPSTAT	2	0.19	0.8310	0.18	0.8315

Exhibit 3-2. Analysis of Variance Models Involving Type of Room and Classroom Age

```
Number of observations read       :    810    Weighted count:   230156
Number of observations skipped    :    101 (WEIGHT variable nonpositive)
Observations used in the analysis :    565    Weighted count:   153951
Denominator degrees of freedom    :    283
File _CCC contains  284 Clusters; 227 clusters were used to fit the model
Maximum cluster size = 3 records      Minimum cluster size = 1 records
Weighted mean response is 3.038277

INTERACTION MODEL RESULTS
Multiple R-Square for the dependent variable LNMEAS: 0.043837
```

Contrast	Degrees of Freedom	Wald F	P-value Wald F	Adj Wald F	P-value Adj Wald F
OVERALL MODEL	10	301.53	0.0000	291.94	0.0000
MODEL MINUS INTERCEPT	9	2.73	0.0046	2.65	0.0059
INTERCEPT	.	.	.	.	.
ROOMTYPE	.	.	.	.	.
CLRAGE	.	.	.	.	.
ROOMTYPE * CLRAGE	4	1.26	0.2854	1.25	0.2908

```
MAIN EFFECTS MODEL RESULTS
Multiple R-Square for the dependent variable LNMEAS: 0.034727
```

Contrast	Degrees of Freedom	Wald F	P-value Wald F	Adj Wald F	P-value Adj Wald F
OVERALL MODEL	6	413.84	0.0000	406.53	0.0000
MODEL MINUS INTERCEPT	5	3.00	0.0118	2.95	0.0129
INTERCEPT	.	.	.	.	.
ROOMTYPE	1	2.82	0.0940	2.82	0.0940
CLRAGE	4	0.97	0.4264	0.96	0.4321

Table 3-18. Summary of ANOVA Results for LN (Formaldehyde Conc)

Variable Name	Description	Adj Wald F p_Value for Variable	Adj Wald F p_Value for Room Type	Adj Wald F p_Value for Interaction	Category	Clroom Type	No. Obs	Est. Pop. Size	Est. Log-Scale Mean	Est. Geometric Mean
OVERALL	All classrooms	NA	0.000	NA	All	All	911	230156	3.0270	20.6
					All	Port	644	85416	3.2167	24.9
					All	Trad	267	144740	2.9151	18.4
POPSTAT	School location	0.831	0.000	0.866	Urban	All	147	40824	3.0467	21.0
					Urban	Port	102	13035	3.2332	25.4
					Urban	Trad	45	27788	2.9593	19.3
					Suburb	All	684	173419	3.0259	20.6
					Suburb	Port	487	66262	3.2135	24.9
					Suburb	Trad	197	107157	2.9099	18.4
					Rural	All	80	15913	2.9881	19.8
					Rural	Port	55	6118	3.2153	24.9
					Rural	Trad	25	9795	2.8463	17.2
REGION	Geographic region	0.014	0.000	0.441	North	All	397	86702	2.8622	17.5
					North	Port	283	32659	3.0982	22.2
					North	Trad	114	54043	2.7196	15.2
					South	All	514	143454	3.1266	22.8
					South	Port	361	52757	3.2900	26.8
					South	Trad	153	90697	3.0315	20.7
SCHTYPE	School type	0.638	0.000	0.456	Elem	All	592	119045	3.0829	21.8
					Elem	Port	419	50580	3.2481	25.7
					Elem	Trad	173	68465	2.9609	19.3
					Middle	All	149	46772	3.0610	21.3
					Middle	Port	103	15540	3.1495	23.3
					Middle	Trad	46	31232	3.0169	20.4

Variable Name	Description	Adj Wald F p_Value for Variable	Adj Wald F p_Value for Room Type	Adj Wald F p_Value for Interaction	Category	Clroom Type	No. Obs	Est. Pop. Size	Est. Log-Scale Mean	Est. Geometric Mean
					High	All	170	64339	2.8988	18.2
					High	Port	122	19296	3.1883	24.2
					High	Trad	48	45043	2.7748	16.0
SAMPMO	Month of formaldehyde sample	0.000	0.000	0.239	April	All	241	70689	2.7071	15.0
					April	Port	165	24201	2.8845	17.9
					April	Trad	76	46488	2.6147	13.7
					May	All	471	111745	3.0706	21.6
					May	Port	335	42578	3.2983	27.1
					May	Trad	136	69167	2.9305	18.7
					June/July	All	199	47722	3.3987	29.9
					June/July	Port	144	18637	3.4615	31.9
					June/July	Trad	55	29085	3.3584	28.7
SAMPTIME	Time of formaldehyde sample	0.000	0.000	0.321	Early_April	All	64	14554	2.5209	12.4
					Early_April	Port	43	4966	2.5325	12.6
					Early_April	Trad	21	9589	2.5149	12.4
					Late_April	All	177	56135	2.7553	15.7
					Late_April	Port	122	19235	2.9754	19.6
					Late_April	Trad	55	36899	2.6406	14.0
					Early_May	All	219	50538	3.2113	24.8
					Early_May	Port	154	18970	3.3560	28.7
					Early_May	Trad	65	31569	3.1244	22.7
					Late_May	All	252	61207	2.9545	19.2
					Late_May	Port	181	23608	3.2519	25.8
					Late_May	Trad	71	37599	2.7677	15.9
					June/July	All	195	47116	3.4081	30.2

Variable Name	Description	Adj Wald F p_Value for Variable	Adj Wald F p_Value for Room Type	Adj Wald F p_Value for Interaction	Category	Clroom Type	No. Obs	Est. Pop. Size	Est. Log-Scale Mean	Est. Geometric Mean
					June/July	Port	141	18421	3.4670	32.0
					June/July	Trad	54	28695	3.3703	29.1
PWDXPOSC	<25% non-weekday in samp period	0.457	0.000	0.601	Yes	All	475	127884	2.9863	19.8
					Yes	Port	332	45716	3.1532	23.4
					Yes	Trad	143	82168	2.8933	18.1
					No	All	432	101666	3.0804	21.8
					No	Port	309	39484	3.2913	26.9
					No	Trad	123	62182	2.9464	19.0
GENINST	General instruction classroom	0.106	0.000	0.871	Yes	All	744	188161	2.9822	19.7
					Yes	Port	529	75614	3.1976	24.5
					Yes	Trad	215	112546	2.8376	17.1
					No	All	93	39852	3.1368	23.0
					No	Port	64	9080	3.3901	29.7
					No	Trad	29	30773	3.0620	21.4
CARPET	Carpeted classroom	0.237	0.000	0.926	Full	All	528	111611	2.9944	20.0
					Full	Port	433	59952	3.1795	24.0
					Full	Trad	95	51659	2.7797	16.1
					Partial	All	221	58271	2.9631	19.4
					Partial	Port	128	18174	3.1849	24.2
					Partial	Trad	93	40097	2.8626	17.5
					None	All	95	60274	3.0822	21.8
					None	Port	37	7290	3.4383	31.1
					None	Trad	58	52984	3.0332	20.8
VINYLFL	Vinyl/linoleum floor	0.458	0.001	0.987	Yes	All	305	109034	3.0134	20.4
					Yes	Port	171	26050	3.2673	26.2

Variable Name	Description	Adj Wald F p_Value for Variable	Adj Wald F p_Value for Room Type	Adj Wald F p_Value for Interaction	Category	Clroom Type	No. Obs	Est. Pop. Size	Est. Log-Scale Mean	Est. Geometric Mean
					Yes	Trad	134	82984	2.9337	18.8
					No	All	539	121122	3.0059	20.2
					No	Port	427	59366	3.1744	23.9
					No	Trad	112	61756	2.8440	17.2
VINYLWL	Vinyl tackable wallboard	0.418	0.010	0.158	Yes	All	541	109990	3.1187	22.6
					Yes	Port	464	66725	3.1825	24.1
					Yes	Trad	77	43265	3.0204	20.5
					No	All	292	116536	2.8990	18.2
					No	Port	128	17315	3.2774	26.5
					No	Trad	164	99221	2.8330	17.0
WINDOPEN	Open windows	0.972	0.000	0.930	Never	All	145	59295	2.9662	19.4
					Never	Port	63	10196	3.2006	24.5
					Never	Trad	82	49100	2.9175	18.5
					Infrequent	All	447	102420	3.0261	20.6
					Infrequent	Port	349	47645	3.1976	24.5
					Infrequent	Trad	98	54775	2.8769	17.8
					Frequent	All	238	61938	3.0263	20.6
					Frequent	Port	179	26269	3.2361	25.4
					Frequent	Trad	59	35669	2.8717	17.7
DOOROPEN	Open door to outside	0.185	0.003	0.001	Infreq	All	427	105524	3.0389	20.9
					Infreq	Port	308	45164	3.2527	25.9
					Infreq	Trad	119	60360	2.8789	17.8
					Freq	All	356	87860	3.1149	22.5
					Freq	Port	268	36926	3.1344	23.0
					Freq	Trad	88	50934	3.1007	22.2

Variable Name	Description	Adj Wald F p_Value for Variable	Adj Wald F p_Value for Room Type	Adj Wald F p_Value for Interaction	Category	Clroom Type	No. Obs	Est. Pop. Size	Est. Log-Scale Mean	Est. Geometric Mean
					NA	All	36	29830	2.5553	12.9
					NA	Port	3	66	4.2565	70.6
					NA	Trad	33	29764	2.5515	12.8
PRESWOOD	Pressed wood furniture	0.593	0.000	0.194	Yes	All	769	203508	3.0019	20.1
					Yes	Port	548	77934	3.1707	23.8
					Yes	Trad	221	125574	2.8972	18.1
					No	All	75	26648	3.0671	21.5
					No	Port	50	7482	3.5366	34.4
					No	Trad	25	19165	2.8838	17.9
PRESWOD1	Pressed wood table/desks	0.234	0.000	0.688	Yes	All	681	180549	2.9869	19.8
					Yes	Port	489	71065	3.1696	23.8
					Yes	Trad	192	109484	2.8683	17.6
					No	All	163	49607	3.0916	22.0
					No	Port	109	14351	3.3669	29.0
					No	Trad	54	35256	2.9796	19.7
PRESWOD2	Pressed wood bookcases	0.436	0.000	0.996	Yes	All	492	123865	3.0583	21.3
					Yes	Port	353	49635	3.2391	25.5
					Yes	Trad	139	74231	2.9373	18.9
					No	All	352	106291	2.9526	19.2
					No	Port	245	35781	3.1523	23.4
					No	Trad	107	70509	2.8513	17.3
PRESWOD3	Pressed wood cabinets	0.875	0.000	0.258	Yes	All	403	103903	3.0084	20.3
					Yes	Port	296	41483	3.2616	26.1
					Yes	Trad	107	62419	2.8401	17.1
					No	All	441	126253	3.0104	20.3

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					No	Port	302	43933	3.1471	23.3
					No	Trad	139	82321	2.9374	18.9
NEWFURN	New furnishings this school yr	0.636	0.000	0.152	Yes	All	214	49215	3.0353	20.8
					Yes	Port	162	21446	3.3089	27.4
					Yes	Trad	52	27769	2.8240	16.8
					No	All	591	169405	3.0007	20.1
					No	Port	406	59010	3.1512	23.4
					No	Trad	185	110394	2.9203	18.5
					DK	All	28	8564	2.9112	18.4
					DK	Port	22	3579	3.2710	26.3
					DK	Trad	6	4985	2.6529	14.2
APPLIAN	Type appliances in room	0.523	0.000	0.062	Stove/burnr	All	27	13483	3.2005	24.5
					Stove/burnr	Port	19	4829	3.3334	28.0
					Stove/burnr	Trad	8	8654	3.1263	22.8
					Other	All	254	65172	3.0706	21.6
					Other	Port	194	28596	3.0931	22.0
					Other	Trad	60	36576	3.0531	21.2
					None	All	475	125947	2.9486	19.1
					None	Port	329	45014	3.2604	26.1
					None	Trad	146	80933	2.7752	16.0
CHEMPRES	Chemical present in room	0.151	0.000	0.966	Yes	All	407	111686	3.0801	21.8
					Yes	Port	285	39052	3.2869	26.8
					Yes	Trad	122	72634	2.9688	19.5
					No	All	437	118470	2.9429	19.0
					No	Port	313	46364	3.1318	22.9

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					No	Trad	124	72106	2.8215	16.8
PAINTS	Oil/acrylic paints used	0.790	0.000	0.982	Yes	All	119	28768	2.9728	19.5
					Yes	Port	86	10240	3.1743	23.9
					Yes	Trad	33	18528	2.8614	17.5
					No	All	725	201387	3.0147	20.4
					No	Port	512	75176	3.2066	24.7
					No	Trad	213	126212	2.9004	18.2
PMARKER	Permanent marker/pen used	0.272	0.000	0.645	Yes	All	690	177758	3.0586	21.3
					Yes	Port	493	67984	3.2274	25.2
					Yes	Trad	197	109774	2.9541	19.2
					No	All	154	52398	2.8427	17.2
					No	Port	105	17432	3.1063	22.3
					No	Trad	49	34966	2.7113	15.0
WBMARKER	Whiteboard marker used	0.604	0.000	0.366	Yes	All	713	188179	3.0218	20.5
					Yes	Port	507	71394	3.2304	25.3
					Yes	Trad	206	116785	2.8943	18.1
					No	All	131	41977	2.9543	19.2
					No	Port	91	14022	3.0620	21.4
					No	Trad	40	27955	2.9003	18.2
GLUFLU	Glues/fluids used	0.159	0.000	0.349	Yes	All	570	152451	3.0769	21.7
					Yes	Port	410	57549	3.2278	25.2
					Yes	Trad	160	94902	2.9854	19.8
					No	All	274	77705	2.8772	17.8
					No	Port	188	27867	3.1509	23.4
					No	Trad	86	49838	2.7241	15.2

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CORFLU	Correction fluid used	0.273	0.000	0.615	Yes	All	526	140218	3.0638	21.4
					Yes	Port	378	52388	3.2335	25.4
					Yes	Trad	148	87829	2.9625	19.3
					No	All	318	89938	2.9249	18.6
					No	Port	220	33027	3.1539	23.4
					No	Trad	98	56911	2.7919	16.3
GLUES	Epoxy/rubber cement used	0.105	0.000	0.124	Yes	All	126	29778	3.1566	23.5
					Yes	Port	93	12924	3.1955	24.4
					Yes	Trad	33	16854	3.1269	22.8
					No	All	718	200378	2.9876	19.8
					No	Port	505	72492	3.2040	24.6
					No	Trad	213	127886	2.8649	17.5
AFRESH	Air freshener used	0.353	0.000	0.015	Yes	All	311	74849	3.0852	21.9
					Yes	Port	238	33106	3.1060	22.3
					Yes	Trad	73	41743	3.0688	21.5
					No	All	533	155307	2.9730	19.5
					No	Port	360	52310	3.2640	26.2
					No	Trad	173	102997	2.8252	16.9
AFRESHP	Air freshener used - plug-in	0.466	0.000	0.039	Yes	All	161	36508	2.9778	19.6
					Yes	Port	123	17274	2.9735	19.6
					Yes	Trad	38	19234	2.9817	19.7
					No	All	683	193648	3.0154	20.4
					No	Port	475	68142	3.2608	26.1
					No	Trad	208	125506	2.8822	17.9
AFRESHS	Air freshener used - spray	0.253	0.000	0.107	Yes	All	172	45884	3.1126	22.5

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					Yes	Port	132	19393	3.1362	23.0
					Yes	Trad	40	26492	3.0952	22.1
					No	All	672	184271	2.9838	19.8
					No	Port	466	66023	3.2223	25.1
					No	Trad	206	118248	2.8507	17.3
NEWODOR	New furnishings odor	0.000	0.000	0.018	Never	All	699	203163	2.9910	19.9
					Never	Port	481	68750	3.1753	23.9
					Never	Trad	218	134412	2.8966	18.1
					Sometimes	All	102	19471	3.1520	23.4
					Sometimes	Port	78	10683	3.4060	30.1
					Sometimes	Trad	24	8788	2.8433	17.2
					Often	All	17	2488	3.6367	38.0
					Often	Port	16	2132	3.6316	37.8
					Often	Trad	1	356	3.6674	39.1
CONST	Construction activity this yr	0.310	0.000	0.467	Current	All	186	55860	3.1664	23.7
					Current	Port	136	20271	3.3202	27.7
					Current	Trad	50	35589	3.0788	21.7
					Previous	All	404	107657	2.9668	19.4
					Previous	Port	287	42790	3.2085	24.7
					Previous	Trad	117	64867	2.8074	16.6
					Never	All	227	58874	2.9749	19.6
					Never	Port	155	19464	3.1780	24.0
					Never	Trad	72	39410	2.8745	17.7
					Unknown	All	16	3686	2.8659	17.6
					Unknown	Port	13	1638	2.5735	13.1

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					Unknown	Trad	3	2048	3.0996	22.2
RTQ31C_B	Carpentry activity this yr	0.194	0.000	0.648	Yes	All	263	76690	3.1016	22.2
					Yes	Port	185	26825	3.2672	26.2
					Yes	Trad	78	49866	3.0126	20.3
					No	All	581	153465	2.9634	19.4
					No	Port	413	58591	3.1732	23.9
					No	Trad	168	94874	2.8338	17.0
RTQ31B_A	In-room construction this yr	0.358	0.000	0.074	Yes	All	117	34581	3.1049	22.3
					Yes	Port	77	10769	3.0730	21.6
					Yes	Trad	40	23813	3.1194	22.6
					No	All	721	195135	2.9967	20.0
					No	Port	516	74240	3.2332	25.4
					No	Trad	205	120896	2.8514	17.3
OTHCONST	Other school construction this yr	0.485	0.000	0.381	Yes	All	568	157936	3.0360	20.8
					Yes	Port	409	61681	3.2458	25.7
					Yes	Trad	159	96255	2.9015	18.2
					No	All	276	72220	2.9515	19.1
					No	Port	189	23734	3.0907	22.0
					No	Trad	87	48485	2.8834	17.9
COMPLAN	# teacher complaints in school yr	0.915	0.000	0.925	0	All	335	91495	2.9860	19.8
					0	Port	232	33620	3.1531	23.4
					0	Trad	103	57876	2.8889	18.0
					1-5	All	430	115248	3.0275	20.6
					1-5	Port	308	43361	3.2390	25.5
					1-5	Trad	122	71887	2.9000	18.2

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					>5	All	62	19744	2.9776	19.6
					>5	Port	47	7289	3.1842	24.1
					>5	Trad	15	12454	2.8567	17.4
TQ37	Overall air quality (teacher)	0.047	0.000	0.063	Excellent	All	132	36264	3.0890	22.0
					Excellent	Port	87	14035	3.3152	27.5
					Excellent	Trad	45	22229	2.9462	19.0
					Good	All	307	85306	2.8117	16.6
					Good	Port	206	28049	3.1727	23.9
					Good	Trad	101	57257	2.6349	13.9
					Adequate	All	277	75748	3.2020	24.6
					Adequate	Port	204	29544	3.2156	24.9
					Adequate	Trad	73	46204	3.1934	24.4
					Poor	All	100	26212	2.9821	19.7
					Poor	Port	78	10797	3.1267	22.8
					Poor	Trad	22	15415	2.8808	17.8
					Very_poor	All	17	4550	3.0119	20.3
					Very_poor	Port	14	1910	3.0856	21.9
					Very_poor	Trad	3	2640	2.9586	19.3
NOSESYM	Nose symptoms past 2 weeks	0.045	0.001	0.371	None	All	342	101233	3.0141	20.4
					None	Port	239	35064	3.1802	24.1
					None	Trad	103	66169	2.9261	18.7
					Occasional	All	291	76978	2.8565	17.4
					Occasional	Port	194	26192	3.1480	23.3
					Occasional	Trad	97	50786	2.7061	15.0
					Frequent	All	194	48946	3.2303	25.3

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					Frequent	Port	150	21696	3.2955	27.0
					Frequent	Trad	44	27250	3.1784	24.0
NOSESYMI	Nose symptoms at home	0.760	0.001	0.162	Same/worse	All	264	69745	2.9387	18.9
					Same/worse	Port	179	23742	3.2811	26.6
					Same/worse	Trad	85	46004	2.7620	15.8
					Improves	All	166	43426	3.1008	22.2
					Improves	Port	129	20137	3.1124	22.5
					Improves	Trad	37	23289	3.0906	22.0
					NA	All	342	101233	3.0141	20.4
					NA	Port	239	35064	3.1802	24.1
					NA	Trad	103	66169	2.9261	18.7
THRTSYM	Throat symptoms past 2 weeks	0.931	0.001	0.709	None	All	436	125701	3.0403	20.9
					None	Port	302	44338	3.2460	25.7
					None	Trad	134	81363	2.9282	18.7
					Occasional	All	250	68293	3.0025	20.1
					Occasional	Port	175	25125	3.1156	22.5
					Occasional	Trad	75	43167	2.9367	18.9
					Frequent	All	129	26844	3.0824	21.8
					Frequent	Port	99	13276	3.1886	24.3
					Frequent	Trad	30	13568	2.9785	19.7
THRTSYMI	Throat symptoms at home	0.726	0.001	0.028	Same/worse	All	167	40813	2.9406	18.9
					Same/worse	Port	117	15009	3.2706	26.3
					Same/worse	Trad	50	25804	2.7486	15.6
					Improves	All	167	42734	3.0948	22.1
					Improves	Port	128	19333	3.0124	20.3

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					Improves	Trad	39	23401	3.1629	23.6
					NA	All	436	125701	3.0403	20.9
					NA	Port	302	44338	3.2460	25.7
					NA	Trad	134	81363	2.9282	18.7
EYESSYM	Eyes symptoms past 2 weeks	0.288	0.000	0.177	None	All	458	129615	2.9940	20.0
					None	Port	320	47001	3.1709	23.8
					None	Trad	138	82614	2.8933	18.1
					Occasional	All	224	62270	3.1468	23.3
					Occasional	Port	152	20476	3.3800	29.4
					Occasional	Trad	72	41793	3.0325	20.7
					Frequent	All	121	30342	3.0778	21.7
					Frequent	Port	91	13734	3.0577	21.3
					Frequent	Trad	30	16609	3.0944	22.1
EYESSYMI	Eyes symptoms at home	0.317	0.002	0.076	Same/worse	All	158	49361	3.0758	21.7
					Same/worse	Port	101	13068	3.3978	29.9
					Same/worse	Trad	57	36293	2.9599	19.3
					Improves	All	139	34000	3.2082	24.7
					Improves	Port	108	16471	3.1376	23.0
					Improves	Trad	31	17529	3.2746	26.4
					NA	All	458	129615	2.9940	20.0
					NA	Port	320	47001	3.1709	23.8
					NA	Trad	138	82614	2.8933	18.1
CLRAGE	Classroom age (yrs)	0.432	0.094	0.291	<=10yr	All	273	44801	3.1367	23.0
					<=10yr	Port	250	32673	3.2672	26.2
					<=10yr	Trad	23	12128	2.7852	16.2

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					11-20yr	All	123	27029	3.2832	26.7
					11-20yr	Port	110	19747	3.2432	25.6
					11-20yr	Trad	13	7282	3.3915	29.7
					21-30yr	All	50	24429	2.7545	15.7
					21-30yr	Port	28	5389	2.9041	18.2
					21-30yr	Trad	22	19040	2.7121	15.1
					31-40yr	All	50	18353	3.0490	21.1
					31-40yr	Port	20	3019	3.1466	23.3
					31-40yr	Trad	30	15334	3.0298	20.7
					41+yr	All	69	39339	2.9291	18.7
					41+yr	Port	4	343	3.7142	41.0
					41+yr	Trad	65	38996	2.9222	18.6
CLRAGEX	Classroom age (yrs)	0.074	0.140	0.021	0-3yr	All	119	18008	3.1670	23.7
					0-3yr	Port	113	14176	3.3898	29.7
					0-3yr	Trad	6	3833	2.3428	10.4
					4-5yr	All	77	12024	3.4363	31.1
					4-5yr	Port	73	10438	3.4393	31.2
					4-5yr	Trad	4	1586	3.4164	30.5
					6-10yr	All	77	14768	2.8560	17.4
					6-10yr	Port	64	8059	2.8287	16.9
					6-10yr	Trad	13	6709	2.8888	18.0
					11-15yr	All	91	21006	3.3021	27.2
					11-15yr	Port	82	14911	3.2553	25.9
					11-15yr	Trad	9	6095	3.4167	30.5
					16+yr	All	201	88144	2.9254	18.6

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					16+yr	Port	80	13588	3.0859	21.9
					16+yr	Trad	121	74557	2.8961	18.1
CLRAGEU	Classroom age (known/unknown)	0.554	0.000	0.679	Known	All	565	153951	3.0383	20.9
					Known	Port	412	61172	3.2240	25.1
					Known	Trad	153	92780	2.9158	18.5
					Unknown	All	245	76204	2.9475	19.1
					Unknown	Port	162	24244	3.2075	24.7
					Unknown	Trad	83	51960	2.8261	16.9
RENOVAT	Major renovations/additions	0.351	0.000	0.722	Yes	All	233	85572	2.8897	18.0
					Yes	Port	124	20170	3.0805	21.8
					Yes	Trad	109	65402	2.8308	17.0
					No	All	535	133876	3.0737	21.6
					No	Port	421	60699	3.2498	25.8
					No	Trad	114	73177	2.9276	18.7
RENOVMAJ	Addition/wall/floor renovations	0.322	0.000	0.191	Yes	All	87	32354	2.7370	15.4
					Yes	Port	42	6191	3.2927	26.9
					Yes	Trad	45	26163	2.6055	13.5
					No	All	681	187094	3.0477	21.1
					No	Port	503	74678	3.2005	24.5
					No	Trad	178	112416	2.9463	19.0
RENOVELE	HVAC or lighting renovations	0.227	0.000	0.614	Yes	All	167	67109	2.8268	16.9
					Yes	Port	79	13864	2.9796	19.7
					Yes	Trad	88	53244	2.7871	16.2
					No	All	601	152339	3.0791	21.7
					No	Port	466	67005	3.2547	25.9

Variable Name	Description	Adj Wald F p_Value for Variable	Adj Wald F p_Value for Room Type	Adj Wald F p_Value for Interaction	Category	Clroom Type	No. Obs	Est. Pop. Size	Est. Log-Scale Mean	Est. Geometric Mean
					No	Trad	135	85335	2.9411	18.9
RENOVRUF	Roof renovations	0.250	0.000	0.164	Yes	All	92	42388	3.0520	21.2
					Yes	Port	36	7744	3.1605	23.6
					Yes	Trad	56	34644	3.0277	20.6
					No	All	676	177059	2.9900	19.9
					No	Port	509	73124	3.2125	24.8
					No	Trad	167	103935	2.8334	17.0
CLRSIZ	Classroom size (sq. ft.)	0.132	0.000	0.016	<600	All	66	20541	2.9720	19.5
					<600	Port	44	5160	2.9272	18.7
					<600	Trad	22	15381	2.9870	19.8
					600-1100	All	538	135029	3.1290	22.9
					600-1100	Port	401	60372	3.2068	24.7
					600-1100	Trad	137	74657	3.0661	21.5
					>1100	All	206	74585	2.7995	16.4
					>1100	Port	129	19883	3.3332	28.0
					>1100	Trad	77	54702	2.6055	13.5
DAMPSET	Outdoor damper min setting	0.697	0.000	0.333	<=10%	All	48	13182	3.1077	22.4
					<=10%	Port	36	6504	3.1614	23.6
					<=10%	Trad	12	6677	3.0554	21.2
					11-20%	All	122	43599	2.9112	18.4
					11-20%	Port	80	14728	3.2496	25.8
					11-20%	Trad	42	28872	2.7385	15.5
					21-40%	All	22	8033	2.8596	17.5
					21-40%	Port	16	2086	3.1958	24.4
					21-40%	Trad	6	5947	2.7417	15.5

Variable Name	Description	Adj Wald F p_Value for Variable	Adj Wald F p_Value for Room Type	Adj Wald F p_Value for Interaction	Category	Clroom Type	No. Obs	Est. Pop. Size	Est. Log-Scale Mean	Est. Geometric Mean
					>40%	All	22	4833	3.1679	23.8
					>40%	Port	16	2106	3.3827	29.4
					>40%	Trad	6	2727	3.0019	20.1
					Unknown	All	484	126550	2.9709	19.5
					Unknown	Port	351	48665	3.1532	23.4
					Unknown	Trad	133	77885	2.8570	17.4
NEWWOOD	New pressed wood last yr	0.079	0.000	0.272	Yes	All	228	61685	3.1894	24.3
					Yes	Port	167	24777	3.3687	29.0
					Yes	Trad	61	36907	3.0689	21.5
					No	All	429	122979	2.8901	18.0
					No	Port	303	42260	3.1485	23.3
					No	Trad	126	80719	2.7548	15.7
					DK	All	81	25704	3.1182	22.6
					DK	Port	57	10719	3.1752	23.9
					DK	Trad	24	14984	3.0775	21.7
NEWCARP	New carpet past yr	0.012	0.000	0.744	Yes	All	138	29489	3.2695	26.3
					Yes	Port	108	14656	3.4504	31.5
					Yes	Trad	30	14833	3.0908	22.0
					No	All	630	189959	2.9604	19.3
					No	Port	437	66213	3.1538	23.4
					No	Trad	193	123746	2.8569	17.4
NEWFLOOR	New flooring past yr	0.040	0.000	0.438	Yes	All	183	46531	3.1991	24.5
					Yes	Port	135	18350	3.4013	30.0
					Yes	Trad	48	28181	3.0674	21.5
					No	All	441	130552	2.9980	20.0

Variable Name	Description	Adj Wald F p_Value for Variable	Adj Wald F p_Value for Room Type	Adj Wald F p_Value for Interaction	Category	Clroom Type	No. Obs	Est. Pop. Size	Est. Log-Scale Mean	Est. Geometric Mean
					No	Port	303	45538	3.2661	26.2
					No	Trad	138	85013	2.8544	17.4
					DK	All	144	42365	2.7974	16.4
					DK	Port	107	16981	2.8411	17.1
					DK	Trad	37	25384	2.7682	15.9

4. DISCUSSION

The specific objectives outlined in Section 1.2 were accomplished. Based on the response rate, sample sizes, and sampling procedures employed in this study, the data obtained can be considered representative of the target populations (after appropriate weighting) of schools, portable classrooms, and traditional classrooms. A large amount of comprehensive data was obtained making this the first major study of this type in California, if not the United States. A discussion of the general highlights resulting from the survey information is provided below.

4.1 Formaldehyde Data Quality

The quality of the formaldehyde data directly impacts the interpretation of the results of the study. The estimate of precision as measured by the median RSD of duplicate field samples of 10% was achieved for those cases where both members of the pair were detected (i.e., >6 ppb). Laboratory LODs ranged from 4 to 13 ppb, and averaged about 6 ppb. The LOD based on standard deviations of the field blanks was 12 ppb. These estimates approximate the one given in the method description provided by NIOSH. Based on these measures, the quality of the formaldehyde data resulting from this phase of the study was excellent.

4.2 Survey Response Data Quality

Response rates at the school-level were all less than 50%, as summarized below:

- 44.7% for FQ or TQ data
- 40.3% for FQ data
- 41.9% for formaldehyde monitoring data.

Although these response rates are relatively low, they are not atypical for mail surveys.

On the other hand, for the schools that responded, the conditional classroom-level response rates were good:

- 93.6% for TQ data
- 87.3% for FQ data
- 95.6% for formaldehyde monitoring data
- 82.5% for all three.

Hence, the greatest potential for bias occurs at the school level. Nonresponse bias could occur, for example, if schools with severe indoor environmental quality (IEQ) problems were less likely to participate in this study than schools without severe IEQ problems..

The combined (unconditional) classroom-level response rates range from 34.5% for all three data sets (TQ, FQ, and formaldehyde) to 41.9% for the TQ data alone.

The primary reason for relatively low response rates in Phase I of this study was the timing of the study. We started late in the school year; the first mailing to principals was on April 2, 2001. As a result, we did not go through all the usual steps, like getting superintendent approvals before contacting principals, and the schools were pressed for time because of spring breaks and end-of-year testing. A well-executed mail survey requires considerable calendar time, especially for a survey of schools or other organizations. Detailed recommendations for improving response rates are provided in Section 6.

4.3 Characterization of the Target Population of Schools

The target population of schools, an estimated 6,924 schools, is comprised of mostly suburban schools (73.8%) and mostly elementary schools (59.3%). Facility managers reported a list of common characteristics of the target schools that are identified in Section 3.3.1. A remarkable high percentage (52.1%) received some type of environmentally related complaint during the school year. The ranking of portable-classroom complaints (with percent shown in parentheses) was: Roof leaks (60.9%), Air Quality/Odor (51.2%), Temperature (50.0%), Mold (25.5%), Plumbing leaks (20.4%), and Noise (19.7). The rankings of traditional-classroom complaints were similar, although the percentages were generally lower: Roof Leaks (44.2%), Temperature (40.9%), Air Quality/Odor (31.0%), Plumbing Leaks (30.1%), Mold (16.3%), and Noise (14.8%). Many of these complaints may be interrelated, for example, noise, temperature, mold, and air quality/odor are all affected by ventilation. Such school-level comparisons can be misleading, however, due to the differences in the numbers of classrooms of the two types, and the frequencies of complaints.

Most types of environmental complaints (roof leaks, air quality/odor, mold, temperature, noise) were more prevalent for portable classrooms, especially for air quality/odor with a 20% increase. The differences in percentages between the portables and the traditional are undoubtedly related in part to the disparity in the age distributions for the two types of rooms. For example, newer construction is more likely to off-gas organic vapors (including formaldehyde) that would influence complaints about air quality and odor. Complicating the assessment of association between the age distribution of the two types of classrooms is the inherent differences in construction and operation between the two types. Further examination of the interaction between these factors will be closely examined in the Phase II monitoring study.

Temperature complaints, as reported by facility managers, are higher for portable classrooms (50%) than traditional classrooms (40%), although as the next section indicates, the teachers in portable classrooms reported that they are generally more satisfied with temperatures than teachers in traditional classrooms. Although this appears to be a contradiction, it is likely an artifact of the way the information was collected and what that information is intended to represent. As noted above, facility manager reports of complaints represent a school-wide summary over all the classrooms of a given type. However, different numbers of traditional and portable classrooms occur within schools and the frequencies of complaints may also differ by classroom type. Hence, it is more appropriate to compare the classrooms using classroom-based data rather than school-based data (see Section 4.4).

In general, there was an overall lack of awareness of "Tools for Schools" and a lack of the Integrated Pest Management (IPM) program. This suggests the need for school outreach and training to assist the schools in ways to better address environmental conditions at their school and in their classrooms.

4.4 Characterization of the Target Population of Classrooms

The target population is estimated to consist of 230,156 classrooms; 37.1% of these are estimated to be portable classrooms. Portable classrooms were more prevalent for elementary schools than for middle or high schools. A high percentage (90.4%) of the portables are devoted to general instruction, as compared to 75.1% of the traditionals. Classroom age was not known for many classrooms; however, there is a dramatic difference in the estimated age distributions for portable and traditional classrooms. For instance, 55.3% of the portables are 10 years old or less whereas only 12.4% of the traditionals are. This disparity is undoubtedly partly responsible for many other concomitant differences—e.g., structural characteristics, HVAC characteristics, and types of environmental problems/complaints. As compared to traditional classrooms, for instance, portables tend to have more carpet, more tackable wallboard, more exterior doors, more opening of windows, and more air conditioning (and thermostat control). Teachers in traditional classrooms have a strong preference for traditional classrooms over portable classrooms (84%), whereas 30% of the teachers in portable classrooms prefer their portable classrooms, and only 35% of the teachers in portable classrooms prefer traditional classrooms. Environmental problems/complaints tend to be different in the two types of classrooms (except for pest-related factors such as pesticide usage). Most such problems/complaints were more prevalent in portable classrooms, but plumbing leaks were more prevalent in traditional rooms.

4.5 Formaldehyde Levels in Portable and Traditional Classrooms

Formaldehyde is an irritant and probable human carcinogen. The ARB (1992, 1997) has identified it as a Toxic Air Contaminant, and the Office of Environmental Health Hazard Assessment (OEHHA, 2002) has listed it as a carcinogen requiring Proposition 65 warnings.

Valid indoor-air formaldehyde concentration data were obtained for 911 classrooms. For the target population (230,156 classrooms), it was estimated that only about 3% had non-detectable concentration levels (i.e., less than 6 ppb). This was true for both types of classrooms. Otherwise, some distinct differences in the distributions were evident, with the portables having higher levels.

	Portables	**Traditionals**	**All**
Mean (ppb)	32.4	23.7	27.0
Median (ppb)	27.1	20.0	22.0
90th Percentile (ppb)	57.1	42.8	50.3
% Pop. >27 ppb	50.3%	29.0%	36.9%

From the above table it can be seen that 50% of the portable classrooms are probably over the draft 8-hour indoor reference exposure level (IREL) of 27 ppb (Broadwin, 2000) for many weeks in the school year, indicating that many of the students and teachers might experience eye, nose, and throat irritation while in their classrooms. Furthermore, 4% of the

portables are estimated to exceed the acute reference exposure level (REL) of 76 ppb (OEHHA, March 1999), indicating a potential risk for short-term irritation and other acute effects. In addition:

- nearly all classrooms are well above the current Chronic REL of 2.4 ppb (OEHHA) and typical annual means for outdoor air in California (3-5 ppb);
- other irritants and carcinogens may also be present in the classrooms, potentially adding to any health effects from formaldehyde;
- traditional classrooms have markedly lower formaldehyde levels than portable classrooms, even when comparing only newer classrooms, but nonetheless, nearly 30% of the traditional classrooms exceed the draft IREL (27 ppb).

It should be pointed out that the study measurements are 10-day average levels of formaldehyde, which are screening method estimates that do not directly compare to standards and guidelines based on shorter time periods. However, the measured levels of formaldehyde are probably conservative estimates of concentrations over 1 day or less, because peak short-term averages are usually higher than longer-term averages and are probably a conservative estimate of exposures over shorter time periods. The measured formaldehyde concentration levels from this study suggest the presence of significant indoor sources of formaldehyde and/or that there is inadequate ventilation with outdoor air, especially in newer portable classrooms, but also in traditional classrooms. Further analysis of these sources and the ventilation characteristics will be explored in the subsequent phase of the PCS.

A number of factors appear to be associated with formaldehyde levels in both types of rooms. The following variables showed statistically significant main effects ($p < 0.05$) in the analysis of variance (ANOVA) models that were used to identify the key factors associated with formaldehyde levels:

- Geographic region: Higher formaldehyde levels occur in the southern region, possibly due to the average higher temperatures
- Time of formaldehyde sample: Higher formaldehyde levels occur later in the school year, e.g., June/July when there are typically higher temperatures and more air-conditioning usage. (Note that the sampling period only covered the period of April through the end of the school year.)
- Overall air quality rating: There are differences between the levels of this variable, but there is not a logical pattern to them.
- Nose symptoms past 2 weeks: Higher formaldehyde levels are found in those rooms where teachers reported frequent nasal problems.
- New carpet: Higher formaldehyde levels are found in those rooms with new carpet in the past year.
- New flooring: Higher formaldehyde levels are found in those rooms with new flooring in the past year.
- New furnishing odor: Higher formaldehyde levels are observed for rooms in which new furnishing odors are present; this effect is more pronounced for the portables than for the traditional classrooms (i.e., this variable also exhibits an interaction with room type).

The last three items relate to building materials. These factors and building age probably act together as covariates and should be examined together in future data analyses. Other variables showed a significant interaction effect (with room type) in the ANOVA models. These were the following:

- Open door to outside: There is little difference in formaldehyde levels between portable and traditional classrooms for rooms with exterior doors frequently open, consistent with the notion that there would be increased outdoor air flow into the classroom, diluting formaldehyde concentration effects; when doors are infrequently opened, portables tend to have somewhat higher levels (geometric mean of 25.9 vs. 17.8 ppb for traditionals).
- Air freshener used: Portable classrooms tend to have higher formaldehyde levels than traditional classrooms in rooms where air fresheners are not used, but similar when they are used. This may be a significant indoor source of the carcinogen, paradichlorobenzene, and of organic compounds such as limonene that can react with ozone to produce indoor formaldehyde and other pollutants. Elimination of air fresheners from use in classrooms suggest a potential reduction of formaldehyde levels and possibly other organics that will be measured in the second phase of this study.
- Throat symptoms at home: A different pattern was observed for portable and traditional classrooms, but one category for traditionals had a small sample size.
- Classroom age (2nd version): Portable classrooms tend to have higher formaldehyde levels than traditional classrooms in the newest age group (0 to 3 years); for the other age groups, there is not much difference between the two types of rooms.
- Classroom size: A larger difference in formaldehyde levels between portable classrooms and traditional classrooms occurs for larger rooms (>1100 se feet). It should be pointed out that it is not intuitively obvious that formaldehyde levels would be higher in larger portable classrooms, and room size was not significant for all rooms. This suggests that activities, possibly other types of sources, and other factors such as ventilation may be accounting for this larger difference between the two classroom types. Further data analysis is warranted to try to ascertain the reasons for the differences.

Among all the ANOVA models, the room type variable, adjusted for the other variables appearing in the model, is always highly significant except for the models involving classroom age (both versions of the variable, CLRAGE and CLRAGEX). For these models the effect of room type, after adjustment, is non-significant, suggesting that at least part of the overall differences between the room types is due to the disparity in their age distributions. The sample included 250 portable classrooms 10 years old or less, but only 23 traditional classrooms in this age range. The estimated percentages of classrooms in this age range having formaldehyde concentrations above 27 ppb were 57.3% for the portables and 12.8% for the traditionals. Less difference between the room types was evident for the older age groups.

Recommendations related to these findings would involve methods to dilute the concentrations of formaldehyde resulting from indoor building materials, and indoor furnishings and sources, especially during the first 2-3 years. This could require better installation and maintenance of HVAC systems with constant fan operation especially in the early years. Steps

may be required to reduce the noise of these systems while in operation so that they are not shut down during classroom use which is often the case.

Additional ANOVA models that incorporate multiple factors can be carried out in the same manner as those described above (for two factors) to examine further some of the important and interesting findings suggested by the above models.

5. SUMMARY AND CONCLUSIONS

The Phase I study involved a mail survey that was carried out in the spring of 2001 with data receipt continuing through the summer of 2001. It involved a probability sample of California public schools (and classrooms) having one or more portable classrooms. Facility managers provided school-level data (n = 384) and classroom-level data (n=1,133), via a Facilities Questionnaire (FQ). Teachers provided additional classroom level data (n = 1,181), via a Teacher Questionnaire (TQ). The classroom data were collected for three classrooms, usually two portable classrooms and one traditional classroom. For a subsample of the classrooms, air monitors were placed in the classrooms to collect indoor air samples that were analyzed to determine formaldehyde concentration levels (n = 911). This is the largest, most comprehensive study of indoor environmental quality in California public schools to date.

For the most part, the methods and materials used in the study were successful. The formaldehyde monitoring data appeared to be of acceptable quality in terms of completeness, relative precision, and sensitivity, with 97% of the measurements above the LOD. The major problem areas were the following:

- Overall response rate: Timing of the survey conflicted with the end of school year activities.
- In general, poor response rates at the school-level were achieved in the Phase I study (40 to 45%, depending on the type of data). Once having achieved cooperation at the schools, the (conditional) classroom-level response rates were good: 93.6% for TQ data, 87.3% for FQ data, 95.6% for formaldehyde monitoring data, and 82.5% for all three. Hence the combined (unconditional) classroom level response rates were 41.9% for TQ data, 39.1% for FQ data, 40.1% for formaldehyde monitoring data, and 34.5% for all three.
- Classroom identification: Teachers and facility managers were instructed regarding how to select and identify (label A, B or C) the classrooms, but this was not consistently done. This led to situations where it was difficult to identify (a) whether the two respondents were reporting on the same room, and (b) whether that room was a portable or a traditional classroom. These problems complicated the calculation of sampling weights and the merging of files.
- Questionnaire scanning: One item was inadvertently not scanned and some difficulties were encountered with others (e.g., dates). Several other questionnaire items originally designated as allowing a single response had multiple responses for a significant number of respondents. These questionnaire items had to be manually reviewed in order to enter the data.

The target population of schools, an estimated 6,924 schools, is comprised of mostly suburban schools (73.8%) and mostly elementary schools (59.3%). Facility managers reported that only about 29% of the schools were less than 30 years old, that the majority (54.4%) of the schools have 10 or fewer portable classrooms, and that over half (52.1%) of them received some type of environmentally related complaint within the year.

The target population of classrooms is estimated to consist of 230,156 classrooms; 37.1% of these are estimated to be portable classrooms. Portable classrooms were more prevalent for elementary schools than for middle or high schools. Most (90.4%) of the portable classrooms were devoted to general instruction, as compared to 75.1% of the traditionals. Classroom age was not known for many classrooms; however, there is a dramatic difference in the estimated age distributions for portable and traditional classrooms. For instance, 55.3% of the portables are 10 years old or less whereas only 12.4% of the traditionals are. This disparity is undoubtedly partly responsible for many other concomitant differences—e.g., structural characteristics, HVAC characteristics, and types of environmental problems/complaints. As compared to traditional classrooms, for instance, portables tend to have more carpet, more tackable wallboard, more exterior doors, more opening of windows, and more air conditioning (and thermostat control).

Most types of environmental complaints (roof leaks, air quality/odor, mold, temperature, noise) were more prevalent for portable classrooms; an exception was plumbing leaks, which was more common in traditional classrooms. Pest related problems seemed to be about the same in portable and traditional classrooms.

Teachers in traditional classrooms have a strong preference for traditional classrooms, whereas teachers in portables tend to be either indifferent or to favor portables.

Valid indoor-air formaldehyde concentration data were obtained for 911 classrooms. For the target population (230,156 classrooms), it was estimated that only about 3% had non-detectable concentration levels (i.e., less than 6 ppb). This was true for both types of classrooms. Otherwise, some distinct differences in the distributions were evident, with the portables having higher levels. The median concentration for portable rooms was 27.1 ppb, for instance, as compared 20.0 ppb for traditional rooms.

Analysis of variance models involving room type and one other selected variable were used to identify factors associated with formaldehyde levels and with portable versus traditional differences. Statistically significant associations were found for geographic region, time of formaldehyde sample, overall air quality rating (teacher), nasal symptoms (teacher), presence of new carpet and new flooring, and presence of new furnishing odors. Other variables showed a significant interaction effect (with room type) in the ANOVA models. These included open door to outside, classroom age, and classroom size.

Among all the ANOVA models, the room type variable, adjusted for the other variable appearing in the model, was always highly significant except for the models involving classroom age. For these models the effect of room type, after adjustment, was non-significant, suggesting that at least part of the overall difference between the room types was due to the disparity in their age distributions.

6. RECOMMENDATIONS

Recommendations that would substantially improve the quality and/or quantity of subsequent mailed surveys to California schools, include:

1. Schedule the survey to begin much earlier in the school year, and to extend across the temperature gradient experienced across the geographical regions of the state.
2. Use Dillman's "tailored design method" for designing and implementing mail and internet surveys (Dillman, 2000).
3. Pre-arrange all school related material so that each form has the school and classroom identifier so that teachers and facility managers would not be able to mis-identify the classroom. This may require that someone select the classrooms before shipping the materials.
4. Allow more time for survey instrument development, testing and electronic processing so that all details will be worked out prior to implementation.
5. Consider use of web-based information collection and transfer to take better advantage of emerging technologies. This should include instructional materials (videos), on-line messaging, and verification checks of information transfer.

If California were to implement a similar survey in the future, we recommend that the survey begin early in the school year and that procedures more like those used for Phase II of this study be implemented in Phase I, also. In particular, we expect that implementing the following procedures would significantly improve response rates relative to those experienced in Phase I:

- Obtain written approval from the district superintendents before mailing anything to the school principals. Provide a template for superintendents to sign and date. Have them mail or fax the signed permission forms to the survey contractor to make it quick and easy for the superintendent to provide his/her written approval.
- Include a copy of the superintendent's signed permission form prominently in the package(s) mailed to the principals. Several principals told us that they discard all requests to participate in research studies that have not been approved by their superintendent.
- Telephone the schools to obtain their site plan or list of classrooms and select the sample classrooms for them, rather than asking the schools to select the sample classrooms themselves. Although cookbook-type instructions were used in Phase I and the sampling process was very simple, many study coordinators had difficulty understanding and correctly implementing the process because of a lack of time to carefully read and follow the instructions.
- Follow-up all nonrespondents with additional mailings and telephone contacts to prompt the schools to complete their data collection.
- Collect data from reluctant respondents by telephone to increase response rates.
- Consider using more robust push-pins or another more robust method of attaching the formaldehyde monitoring tubes to the ceiling to reduce loss due to breakage.
- Further clarify the instructions regarding use of the formaldehyde monitoring tubes to ensure that QC samples are collected correctly, that times and dates are recorded for all samples, and that all tubes are properly sealed before shipment to the lab. Schools

often failed to report the dates and times that tubes were hung and retrieved. This should be emphasized on the study coordinator's checklist and should be discussed with the study coordinator after the sample classrooms have been identified.

Above and beyond these specific steps, applying the following general principles, to the extent possible, also would enhance response rates:

- Use several contacts. The number of repeated contacts has consistently been shown to be directly related to the final response rate (see Dillman, 2000, pg. 149). Hence, reminder postcards and nonresponse follow-up by mail, email, and telephone can make an important difference in the final response rates.
- Use personalized addresses on envelopes and in the salutations of letters. This recommendation may be difficult to implement because the most current California Public Schools Directory is usually one year out-of-date, and the turnover of school staff from year to year is not negligible.
- Use participant incentives so that participating schools and districts receive some direct reward or token of appreciation for their participation. The incentives may be cash, school supplies, books, and/or reports of the study findings, both for the individual school and for the study as a whole. Incentives have consistently been shown to improve response rates.

Another alternative that might improve both the response rates and the timeliness of the study would be to use Web-based data collection instruments, instead of mail questionnaires. Quality checks could be built into the Web-based instruments and email could be used to prompt nonrespondents. However, a pilot test would be needed to determine whether or not teachers and facility managers would be willing to take the initiative to log on to a data collection site and complete their surveys.

Recommendations from the formaldehyde laboratory (Air Quality Research) for improving the quality of the formaldehyde data are provided in Appendix H.

Recommendations from ARB and DHS for reducing formaldehyde levels in schools are provided in Appendix I.

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APPENDIX A

Phase I Survey Instruments and Materials

Appendix A contains the following:

1. Facilities Questionnaire
2. Teacher Questionnaire
3. Superintendent Letter
4. Principal Letter
5. Postcard to Superintendent
6. Postcard to Principal
7. Introductory Letter to Principal
8. Introductory Letter to Teacher
9. Introductory Letter to Facility Manager
10. Introductory Letter to Study Coordinator
11. Instructions for Selecting Classrooms
12. Instructions for Formaldehyde Placement
13. Study Coordinator Checklist with Formaldehyde
14. Study Coordinator Checklist without Formaldehyde
15. Study Brochure
16. Preparation for Mailout
17. Thank You/Reminder Postcard
18. Non-response Conversion Letter

California Portable Classroom Study: Facilities Questionnaire

1487

Dear Facility Manager,

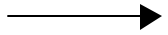
Thank you for participating in the California Portable Classrooms Study. Your support is critical to the success of obtaining useful statewide results. Results from this study will be used to identify potential environmental problems, determine if and to what extent they occur, and make recommendations to resolve current and future problems.

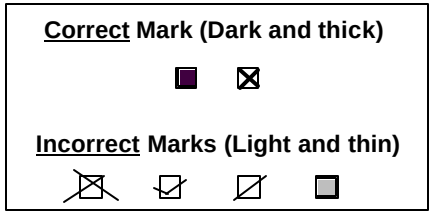
The following questionnaire is designed to be completed by the school's facility manager, who may be in the district office. The district facility manager has been notified that he/she may need to assist the schools in completing the questionnaire. Section B of the questionnaire asks about the school site as a whole, whereas Section C asks about the three sample classrooms. Before completing this questionnaire, please review the instructions below. To fill in boxes, use a black ink pen or the enclosed #2 pencil to apply dark marks to the questionnaire boxes. Please do not fold this questionnaire.

After you have finished the questionnaire, please seal it in the white envelope and return it and a copy of the school site map to the study coordinator. If you have any questions about the questionnaire, please call Mr. Michael Phillips, the RTI Survey Manager, at 1-800-334-8571, Ext. 6276. Call before 2:00 pm Pacific time or leave a voice mail message.

FILLING IN BOXES:

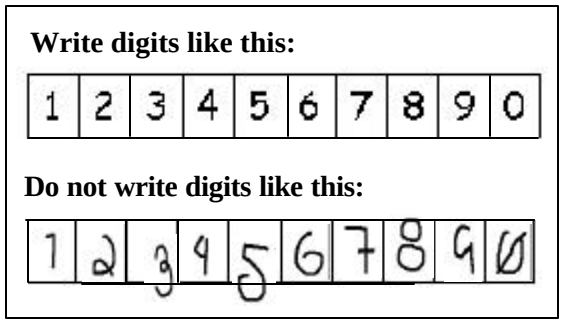
It is important that you completely fill in (or make a dark X in) the boxes next to your answers and print clearly. Listed to the right are examples of correct and incorrect ways to mark your answers.





PRINTING NUMBERS IN BOXES:

Print one number per box. Listed to the right are examples of correct and incorrect ways to print text into the boxes. The numbers should be printed with solid connected lines and should not touch or cross any of the box lines. Do not cross zeroes or sevens.



California Portable Classroom Study: Facilities Questionnaire

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Section A. Respondent Information

Please fill in today's date (mm-dd-yy) Month ☐☐ / Day ☐☐ / Year ☐☐

1. Your job category: ☐ facilities manager ☐ assistant manager ☐ maintenance staff ☐ custodial staff ☐ administrative staff ☐ other
2. Your work location is: ☐ district-wide ☐ at this school only ☐ at several sites
3. Years you have worked at this school (in years): ☐ 1 ☐ 2-5 ☐ 6+
4. May we contact you later to verify or clarify your responses, if necessary? ☐ Yes ☐ No
5. If Yes, please enter the following: Phone number ☐☐☐ - ☐☐☐ - ☐☐☐☐

   E-mail address: _____

B. School Site Characteristics and Maintenance Practices *(Fill in all that apply for the entire site)*

School Site

6. Year of the school's original construction: ☐☐☐☐
7. Total number of classrooms at this site: Portable- relocatable ☐☐☐ Permanent- traditional ☐☐☐
8. Building density near the school: ☐ Urban ☐ Suburban ☐ Rural
9. Nearby areas or typical activities (within 1/4 mile) : ***(Mark <u>all</u> that apply)***

Roadways:	☐ busy intersection(s)	☐ congested streets	☐ freeways	☐ dirt or gravel roads	☐ serpentine road cover	☐ none
Commercial:	☐ service stations	☐ heavy industrial	☐ light industrial	☐ truck route or depot	☐ rail route or depot	☐ none
Agriculture:	☐ livestock	☐ row crops	☐ orchards	☐ open fields with exposed soil	☐ none	
Diesel engines:	☐ school buses	☐ transit buses	☐ trucks	☐ trains	☐ farm equipment	☐ generators	☐ none
Waste facilities:	☐ sewage treatment	☐ municipal waste	☐ composting	☐ recycling	☐ none	

California Portable Classroom Study: Facilities Questionnaire

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HVAC Maintenance:

10. HVAC maintenance done by: ***(Mark all that apply)***
☐ school staff ☐ district staff ☐ contractor ☐ none ☐ don't know ☐ not applicable

11. Where are maintenance logs for HVAC kept? ***(Mark all that apply)***
☐ not kept ☐ on equipment ☐ paper files ☐ computer ☐ contractor ☐ other ☐ don't know

12. Typical thermostat setting during classes (degrees F): Heating ☐☐ Cooling ☐☐

13. Are thermostats usually set back or shut down? ***(Mark all that apply)***
☐ never ☐ nights ☐ weekends ☐ holidays ☐ summer vacation ☐ don't know ☐ not applicable

14. Daily start time of system on school days: ☐ when first class starts ☐ when teacher arrives ☐ 1-2 hours before classes start ☐ don't know ☐ not applicable

15. Regular inspection and maintenance: ☐ Yes ☐ No ☐ not applicable
→ If Yes, how frequently are the following items inspected and maintained (check one)?

Outdoor air damper setting:	☐ monthly	☐ quarterly	☐ annually	☐ more than annually	☐ never	☐ don't know	☐ not applicable
Coils cleaned:	☐ monthly	☐ quarterly	☐ annually	☐ more than annually	☐ never	☐ don't know	☐ not applicable
Condensate pan and drain:	☐ monthly	☐ quarterly	☐ annually	☐ more than annually	☐ never	☐ don't know	☐ not applicable
HVAC filter replaced:	☐ monthly	☐ quarterly	☐ annually	☐ more than annually	☐ never	☐ don't know	☐ not applicable
Heat exchanger checked:	☐ monthly	☐ quarterly	☐ annually	☐ more than annually	☐ never	☐ don't know	☐ not applicable

Other Maintenance Practices:

16. Frequency of usual custodial services for classrooms:

Trash removed:	☐ 5 days per week	☐ 3-4 days per week	☐ 1-2 days per week	☐ 1-2 per month	☐ <1 per month
Vacuumed, swept, and dusted:	☐ 5 days per week	☐ 3-4 days per week	☐ 1-2 days per week	☐ 1-2 per month	☐ <1 per month
Carpets steam- or dry-cleaned:	☐ quarterly	☐ annually	☐ >annually	☐ don't know	☐ not applicable

17. General building maintenance and repairs are done by: ***(Mark all that apply)***
☐ school staff ☐ district staff ☐ contractor ☐ none ☐ don't know

18. Number of building maintenance staff assigned to the school (full-time school or contract personnel):
☐ <1 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5+

19. Are you aware of the U.S. EPA's IAQ Tools for Schools Program?
☐ Yes ☐ No → If Yes, does your school use their kit? ☐ Yes ☐ No ☐ don't know

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Pesticides Practices:

(For Questions 20 -23, mark all that apply)

20. Types of pesticides used at the school: ☐ lawn care ☐ crack & crevice ☐ spray can ☐ other ☐ none ☐ don't know

21. Regularly scheduled applications: ☐ lawn care ☐ crack & crevice ☐ spray can ☐ other ☐ none ☐ don't know

22. Routine applications done by: ☐ School staff ☐ District staff ☐ Pest control contractor ☐ none ☐ don't know

23. Usual frequency of classroom applications: ☐ weekly ☐ monthly ☐ quarterly ☐ annually ☐ every 2 years or more ☐ don't know ☐ not applicable

24. Have you implemented an Integrated Pest Management (IPM) program at this site?: ☐ Yes ☐ No ☐ don't know

Environmental Complaints

25. In the last year, have major complaints of environmental conditions been made for any classroom at this site? ☐ Yes ☐ No ☐ don't know

→ If Yes, please check a number category below, for both portable and permanent classrooms:

Type of Complaint	Number of Portable - Relocatable Classrooms	Number of Permanent -Traditional Classrooms
Roof leak	☐ none ☐ 1 ☐ 2-4 ☐ 5-9 ☐ 10+	☐ none ☐ 1 ☐ 2-4 ☐ 5-9 ☐ 10+
Plumbing leak or flood	☐ none ☐ 1 ☐ 2-4 ☐ 5-9 ☐ 10+	☐ none ☐ 1 ☐ 2-4 ☐ 5-9 ☐ 10+
Air quality/odor	☐ none ☐ 1 ☐ 2-4 ☐ 5-9 ☐ 10+	☐ none ☐ 1 ☐ 2-4 ☐ 5-9 ☐ 10+
Mold	☐ none ☐ 1 ☐ 2-4 ☐ 5-9 ☐ 10+	☐ none ☐ 1 ☐ 2-4 ☐ 5-9 ☐ 10+
Temperature	☐ none ☐ 1 ☐ 2-4 ☐ 5-9 ☐ 10+	☐ none ☐ 1 ☐ 2-4 ☐ 5-9 ☐ 10+
Noise	☐ none ☐ 1 ☐ 2-4 ☐ 5-9 ☐ 10+	☐ none ☐ 1 ☐ 2-4 ☐ 5-9 ☐ 10+

26. Who responds to environmental complaints or concerns in the school's buildings?: ***(Mark all that apply)***

☐ district maintenance staff ☐ district health & safety staff ☐ district risk management staff
☐ school nurse ☐ outside consultant (industrial hygienist) ☐ other ☐ none ☐ don't know

PROCEED TO SECTION C, QUESTIONS FOR CLASSROOMS A, B, AND C →

California Portable Classroom Study: Facilities Questionnaire

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C. Classroom Description *(Fill in all that apply for each selected Room A, B, and C.)*

Note: DK= don't know and NA= not applicable.

	Room A	Room B	Room C
Please fill in the room numbers/names:	☐☐☐☐☐	☐☐☐☐☐	☐☐☐☐☐
Building Characteristics:			
27. Portable or relocatable classroom:	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
→ If Yes, name of manufacturer	_____ ☐ DK	_____ ☐ DK	_____ ☐ DK
→ Type of portable?	☐ DSA ☐ DOH ☐ DK	☐ DSA ☐ DOH ☐ DK	☐ DSA ☐ DOH ☐ DK
→ Number of times relocated in the last 3 years?	☐	☐	☐
28. Date of construction or manufacture (approximate year)	☐☐☐☐	☐☐☐☐	☐☐☐☐
29. Major renovations or additions: ***(Mark <u>all</u> that apply)***	☐ addition ☐ roof ☐ lighting ☐ floor ☐ HVAC ☐ wall	☐ addition ☐ roof ☐ lighting ☐ floor ☐ HVAC ☐ wall	☐ addition ☐ roof ☐ lighting ☐ floor ☐ HVAC ☐ wall
30. Major remediations: ***(Mark <u>all</u> that apply)***	☐ asbestos ☐ mold ☐ lead ☐ other	☐ asbestos ☐ mold ☐ lead ☐ other	☐ asbestos ☐ mold ☐ lead ☐ other
31. Classroom size (square feet):	☐ <600 ☐ 600-1100 ☐ 1101-2000 ☐ >2000	☐ <600 ☐ 600-1100 ☐ 1101-2000 ☐ >2000	☐ <600 ☐ 600-1100 ☐ 1101-2000 ☐ >2000
32. Number of classrooms in the building:	☐ 1 ☐ 2 ☐ 3-5 ☐ 6-9 ☐ 10 or more	☐ 1 ☐ 2 ☐ 3-5 ☐ 6-9 ☐ 10 or more	☐ 1 ☐ 2 ☐ 3-5 ☐ 6-9 ☐ 10 or more

California Portable Classroom Study: Facilities Questionnaire

1487

	Room A	Room B	Room C
33. Floor level of this classroom	☐ below grade ☐ ground ☐ 2nd story ☐ 3rd story or more	☐ below grade ☐ ground ☐ 2nd story ☐ 3rd story or more	☐ below grade ☐ ground ☐ 2nd story ☐ 3rd story or more
34. Type of building foundation	☐ below grade ☐ slab on grade ☐ raised floor	☐ below grade ☐ slab on grade ☐ raised floor	☐ below grade ☐ slab on grade ☐ raised floor
→ If Raised Floor, type of ground cover: ***(Mark <u>all</u> that apply)***	☐ dirt ☐ gravel ☐ plastic ☐ concrete or asphalt ☐ other	☐ dirt ☐ gravel ☐ plastic ☐ concrete or asphalt ☐ other	☐ dirt ☐ gravel ☐ plastic ☐ concrete or asphalt ☐ other
→ If Raised Floor, inches above ground :	☐ <6 ☐ 6-11 ☐ 12-17 ☐ 18 or more	☐ <6 ☐ 6-11 ☐ 12-17 ☐ 18 or more	☐ <6 ☐ 6-11 ☐ 12-17 ☐ 18 or more
35. Roof last replaced (in years):	☐ 1-4 ☐ 5-9 ☐ 10-19 ☐ 20 or more ☐ DK	☐ 1-4 ☐ 5-9 ☐ 10-19 ☐ 20 or more ☐ DK	☐ 1-4 ☐ 5-9 ☐ 10-19 ☐ 20 or more ☐ DK
36. Type of roof	☐ membrane ☐ composite shingle or roll ☐ shake ☐ metal ☐ tar and gravel ☐ other	☐ membrane ☐ composite shingle or roll ☐ shake ☐ metal ☐ tar and gravel ☐ other	☐ membrane ☐ composite shingle or roll ☐ shake ☐ metal ☐ tar and gravel ☐ other
37. Roof pitch	☐ flat ☐ sloped ☐ both	☐ flat ☐ sloped ☐ both	☐ flat ☐ sloped ☐ both
38. Suspended ceilings:	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

California Portable Classroom Study: Facilities Questionnaire

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	Room A	Room B	Room C
39. Are any of these within 50 feet of the classroom? ***(Mark <u>all</u> that apply)***	☐ parking lot or roadway ☐ loading dock ☐ art room ☐ flue exhaust ☐ shop ☐ dumpster ☐ cafeteria ☐ custodial room ☐ science lab ☐ bathroom	☐ parking lot or roadway ☐ loading dock ☐ art room ☐ flue exhaust ☐ shop ☐ dumpster ☐ cafeteria ☐ custodial room ☐ science lab ☐ bathroom	☐ parking lot or roadway ☐ loading dock ☐ art room ☐ flue exhaust ☐ shop ☐ dumpster ☐ cafeteria ☐ custodial room ☐ science lab ☐ bathroom
40. Peeling paint?	☐ inside ☐ outside ☐ none	☐ inside ☐ outside ☐ none	☐ inside ☐ outside ☐ none
<u>HVAC Characteristics</u>			
41. Packaged HVAC unit	☐ Yes ☐ No ☐ DK ☐ NA	☐ Yes ☐ No ☐ DK ☐ NA	☐ Yes ☐ No ☐ DK ☐ NA
42. Location of main air handler unit (AHU)	☐ floor ☐ wall ☐ roof ☐ other ☐ DK ☐ NA	☐ floor ☐ wall ☐ roof ☐ other ☐ DK ☐ NA	☐ floor ☐ wall ☐ roof ☐ other ☐ DK ☐ NA
43. Type of main heating system:	☐ forced air ☐ radiant ☐ solar ☐ other ☐ DK ☐ NA	☐ forced air ☐ radiant ☐ solar ☐ other ☐ DK ☐ NA	☐ forced air ☐ radiant ☐ solar ☐ other ☐ DK ☐ NA
44. Heating fuel or energy type:	☐ electric ☐ gas ☐ solar ☐ other ☐ DK ☐ NA	☐ electric ☐ gas ☐ solar ☐ other ☐ DK ☐ NA	☐ electric ☐ gas ☐ solar ☐ other ☐ DK ☐ NA

California Portable Classroom Study: Facilities Questionnaire

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	Room A	Room B	Room C
45. Type of main cooling system:	☐ central AC ☐ window AC ☐ swamp ☐ other ☐ DK ☐ NA	☐ central AC ☐ window AC ☐ swamp ☐ other ☐ DK ☐ NA	☐ central AC ☐ window AC ☐ swamp ☐ other ☐ DK ☐ NA
46. Mode of supply fan operation	☐ Auto (only when heating or cooling) ☐ Always on ☐ Always off ☐ Other ☐ DK ☐ NA	☐ Auto (only when heating or cooling) ☐ Always on ☐ Always off ☐ Other ☐ DK ☐ NA	☐ Auto (only when heating or cooling) ☐ Always on ☐ Always off ☐ Other ☐ DK ☐ NA
47. Economizer	☐ Yes ☐ No ☐ DK ☐ NA	☐ Yes ☐ No ☐ DK ☐ NA	☐ Yes ☐ No ☐ DK ☐ NA
48. Minimum setting of outdoor air damper (%):	☐☐ % ☐ don't know	☐☐ % ☐ don't know	☐☐ % ☐ don't know
49. Type of return vents: ***(Mark <u>all</u> that apply)***	☐ open plenum ☐ ducted ☐ other ☐ DK ☐ NA	☐ open plenum ☐ ducted ☐ other ☐ DK ☐ NA	☐ open plenum ☐ ducted ☐ other ☐ DK ☐ NA
50. Filter type: ***(Mark <u>all</u> that apply)***	☐ fiberglass mesh ☐ pleated ☐ high efficiency ☐ other ☐ DK ☐ NA	☐ fiberglass mesh ☐ pleated ☐ high efficiency ☐ other ☐ DK ☐ NA	☐ fiberglass mesh ☐ pleated ☐ high efficiency ☐ other ☐ DK ☐ NA
51. Type of supply ductwork: ***(Mark <u>all</u> that apply)***	☐ flexible ☐ sheet metal ☐ other ☐ DK ☐ NA	☐ flexible ☐ sheet metal ☐ other ☐ DK ☐ NA	☐ flexible ☐ sheet metal ☐ other ☐ DK ☐ NA
52. Thermostat control by:	☐ maintenance staff ☐ teacher ☐ central energy management system ☐ other ☐ DK ☐ NA	☐ maintenance staff ☐ teacher ☐ central energy management system ☐ other ☐ DK ☐ NA	☐ maintenance staff ☐ teacher ☐ central energy management system ☐ other ☐ DK ☐ NA

California Portable Classroom Study: Facilities Questionnaire

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	Room A	Room B	Room C
Auxiliary Equipment			
53. Space heater(s): ***(Mark all that apply)***	☐ electric ☐ gas ☐ propane ☐ kerosene ☐ wood ☐ other ☐ none	☐ electric ☐ gas ☐ propane ☐ kerosene ☐ wood ☐ other ☐ none	☐ electric ☐ gas ☐ propane ☐ kerosene ☐ wood ☐ other ☐ none
54. Humidity control	☐ humidifier ☐ dehumidifier ☐ NA	☐ humidifier ☐ dehumidifier ☐ NA	☐ humidifier ☐ dehumidifier ☐ NA
55. Fans ***(Mark all that apply)***	☐ ceiling ☐ window ☐ lab or range hood ☐ other ☐ DK ☐ none	☐ ceiling ☐ window ☐ lab or range hood ☐ other ☐ DK ☐ none	☐ ceiling ☐ window ☐ lab or range hood ☐ other ☐ DK ☐ none
Water and Moisture			
56. Type of flooding or leaks ***(in the last 3 years)***: ***(Mark all that apply)***	☐ roof leak ☐ plumbing leak ☐ ground level ☐ other ☐ DK ☐ none	☐ roof leak ☐ plumbing leak ☐ ground level ☐ other ☐ DK ☐ none	☐ roof leak ☐ plumbing leak ☐ ground level ☐ other ☐ DK ☐ none
57. Visible signs of mold growth ***(in the last 3 years)***: ***(Mark all that apply)***	☐ window ☐ wall ☐ carpet ☐ ceiling ☐ classroom item ☐ furniture ☐ cabinet ☐ other ☐ DK ☐ none	☐ window ☐ wall ☐ carpet ☐ ceiling ☐ classroom item ☐ furniture ☐ cabinet ☐ other ☐ DK ☐ none	☐ window ☐ wall ☐ carpet ☐ ceiling ☐ classroom item ☐ furniture ☐ cabinet ☐ other ☐ DK ☐ none
58. Lawn sprinklers spray the outside wall	☐ Yes ☐ No ☐ DK	☐ Yes ☐ No ☐ DK	☐ Yes ☐ No ☐ DK
59. Standing water within 50 feet of the building?	☐ never ☐ occassionally ☐ frequently ☐ DK	☐ never ☐ occassionally ☐ frequently ☐ DK	☐ never ☐ occassionally ☐ frequently ☐ DK

California Portable Classroom Study: Facilities Questionnaire

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	Room A	Room B	Room C
Other Room Characteristics ***Mark if the room had any of the following in the last year.***			
60. New pressed wood-products:	☐ bookcases or cabinets ☐ tack boards ☐ desks ☐ chairs ☐ DK ☐ none	☐ bookcases or cabinets ☐ tack boards ☐ desks ☐ chairs ☐ DK ☐ none	☐ bookcases or cabinets ☐ tack boards ☐ desks ☐ chairs ☐ DK ☐ none
61. Painting, caulking or sealing:	☐ Yes ☐ No ☐ DK	☐ Yes ☐ No ☐ DK	☐ Yes ☐ No ☐ DK
62. New floor covering:	☐ carpet ☐ linoleum ☐ vinyl ☐ rubber ☐ wood ☐ other ☐ DK	☐ carpet ☐ linoleum ☐ vinyl ☐ rubber ☐ wood ☐ other ☐ DK	☐ carpet ☐ linoleum ☐ vinyl ☐ rubber ☐ wood ☐ other ☐ DK
63. Pesticides used in classroom:	☐ crack & crevice ☐ fumigation ☐ bomb ☐ spray can ☐ traps ☐ powder, pellet ☐ other ☐ DK ☐ none	☐ crack & crevice ☐ fumigation ☐ bomb ☐ spray can ☐ traps ☐ powder, pellet ☐ other ☐ DK ☐ none	☐ crack & crevice ☐ fumigation ☐ bomb ☐ spray can ☐ traps ☐ powder, pellet ☐ other ☐ DK ☐ none
Lighting Fixtures			
64. Type of light bulbs: ***(Mark all that apply)***	☐ T8 fluorescent ☐ T12 fluorescent ☐ incandescent ☐ DK ☐ none	☐ T8 fluorescent ☐ T12 fluorescent ☐ incandescent ☐ DK ☐ none	☐ T8 fluorescent ☐ T12 fluorescent ☐ incandescent ☐ DK ☐ none

Comments: If you have any comments on site and classroom conditions, or on this study, please respond below.

_____

_____

_____

57060

TEACHER QUESTIONNAIRE

Dear Teacher,

Thank you for participating in the California Portable Classrooms Study. Your support is critical to the success of obtaining useful statewide results. Results from this study will be used to identify potential environmental problems, determine if and to what extent they occur, and make recommendations to resolve current and future problems. Be assured that your responses remain confidential and will only be reported in summary reports to goverment researchers.

Please complete the following questionnaire regarding the room identified at the beginning of Section B. Please review the instructions below describing the correct and incorrect way to fill in boxes. Use a black ink pen or the enclosed #2 pencil to apply dark marks to the questionnaire boxes. Please do not fold this questionnaire. After you have finished the questionnaire please seal it in the white envelope and return it to the study coordinator.

If you have any questions about the questionnaire, please call Mr. Michael Phillips, the RTI Survey Manager, at 1-800-334-8571, ext. 6276. Call before 2:00 pm Pacific time or leave a voice mail message.

FILLING IN BOXES:

Correct Mark (Dark and thick)

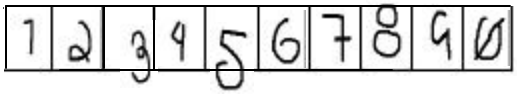
Incorrect Marks (Light and thin)

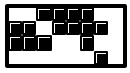
PRINTING NUMBERS IN BOXES:

Write digits like this:

1	2	3	4	5	6	7	8	9	0

Do not write digits like this:





57060

TEACHER QUESTIONNAIRE

Section A. Respondent Information

Please fill in today's date (mm-dd-yy) Month ☐☐ / Day ☐☐ / Year ☐☐

1. Your gender and current age: ☐ male ☐ female ☐☐ years
2. Your job category: ☐ teacher ☐ administrator ☐ facility staff ☐ aide ☐ office staff ☐ other

3. How long have you worked in this room? ☐ Less than all year ☐ all year ☐ 2 ☐ 3+
   - in this school? (years) ☐ 1 ☐ 2-5 ☐ 6-10 ☐ 11-16 ☐ 16+
   - in the teaching profession? (years) ☐ 1 ☐ 2-5 ☐ 6-10 ☐ 11-16 ☐ 16+

Section B. Room Description

Please fill in room number/name: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

4. How much time do you typically spend in this classroom?
   - days of the week: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
   - hours of the day: ☐ less than 3 ☐ 3-6 ☐ more than 6

5. Which term best describes this classroom? ***Choose one:***
   ☐ general instruction classroom ☐ ceramic studio ☐ library ☐ office
   ☐ art room ☐ computer lab ☐ auto/metal shop ☐ none of these
   ☐ science lab ☐ wood shop ☐ music room

6. Which student grade level(s) are taught within this room? ***Mark all that apply:***
   ☐ K ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
   ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ not applicable

7. Do students generally stay in this room or change rooms during the day? ☐ stay ☐ change

8. How many students per class typically occupy this room? ☐☐☐

9. The building this classroom is in: ☐ portable or relocatable ☐ permanent ☐ don't know

10. Which best describes the flooring in this room? ***Mark all that apply:***
    - Carpet: ☐ entire room ☐ partial ☐ area rug ☐ sitting pads
    - Hard: ☐ vinyl/linoleum ☐ wood ☐ rubber ☐ concrete/ceramic ☐ walk-off mat(s)

11. What is the primary wall material in this room? ***Choose one***:
    ☐ sheetrock or plaster ☐ painted cinderblock
    ☐ vinyl-coated tackable wallboard ☐ other or don't know

☐☐☐☐☐☐☐

TEACHER QUESTIONNAIRE

12. What, if any, plumbing is in this room? ☐ none ☐ sink ☐ toilet ☐ fountain

13. How many sides of this room have windows? ☐ none ☐ 1 ☐ 2 ☐ 3 ☐ 4

14. What kinds of windows are in this room? ***Mark <u>all</u> that apply***:

☐ none ☐ windows up to door height (7ft) ☐ windows up to 9 ft
☐ windows above 9 ft ☐ skylights

15. How often do you open windows for natural ventilation, in general?

☐ rarely ☐ occasionally ☐ frequently
☐ most of the time ☐ all of the time ☐ none openable

16. Does a door into this room open directly to the outdoors? ☐ yes ☐ no

- If yes, how often do you leave this door open during the school day, in general?

☐ rarely ☐ occasionally ☐ frequently
☐ most of the time ☐ all of the time

17. Does this room have air conditioning (AC)? ☐ yes ☐ no

18. Is there a thermostat in this room? ☐ yes ☐ no ☐ don't know

- If yes, indicate which is the case:

☐ I can adjust it ☐ it is kept locked ☐ it does not work

Section C. Room Contents & Activities

19. Indicate what kinds of furnishings are in this room. ***Mark <u>all</u> that apply***:

- Table & Desks: ☐ none ☐ solid wood ☐ plastic ☐ metal ☐ pressed wood* ☐ don't know
- Bookcases: ☐ none ☐ solid wood ☐ plastic ☐ metal ☐ pressed wood* ☐ don't know
- Cabinets: ☐ none ☐ solid wood ☐ plastic ☐ metal ☐ pressed wood* ☐ don't know

**Materials such as plywood and particle/fiber board; some may have a thin laminate.*

20. Has the room acquired new furnishings during this school year? ***Mark <u>all</u> that apply***:

☐ none ☐ tables ☐ bookcases ☐ don't know
☐ carpet ☐ desks/chairs ☐ cabinets

21. Do you keep any of the following <u>living items</u> in this room? ***Mark <u>all</u> that apply***:

☐ potted plants or terrarium ☐ birds ☐ mammals
☐ reptiles/amphibians ☐ fish ☐ bugs

TEACHER QUESTIONNAIRE

22. Do you currently have any of the following items in this room? ***Mark <u>all</u> that apply***:

- Copiers: ☐ none ☐ photocopy machine ☐ mimeograph machine ☐ laser printers ☐ carbonless copy paper ☐ laminator
- Appliances: ☐ none ☐ stove or oven ☐ lab burners ☐ refrigerator ☐ washing machine ☐ microwave oven
- Chemicals: ☐ none ☐ cleaning products ☐ lab chemicals ☐ biological specimens stored in chemicals

23. Are any of the following items ever used in this room? ***Mark <u>all</u> that apply***:

- Paints/pens: ☐ never ☐ permanent markers or art pens ☐ oil/acrylic paints ☐ whiteboard markers
- Glues/fluids: ☐ never ☐ correction fluid ☐ rubber cement ☐ epoxy
- Air freshener: ☐ never ☐ plug-in deodorizer ☐ hanging freshener ☐ spray can
- Candles: ☐ never ☐ scented candles ☐ unscented candles ☐ incense
- Air Cleaner: ☐ never ☐ ozone or ion-generating air purifier ☐ portable air (filter) purifier

24. Have <u>you</u> applied any of the following pesticides in this room this year? ***Mark <u>all</u> that apply***:

- Sprays: ☐ never ☐ in the past ☐ currently
- Powders: ☐ never ☐ in the past ☐ currently
- Traps: ☐ never ☐ in the past ☐ currently

Section D. Observations & Impressions

25. Which is your classroom preference at your school?

☐ permanent ☐ portable ☐ no opinion

26. Characterize each of the following as it applies to your room. ***Mark <u>all</u> that apply***:

- Temperature: ☐ generally acceptable ☐ often too cold ☐ often too hot
- Humidity: ☐ generally acceptable ☐ often too humid ☐ often too dry
- Air: ☐ generally acceptable ☐ often too drafty ☐ often too stale or stuffy
- Light: ☐ generally acceptable ☐ too dim ☐ too bright ☐ glare from lights ☐ too much direct sun

TEACHER QUESTIONNAIRE

27. Are there noises that generally disrupt teaching activities in this room? ***Mark <u>all</u> that apply***:

- Inside: ☐ none ☐ lighting (buzz) ☐ other
  ☐ ventilation (fan) ☐ next-room voices
- Outside: ☐ none ☐ mower/blower ☐ aircraft
  ☐ playground ☐ traffic ☐ other

28. Do you ever turn off the heater or air conditioner in this room because of excessive noise?

☐ never ☐ rarely ☐ occasionally ☐ frequently ☐ most of the time

29. Are you aware of past or current pest problems in this room? ***Mark <u>all</u> that apply***:

- Bugs (ants, etc.): ☐ never ☐ in the past ☐ currently
- Rodents (mice, etc.): ☐ never ☐ in the past ☐ currently

30. Indicate if you have experienced any of the following odors in this room. ***Mark <u>one</u> for each***:

	never	**sometimes**	**often**
• Musty odor	☐	☐	☐
• Cleaning products	☐	☐	☐
• Bus/auto exhaust	☐	☐	☐
• New carpet or furniture	☐	☐	☐
• Fresh paint	☐	☐	☐
• Cooking odor	☐	☐	☐
• Pesticides	☐	☐	☐
• Asphalt/tar	☐	☐	☐
• Tobacco smoke	☐	☐	☐
• Trash or dumpster odor	☐	☐	☐
• Sewer/compost	☐	☐	☐
• Fire/smoke odor	☐	☐	☐

31. Have you observed construction activities during school hours this year? ***Mark <u>all</u> that apply***:

- When: ☐ never ☐ in the past ☐ currently ☐ don't know
- Where: ☐ your room ☐ same building ☐ nearby or new building ☐ outdoors ☐ other
- Type: ☐ painting ☐ carpentry ☐ plumbing ☐ flooring ☐ roofing ☐ other

32. Have you observed water leaks, flooding, water stains or visible mold in this room? ***Mark <u>all</u> that apply***:

- Leak or flood: ☐ never ☐ in the past ☐ currently ☐ don't know
  - Type: ☐ roof ☐ window ☐ sink/toilet overflow ☐ sprinkler ☐ plumbing ☐ other
- Water stains: ☐ never ☐ in the past ☐ currently ☐ don't know
  - Where: ☐ walls ☐ ceiling ☐ window sills ☐ carpet/rug/floor ☐ furniture ☐ other
- Visible mold: ☐ never ☐ in the past ☐ currently ☐ don't know
  - Where: ☐ walls ☐ ceiling ☐ window sills ☐ carpet/rug/floor ☐ furniture ☐ other

33. How often are the floors in this room swept or vacuumed?

☐ daily ☐ 2-3/week ☐ weekly
☐ 1-2/month ☐ less than 1/month ☐ don't know

TEACHER QUESTIONNAIRE

34. Do you feel the room receives adequate custodial services? ☐ yes ☐ no
    - If not, what do you feel is needed? ☐ more frequent ☐ more effective ☐ both

35. To whom do teachers direct questions or complaints about temperature, odors, or hygiene in their rooms? ***Mark <u>all</u> that apply***:

    ☐ custodian ☐ principal/administrator ☐ IAQ coordinator

    ☐ facility staff ☐ health & safety staff

36. How many times have you made complaints about such conditions in this room during this school year?

    ☐ never ☐ 1-2 ☐ 3-5 ☐ 6-10 ☐ 11 or more

37. How would you generally characterize the overall environmental quality in this classroom?

    ☐ excellent ☐ good ☐ adequate ☐ poor ☐ very poor

Section E. Symptoms & Related Questions

38. Were you absent in the past two weeks?

    ☐ no ☐ 1-2 days ☐ 3-5 days ☐ more than 5 days

    - Chief cause: ☐ cold or flu ☐ asthma ☐ any other reason
      ☐ allergies ☐ other respiratory

39. In the past two weeks, did you experience any of the following symptoms <u>at school</u>? Indicate if they continued or improved when you were home.

	At school			At home	
	none	**occasional**	**frequent**	**same/worse**	**improves**
• Nose (congestion, runny nose, dry nose)	☐	☐	☐	☐	☐
• Throat (irritation, sore throat, dryness)	☐	☐	☐	☐	☐
• Eyes (irritation, redness, watering, puffiness)	☐	☐	☐	☐	☐
• Skin (dryness, flaking, rash, other irritation)	☐	☐	☐	☐	☐
• Headaches or sinus pain	☐	☐	☐	☐	☐
• Drowsiness or difficulty concentrating	☐	☐	☐	☐	☐
• Dizziness or faintness	☐	☐	☐	☐	☐
• Shortness of breath, wheeze, difficulty breathing	☐	☐	☐	☐	☐
• Upset Stomach	☐	☐	☐	☐	☐

40. Do you have any of the following <u>chronic</u> medical conditions? ***Mark <u>all</u> that apply***:

    ☐ hay fever or other allergies ☐ bronchitis ☐ heart disease

    ☐ asthma ☐ hypertension

    - If you have asthma, how often did you use inhaled asthma medication <u>in the past two weeks</u>?

      ☐ never ☐ 1-2 times per week ☐ most days ☐ every day

41. How many students in your class currently take medication for asthma?

    ☐ don't know ☐ none ☐ 1-2 ☐ 3-5 ☐ 6-10 ☐ 11+

42. Are you currently a smoker? ☐ yes ☐ no

43. Do you live with a smoker? ☐ yes ☐ no

California Portable Classrooms Study

A joint project of the California Air Resources Board and Department of Health Services

California Environmental Protection Agency

Air Resources Board

Gray Davis, Governor

Department of Health Services

April16, 2001 «Expr1»

«district»
Attn: «distcontactname1»
«distaddrline1»
«distcity», «diststate» «distzip»

Dear «distcontactname1»:

We are writing to request your support for the California Portable Classrooms Study. The California Air Resources Board (ARB) and the California Department of Health Services (DHS) are conducting this study to learn more about the environmental health conditions in California's portable classrooms. The ARB and DHS have contracted with Research Triangle Institute (RTI) to assist in the study.

The California Portable Classrooms Study was requested by Governor Davis and mandated by the State Legislature, and is endorsed by the Superintendent of Public Instruction, Ms. Delaine Eastin. Per the California Health & Safety Code (Section 39619.6), the study must be completed by June 30, 2002, and a report provided to the Legislature, including "recommendations to remedy and prevent unhealthful conditions found in portable classrooms." These recommendations will help shape future programs and funding decisions at the State level.

Schools in your district have been randomly selected to participate in this study. The schools in your district listed on the following page will be contacted, and asked to participate in this study. In about a week, RTI will send a study package to the principal of each school listed on the attached page. The package will contain instructions and questionnaires for the school, and the principal will be asked to assign a "study coordinator" to organize and manage these activities. If you would like to review the study package and its contents, please go to the following Web site: http://www.rti.org/units/shsp/projects/cpcs.cfm. The survey has been designed to require minimal effort on the part of school staff.

Your district's participation is critical to the success of the study. We hope you will support this study in your school district, because, to be a valid study, we cannot substitute the schools to be sampled from your school district with other California schools. The information acquired from the participating schools and staff will remain strictly confidential; the names of individual schools and staff that participate will not be reported to our agencies or any other government agencies.

Enclosed is a postcard asking whom in your district should receive the study results for schools in your district. If you would like to receive the formaldehyde monitoring results from your district and a summary of the findings from the entire study please circle "yes" on the enclosed postcard and return it to RTI. After the survey, a subset of schools will also be asked to participate in more in-depth environmental testing for a one-day period sometime between August 2001 and March 2002. We hope that you will support this study. If you have any questions, please contact either of us (see phone numbers below) or Dr. Roy Whitmore, of RTI, at 1-800-334-8571, ext. 5809. It is only with the help of schools in your district that this research can be successful. Thank you for your time and consideration.

Sincerely,

Peggy L. Jenkins
ARB Project Officer
(916) 445-0753

Jed Waldman
DHS Project Officer
(510) 540-2469

California Portable Classrooms Study

A joint project of the California Air Resources Board and Department of Health Services

California Environmental Protection Agency

Air Resources Board

Gray Davis, Governor

Department of Health Services

April 20, 2001 «id»

«school»
«addrline1»
«City», «State» «Zip»

Dear Principal:

We are writing to request your support of the California Portable Classrooms Study. The California Air Resources Board (ARB) and the California Department of Health Services (DHS) are conducting this study to learn more about the environmental health conditions in California's portable classrooms.

The California Portable Classrooms Study was requested by Governor Davis, mandated by the State Legislature, and endorsed by the Superintendent of Public Instruction, Ms. Delaine Eastin. Per the California Health & Safety Code (Section 39619.6), the study must be completed by June 30, 2002, and a report provided to the Legislature, including "recommendations to remedy and prevent unhealthful conditions found in portable classrooms." These recommendations will help shape future programs and funding decisions at the State level.

«school» has been randomly selected to participate in this study. We are writing in advance to encourage you and others at your school to participate in this very important study. The ARB and DHS have contracted with Research Triangle Institute (RTI) to administer this survey to the selected schools.

In about a week, RTI will send a package containing study materials directed to you. The package will contain instructions, questionnaires, a study brochure, and formaldehyde sampling tubes (not all schools will receive sampling tubes).You will be asked to assign one person from your school as a "study coordinator", who will be asked to follow instructions for selecting three classrooms and teachers to respond to the survey, place and collect the sampling tubes, and return the materials to RTI and the lab. Teachers will only be asked to complete a single questionnaire.

Your study coordinator may need assistance from your district's facility manager to complete the facility questionnaire. We encourage you to contact the district office if their assistance is needed. Information about the study has been provided to your district facility manager.

Your school's participation is critical to the success of this study. For the results to be valid, we cannot substitute other schools for those currently selected. The responses and information provided by your school will remain strictly confidential; names of individual schools and school staff that participate will not be reported to any state agencies. Your superintendent will have the opportunity to receive the formaldehyde monitoring results for your school and a summary of the state-wide findings. A small percent of participating schools will be asked to participate in more in-depth environmental testing for a one-day period sometime between August 2001 and March 2002.

We hope that you will support this important study. If you have any questions, please contact either of us (see phone numbers below), or Dr. Roy Whitmore, of RTI, at 1-800-334-8571, ext. 5809. It is only with the help of individual schools, such as yours, that this research can be successful and provide results that are accurate and useful. Thank you for your assistance and support.

Sincerely,

Peggy L. Jenkins
ARB Project Officer
(916) 323-1504

Jed Waldman
DHS Project Officer
(510) 540-3427

Enclosure

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 593 DURHAM, NC

POSTAGE WILL BE PAID BY ADDRESSEE

RESEARCH TRIANGLE INSTITUTE
ATTN: Michael Phillips (08034.001)
PO BOX 12194
RESEARCH TRIANGLE PARK, NC 27709-9985

Dear School Superintendent,

Classroom monitoring results obtained during the California Portable Classrooms Study will be made available to participating school districts. Results for individual classrooms in your district will be provided, along with general information about our findings for all schools in the study. The results will only be provided to you or the person chosen below and not to anyone else, including other schools, the California Air Resources Board or the Department of Health Services. State agencies will only receive data and summary results without school and classroom identifiers attached.

Would you or the person indicated below like to receive the results from this study?

Please circle Yes or No

YES NO

Please provide the name and address below if someone other than yourself should receive the results.

School or District_____

Contact Name (please print)_____

Street Address_____

City _____ Zip Code_____

Phone number and / or email _____

Results will be mailed after the entire study has been conducted. Please feel free to share this information with schools in your district if you so desire. Thank you very much for your support of the California Portable Classrooms Study!

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ATTN: Michael Phillips (08034.001)
PO BOX 12194
RESEARCH TRIANGLE PARK, NC 27709-9985

Dear Principal,

Thank you for participating in the California Portable Classrooms Study! Your participation will provide more accurate, state-wide results for environmental scientists analyzing the data. Please fill out and return this postcard or email your response to mjp@rti.org. If it is more convenient, please fill out the enclosed fax transmittal sheet with this information and fax to Michael Phillips, of RTI, at 919-541-7250. Please note: neither names of staff nor schools will be reported to any state agencies. Please provide the name and phone number of a school coordinator, or someone who can best help coordinate the study activities at your school. This information will only be used for recontact purposes.

Name of School (please print) _____

Coordinator's name (please print)_____

Coordinator's phone number _____ - _____ -_____ Best time to reach_____am / pm

E-mail (if available) _____

If you have any further questions about the study, please contact Michael Phillips at 1-800-334-8571, ext. 6276.

If you have questions about study oversight and participant rights, please contact Dr. Wendy Visscher, Chairperson of the RTI Committee on the Protection of Human Subjects, at 1-800-334-8571, ext. 6028.

Dear Principal,

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Coordinator's phone number _____ - _____ -_____ Best time to reach_____am / pm

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RESEARCH TRIANGLE INSTITUTE
ATTN: Michael Phillips (08034.001)
PO BOX 12194
RESEARCH TRIANGLE PARK, NC 27709-9985

April 27, 2001

Dear Principal:

I am writing to ask for your help with the California Portable Classrooms Study. Research Triangle Institute (RTI) is conducting this study on behalf of the California Air Resources Board (ARB) and the California Department of Health Services (DHS) to learn more about the environmental health conditions in California's portable classrooms.

About a week ago, we sent you, and your district superintendent, a brief letter explaining the study. Enclosed are the study materials for your school. The packet includes questionnaires (for 3 teachers and the facility manager), self-sealing envelopes, postage-paid envelopes, and (for some schools) formaldehyde monitoring tubes.

As principal for your school, we would like to ask you to do two things:

1) **Appoint a "study coordinator" to carry out this study in your school. The study coordinator will have 3 main responsibilities: select 3 classrooms/teachers to participate (according to enclosed instructions), distribute the study materials, and collect and return the study materials.**

2) **Please complete and return the enclosed postcard or fax the response on the enclosed fax transmittal sheet.**

Because your school was selected using a randomized process to insure a representative sample of all California public schools, your school's participation is critical to the success of the study. RTI will keep all school information strictly confidential. Neither individual questionnaire responses nor specific results for any individual schools will be reported to any government agencies. Government agencies will receive data and summary results that exclude identifiers for individual participants, classrooms, and schools.

Classroom formaldehyde concentrations will be reported only to the district superintendent. If you would like to obtain a copy of these results for your school, please contact your superintendent's office after the study has been completed in June 2002.

If you have any questions about this study, please call Mr. Michael Phillips, of RTI, at 1-800-334-8571, ext. 6276. If you have questions about study oversight and participant rights, please contact Dr. Wendy Visscher, Chairperson of the RTI Committee on the Protection of Human Subjects, at 1-800-334-8571, ext. 6028.

It is only with the help of individual schools, such as yours, that this research can be successful and provide results that are accurate and useful. Thank you for your assistance and participation.

Sincerely,

Michael Phillips

Michael Phillips
RTI Survey Manager

April 27, 2001

Dear Teacher:

I am writing to ask for your help with the California Portable Classrooms Study. Research Triangle Institute (RTI) is conducting this study on behalf of the California Air Resources Board (ARB) and the California Department of Health Services (DHS) to learn more about the environmental health conditions in California's portable classrooms.

Your school has been chosen at random from a list of all California public schools. Three teachers in your school, including yourself, were systematically chosen to participate in this study based on classroom assignment. The results from the study will be used by the ARB, DHS, and other state agencies to assess the potential for adverse health conditions and to recommend effective actions that can be taken to remedy or prevent any unhealthful conditions that may be found.

Please complete the "Teacher Questionnaire." It should take about 20 minutes. Then, return the questionnaire, sealed in the white envelope, to the study coordinator.

Your participation is voluntary. However, because your school and this classroom were selected using a randomized process to insure a representative sample of all California public school classrooms, your participation is critical to the success of the study. RTI will keep all school information strictly confidential. Neither individual questionnaire responses nor specific results for any individual schools will be reported to any government agencies. Government agencies will receive data and summary results that exclude identifiers for individual participants, classrooms, and schools.

Classroom formaldehyde concentrations will be reported only to the district superintendent. If you would like to obtain a copy of these results for your school, please contact your superintendent's office after the study has been completed in June 2002.

If you have any questions about this study, please call Mr. Michael Phillips, of RTI, at 1-800-334-8571, ext. 6276. If you have questions about study oversight and participant rights, please contact Dr. Wendy Visscher, Chairperson of the RTI Committee on the Protection of Human Subjects, at 1-800-334-8571, ext. 6028.

It is only with the help of individual schools, such as yours, that this research can be successful and provide results that are accurate and useful. Thank you for your assistance and participation.

Sincerely,

Michael Phillips
RTI Survey Manager

April 27, 2001

Dear Facility Manager:

I am writing to ask for your help with the California Portable Classrooms Study. Research Triangle Institute (RTI) is conducting this study on behalf of the California Air Resources Board (ARB) and the California Department of Health Services (DHS) to learn more about the environmental health conditions in California's portable classrooms.

Your school has been chosen at random from a list of all California public schools. You, individually, have been chosen to participate because you are the facility manager or play an important role in facility oversight at your school. The results from the study will be used by the ARB, DHS, and other state agencies to assess the potential for adverse health conditions and to recommend effective actions that can be taken to remedy or prevent any unhealthful conditions that may be found.

> **Please complete the "Facility Manager Questionnaire." It should take about 40 minutes. Then, return the questionnaire, sealed in the white envelope, to the study coordinator.**
>
> **In addition, we are asking that you assist the study coordinator (whom your principal has already assigned). This may include aiding the coordinator in utilizing the school site plan to identify sample classrooms and/or placing and retrieving the formaldehyde sampling tubes in classrooms.**

Your participation is voluntary. However, because your school and the sample classrooms were selected using a randomized process to insure a representative sample of all California public school classrooms, your participation is critical to the success of the study. RTI will keep all school information strictly confidential. Neither individual questionnaire responses nor specific results for any individual schools will be reported to any government agencies. Government agencies will receive data and summary results that exclude identifiers for individual participants, classrooms, and schools.

Classroom formaldehyde concentrations will be reported only to the district superintendent. If you would like to obtain a copy of these results for your school, please contact your superintendent's office after the study has been completed in June 2002.

If you have any questions about this study, please call Mr. Michael Phillips, of RTI, at 1-800-334-8571, ext. 6276. If you have questions about study oversight and participant rights, please contact Dr. Wendy Visscher, Chairperson of the RTI Committee on the Protection of Human Subjects, at 1-800-334-8571, ext. 6028.

It is only with the help of individual schools, such as yours, that this research can be successful and provide results that are accurate and useful. Thank you for your assistance and participation.

Sincerely,

Michael Phillips

Michael Phillips
RTI Survey Manager

April 27, 2001

Dear Study Coordinator:

Thank you for serving as the study coordinator for your school for the California Portable Classrooms Study! Research Triangle Institute (RTI) is conducting this study on behalf of the California Air Resources Board (ARB) and the California Department of Health Services (DHS) to learn more about the environmental health conditions in California's portable classrooms.

Your school has been chosen at random from a list of all California public schools. The results from the study will be used by the ARB, DHS, and other state agencies to assess the potential for adverse health conditions and to recommend effective actions that can be taken to remedy or prevent any unhealthful conditions that may be found.

Please review and follow these steps:

1) **Read the Study Coordinator Checklist. This one page checklist provides guidelines to completing responsibilities in a desired order.**

2) **Select 3 study classrooms and the associated teachers to participate: Please use the enclosed instructions (and your school site plan) to select three classrooms and the associated teachers to complete the "Teacher Questionnaire."**

3) **Distribute the Study Materials: Please give the enclosed questionnaires (three teacher questionnaires and one facility manager questionnaire) to the selected teachers and facility manager at your school. In addition, if formaldehyde tubes are included in your school's box, please have them placed in each of the three selected classrooms for 10 days using the enclosed instructions. You may want to utilize the assistance of your school's facility manager for this task.**

4) **Collect and Return the Completed Study Materials: Please collect the completed teacher and facility manager questionnaires (in sealed envelopes), and return them in the enclosed postage-paid envelope to RTI. In addition, please ship the formaldehyde tubes to the lab in the enclosed postage-paid envelope.**

Because your school was selected using a randomized process to insure a representative sample of all California public schools, your school's participation is critical to the success of the study. RTI will keep all school information strictly confidential. Neither individual questionnaire responses nor specific results for any individual schools will be reported to any government agencies. Government agencies will receive data and summary results that exclude identifiers for individual participants, classrooms, and schools. Classroom formaldehyde concentrations will be reported only to the district superintendent. If you would like to obtain a copy of these results for your school, please contact your superintendent's office after the study has been completed in June 2002.

If you have any questions about this study, please call Mr. Michael Phillips, of RTI, at 1-800-334-8571. If you have questions about study oversight and participant rights, please contact Dr. Wendy Visscher, Chairperson of the RTI Committee on the Protection of Human Subjects, at 1-800-334-8571, ext. 6028.

It is only with the help of individual schools, such as yours, that this research can be successful and provide results that are accurate and useful. Thank you for your assistance and participation.

Sincerely,

Michael Phillips

Michael Phillips
RTI Survey Manager

INSTRUCTIONS FOR SELECTING SAMPLE CLASSROOMS
For "SCHOOL NAME" "SCHOOL ID"

Overview

We need you to help us pick classrooms and teachers for our study. These instructions will guide you through making a list of your portable classrooms and a list of your traditional classrooms from which you will randomly select two portable classrooms and one traditional classroom (unless you have only one portable classroom). Because we need to select classrooms at random, it is important that you follow these instructions carefully and thoroughly. You will need first to gather a few basic **Materials**. You will then follow the numbered instructions in the **Selection Procedure** section below, referring to the **Example** on page 4 and the **Tables** beginning on page 5, as needed.

Materials

- Map of your school showing all the classrooms, or a list of all the classrooms
- Red and green pencils, included in the coordinator package with these instructions
- Tables on pages 5-8 of this document – *Table 1: Classroom Selection* and *Table 2: Classroom Sample*.

Selection Procedure

1. Obtain a school map that shows the physical locations of all **classrooms** (traditional and portable) used by your school. Or, if a map is not readily available, obtain a list of all classrooms.

   A **classroom** is ***any*** room used for classroom instruction ***for grades K-12***, including special-purpose rooms such as art, shop, band, and lab rooms. Include libraries that have staff assigned to them. Also include classrooms at your facility used by the County Education Office.

2. Does your school have **portable classrooms**?

   A **portable classroom** is a classroom in a building that is designed and constructed to be relocatable and transportable over public streets.

   If your school has no portable classrooms, please initial here (_____) and return the entire package to RTI using the return envelope provided because your school is not eligible to participate in this study. Otherwise, please continue.

3. On the school map (or list), number the portable classrooms with the red pencil, starting at 1. Number all other classrooms (the **traditional classrooms**) with the green pencil, starting at 1.

   A **traditional classroom** is any room used for classroom instruction that is not a portable classroom.

   You do not have to number the classrooms in any particular order. The important point is that all classrooms are numbered and that the numbering provides a count of classrooms.

4. Each classroom should now have a red or a green classroom number assigned to it. Please check to make sure this is the case; then enter the total numbers of portable and traditional classrooms in the table below.

Total Number of Classrooms	
Portable (red)	**Traditional (green)**

If your school has more portable or traditional classrooms than shown in Table 1 on pages 5-7, call Mr. Michael Phillips at Research Triangle Institute at 1-800-334-8571, Ext. 6276, before proceeding with Step 5.

5. Select sample classrooms as follows:

5.1. There are two tables beginning on page 5: Table 1 (Classroom Selection) and Table 2 (Classroom Sample). On Table 1, circle the number in the first column that corresponds to the total number of **portable classrooms** . As shown in the example below, if your school has 10 portable classrooms, the relevant section of the table would look like this:

Total Number of Classrooms	First ID	Second ID
8	3	5
9	7	2
10	4	7
~~11~~	2	5
12	8	11

5.2. Proceed across the row of the number you circled, and copy the *First ID* into the middle column of Table 2 (Classroom Sample) on page 8. This *First ID* corresponds to a red classroom number on the school map. Write the room number (or name) of this classroom in the last column of Table 2. See the Example on page 4.

In our example, the *First ID* in Table 1 is *4*. If it corresponds to the room Annex 25, then you would write *Annex 25* in the last column of Table 2. At this point, Table 2 would look like this:

Table 2: CLASSROOM SAMPLE
For the Example School

Classroom Code	ID Number	Room Number/Name [a]
Pre-printed code ending in A	4	Annex 25
Pre-printed code ending in B		
Pre-printed code ending in C		

[a]The number or name on the classroom door.

5.3. *If your school has more than one portable classroom,* repeat this process using the *Second ID* in the same row from Table 1. Enter the *Second ID* Number in the middle column of Table 2 (classroom sample). This *ID* corresponds to a red classroom number on the school map. Write the room number (or name) of this classroom in the last column of Table 2.

In our example, you would enter a *7* under the *4* above. Classroom 7 on the map might be *Annex 28.* See the Example on page 4.

5.4. On Table 1 on page 5, circle the number in the first column that corresponds to the total number of **traditional classrooms**. In a school with 50 traditional classrooms, the relevant portion of the table would look like this:

Total Number of Classrooms	First ID	Second ID
48	26	24
49	40	15
50	38	9
51	12	33
52	35	29

5.5. Proceed across the row of the number you circled, and copy the *First ID* into the middle column of Table 2 (classroom sample). (In our example, this would be *38.)* This *First ID* corresponds to a green classroom number on the school map. Write the room number (or name) of this classroom in the last column of Table 2. See the Example on page 4.

If ID number 38 in our example corresponds to the staffed library of the school, which does not have a room number but which the school calls a Media Center, your completed Table 2 would look like this:

Table 2: CLASSROOM SAMPLE
For the Example School

Classroom Code	ID Number	Room Number/Name [a]
Pre-printed code ending in A	4	Annex 25
Pre-printed code ending in B	7	Annex 28
Pre-printed code ending in C	38	Media Center

[a]The number or name on the classroom door.

5.6. *If your school has only one portable classroom,* you will at this point have filled out only two rows of Table 2. To complete the third and final row, repeat Step 5.5 using the *Second ID* from the third column of Table 1. (In our example, this would be *9*.) Enter that ID number in the middle column of Table 2. This *ID* corresponds to a green classroom number on the school map. Write the room number (or name) of this classroom in the last column of Table 2.

5.7. ***You should now have completed all three rows of Table 2 (classroom sample). The sample classroom numbers appear in the last column of this table. The study code numbers for these three classrooms are listed in the first column. The first classroom code number ends in A, the second in B, and the third in C. If your school has two or more portable classrooms, your sample should consist of two portable classrooms and one traditional classroom. Otherwise, your sample should consist of one portable classroom and two traditional classrooms.***

6. ***Select the sample teacher for each sample classroom***. The sample teacher for each sample classroom is the teacher who uses the classroom the most. If two or more teachers use the classroom for equal amounts of time, select the teacher who will have the next birthday.

Please mail this completed form to RTI along with the school map with the red and green classroom ID numbers and the completed teacher and facility manager questionnaires.

EXAMPLE

TABLE 1: CLASSROOM SELECTION

Total Number of Classrooms	First ID	Second ID
8	3	5
9	7	2
10	4	7
11	2	5
12	8	11

TABLE 1: CLASSROOM SELECTION

Total Number of Classrooms	First ID	Second ID
48	26	24
49	40	15
50	38	9
51	12	33
52	35	29

TABLE 2: CLASSROOM SAMPLE

Classroom Code	ID Number	Room Number/Name [a]
Pre-printed code ending in A	4	Annex 25
Pre-printed code ending in B	7	Annex 28
Pre-printed code ending in C	38	Media Center

[a]The number or name on the classroom door.

Instructions for Use of Formaldehyde Sampling Tubes

Note: Please follow these instructions immediately after all sample classrooms have been selected. **If your Spring/Easter break is next week, please wait until after the break to deploy the formaldehyde sampling tubes.**

1. Remove all materials from the envelope labeled "formaldehyde." The envelope should contain:
   A. 3 or 4 formaldehyde sampling tubes in cardboard box(es). **Save the cardboard box(es) for mailing the tubes to the lab. Please don't take the end caps off the tubes yet.**
   B. 3 or 4 mounting pins.
   C. 3 or 4 labels with code numbers.
   D. A TyVec mailing envelope pre-addressed to AIR QUALITY RESEARCH, INC.
   E. An Analysis Request Form.

2. You should have the same number of labels as sampling tubes. Take the tubes out of the cardboard boxes and remove the plastic wrapping. Adhere one label to each sampling tube (**but not over other label**). The sampling tube will be deployed in the classroom whose code number ends with the same letter as the code number on the sampling tube. For example, the tube(s) whose code number ends in A will be placed in the classroom whose code number also ends in A. If the code number on a tube ends in X, it can be deployed in any of the sample classrooms A, B, or C, but the end cap on this tube should never be removed for any reason whatsoever. The "X" tube is called a field blank.

3. Deploy the formaldehyde sampling tubes in the selected sample classrooms, carefully following the instructions below.

   A. Unwrap the ribbon on the tube.
   B. Stick the pushpin through the ribbon and attach to the classroom's ceiling. Please see that the sampling tube is at least 2 ft. from any wall and is not subject to strong drafts from windows, outdoors, or air vents. The tube should hang about a foot below the ceiling.
   C. **For tubes whose code numbers end in A, B, or C**, hang the tube in the classroom whose code number ends in the same letter. If two tubes have code numbers that end with the same letter**,** hang those two tubes about 6 inches apart in the classroom whose code number ends with the same letter. **Take the yellow cap off the end of each sampling tube, and place it on the opposite end of the tube** . The open end of the sampling tube should hang down.
   D. **If you have a tube whose code number ends with an X,** hang the tube about 6 inches from another tube in classroom A, B, or C, but **DO NOT REMOVE THE END CAP FROM THE TUBE WHOSE ID NUMBER ENDS IN X.** The cap should remain on this tube for the entire sampling period.
   E. Fill out the Analysis Request Form. Enter the start date and time for each sampling tube.

4. Tubes should be left hanging and undisturbed for 10 days. Make a note to remind yourself of the day the tubes are to be taken down. If the 10^{th} day lies on a weekend or holiday, please take the formaldehyde tube down the Friday before the weekend or holiday.

5. On the scheduled day, take the tubes down and cap them tightly**. Record the date and stop time on the Analysis Request Form.**

6. Place the tubes in the cardboard box(es) that they originally came in. Place them and the Analysis Request Form in the TyVec envelope addressed to AIR QUALITY RESEARCH, INC. Mail the envelope(s).

7. Thank you very much!

Coordinator Checklist

For those schools <u>with</u> Formaldehyde Tubes

Complete	Description of Each Step
	1. Read the letter addressed to the Study Coordinator in the envelope labeled "Study Coordinator." It provides you with background information about the study and provides general instructions for your tasks.
	2. Read the Instructions for Selecting Sample Classrooms, which you will find in the same envelope. Then, following those instructions, select three sample classrooms.
	3. Read the Instructions for Use of Formaldehyde Sampling Tubes, which is also in the same envelope. Then, following those instructions, have the facility manager or other appropriate person help you deploy the formaldehyde monitoring tubes in the sample classrooms. Be sure to record the start date and time for each tube on the Analysis Report Form found in the Study Coordinator envelope. **If your Spring/Easter break is next week, please wait until after the break to deploy the formaldehyde monitoring tubes and to distribute the questionnaires. This request is being made because it is assumed there will be no school staff and children around during the Spring break.**
	4. Pull the Facilities Questionnaire from the envelope labeled "Facility Manager." In Item #7, on page 2, enter the total numbers of portable and traditional classrooms at your school. In the header of Section C, on page 5, enter the number/name for each of the three sample classrooms. Then, put the questionnaire back in the envelope and give it to your facility manager. Ask him/her to read the enclosed letter, complete the enclosed questionnaire, seal it in the self-sealing envelope provided (to keep his/her answers confidential), and return the completed questionnaire to you.
	5. Find the envelopes labeled Classroom A, Classroom B, and Classroom C. Enter in the Section B header (page 2) of the questionnaire in the Classroom A envelope, the room number/name for the sample classroom whose code number ends in A. Then, put the questionnaire back in the envelope and give it to the teacher selected for the sample classroom whose code number ends in A. Similarly, enter in the Section B headers of the questionnaires in the Classroom B and C envelopes, the room number/name for the sample classrooms whose code numbers end in B and C. Then, put the questionnaires back in the envelopes and give them to the teachers selected for the sample classrooms whose code numbers ends in B and C. Ask each teacher to read the enclosed letter, complete the enclosed questionnaire, seal it in the self-sealing envelope provided (to keep their answers confidential), and return the sealed envelope to you.
	6. Collect the sealed envelopes from the three teachers and the facility manager. Place the sealed envelopes, "Instructions for Selecting Sample Classrooms," and the school map (with the red and green classroom numbers) in the return envelope addressed to RTI, and mail it.
	7. Allow the monitoring tubes to hang undisturbed for 8 to10 days, per the Instructions for Use of Formaldehyde Sampling Tubes. Take the tubes down, cap the tubes, and replace them in their original package(s). Write down the stop date and time on the Analysis Request Form.
	8. Place the Analysis Request Form and tubes collected from all classrooms in the pre-addressed envelope to AIR QUALITY RESEARCH, INC, and mail it.
	9. You are finished! Thank you for your time and assistance coordinating the California Portable Classrooms Study at your school.

Study Coordinator Checklist

Thank you, study coordinator, for managing the responsibilities associated with this study! ***Please use the following checklist to do your tasks in the proper order.***

CHECK BOX	Description of Each Step
	1. Read the letter addressed to the "Study Coordinator". This provides background information about the study and provides general instructions for the tasks associated with being the study coordinator. There is no need to distribute any materials to anyone else yet.
	2. Find the Instructions for Selecting Sample Classrooms, and please read it next.
	3. Follow the Instructions for Selecting Sample Classrooms to select three sample classrooms, and the teacher who is to be the respondent for each classroom.
	4. Pull the Facilities Questionnaire from the envelop labeled "Facility Manager." Enter the total numbers of portable and traditional classrooms, in Item #7 (page 2) of the Facilities Questionnaire. Also, enter the sample classroom numbers in the header of Section C (page 5) of the Facilities Questionnaire. Then, put the questionnaire back in the envelope and give it to your facility manager. Ask him/her to read the enclosed letter, complete the enclosed questionnaire, seal it in the self-sealing envelope provided (to keep his/her answers confidential), and return the sealed envelope to you.
	5. Find the envelopes labeled Classroom A, Classroom B, and Classroom C. Enter in the Section B header (page 2) of the questionnaire in the Classroom A envelope, the room number/name for the sample classroom whose code number ends in A. Then, put the questionnaire back in the envelope and give it to the teacher selected for the sample classroom whose code number ends in A. Similarly, enter in the Section B headers of the questionnaires in the Classroom B and C envelopes, the room number/name for the sample classrooms whose code numbers end in B and C. Then, put the questionnaires back in the envelopes and give them to the teachers selected for the sample classrooms whose code numbers ends in B and C. Ask each teacher to read the enclosed letter, complete the enclosed questionnaire, seal it in the self-sealing envelope provided (to keep their answers confidential), and return the sealed envelope to you.
	6. Collect the completed questionnaires (in self-sealing envelopes) from the three teachers and the facility manager. Place the completed questionnaires, "Instructions for Selecting Sample Classrooms," and the school map (with red and green classrooms identified) in the return envelope addressed to RTI and mail. You are finished!
	7. You are finished! Thank you for your time and assistance coordinating the California Portable Classrooms Study at your school.

What Will Happen to These Data Once They Are Collected?

At RTI, the questionnaire and environmental data will be entered into a computer database and analyzed. Before State agencies receive the results from RTI, individual names and all other school and classroom identifiers will be removed. The study results will then be used by State researchers to develop a report on the system-wide status of environmental conditions in California public schools. With input from interested stakeholders, the State researchers will also recommend actions that can be taken to remedy and/or prevent unhealthful environmental conditions in portable classrooms.

When Will the Study Results Be Available?

The Legislature has required that ARB and DHS finish the study and submit their report by June 30, 2002. You can sign up on our LISTSERV at: **www.arb.ca.gov/research/indoor/pcs/pcs.htm** for regular updates on study progress.

You can find study updates at the California Portable Classrooms Study Web site:
www.arb.ca.gov/research/indoor/pcs/pcs.htm

Whom May I Call If I Have Further Questions?

If you have any questions or comments regarding any aspect of this study, please call:

Mr. Michael Phillips, RTI Survey Manager, at 800-334-8571, ext. 6276

Ms. Peggy Jenkins, California Air Resources Board, at 916-445-0753

Dr. Jed Waldman, California Department of Health Services, at 510-540-2469

E-mail should be sent to **CAPCS@arb.ca.gov**

Additional resources on Healthy Schools can be found at:

U.S. EPA IAQ Tools for Schools: **www.epa.gov/iaq/schools/tools4s2.html**

Collaborative for High Performance Schools: **www.chps.net**

Please feel free to copy this brochure and distribute it to others at your school.

Questions & Answers about the California Portable Classrooms Study

Sponsored by
California Air Resources Board (ARB)
and
California Department of Health Services (DHS)

Conducted by
Research Triangle Institute
Research Triangle Park, NC 27709

What Is the California Portable Classrooms Study?

This is a statewide study to learn more about environmental health conditions in California's portable classrooms. The State Air Resources Board (ARB) and the Department of Health Services (DHS) are jointly conducting the study. Study scientists will identify how widespread any potential problems may be, and make recommendations, in consultation with stakeholders, for actions that can be taken to solve any problems identified and prevent future problems.

Why Is This Study Being Conducted?

The California Portable Classrooms Study was proposed by Governor Gray Davis and is supported by the California State Legislature. Delaine Eastin, State Superintendent of Public Instruction, has endorsed the study.

How Was Our School Selected?

Your school is one of 1000 schools randomly chosen from all public schools in the State.

Why Is It So Important That Our School Participates?

Because the study uses a representative, statewide sample of schools, every school selected in the sample is important. Because your school was one of those randomly selected, we cannot replace it with another. If your school does not participate, study results will be less representative of statewide conditions.

How Will Portable Classrooms Be Studied?

There are two main components to the California Portable Classrooms Study. The first is a mail survey of 1000 schools, which will collect information from facility managers and teachers. In addition, air sampling for formaldehyde will be conducted in some schools. Several months after the mail survey, 60 schools will be recruited for more extensive environmental monitoring of their classrooms. In addition to portable classrooms, the study will include some traditional classrooms.

Will Much Effort Be Required by School Staff?

At each school, a "study coordinator" will receive a packet with instructions for selecting three classrooms, giving out questionnaires, placing formaldehyde monitoring tubes, and mailing these items back. The questionnaires for facility managers and teachers typically take about 20 minutes to complete. In the second part of the study in the fall, air samples and other environmental measurements will be taken by study scientists in several classrooms in each of the 60 schools selected for further environmental monitoring.

Are There Other Reasons Our School Should Participate?

Participating in this study offers you the opportunity to contribute to knowledge needed to promote healthier environmental conditions for school children in California. The results of this study will help shape future programs and funding decisions at the State level.

How Will Information I Provide Be Kept Confidential?

Research Triangle Institute (RTI) has been hired by the State to conduct the study, and they are required to keep all study information they receive ***confidential***. Researchers will use the information you provide for statistical purposes only. Individual participant and school names will not be shared with any government agencies. Specific formaldehyde monitoring results for your school will only be provided to your school district superintendent.

Preparing School Packets for Wave 1 of the California Portable Classrooms Study
08034.001

One medium/large Fed Ex box per school.
Each box contains 5 white envelopes. Add contents to each white envelope as specified below.

Teacher (A-C) Materials each school receives Teacher A, B, and C
- 1 Teacher Cover letter 1 pg.
- 1 Teacher Questionnaire **(match ID)**
- 1 #2 pencil
- 1 yellow postcard

Facility Manager's Materials each school receives contents below
- Facility Manager Cover Letter 1pg.
- Facilities Questionnaire **(match ID)**
- 1 #2 pencil
- 1 yellow postcard

Study Coordinator's Materials (w/ Formaldehyde) 480 schools
Lght orange Study Coordinator Checklist (w/ formaldehyde) 1pg.
Study Coordinator Cover 1 pg.
Classroom Selection Instructions 9 pgs. **(match ID)**
1 Formaldehyde Instructions 1 pg.
1 Analysis Request Form **(match ID)**
3-4 Formaldehyde Labels **(match ID)**
1 #2 pencil
1 green colored pencil
1 red colored pencil
1 yellow postcard
1 brochure

Study Coordinator's Materials (without Formaldehyde) 120 schools
Beige Study Coordinator Checklist (without formaldehyde) 1 pg.
Study Coordinator Cover 1 pg.
Classroom Selection Instructions 9 pgs. **(match ID)**
1 #2 pencil
1 green colored pencil
1 red colored pencil
1 yellow postcard
1 brochure

Loose materials in each box:

Principal's Materials (paper clip all together) (applies to all schools)
- Blue postcard **(match ID)**
- Principal cover letter 1 pg.
- Fax transmittal sheet 1 pg.

Misc.
- Formaldehyde tubes 3 packs 264 schools **(school specific)**
- Formaldehyde tubes 3 packs + 1 pack (4 total) 216 schools **(school specific)**
- AQR (white) envelope 480 schools **(for every school that receives formaldehyde tubes)**
- Return (yellow clasp) envelope all schools

California Portable Classrooms S udy

A joint project of the California Air Resources Board and Department of Health Services,

California Environmental Protection Agency,
Air Resources Board

Gray Davis, Governor,

Department of Health Services,

Dear Principal,

Thank you for your support of the California Portable Classrooms Study. You should have received your study materials one week ago. Please complete and return the blue postcard or fax transmittal sheet at your convenience. Your school's participation is very important to the overall success of this environmental study. If you have any questions, please call me at 1-800-334-8571, extension 6276.

Regards,
Michael Phillips

California Portable Classrooms Study,
Research T,iangle Institute,
Attn: Michael Phillips,
PO Box 12194,
Research T,iangle Park, NC 27709-2194,

California Portable Classrooms Study,
Research Tiangle Institute,
Attn: Michael Phillips,
PO Box 12194,
Research Tiangle Park, NC 27709-2194,

California Portable Classrooms Study

A joint project of the California Air Resources Board and Department of Health Services,

California Environmental Protection Agency,
Air Resources Board

Gray Davis, Governor,

Department of Health Services,

Dear Principal,

Thank you for your support of the California Portable Classrooms Study. You should have received your study materials one week ago. Please complete and return the blue postcard or fax transmittal sheet at your convenience. Your school s participation is very important to the overall success of this environmental study. If you have any questions, please call me at 1-800-334-8571, extension 6276.

Regards,

Michael Phillips

California Portable Classrooms Study

A joint project of the California Air Resources Board and Department of Health Services

California Environmental Protection Agency

Air Resources Board

Gray Davis, Governor

Department of Health Services

May 18, 2001 «id»

«school»
«addrline1»
«City», «State» «Zip»

Dear Principal:

In the past month, you should have received a Federal Express package containing the study materials for the California Portable Classrooms Study. If you have completed these materials, we thank you for your participation in this important study. If not, we ask that you hang the formaldehyde tubes (if you received them) by June 5 and return them and the questionnaires by June 15, 2001.

It is important that all selected schools from all regions of the state participate in this landmark study. ***This study has been mandated by the California Legislature.*** It will be used to assess environmental health conditions in California's portable classrooms and to make recommendations to the Legislature to remedy and prevent any unhealthful conditions found. A random sample of 1,000 schools has been selected to include all types of portable schools across California. A large portion of these sample schools need to participate in order to obtain the best information possible for future policy and funding decisions.

We understand that your school is very busy with testing and end-of-year activities at this time, so we have attempted to design the study to minimize the time required for participation. School district offices have been informed of this study, and many are providing district staff, such as the facility manager or risk manager, to help schools participate in this study because of its importance. If you need assistance in order to participate in this study, please contact your district office. In addition, the State Agencies responsible for implementing this study, the Air Resources Board and the Department of Health Services, may be able to provide direct assistance to some schools. If you would like to request their assistance or discuss the study with them, please call me at the number listed below.

The questionnaire responses and formaldehyde measurement results from individual schools will be kept strictly confidential. No names of schools or participants will be reported to any government agencies. However, superintendents can obtain the formaldehyde data for schools in their districts at the conclusion of the study in June 2002.

If you never received the study materials, need a replacement package, or have any questions about the study, please contact me at the number listed below. Only with the help of individual schools, such as yours, will this research provide results that are a reliable basis for policy decisions. Thank you for your assistance and support.

Sincerely,

Michael Phillips

Michael Phillips
Survey Manager, California Portable Classrooms Study
1-800-334-8571, ext. 6276, Eastern Daylight Time Zone

cc: Facility Manager

APPENDIX B

Documentation of Analysis Files

Appendix B consists of three parts:

19. A listing of variables appearing on SCHOOL1, the school-level analysis file; variables are ordered by position and formats associated with the variables are identified.
20. A listing of variables appearing on COMBIN4, the classroom-level analysis file; variables are ordered by position and formats associated with the variables are identified.
21. A format library that defines the meaning of variable values.

Phase I Analysis Data Set Information
School Analysis Data Set

-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
1	studyid	Char	8	1472	$8.		Study ID
2	P1WT1	Num	8	0	6.		Initial Sampling Weight
3	P1WT2	Num	8	8	8.3		Wgt Component for SubSample Waves 1-2
4	P1WT3	Num	8	16	6.		Eligible based on Phase 1 Data (0/1)
5	P1WT4	Num	8	24	8.3		Phase I Sampling Weight
6	Eligible	Char	1	1480		YesNo	Eligibility Status: 1 = Eligible
7	P1WT2PF1	Num	8	32			Phase I Formaldehyde Weight Component
8	P1WT4PF1	Num	8	40			Phase I Samp Wgt H2CO, Adj Inelig Sch
9	RespSch	Num	8	48		YesNo	PhaseI Data either Teacher, Facil, or H2CO Data
10	ResQuex	Num	8	56		YesNo	PhaseI Data either Teacher or Facility Data
11	CDS_CODE	Char	25	1481	$25.		Unique CA School ID
12	NorthSouth	Char	3	1506	$3.		North/South County Indicator
13	PopStatus	Char	1	1509		$pop	Population Indicator
14	P_CalWORKs	Num	8	64	8.		Percent Based on CalWORKs and Total Enrollment
15	P_Meals	Num	8	72	8.		Percent Total Meals and Total Enrollment
16	Sch_Type	Char	1	1510		$sch	Three Category School Type
17	p_mealsC	Num	8	80			0 LT 45 P_Meals / 1 Otherwise
18	AvgCost	Num	8	88	DOLLAR10.2		Expenditure per Student
19	AvgCostC	Num	8	96			Average Cost Per Student - Dich
20	AvgCostA	Num	8	104			Adjusted Average Cost Per Student
21	ResPF1	Num	8	112		YesNo	School with at Least One Valid H2CO Value
22	WgtClass	Num	8	120			School Level Weight Class
23	SumW4W3	Num	8	128			WgtClass Sum of P1WT4 * P1WT3
24	SumW4Ir	Num	8	136			WgtClass Sum of P1WT4 * ResQuex

Source: \\RTINTS14\08034\AGREEN\CAPCS_13.SAS

Phase I Analysis Data Set Information
School Analysis Data Set

-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
25	SumW4PF1	Num	8	144			WgtClass Sum of P1WT4PF1
26	SumW4PF	Num	8	152			WgtClass Sum of P1WT4 * ResPF1
27	P1WT5	Num	8	160			Non-response Adj -- School Level
28	P1WT5PF1	Num	8	168			Adj for H2CO NonResp -- School Level
29	P1WT6	Num	8	176			Stat Analysis Wgt Adj for Sch Level NonResp
30	P1WT6PF1	Num	8	184			Stat Analy Wgt Adj H2CO NonResp -- Sch Lev
31	FQ_ID	Char	9	1511	$9.		Facility Questionnaire ID
32	FQ1	Num	8	192	BEST12.	Fq1f	Job Category
33	FQ2	Num	8	200	BEST12.	Fq2f	Work Location
34	FQ3	Num	8	208	BEST12.	Fq3f	Years Worked in this School
35	FQ4	Num	8	216	BEST12.	YesNoD	May we contact you later?
36	FQ6	Num	8	224	BEST12.		Year of School's Original Construction
37	FQ7A	Num	8	232	BEST12.		Number Portable/Reloc Classrooms at Site
38	FQ7B	Num	8	240	BEST12.		Number Permanent/Trad Classrooms at Site
39	FQ8	Num	8	248	BEST12.	Fq8	Building Density near the School
40	FQ9AA	Num	8	256	BEST12.	YesNo	Nearby Areas/Activity - Roadways - Busy Intersection(s)
41	FQ9AB	Num	8	264	BEST12.	YesNo	Nearby Areas/Activity - Roadways - Congested Streets
42	FQ9AC	Num	8	272	BEST12.	YesNo	Nearby Areas/Activity - Roadways - Freeways
43	FQ9AD	Num	8	280	BEST12.	YesNo	Nearby Areas/Activity - Roadways - Dirt/Gravel Roads
44	FQ9AE	Num	8	288	BEST12.	YesNo	Nearby Areas/Activity - Roadways - Serpentine Road Cover
45	FQ9AF	Num	8	296	BEST12.	YesNo	Nearby Areas/Activity - Roadways - None
46	FQ9BA	Num	8	304	BEST12.	YesNo	Nearby Areas/Activity - Commercial - Service Stations
47	FQ9BB	Num	8	312	BEST12.	YesNo	Nearby Areas/Activity - Commercial - Heavy Industrial
48	FQ9BC	Num	8	320	BEST12.	YesNo	Nearby Areas/Activity - Commercial - Light Industrial

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Phase I Analysis Data Set Information
School Analysis Data Set

-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
49	FQ9BD	Num	8	328	BEST12.	YesNo	Nearby Areas/Activity - Commercial - Truck Route/Depot
50	FQ9BE	Num	8	336	BEST12.	YesNo	Nearby Areas/Activity - Commercial - Rail Route/Depot
51	FQ9BF	Num	8	344	BEST12.	YesNo	Nearby Areas/Activity - Commercial - None
52	FQ9CA	Num	8	352	BEST12.	YesNo	Nearby Areas/Activity - Agriculture - Livestock
53	FQ9CB	Num	8	360	BEST12.	YesNo	Nearby Areas/Activity - Agriculture - Row Crops
54	FQ9CC	Num	8	368	BEST12.	YesNo	Nearby Areas/Activity - Agriculture - Orchards
55	FQ9CD	Num	8	376	BEST12.	YesNo	Nearby Areas/Activity - Agriculture - Open Fields
56	FQ9CE	Num	8	384	BEST12.	YesNo	Nearby Areas/Activity - Agriculture - None
57	FQ9DA	Num	8	392	BEST12.	YesNo	Nearby Areas/Activity - Diesel Eng - School Buses
58	FQ9DB	Num	8	400	BEST12.	YesNo	Nearby Areas/Activity - Diesel Eng - Transit Buses
59	FQ9DC	Num	8	408	BEST12.	YesNo	Nearby Areas/Activity - Diesel Eng - Trucks
60	FQ9DD	Num	8	416	BEST12.	YesNo	Nearby Areas/Activity - Diesel Eng - Trains
61	FQ9DE	Num	8	424	BEST12.	YesNo	Nearby Areas/Activity - Diesel Eng - Farm Equipment
62	FQ9DF	Num	8	432	BEST12.	YesNo	Nearby Areas/Activity - Diesel Eng - Generators
63	FQ9DG	Num	8	440	BEST12.	YesNo	Nearby Areas/Activity - Diesel Eng - None
64	FQ9EA	Num	8	448	BEST12.	YesNo	Nearby Areas/Activity - Waste Facility - Sewage Trt
65	FQ9EB	Num	8	456	BEST12.	YesNo	Nearby Areas/Activity - Waste Facility - Municipal Waste
66	FQ9EC	Num	8	464	BEST12.	YesNo	Nearby Areas/Activity - Waste Facility - Composting
67	FQ9ED	Num	8	472	BEST12.	YesNo	Nearby Areas/Activity - Waste Facility - Recycling
68	FQ9EE	Num	8	480	BEST12.	YesNo	Nearby Areas/Activity - Waste Facility - None
69	FQ10AA	Num	8	488	BEST12.	YesNo	HVAC Maintenance Done by - School Staff
70	FQ10AB	Num	8	496	BEST12.	YesNo	HVAC Maintenance Done by - District Staff
71	FQ10AC	Num	8	504	BEST12.	YesNo	HVAC Maintenance Done by - Contractor
72	FQ10AD	Num	8	512	BEST12.	YesNo	HVAC Maintenance Done by - None

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
73	FQ10AE	Num	8	520	BEST12.	YesNo	HVAC Maintenance Done by - Don't Know
74	FQ10AF	Num	8	528	BEST12.	YesNo	HVAC Maintenance Done by - N/A
75	FQ11AA	Num	8	536	BEST12.	YesNo	HVAC Maintenance Log Location - Not Kept
76	FQ11AB	Num	8	544	BEST12.	YesNo	HVAC Maintenance Log Location - On Equipment
77	FQ11AC	Num	8	552	BEST12.	YesNo	HVAC Maintenance Log Location - Paper Files
78	FQ11AD	Num	8	560	BEST12.	YesNo	HVAC Maintenance Log Location - Computer
79	FQ11AE	Num	8	568	BEST12.	YesNo	HVAC Maintenance Log Location - Contractor
80	FQ11AF	Num	8	576	BEST12.	YesNo	HVAC Maintenance Log Location - Other
81	FQ11AG	Num	8	584	BEST12.	YesNo	HVAC Maintenance Log Location - Don't Know
82	FQ12A	Num	8	592	BEST12.		Typical Thermostat Setting During Class - Heating
83	FQ12B	Num	8	600	BEST12.		Typical Thermostat Setting During Class - Cooling
84	FQ13AA	Num	8	608	BEST12.	YesNo	Thermostats Usually Set Back/Shut Down - Never
85	FQ13AB	Num	8	616	BEST12.	YesNo	Thermostats Usually Set Back/Shut Down - Nights
86	FQ13AC	Num	8	624	BEST12.	YesNo	Thermostats Usually Set Back/Shut Down - Weekends
87	FQ13AD	Num	8	632	BEST12.	YesNo	Thermostats Usually Set Back/Shut Down - Holidays
88	FQ13AE	Num	8	640	BEST12.	YesNo	Thermostats Usually Set Back/Shut Down - Summer Vac
89	FQ13AF	Num	8	648	BEST12.	YesNo	Thermostats Usually Set Back/Shut Down - Don't Know
90	FQ13AG	Num	8	656	BEST12.	YesNo	Thermostats Usually Set Back/Shut Down - N/A
91	FQ14	Num	8	664	BEST12.	Fq14f	Daily Start Time of System on School Days
92	FQ15AA	Num	8	672	BEST12.	Fq15f	Reg Insp/Main: Outdoor Air Damper Setting
93	FQ15AB	Num	8	680	BEST12.	Fq15f	Reg Insp/Main: Coils Cleaned
94	FQ15AC	Num	8	688	BEST12.	Fq15f	Reg Insp/Main: Condensate Pan and Drain
95	FQ15AD	Num	8	696	BEST12.	Fq15f	Reg Insp/Main: HVAC Filter Replaced
96	FQ15AE	Num	8	704	BEST12.	Fq15f	Reg Insp/Main: Heat Exchanger Checked

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
97	FQ16A	Num	8	712	BEST12.	Fq16f	Freq Usual Custodial: Trash Removed
98	FQ16B	Num	8	720	BEST12.	Fq16f	Freq Usual Custodial: Vacuumed, Swept, and Dusted
99	FQ16C	Num	8	728	BEST12.	Fq16cf	Freq Usual Custodial: Carpets Steam- or Dry-Cleaned
100	FQ17AA	Num	8	736	BEST12.	YesNo	Gen Bldg Main/Repair: School Staff
101	FQ17AB	Num	8	744	BEST12.	YesNo	Gen Bldg Main/Repair: District Staff
102	FQ17AC	Num	8	752	BEST12.	YesNo	Gen Bldg Main/Repair: Contractor
103	FQ17AD	Num	8	760	BEST12.	YesNo	Gen Bldg Main/Repair: None
104	FQ17AE	Num	8	768	BEST12.	YesNo	Gen Bldg Main/Repair: Don't Know
105	FQ18	Num	8	776	BEST12.	Fq18f	Num Bldg Main Staff Assigned/School
106	FQ19A	Num	8	784	BEST12.	YesNoD	Aware of US EPA's IAQ Tools for School
107	FQ19B	Num	8	792	BEST12.	YesNoD	Does School Use IAQ Kit
108	FQ20AA	Num	8	800	BEST12.	YesNo	Types of Pesticides used at School - Lawn Care
109	FQ20AB	Num	8	808	BEST12.	YesNo	Types of Pesticides used at School - Crack/Crevice
110	FQ20AC	Num	8	816	BEST12.	YesNo	Types of Pesticides used at School - Spray Can
111	FQ20AD	Num	8	824	BEST12.	YesNo	Types of Pesticides used at School - Other
112	FQ20AF	Num	8	832	BEST12.	YesNo	Types of Pesticides used at School - Don't Know
113	FQ20AE	Num	8	840	BEST12.	YesNo	Types of Pesticides used at School - None
114	FQ21AA	Num	8	848	BEST12.	YesNo	Reg Scheduled Applications Pesticides - Lawn Care
115	FQ21AB	Num	8	856	BEST12.	YesNo	Reg Scheduled Applications Pesticides - Crack/Crevice
116	FQ21AC	Num	8	864	BEST12.	YesNo	Reg Scheduled Applications Pesticides - Spray Can
117	FQ21AD	Num	8	872	BEST12.	YesNo	Reg Scheduled Applications Pesticides - Other
118	FQ21AF	Num	8	880	BEST12.	YesNo	Reg Scheduled Applications Pesticides - Don't Know
119	FQ21AE	Num	8	888	BEST12.	YesNo	Reg Scheduled Applications Pesticides - None
120	FQ22AA	Num	8	896	BEST12.	YesNo	Routine Applications Pesticides by - School Staff

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
121	FQ22AB	Num	8	904	BEST12.	YesNo	Routine Applications Pesticides by - District Staff
122	FQ22AC	Num	8	912	BEST12.	YesNo	Routine Applications Pesticides by - Pest Control
123	FQ22AE	Num	8	920	BEST12.	YesNo	Routine Applications Pesticides by - Don't Know
124	FQ22AD	Num	8	928	BEST12.	YesNo	Routine Applications Pesticides by - None
125	FQ23AA	Num	8	936	BEST12.	YesNo	Usual Freq Classroom Apply Pesticides - Weekly
126	FQ23AB	Num	8	944	BEST12.	YesNo	Usual Freq Classroom Apply Pesticides - Monthly
127	FQ23AC	Num	8	952	BEST12.	YesNo	Usual Freq Classroom Apply Pesticides - Quarterly
128	FQ23AD	Num	8	960	BEST12.	YesNo	Usual Freq Classroom Apply Pesticides - Annually
129	FQ23AE	Num	8	968	BEST12.	YesNo	Usual Freq Classroom Apply Pesticides - GE 2 Years
130	FQ23AF	Num	8	976	BEST12.	YesNo	Usual Freq Classroom Apply Pesticides - Don't Know
131	FQ23AG	Num	8	984	BEST12.	YesNo	Usual Freq Classroom Apply Pesticides - N/A
132	FQ24	Num	8	992	BEST12.	YesNoD	Implemented Integrated Pest Management (IPM) at Site
133	FQ25	Num	8	1000	BEST12.	YesNoD	Major Complaints/Environment Conditions in Last Year
134	FQ25AA	Num	8	1008	BEST12.	Fq25f	Roof Leak - Number Portable/Relocatable
135	FQ25AB	Num	8	1016	BEST12.	Fq25f	Plumbing Leak or Flood - Number Portable/Reloc
136	FQ25AC	Num	8	1024	BEST12.	Fq25f	Air Quality/Odor - Number Portable/Relocatable
137	FQ25AD	Num	8	1032	BEST12.	Fq25f	Mold - Number Portable/Relocatable
138	FQ25AE	Num	8	1040	BEST12.	Fq25f	Temperature - Number Portable/Relocatable
139	FQ25AF	Num	8	1048	BEST12.	Fq25f	Noise - Number Portable/Relocatable
140	FQ25BA	Num	8	1056	BEST12.	Fq25f	Roof Leak - Number Permanent/Traditional
141	FQ25BB	Num	8	1064	BEST12.	Fq25f	Plumbing Leak or Flood - Number Permanent/Trad
142	FQ25BC	Num	8	1072	BEST12.	Fq25f	Air Quality/Odor - Number Permanent/Traditional
143	FQ25BD	Num	8	1080	BEST12.	Fq25f	Mold - Number Permanent/Traditional
144	FQ25BE	Num	8	1088	BEST12.	Fq25f	Temperature - Number Permanent/Traditional

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
145	FQ25BF	Num	8	1096	BEST12.	Fq25f	Noise - Number Permanent/Traditional
146	FQ26AA	Num	8	1104	BEST12.	YesNo	Who Responds to Envir Compl: District Main Staff
147	FQ26AB	Num	8	1112	BEST12.	YesNo	Who Responds to Envir Compl: District Health/Safety
148	FQ26AC	Num	8	1120	BEST12.	YesNo	Who Responds to Envir Compl: District Risk Management
149	FQ26AD	Num	8	1128	BEST12.	YesNo	Who Responds to Envir Compl: School Nurse
150	FQ26AE	Num	8	1136	BEST12.	YesNo	Who Responds to Envir Compl: Outside Consultant
151	FQ26AF	Num	8	1144	BEST12.	YesNo	Who Responds to Envir Compl: Other
152	FQ26AH	Num	8	1152	BEST12.	YesNo	Who Responds to Envir Compl: Don't Know
153	I_F	Num	8	1160		YesNo	Facility Data: 1 if Yes, 0 if No
154	Sum_WT6	Num	8	1168			Sum(P1WT6(i)
155	SWT6_IF	Num	8	1176			Sum(P1WT6(i)*I_F(i))
156	P1WT5FAC	Num	8	1184			Non-response Adjustment - WgtClass Level
157	P1WT6FAC	Num	8	1192			Stat Anal Wgt Adj for Sch Lev FQ NonResp
158	p_calwor	Num	8	1200			AFDC <= 25%
159	p_meal	Num	8	1208			Meal Assistance <=55%
160	pavgcost	Num	8	1216		YesNoD	Avg Student Expenditure <=$5500
161	areacode	Num	8	1224			Area code
162	schage	Num	8	1232		Fschage	School age (yrs)
163	rfq15	Num	8	1240		Frfq15_	Regular HVAC inspection/maintenance
164	rfq12a	Num	8	1248			Thermostat setting in class - heating
165	rfq12b	Num	8	1256			Thermostat setting in class - cooling
166	numport	Num	8	1264			Number of portable classrooms
167	numtrad	Num	8	1272			Number of traditional classrooms
168	numtc	Num	8	1280			Total number classrooms

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
169	numtot	Num	8	1288			Total number classrooms
170	hvaclog	Num	8	1296		YesNoD	HVAC maintenance log kept
171	usetol	Num	8	1304		Fusetol	Awareness/use of EPA IAQ Tools
172	rfq25aa	Num	8	1312		Fq25f	Roof leak complaint last yr: Portable
173	rfq25ab	Num	8	1320		Fq25f	Plumbing leak complaint last yr: Portable
174	rfq25ac	Num	8	1328		Fq25f	Air/odor complaint last yr: Portable
175	rfq25ad	Num	8	1336		Fq25f	Mold complaint last yr: Portable
176	rfq25ae	Num	8	1344		Fq25f	Temperature complaint last yr: Portable
177	rfq25af	Num	8	1352		Fq25f	Noise complaint last yr: Portable
178	rfq25ba	Num	8	1360		Fq25f	Roof leak complaint last yr: Traditional
179	rfq25bb	Num	8	1368		Fq25f	Plumbing leak complaint last yr: Traditional
180	rfq25bc	Num	8	1376		Fq25f	Air/odor complaint last yr: Traditional
181	rfq25bd	Num	8	1384		Fq25f	Mold complaint last yr: Traditional
182	rfq25be	Num	8	1392		Fq25f	Temperature complaint last yr: Traditional
183	rfq25bf	Num	8	1400		Fq25f	Noise complaint last yr: Traditional
184	portcp	Num	8	1408		YesNoD	Envir complaints from port classrooms
185	tradcp	Num	8	1416		YesNoD	Envir complaints from trad classrooms
186	apsu	Num	8	1424			Analysis PSU identifier (school)
187	astratum	Num	8	1432			Analysis stratum (identically 1)
188	overall	Num	8	1440			Identically 1
189	popstat	Num	8	1448		Fpopstat	School location
190	schtype	Num	8	1456		Fschtype	School type
191	region	Num	8	1464		Fregion	Geographic region

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Phase I Analysis Data Set Information
School Analysis Data Set

-----Sort Information-----	
Sortedby:	astratum apsu
Validated:	YES
Character Set:	ANSI

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Phase I Analysis Data Set Information
Classroom Analysis Data Set

-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
1	studyid	Char	8	5744	$8.		Study ID
2	alpha_id	Char	8	5752	$8.		Alpha Value on ID Suffix
3	RoomType	Num	8	0		Type	Classroom Classification
4	FRoom	Char	17	5760			Facility Room Number
5	FRmType	Num	8	8		Type	Facility Portable or Traditional Classroom
6	FQ27B	Num	8	16		Fq27bf	FQ27XB: Don't Know Manufacturer
7	FTypePort	Num	8	24		Typeprtf	FQ27XC: Type of Portable Classroom
8	FReloc3Yr	Num	8	32			FQ27XD: Times Relocated in Last 3 Years
9	FYrConst	Num	8	40			FQ28X: Year of Construction/Manufacture
10	FQ29_A	Num	8	48		YesNo	FQ29XA: Major Renov/Add - Addition
11	FQ29_B	Num	8	56		YesNo	FQ29XB: Major Renov/Add - Lighting
12	FQ29_C	Num	8	64		YesNo	FQ29XC: Major Renov/Add - HVAC
13	FQ29_D	Num	8	72		YesNo	FQ29XD: Major Renov/Add - Roof
14	FQ29_E	Num	8	80		YesNo	FQ29XE: Major Renov/Add - Floor
15	FQ29_F	Num	8	88		YesNo	FQ29XF: Major Renov/Add - Wall
16	FQ30_A	Num	8	96		YesNo	FQ30XA: Major Remediations - Asbestos
17	FQ30_B	Num	8	104		YesNo	FQ30XB: Major Remediations - Lead
18	FQ30_C	Num	8	112		YesNo	FQ30XC: Major Remediations - Mold
19	FQ30_D	Num	8	120		YesNo	FQ30XD: Major Remediations - Other
20	FQ31	Num	8	128		Fq31f	FQ31X: Classroom Size (Sq. Ft.)
21	FQ32	Num	8	136		Fq32f	FQ32X: Number Classrooms in Bldg
22	FQ33	Num	8	144		Fq33f	FQ33X: Floor Level of this Classroom
23	FQ34_A	Num	8	152		Fq34af	FQ34XA: Type of Building Foundation
24	FQ34_BA	Num	8	160		YesNo	FQ34XBA: Type of Ground Cover - Dirt
25	FQ34_BB	Num	8	168		YesNo	FQ34XBB: Type of Ground Cover - Gravel

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
26	FQ34_BC	Num	8	176		YesNo	FQ34XBC: Type of Ground Cover - Plastic
27	FQ34_BD	Num	8	184		YesNo	FQ34XBD: Type of Ground Cover - Concrete/Asphalt
28	FQ34_BE	Num	8	192		YesNo	FQ34XBE: Type of Ground Cover - Other
29	FQ34_C	Num	8	200		Fq34cf	FQ34XC: Raised Floor Inches Above Ground
30	FQ35	Num	8	208		Fq35f	FQ35X: Roof Last Replaced (in years)
31	FQ36	Num	8	216		Fq36f	FQ36X: Type of Roof
32	FQ37	Num	8	224		Fq37f	FQ37X: Roof Pitch
33	FQ38	Num	8	232		YesNoD	FQ38X: Suspended Ceilings
34	FQ39_A	Num	8	240		YesNo	FQ39XA: Within 50 Ft/Classroom - Parking Lot/Roadway
35	FQ39_B	Num	8	248		YesNo	FQ39XB: Within 50 Ft/Classroom - Loading Dock
36	FQ39_C	Num	8	256		YesNo	FQ39XC: Within 50 Ft/Classroom - Flue Exhaust
37	FQ39_D	Num	8	264		YesNo	FQ39XD: Within 50 Ft/Classroom - Dumpster
38	FQ39_E	Num	8	272		YesNo	FQ39XE: Within 50 Ft/Classroom - Custodial Room
39	FQ39_F	Num	8	280		YesNo	FQ39XF: Within 50 Ft/Classroom - Bathroom
40	FQ39_G	Num	8	288		YesNo	FQ39XG: Within 50 Ft/Classroom - Art Room
41	FQ39_H	Num	8	296		YesNo	FQ39XH: Within 50 Ft/Classroom - Shop
42	FQ39_I	Num	8	304		YesNo	FQ39XI: Within 50 Ft/Classroom - Cafeteria
43	FQ39_J	Num	8	312		YesNo	FQ39XJ: Within 50 Ft/Classroom - Science Lab
44	FQ40_A	Num	8	320		YesNo	FQ40XA: Peeling Paint - Inside
45	FQ40_B	Num	8	328		YesNo	FQ40XB: Peeling Paint - Outside
46	FQ40_C	Num	8	336		YesNo	FQ40XC: Peeling Paint - None
47	FQ41	Num	8	344		YesNoD	FQ41X: Packaged HVAC Unit
48	FQ42	Num	8	352		Fq42f	FQ42X: Location Main Air Handler Unit AHU
49	FQ43	Num	8	360		Fq43f	FQ43X: Type of Main Heating System
50	FQ44_1	Num	8	368		YesNoD	FQ44: Heating Fuel or Energy Type - Electric

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
51	FQ44_2	Num	8	376		YesNoD	FQ44: Heating Fuel or Energy Type - Gas
52	FQ44_3	Num	8	384		YesNoD	FQ44: Heating Fuel or Energy Type - Solar
53	FQ44_4	Num	8	392		YesNoD	FQ44: Heating Fuel or Energy Type - Other
54	FQ44_5	Num	8	400		YesNoD	FQ44: Heating Fuel or Energy Type - Don't Know
55	FQ44_6	Num	8	408		YesNoD	FQ44: Heating Fuel or Energy Type - N/A
56	FQ45	Num	8	416		Fq45f	FQ45X: Type of Main Cooling System
57	FQ46	Num	8	424		Fq46f	FQ46X: Mode of Supply Fan Operation
58	FQ47	Num	8	432		YesNoD	FQ47X: Economizer
59	FQ48_A	Num	8	440			FQ48XA: Minimum Setting of Outdoor Damper %
60	FQ48_B	Num	8	448		Fq48bf	FQ48XB: Don't Know Min Setting Outdoor Damper%
61	FQ49_A	Num	8	456		YesNo	FQ49XA: Type Return Vents - Open Plenum
62	FQ49_B	Num	8	464		YesNo	FQ49XB: Type Return Vents - Ducted
63	FQ49_C	Num	8	472		YesNo	FQ49XC: Type Return Vents - Other
64	FQ49_D	Num	8	480		YesNo	FQ49XD: Type Return Vents - Don't Know
65	FQ49_E	Num	8	488		YesNo	FQ49XE: Type Return Vents - N/A
66	FQ50_A	Num	8	496		YesNo	FQ50XA: Filter Type - Fiberglass Mesh
67	FQ50_B	Num	8	504		YesNo	FQ50XB: Filter Type - Pleated
68	FQ50_C	Num	8	512		YesNo	FQ50XC: Filter Type - High Efficiency
69	FQ50_D	Num	8	520		YesNo	FQ50XD: Filter Type - Other
70	FQ50_E	Num	8	528		YesNo	FQ50XE: Filter Type - Don't Know
71	FQ50_F	Num	8	536		YesNo	FQ50XF: Filter Type - N/A
72	FQ51_A	Num	8	544		YesNo	FQ51XA: Supply Ductwork - Flexible
73	FQ51_B	Num	8	552		YesNo	FQ51XB: Supply Ductwork - Sheet Metal
74	FQ51_C	Num	8	560		YesNo	FQ51XC: Supply Ductwork - Other
75	FQ51_D	Num	8	568		YesNo	FQ51XD: Supply Ductwork - Don't Know

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
76	FQ51_E	Num	8	576		YesNo	FQ51XE: Supply Ductwork - N/A
77	FQ52_1	Num	8	584		YesNoD	FQ52: Thermostat Control by Maintenance
78	FQ52_2	Num	8	592		YesNoD	FQ52: Thermostat Control by Teacher
79	FQ52_3	Num	8	600		YesNoD	FQ52: Thermostat Control by Ctl Energy Mgt
80	FQ52_4	Num	8	608		YesNoD	FQ52: Thermostat Control by Other
81	FQ52_5	Num	8	616		YesNoD	FQ52: Thermostat Control by Don't Know
82	FQ52_6	Num	8	624		YesNoD	FQ52: Thermostat Control by NA
83	FQ53_A	Num	8	632		YesNo	FQ53XA: Space Heater(s) - Electric
84	FQ53_B	Num	8	640		YesNo	FQ53XB: Space Heater(s) - Gas
85	FQ53_C	Num	8	648		YesNo	FQ53XC: Space Heater(s) - Propane
86	FQ53_D	Num	8	656		YesNo	FQ53XD: Space Heater(s) - Kerosene
87	FQ53_E	Num	8	664		YesNo	FQ53XE: Space Heater(s) - Wood
88	FQ53_F	Num	8	672		YesNo	FQ53XF: Space Heater(s) - Other
89	FQ53_G	Num	8	680		YesNo	FQ53XG: Space Heater(s) - None
90	FQ54	Num	8	688		Fq54f	FQ54X: Humidity Control
91	FQ55_A	Num	8	696		YesNo	FQ55XA: Fans - Ceiling
92	FQ55_B	Num	8	704		YesNo	FQ55XB: Fans - Window
93	FQ55_C	Num	8	712		YesNo	FQ55XC: Fans - Lab or Range Hood
94	FQ55_D	Num	8	720		YesNo	FQ55XD: Fans - Other
95	FQ55_E	Num	8	728		YesNo	FQ55XE: Fans - Don't Know
96	FQ55_F	Num	8	736		YesNo	FQ55XF: Fans - None
97	FQ56_A	Num	8	744		YesNo	FQ56XA: Flooding/Leaks - Roof Leak
98	FQ56_B	Num	8	752		YesNo	FQ56XB: Flooding/Leaks - Plumbing Leak
99	FQ56_C	Num	8	760		YesNo	FQ56XC: Flooding/Leaks - Ground Level
100	FQ56_D	Num	8	768		YesNo	FQ56XD: Flooding/Leaks - Other

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
101	FQ56_E	Num	8	776		YesNo	FQ56XE: Flooding/Leaks - Don't Know
102	FQ56_F	Num	8	784		YesNo	FQ56XF: Flooding/Leaks - None
103	FQ57_A	Num	8	792		YesNo	FQ57XA: Visible Mold Growth - Window
104	FQ57_B	Num	8	800		YesNo	FQ57XB: Visible Mold Growth - Wall
105	FQ57_C	Num	8	808		YesNo	FQ57XC: Visible Mold Growth - Carpet
106	FQ57_D	Num	8	816		YesNo	FQ57XD: Visible Mold Growth - Ceiling
107	FQ57_E	Num	8	824		YesNo	FQ57XE: Visible Mold Growth - Classroom Item
108	FQ57_F	Num	8	832		YesNo	FQ57XF: Visible Mold Growth - Furniture
109	FQ57_G	Num	8	840		YesNo	FQ57XG: Visible Mold Growth - Cabinet
110	FQ57_H	Num	8	848		YesNo	FQ57XH: Visible Mold Growth - Other
111	FQ57_I	Num	8	856		YesNo	FQ57XI: Visible Mold Growth - Don't Know
112	FQ57_J	Num	8	864		YesNo	FQ57XJ: Visible Mold Growth - None
113	FQ58	Num	8	872		YesNoD	FQ58X: Lawn Sprinklers Spray Outside Wall
114	FQ59	Num	8	880		Fq59f	FQ59X: Standing Water Within 50 Ft. of Bldg
115	FQ60_A	Num	8	888		YesNo	FQ60XA: New Pressed Wood - Bookcases/Cabinets
116	FQ60_B	Num	8	896		YesNo	FQ60XB: New Pressed Wood - Tack Boards
117	FQ60_C	Num	8	904		YesNo	FQ60XC: New Pressed Wood - Desks
118	FQ60_D	Num	8	912		YesNo	FQ60XD: New Pressed Wood - Chairs
119	FQ60_E	Num	8	920		YesNo	FQ60XE: New Pressed Wood - Don't Know
120	FQ60_F	Num	8	928		YesNo	FQ60XF: New Pressed Wood - None
121	FQ61	Num	8	936		YesNoD	FQ61X: Painting, Caulking or Sealing
122	FQ62_A	Num	8	944		YesNo	FQ62XA: New Floor Covering - Carpet
123	FQ62_B	Num	8	952		YesNo	FQ62XB: New Floor Covering - Linoleum
124	FQ62_C	Num	8	960		YesNo	FQ62XC: New Floor Covering - Vinyl
125	FQ62_D	Num	8	968		YesNo	FQ62XD: New Floor Covering - Rubber

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
126	FQ62_E	Num	8	976		YesNo	FQ62XE: New Floor Covering - Wood
127	FQ62_F	Num	8	984		YesNo	FQ62XF: New Floor Covering - Other
128	FQ62_G	Num	8	992		YesNo	FQ62XG: New Floor Covering - Don't Know
129	FQ63_A	Num	8	1000		YesNo	FQ63XA: Pesticides/Classrooms - Crack/Crevice
130	FQ63_B	Num	8	1008		YesNo	FQ63XB: Pesticides/Classrooms - Fumigation
131	FQ63_C	Num	8	1016		YesNo	FQ63XC: Pesticides/Classrooms - Bomb
132	FQ63_D	Num	8	1024		YesNo	FQ63XD: Pesticides/Classrooms - Spray Can
133	FQ63_E	Num	8	1032		YesNo	FQ63XE: Pesticides/Classrooms - Traps
134	FQ63_F	Num	8	1040		YesNo	FQ63XF: Pesticides/Classrooms - Powder
135	FQ63_G	Num	8	1048		YesNo	FQ63XG: Pesticides/Classrooms - Other
136	FQ63_H	Num	8	1056		YesNo	FQ63XH: Pesticides/Classrooms - DK
137	FQ63_I	Num	8	1064		YesNo	FQ63XI: Pesticides/Classrooms - None
138	FQ64_A	Num	8	1072		YesNo	FQ64XA: Light Bulbs - T8 Fluorescent
139	FQ64_B	Num	8	1080		YesNo	FQ64XB: Light Bulbs - T12 Fluorescent
140	FQ64_C	Num	8	1088		YesNo	FQ64XC: Light Bulbs - Incandescent
141	FQ64_D	Num	8	1096		YesNo	FQ64XD: Light Bulbs - Don't Know
142	FQ64_E	Num	8	1104		YesNo	FQ64XE: Light Bulbs - None
143	TQ_ID	Char	9	5777	$9.		Teacher Questionnaire ID
144	ROOM	Char	17	5786	$17.		Room Description - CA-PAC Teacher Data
145	H2CO_ppm	Num	8	1112			H2CO_ppm
146	DQFLAG	Num	8	1120		Flagf	Data Quality Flag Assigned to Record
147	field_ob	Num	8	1128		YesNo	Field Observation
148	FQ_ID	Char	9	5803	$9.		Facility Questionnaire ID
149	ResQuex	Num	8	1136		YesNo	PhaseI Data either Teacher or Facility Data
150	n_port	Num	8	1144			Number of Portable Classrooms in School

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Phase I Analysis Data Set Information
Classroom Analysis Data Set

-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
151	n_trad	Num	8	1152			Number of Traditional Classrooms in School
152	ResPF1	Num	8	1160		YesNo	School with at Least One Valid H2CO Value
153	P1WT1	Num	8	1168	6.		Initial Sampling Weight
154	P1WT2	Num	8	1176	8.3		Wgt Component for SubSample Waves 1-2
155	P1WT3	Num	8	1184	6.		Eligible based on Phase 1 Data (0/1)
156	P1WT4	Num	8	1192	8.3		Phase I Sampling Weight
157	P1WT2PF1	Num	8	1200			Phase I Formaldehyde Weight Component
158	P1WT4PF1	Num	8	1208			Phase I Samp Wgt H2CO, Adj Inelig Sch
159	CDS_CODE	Char	25	5812	$25.		Unique CA School ID
160	NorthSouth	Char	3	5837	$3.		North/South County Indicator
161	PopStatus	Char	1	5840		$pop	Population Indicator
162	P_CalWORKs	Num	8	1216	8.		Percent Based on CalWORKs and Total Enrollment
163	P_Meals	Num	8	1224	8.		Percent Total Meals and Total Enrollment
164	Sch_Type	Char	1	5841		$sch	Three Category School Type
165	p_mealsC	Num	8	1232			0 LT 45 P_Meals / 1 Otherwise
166	AvgCost	Num	8	1240	DOLLAR10.2		Expenditure per Student
167	AvgCostC	Num	8	1248		Acostf	Average Cost Per Student - Dich
168	AvgCostA	Num	8	1256			Adjusted Average Cost Per Student
169	WgtClass	Num	8	1264			School Level Weight Class
170	P1WT5	Num	8	1272			Non-response Adj -- School Level
171	P1WT5PF1	Num	8	1280			Adj for H2CO NonResp -- School Level
172	P1WT6	Num	8	1288			Stat Analysis Wgt Adj for Sch Level NonResp
173	P1WT6PF1	Num	8	1296			Stat Analy Wgt Adj H2CO NonResp -- Sch Lev
174	I_F	Num	8	1304		YesNo	Facility Data: 1 if Yes, 0 if No
175	SWT6_IF	Num	8	1312			Sum(P1WT6(i)*I_F(i))

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Phase I Analysis Data Set Information
Classroom Analysis Data Set

-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
176	P1WT5FAC	Num	8	1320			Non-response Adjustment - WgtClass Level
177	P1WT6FAC	Num	8	1328			Stat Anal Wgt Adj for Sch Lev FQ NonResp
178	n_p3	Num	8	1336			Num Port Classrooms (1-3) - Phase 1
179	n_t3	Num	8	1344			Num Trad Classrooms (0-2) - Phase 1
180	P1WT7	Num	8	1352			Classroom Sampling Weight Component
181	P1WT8	Num	8	1360			Classroom Inital Sampling Weight
182	P1WT8PF1	Num	8	1368			Classroom Inital Samp Wgt H2CO Sample
183	Resp1	Num	8	1376		YesNo	Teacher Data Response
184	Resp2	Num	8	1384		YesNo	Facility Data Response
185	Resp3	Num	8	1392		YesNo	Valid Field Ob Formaldehyde Response
186	Resp12	Num	8	1400		YesNo	Teacher and Facility Response
187	Resp13	Num	8	1408		YesNo	Teacher/Valid Field Ob Response
188	Resp23	Num	8	1416		YesNo	Facility/Valid Field Ob Response
189	Resp123	Num	8	1424		YesNo	Teacher/Facility/Field Ob Response
190	WgtClass2	Num	8	1432			Classroom Level Weight Class
191	SWT8_R1	Num	8	1440			Sum(P1WT8(i)*Resp1(i))
192	SWT8_R2	Num	8	1448			Sum(P1WT8(i)*Resp2(i))
193	SWT8_R12	Num	8	1456			Sum(P1WT8(i)*Resp12(i))
194	SWT8PF_R3	Num	8	1464			Sum(P1WT8PF1(i)*Resp3(i))
195	SWT8PF_R13	Num	8	1472			Sum(P1WT8PF1(i)*Resp13(i))
196	SWT8PF_R23	Num	8	1480			Sum(P1WT8PF1(i)*Resp23(i))
197	SWT8PF_R123	Num	8	1488			Sum(P1WT8PF1(i)*Resp123(i))
198	P1WT9_1	Num	8	1496			Adj for TQ NonResp - Classroom
199	P1WT10_1	Num	8	1504			Stat Anal Wgt for TQ
200	P1WT9_2	Num	8	1512			Adj for FQ NonResp - Classroom

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Phase I Analysis Data Set Information
Classroom Analysis Data Set

-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
201	P1WT10_2	Num	8	1520			Stat Anal Wgt for FQ
202	P1WT9_12	Num	8	1528			Adj for TQ & FQ NonResp - Classroom
203	P1WT10_12	Num	8	1536			Stat Anal Wgt for TQ and FQ
204	P1WT9_3	Num	8	1544			Adj for H2CO NonResp - Classroom
205	P1WT10_3	Num	8	1552			Stat Anal Wgt for H2CO Data
206	P1WT9_13	Num	8	1560			Adj for TQ & H2CO NonResp Classroom
207	P1WT10_13	Num	8	1568			Stat Anal Wgt for TQ & H2CO Data
208	P1WT9_23	Num	8	1576			Adj for FQ & H2CO NonResp Classroom
209	P1WT10_23	Num	8	1584			Stat Anal Wgt for FQ & H2CO Data
210	P1WT9_123	Num	8	1592			Adj for TQ, FQ & H2CO NR Classroom
211	P1WT10_123	Num	8	1600			Stat Anal Wgt TQ, FQ & H2CO Data
212	Location	Char	25	5842	$25.		School name from H2CO sampling
213	StartDateTime	Char	30	5867	$30.		StartDateTime
214	StopDateTime	Char	30	5897	$30.		StopDateTime
215	ExposureHours	Char	30	5927	$30.		ExposureHours
216	A_580	Num	8	1608			H2CO raw instrument response
217	LotNum	Char	8	5957	$8.		Lot number for H2CO vials
218	Blank_ug	Num	8	1616			Average of lab blanks (ug)
219	Slope	Num	8	1624			H2CO calibration line: slope
220	Intercept	Num	8	1632			H2CO calibration line: intercept
221	H2CO_ug	Num	8	1640			H2CO_ug
222	Comments	Char	50	5965	$50.		Comments from lab
223	H2CO_0	Num	8	1648			H2CO_PPM: Negative/Zero H2CO_ppm = 0
224	H2CO_1	Num	8	1656			H2CO_PPM: Negative/Zero H2CO_ppm = 0.0001
225	logH2CO	Num	8	1664			Log of Max 0.0001 or H2CO_ppm

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Phase I Analysis Data Set Information
Classroom Analysis Data Set

-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
226	Date	Num	8	1672	MMDDYY10.		Date CA-PAC Teacher Data
227	TQ1A	Num	8	1680	BEST12.	Tq1f	Teacher Gender
228	TQ1B	Num	8	1688	BEST12.		Teacher Age
229	TQ2	Num	8	1696	BEST12.	Tq2f	Job Category
230	TQ3A	Num	8	1704	BEST12.	Tq3f	How long have you worked in this room?
231	TQ3B	Num	8	1712	BEST12.	Tq3bcf	How long have you worked in this school?
232	TQ3C	Num	8	1720	BEST12.	Tq3bcf	How long have you worked in teaching prof?
233	TQ4A	Num	8	1728	BEST12.		Time spent in classroom - Days of the week
234	TQ4B	Num	8	1736	BEST12.	Tq4bf	Time spent in classroom - Hours of the day
235	TQ5	Num	8	1744	BEST12.	Tq5f	Classroom best described as
236	TQ6A	Num	8	1752	BEST12.	YesNo	Student Grade Level Taught in Room - KG
237	TQ6B	Num	8	1760	BEST12.	YesNo	Student Grade Level Taught in Room - G1
238	TQ6C	Num	8	1768	BEST12.	YesNo	Student Grade Level Taught in Room - G2
239	TQ6D	Num	8	1776	BEST12.	YesNo	Student Grade Level Taught in Room - G3
240	TQ6E	Num	8	1784	BEST12.	YesNo	Student Grade Level Taught in Room - G4
241	TQ6F	Num	8	1792	BEST12.	YesNo	Student Grade Level Taught in Room - G5
242	TQ6G	Num	8	1800	BEST12.	YesNo	Student Grade Level Taught in Room - G6
243	TQ6H	Num	8	1808	BEST12.	YesNo	Student Grade Level Taught in Room - G7
244	TQ6I	Num	8	1816	BEST12.	YesNo	Student Grade Level Taught in Room - G8
245	TQ6J	Num	8	1824	BEST12.	YesNo	Student Grade Level Taught in Room - G9
246	TQ6K	Num	8	1832	BEST12.	YesNo	Student Grade Level Taught in Room - G10
247	TQ6L	Num	8	1840	BEST12.	YesNo	Student Grade Level Taught in Room - G11
248	TQ6M	Num	8	1848	BEST12.	YesNo	Student Grade Level Taught in Room - G12
249	TQ6N	Num	8	1856	BEST12.	YesNo	Student Grade Level Taught in Room - N/A
250	TQ7	Num	8	1864	BEST12.	Tq7f	Students stay in room or change rooms

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
251	TQ8	Num	8	1872	BEST12.		How many students per class typically in room
252	TQ9	Num	8	1880	BEST12.	Type	Type of building classroom is in
253	TQ10A	Num	8	1888	BEST12.	YesNo	Flooring in Room - Carpet - Entire Room
254	TQ10B	Num	8	1896	BEST12.	YesNo	Flooring in Room - Carpet - Partial Room
255	TQ10C	Num	8	1904	BEST12.	YesNo	Flooring in Room - Carpet - Area Rug
256	TQ10D	Num	8	1912	BEST12.	YesNo	Flooring in Room - Carpet - Sitting Pads
257	TQ10E	Num	8	1920	BEST12.	YesNo	Flooring in Room - Hard - Vinyl/linoleum
258	TQ10F	Num	8	1928	BEST12.	YesNo	Flooring in Room - Hard - Wood
259	TQ10G	Num	8	1936	BEST12.	YesNo	Flooring in Room - Hard - Rubber
260	TQ10H	Num	8	1944	BEST12.	YesNo	Flooring in Room - Hard - Concrete/ceramic
261	TQ10I	Num	8	1952	BEST12.	YesNo	Flooring in Room - Hard - Walk-off mat(s)
262	TQ11	Num	8	1960	BEST12.	Tq11f	Primary Wall Material
263	TQ12_N	Num	8	1968	BEST12.	YesNo	Plumbing in Room - None
264	TQ12_S	Num	8	1976	BEST12.	YesNo	Plumbing in Room - Sink
265	TQ12_T	Num	8	1984	BEST12.	YesNo	Plumbing in Room - Toilet
266	TQ12_F	Num	8	1992	BEST12.	YesNo	Plumbing in Room - Fountain
267	TQ13	Num	8	2000	BEST12.	Tq13f	Sides of Room with Windows
268	TQ14A	Num	8	2008	BEST12.	YesNo	Type of Windows in Room - None
269	TQ14B	Num	8	2016	BEST12.	YesNo	Type of Windows in Room - Above 9 ft
270	TQ14C	Num	8	2024	BEST12.	YesNo	Type of Windows in Room - Up to Door Hgt
271	TQ14D	Num	8	2032	BEST12.	YesNo	Type of Windows in Room - Skylights
272	TQ14E	Num	8	2040	BEST12.	YesNo	Type of Windows in Room - Up to 9 ft
273	TQ15	Num	8	2048	BEST12.	Tq15f	How often open windows for ventilation
274	TQ16A	Num	8	2056	BEST12.	YesNoD	Does a door open directly to outdoors?
275	TQ16B	Num	8	2064	BEST12.	Tq15f	How often is door to outside open d/school day

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
276	TQ17	Num	8	2072	BEST12.	YesNoD	Air Conditioning in Room?
277	TQ18A	Num	8	2080	BEST12.	YesNoD	Thermostat in the Room?
278	TQ18B	Num	8	2088	BEST12.		Case of thermostat in Room
279	TQ19A_A	Num	8	2096	BEST12.	YesNo	Furnishings/Room - Tables & Desks - None
280	TQ19A_B	Num	8	2104	BEST12.	YesNo	Furnishings/Room - Tables & Desks - Metal
281	TQ19A_C	Num	8	2112	BEST12.	YesNo	Furnishings/Room - Tables & Desks - Solid Wood
282	TQ19A_D	Num	8	2120	BEST12.	YesNo	Furnishings/Room - Tables & Desks - Pressed Wood
283	TQ19A_E	Num	8	2128	BEST12.	YesNo	Furnishings/Room - Tables & Desks - Plastic
284	TQ19A_F	Num	8	2136	BEST12.	YesNo	Furnishings/Room - Tables & Desks - Don't Know
285	TQ19B_A	Num	8	2144	BEST12.	YesNo	Furnishings in Room - Bookcases - None
286	TQ19B_B	Num	8	2152	BEST12.	YesNo	Furnishings in Room - Bookcases - Metal
287	TQ19B_C	Num	8	2160	BEST12.	YesNo	Furnishings in Room - Bookcases - Solid Wood
288	TQ19B_D	Num	8	2168	BEST12.	YesNo	Furnishings in Room - Bookcases - Pressed Wood
289	TQ19B_E	Num	8	2176	BEST12.	YesNo	Furnishings in Room - Bookcases - Plastic
290	TQ19B_F	Num	8	2184	BEST12.	YesNo	Furnishings in Room - Bookcases - Don't Know
291	TQ19C_A	Num	8	2192	BEST12.	YesNo	Furnishings in Room - Cabinets - None
292	TQ19C_B	Num	8	2200	BEST12.	YesNo	Furnishings in Room - Cabinets - Metal
293	TQ19C_C	Num	8	2208	BEST12.	YesNo	Furnishings in Room - Cabinets - Solid Wood
294	TQ19C_D	Num	8	2216	BEST12.	YesNo	Furnishings in Room - Cabinets - Pressed Wood
295	TQ19C_E	Num	8	2224	BEST12.	YesNo	Furnishings in Room - Cabinets - Plastic
296	TQ19C_F	Num	8	2232	BEST12.	YesNo	Furnishings in Room - Cabinets - Don't Know
297	TQ20A	Num	8	2240	BEST12.	YesNo	New furnishings this school year - None
298	TQ20B	Num	8	2248	BEST12.	YesNo	New furnishings this school year - Carpet
299	TQ20C	Num	8	2256	BEST12.	YesNo	New furnishings this school year - Tables
300	TQ20D	Num	8	2264	BEST12.	YesNo	New furnishings this school year - Desks/Chairs

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
301	TQ20E	Num	8	2272	BEST12.	YesNo	New furnishings this school year - Bookcases
302	TQ20F	Num	8	2280	BEST12.	YesNo	New furnishings this school year - Cabinets
303	TQ20G	Num	8	2288	BEST12.	YesNo	New furnishings this school year - Don't Know
304	TQ21A	Num	8	2296	BEST12.	YesNo	Living Items in Room - Potted Plants or Terrarium
305	TQ21B	Num	8	2304	BEST12.	YesNo	Living Items in Room - Reptiles/amphibians
306	TQ21C	Num	8	2312	BEST12.	YesNo	Living Items in Room - Birds
307	TQ21D	Num	8	2320	BEST12.	YesNo	Living Items in Room - Fish
308	TQ21E	Num	8	2328	BEST12.	YesNo	Living Items in Room - Mammals
309	TQ21F	Num	8	2336	BEST12.	YesNo	Living Items in Room - Bugs
310	TQ22A_A	Num	8	2344	BEST12.	YesNo	Currently in Room - Copiers - None
311	TQ22A_B	Num	8	2352	BEST12.	YesNo	Currently in Room - Copiers - Photocopy Machine
312	TQ22A_C	Num	8	2360	BEST12.	YesNo	Currently in Room - Copiers - Mimeograph Machine
313	TQ22A_D	Num	8	2368	BEST12.	YesNo	Currently in Room - Copiers - Laser Printers
314	TQ22A_E	Num	8	2376	BEST12.	YesNo	Currently in Room - Copiers - Carbonless Copy Paper
315	TQ22A_F	Num	8	2384	BEST12.	YesNo	Currently in Room - Copiers - Laminator
316	TQ22B_A	Num	8	2392	BEST12.	YesNo	Currently in Room - Appliances - None
317	TQ22B_B	Num	8	2400	BEST12.	YesNo	Currently in Room - Appliances - Refrigerator
318	TQ22B_C	Num	8	2408	BEST12.	YesNo	Currently in Room - Appliances - Stove or Oven
319	TQ22B_D	Num	8	2416	BEST12.	YesNo	Currently in Room - Appliances - Washing Machine
320	TQ22B_E	Num	8	2424	BEST12.	YesNo	Currently in Room - Appliances - Lab Burner
321	TQ22B_F	Num	8	2432	BEST12.	YesNo	Currently in Room - Appliances - Microwave Oven
322	TQ22C_A	Num	8	2440	BEST12.	YesNo	Currently in Room - Chemicals - None
323	TQ22C_B	Num	8	2448	BEST12.	YesNo	Currently in Room - Chemicals - Lab Chemicals
324	TQ22C_C	Num	8	2456	BEST12.	YesNo	Currently in Room - Chemicals - Cleaning Products
325	TQ22C_D	Num	8	2464	BEST12.	YesNo	Currently in Room - Chemicals - Biological Spec/Chem

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
326	TQ23A_A	Num	8	2472	BEST12.	YesNo	Ever used in Room - Paints/Pens - Never
327	TQ23A_B	Num	8	2480	BEST12.	YesNo	Ever used in Room - Paints/Pens - Oil/Acrylic Paint
328	TQ23A_C	Num	8	2488	BEST12.	YesNo	Ever used in Room - Paints/Pens - Perm Markers/Pens
329	TQ23A_D	Num	8	2496	BEST12.	YesNo	Ever used in Room - Paints/Pens - Whiteboad Markers
330	TQ23B_A	Num	8	2504	BEST12.	YesNo	Ever used in Room - Glue/Fluids - Never
331	TQ23B_B	Num	8	2512	BEST12.	YesNo	Ever used in Room - Glue/Fluids - Rubber Cement
332	TQ23B_C	Num	8	2520	BEST12.	YesNo	Ever used in Room - Glue/Fluids - Correction Fluid
333	TQ23B_D	Num	8	2528	BEST12.	YesNo	Ever used in Room - Glue/Fluids - Epoxy
334	TQ23C_A	Num	8	2536	BEST12.	YesNo	Ever used in Room - Air Freshener - Never
335	TQ23C_B	Num	8	2544	BEST12.	YesNo	Ever used in Room - Air Freshener - Hanging Freshener
336	TQ23C_C	Num	8	2552	BEST12.	YesNo	Ever used in Room - Air Freshener - Plug-In Freshener
337	TQ23C_D	Num	8	2560	BEST12.	YesNo	Ever used in Room - Air Freshener - Spray Can
338	TQ23D_A	Num	8	2568	BEST12.	YesNo	Ever used in Room - Candles - Never
339	TQ23D_B	Num	8	2576	BEST12.	YesNo	Ever used in Room - Candles - Unscented
340	TQ23D_C	Num	8	2584	BEST12.	YesNo	Ever used in Room - Candles - Scented
341	TQ23D_D	Num	8	2592	BEST12.	YesNo	Ever used in Room - Candles - Incense
342	TQ23E_A	Num	8	2600	BEST12.	YesNo	Ever used in Room - Air Cleaner - Never
343	TQ23E_B	Num	8	2608	BEST12.	YesNo	Ever used in Room - Air Cleaner - Portable Air Fil/Pur
344	TQ23E_C	Num	8	2616	BEST12.	YesNo	Ever used in Room - Air Cleaner - Ozone/Ion-Gen Air Pur
345	TQ24A_A	Num	8	2624	BEST12.	YesNo	Pesticides in Room - Sprays - Never
346	TQ24A_B	Num	8	2632	BEST12.	YesNo	Pesticides in Room - Sprays - In the past
347	TQ24A_C	Num	8	2640	BEST12.	YesNo	Pesticides in Room - Sprays - Currently
348	TQ24B_A	Num	8	2648	BEST12.	YesNo	Pesticides in Room - Powders - Never
349	TQ24B_B	Num	8	2656	BEST12.	YesNo	Pesticides in Room - Powders - In the past
350	TQ24B_C	Num	8	2664	BEST12.	YesNo	Pesticides in Room - Powders - Currently

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
351	TQ24C_A	Num	8	2672	BEST12.	YesNo	Pesticides in Room - Traps - Never
352	TQ24C_B	Num	8	2680	BEST12.	YesNo	Pesticides in Room - Traps - In the past
353	TQ24C_C	Num	8	2688	BEST12.	YesNo	Pesticides in Room - Traps - Currently
354	TQ25	Num	8	2696	BEST12.	Tq25f	Classroom Preference at School
355	TQ26A_A	Num	8	2704	BEST12.	YesNo	Classroom - Temperature - Generally acceptable
356	TQ26A_B	Num	8	2712	BEST12.	YesNo	Classroom - Temperature - Often too cold
357	TQ26A_C	Num	8	2720	BEST12.	YesNo	Classroom - Temperature - Often too hot
358	TQ26B_A	Num	8	2728	BEST12.	YesNo	Classroom - Humidity - Generally acceptable
359	TQ26B_B	Num	8	2736	BEST12.	YesNo	Classroom - Humidity - Often too humid
360	TQ26B_C	Num	8	2744	BEST12.	YesNo	Classroom - Humidity - Often too dry
361	TQ26C_A	Num	8	2752	BEST12.	YesNo	Classroom - Air - Generally acceptable
362	TQ26C_B	Num	8	2760	BEST12.	YesNo	Classroom - Air - Often too drafty
363	TQ26C_C	Num	8	2768	BEST12.	YesNo	Classroom - Air - Often too stale or stuffy
364	TQ26D_A	Num	8	2776	BEST12.	YesNo	Classroom - Light - Generally acceptable
365	TQ26D_B	Num	8	2784	BEST12.	YesNo	Classroom - Light - Too dim
366	TQ26D_C	Num	8	2792	BEST12.	YesNo	Classroom - Light - Glare from lights
367	TQ26D_D	Num	8	2800	BEST12.	YesNo	Classroom - Light - Too bright
368	TQ26D_E	Num	8	2808	BEST12.	YesNo	Classroom - Light - Too much direct sun
369	TQ27A_A	Num	8	2816	BEST12.	YesNo	Noises - Inside - None
370	TQ27A_B	Num	8	2824	BEST12.	YesNo	Noises - Inside - Ventilation (fan)
371	TQ27A_C	Num	8	2832	BEST12.	YesNo	Noises - Inside - Lighting (buzz)
372	TQ27A_D	Num	8	2840	BEST12.	YesNo	Noises - Inside - Next-room voices
373	TQ27A_E	Num	8	2848	BEST12.	YesNo	Noises - Inside - Other
374	TQ27B_A	Num	8	2856	BEST12.	YesNo	Noises - Outside - None
375	TQ27B_B	Num	8	2864	BEST12.	YesNo	Noises - Outside - Playground

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
376	TQ27B_C	Num	8	2872	BEST12.	YesNo	Noises - Outside - Mower/blower
377	TQ27B_D	Num	8	2880	BEST12.	YesNo	Noises - Outside - Traffic
378	TQ27B_E	Num	8	2888	BEST12.	YesNo	Noises - Outside - Aircraft
379	TQ27B_F	Num	8	2896	BEST12.	YesNo	Noises - Outside - Other
380	TQ28	Num	8	2904	BEST12.	Tq28f	Turn off Heater or AC due to noise
381	TQ29A_A	Num	8	2912	BEST12.	YesNo	Pest Problem - Bugs - Never
382	TQ29A_B	Num	8	2920	BEST12.	YesNo	Pest Problem - Bugs - In the Past
383	TQ29A_C	Num	8	2928	BEST12.	YesNo	Pest Problem - Bugs - Currently
384	TQ29B_A	Num	8	2936	BEST12.	YesNo	Pest Problem - Rodents - Never
385	TQ29B_B	Num	8	2944	BEST12.	YesNo	Pest Problem - Rodents - In the Past
386	TQ29B_C	Num	8	2952	BEST12.	YesNo	Pest Problem - Rodents - Currently
387	TQ30A	Num	8	2960	BEST12.	Tq30f	Odors in Classroom - Musty odor
388	TQ30B	Num	8	2968	BEST12.	Tq30f	Odors in Classroom - Cleaning products
389	TQ30C	Num	8	2976	BEST12.	Tq30f	Odors in Classroom - Bus/auto exhaust
390	TQ30D	Num	8	2984	BEST12.	Tq30f	Odors in Classroom - New carpet or furniture
391	TQ30E	Num	8	2992	BEST12.	Tq30f	Odors in Classroom - Fresh paint
392	TQ30F	Num	8	3000	BEST12.	Tq30f	Odors in Classroom - Cooking odor
393	TQ30G	Num	8	3008	BEST12.	Tq30f	Odors in Classroom - Pesticides
394	TQ30H	Num	8	3016	BEST12.	Tq30f	Odors in Classroom - Asphalt/tar
395	TQ30I	Num	8	3024	BEST12.	Tq30f	Odors in Classroom - Tobacco smoke
396	TQ30J	Num	8	3032	BEST12.	Tq30f	Odors in Classroom - Trash or dumpster odor
397	TQ30K	Num	8	3040	BEST12.	Tq30f	Odors in Classroom - Sewer/compost
398	TQ30L	Num	8	3048	BEST12.	Tq30f	Odors in Classroom - First/smoke odor
399	TQ31A_A	Num	8	3056	BEST12.	YesNo	Construction Activities - When - Never
400	TQ31A_B	Num	8	3064	BEST12.	YesNo	Construction Activities - When - In the past

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
401	TQ31A_C	Num	8	3072	BEST12.	YesNo	Construction Activities - When - Currently
402	TQ31A_D	Num	8	3080	BEST12.	YesNo	Construction Activities - When - Don't know
403	TQ31B_A	Num	8	3088	BEST12.	YesNo	Construction Activities - Where - Your room
404	TQ31B_B	Num	8	3096	BEST12.	YesNo	Construction Activities - Where - Same building
405	TQ31B_C	Num	8	3104	BEST12.	YesNo	Construction Activities - Where - Nearby/New Bldg
406	TQ31B_D	Num	8	3112	BEST12.	YesNo	Construction Activities - Where - Outdoors
407	TQ31B_E	Num	8	3120	BEST12.	YesNo	Construction Activities - Where - Other
408	TQ31C_A	Num	8	3128	BEST12.	YesNo	Construction Activities - Type - Painting
409	TQ31C_B	Num	8	3136	BEST12.	YesNo	Construction Activities - Type - Carpentry
410	TQ31C_C	Num	8	3144	BEST12.	YesNo	Construction Activities - Type - Plumbing
411	TQ31C_D	Num	8	3152	BEST12.	YesNo	Construction Activities - Type - Flooring
412	TQ31C_E	Num	8	3160	BEST12.	YesNo	Construction Activities - Type - Roofing
413	TQ31C_F	Num	8	3168	BEST12.	YesNo	Construction Activities - Type - Other
414	TQ32A_A	Num	8	3176	BEST12.	YesNo	Water/Mold - Leak or Flood - Never
415	TQ32A_B	Num	8	3184	BEST12.	YesNo	Water/Mold - Leak or Flood - In the past
416	TQ32A_C	Num	8	3192	BEST12.	YesNo	Water/Mold - Leak or Flood - Currently
417	TQ32A_D	Num	8	3200	BEST12.	YesNo	Water/Mold - Leak or Flood - Don't know
418	TQ32B_A	Num	8	3208	BEST12.	YesNo	Water/Mold - Type - Roof
419	TQ32B_B	Num	8	3216	BEST12.	YesNo	Water/Mold - Type - Window
420	TQ32B_C	Num	8	3224	BEST12.	YesNo	Water/Mold - Type - Sink/toilet overflow
421	TQ32B_D	Num	8	3232	BEST12.	YesNo	Water/Mold - Type - Sprinkler
422	TQ32B_E	Num	8	3240	BEST12.	YesNo	Water/Mold - Type - Plumbing
423	TQ32B_F	Num	8	3248	BEST12.	YesNo	Water/Mold - Type - Other
424	TQ32C_A	Num	8	3256	BEST12.	YesNo	Water/Mold - Water Stains - Never
425	TQ32C_B	Num	8	3264	BEST12.	YesNo	Water/Mold - Water Stains - In the past

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
426	TQ32C_C	Num	8	3272	BEST12.	YesNo	Water/Mold - Water Stains - Currently
427	TQ32C_D	Num	8	3280	BEST12.	YesNo	Water/Mold - Water Stains - Don't know
428	TQ32D_A	Num	8	3288	BEST12.	YesNo	Water/Mold - Stains/Where - Walls
429	TQ32D_B	Num	8	3296	BEST12.	YesNo	Water/Mold - Stains/Where - Ceiling
430	TQ32D_C	Num	8	3304	BEST12.	YesNo	Water/Mold - Stains/Where - Window sills
431	TQ32D_D	Num	8	3312	BEST12.	YesNo	Water/Mold - Stains/Where - Carpet/rug/floor
432	TQ32D_E	Num	8	3320	BEST12.	YesNo	Water/Mold - Stains/Where - Furniture
433	TQ32D_F	Num	8	3328	BEST12.	YesNo	Water/Mold - Stains/Where - Other
434	TQ32E_A	Num	8	3336	BEST12.	YesNo	Water/Mold - Visible Mold - Never
435	TQ32E_B	Num	8	3344	BEST12.	YesNo	Water/Mold - Visible Mold - In the past
436	TQ32E_C	Num	8	3352	BEST12.	YesNo	Water/Mold - Visible Mold - Currently
437	TQ32E_D	Num	8	3360	BEST12.	YesNo	Water/Mold - Visible Mold - Don't know
438	TQ32F_A	Num	8	3368	BEST12.	YesNo	Water/Mold - Mold/Where - Walls
439	TQ32F_B	Num	8	3376	BEST12.	YesNo	Water/Mold - Mold/Where - Ceiling
440	TQ32F_C	Num	8	3384	BEST12.	YesNo	Water/Mold - Mold/Where - Window sills
441	TQ32F_D	Num	8	3392	BEST12.	YesNo	Water/Mold - Mold/Where - Carept/rug/floor
442	TQ32F_E	Num	8	3400	BEST12.	YesNo	Water/Mold - Mold/Where - Furniture
443	TQ32F_F	Num	8	3408	BEST12.	YesNo	Water/Mold - Mold/Where - Other
444	TQ33	Num	8	3416	BEST12.	Tq33f	How often are floors swept or vacuumed?
445	TQ34A	Num	8	3424	BEST12.	YesNoD	Adequate custodial services
446	TQ34B	Num	8	3432	BEST12.	TQ34f	Needed custodial services
447	TQ35A	Num	8	3440	BEST12.	YesNo	Report problems to Custodian
448	TQ35B	Num	8	3448	BEST12.	YesNo	Report problems to Facility staff
449	TQ35C	Num	8	3456	BEST12.	YesNo	Report problems to Principal/Admin
450	TQ35D	Num	8	3464	BEST12.	YesNo	Report problems to Health & Safety staff

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
451	TQ35E	Num	8	3472	BEST12.	YesNo	Report problems to IAQ coordinator
452	TQ36	Num	8	3480	BEST12.	Tq36f	Number of times complained about room
453	TQ37	Num	8	3488	BEST12.	Tq37f	Generally characterize environmental quality
454	TQ38A	Num	8	3496	BEST12.	Tq38f	Absent in the past two weeks?
455	TQ38B	Num	8	3504	BEST12.		Chief cause of absence in past two weeks
456	TQ39A_N	Num	8	3512	BEST12.	YesNo	Symptoms at School - Nose - None
457	TQ39A_O	Num	8	3520	BEST12.	YesNo	Symptoms at School - Nose - Occasional
458	TQ39A_F	Num	8	3528	BEST12.	YesNo	Symptoms at School - Nose - Frequent
459	TQ39A_S	Num	8	3536	BEST12.	YesNo	Symptoms at Home - Nose - Same/Worse
460	TQ39A_I	Num	8	3544	BEST12.	YesNo	Symptoms at Home - Nose - Improves
461	TQ39B_N	Num	8	3552	BEST12.	YesNo	Symptoms at School - Throat - None
462	TQ39B_O	Num	8	3560	BEST12.	YesNo	Symptoms a School - Throat - Occasional
463	TQ39B_F	Num	8	3568	BEST12.	YesNo	Symptoms a School - Throat - Frequent
464	TQ39B_S	Num	8	3576	BEST12.	YesNo	Symptoms at Home - Throat - Same/Worse
465	TQ39B_I	Num	8	3584	BEST12.	YesNo	Symptoms at Home - Throat - Improves
466	TQ39C_N	Num	8	3592	BEST12.	YesNo	Symptoms at School - Eyes - None
467	TQ39C_O	Num	8	3600	BEST12.	YesNo	Symptoms a School - Eyes - Occasional
468	TQ39C_F	Num	8	3608	BEST12.	YesNo	Symptoms a School - Eyes - Frequent
469	TQ39C_S	Num	8	3616	BEST12.	YesNo	Symptoms at Home - Eyes - Same/Worse
470	TQ39C_I	Num	8	3624	BEST12.	YesNo	Symptoms at Home - Eyes - Improves
471	TQ39D_N	Num	8	3632	BEST12.	YesNo	Symptoms at School - Skin - None
472	TQ39D_O	Num	8	3640	BEST12.	YesNo	Symptoms a School - Skin - Occasional
473	TQ39D_F	Num	8	3648	BEST12.	YesNo	Symptoms a School - Skin - Frequent
474	TQ39D_S	Num	8	3656	BEST12.	YesNo	Symptoms at Home - Skin - Same/Worse
475	TQ39D_I	Num	8	3664	BEST12.	YesNo	Symptoms at Home - Skin - Improves

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
476	TQ39E_N	Num	8	3672	BEST12.	YesNo	Symptoms at School - Headaches/Sinus - None
477	TQ39E_O	Num	8	3680	BEST12.	YesNo	Symptoms a School - Headaches/Sinus - Occasional
478	TQ39E_F	Num	8	3688	BEST12.	YesNo	Symptoms a School - Headaches/Sinus - Frequent
479	TQ39E_S	Num	8	3696	BEST12.	YesNo	Symptoms at Home - Headaches/Sinus - Same/Worse
480	TQ39E_I	Num	8	3704	BEST12.	YesNo	Symptoms at Home - Headaches/Sinus - Improves
481	TQ39F_N	Num	8	3712	BEST12.	YesNo	Symptoms at School - Drowsiness - None
482	TQ39F_O	Num	8	3720	BEST12.	YesNo	Symptoms a School - Drowsiness - Occasional
483	TQ39F_F	Num	8	3728	BEST12.	YesNo	Symptoms a School - Drowsiness - Frequent
484	TQ39F_S	Num	8	3736	BEST12.	YesNo	Symptoms at Home - Drowsiness - Same/Worse
485	TQ39F_I	Num	8	3744	BEST12.	YesNo	Symptoms at Home - Drowsiness - Improves
486	TQ39G_N	Num	8	3752	BEST12.	YesNo	Symptoms at School - Dizziness - None
487	TQ39G_O	Num	8	3760	BEST12.	YesNo	Symptoms a School - Dizziness - Occasional
488	TQ39G_F	Num	8	3768	BEST12.	YesNo	Symptoms a School - Dizziness - Frequent
489	TQ39G_S	Num	8	3776	BEST12.	YesNo	Symptoms at Home - Dizziness - Same/Worse
490	TQ39G_I	Num	8	3784	BEST12.	YesNo	Symptoms at Home - Dizziness - Improves
491	TQ39H_N	Num	8	3792	BEST12.	YesNo	Symptoms at School - Diff/Breath - None
492	TQ39H_O	Num	8	3800	BEST12.	YesNo	Symptoms a School - Diff/Breath - Occasional
493	TQ39H_F	Num	8	3808	BEST12.	YesNo	Symptoms a School - Diff/Breath - Frequent
494	TQ39H_S	Num	8	3816	BEST12.	YesNo	Symptoms at Home - Diff/Breath - Same/Worse
495	TQ39H_I	Num	8	3824	BEST12.	YesNo	Symptoms at Home - Diff/Breath - Improves
496	TQ39I_N	Num	8	3832	BEST12.	YesNo	Symptoms at School - Upset Stomach - None
497	TQ39I_O	Num	8	3840	BEST12.	YesNo	Symptoms a School - Upset Stomach - Occasional
498	TQ39I_F	Num	8	3848	BEST12.	YesNo	Symptoms a School - Upset Stomach - Frequent
499	TQ39I_S	Num	8	3856	BEST12.	YesNo	Symptoms at Home - Upset Stomach - Same/Worse
500	TQ39I_I	Num	8	3864	BEST12.	YesNo	Symptoms at Home - Upset Stomach - Improves

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Phase I Analysis Data Set Information
Classroom Analysis Data Set

-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
501	TQ40A_A	Num	8	3872	BEST12.	YesNo	Chronic Med Probs - Hay Fever/Allergies
502	TQ40A_B	Num	8	3880	BEST12.	YesNo	Chronic Med Probs - Asthma
503	TQ40A_C	Num	8	3888	BEST12.	YesNo	Chronic Med Probs - Bronchitis
504	TQ40A_D	Num	8	3896	BEST12.	YesNo	Chronic Med Probs - Hypertension
505	TQ40A_E	Num	8	3904	BEST12.	YesNo	Chronic Med Probs - Heart disease
506	TQ40B_A	Num	8	3912	BEST12.	YesNo	Freq Inhaled Asthma Med - Never
507	TQ40B_B	Num	8	3920	BEST12.	YesNo	Freq Inhaled Asthma Med - 1-2 times/week
508	TQ40B_C	Num	8	3928	BEST12.	YesNo	Freq Inhaled Asthma Med - Most days
509	TQ40B_D	Num	8	3936	BEST12.	YesNo	Freq Inhaled Asthma Med - Every day
510	TQ41	Num	8	3944	BEST12.	Tq41f	Number of Students who take asthma medication
511	TQ42	Num	8	3952	BEST12.	YesNoD	Are you currently a smoker?
512	TQ43	Num	8	3960	BEST12.	YesNoD	Do you live with a smoker?
513	TQ18B_1	Num	8	3968		YesNoD	Thermostat in Room Can be Adjusted
514	TQ18B_2	Num	8	3976		YesNoD	Thermostat in Room is Kept Locked
515	TQ18B_3	Num	8	3984		YesNoD	Thermostat in Room Does Not Work
516	TQ38B_1	Num	8	3992		YesNoD	Chief cause absence past 2 wks Cold/Flu
517	TQ38B_2	Num	8	4000		YesNoD	Chief cause absence past 2 wks Allergies
518	TQ38B_3	Num	8	4008		YesNoD	Chief cause absence past 2 wks Asthma
519	TQ38B_4	Num	8	4016		YesNoD	Chief cause absence past 2 wks Oth Rsp
520	TQ38B_5	Num	8	4024		YesNoD	Chief cause absence past 2 wks Oth Reason
521	meas	Num	8	4032			Formaldehyde Value (H2CO_1) in PPB
522	lnmeas	Num	8	4040			Log(Meas)
523	rtq15	Num	8	4048		Frtq15_	How often open windows for ventilation
524	rtq16a	Num	8	4056		YesNoD	Door directly to outside
525	rtq16b	Num	8	4064		Frtq16b	How often outside door is open

Source: \\RTINTS14\08034\AGREEN\CAPCS_13.SAS

-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
526	rtq18b	Num	8	4072		Frtq18b	Thermostat adjustment
527	rtq31a_a	Num	8	4080		YesNoD	Construction - When - Never
528	rtq31a_b	Num	8	4088		YesNoD	Construction - When - Prior
529	rtq31a_c	Num	8	4096		YesNoD	Construction - When - Current
530	rtq31a_d	Num	8	4104		YesNoD	Construction - When - DK
531	rtq31b_a	Num	8	4112		YesNoD	In-room construction this yr
532	rtq31b_b	Num	8	4120		YesNoD	Construction - Where- same bldg
533	rtq31b_c	Num	8	4128		YesNoD	Construction - Where- nearby
534	rtq31b_d	Num	8	4136		YesNoD	Construction - Where- outdoors
535	rtq31b_e	Num	8	4144		YesNoD	Construction - Where- other
536	rtq31c_a	Num	8	4152		YesNoD	Construction - Type- painting
537	rtq31c_b	Num	8	4160		YesNoD	Construction - Type- carpentry
538	rtq31c_c	Num	8	4168		YesNoD	Construction - Type- plumbing
539	rtq31c_d	Num	8	4176		YesNoD	Construction - Type- flooring
540	rtq31c_e	Num	8	4184		YesNoD	Construction - Type- roofing
541	rtq31c_f	Num	8	4192		YesNoD	Construction - Type- other
542	rtq32a_a	Num	8	4200		YesNoD	Water leak/flood - never
543	rtq32a_b	Num	8	4208		YesNoD	Water leak/flood - prior
544	rtq32a_c	Num	8	4216		YesNoD	Water leak/flood - current
545	rtq32a_d	Num	8	4224		YesNoD	Water leak/flood - DK
546	rtq32b_a	Num	8	4232		YesNoD	Water leak/flood - roof
547	rtq32b_b	Num	8	4240		YesNoD	Water leak/flood - window
548	rtq32b_c	Num	8	4248		YesNoD	Water leak/flood - sink/toilet
549	rtq32b_d	Num	8	4256		YesNoD	Water leak/flood - sprinkler
550	rtq32b_e	Num	8	4264		YesNoD	Water leak/flood - plumbing

Source: \\RTINTS14\08034\AGREEN\CAPCS_13.SAS

-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
551	rtq32b_f	Num	8	4272		YesNoD	Water leak/flood - other type
552	rtq32c_a	Num	8	4280		YesNoD	Water stains - never
553	rtq32c_b	Num	8	4288		YesNoD	Water stains - prior
554	rtq32c_c	Num	8	4296		YesNoD	Water stains - current
555	rtq32c_d	Num	8	4304		YesNoD	Water stains - DK
556	rtq32d_a	Num	8	4312		YesNoD	Water stains - walls
557	rtq32d_b	Num	8	4320		YesNoD	Water stains - ceiling
558	rtq32d_c	Num	8	4328		YesNoD	Water stains - window sills
559	rtq32d_d	Num	8	4336		YesNoD	Water stains - floor/carpet
560	rtq32d_e	Num	8	4344		YesNoD	Water stains - furniture
561	rtq32d_f	Num	8	4352		YesNoD	Water stains - other
562	rtq32e_a	Num	8	4360		YesNoD	Visible mold - never
563	rtq32e_b	Num	8	4368		YesNoD	Visible mold - prior
564	rtq32e_c	Num	8	4376		YesNoD	Visible mold - current
565	rtq32e_d	Num	8	4384		YesNoD	Visible mold - DK
566	rtq32f_a	Num	8	4392		YesNoD	Visible mold - walls
567	rtq32f_b	Num	8	4400		YesNoD	Visible mold - ceiling
568	rtq32f_c	Num	8	4408		YesNoD	Visible mold - window sills
569	rtq32f_d	Num	8	4416		YesNoD	Visible mold - floor/carpet
570	rtq32f_e	Num	8	4424		YesNoD	Visible mold - furniture
571	rtq32f_f	Num	8	4432		YesNoD	Visible mold - other
572	rtq33	Num	8	4440		Frtq33_	Freq of sweeping/vacuuming
573	rtq34b	Num	8	4448		Frtq34b	Needed custodial services
574	rtq34a	Num	8	4456		YesNoD	Adequate custodial services
575	rtq38b_1	Num	8	4464		Fyesnona	Absent due to flu/cold

Source: \\RTINTS14\08034\AGREEN\CAPCS_13.SAS

-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
576	rtq38b_2	Num	8	4472		Fyesnona	Absent due to allergies
577	rtq38b_3	Num	8	4480		Fyesnona	Absent due to asthma
578	rtq38b_4	Num	8	4488		Fyesnona	Absent due to other respiratory
579	rtq38b_5	Num	8	4496		Fyesnona	Absent due to other reasons
580	rtq40b	Num	8	4504		Frtq40b	Freq of asthma medication
581	apsu	Num	8	4512			PSU for analysis
582	astratum	Num	8	4520			Stratum for analysis
583	overall	Num	8	4528			All classrooms (=1)
584	popstat	Num	8	4536		Fpopstat	School location
585	schtype	Num	8	4544		Fschtype	School type
586	region	Num	8	4552		Fregion	Geographic region
587	sampmo	Num	8	4560		Fsampmo	Month of formaldehyde sample
588	ndind100	Num	8	4568			100 if Formaldehyde detected (>6ppb)
589	thr1pct	Num	8	4576			100 if Formaldehyde exceeds 27ppb
590	thr2pct	Num	8	4584			100 if Formaldehyde exceeds 76ppb
591	startday	Num	8	4592	MMDDYY10.		Start date of sampling period
592	stopday	Num	8	4600	MMDDYY10.		Stop date of sampling period
593	xposday	Num	8	4608			Number days in sampling period
594	wdxpos	Num	8	4616			# weekend/holidays in sampling period
595	pwdxpos	Num	8	4624			% weekend/holidays in sampling period
596	pwdxposc	Num	8	4632		YesNoD	<25% weekend/holidays in samp period
597	samptime	Num	8	4640		Fsamptim	Time of formaldehyde sampling
598	geninst	Num	8	4648		YesNoD	General instruction classroom
599	numstud	Num	8	4656		Fnumstud	Typical number students in class
600	carpet	Num	8	4664		Fcarpet	Carpeted classroom

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
601	vinylfl	Num	8	4672		YesNoD	Vinyl/linoleum floor
602	flrtyp	Num	8	4680		Fflrtyp	Type of flooring
603	vinylwl	Num	8	4688		YesNoD	Vinyl tackable wallboard
604	windopen	Num	8	4696		Ffreq	Open windows
605	dooropen	Num	8	4704		Fdooropn	Open external door
606	preswood	Num	8	4712		YesNoD	Pressed wood furniture
607	plastic	Num	8	4720		YesNoD	Plastic furniture
608	preswod1	Num	8	4728		YesNoD	Pressed wood table/desks
609	preswod2	Num	8	4736		YesNoD	Pressed wood bookcases
610	preswod3	Num	8	4744		YesNoD	Pressed wood cabinets
611	newfurn	Num	8	4752		YesNoD	New furnishings this school year
612	copiers	Num	8	4760		YesNoD	Copiers present in room
613	applian	Num	8	4768		Fapplian	Type appliances in room
614	chempres	Num	8	4776		YesNoD	Chemicals present in room
615	paints	Num	8	4784		YesNoD	Oil/acrylic paints used
616	paintpen	Num	8	4792		YesNoD	Paints/pens used
617	pmarker	Num	8	4800		YesNoD	Permanent marker/pen used
618	wbmarker	Num	8	4808		YesNoD	Whiteboard marker used
619	gluflu	Num	8	4816		YesNoD	Glues/fluids used
620	corflu	Num	8	4824		YesNoD	Correction fluid used
621	glues	Num	8	4832		YesNoD	Epoxy/rubber cement used
622	afresh	Num	8	4840		YesNoD	Air freshener used
623	afreshp	Num	8	4848		YesNoD	Air freshener used-plug-in
624	afreshs	Num	8	4856		YesNoD	Air freshener used-spray
625	candles	Num	8	4864		YesNoD	Candles used in room

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Phase I Analysis Data Set Information
Classroom Analysis Data Set

-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
626	airclean	Num	8	4872		YesNoD	Air cleaner used in room
627	airpurf	Num	8	4880		YesNoD	Portable air purifier used
628	pestuse	Num	8	4888		Fpestuse	Pesticide use past yr (teacher)
629	pestspr	Num	8	4896		YesNoD	Pesticide spray use past yr
630	pestpow	Num	8	4904		YesNoD	Pesticide powder use past yr
631	pesttrp	Num	8	4912		YesNoD	Pesticide traps use past yr
632	claspref	Num	8	4920		Fclaspre	Teacher classroom preference
633	temp	Num	8	4928		Ftemp	Classroom temperature
634	humid	Num	8	4936		Fhumid	Classroom humidity
635	cair	Num	8	4944		Fcair	Classroom air
636	light	Num	8	4952		Flight	Classroom light
637	innoise	Num	8	4960		YesNoD	Disruptive inside noise
638	outnoise	Num	8	4968		YesNoD	Disruptive outside noise
639	turnoff	Num	8	4976		YesNoD	Turn off heat/AC due to noise
640	bugprob	Num	8	4984		Fproblem	Bug problems in room
641	rodprob	Num	8	4992		Fproblem	Rodent problems in room
642	mustodor	Num	8	5000		Fodor	Musty odor
643	newodor	Num	8	5008		Fodor	New furnishings odor
644	rtq30a	Num	8	5016		YesNoD	Musty odor at times
645	rtq30b	Num	8	5024		YesNoD	Cleaning products odor at times
646	rtq30c	Num	8	5032		YesNoD	Vehicle exhaust odor at times
647	rtq30d	Num	8	5040		YesNoD	New carpet/furniture odor at times
648	rtq30e	Num	8	5048		YesNoD	Fresh paint odor at times
649	rtq30f	Num	8	5056		YesNoD	Cooking odor at times
650	rtq30g	Num	8	5064		YesNoD	Pesticide odor at times

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
651	rtq30h	Num	8	5072		YesNoD	Asphalt/tar odor at times
652	rtq30i	Num	8	5080		YesNoD	Tobacco smoke odor at times
653	rtq30j	Num	8	5088		YesNoD	Trash/dumpster odor at times
654	rtq30k	Num	8	5096		YesNoD	Sewer/compost odor at times
655	rtq30L	Num	8	5104		YesNoD	Fire/smoke odor at times
656	const	Num	8	5112		Fwatrprb	Construction activity this yr
657	othconst	Num	8	5120		YesNoD	Construction other than in room
658	watrprb	Num	8	5128		Fwatrprb	Water problems this yr
659	watrlek	Num	8	5136		Fwatrprb	Water leaks/flooding in room
660	typlek	Num	8	5144		Ftyplek	Type of leak or flood
661	watrstn	Num	8	5152		Fwatrprb	Water stains in rooms
662	typstn	Num	8	5160		Ftypstn	Type of water stain
663	vismolt	Num	8	5168		Fwatrprb	Visible mold in room (teacher)
664	moldloc	Num	8	5176		Fmoldloc	No. locations with mold
665	flswep	Num	8	5184		Fflswep	Freq of floor cleaning
666	complan	Num	8	5192		Fcomplan	No. teacher complaints this yr
667	airqual	Num	8	5200		Fairqual	Teacher air quality rating
668	absent	Num	8	5208		Fabsent	Days absent last 2 weeks
669	cause	Num	8	5216		Fcause	Reasons for absence
670	nosesym	Num	8	5224		Fsympa	Nose symptoms past 2 weeks
671	nosesymi	Num	8	5232		Fsympb	Nose symptoms at home
672	thrtsym	Num	8	5240		Fsympa	Throat symptoms past 2 weeks
673	thrtsymi	Num	8	5248		Fsympb	Throat symptoms at home
674	eyessym	Num	8	5256		Fsympa	Eyes symptoms past 2 weeks
675	eyessymi	Num	8	5264		Fsympb	Eyes symptoms at home

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Phase I Analysis Data Set Information
Classroom Analysis Data Set

-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
676	skinsym	Num	8	5272		Fsympa	Skin symptoms past 2 weeks
677	skinsymi	Num	8	5280		Fsympb	Skin symptoms at home
678	headsym	Num	8	5288		Fsympa	Headache/sinus pain past 2 weeks
679	headsymi	Num	8	5296		Fsympb	Headache/sinus pain at home
680	drowsym	Num	8	5304		Fsympa	Drowsiness past 2 weeks
681	drowsymi	Num	8	5312		Fsympb	Drowsiness at home
682	dizzsym	Num	8	5320		Fsympa	Dizziness/faintness past 2 weeks
683	dizzsymi	Num	8	5328		Fsympb	Dizziness/faintness at home
684	lungsym	Num	8	5336		Fsympa	Lung symptoms past 2 weeks
685	lungsymi	Num	8	5344		Fsympb	Lung symptoms past at home
686	stomsym	Num	8	5352		Fsympa	Upset stomach past 2 weeks
687	stomsymi	Num	8	5360		Fsympb	Upset stomach at home
688	numsym	Num	8	5368		Fnumsym	No. health symptoms past 2 weeks
689	allerg	Num	8	5376		YesNoD	Chronic hay fever/allergies
690	lungprb	Num	8	5384		YesNoD	Chronic asthma/bronchitis
691	circprb	Num	8	5392		YesNoD	Chronic hypertension/heart disease
692	asmed	Num	8	5400		Fasmed	Inhaled asthma med past 2 weeks
693	stuasma	Num	8	5408		Fstuasma	No. students taking asthma med
694	porttyp	Num	8	5416		Fporttyp	Type of Classroom
695	clragec	Num	8	5424			Classroom age (yrs)
696	clrage	Num	8	5432		Fclrage	Classroom age
697	clragex	Num	8	5440		Fclragex	Classroom age
698	clrageu	Num	8	5448		Fclrageu	Classroom age (known/unknown)
699	renovat	Num	8	5456		YesNoD	Major renovations/additions
700	renovmaj	Num	8	5464		YesNoD	Addition/wall/floor renovations

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-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
701	renovele	Num	8	5472		YesNoD	HVAC or lighting renovations
702	renovruf	Num	8	5480		YesNoD	Roof renovations
703	clrsiz	Num	8	5488		Fclrsiz	Classroom size (sq. ft.)
704	bldgfon	Num	8	5496		Fbldgfon	Building foundation type
705	rfq34c	Num	8	5504		Frfq34c	Floor Height (in)
706	ruftyp	Num	8	5512		Fruftyp	Roof type
707	lddock	Num	8	5520		YesNoD	Load dock/parking/road in 50ft
708	dumpstr	Num	8	5528		YesNoD	Dumpster within 50ft
709	sprooms	Num	8	5536		YesNoD	Spec purpose rooms within 50ft
710	pelpani	Num	8	5544		YesNoD	Peeling paint inside
711	pelpano	Num	8	5552		YesNoD	Peeling paint outside
712	pelpant	Num	8	5560		YesNoD	Peeling paint in or out
713	pachvac	Num	8	5568		YesNoD	Packaged HVAC
714	ahuloc	Num	8	5576		Fahuloc	Main AHU Location
715	centac	Num	8	5584		YesNoD	Central cooling system
716	fanop	Num	8	5592		Ffanop	HVAC supply fan operation
717	dampset	Num	8	5600		Fdampset	Outdoor damper min setting
718	plenopen	Num	8	5608		YesNoD	Plenum open
719	fglfilt	Num	8	5616		YesNoD	HVAC fiberglass mesh filter
720	plefilt	Num	8	5624		YesNoD	HVAC pleated filter
721	hiefilt	Num	8	5632		YesNoD	HVAC high efficiency filter
722	tcntl	Num	8	5640		Ftcntl	Thermostat control
723	spheat	Num	8	5648		YesNoD	Space heaters used
724	watrdam	Num	8	5656		YesNoD	Water damage past 3 yrs
725	rufleak	Num	8	5664		YesNoD	Roof leaks last 3 yrs

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Phase I Analysis Data Set Information
Classroom Analysis Data Set

-----Variables Ordered by Position-----							
#	Variable	Type	Len	Pos	Format	Format Name	Label
726	vismold	Num	8	5672		YesNoD	Visable mold past 3 yrs
727	stdwatr	Num	8	5680		YesNoD	Standing water within 50ft
728	newwood	Num	8	5688		YesNoD	New pressed wood last yr
729	newcarp	Num	8	5696		YesNoD	New carpet past yr
730	newfloor	Num	8	5704		YesNoD	New flooring past yr
731	pestusef	Num	8	5712		YesNoD	Pesticide use past yr (FM)
732	ccpest	Num	8	5720		YesNoD	Crack/crevice pesticides last yr
733	sppest	Num	8	5728		YesNoD	Spray can pesticides last yr
734	flubulb	Num	8	5736		Fflubulb	Fluorecent bulbs

-----Sort Information-----	
Sortedby:	astratum apsu
Validated:	YES
Character Set:	ANSI

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```
proc format;
   value ACostf 0 = "AvgCost LE 0"
                1 = "AvgCost GT 0";
   value fabsent  1='None'
                  2='1-2 days'
                  3='>2 days';
   value fahuloc  1='Wall'
                  2='Roof'
                  3='Floor/Other'
                  4='DK'
                  5='NA';
   value fairqual 1='Excel/Good'
                  2='Adequate'
                  3='Poor';
   value fapplian 1='Stove/burner'
                  2='Other'
                  3='None';
   value fasmed   1='Never'
                  2='Some'
                  3='NA';
   value fbldgfon 1='<Grade'
                  2='Slab'
                  3='Raised Flr';
   value fcair    1='Okay'
                  2='Drafty'
                  3='Stuffy';

   value fcarpet 1='Full'
                 2='Partial'
                 3='None';
   value fcause   1='Cold/flu'
                  2='Allergy/respiratory'
                  3='NA';
   value fclaspre 1='Permanent'
                  2='Portable'
                  3='No Opinion';
   value fclrage  1='<=10yr'
                  2='11-20yr'
                  3='21-30yr'
                  4='31-40yr'
                  5='41+yr';
   value fclrageu 1='Known'
                  2='Unknown';
   value fclragex 1='0-3yr'
                  2='4-5yr'
                  3='6-10yr'
                  4='11-15yr'
                  5='16+yr';
   value fclrsiz  1='<600'
                  2='600-1100'
                  3='>1100';
   value fcomplan 1='0'
                  2='1 to 5'
                  3='>5';

   value fdampset 1='<=10%'
                  2='11-20%'
```

```
               3='21-40%'
               4='>40%'
               5='Unknown';
value fdooropn 1='Infreq'
               2='Freq'
               3='NA';
value ffanop   1='Auto'
               2='Always on'
               3='Other/unspec';
value fflrtyp  1='Carpet only'
               2='Vinyl/linoleum'
               3='Both'
               4='Other carpet combo'
               5='Other';
value fflswep  1='Daily'
               2='2-3/wk'
               3='1/wk'
               4='Other'
               5='DK';
value fflubulb 1='T8'
               2='T12'
               3='Both'
               4='No/DK';
value ffreq   1='Never'
              2='Infreq'
              3='Freq';
value fhumid   1='Okay'
               2='Humid'
               3='Dry';
value Flagf  0 = "Valid"
             1 = "Suspect/Valid";

value flight   1='Okay'
               2='Dim'
               3='Bright';
value fmoldloc 1='No mold'
               2='1-2 locations'
               3='3+ locations';
value fnumstud 1='0-9'
               2='10-19'
               3='20-29'
               4='30-39'
               5='>40';
value fnumsym  1='None'
               2='1-2'
               3='3+';
value fodor    1='Never'
               2='Sometimes'
               3='Often';
value fpestuse 1='Current'
               2='Previous'
               3='Never';
value fpopstat 1='Urban'
               2='Suburb'
               3='Rural';
value fporttyp 1='Port-DSA'
               2='Port-DOH'
```

```
              3='Port-Unk'
              4='Trad'
              5='Trad?';
value fproblem 1='Current'
              2='Previous'
              3='Never';
value fq1f   1 = "Facilities Manager"
             2 = "Assist. Manager"
             3 = "Maintenance Staff"
             4 = "Custodial Staff"
             5 = "Admin Staff"
             6 = "Other";
value fq2f   1 = "District-Wide"
             2 = "At this School Only"
             3 = "At Several Sites";
value fq3f   1 = "1"
             2 = "2-5"
             3 = "6+";
value fq8f   1 = "Urban"
             2 = "Suburban"
             3 = "Rural";
value fq14f  1 = "When First Class Starts"
             2 = "When Teacher Arrives"
             3 = "1-2 Hrs Before Classes Start"
             4 = "Don't Know"
             5 = "N/A"
             8 = "Multiple Responses";
value fq15f  1 = "Monthly"
             2 = "Quarterly"
             3 = "Annually"
             4 = "> Annually"
             5 = "Never"
             6 = "Don't Know"
             7 = "N/A";
value fq16cf 1 = "Quarterly"
             2 = "Annually"
             3 = "> Annually"
             4 = "Don't Know"
             5 = "N/A";
value fq16f  1 = "5 Days/Week"
             2 = "3-4 Days/Week"
             3 = "1-2 Days/Week"
             4 = "1-2 Days/Month"
             5 = "< 1/Month";
value fq18f  1 = "< 1"
             2 = "1"
             3 = "2"
             4 = "3"
             5 = "4"
             6 = "5+";
value fq25f  1="None"
             2="1"
             3="2-4"
             4="5-9"
             5="10+"
             6="LS";
value fq27bf 1 = "Don't Know";
```

```
value fq31f 1 = "< 600"
            2 = "600-1100"
            3 = "1101-2000"
            4 = "> 2000";
value fq32f 1 = "1"
            2 = "2"
            3 = "3-5"
            4 = "6-9"
            5 = "10 +";
value fq33f 1 = "Below Grade"
            2 = "Ground"
            3 = "2nd Story"
            4 = "3rd Story +";
value fq34af 1 = "Below Grade"
             2 = "Slab on Grade"
             3 = "Raised Floor";
value fq34cf 1 = "< 6"
             2 = "6-11"
             3 = "12-17"
             4 = "18 +";
value fq35f  1 = "1-4"
             2 = "5-9"
             3 = "10-19"
             4 = "20 +"
             5 = "Don't Know";
value fq36f  1 = "Membrane"
             2 = "Shingle/Roll"
             3 = "Shake"
             4 = "Tar/Gravel"
             5 = "Metal"
             6 = "Other";
value fq37f  1 = "Flat"
             2 = "Sloped"
             3 = "Both";
value fq42f  1 = "Floor"
             2 = "Wall"
             3 = "Roof"
             4 = "Other"
             5 = "Don't Know"
             6 = "N/A";
value fq43f  1 = "Forced Air"
             2 = "Radiant"
             3 = "Solar"
             4 = "Other"
             5 = "Don't Know"
             6 = "N/A";
value fq45f  1 = "Central AC"
             2 = "Window AC"
             3 = "Swamp"
             4 = "Other"
             5 = "Don't Know"
             6 = "N/A";
value fq46f  1 = "Auto"
             2 = "Always on"
             3 = "Always off"
             4 = "Other"
             5 = "Don't Know"
```

```
             6 = "N/A";
value fq48bf 1 = "Don't Know";
value fq54f  1 = "Humidifier"
             2 = "Dehumidifier"
             3 = "N/A";
value fq59f  1 = "Never"
             2 = "Occassionally"
             3 = "Frequently"
             4 = "Don't Know";
value fregion  1='North'
               2='South';
value frfq15_  1='Yes'
               2='No or NA';
value frfq34c  1='<6'
               2='6-11'
               3='12-17'
               4='18+'
               5='NA or Unk';
value frtq15_ 1='None openable'
              2='Rarely'
              3='Occasionally'
              4='Frequently'
              5='Most of time'
              6='All the time';
value frtq16b 1='No outside door'
              2='Rarely'
              3='Occasionally'
              4='Frequently'
              5='Most of time'
              6='All the time';
value frtq18b 1='Adjustable'
              2='Locked up'
              3='Not working'
              4='Unspecified'
              5='NA or DK';
value frtq33_ 1='Daily'
              2='2-3/wk'
              3='Weekly'
              4='1-2/mo'
              5='<1/mo'
              6='DK';
value frtq34b 1='More freq'
              2='More effective'
              3='Both'
              4='Unspecified'
              5='NA';
value frtq40b 1='Never'
              2='1-2 per wk'
              3='most days'
              4='every day'
              5='NA';
value fruftyp  1='Membrane'
               2='Composite'
               3='Tar/gravel'
               4='Metal'
               5='Other';
value fsampmo  1='April'
```

```
                2='May'
                3='June/July';
value fsamptim 1='Early April'
                2='Late April'
                3='Early May'
                4='Late May'
                5='June/July';
value fschage  1='<=10yr'
                2='11-20yr'
                3='21-30yr'
                4='31-40yr'
                5='41-50yr'
                6='50+yr'
                7='Unspec';
value fschtype 1='Elem'
                2='Middle'
                3='High';
value fstuasma 1='DK'
                2='None'
                3='1-2'
                4='3-5'
                5='6+';
value fsympa   1='None'
                2='Occasional'
                3='Frequent';
value fsympb   1='Same/worse'
                2='Improves'
                3='NA';
value ftcntl   1='Teacher'
                2='Others'
                3='Both'
                4='DK'
                5='NA';
value ftemp    1='Okay'
                2='Cold'
                3='Hot';
value ftyplek  1='Roof'
                2='Other'
                3='Both'
                4='No Leaks';
value ftypstn  1='Ceiling'
                2='Floor'
                3='Both'
                4='Other'
                5='No Stains';
value fusetol  1='Aware/use'
                2='Aware/no use'
                3='Aware/DK'
                4='Unaware';
value fwatrprb 1='Current'
                2='Previous'
                3='Never'
                4='Unknown';
value fyesnona 1='Yes'
                2='No'
                3='NA';
value $pop   '1'="Urban"
```

```
             '2'="Suburban"
             '3'="Rural";
value $sch   '1'="Elementary"
             '2'="Middle"
             '3'="High School";
value tq1f  1 = "Male"
            2 = "Female";
value tq2f  1 = "Teacher"
            2 = "Aide"
            3 = "Administrator"
            4 = "Office Staff"
            5 = "Facility Staff"
            6 = "Other"
            8 = "Multiple Resp";
value tq3bcf 1 = "1"
             2 = "2-5"
             3 = "6-10"
             4 = "11-16"
             5 = "16+";
value tq3f  1 = "< All Year"
            2 = "All Year"
            3 = "2"
            4 = "3+";
value tq4bf 1 = "< 3"
            2 = "3-6"
            3 = "> 6";
value tq5f  1 = "Gen Instruction"
            2 = "Art Room"
            3 = "Science Lab"
            4 = "Ceramic Studio"
            5 = "Computer Lab"
            6 = "Wood Shop"
            7 = "Library"
            8 = "Auto/Metal Shop"
            9 = "Music Room"
           10 = "Office"
           11 = "None of These"
           12 = "Multiple Response";
value tq7f  1 = "Stay"
            2 = "Change";
value tq11f 1 = "Sheetrock/Plaster"
            2 = "Vinyl/Tackable"
            3 = "Painted Cinderblock"
            4 = "Other/Don't Know"
            8 = "Multiple Response";
value tq13f 1 = "None"
            2 = "1"
            3 = "2"
            4 = "3"
            5 = "4";
value tq15f 1 = "Rarely"
            2 = "Most Time"
            3 = "Occasionally"
            4 = "All the Time"
            5 = "Frequently"
            6 = "None Openable";
value tq25f 1 = "Permanent"
```

```
                2 = "Portable"
                3 = "No Opinion";
    value tq28f 1 = "Never"
                2 = "Rarely"
                3 = "Occasionally"
                4 = "Frequently"
                5 = "Most Time";
    value tq30f 1 = "Never"
                2 = "Sometimes"
                3 = "Often";
    value tq33f 1 = "Daily"
                2 = "1-2/Month"
                3 = "2-3/Week"
                4 = "< 1/Month"
                5 = "Weekly"
                6 = "Don't Know";
    value tq34f 1 = "More Frequent"
                2 = "More Effective"
                3 = "Both";
    value tq36f 1 = "Never"
                2 = "1-2"
                3 = "3-5"
                4 = "6-10"
                5 = "11 or More";
    value tq37f 1 = "Excellent"
                2 = "Good"
                3 = "Adequate"
                4 = "Poor"
                5 = "Very Poor";
    value tq38af 1 = "No"
                 2 = "1-2 Days"
                 3 = "3-5 Days"
                 4 = "> 5 Days";
    value tq41f 1 = "Don't Know"
                2 = "None"
                3 = "1-2"
                4 = "3-5"
                5 = "6-10"
                6 = "11+";
    value type   1 = "Portable/Reloc"
                 2 = "Permanent"
                 3 = "Don't Know"
                 4 = "Unknown";
    value typeprtf 1 = "DSA"
                   2 = "DOH"
                   3 = "DK";
    value YesNo  0 = "No"
                 1 = "Yes";
    value YesNoD 1="Yes"
                 2="No"
                 3="Don't Know"
                 4="N/A";
run;
```

APPENDIX C

Data Analysis Programs

```
*** pgm in f:/clayton/RECODSCH.sas;
*** modified 12/15/2001;
************************************************************************
***   PURPOSE: TO RECODE SCHOOL-LEVEL DATA AND CREATE SCHOOL-LEVEL ANALYSIS
      VARIABLES. RESULTS ARE SAVED IN SCHOOL1 FILE;
************************************************************************;

options ls=80 ps=55 nocenter mprint nodate nonumber missing=' ';
libname IN 'F:/data';
libname out 'F:/clayton';
title ' ';
proc format;
value fschtype 1='Elem' 2='Middle' 3='High';
value fregion 1='North' 2='South';
value fpopstat 1='Urban' 2='Suburb' 3='Rural';
value fschage 1='<=10yr' 2='11-20yr' 3='21-30yr' 4='31-40yr'
              5='41-50yr' 6='50+yr' 7='Unspec';
value frfq15_ 1='Yes' 2='No or NA';
value fyesno 1='Yes' 2='No';
value fnumport 1='1-10' 2='11-20' 3='21-30' 4='>30';
value fnumtrad 1='1-20' 2='21-40' 3='41-60' 4='>60';
value fnumtot 1='1-30' 2='31-60' 3='61-100' 4='>100';
value fhvacim 1='Monthly' 2='Quarterly' 3='Yearly' 4='>Year' 5='Never' 6='DK' 7='NA';
value fusetol 1='Aware/use' 2='Aware/no use' 3='Aware/DK' 4='Unaware';
value ffrcomp 1='None' 2='1' 3='2-4' 4='5-9' 5='10+';
run;

data school1;   set in.school;

if p_calworks ne . then p_calwor=2-(p_calworks<=25); * use fyesno format;
if p_meals ne . then p_meal=2-(p_meals<=55);  * use fyesno format;
if avgcosta ne . then pavgcost=2-(avgcosta<=5500);  * use fyesno format;
IF P1WT6FAC>0 THEN DO;
areacode=floor(fq5a/10000000);
  if fq6=. then schage=7;
  else do;
    if fq6 ne . then schage=ceil((2001-fq6)/10);
    if schage>6 then schage=6; *use fschage;
  end;

*** infer FQ15A from other items (this item was not scanned); * use frfq15_ format;
if fq15aa in (1,2,3,4,5,6,7) or fq15ab in (1,2,3,4,5,6,7) or
fq15ac in (1,2,3,4,5,6,7) or fq15ad in (1,2,3,4,5,6,7) or
fq15ae in (1,2,3,4,5,6,7) then rfq15=1; * yes;
else if fq14>=1 then rfq15=2; * no or NA;

*** flag bad and missing data for thermostat settings;
rfq12a=fq12a;
if rfq12a=. then rfq12a=.N;
else if 0<=rfq12a<60 or rfq12a>85 then rfq12a=.B;
rfq12b=fq12b;
if rfq12b=. then rfq12b=.N;
else if 0<=rfq12b<60 or rfq12b>85 then rfq12b=.B;

if fq7a>0 then numport=(1<=fq7a<=10)+2*(11<=fq7a<=20)+3*(21<=fq7a<=30)+4*(fq7a>30);
* use fnumport;
if fq7b>0 then numtrad=(1<=fq7b<=20)+2*(21<=fq7a<=40)+3*(41<=fq7a<=60)+4*(fq7a>60);
* use fnumtrad;
numtc=fq7a+fq7b;
if numtc>0 then
numtot=(1<=numtc<=30)+2*(31<=numtc<=60)+3*(61<=numtc<=100)+4*(numtc>100);
* use fnumtot;

if fq11aa=1 then hvaclog=2;
```

```
else if max(fq11ab,fq11ac,fq11ad,fq11ae,fq11af)=1 then hvaclog=1;
else if fq11ag=1 then hvaclog=3; * use fyesnodk;

if fq19a=1 then usetol=fq19b;else if fq19a=2 then usetol=4; * use fusetol;

rfq25aa=fq25aa;if rfq25aa=. and fq25=2 then rfq25aa=1;
rfq25ab=fq25ab;if rfq25ab=. and fq25=2 then rfq25ab=1;
rfq25ac=fq25ac;if rfq25ac=. and fq25=2 then rfq25ac=1;
rfq25ad=fq25ad;if rfq25ad=. and fq25=2 then rfq25ad=1;
rfq25ae=fq25ae;if rfq25ae=. and fq25=2 then rfq25ae=1;
rfq25af=fq25af;if rfq25af=. and fq25=2 then rfq25af=1;

rfq25ba=fq25ba;if rfq25ba=. and fq25=2 then rfq25ba=1;
rfq25bb=fq25bb;if rfq25bb=. and fq25=2 then rfq25bb=1;
rfq25bc=fq25bc;if rfq25bc=. and fq25=2 then rfq25bc=1;
rfq25bd=fq25bd;if rfq25bd=. and fq25=2 then rfq25bd=1;
rfq25be=fq25be;if rfq25be=. and fq25=2 then rfq25be=1;
rfq25bf=fq25bf;if rfq25bf=. and fq25=2 then rfq25bf=1;

if fq25=1 and max(fq25aa,fq25ab,fq25ac,fq25ad, fq25ae,fq25af)>1 then portcp=1;
else if fq25=2 or max(fq25aa,fq25ab,fq25ac,fq25ad, fq25ae,fq25af)=1 then portcp=2;
else if fq25=3 then portcp=3; * use fyesnodk;
if fq25=1 and max(fq25ba,fq25bb,fq25bc,fq25bd,fq25be,fq25bf)>1 then tradcp=1;
else if fq25=2 or max(fq25ba,fq25bb,fq25bc,fq25bd,fq25be,fq25bf)=1 then tradcp=2;
else if fq25=3 then tradcp=3; * use fyesnodk;

END;

*** create sample design variables,treating sample as having one stratum,
    with PSU=school;
apsu=input(studyid,4.);
astratum=1;

** create other analysis variables;
overall=1;
popstat=input(popstatus,1.);
schtype=input(sch_type,1.);
if northsouth='N' then region=1;else if northsouth='S' then region=2;
label schage='School age (yrs)'
      schtype='School type'
      popstat='School location'
      region='Geographic region'
      p_calwor='AFDC <= 25%'
       p_meal='Meal Assistance <=55%'
      pavgcost='Avg Student Expenditure <=$5500'
      rfq15='Regular HVAC inspection/maintenance'
      overall='Identically 1'
      apsu='Analysis PSU identifier (school)'
      astratum='Analysis stratum (identically 1)'
         hvaclog='HVAC maintenance log kept'
         rfq12a='Thermostat setting in class - heating'
      rfq12b='Thermostat setting in class - cooling'
        numtc='Total number classrooms'
        numtot='Total number classrooms'
        numport='Number of portable classrooms'
        numtrad='Number of traditional classrooms'
        usetol='Awareness/use of EPA IAQ Tools'
        rfq25aa='Roof leak complaint last yr: Portable'
        rfq25ab='Plumbing leak complaint last yr: Portable'
        rfq25ac='Air/odor complaint last yr: Portable'
        rfq25ad='Mold complaint last yr: Portable'
        rfq25ae='Temperature complaint last yr: Portable'
        rfq25af='Noise complaint last yr: Portable'
        rfq25ba='Roof leak complaint last yr: Traditional'
```

```
        rfq25bb='Plumbing leak complaint last yr: Traditional'
        rfq25bc='Air/odor complaint last yr: Traditional'
        rfq25bd='Mold complaint last yr: Traditional'
        rfq25be='Temperature complaint last yr: Traditional'
        rfq25bf='Noise complaint last yr: Traditional'
        portcp='Envir complaints from port classrooms'
        tradcp='Envir complaints from trad classrooms'
        areacode='Area code';
        drop fq5a comb_cat;
run;

PROC SORT OUT=OUT.SCHOOL1;BY ASTRATUM APSU;RUN;
proc contents;
TITLE ' ';
run;
```

```
*** pgm in f:/clayton/recod3_4.sas;
*** modified 12/19/2001;
************************************************************************
***   PURPOSE: To recode variables in COMBIN3 file to produce COMBIN4 file.
      There are two main types of recodes -- one to account for skip patterns
      (and associated multiple responses), and the other, to create analysis
      variables appropriate for SUDAAN analyses.
************************************************************************;

options ls=130 ps=44 nocenter mprint nodate nonumber;
libname OUT 'f:/clayton';
libname IN 'F:/data';

title ' ';

*** FOLLOWING IS USED TO RECODE TQ39;
%macro recod39(tq39a_n,tq39a_o,tq39a_f,tq39a_s,tq39a_i,rtq39aa,rtq39ab);
if sum(&tq39a_n,&tq39a_o,&tq39a_f)=0 then do;
   &rtq39aa=.N;
   if sum(&tq39a_s,&tq39a_i)=0 then &rtq39ab=.N;
   if sum(&tq39a_s,&tq39a_i)=1 then &rtq39ab=.S;
   if sum(&tq39a_s,&tq39a_i)>1 then &rtq39ab=.M;
end;
else if sum(&tq39a_n,&tq39a_o,&tq39a_f)=1 then do;
    &rtq39aa=(&tq39a_n=1)+2*(&tq39a_o=1)+3*(&tq39a_f);
    if &rtq39aa=1 then &rtq39ab=3;
    else do;
       if sum(&tq39a_s,&tq39a_i)=1 then
                &rtq39ab=(&tq39a_s=1)+2*(&tq39a_i=1);
       else if sum(&tq39a_s,&tq39a_i)=0 then &rtq39ab=.N;
       else if sum(&tq39a_s,&tq39a_i)=2 then &rtq39ab=.M;
    end;
end;
else if sum(&tq39a_n,&tq39a_o,&tq39a_f)=2 then do;
    &rtq39aa=.M;&rtq39ab=.S;
end;
** use fsympa format for rtq39aa variable;
** use fsympb format for rtq39ab variable;
%mend recod39;

proc format;
*** add formats for recoded variables;
value froomtyp 1='Port' 2='Trad';
value fschtype 1='Elem' 2='Middle' 3='High';
value fregion 1='North' 2='South';
value fpopstat 1='Urban' 2='Suburb' 3='Rural';
value frtq15_ 1='None openable' 2='Rarely' 3='Occasionally'
           4='Frequently' 5='Most of time' 6='All the time';
value frtq16b 1='No outside door' 2='Rarely' 3='Occasionally'
           4='Frequently' 5='Most of time' 6='All the time';
value frtq18b 1='Adjustable' 2='Locked up' 3='Not working'
           4='Unspecified' 5='NA or DK';
value frtq33_ 1='Daily' 2='2-3/wk' 3='Weekly' 4='1-2/mo' 5='<1/mo'
             6='DK';
value frtq34b 1='More freq' 2='More effective' 3='Both'
           4='Unspecified' 5='NA';
value frtq40b 1='Never' 2='1-2 per wk' 3='most days' 4='every day'
           5='NA';
value fcarpet 1='Full' 2='Partial' 3='None';
value ffreq 1='Never' 2='Infreq' 3='Freq';
value fdooropn 1='Infreq' 2='Freq' 3='NA';
value fyesno 1='Yes' 2='No';
value fyesnodk 1='Yes' 2='No' 3='DK';
value fyesnona 1='Yes' 2='No' 3='NA';
```

```
value fyndkna 1='Yes' 2='No' 3='DK' 4='NA';
value ffanop 1='Auto' 2='Always on' 3='Other/unspec';
value fpestuse 1='Current' 2='Previous' 3='Never';
value fclaspre 1='Permanent' 2='Portable' 3='No Opinion';
value ftemp 1='Okay' 2='Cold' 3='Hot';
value fhumid 1='Okay' 2='Humid' 3='Dry';
value fcair 1='Okay' 2='Drafty' 3='Stuffy';
value flight 1='Okay' 2='Dim' 3='Bright';
value fodor 1='Never' 2='Sometimes' 3='Often';
value fwatrprb 1='Current' 2='Previous' 3='Never' 4='Unknown';
value fproblem 1='Current' 2='Previous' 3='Never';
value fcomplan 1='0' 2='1 to 5' 3='>5';
value ftq37_ 1='Excellent' 2='Good' 3='Adequate' 4='Poor' 5='Very Poor';
value airqual 1='Excel/Good' 2='Adequate' 3='Poor';
value fabsent 1='None' 2='1-2 days' 3='>2 days';
value fporttyp 1='Port-DSA' 2='Port-DOH' 3='Port-Unk' 4='Trad' 5='Trad?';
value fclrage 1='<=10yr' 2='11-20yr' 3='21-30yr' 4='31-40yr' 5='41+yr';
value fclragex 1='0-3yr' 2='4-5yr' 3='6-10yr' 4='11-15yr' 5='16+yr';
value fclrageu 1='Known' 2='Unknown';
value fsampmo 1='April' 2='May' 3='June/July';
value fsamptim 1='Early April' 2='Late April' 3='Early May' 4='Late May'
               5='June/July';
value fapplian 1='Stove/burner' 2='Other' 3='None';
value fsympa 1='None' 2='Occasional' 3='Frequent';
value fsympb 1='Same/worse' 2='Improves' 3='NA';
value fclrsiz 1='<600' 2='600-1100' 3='>1100';
value fdampset 1='<=10%' 2='11-20%' 3='21-40%' 4='>40%' 5='Unknown';
value ftcntl 1='Teacher' 2='Others' 3='Both' 4='DK' 5='NA';
value frfq34c 1='<6' 2='6-11' 3='12-17' 4='18+' 5='NA or Unk';
value fbldgfon 1='<Grade' 2='Slab' 3='Raised Flr';
value fruftyp 1='Membrane' 2='Composite' 3='Tar/gravel' 4='Metal' 5='Other';
value fahuloc 1='Wall' 2='Roof' 3='Floor/Other' 4='DK' 5='NA';
value fflubulb 1='T8' 2='T12' 3='Both' 4='No/DK';
value fnumstud 1='0-9' 2='10-19' 3='20-29' 4='30-39' 5='>40';
value fflrtyp 1='Carpet only' 2='Vinyl/linoleum' 3='Both' 4='Other carpet combo'
              5='Other';
value ftyplek 1='Roof' 2='Other' 3='Both' 4='No Leaks';
value ftypstn 1='Ceiling' 2='Floor' 3='Both' 4='Other' 5='No Stains';
value fmoldloc 1='No mold' 2='1-2 locations' 3='3+ locations';
value fflswep 1='Daily' 2='2-3/wk' 3='1/wk' 4='Other' 5='DK';
value fcause 1='Cold/flu' 2='Allergy/respiratory' 3='NA';
value fnumsym 1='None' 2='1-2' 3='3+';
value fasmed 1='Never' 2='Some' 3='NA';
value fstuasma 1='DK' 2='None' 3='1-2' 4='3-5' 5='6+';
run;
*** MAKE RECODES TO ACCOUNT FOR SKIP PATTERNS AND TO RE-ORDER LEVELS OF
    SOME VARIABLES AS REQUESTED BY TOM PHILLIPS;

data combin4;set in.combin3;
************************************************************
** RECODES FOR TQ;
************************************************************;

if p1wt10_1>0 THEN DO;
/*
** REORDERING LEVELS OF TQ14 - not neeeded since separate var;
rtq14a=tq14a;
rtq14b=tq14c;
rtq14c=tq14e;
rtq14d=tq14b;
rtq14e=tq14d;
* use fyesno format for above variables;
*/
** REORDERING LEVELS OF TQ15;
```

```
if tq15=6 then rtq15=1;
else if tq15=1 then rtq15=2;
else if tq15=3 then rtq15=3;
else if tq15=5 then rtq15=4;
else if tq15=2 then rtq15=5;
else if tq15=4 then rtq15=6;
* use frtq15_ format for rtq15;

** SKIP PATTERN RECODES FOR RECODE TQ16;
if tq16a=. then do;
  _rtq16b=tq16b;
  if tq16b>=1 then rtq16a=1;
end;
else if tq16a=1 then do;
  rtq16a=tq16a;_rtq16b=tq16b;
  if tq16b=. then _rtq16b=.N;
end;
else if tq16a=2 then do;
  rtq16a=tq16a;_rtq16b=6; ** category 6 = not applicable;
end;

** REORDERING LEVELS OF TQ16B;
if _rtq16b in (1,6) then rtq16b=_rtq16b;
else if _rtq16b=3 then rtq16b=2;
else if _rtq16b=5 then rtq16b=3;
else if _rtq16b=2 then rtq16b=4;
else if _rtq16b=4 then rtq16b=5;
* use fyesno for rtq16a;
* use frtq16b format for rtq16b;

** SKIP PATTERN RECODES FOR TQ18;
*** NOTE ITEM tq18b HAS BEEN FIXED TO ALLOW MULT RESPONSES;
*** tq18b_1,_2,_3=1 for yes, =2 for no;
if tq18a=. then do;
  if max(tq18b_1,tq18b_2,tq18b_3)>=1 then rtq18b=.S;
end;
else if tq18a=1 then do;
  if tq18b_1=1 then rtq18b=1;
  else if tq18b_2=1 then rtq18b=2;
  else if tq18b_3=1 then rtq18b=3;
  else rtq18b=4; ** category 4 = unspecified;
end;
else if tq18a>=2 then rtq18b=5; ** category 5 = not applicable;
* use fyesnodk format for tq18a;
* use frtq18b format for rtq18b;

** SKIP PATTERN RECODES FOR TQ31;
rtq31a_a=2-tq31a_a;
rtq31a_b=2-tq31a_b;
rtq31a_c=2-tq31a_c;
rtq31a_d=2-tq31a_d;
rtq31b_a=2-tq31b_a;
rtq31b_b=2-tq31b_b;
rtq31b_c=2-tq31b_c;
rtq31b_d=2-tq31b_d;
rtq31b_e=2-tq31b_e;
rtq31c_a=2-tq31c_a;
rtq31c_b=2-tq31c_b;
rtq31c_c=2-tq31c_c;
rtq31c_d=2-tq31c_d;
rtq31c_e=2-tq31c_e;
rtq31c_f=2-tq31c_f;
if max(tq31a_b,tq31a_c,tq31a_d)=1 then rtq31a_a=2;
if rtq31a_a=1 then do;
```

```
  if tq31b_a=1 then rtq31b_a=.S;
  if tq31b_b=1 then rtq31b_b=.S;
  if tq31b_c=1 then rtq31b_c=.S;
  if tq31b_d=1 then rtq31b_d=.S;
  if tq31b_e=1 then rtq31b_e=.S;
  if tq31c_a=1 then rtq31c_a=.S;
  if tq31c_b=1 then rtq31c_b=.S;
  if tq31c_c=1 then rtq31c_c=.S;
  if tq31c_d=1 then rtq31c_d=.S;
  if tq31c_e=1 then rtq31c_e=.S;
  if tq31c_f=1 then rtq31c_f=.S;
end;
* use fyesno format for all of above rtq31 variables;

** SKIP PATTERN RECODES FOR TQ32;
rtq32a_a=2-tq32a_a;
rtq32a_b=2-tq32a_b;
rtq32a_c=2-tq32a_c;
rtq32a_d=2-tq32a_d;
rtq32b_a=2-tq32b_a;
rtq32b_b=2-tq32b_b;
rtq32b_c=2-tq32b_c;
rtq32b_d=2-tq32b_d;
rtq32b_e=2-tq32b_e;
rtq32b_f=2-tq32b_f;
if max(tq32a_b,tq32a_c,tq32a_d)=1 then rtq32a_a=2;
if rtq32a_a=1 then do;
  if tq32b_a=1 then rtq32b_a=.S;
  if tq32b_b=1 then rtq32b_b=.S;
  if tq32b_c=1 then rtq32b_c=.S;
  if tq32b_d=1 then rtq32b_d=.S;
  if tq32b_e=1 then rtq32b_e=.S;
  if tq32b_f=1 then rtq32b_f=.S;
end;

rtq32c_a=2-tq32c_a;
rtq32c_b=2-tq32c_b;
rtq32c_c=2-tq32c_c;
rtq32c_d=2-tq32c_d;
rtq32d_a=2-tq32d_a;
rtq32d_b=2-tq32d_b;
rtq32d_c=2-tq32d_c;
rtq32d_d=2-tq32d_d;
rtq32d_e=2-tq32d_e;
rtq32d_f=2-tq32d_f;
if max(tq32c_b,tq32c_c,tq32c_d)=1 then rtq32c_a=2;
if rtq32c_a=1 then do;
  if tq32d_a=1 then rtq32d_a=.S;
  if tq32d_b=1 then rtq32d_b=.S;
  if tq32d_c=1 then rtq32d_c=.S;
  if tq32d_d=1 then rtq32d_d=.S;
  if tq32d_e=1 then rtq32d_e=.S;
  if tq32d_f=1 then rtq32d_f=.S;
end;

rtq32e_a=2-tq32e_a;
rtq32e_b=2-tq32e_b;
rtq32e_c=2-tq32e_c;
rtq32e_d=2-tq32e_d;
rtq32f_a=2-tq32f_a;
rtq32f_b=2-tq32f_b;
rtq32f_c=2-tq32f_c;
rtq32f_d=2-tq32f_d;
rtq32f_e=2-tq32f_e;
```

```
rtq32f_f=2-tq32f_f;
if max(tq32e_b,tq32e_c,tq32e_d)=1 then rtq32e_a=2;
if rtq32e_a=1 then do;
  if tq32f_a=1 then rtq32f_a=.S;
  if tq32f_b=1 then rtq32f_b=.S;
  if tq32f_c=1 then rtq32f_c=.S;
  if tq32f_d=1 then rtq32f_d=.S;
  if tq32f_e=1 then rtq32f_e=.S;
  if tq32f_f=1 then rtq32f_f=.S;
end;
* use fyesno format for all of above rtq32 variables;

** REORDERING LEVELS OF TQ33;
else if tq33 in (1,6) then rtq33=tq33;
else if tq33=3 then rtq33=2;
else if tq33=5 then rtq33=3;
else if tq33=2 then rtq33=4;
else if tq33=4 then rtq33=5;
* use frtq33_ format for rtq33;

** SKIP PATTERN RECODES FOR TQ34;
if tq34a=. then do;
  rtq34b=.S; rtq34a=.N;
end;
else if tq34a=1 then do;
  rtq34a=tq34a;rtq34b=5; ** category 5 = not applicable;
end;
else if tq34a=2 then do;
  rtq34a=tq34a;rtq34b=tq34b;
  if tq34b=. then rtq34b=4; ** category 4 = unspecified;
end;
* use fyesno format for rtq34a;
* use frtq34b format for rtq34b;

** SKIP PATTERN RECODES FOR TQ38;
******NOTE: Following assumes TQ38B has been recoded as separate items;
if tq38a=. then do;
  if tq38b_1>=0 then rtq38b_1=.S;
  if tq38b_2>=0 then rtq38b_2=.S;
  if tq38b_3>=0 then rtq38b_3=.S;
  if tq38b_4>=0 then rtq38b_4=.S;
  if tq38b_5>=0 then rtq38b_5=.S;
end;
else if tq38a>1 then do;
  rtq38b_1=tq38b_1;
  rtq38b_2=tq38b_2;
  rtq38b_3=tq38b_3;
  rtq38b_4=tq38b_4;
  rtq38b_5=tq38b_5;
end;
else if tq38a=1 then do;
  if rtq38b_1=1 then rtq38b_1=.S;else rtq38b_1=3; ** category 3 = not applicable;
  if rtq38b_2=1 then rtq38b_2=.S;else rtq38b_2=3;
  if rtq38b_3=1 then rtq38b_3=.S;else rtq38b_3=3;
  if rtq38b_4=1 then rtq38b_4=.S;else rtq38b_4=3;
  if rtq38b_5=1 then rtq38b_5=.S;else rtq38b_5=3;
end;
* use fyesnona for rtq38b variables;

** SKIP PATTERN RECODES AND RE-STRUCTURING FOR TQ40;
if tq40a_b=0 then rtq40b=5;
else if tq40a_b=1 then do;
     rtq40b=(tq40b_a=1)+2*(tq40b_b=1)+3*(tq40b_c=1)+4*(tq40b_d=1);
     if rtq40b=0 then rtq40b=.N;
```

```
     if sum(tq40b_a,tq40b_b,tq40b_c,tq40b_d)>1 then rtq40b=.M;
end;
END;
* use frtq40b format for rtq40b;

*** create sample design variables, treating sample as having one stratum,
    with PSU=school;
apsu=input(studyid,4.);
astratum=1;

*** create general analysis variables;
overall=1;
popstat=input(popstatus,1.);
schtype=input(sch_type,1.);
if northsouth='N' then region=1;else if northsouth='S' then region=2;

*** create analysis variables from formaldehyde dataset;
if p1wt10_3>0 then do;
   sampmo=min(3,input(substr(startdatetime,1,1),1.)-3);
   if meas<=6 then ndind100=0;
   else if meas>6 then ndind100=100;
   if meas<=27 then thr1pct=0;
   else if meas>27 then thr1pct=100;
   if meas<=76 then thr2pct=0;
   else if meas>76 then thr2pct=100;
   startmo=input(substr(startdatetime,1,1),2.);
   startda=input(compress(substr(startdatetime,3,2),'/'),2.);
   stopmo=input(substr(stopdatetime,1,1),2.);
   stopda=input(compress(substr(stopdatetime,3,2),'/'),2.);
   startday=mdy(startmo,startda,2001);
   stopday=mdy(stopmo,stopda,2001);
   xposday=stopday-startday;
   wdxpos=.;
   if xposday>=1 then do;
     wdxpos=0;
     if weekday(startday) in (1,7) or startday=mdy(5,28,2001)
                      or startday=mdy(7,4,2001) then wdxpos=.5;
     if weekday(stopday) in (1,7) or stopday=mdy(5,28,2001)
                      or stopday=mdy(7,4,2001)then wdxpos+.5;
     do dayinc = startday+1 to stopday-1;
        if weekday(dayinc) in (1,7) or dayinc=mdy(5,28,2001)
                    or dayinc=mdy(7,4,2001)then wdxpos+1;
     end;
   end;
   pwdxpos=100*wdxpos/xposday;
   if pwdxpos>=0 then pwdxposc=2-(pwdxpos<25);  * use fyesno;
end;
if startday ne . then do;
     if mdy(4,1,2001)<=startday<=mdy(4,15,2001) then samptime=1;
     else if mdy(4,16,2001)<=startday<=mdy(4,30,2001) then samptime=2;
     else if mdy(5,1,2001)<=startday<=mdy(5,15,2001) then samptime=3;
     else if mdy(5,16,2001)<=startday<=mdy(5,31,2001) then samptime=4;
     else if mdy(6,1,2001)<=startday<=mdy(7,30,2001) then samptime=5;
end;   *use fsamptim;
format startday stopday mmddyy10.;

*** create analysis variables from TQ;
if p1wt10_1>0 THEN DO;
if tq5>=1 then geninst=(tq5=1)+2*(tq5>1); *use fyesno;
if tq8>=0 then numstud=(0<=tq8<=9)+2*(10<=tq8<=19)+3*(20<=tq8<=29)
         +4*(30<=tq8<=39)+5*(40<=tq8); * use fnumstud;
if tq10a=1 then carpet=1;
else if tq10b=1 or tq10c=1 then carpet=2;
else if tq10a=0 and tq10b=0 and tq10c=0 then carpet=3; *use fcarpet;
```

```
vinylfl=2-tq10e; * use fyesno;
_xxt=sum(tq10a,tq10b,tq10c,tq10d,tq10e,tq10f,tq10g,tq10h,tq10i);
_xxc=sum(tq10a,tq10b,tq10c);
if tq10a=1 and tq10e=0 then flrtyp=1;
else if _xxc=0 and tq10e=1 then flrtyp=2;
else if _xxc>=1 and tq10e=1 then flrtyp=3;
else if _xxc>=1 and tq10e=0 then flrtyp=4;
else if _xxt>=1 then flrtyp=5; *use fflrtyp;
if tq11>=1 then vinylwl=(tq11=2)+2*(tq11 ne 2); *use fyesno;
if rtq15 in (2,3) then windopen=2;
else if rtq15 in (4,5,6) then windopen=3;
else if rtq15=1 then windopen=1;          * use ffreq;
if rtq16b in (1,2) then dooropen=1;
else if rtq16b in (3,4,5) then dooropen=2;
else if rtq16b=6 then dooropen=3;          * use fdooropn;
preswood=2-max(tq19a_d,tq19b_d,tq19c_d); * use fyesno;
plastic=2-max(tq19a_e,tq19b_e,tq19c_e); * use fyesno;
preswod1=2-tq19a_d;* use fyesno;
preswod2=2-tq19b_d;* use fyesno;
preswod3=2-tq19c_d;* use fyesno;
if max(tq20b,tq20c,tq20d,tq20e,tq20f)=1 then newfurn=1;
else if tq20g=1 then newfurn=3;
else if tq20a=1 then newfurn=2; * use fyesnodk;
copiers=2-max(tq22a_b,tq22a_c,tq22a_d,tq22a_e,tq22a_f); * use fyesno;
if max(tq22b_c,tq22b_e)=1 then applian=1;
else if max(tq22b_b,tq22b_d,tq22b_f)=1 then applian=2;
else if tq22b_a=1 then applian=3; *use fapplian;
chempres=2-max(tq22c_b,tq22c_c,tq22c_d); * use fyesno;
paints=2-tq23a_b; * use fyesno;
paintpen=2-max(tq23a_b,tq23a_c,tq23a_d); * use fyesno;
pmarker=2-tq23a_c; * use fyesno;
wbmarker=2-tq23a_d; * use fyesno;
gluflu=2-max(tq23b_b,tq23b_c,tq23b_d); * use fyesno;
corflu=2-tq23b_c; * use fyesno;
glues=2-max(tq23b_b,tq23b_d); * use fyesno;
afresh=2-max(tq23c_b,tq23c_c,tq23c_d); * use fyesno;
afreshp=2-tq23c_c; * use fyesno;
afreshs=2-tq23c_d; * use fyesno;
candles=2-max(tq23d_b,tq23d_c,tq23d_d); * use fyesno;
airclean=2-max(tq23e_b,tq23e_c); * use fyesno;
airpurf=2-tq23e_b; * use fyesno;
if max(tq24a_c,tq24b_c,tq24c_c)=1 then pestuse=1;
else if max(tq24a_b,tq24b_b,tq24c_b)=1 then pestuse=2;
else if max(tq24a_a,tq24b_a,tq24c_a)=1 then pestuse=3; * use fpestuse;
pestspr=2-max(tq24a_b,tq24a_c); *use fyesno;
pestpow=2-max(tq24b_b,tq24b_c); *use fyesno;
pesttrp=2-max(tq24c_b,tq24c_c); *use fyesno;
claspref=tq25; * use fclaspre;
if tq26a_a=1 then temp=1;
else if tq26a_b=1 then temp=2;
else if tq26a_c=1 then temp=3; * use ftemp;
if tq26b_a=1 then humid=1;
else if tq26b_b=1 then humid=2;
else if tq26b_c=1 then humid=3; * use fhumid;
if tq26c_a=1 then cair=1;
else if tq26c_b=1 then cair=2;
else if tq26c_c=1 then cair=3; * use fcair;
if tq26d_a=1 then light=1;
else if tq26d_b=1 then light=2;
else if max(tq26d_c,tq26d_d,tq26d_e)=1 then light=3; * use flight;
if tq27a_a=1 then innoise=2;
else if max(tq27a_b,tq27a_c,tq27a_d,tq27a_e) then innoise=1; * use fyesno;
if tq27b_a=1 then outnoise=2;
else if max(tq27b_b,tq27b_c,tq27b_d,tq27b_e) then outnoise=1; * use fyesno;
```

```
if tq28>=1 then turnoff=3-min(tq28,2); * use fyesno;
if tq29a_c=1 then bugprob=1;
else if tq29a_b=1 then bugprob=2;
else if tq29a_a=1 then bugprob=3; * use fproblem;
if tq29b_c=1 then rodprob=1;
else if tq29b_b=1 then rodprob=2;
else if tq29b_a=1 then rodprob=3; * use fproblem;
mustodor=tq30a; * use fodor;
newodor=tq30d;  * use fodor;
if tq30a>=1 then rtq30a=3-min(tq30a,2);
if tq30b>=1 then rtq30b=3-min(tq30b,2);
if tq30c>=1 then rtq30c=3-min(tq30c,2);
if tq30d>=1 then rtq30d=3-min(tq30d,2);
if tq30e>=1 then rtq30e=3-min(tq30e,2);
if tq30f>=1 then rtq30f=3-min(tq30f,2);
if tq30g>=1 then rtq30g=3-min(tq30g,2);
if tq30h>=1 then rtq30h=3-min(tq30h,2);
if tq30i>=1 then rtq30i=3-min(tq30i,2);
if tq30j>=1 then rtq30j=3-min(tq30j,2);
if tq30k>=1 then rtq30k=3-min(tq30k,2);
if tq30L>=1 then rtq30L=3-min(tq30L,2); * use fyesno for all these;
if rtq31a_c=1 then const=1;
else if rtq31a_b=1 then const=2;
else if rtq31a_a=1 then const=3;
else if rtq31a_d=1 then const=4; * use fwatrprb;
othconst=min(rtq31b_b,rtq31b_c,rtq31b_d,rtq31b_e); * use fyesno;
if min(rtq32a_c,rtq32c_c,rtq32e_c)=1 then watrprb=1;
else if min(rtq32a_b,rtq32c_b,rtq32e_b)=1 then watrprb=2;
else if min(rtq32a_a,rtq32c_a,rtq32e_a)=1 then watrprb=3;
else if min(rtq32a_d,rtq32c_d,rtq32e_d)=1 then watrprb=4; * use fwatrprb;
if rtq32a_c=1 then watrlek=1;
else if rtq32a_b=1 then watrlek=2;
else if rtq32a_a=1 then watrlek=3;
else if rtq32a_d=1 then watrlek=4; * use fwatrprb;
if rtq32b_a=1
  and min(rtq32b_b,rtq32b_c,rtq32b_d,rtq32b_e,rtq32b_f)=2 then typlek=1;
else if rtq32b_a=2 and min(rtq32b_b,rtq32b_c,rtq32b_d,rtq32b_e,rtq32b_f)=1 then
typlek=2;
if rtq32b_a=1
  and min(rtq32b_b,rtq32b_c,rtq32b_d,rtq32b_e,rtq32b_f)=1 then typlek=3;
else if min(rtq32b_a,rtq32b_b,rtq32b_c,rtq32b_d,rtq32b_e,rtq32b_f)=2 then typlek=4;
   * use ftyplek;
if rtq32c_c=1 then watrstn=1;
else if rtq32c_b=1 then watrstn=2;
else if rtq32c_a=1 then watrstn=3;
else if rtq32c_d=1 then watrstn=4; * use fwatrprb;
if rtq32d_b=1
  and min(rtq32d_a,rtq32d_c,rtq32d_d,rtq32d_e,rtq32d_f)=2 then typstn=1;
else if rtq32d_d=1
  and min(rtq32d_a,rtq32d_b,rtq32d_c,rtq32d_e,rtq32d_f)=2 then typstn=2;
else if rtq32d_b=1 and rtq32d_d=1 then typstn=3;
else if min(rtq32d_a,rtq32d_c,rtq32d_e,rtq32d_f)=1 then typstn=4;
else if min(rtq32d_a,rtq32d_b,rtq32d_c,rtq32d_d,rtq32d_e,rtq32d_f)=2
     then typstn=4; *use ftypstn;
if rtq32e_c=1 then vismolt=1;
else if rtq32e_b=1 then vismolt=2;
else if rtq32e_a=1 then vismolt=3;
else if rtq32e_d=1 then vismolt=4; * use fwatrprb;
_moldloc=sum(2-rtq32f_a,2-rtq32f_b,2-rtq32f_c,2-rtq32f_d,2-rtq32f_e,
             2-rtq32f_f);
if _moldloc>=0 then moldloc=(_moldloc=0)+2*(1<=_moldloc<=2)+3*(_moldloc>2);
* use fmoldloc;
if rtq33<=3 then flswep=rtq33;
else if rtq33 in (4,5) then flswep=4;
```

```
else if rtq33=6 then flswep=5; * use fflswep;


if tq36>=1 then complan=1*(tq36=1)+2*(2<=tq36<=3)+3*(4<=tq36<=5); * use fcomplan;
if tq37>=1 then airqual=(1<=tq37<=2)+2*(tq37=3)+3*(4<=tq37<=5); * use fairqual;
if tq38a>=1 then absent=(tq38a=1)+2*(tq38a=2)+3*(3<=tq38a<=4); * use fabsent;
if tq38a=1 then cause=3;
else if tq38a>1 then do;
    if rtq38b_1=1 then cause=1;
       else if min(rtq38b_2,rtq38b_3,rtq38b_4)=1 then cause=2;
end;  * use fcause;
** SKIP PATTERN RECODES FOR TQ39;
%recod39(tq39a_n,tq39a_o,tq39a_f,tq39a_s,tq39a_i,nosesym,nosesymi);
%recod39(tq39b_n,tq39b_o,tq39b_f,tq39b_s,tq39b_i,thrtsym,thrtsymi);
%recod39(tq39c_n,tq39c_o,tq39c_f,tq39c_s,tq39c_i,eyessym,eyessymi);
%recod39(tq39d_n,tq39d_o,tq39d_f,tq39d_s,tq39d_i,skinsym,skinsymi);
%recod39(tq39e_n,tq39e_o,tq39e_f,tq39e_s,tq39e_i,headsym,headsymi);
%recod39(tq39f_n,tq39f_o,tq39f_f,tq39f_s,tq39f_i,drowsym,drowsymi);
%recod39(tq39g_n,tq39g_o,tq39g_f,tq39g_s,tq39g_i,dizzsym,dizzsymi);
%recod39(tq39h_n,tq39h_o,tq39h_f,tq39h_s,tq39h_i,lungsym,lungsymi);
%recod39(tq39i_n,tq39i_o,tq39i_f,tq39i_s,tq39i_i,stomsym,stomsymi);
if nosesym>=1 then do;
  _sfrq=(2<=nosesym<=3)+(2<=thrtsym<=3)+(2<=eyessym<=3)+(2<=skinsym<=3)
      +(2<=headsym<=3)+(2<=drowsym<=3)+(2<=dizzsym<=3)+(2<=lungsym<=3)
      +(2<=stomsym<=3);
  if _sfrq=0 then numsym=1;
  else if 1<=_sfrq<=2 then numsym=2;
  else if 3<=_sfrq then numsym=3;
end; * use fnumsym;
allerg=2-tq40a_a; * use fyesno;
lungprb=2-max(tq40a_b,tq40a_c); * use fyesno;
circprb=2-max(tq40a_d,tq40a_e); * use fyesno;
asmed=(rtq40b=1)+2*(2<=rtq40b<=4)+3*(rtq40b=5); * use fasmed;
if tq41>=1 then stuasma=min(tq41,5); * use fstuasma;
END;

*** create analysis variables from FMQ;

if p1wt10_2>0 or alpha_id in ('D','E','F')THEN DO;
if roomtype=1 and 1<=ftypeport<=3 then porttyp=ftypeport;
else if roomtype=1 and ftypeport=. then porttyp=3;
else if roomtype=2 and (ftypeport=3 or ftypeport=.) then porttyp=4;
else if roomtype=2 and 1<=ftypeport<=2 then porttyp=5; * use fporttyp;
clragec=2001-fyrconst;
clrage=(0<=clragec<=10)+2*(11<=clragec<=20)+3*(21<=clragec<=30)
           +4*(31<=clragec<=40)+5*(clragec>40); *use fclrage;
clragex=(0<=clragec<=3)+2*(4<=clragec<=5)+3*(6<=clragec<=10)
           +4*(11<=clragec<=15)+5*(clragec>15); *use fclragex;
if clragec>=0 then clrageu=1;else if clragec=. then clrageu=2; *use fclrageu;
renovat=2-max(fq29_a,fq29_b,fq29_c,fq29_d,fq29_e,fq29_f); * use fyesno;
renovmaj=2-max(fq29_a,fq29_e,fq29_f); * use fyesno;
renovele=2-max(fq29_b,fq29_c); * use fyesno;
renovruf=2-fq29_d; * use fyesno;
clrsiz=min(3,fq31); * use fclrsiz;
bldgfon=tq34a; * use fbldgfon;

if fq34_a in (1,2) then do;
  if fq34_c>0 then rfq34c =.S;
  else rfq34c=5; ** category 5 = not applicable or unspec;
end;
else if fq34_a=3 then do;
  rfq34c=fq34_c;
  if fq34_c=. then rfq34c=5;
end; *use frfq34c;
```

```
if fq36 in (1,2)then ruftyp=fq36;
else if fq36 in (3,6) then ruftyp=5;
else if fq36 in (4,5) then ruftyp=fq36-1; * use fruftyp;
lddock=2-max(fq39_a,fq39_b); *use fyesno;
dumpstr=2-fq39_d;  *use fyesno;
sprooms=2-max(fq39_g,fq39_h,fq39_i,fq39_j,fq39_c,fq39_e,fq39_f); *use fyesno;
pelpani=2-fq40_a; *use fyesno;
pelpano=2-fq40_b; *use fyesno;
pelpant=2-max(fq40_a,fq40_b);  *use fyesno;
pachvac=fq41; *use fyndkna;
if fq42=1 then ahuloc=3;
else if fq42 in (2,3,5,6) then ahuloc=fq42-1; *use fahuloc;
if fq45=1 then centac=1;
else if fq45 in (2,3,4) then centac=2;
else if fq45 in (5,6) then centac=fq45-1; *use fyndkna;
if fq46>0 then fanop=min(fq46,3); * use ffanop;
if fq48_a=. and fq48_b=. then dampset=.;
else dampset=(0<=fq48_a<=10)+2*(10<fq48_a<=20)+3*(20<fq48_a<=40)+
          4*(fq48_a>40)+5*(fq48_a<=.Z and fq48_b=1); * use fdampset;
plenopen=2-fq49_a; *use fyesno;
fglfilt=2-fq50_a; *use fyesno;
plefilt=2-fq50_b; *use fyesno;
hiefilt=2-fq50_c; *use fyesno;
if min(fq52_1,fq52_2,fq52_3,fq52_4)=2 then do;
  if fq52_5=1 then tcntl=4;
  else if fq52_6=1 then tcntl=5;
  else tcntl=.;
end;
else if fq52_2=1 and min(fq52_1,fq52_3,fq52_4)=2 then tcntl=1;
else if fq52_2=2 and min(fq52_1,fq52_3,fq52_4)=1 then tcntl=3;
else if fq52_2=1 and min(fq52_1,fq52_3,fq52_4)=1 then tcntl=2; * use ftcntl;
spheat=2-max(fq53_a,fq53_b,fq53_c,fq53_d,fq53_e,fq53_f); * use fyesno;
if max(fq56_a,fq56_b,fq56_c,fq56_d)=1 then watrdam=1;
else if fq56_f=1 then watrdam=2;
else if fq56_e=1 then watrdam=3; * use fyesnodk;
rufleak=2-fq56_a; * use fyesno;
if max(fq57_a,fq57_b,fq57_c,fq57_d,
       fq57_e,fq57_f,fq57_g,fq57_h)=1 then vismold=1;
else if fq57_j=1 then vismold=2;
else if fq57_i=1 then vismold=3; * use fyesnodk;
if fq59 in (2,3) then stdwatr=1;
else if fq59=1 then stdwatr=2;
else if fq59=4 then stdwatr=3; * use fyesnodk;
if max(fq60_a,fq60_b,fq60_c,fq60_d)=1 then newwood=1;
else if fq60_f=1 then newwood=2;
else if fq60_e=1 then newwood=3; * use fyesnodk;
newcarp=2-fq62_a; * use fyesno;
if fq62_g=1 then newfloor=3;
else newfloor=2-max(fq62_a,fq62_b,fq62_c,fq62_d,
       fq62_e,fq62_f); * use fyesnodk;
if max(fq63_a,fq63_b,fq63_c,fq63_d,
       fq63_e,fq63_f,fq63_g)=1 then pestusef=1;
else if fq63_i=1 then pestusef=2;
else if fq63_h=1 then pestusef=3; * use fyesnodk;
ccpest=2-fq63_a; * use fyesno;
sppest=2-fq63_d; * use fyesno;
if fq64_a=1 and fq64_b=1 then flubulb=3;
else if fq64_a=1 then flubulb=1;
else if fq64_b=1 then flubulb=2;
else if fq64_a=0 and fq64_b=0 then flubulb=4; * use fflubulb;
END;

*** labels for recoded variables and analysis variables;
label A_580='H2CO raw instrument response'
```

```
blank_ug='Average of lab blanks (ug)'
comments='Comments from lab'
froom='Facility Room Number'
intercept='H2CO calibration line: intercept'
   slope='H2CO calibration line: slope'
   location='School name from H2CO sampling'
   lotnum='Lot number for H2CO vials'
schtype='School type'
overall='All classrooms (=1)'
   popstat='School location'
   region='Geographic region'
   apsu='PSU for analysis'
   astratum='Stratum for analysis'
ndind100='100 if Formaldehyde detected (>6ppb)'
thr1pct='100 if Formaldehyde exceeds 27ppb'
thr2pct='100 if Formaldehyde exceeds 76ppb'
   startday='Start date of sampling period'
stopday='Stop date of sampling period'
   samptime='Time of formaldehyde sampling'
   xposday='Number days in sampling period'
   wdxpos='# weekend/holidays in sampling period'
   pwdxpos='% weekend/holidays in sampling period'
   pwdxposc='<25% weekend/holidays in samp period'
rtq15='How often open windows for ventilation'
rtq16a='Door directly to outside'
rtq16b='How often outside door is open'
rtq18b='Thermostat adjustment'
   rtq30a='Musty odor at times'
   rtq30b='Cleaning products odor at times'
   rtq30c='Vehicle exhaust odor at times'
   rtq30d='New carpet/furniture odor at times'
   rtq30e='Fresh paint odor at times'
   rtq30f='Cooking odor at times'
   rtq30g='Pesticide odor at times'
rtq30h='Asphalt/tar odor at times'
   rtq30i='Tobacco smoke odor at times'
   rtq30j='Trash/dumpster odor at times'
   rtq30k='Sewer/compost odor at times'
   rtq30L='Fire/smoke odor at times'
rtq31a_a='Construction - When - Never'
rtq31a_b='Construction - When - Prior'
rtq31a_c='Construction - When - Current'
rtq31a_d='Construction - When - DK'
rtq31b_a='Construction - Where- classroom'
rtq31b_b='Construction - Where- same bldg'
rtq31b_c='Construction - Where- nearby'
rtq31b_d='Construction - Where- outdoors'
rtq31b_e='Construction - Where- other'
rtq31c_a='Construction - Type- painting'
rtq31c_b='Construction - Type- carpentry'
rtq31c_c='Construction - Type- plumbing'
rtq31c_d='Construction - Type- flooring'
rtq31c_e='Construction - Type- roofing'
rtq31c_f='Construction - Type- other'
rtq32a_a='Water leak/flood - never'
rtq32a_b='Water leak/flood - prior'
rtq32a_c='Water leak/flood - current'
rtq32a_d='Water leak/flood - DK'
rtq32b_a='Water leak/flood - roof'
rtq32b_b='Water leak/flood - window'
rtq32b_c='Water leak/flood - sink/toilet'
rtq32b_d='Water leak/flood - sprinkler'
rtq32b_e='Water leak/flood - plumbing'
rtq32b_f='Water leak/flood - other type'
```

```
rtq32c_a='Water stains - never'
rtq32c_b='Water stains - prior'
rtq32c_c='Water stains - current'
rtq32c_d='Water stains - DK'
rtq32d_a='Water stains - walls'
rtq32d_b='Water stains - ceiling'
rtq32d_c='Water stains - window sills'
rtq32d_d='Water stains - floor/carpet'
rtq32d_e='Water stains - furniture'
rtq32d_f='Water stains - other'
rtq32e_a='Visible mold - never'
rtq32e_b='Visible mold - prior'
rtq32e_c='Visible mold - current'
rtq32e_d='Visible mold - DK'
rtq32f_a='Visible mold - walls'
rtq32f_b='Visible mold - ceiling'
rtq32f_c='Visible mold - window sills'
rtq32f_d='Visible mold - floor/carpet'
rtq32f_e='Visible mold - furniture'
rtq32f_f='Visible mold - other'
rtq34a='Adequate custodial services'
rtq34b='Needed custodial services'
rtq38b_1='Absent due to flu/cold'
rtq38b_2='Absent due to allergies'
rtq38b_3='Absent due to asthma'
rtq38b_4='Absent due to other respiratory'
rtq38b_5='Absent due to other reasons'
rtq40b='Freq of asthma medication'
rtq33='Freq of sweeping/vacuuming'
geninst='General instruction classroom'
   numstud='Typical number students in class'
   flrtyp='Type of flooring'
carpet='Carpeted classroom'
vinylfl='Vinyl/linoleum floor'
vinylwl='Vinyl tackable wallboard'
windopen='Open windows'
dooropen='Open external door'
preswood='Pressed wood furniture'
   plastic='Plastic furniture'
preswod1='Pressed wood table/desks'
preswod2='Pressed wood bookcases'
preswod3='Pressed wood cabinets'
newfurn='New furnishings this school year'
   copiers='Copiers present in room'
   applian='Type appliances in room'
chempres='Chemicals present in room'
   paintpen='Paints/pens used'
paints='Oil/acrylic paints used'
pmarker='Permanent marker/pen used'
wbmarker='Whiteboard marker used'
gluflu='Glues/fluids used'
corflu='Correction fluid used'
glues='Epoxy/rubber cement used'
afresh='Air freshener used'
afreshp='Air freshener used-plug-in'
afreshs='Air freshener used-spray'
   candles='Candles used in room'
   airclean='Air cleaner used in room'
const='Construction activity this yr'
watrprb='Water problems this yr'
complan='No. teacher complaints this yr'
   airqual='Teacher air quality rating'
   airpurf='Portable air purifier used'
pestuse='Pesticide use past yr (teacher)'
```

```
   pestspr='Pesticide spray use past yr'
pestpow='Pesticide powder use past yr'
pesttrp='Pesticide traps use past yr'
claspref='Teacher classroom preference'
temp='Classroom temperature'
humid='Classroom humidity'
cair='Classroom air'
light='Classroom light'
innoise='Disruptive inside noise'
outnoise='Disruptive outside noise'
   turnoff='Turn off heat/AC due to noise'
   bugprob='Bug problems in room'
   rodprob='Rodent problems in room'
mustodor='Musty odor'
newodor='New furnishings odor'
   othconst='Construction other than in room'
   moldloc='No. locations with mold'
   watrlek='Water leaks/flooding in room'
   typlek='Type of leak or flood'
   watrstn='Water stains in rooms'
   typstn='Type of water stain'
   vismolt='Visible mold in room (teacher)'
   flswep='Freq of floor cleaning'
absent='Days absent last 2 weeks'
   cause='Reasons for absence'
nosesym='Nose symptoms past 2 weeks'
thrtsym='Throat symptoms past 2 weeks'
eyessym='Eyes symptoms past 2 weeks'
skinsym='Skin symptoms past 2 weeks'
headsym='Headache/sinus pain past 2 weeks'
drowsym='Drowsiness past 2 weeks'
dizzsym='Dizziness/faintness past 2 weeks'
lungsym='Lung symptoms past 2 weeks'
stomsym='Upset stomach past 2 weeks'
nosesymi='Nose symptoms at home'
thrtsymi='Throat symptoms at home'
eyessymi='Eyes symptoms at home'
skinsymi='Skin symptoms at home'
headsymi='Headache/sinus pain at home'
drowsymi='Drowsiness at home'
dizzsymi='Dizziness/faintness at home'
lungsymi='Lung symptoms past at home'
stomsymi='Upset stomach at home'
   numsym='No. health symptoms past 2 weeks'
allerg='Chronic hay fever/allergies'
   lungprb='Chronic asthma/bronchitis'
   circprb='Chronic hypertension/heart disease'
   asmed='Inhaled asthma med past 2 weeks'
   stuasma='No. students taking asthma med'
porttyp='Type of Classroom'
clragec='Classroom age (yrs)'
clrage='Classroom age'
clragex='Classroom age'
   clrageu='Classroom age (known/unknown)'
   clrsiz='Classroom size (sq.ft.)'
rtq31b_a='In-room construction this yr'
renovat='Major renovations/additions'
renovmaj='Addition/wall/floor renovations'
renovele='HVAC or lighting renovations'
renovruf='Roof renovations'
tcntl='Thermostat control'
watrdam='Water damage past 3 yrs'
vismold='Visable mold past 3 yrs'
newwood='New pressed wood last yr'
```

```
       newcarp='New carpet past yr'
       newfloor='New flooring past yr'
       pestusef='Pesticide use past yr (FM)'
       sampmo='Month of formaldehyde sample'
       clrsiz='Classroom size (sq. ft.)'
       dampset='Outdoor damper min setting'
       bldgfon='Building foundation type'
          rfq34c='Floor Height (in)'
       ruftyp='Roof type'
          lddock='Load dock/parking/road in 50ft'
          dumpstr='Dumpster within 50ft'
          sprooms='Spec purpose rooms within 50ft'
          pelpani='Peeling paint inside'
          pelpano='Peeling paint outside'
          pelpant='Peeling paint in or out'
       pachvac='Packaged HVAC'
          ahuloc='Main AHU Location'
          fanop='HVAC supply fan operation'
       centac='Central cooling system'
       plenopen='Plenum open'
       fglfilt='HVAC fiberglass mesh filter'
          plefilt='HVAC pleated filter'
          hiefilt='HVAC high efficiency filter'
       spheat='Space heaters used'
          rufleak='Roof leaks last 3 yrs'
       stdwatr='Standing water within 50ft'
       ccpest='Crack/crevice pesticides last yr'
       sppest='Spray can pesticides last yr'
       flubulb='Fluorecent bulbs';
drop dayinc startmo startda stopmo stopda _rtq16b
     dummy eligible exposuredays fcomments
     fq_rmkey id numsch resrat_h resrat_t respsch
        sumw4ir sumw4pf sumw4pf1
        sumw4w3 sum_wt6 sum_wt8 sum_wt8pf time_stamp
     totreca3 totrec_3 samtyp _xxc _xxt _sfrq moldloc fq1- -fq26ah comb_cat;
run;
proc sort out=out.combin4;by astratum apsu;run;
proc contents;title ' ';run;
```

```
*** pgm in f:/clayton/crslabvr.sas;
*** modified 12/19/2001;
*************************************************************************
***   PURPOSE: To create labels and formats for school level analyses;
***              Results are saved in OUT.SLABVAR;
***              Should be run before POPCHAR2;
*************************************************************************;

options ls=150 ps=44 nocenter mprint nodate nonumber missing=' ';
libname OUT 'f:/clayton';
libname IN 'F:/data';
ODS RTF FILE="f:/clayton/SCHLABL.RTF" STYLE=MINIMAL;

title ' ';

** DEFINE LEVELS FOR ANALYSIS VARIABLES;
** LEVELS ARE ASSUMED TO BE 1,2,... FOR USE IN SUDAAN;
data catfmt(keep=datsor varsor varnam lev cat)
     levfmt(keep=datsor varsor varnam lev1-lev7);
LENGTH DATSOR $ 1;
infile 'f:/clayton/slabvar.txt' missover pad;
input @2  varsor $char13.
      @15 varnam $char8.
      @27 lev1 $char10.
      @38 lev2 $char10.
      @51 lev3 $char10.
      @63 lev4 $char10.
      @74 lev5 $char10.
      @84 lev6 $char10.
      @95 lev7 $char10.;
varnam=upcase(varnam);
DATSOR=SUBSTR(VARSOR,1,1);
output levfmt;
if lev1 ne ' ' then do;lev=1;cat=lev1;output catfmt;end;
if lev2 ne ' ' then do;lev=2;cat=lev2;output catfmt;end;
if lev3 ne ' ' then do;lev=3;cat=lev3;output catfmt;end;
if lev4 ne ' ' then do;lev=4;cat=lev4;output catfmt;end;
if lev5 ne ' ' then do;lev=5;cat=lev5;output catfmt;end;
if lev6 ne ' ' then do;lev=6;cat=lev6;output catfmt;end;
if lev7 ne ' ' then do;lev=7;cat=lev7;output catfmt;end;
run;
proc sort data=levfmt;by varnam;run;
proc sort data=catfmt;by varnam lev;run;

** DEFINE LABELS FOR ANALYSIS VARIABLES;
data labls;
infile cards;
input @1 varnam $char8. @13 vardesc $char40.;
varnam=upcase(varnam);
vnum=_n_;
cards;
popstat     School location
region      Geographic region
schtype     School type
schage      School age (yrs)
p_calwor    Percent students on AFDC
p_meal      Percent students on Meal Assistance
pavgcost    Avg Student Expenditure
numport     Number of portable classrooms
numtrad     Number of traditional classrooms
numtot      Total number classrooms
hvaclog     HVAC maintenance logs kept
rfq15       Regular HVAC inspection/maintenance
fq15aa      HVAC I&M: outdr damper setting
```

```
fq15ab      HVAC I&M: coils cleaned
fq15ac      HVAC I&M: condensate pan/drain
fq15ad      HVAC I&M: filter replaced
fq15ae      HVAC I&M: exchanger checked
fq16a       Freq of trash removal
fq16b       Freq of vacuuming/sweeping/dusting
fq16c       Freq of carpet steam/dry cleaning
fq19a       Aware of EPA IAQ Tools for Schools Pgm
usetol      Awareness/use of EPA IAQ Tools
fq25        Any major complaints of envir cond
rfq25aa     Roof leak complaint last yr: Port
rfq25ab     Plumbing leak complaint last yr: Port
rfq25ac     Air/odor complaint last yr: Port
rfq25ad     Mold complaint last yr: Port
rfq25ae     Temperature complaint last yr: Port
rfq25af     Noise complaint last yr: Port
rfq25ba     Roof leak complaint last yr: Trad
rfq25bb     Plumbing leak complaint last yr: Trad
rfq25bc     Air/odor complaint last yr: Trad
rfq25bd     Mold complaint last yr: Trad
rfq25be     Temperature complaint last yr: Trad
rfq25bf     Noise complaint last yr: Trad
portcp      Port classroom envir complaints
tradcp      Trad classroom envir complaints
run;
proc sort;by varnam;run;
data out.slabvar;merge labls catfmt;by varnam;run;
data levfmt;merge labls levfmt;by varnam;
label varnam='Variable'
      vardesc='Description'
         varsor='Source'
         lev1='Level*1' lev2='Level*2' lev3='Level*3' lev4='Level*4'
         lev5='Level*5' lev6='Level*6' lev7='Level*7';
run;
proc sort data=levfmt;by vnum;run;
proc print split='*';id varnam;var vardesc lev1-lev7 varsor;
title 'SCHOOL-LEVEL ANALYSIS VARIABLES' ;
run;
ODS RTF CLOSE;
```

*** FOLLOWING IS THE SLABVAR.TXT FILE READ BY PRIOR PROGRAM;

O	schtype	Elem	Middle	High				
	region	North	South					
O	popstat	Urban	Suburb	Rural				
O	p_calwor	<=25%	>25%					
O	p_meal	<=55%	>55%					
O	pavgcost	<=$5500	>$5500					
FQ6	schage	<=10yr	11-20yr	21-30yr	31-40yr	41-50yr	50+yr	Unspec
	numport	1-10	11-20	21-30	>30			
FQ7a								
FQ7b	numtrad	1-20	21-40	41-60	>60			
FQ7a,b	numtot	1-30	31-60	61-100	>100			
FQ11a-g	hvaclog	Yes	No	DK				
FQ15*	rfq15	Yes	No/NA					
	FQ15AA	Monthly	Quarterly	Yearly	>Year	Never	DK	NA
FQ15aa								
FQ15ab	FQ15AB	Monthly	Quarterly	Yearly	>Year	Never	DK	NA
FQ15ac	FQ15AC	Monthly	Quarterly	Yearly	>Year	Never	DK	NA
FQ15ad	FQ15AD	Monthly	Quarterly	Yearly	>Year	Never	DK	NA
FQ15ae	FQ15AE	Monthly	Quarterly	Yearly	>Year	Never	DK	NA
FQ16a	FQ16a	5/wk	3-4/wk	1-2/wk	1-2/mo	<1/mo		
	FQ16b	5/wk	3-4/wk	1-2/wk	1-2/mo	<1/mo		
FQ16b								
FQ16c	FQ16c	5/wk	3-4/wk	1-2/wk	1-2/mo	<1/mo		
FQ19a	FQ19a	Yes	No					
FQ19a,b	usetol	Aware/yes	Aware/no	Aware/DK	Unaware			
FQ25	FQ25	Yes	No	DK				
FQ25,FQ25aa	RFQ25aa	None	1	2-4	5-9	10+		
FQ25,FQ25ba	RFQ25ba	None	1	2-4	5-9	10+		
FQ25,FQ25ab	RFQ25ab	None	1	2-4	5-9	10+		
FQ25,FQ25bb	RFQ25bb	None	1	2-4	5-9	10+		
FQ25,FQ25ac	RFQ25ac	None	1	2-4	5-9	10+		
FQ25,FQ25bc	RFQ25bc	None	1	2-4	5-9	10+		
FQ25,FQ25ad	RFQ25ad	None	1	2-4	5-9	10+		
FQ25,FQ25bd	RFQ25bd	None	1	2-4	5-9	10+		
FQ25,FQ25ae	RFQ25ae	None	1	2-4	5-9	10+		
FQ25,FQ25be	RFQ25be	None	1	2-4	5-9	10+		
FQ25,FQ25af	RFQ25af	None	1	2-4	5-9	10+		
FQ25,FQ25bf	RFQ25bf	None	1	2-4	5-9	10+		
FQ25,aa-af	portcp	Yes	No	DK				
FQ25,ba-bf	tradcp	Yes	No	DK				

```
*** pgm in f:/clayton/crlabvar.sas;
*** modified 12/19/2001;
************************************************************************
***   PURPOSE: To create labels and formats for analysis programs;
***   NOTE: Must be run before all classroom-level
      analysis programs;
************************************************************************;

options ls=150 ps=45 nocenter mprint nodate nonumber;
libname OUT 'f:/clayton';
libname IN 'F:/data';
ODS RTF FILE="F:/CLAYTON/VARDEFS.RTF" STYLE=MINIMAL;
title ' ';
proc format;value fhind 0='P' 1='B' 2='F' 3='M';run;

** DEFINE LEVELS FOR SUBGROUP VARIABLES FOR VARIABLES HAVING UNIQUE FORMATS;
data catfmt(KEEP=VARNAM LEV CAT)
     VDEFS(KEEP=VARNAM LEV1-LEV6) ;
length lev1-lev6 $ 11;
infile cards missover pad;
input @2 varnam $char8.
      @11 lev1 $char11.
      @23 lev2 $char11.
      @35 lev3 $char11.
      @46 lev4 $char11.
      @57 lev5 $char11.
      @68 lev6 $char11.  ;
varnam=upcase(varnam);
OUTPUT VDEFS;
if lev1 ne ' ' then do;lev=1;cat=lev1;output CATFMT;end;
if lev2 ne ' ' then do;lev=2;cat=lev2;output CATFMT;end;
if lev3 ne ' ' then do;lev=3;cat=lev3;output CATFMT;end;
if lev4 ne ' ' then do;lev=4;cat=lev4;output CATFMT;end;
if lev5 ne ' ' then do;lev=5;cat=lev5;output CATFMT;end;
if lev6 ne ' ' then do;lev=6;cat=lev6;output CATFMT;end;
cards;
 roomtype Portable    Traditional
 overall  All
 schtype  Elem        Middle      High
 region   North       South
 popstat  Urban       Suburb      Rural
 sampmo   April       May         June/July
 carpet   Full        Partial     None
 dooropen Infreq      Freq        NA
 claspref Permanent   Portable    No_Opinion
 temp     Okay        Cold        Hot
 humid    Okay        Humid       Dry
 cair     Okay        Drafty      Stuffy
 light    Okay        Dim         Bright
 mustodor Never       Sometimes   Often
 newodor  Never       Sometimes   Often
 complan  0           1-5         >5
 absent   None        1-2_days    >2_days
 clrage   <=10yr      11-20yr     21-30yr     31-40yr     41+yr
 clragex  0-3yr       4-5yr       6-10yr      11-15yr     16+yr
 clrageu  Known       Unknown
 clrsiz   <600        600-1100    >1100
 tcntl    Teacher     Others      Both        DK          NA
 dampset  <=10%       11-20%      21-40%      >40%        Unknown
 rfq34c   <6          6-11        12-17       18+         NA/Unk
 bldgfon  <Grade      Slab        Raised_Flr
 ruftyp   Membrane    Composite   Tar/gravel  Metal       Other
 ahuloc   Wall        Roof        Floor/Othr  DK          NA
```

```
 flubulb  T8          T12         Both       No/DK
 fq37     Flat        Sloped      Both
 tq11     Sh_rock/pls vinyl_tack  cinderblk  other/DK
 rtq15    Unopenable  Rarely      Occasional Frequently Most_time  Always
 rtq16b   NA          Rarely      Occasional Frequently Most_time  Always
 rtq18b   Adjustable  Locked_up   Not_workingUnspecifiedNA/DK
 rtq34b   More_freq   More_effctv Both       UnspecifiedNA
 fanop    Auto        Always_on   Other/unspe
 tq37     Excellent   Good        Adequate   Poor       Very_poor
 airqual  Excel/Good  Adequate    Poor
 porttyp  Port-DSA    Port-DOH    Port-Unk   Trad       Trad?
 samptime Early_April Late_April  Early_May  Late_May   June/July
 applian  Stove/burnr Other       None
 numstud  0-9         10-19       20-29      30-39      >40
 flrtyp   Carpet_only Vinyl/linol Both       Carpet_combOther
 typlek   Roof        Other       Both       No_Leaks
 typstn   Ceiling     Floor       Both       Other      No_Stains
 moldloc  No mold     1-2_loc     3+loc
 flswep   Daily       2-3/wk      1/wk       Other      DK
 cause    Cold/flu    Allerg/resp NA
 numsym   None        1-2         3+
 asmed    Never       Some        NA
 stuasma  DK          None        1-2        3-5        6+
run;

** DEFINE LEVELS FOR SUBGROUP VARIABLES HAVING COMMON FORMATS;
data multfmt(KEEP=VARNAM LEV CAT)
     VDEFSX(KEEP=VARNAM LEV1-LEV6) ;
length cat LEV1-LEV6 $ 11;
ARRAY LL{6} $ LEV1-LEV6;
RETAIN LEV1-LEV6;
infile cards;
input fmt $char8. @11 varnam $char8.;
varnam=upcase(varnam);
DO II=1 TO 6;LL{II}=' ';END;
if fmt='ffreq' then do;
  lev=1;cat='Never';LEV1=CAT;output multfmt;
  lev=2;cat='Infrequent';LEV2=CAT;output multfmt;
  lev=3;cat='Frequent';LEV3=CAT;output multfmt;
  OUTPUT VDEFSX;
end;
else if fmt='fsyma' then do;
  lev=1;cat='None';LEV1=CAT;output multfmt;
  lev=2;cat='Occasional';LEV2=CAT;output multfmt;
  lev=3;cat='Frequent';LEV3=CAT;output multfmt;
  OUTPUT VDEFSX;
end;
else if fmt='fsymb' then do;
  lev=1;cat='Same/worse';LEV1=CAT;output multfmt;
  lev=2;cat='Improves';LEV2=CAT;output multfmt;
  lev=3;cat='NA';LEV3=CAT;output multfmt;
  OUTPUT VDEFSX;
end;
else if fmt='fyesno' then do;
  lev=1;cat='Yes';LEV1=CAT;output multfmt;
  lev=2;cat='No';LEV2=CAT;output multfmt;
  OUTPUT VDEFSX;
end;
else if fmt='fyesnodk' then do;
  lev=1;cat='Yes';LEV1=CAT;output multfmt;
  lev=2;cat='No';LEV2=CAT;output multfmt;
  lev=3;cat='DK';LEV3=CAT;output multfmt;
  OUTPUT VDEFSX;
```

```
end;
else if fmt='fyesnona' then do;
  lev=1;cat='Yes';LEV1=CAT;output multfmt;
  lev=2;cat='No';LEV2=CAT;output multfmt;
  lev=3;cat='NA';LEV3=CAT;output multfmt;
  OUTPUT VDEFSX;
end;
else if fmt='fyndkna' then do;
  lev=1;cat='Yes';LEV1=CAT;output multfmt;
  lev=2;cat='No';LEV2=CAT;output multfmt;
  lev=3;cat='DK';LEV3=CAT;output multfmt;
  lev=4;cat='NA';LEV4=CAT;output multfmt;
  OUTPUT VDEFSX;
end;
else if fmt='fwatrprb' then do;
  lev=1;cat='Current';LEV1=CAT;output multfmt;
  lev=2;cat='Previous';LEV2=CAT;output multfmt;
  lev=3;cat='Never';LEV3=CAT;output multfmt;
  lev=4;cat='Unknown';LEV4=CAT;output multfmt;
  OUTPUT VDEFSX;
end;
else if fmt='fproblem' then do;
  lev=1;cat='Current';LEV1=CAT;output multfmt;
  lev=2;cat='Previous';LEV2=CAT;output multfmt;
  lev=3;cat='Never';LEV3=CAT;output multfmt;
  OUTPUT VDEFSX;
end;
cards;
fproblem  pestuse
fproblem  bugprob
fproblem  rodprob
fwatrprb  watrprb
fwatrprb  const
fwatrprb  watrlek
fwatrprb  watrstn
fwatrprb  vismolt
ffreq     windopen
fsyma     nosesym
fsyma     thrtsym
fsyma     eyessym
fsyma     skinsym
fsyma     headsym
fsyma     drowsym
fsyma     dizzsym
fsyma     lungsym
fsyma     stomsym
fsymb     nosesymi
fsymb     thrtsymi
fsymb     eyessymi
fsymb     skinsymi
fsymb     headsymi
fsymb     drowsymi
fsymb     dizzsymi
fsymb     lungsymi
fsymb     stomsymi
fyesno    pwdxposc
fyesno    tq17
fyesno    geninst
fyesno    vinylfl
fyesno    vinylwl
fyesno    preswod1
fyesno    preswod2
fyesno    preswod3
```

```
fyesno    preswood
fyesno    plastic
fyesno    copiers
fyesno    paintpen
fyesno    candles
fyesno    airclean
fyesno    pestspr
fyesno    pestpow
fyesno    pesttrp
fyesno    turnoff
fyesno    chempres
fyesno    paints
fyesno    pmarker
fyesno    wbmarker
fyesno    gluflu
fyesno    corflu
fyesno    glues
fyesno    afresh
fyesno    afreshp
fyesno    afreshs
fyesno    rtq31c_b
fyesno    othconst
fyesno    airpurf
fyesno    innoise
fyesno    outnoise
fyesno    rtq30a
fyesno    rtq30b
fyesno    rtq30c
fyesno    rtq30d
fyesno    rtq30e
fyesno    rtq30f
fyesno    rtq30g
fyesno    rtq30h
fyesno    rtq30i
fyesno    rtq30j
fyesno    rtq30k
fyesno    rtq30L
fyesno    rtq31b_a
fyesno    rtq31b_b
fyesno    allerg
fyesno    lungprb
fyesno    circprb
fyesno    renovat
fyesno    renovmaj
fyesno    renovele
fyesno    renovruf
fyesno    newcarp
fyesno    fq38
fyesno    lddock
fyesno    dumpstr
fyesno    sprooms
fyesno    pelpani
fyesno    pelpano
fyesno    pelpant
fyesno    plenopen
fyesno    fglfilt
fyesno    plefilt
fyesno    hiefilt
fyesno    spheat
fyesno    rufleak
fyesno    ccpest
fyesno    sppest
fyndkna   pachvac
```

```
fyndkna   centac
fyesnodk  tq18a
fyesnodk  newfurn
fyesnodk  vismold
fyesnodk  newwood
fyesnodk  watrdam
fyesnodk  newfloor
fyesnodk  pestusef
fyesnodk  stdwatr
fyesnodk  fq61
run;
data catfmt;
set catfmt multfmt;
run;
proc sort;by varnam lev;run;

** DEFINE LABELS FOR SUBGROUP VARIABLES;
data labls;
length datsor $ 1.;
infile cards;
input @1 hind 1. @2 varsor $13. @17 varnam $char8. @29 vardesc $char40.;
if hind=. then hind=0;
datsor=substr(varsor,1,1);
varnam=upcase(varnam);
VNUM=_N_;
cards;
3O              roomtype    Classroom type
1O              overall     All classrooms
1O              popstat     School location
1O              region      Geographic region
1O              schtype     School type
2H2CO data      sampmo      Month of formaldehyde sample
2H2CO data      samptime    Time of formaldehyde sample
2H2CO data      pwdxposc    <25% non-weekday in samp period
1TQ5            geninst     General instruction classroom
 TQ8            numstud     Typical number students in class
 TQ10a-i        flrtyp      Type of flooring
1TQ10a/b        carpet      Carpeted classroom
1TQ10e          vinylfl     Vinyl/linoleum floor
1TQ11           vinylwl     Vinyl tackable wallboard
 TQ11           tq11        Primary wall material
1TQ15           windopen    Open windows
 TQ15           rtq15       Freq of open windows
1TQ16b          dooropen    Open door to outside
 TQ16b          rtq16b      Freq of open exterior door
 TQ17           tq17        Air conditioning in room
 TQ18A          tq18a       Thermostat in room
 TQ18b          rtq18b      Thermostat adjustment
1TQ19           preswood    Pressed wood furniture
1TQ19a          preswod1    Pressed wood table/desks
1TQ19b          preswod2    Pressed wood bookcases
1TQ19c          preswod3    Pressed wood cabinets
 TQ19           plastic     Plastic furniture
1TQ20           newfurn     New furnishings this school yr
 TQ22a          copiers     Copiers present in room
1TQ22b          applian     Type appliances in room
1TQ22c          chempres    Chemical present in room
 TQ23a          paintpen    Paints/pens used
2TQ23a_b        paints      Oil/acrylic paints used
2TQ23a_c        pmarker     Permanent marker/pen used
2TQ23a_d        wbmarker    Whiteboard marker used
1TQ23b          gluflu      Glues/fluids used
2TQ23b_c        corflu      Correction fluid used
```

2TQ23b_b/d	glues	Epoxy/rubber cement used
1TQ23c	afresh	Air freshener used
2TQ23c_c	afreshp	Air freshener used - plug-in
2TQ23c_d	afreshs	Air freshener used - spray
TQ23d	candles	Candles used
TQ23e	airclean	Air cleaners used
TQ23e_b	airpurf	Portable air purifier used
TQ24	pestuse	Pesticide use past yr (teacher)
TQ24a	pestspr	Pesticide spray use past yr
TQ24b	pestpow	Pesticide powder use past yr
TQ24c	pesttrp	Pesticide trap use past yr
TQ25	claspref	Teacher classroom preference
TQ26a	temp	Classroom temperature
TQ26b	humid	Classroom humidity
TQ26c	cair	Classroom air
TQ26d	light	Classroom light
TQ27a	innoise	Disruptive inside noise
TQ27b	outnoise	Disruptive outside noise
TQ28	turnoff	Turn off heat/AC due to noise
TQ29a	bugprob	Bug problems in room
TQ29b	rodprob	Rodent problems in room
TQ30a	mustodor	Musty odor
1TQ30d	newodor	New furnishings odor
TQ30a	rtq30a	Musty odor at times
TQ30b	rtq30b	Cleaning products odor at times
TQ30c	rtq30c	Vehicle exhaust odor at times
TQ30d	rtq30d	New carpet/furniture odor at times
TQ30e	rtq30e	Fresh paint odor at times
TQ30f	rtq30f	Cooking odor at times
TQ30g	rtq30g	Pesticide odor at times
TQ30h	rtq30h	Asphalt/tar odor at times
TQ30i	rtq30i	Tobacco smoke odor at times
TQ30j	rtq30j	Trash/dumpster odor at times
TQ30k	rtq30k	Sewer/compost odor at times
TQ30l	rtq30L	Fire/smoke odor at times
1TQ31a	const	Construction activity this yr
1TQ31c_b	rtq31c_b	Carpentry activity this yr
1TQ31b_a	rtq31b_a	In-room construction this yr
1TQ31b_b-e	othconst	Other school construction this yr
TQ31b_b	rtq31b_b	Same building construction this yr
TQ32	watrprb	Evidence of water problems (teacher)
TQ32a	watrlek	Leak or flood in room
TQ32b	typlek	Type leak or flood
TQ32c	watrstn	Water stains in room
TQ32d	typstn	Type water stains
TQ32e	vismolt	Visible mold in room (teacher)
TQ32f	moldloc	No. locations with mold
TQ33	flswep	Freq of floor cleaning
TQ34a/b	rtq34b	Custodial services needed
1TQ36	complan	# teacher complaints in school yr
1TQ37	tq37	Overall air quality (teacher)
TQ37	airqual	Overall air quality (teacher)
TQ38a	absent	Days absent last 2 weeks
TQ38b	cause	Reason for absence
1TQ39a_n/o/f	nosesym	Nose symptoms past 2 weeks
1TQ39b_n/o/f	thrtsym	Throat symptoms past 2 weeks
1TQ39c_n/o/f	eyessym	Eyes symptoms past 2 weeks
TQ39d_n/o/f	skinsym	Skin symptoms past 2 weeks
TQ39e_n/o/f	headsym	Headache/sinus pain past 2 weeks
TQ39f_n/o/f	drowsym	Drowsiness past 2 weeks
TQ39g_n/o/f	dizzsym	Dizziness/faintness past 2 weeks
TQ39h_n/o/f	lungsym	Lung symptoms past 2 weeks
TQ39i_n/o/f	stomsym	Upset stomach past 2 weeks

```
1TQ39a_s/i      nosesymi    Nose symptoms at home
1TQ39b_s/i      thrtsymi    Throat symptoms at home
1TQ39c_s/i      eyessymi    Eyes symptoms at home
 TQ39d_s/i      skinsymi    Skin symptoms at home
 TQ39e_s/i      headsymi    Headache/sinus pain at home
 TQ39f_s/i      drowsymi    Drowsiness at home
 TQ39g_s/i      dizzsymi    Dizziness/faintness at home
 TQ39h_s/i      lungsymi    Lung symptoms at home
 TQ39i_s/i      stomsymi    Upset stomach at home
 TQ39           numsym      No. health symptoms past 2 weeks
 TQ40a_a        allerg      Chronic hay fever/allergies
 TQ40a_b/c       lungprb     Chronic asthma/bronchitis
 TQ40a_d/e      circprb     Chronic hypertension/heart disease
 TQ40a/b        asmed       Inhaled asthma med past 2 weeks
 TQ41           stuasma     No. students taking asthma med
 FtypePort      porttyp     Type of Classroom
1Fyrconst       clrage      Classroom age (yrs)
1Fyrconst       clragex     Classroom age (yrs)
1Fyrconst       clrageu     Classroom age (known/unknown)
1FQ29           renovat     Major renovations/additions
1FQ29_a/e/f     renovmaj    Addition/wall/floor renovations
1FQ29_b/c       renovele    HVAC or lighting renovations
1FQ29_d         renovruf    Roof renovations
1FQ31           clrsiz      Classroom size (sq. ft.)
 FQ34_a         bldgfon     Building foundation type
 FQ34c          rfq34c      Floor Height (in)
 FQ36           ruftyp      Roof type
 FQ37           fq37        Roof pitch
 FQ38           fq38        Suspended ceilings
 FQ39_a/b       lddock      Load dock/parking/road in 50ft
 FQ39_d         dumpstr     Dumpster within 50ft
 FQ39           sprooms     Spec purpose rooms within 50ft
 FQ40_a         pelpani     Peeling paint inside
 FQ40_b         pelpano     Peeling paint outside
 FQ40_a/b       pelpant     Peeling paint in or out
 FQ41           pachvac     Packaged HVAC
 FQ42           ahuloc      Main AHU Location
 FQ45           centac      Central cooling system
 FQ46           fanop       HVAC supply fan operation
1FQ48           dampset     Outdoor damper min setting
 FQ49_a         plenopen    Plenum open
 FQ50_a         fglfilt     HVAC fiberglass mesh filter
 FQ50_b         plefilt     HVAC pleated filter
 FQ50_c         hiefilt     HVAC high efficiency filter
 FQ52           tcntl       Thermostat control
 FQ53_a-f       spheat      Space heaters used
 FQ56           watrdam     Water damage past 3 yrs (FM)
 FQ56_a         rufleak     Roof leaks last 3 yrs (FM)
 FQ57           vismold     Visible mold past 3 yrs (FM)
 FQ59           stdwatr     Standing water within 50ft
1FQ60           newwood     New pressed wood last yr
 FQ61           fq61        Paint/caulk/seal last yr
1FQ62_a         newcarp     New carpet past yr
1FQ62           newfloor    New flooring past yr
 FQ63           pestusef    Pesticide use past yr (FM)
 FQ63_a         ccpest      Crack/crevice pesticides last yr
 FQ63_d         sppest      Spray can pesticides last yr
 FQ64_a/b       flubulb     Fluorescent bulbs
run;
proc sort;by varnam;run;
data labvar;merge labls catfmt;by varnam;
LABEL DATSOR='Data*Source'
      varsor='Source'
```

```
      varnam='Variable'
         vardesc='Description'
         hind='Analysis*Type'
         CAT='Category';
run;
proc sort out=out.labvar;by varnam lev;run;

*** print tables showing variables of interest;
DATA VDEFS;SET VDEFS VDEFSX;RUN;
PROC SORT;BY VARNAM;RUN;
DATA VDEFS;MERGE VDEFS(in=d1) LABLS(in=d2);BY VARNAM;
if not(d1 and d2) then do;file log;put _all_;end;
if not(first.varnam and last.varnam) then do;file log;put _all_;end;
LABEL DATSOR='Data*Source'
      varsor='Source'
      varnam='Variable'
         vardesc='Description'
         hind='Analysis*Type'
         lev1='Level 1'
         lev2='Level 2'
         lev3='Level 3'
         lev4='Level 4'
         lev5='Level 5'
      lev6='Level 6';
RUN;
PROC SORT;BY VNUM;RUN;


PROC PRINT split='*';
ID VARNAM;var VARDESC LEV1-LEV6 varsor hind;
TITLE 'CLASSROOM-LEVEL ANALYSIS VARIABLES';
FORMAT VARSOR $CHAR13. VARNAM $CHAR8. VARDESC $CHAR40.
 LEV1-LEV6 $CHAR11. HIND FHIND.;
RUN;

ODS RTF CLOSE;
```

```
*** pgm in f:/clayton/RESPRATE.sas;
*** modified 12/10/2001;
************************************************************************
***   PURPOSE: To calculate response rates;
*** USES COMBIN4 FILE AND SCHOOL1 FILES;
************************************************************************;
options ls=130 ps=44 nocenter mprint nodate nonumber missing=' ';
libname OUT 'f:/clayton';
ODS RTF FILE="F:/CLAYTON/RESP_RAT.RTF" STYLE=MINIMAL;
/*
proc contents data=out.school1;run;
*/

** TITLE2 'NOTE WEIGHTED AND WEIGHTED RATES ARE THE SAME BECAUSE';
** TITLE3 'P1WT4 AND P1WT4PF1 ARE CONSTANTS';

proc format;
value fvarnam 0='Overall'
              1='School Type'
              2='School Location'
                      3='Geographic Region'
                      4='% AFDC'
                      5='% Meal Assist'
                      6='Per Student Expend'
                      7='Room Type';
value flev 1=' '
 71='Port' 72='Trad'
 11='Elem' 12='Middle' 13='High'
 31='North' 32='South'
 21='Urban' 22='Suburb' 23='Rural'
 41='<=25%' 42='>25%'
 51='<=55%' 52='>55%'
 61='<=$5500' 62='>$5500';
run;

data aaa;set out.school1;
keep resquex p1wt6 p1wt3 p1wt4
     p1wt6fac i_f
     p1wt6pf1 respf1 p1wt4pf1
     i3 i4 i6 i6fac i6pf1 i4pf1
     p1wt3pf1
     a1n a1d a2n a2d a3n a3d
      schtype popstat region studyid
     p_calwor p_meal pavgcost;

p1wt3pf1=p1wt3*i_f;
i6=(p1wt6>0);           if i6=0 then i6=.;
i3=(p1wt3>0);           if i3=0 then i3=.;
i4=(p1wt4>0);           if i4=0 then i4=.;
i6fac=(p1wt6fac>0);     if i6fac=0 then i6fac=.;
i6pf1=(p1wt6pf1>0);     if i6pf1=0 then i6pf1=.;
i4pf1=(p1wt4pf1>0);     if i4pf1=0 then i4pf1=.;
a1n=i6*p1wt4;
a1d=i3*p1wt4;
a2n=i6fac*p1wt4;
a2d=i4*p1wt4;
a3n=i6pf1*p1wt4pf1;
a3d=i4pf1*p1wt4pf1;
run;

proc means data=aaa n sum noprint;
var resquex p1wt6 p1wt3 p1wt4
     p1wt6fac i_f
```

```
     p1wt6pf1 respf1 p1wt4pf1
     i3 i4 i6 i6fac i6pf1 i4pf1
     p1wt3pf1 a1n a1d a2n a2d a3n a3d;
output out=ssss(drop=_type_ _freq_) sum(a1n a1d a2n a2d a3n a3d)=a1n a1d a2n a2d a3n a3d
                  n(a1n a1d a2n a2d a3n a3d)=n1n n1d n2n n2d n3n n3d;
run;

proc means data=aaa n sum noprint;
class schtype popstat region
      pavgcost;
ways 1;
var resquex p1wt6 p1wt3 p1wt4
     p1wt6fac i_f
     p1wt6pf1 respf1 p1wt4pf1
     i3 i4 i6 i6fac i6pf1 i4pf1
     p1wt3pf1 a1n a1d a2n a2d a3n a3d;
output out=ssssc(drop=_type_ _freq_) sum(a1n a1d a2n a2d a3n a3d)=a1n a1d a2n a2d a3n
a3d
                  n(a1n a1d a2n a2d a3n a3d)=n1n n1d n2n n2d n3n n3d;
run;
proc means data=aaa n sum noprint;
class p_calwor p_meal ;
ways 1;
var resquex p1wt6 p1wt3 p1wt4
     p1wt6fac i_f
     p1wt6pf1 respf1 p1wt4pf1
     i3 i4 i6 i6fac i6pf1 i4pf1
     p1wt3pf1 a1n a1d a2n a2d a3n a3d;
output out=sssscX(drop=_type_ _freq_) sum(a1n a1d a2n a2d a3n a3d)=a1n a1d a2n a2d a3n
a3d
                  n(a1n a1d a2n a2d a3n a3d)=n1n n1d n2n n2d n3n n3d;
run;
data ssss2;set ssss ssssc sssscX;
rra1=100*a1n/a1d;urra1=100*n1n/n1d;
rra2=100*a2n/a2d;urra2=100*n2n/n2d;
rra3=100*a3n/a3d;urra3=100*n3n/n3d;
label SCHTYPE='School*Type'
        POPSTAT='School*Location'
        REGION='Region'
      p_calwor='% AFDC'
        p_meal='% Meal*Assist'
      pavgcost='Per*Student*Expend'
        rra1='School*Level*Response*Rate'
      rra2='FQ*School*Response*Rate'
      rra3='H2CO*Subsample*School*Response*Rate'
      n1d='No.*Eligible*Schools'
      n2d='No.*Eligible*Schools'
      n3d='No.*Eligible*Schools*H2CO*Subsample'
      n1n='No.*Responses*TQ or FQ*Data'
        n2n='No.*Responses*FQ Data'
      n3n='No.*Responses*H2CO*Data';
run;
data ssss3;set ssss2;
array x{*} schtype popstat region
     p_calwor p_meal pavgcost;
if _n_=1 then do;lev=1;varnam=0;end;
else do ivar=1 to dim(x);
 if x{ivar}>0 then do;
     lev=10*ivar+x{ivar};
     varnam=ivar;
  end;
end;
label varnam='Classification'
```

```
      lev='Category';
run;
proc sort;by varnam lev;run;
proc print split='*';
id varnam;by varnam notsorted;var lev n1d n1n rra1 n2n rra2 n3d n3n rra3;
format lev flev. varnam fvarnam.  rra1 rra2 rra3 5.1;
title 'NUMBER OF ELIGIBLE AND RESPONDING SCHOOLS AND SCHOOL LEVEL RESPONSE RATES';
run;

data bbb;set out.combin4;
keep p1wt8 i8 iabc resp1 p1wt10_1 i10_1
resp2 p1wt10_2 i10_2
resp3 p1wt10_3 i10_3
resp12 p1wt10_12 i10_12
resp13 p1wt10_13 i10_13
resp23 p1wt10_23 i10_23
resp123 p1wt10_123 i10_123
iabc i8 i8pf1 i10_1 i10_2 i10_3 i10_12 i10_13 i10_23 i10_123
b1d b3d b1n b2n b12n b3n b13n b23n b123n studyid alpha_id roomtype;
iabc=(alpha_id in ('A','B','C')); if iabc=0 then iabc=.;
i8=(p1wt8>0);         if i8=0 then i8=.;
i8pf1=(p1wt8pf1>0);    if i8pf1=0 then i8pf1=.;
i10_1=(p1wt10_1>0);   if i10_1=0 then i10_1=.;
i10_2=(p1wt10_2>0);   if i10_2=0 then i10_2=.;
i10_12=(p1wt10_12>0);   if i10_12=0 then i10_12=.;
i10_3=(p1wt10_3>0);   if i10_3=0 then i10_3=.;
i10_13=(p1wt10_13>0);   if i10_13=0 then i10_13=.;
i10_23=(p1wt10_23>0);   if i10_23=0 then i10_23=.;
i10_123=(p1wt10_123>0);   if i10_123=0 then i10_123=.;
b1n=i10_1*p1wt8;    b1d=i8*p1wt8;
b2n=i10_2*p1wt8;
b12n=i10_12*p1wt8;
b3n=i10_3*p1wt8pf1;    b3d=i8pf1*p1wt8pf1;
b13n=i10_13*p1wt8pf1;
b23n=i10_23*p1wt8pf1;
b123n=i10_123*p1wt8pf1;
run;
proc sort;by studyid alpha_id;run;
proc sort data=aaa;by studyid;run;
data bbb;merge aaa bbb(in=bbbb1);by studyid;if bbbb1;run;
proc means n sum NOPRINT DATA=BBB;
var p1wt8 i8 iabc resp1 p1wt10_1 i10_1
resp2 p1wt10_2 i10_2
resp3 p1wt10_3 i10_3
resp12 p1wt10_12 i10_12
resp13 p1wt10_13 i10_13
resp23 p1wt10_23 i10_23
resp123 p1wt10_123 i10_123
iabc i8 i8pf1 i10_1 i10_2 i10_3 i10_12 i10_13 i10_23 i10_123
b1d b3d b1n b2n b12n b3n b13n b23n b123n;
output out=cccc(drop=_type_ _freq_)
                sum(b1d b3d b1n b2n b12n b3n b13n b23n b123n)=
                    b1d b3d b1n b2n b12n b3n b13n b23n b123n
                  n(b1d b3d b1n b2n b12n b3n b13n b23n b123n)=
                    m1d m3d m1n m2n m12n m3n m13n m23n m123n;

proc means n sum NOPRINT DATA=BBB;
class schtype popstat region
     pavgcost roomtype;
ways 1;
var p1wt8 i8 iabc resp1 p1wt10_1 i10_1
resp2 p1wt10_2 i10_2
resp3 p1wt10_3 i10_3
```

```
resp12 p1wt10_12 i10_12
resp13 p1wt10_13 i10_13
resp23 p1wt10_23 i10_23
resp123 p1wt10_123 i10_123
iabc i8 i8pf1 i10_1 i10_2 i10_3 i10_12 i10_13 i10_23 i10_123
b1d b3d b1n b2n b12n b3n b13n b23n b123n;
output out=cccc1(drop=_type_ _freq_)
                sum(b1d b3d b1n b2n b12n b3n b13n b23n b123n)=
                    b1d b3d b1n b2n b12n b3n b13n b23n b123n
                  n(b1d b3d b1n b2n b12n b3n b13n b23n b123n)=
                    m1d m3d m1n m2n m12n m3n m13n m23n m123n;
run;
proc means n sum NOPRINT DATA=BBB;
class p_calwor p_meal;
ways 1;
var p1wt8 i8 iabc resp1 p1wt10_1 i10_1
resp2 p1wt10_2 i10_2
resp3 p1wt10_3 i10_3
resp12 p1wt10_12 i10_12
resp13 p1wt10_13 i10_13
resp23 p1wt10_23 i10_23
resp123 p1wt10_123 i10_123
iabc i8 i8pf1 i10_1 i10_2 i10_3 i10_12 i10_13 i10_23 i10_123
b1d b3d b1n b2n b12n b3n b13n b23n b123n;
output out=cccc1X(drop=_type_ _freq_)
                sum(b1d b3d b1n b2n b12n b3n b13n b23n b123n)=
                    b1d b3d b1n b2n b12n b3n b13n b23n b123n
                  n(b1d b3d b1n b2n b12n b3n b13n b23n b123n)=
                    m1d m3d m1n m2n m12n m3n m13n m23n m123n;
run;
data cccc2;set cccc cccc1 cccc1X;
rrb1=100*b1n/b1d;urrb1=100*m1n/m1d;
rrb2=100*b2n/b1d;urrb2=100*m2n/m1d;
rrb12=100*b12n/b1d;urrb12=100*m12n/m1d;
rrb3=100*b3n/b3d;urrb3=100*m3n/m3d;
rrb13=100*b13n/b3d;urrb13=100*m13n/m3d;
rrb23=100*b23n/b3d;urrb23=100*m23n/m3d;
rrb123=100*b123n/b3d;urrb123=100*m123n/m3d;
label rrb1='Clroom*TQ*Response*Rate'
      rrb2='Clroom*FQ*Response*Rate'
         rrb12='Clroom*TQ&FQ*Response*Rate'
         rrb3='Clroom*H2CO*Response*Rate'
         rrb13='Clroom*H2CO&TQ*Response*Rate'
         rrb23='Clroom*H2CO&FQ*Response*Rate'
         rrb123='Clroom*H2CO&*TQ&FQ*Response*Rate'
         Urrb1='Clroom*TQ*Response*Rate'
      Urrb2='Clroom*FQ*Response*Rate'
         Urrb12='Clroom*TQ&FQ*Response*Rate'
         Urrb3='Clroom*H2CO*Response*Rate'
         Urrb13='Clroom*H2CO&TQ*Response*Rate'
         Urrb23='Clroom*H2CO&FQ*Response*Rate'
         Urrb123='Clroom*H2CO&*TQ&FQ*Response*Rate'
         ROOMTYPE='Room*Type'
      SCHTYPE='School*Type'
         POPSTAT='School*Location'
         REGION='Region'
      p_calwor='% AFDC'
         p_meal='% Meal*Assist'
      pavgcost='Per*Student*Expend'
      m1d='No.*Eligible*Clrooms'
      m3d='No.*Eligible*Clrooms*H2CO*Subsample'
      m1n='No.*Responses*TQ Data'
         m2n='No.*Responses*FQ Data'
```

```
         m12n='No.*Responses*TQ & FQ*Data'
       m3n='No.*Responses*H2CO*Data'
         m13n='No.*Responses*H2CO*& TQ*Data'
         m23n='No.*Responses*H2CO*& FQ*Data'
         m123n='No.*Responses*H2CO*& TQ &*FQ Data';
run;
data cccc3;set cccc2;
array x{*} schtype popstat region
     p_calwor p_meal pavgcost roomtype;
if _n_=1 then do;lev=1;varnam=0;end;
else do ivar=1 to dim(x);
 if x{ivar}>0 then do;
     lev=10*ivar+x{ivar};
     varnam=ivar;
  end;
end;
label varnam='Classification'
      lev='Category';
run;
proc sort;by varnam lev;run;
proc print split='*';
id varnam;by varnam notsorted;var lev
     m1d m1n m2n m12n m3d m3n m13n m23n m123n;
format lev flev. varnam fvarnam.;
title 'NUMBER OF ELIGIBLE AND RESPONDING CLASSROOMS';
run;
proc print split='*';
id varnam;by varnam notsorted;var lev rrb1 rrb2 rrb12
     rrb3 rrb13 rrb23 rrb123;
format lev flev.  varnam fvarnam.
          rrb1 rrb2 rrb12 rrb3 rrb13 rrb23 rrb123 5.1;
TITLE 'WEIGHTED CONDITIONAL CLASSROOM LEVEL RESPONSE RATES';
run;
proc print split='*';
id varnam;by varnam notsorted;var lev urrb1 urrb2 urrb12
     urrb3 urrb13 urrb23 urrb123;
format lev flev. varnam fvarnam.
          urrb1 urrb2 urrb12 urrb3 urrb13 urrb23 urrb123 5.1;
TITLE 'UNWEIGHTED CONDITIONAL CLASSROOM LEVEL RESPONSE RATES';
run;
data ssss4;set ssss3;
output;
if varnam=0 then do;
   varnam=7;
   lev=71;output;
   lev=72;output;
end;
keep rra1 rra3 varnam lev;
run;
proc sort;by varnam lev;run;

data cccc4;merge cccc3 ssss4;by varnam lev;
*** COMBINED RRs;
crrb1=rra1*rrb1/100;
crrb2=rra1*rrb2/100;
crrb12=rra1*rrb12/100;
crrb3=rra3*rrb3/100;
crrb13=rra3*rrb13/100;
crrb23=rra3*rrb23/100;
crrb123=rra3*rrb123/100;
label crrb1='Clroom*TQ*Response*Rate'
      crrb2='Clroom*FQ*Response*Rate'
         crrb12='Clroom*TQ&FQ*Response*Rate'
```

```
         crrb3='Clroom*H2CO*Response*Rate'
         crrb13='Clroom*H2CO&TQ*Response*Rate'
         crrb23='Clroom*H2CO&FQ*Response*Rate'
         crrb123='Clroom*H2CO&*TQ&FQ*Response*Rate';
run;
proc sort;by varnam lev;run;
proc print split='*';
id varnam;by varnam notsorted;var lev crrb1 crrb2 crrb12
     crrb3 crrb13 crrb23 crrb123;
format lev flev. varnam fvarnam.
          crrb1 crrb2 crrb12 crrb3 crrb13 crrb23 crrb123 5.1;
TITLE 'WEIGHTED OVERALL CLASSROOM LEVEL RESPONSE RATES';
run;
ODS RTF CLOSE;
```

```
*** pgm in f:/clayton/popchar2.sas;
*** modified 12/19/2001;
************************************************************************
***   PURPOSE: To calculate summary percentages to characterize the pop of
               schools. Results are saved in OUT.SCHPCT;
*** USES SCHOOL1 FILE AS INPUT;
************************************************************************;

options ls=150 ps=44 nocenter mprint nodate nonumber missing=' ';
libname OUT 'f:/clayton';
libname IN 'F:/data';
ODS RTF FILE="f:/clayton/POPCHAR2.RTF" STYLE=MINIMAL;

title ' ';
%let olist=popstat region schtype p_calwor p_meal pavgcost;
%let olev=3 2 3 2 2 2;
%let flist=schage numport numtrad numtot hvaclog rfq15
           fq15aa fq15ab fq15ac fq15ad fq15ae
           fq16a fq16b fq16c fq19a usetol fq25
           rfq25aa rfq25ba rfq25ab rfq25bb rfq25ac rfq25bc
           rfq25ad rfq25bd rfq25ae rfq25be rfq25af rfq25bf
           portcp tradcp;

%let flev=7 4 4 4 3 2
          7 7 7 7 7
          5 5 5 2 4 3
          5 5 5 5 5 5
          5 5 5 5 5 5
          3 3;


title 'Distribution of Schools';

data _ccc;   set out.school1;
swti=P1WT4;
swtf=P1WT6FAC;
keep apsu astratum swti swtf
     &olist &flist;
run;

** ANALYSIS BASED ON INTIAL SCHOOL-LEVEL SAMPLING WEIGHTS,
   RESULTS STORED IN _MEANSIS;
proc crosstab design=wr data=_ccc noprint;
   weight swti;
   nest astratum apsu;
   subgroup &olist;
   levels &olev;
   tables  &olist;
    output colper secol nsum wsum /filename=_meansis;
run;

** ANALYSIS BASED ON SCHOOL-LEVEL SAMPLING WEIGHTS, ADJUSTED FOR FMQ RESPONSE,
   RESULTS STORED IN _MEANSFS;
proc crosstab design=wr data=_ccc noprint;
   weight swtf;
   nest astratum apsu;
   subgroup &flist;
   levels &flev;
   tables &flist;
   output colper secol nsum wsum /filename=_meansfs;
run;

** COMBINE RESULTS INTO ONE FILE AND RE-SRUCTURE IT FOR PRINTING;
```

```
data _means;set _meansis(in=ddd1)
                _meansfs(in=ddd2);
length varnam $ 8;
if ddd1 then tablen=1000+tableno;
else if ddd2 then tablen=2000+tableno;
array x{*} &olist &flist;
do ivar=1 to dim(x);
  if x{ivar}=0 then delete;
  else if x{ivar}>0 then do;
     lev=x{ivar};
     call vname(x{ivar},varnam);
     if nsum>10 then do;
        lcl=max(0,colper-2*secol);
           ucl=min(100,colper+2*secol);
        end;
        else do; lcl=.N;ucl=.N;end;
  end;
end;
keep tablen colper secol nsum wsum varnam lev lcl ucl;
run;
proc sort;by varnam lev;run;

** ADD LABELS TO RESULTS FILE;
data _means;merge _means(in=dddd1) out.slabvar(in=dddd2);
by varnam lev;
if dddd1;
label colper='Est.*Pop.*Percent'
      secol='Std.*Error'
         nsum='Sample*Size'
         wsum='Est.*Pop.*Count'
         lcl='Approx.*Lower*95%*Limit'
         ucl='Approx.*Upper*95%*Limit'
      vardesc='Description'
      cat='Category'
      datsor='Data*Source'
      varnam='Variable';
run;
proc sort OUT=OUT.SCHPCT;by tablen lev;run;
proc print split='*';id varnam vardesc;
by varnam vardesc notsorted;
var cat nsum colper lcl ucl;
format colper secol lcl ucl 5.1;
Title 'ESTIMATED DISTRIBUTIONS FOR SCHOOL-LEVEL VARIABLES';
run;
ODS RTF CLOSE;
```

```
*** pgm in f:/clayton/popchar1.sas;
*** modified 12/19/2001;
************************************************************************
***   PURPOSE: To calculate summary percentages to characterize the population
               of classrooms -- overall and by classroom type;
*** USES COMBIN4 FILE, WHICH CONTAINS ANALYSIS VAR AND RECODED VAR.;
*** USES LABVAR FILE (CREATED BY CRLABVAR) TO PROVIDE LABELS AND FORMATS
    FOR OUTPUT;
************************************************************************;
options ls=80 ps=55 nocenter mprint nodate nonumber missing=' ';
libname OUT 'f:/clayton';
libname IN 'F:/data';
ODS RTF FILE="f:/clayton/POPCHAR1.RTF" STYLE=MINIMAL;


*** extract pertinent classroom level data and create analysis variables;
proc format;
value groomtyp 1='Port' 2='Trad' 0='All';
value $ fdatsor T='TQ    ' F='FQ    ' O=' ';
run;
%let olist=  popstat region schtype;

%let olev=3 2 3;

%let tqlist=geninst numstud flrtyp carpet vinylfl vinylwl tq11
windopen rtq15 dooropen rtq16b tq17 tq18a rtq18b
preswood preswod1 preswod2 preswod3 plastic
newfurn copiers applian chempres paintpen
gluflu afresh candles airclean airpurf
pestuse pestspr pestpow pesttrp
claspref temp humid cair light
innoise outnoise turnoff bugprob rodprob mustodor newodor
rtq30a rtq30b rtq30c rtq30d rtq30e rtq30f rtq30g rtq30h rtq30i
rtq30j rtq30k rtq30L
const rtq31c_b rtq31b_a othconst rtq31b_b
watrprb watrlek typlek watrstn typstn vismolt moldloc
flswep rtq34b complan tq37 airqual absent cause
nosesym nosesymi thrtsym thrtsymi eyessym eyessymi
skinsym skinsymi headsym headsymi drowsym drowsymi
dizzsym dizzsymi lungsym lungsymi stomsym stomsymi
numsym allerg lungprb circprb asmed stuasma;

%let tqlev=2 5 5 3 2 2 4
           3 6 3 6 2 3 5
           2 2 2 2 2
           3 2 3 2 2
           2 2 2 2 2
           3 2 2 2
           3 3 3 3 3
           2 2 2 3 3 3 3
           2 2 2 2 2 2 2 2 2
           2 2 2
           4 2 2 2 2
           4 4 4 4 5 4 3
           5 5 3 5 3 3 3
           3 3 3 3 3 3
           3 3 3 3 3 3
           3 3 3 3 3 3
           3 2 2 2 3 5 ;

%let fqlist=porttyp clrage clragex clrageu
  renovat renovmaj renovele renovruf clrsiz
  bldgfon rfq34c ruftyp fq37 fq38
```

```
  lddock dumpstr sprooms pelpani pelpano pelpant
  pachvac ahuloc centac fanop dampset
  plenopen fglfilt plefilt hiefilt
tcntl spheat watrdam rufleak vismold stdwatr
newwood fq61 newcarp newfloor pestusef
ccpest sppest flubulb;

%let fqlev=5 5 5 2
  2 2 2 2 3
  3 5 5 3 2
  2 2 2 2 2 2
  4 5 4 3 5
  2 2 2 2
  5 2 3 2 3 3
  3 3 2 3 3
  2 2 4;

data _ccc;   set out.combin4;
*** treat sample as having one stratum, with PSU=school;

cwtt=P1WT10_1;
cwtf=P1WT10_2;
cwti=P1WT8;
keep overall apsu astratum cwtt cwtf cwti roomtype
&olist &tqlist &fqlist;
run;

title 'Distribution of Classrooms';

** ANALYSIS BASED ON INITIAL CLASSROOM-LEVEL SAMPLING WEIGHTS,
   RESULTS SAVED IN _MEANSI;
proc crosstab design=wr data=_ccc noprint;
   weight cwti;
   nest astratum apsu;
   subgroup roomtype &olist;
   levels 2 &olev;
   tables (&olist)*roomtype;
        test chisq;
   output colper secol nsum wsum /filename=_meansi;
   output chisq chisqp /filename=_ctesti;
run;
data _meansi;merge _meansi _ctesti(keep=tableno chisq chisqp);
by tableno;
run;

** ANALYSIS BASED ON CLASSROOM-LEVEL SAMPLING WEIGHTS, ADJUSTED FOR
   TQ RESPONSE, RESULTS SAVED IN _MEANST;
proc crosstab design=wr data=_ccc noprint;
   weight cwtt;
   nest astratum apsu;
   subgroup roomtype &tqlist;
   levels 2 &tqlev;
   tables (&tqlist)*roomtype;
        test chisq;
   output colper secol nsum wsum /filename=_meanst;
   output chisq chisqp /filename=_ctestt;
run;
data _meanst;merge _meanst _ctestt(keep=tableno chisq chisqp);
by tableno;
run;

** ANALYSIS BASED ON CLASSROOM-LEVEL SAMPLING WEIGHTS, ADJUSTED FOR
   FMQ RESPONSE, RESULTS SAVED IN _MEANSF;
```

```
proc crosstab design=wr data=_ccc noprint;
   weight cwtf;
   nest astratum apsu;
   subgroup roomtype &fqlist;
  levels  2 &fqlev;
   tables (&fqlist)*roomtype;
   test chisq;
   output colper secol nsum wsum /filename=_meansf;
   output chisq chisqp /filename=_ctestf;
title 'Distribution of Classrooms';
run;
data _meansf;merge _meansf _ctestf(keep=tableno chisq chisqp);
by tableno;
run;
** COMBINE RESULTS INTO ONE FILE AND RE-STRUCTURE IT FOR PRINTING;
data _means;set _meansi(in=ddd1)
                _meanst(in=ddd2)
                _meansf(in=ddd3);
length varnam $ 8;
if ddd1 then tableno=1000+tableno;
else if ddd2 then tableno=2000+tableno;
else if ddd3 then tableno=3000+tableno;
array x{*} &olist &tqlist &fqlist;
do ivar=1 to dim(x);
  if x{ivar}=0 then delete;
  else if x{ivar}>0 then do;
     lev=x{ivar};
     call vname(x{ivar},varnam);
        lcl=max(0,colper-2*secol);
           ucl=min(100,colper+2*secol);
  end;
end;
if roomtype>0 then do;chisq=.; chisqp=.;end;
keep tableno chisq chisqp
    colper secol nsum wsum roomtype varnam lev lcl ucl;
run;
proc sort;by varnam lev;run;
** ADD LABELS TO RESULTS AND SAVE RESULTS IN OUT.CLASPCT;
data _means;merge _means(in=ddddd1) out.labvar(in=dddd2);
by varnam lev;
if ddddd1;
label colper='Est.*Pop.*Percent'
      secol='Std.*Error'
         nsum='Sample*Size'
         wsum='Est.*Pop.*Count'
         lcl='Approx.*Lower*95%*Limit'
         ucl='Approx.*Upper*95%*Limit'
      roomtype='Classroom*Type'
      vardesc='Classification*Variable'
      cat='Category'
      datsor='Data*Source'
      chisqp='p-Value*Wald*Chi^2';
run;
proc sort OUT=OUT.CLASPCT;by tableno roomtype lev;run;
** PRINT RESULTS;
proc print split='*';id roomtype vardesc chisqp;
by roomtype vardesc chisqp notsorted;
var cat nsum colper lcl ucl;
format roomtype groomtyp. chisqp 6.2 colper secol lcl ucl 5.1;
title 'ESTIMATED DISTRIBUTIONS FOR CLASSROOM-LEVEL VARIABLES, OVERALL AND BY ROOM TYPE';
run;
ODS RTF CLOSE;
```

```
*** pgm in f:/clayton/wtdstat1.sas;
*** modified 12/19/2001;
************************************************************************
***   PURPOSE: To calculate summary stats for formaldehyde concentrations
***   NOTE: Use landscape, left hand margin of 1"
***   USES COMBIN4 FILE AS INPUT;
***   USES LABVAR FILE (CREATED BY CRLABVAR.SAS)
      TO PROVIDE LABELS AND FORMATS FOR OUTPUT;
************************************************************************;

options ls=150 ps=45 nocenter mprint nodate nonumber;
libname OUT 'f:/clayton';
libname IN 'F:/data';
ODS RTF FILE="f:/clayton/POPESTS1.RTF" STYLE=MINIMAL;

title ' ';
proc format;
value froomtyp 0='All' 1='Port' 2='Trad';
run;
%let olist=overall popstat region schtype sampmo samptime pwdxposc;

%let olev=1 3 2 3 3 5 2;

%let tqlist=geninst carpet vinylfl vinylwl
windopen dooropen preswood preswod1 preswod2 preswod3
newfurn applian chempres paints pmarker wbmarker
gluflu corflu glues afresh afreshp afreshs newodor
const rtq31c_b rtq31b_a othconst
complan tq37
nosesym nosesymi thrtsym thrtsymi eyessym eyessymi;

%let tqlev=2 3 2 2
           3 3 2 2 2 2
           3 3 2 2 2 2
           2 2 2 2 2 2 3
           4 2 2 2
           3 5
           3 3 3 3 3 3 ;

%let fqlist=clrage clragex clrageu
renovat renovmaj renovele renovruf clrsiz dampset
newwood newcarp newfloor;
%let fqlev=5 5 2
                2 2 2 2 3 5
           3 2 3 ;

data _ccc;   set out.combin4;
if P1WT10_3>0;
cwt=P1WT10_3;
cwtt=P1WT10_13;
cwtf=P1WT10_23;

keep meas lnmeas ndind100 apsu astratum  cwt cwtt cwtf roomtype
     &olist &tqlist &fqlist thr1pct thr2pct;
run;

*** compute % measurable and mean concentration and associated std. errors;
*** USING INITIAL CLASSROOM LEVEL SAMPLING WEIGHTS;
proc descript noprint design=wr data=_ccc;
   weight cwt;
   nest astratum apsu;
   var ndind100 meas lnmeas thr1pct thr2pct;
   subgroup roomtype &olist;
```

```
   levels 2 &olev;
   tables roomtype*(&olist);
   output mean semean nsum wsum /filename=_means1 meanfmt=f10.6 semeanfmt=f10.6;
   run;

*** USING CLASSROOM LEVEL SAMPLING WEIGHTS, ADJUSTED FOR TQ RESPONSE;
proc descript noprint design=wr data=_ccc;
   weight cwtt;
   nest astratum apsu;
   var ndind100 meas lnmeas thr1pct thr2pct;
   subgroup roomtype &tqlist;
   levels 2 &tqlev;
   tables roomtype*(&tqlist);
   output mean semean nsum wsum /filename=_means2 meanfmt=f10.6 semeanfmt=f10.6;
   run;

*** USING CLASSROOM LEVEL SAMPLING WEIGHTS, ADJUSTED FOR FMQ RESPONSE;
proc descript noprint design=wr data=_ccc;
   weight cwtf;
   nest astratum apsu;
   var ndind100 meas lnmeas thr1pct thr2pct;
   subgroup roomtype &fqlist;
   levels 2 &fqlev;
   tables roomtype*(&fqlist);
   output mean semean nsum wsum /filename=_means3 meanfmt=f10.6 semeanfmt=f10.6;
   run;

*** compute selected percentiles and associated std. errors and confidence limits;
*** USING INITIAL CLASSROOM LEVEL SAMPLING WEIGHTS;
proc descript noprint design=wr data=_ccc;
   weight cwt;
   nest astratum apsu;
   var meas;
   subgroup roomtype &olist;
   levels 2 &olev;
   tables roomtype*(&olist);
   percentile 5 10 25 50 75 90 95;
   output qtile seqtile lowqtile upqtile
     /filename=_pct1 qtilefmt=f10.6 seqtilefmt=f10.6
     lowqtilefmt=f10.6  upqtilefmt=f10.6 ;
   run;
*** USING CLASSROOM LEVEL SAMPLING WEIGHTS, ADJUSTED FOR TQ RESPONSE;
proc descript noprint design=wr data=_ccc;
   weight cwtt;
   nest astratum apsu;
   var meas;
   subgroup roomtype &tqlist;
   levels 2 &tqlev;
   tables roomtype*(&tqlist);
        percentile 5 10 25 50 75 90 95;
   output qtile seqtile lowqtile upqtile
     /filename=_pct2 qtilefmt=f10.6 seqtilefmt=f10.6
     lowqtilefmt=f10.6  upqtilefmt=f10.6 ;
   run;

*** USING CLASSROOM LEVEL SAMPLING WEIGHTS, ADJUSTED FOR FMQ RESPONSE;
proc descript noprint design=wr data=_ccc;
   weight cwtf;
   nest astratum apsu;
   var meas;
   subgroup roomtype &fqlist;
   levels 2 &fqlev;
   tables roomtype*(&fqlist);
```

```
   percentile 5 10 25 50 75 90 95;
   output qtile seqtile lowqtile upqtile
     /filename=_pct3 qtilefmt=f10.6 seqtilefmt=f10.6
     lowqtilefmt=f10.6  upqtilefmt=f10.6 ;
   run;

*** re-structure means data set and determine approx. confidence limits;

data _means
      (keep=mean semean roomtype tablen varnam lev
      lomean himean nsum wsum rename=(nsum=n wsum=popsize))
     _pmeans(keep=mean semean roomtype tablen varnam lev
      lopcmeas hipcmeas rename=(mean=pcmeas semean=sepcmeas))
     _t1pmean(keep=mean semean roomtype tablen varnam lev
      lot1pct hit1pct rename=(mean=t1pct semean=set1pct))
        _t2pmean(keep=mean semean roomtype tablen varnam lev
      lot2pct hit2pct rename=(mean=t2pct semean=set2pct))
     _gmeans(keep=mean semean roomtype tablen varnam lev
      logm higm gm segm nsum wsum
       rename=(nsum=n wsum=popsize mean=lnmean semean=selnmean));;
set _means1(in=ddd1) _means2(in=ddd2) _means3(in=ddd3);
length varnam $ 8;
array x{*} &olist &tqlist &fqlist;
if ddd1 then tablen=1000+tableno;
else if ddd2 then tablen=2000+tableno;
else if ddd3 then tablen=3000+tableno;
do ivar=1 to dim(x);
**  if x{ivar}=0 then delete;
**  else if x{ivar}>0 then do;
  if x{ivar}>=0 then do;
   lev=x{ivar};
   call vname(x{ivar},varnam);
   if variable=1 then do;
     lopcmeas=max(0,mean-2*semean);
     hipcmeas=min(100,mean+2*semean);
        if semean=0 then do;lopcmeas=.N;hipcmeas=.N;end;
     output _pmeans;
   end;
   else if variable=2 then do;
     lomean=mean-2*semean;
     himean=mean+2*semean;
     output _means;
   end;
   else if variable=3 then do;
     logm=exp(mean-2*semean);
     higm=exp(mean+2*semean);
     gm=exp(mean);
     segm=exp(semean);
     output _gmeans;
   end;
   else if variable=4 then do;
     lot1pct=max(0,mean-2*semean);
     hit1pct=min(100,mean+2*semean);
        if semean=0 then do;lot1pct=.N;hit1pct=.N;end;
     output _t1pmean;
   end;
   else if variable=5 then do;
     lot2pct=max(0,mean-2*semean);
     hit2pct=min(100,mean+2*semean);
        if semean=0 then do;lot2pct=.N;hit2pct=.N;end;
     output _t2pmean;
   end;
  end;
```

```
end;
run;
proc sort data=_means;by varnam lev roomtype;run;

data _means;merge _means(in=dddd1) out.labvar(in=dddd2);
by varnam lev;
if dddd1;
run;

*** modify percentiles data set;

data _pctl;set _pct1(in=ddd1) _pct2(in=ddd2) _pct3(in=ddd3);
array x{*} &olist &tqlist &fqlist;
length varnam $ 8;
if ddd1 then tablen=1000+tableno;
else if ddd2 then tablen=2000+tableno;
else if ddd3 then tablen=3000+tableno;
do ivar=1 to dim(x);
  if x{ivar}>=0 then do;
   lev=x{ivar};
   call vname(x{ivar},varnam);
  end;
end;
drop &olist &tqlist &fqlist; ;
run;

*** combine output data sets;

proc sort data=_means;by tablen lev roomtype;run;
proc sort data=_pmeans;by tablen lev roomtype;run;
proc sort data=_t1pmean;by tablen lev roomtype;run;
proc sort data=_t2pmean;by tablen lev roomtype;run;
proc sort data=_gmeans;by tablen lev roomtype;run;
proc sort data=_pctl;by tablen lev roomtype pctiles;run;
data out.outpctl;merge _pctl _means _gmeans _pmeans _t1pmean _t2pmean;
by tablen lev roomtype;
array pp{7} p05 p10 p25 p50 p75 p90 p95;
array sepp{7} sep05 sep10 sep25 sep50 sep75 sep90 sep95;
array lopp{7} lop05 lop10 lop25 lop50 lop75 lop90 lop95;
array hipp{7} hip05 hip10 hip25 hip50 hip75 hip90 hip95;
retain p05 p10 p25 p50 p75 p90 p95
 sep05 sep10 sep25 sep50 sep75 sep90 sep95
 lop05 lop10 lop25 lop50 lop75 lop90 lop95
 hip05 hip10 hip25 hip50 hip75 hip90 hip95;

if first.roomtype then do jjj=1 to 7;
   pp{jjj}=.; sepp{jjj}=.; lopp{jjj}=.; hipp{jjj}=.;
end;
pp{pctiles}=qtile;
if seqtile ne . then sepp{pctiles}=seqtile;else sepp{pctiles}=.N;
if lowqtile ne . then lopp{pctiles}=lowqtile;else lopp{pctiles}=.N;
if upqtile ne . then hipp{pctiles}=upqtile;else hipp{pctiles}=.N;
if last.roomtype and vardesc ne ' ' then output;
keep p05 p10 p25 p50 p75 p90 p95
 sep05 sep10 sep25 sep50 sep75 sep90 sep95
 lop05 lop10 lop25 lop50 lop75 lop90 lop95
 hip05 hip10 hip25 hip50 hip75 hip90 hip95
 pcmeas sepcmeas mean semean n popsize
 t1pct set1pct lot1pct hit1pct
 t2pct set2pct lot2pct hit2pct
roomtype tablen varnam lev vardesc cat
lomean himean lopcmeas hipcmeas
gm segm logm higm lnmean selnmean;
```

```
label p05='estimated 5th percentile'
     p10='estimated 10th percentile'
     p25='estimated 25th percentile'
     p50='estimated 50th percentile'
     p75='estimated 75th percentile'
     p90='estimated 90th percentile'
     p95='estimated 95th percentile'
   sep05='std. error of 5th percentile'
   sep10='std. error of 10th percentile'
   sep25='std. error of 25th percentile'
   sep50='std. error of 50th percentile'
   sep75='std. error of 75th percentile'
   sep90='std. error of 90th percentile'
   sep95='std. error of 95th percentile'
   lop05='lower 95% CL for 5th percentile'
   lop10='lower 95% CL for 10th percentile'
   lop25='lower 95% CL for 25th percentile'
   lop50='lower 95% CL for 50th percentile'
   lop75='lower 95% CL for 75th percentile'
   lop90='lower 95% CL for 90th percentile'
   lop95='lower 95% CL for 95th percentile'
   hip05='upper 95% CL for 5th percentile'
   hip10='upper 95% CL for 10th percentile'
   hip25='upper 95% CL for 25th percentile'
   hip50='upper 95% CL for 50th percentile'
   hip75='upper 95% CL for 75th percentile'
   hip90='upper 95% CL for 90th percentile'
   hip95='upper 95% CL for 95th percentile'
   pcmeas='est. % of pop. > LOD (6ppb)'
   sepcmeas='std. error of % > LOD'
   lopcmeas='lower 95% CL for % > LOD'
   hipcmeas='upper 95% CL for % > LOD'
   mean='estimated mean'
   semean='std. error of mean'
   lomean='lower 95% CL for mean'
   himean='upper 95% CL for mean'
   t1pct='est. % of pop. > 27ppb'
   set1pct='std. error of % > 27ppb'
   lot1pct='lower 95% CL for % >27ppb'
   hit1pct='upper 95% CL for % >27ppb'
   t2pct='est. % of pop. > 76ppb'
   set2pct='std. error of % > 76ppb'
   lot2pct='lower 95% CL for % > 76ppb'
   hit2pct='upper 95% CL for % > 76ppb'
   gm='estimated geometric mean'
   segm='geometric std. error'
   logm='lower 95% CL for geometric mean'
   higm='upper 95% CL for geometric mean'
   n='number of observations'
   popsize='estimated population size';
run;

*** prepare for printing estimates and standard errors;

DATA PCTL;SET OUT.OUTPCTL;

LABEL n='n'
      popsize='Est. No.*Classrms'
      pcmeas='% >*LOD'
         t1pct='% >*27ppb'
         t2pct='% >*76ppb'
      mean='Mean'
```

```
         gm='Geom.*Mean'
         p05='P05'
         p10='P10'
         p25='P25'
      p50='P50'
         p75='P75'
         p90='P90'
         p95='P95'
         sepcmeas='% >*LOD'
         set1pct='% >*27ppb'
         set2pct='% >*76ppb'
      semean='Mean'
         segm='Geom.*Std.*Error'
         sep05='P05'
         sep10='P10'
         sep25='P25'
      sep50='P50'
         sep75='P75'
         sep90='P90'
         sep95='P95'
      ROOMTYPE='Room*Type'
         varnam='Variable Name'
         vardesc='Variable Description'
      cat='Category';
run;

*** print estimates;

proc print data=pctl  split='*';id vardesc cat;by vardesc cat notsorted;
var roomtype n popsize pcmeas t1pct t2pct mean gm p05 p10 p25
p50 p75 p90 p95;
format pcmeas  t1pct t2pct mean gm p05 p10 p25 p50 p75
p90 p95 6.1 popsize 6.
roomtype froomtyp. ;
title 'PARAMETER ESTIMATES CHARACTERIZING DISTRIBUTIONS OF FORMALDEHYDE LEVELS (ppb) IN
CALIFORNIA CLASSROOMS';
run;

*** print standard errors;

proc print data=pctl split='*';id vardesc cat;by vardesc cat notsorted;
var roomtype popsize sepcmeas set1pct set2pct semean
segm sep05 sep10 sep25 sep50 sep75 sep90 sep95;
format sepcmeas  set1pct set2pct semean
sep05 sep10 sep25 sep50 sep75 sep90 sep95 6.1 segm 6.2
popsize 6. roomtype froomtyp.;
title 'APPROXIMATE STANDARD ERRORS OF ESTIMATES';
run;

*** prepare for printing confidence interval estimates;

data climits;set out.outpctl;
keep roomtype varnam vardesc cat lev limit
     CLPCM CLT1P CLT2P CLMEAN CLGM CL05 CL10 CL25 CL50 CL75 CL90 CL95;
 LIMIT='Lower';CLPCM=LOPCMEAS;CLT1P=LOT1PCT;CLT2P=LOT2PCT;
 CLMEAN=LOMEAN;CL05=LOP05;CLGM=LOGM;
 CL10=LOP10;CL25=LOP25;CL50=LOP50;CL75=LOP75;CL90=LOP90;CL95=LOP95;OUTPUT;
 LIMIT='Upper';CLPCM=HIPCMEAS;CLT1P=HIT1PCT;CLT2P=HIT2PCT;
CLMEAN=HIMEAN;CL05=HIP05;CLGM=HIGM;
 CL10=HIP10;CL25=HIP25;CL50=HIP50;CL75=HIP75;CL90=HIP90;CL95=HIP95;OUTPUT;
LABEL clpcm='% >*LOD'
      clt1p='% >*27ppb'
         clt2p='% >*76ppb'
```

```
      clmean='Mean'
         clgm='Geom.*Mean'
         cl05='P05'
         cl10='P10'
         cl25='P25'
      cl50='P50'
         cl75='P75'
         cl90='P90'
         cl95='P95'
         varnam='Variable Name'
         vardesc='Variable Description'
      cat='Category'
      ROOMTYPE='Room*Type'
         limit='Conf.*Limit';
run;

*** print confidence interval estimates;

proc print split='*';id vardesc cat;by vardesc cat notsorted;
var roomtype limit CLPCM CLT1P CLT2P CLMEAN CLGM CL05 CL10 CL25 CL50 CL75 CL90 CL95;
format CLPCM CLT1P CLT2P CLMEAN CLGM CL05 CL10 CL25 CL50 CL75 CL90 CL95 6.1
 roomtype froomtyp.;
title 'APPROXIMATE 95% CONFIDENCE LIMITS';
run;

ODS RTF CLOSE;
```

```
*** pgm in f:/clayton/wtdstatX.sas;
*** modified 12/06/2001;
************************************************************************
***   PURPOSE: To calculate summary stats for formaldehyde concentrations
***   NOTE: Use landscape, left hand margin of 1"
***   USES COMBIN4 FILE AS INPUT;
***   USES LABVAR FILE (CREATED BY CRLABVAR.SAS)
      TO PROVIDE LABELS AND FORMATS FOR OUTPUT;
************************************************************************;

options ls=150 ps=45 nocenter mprint nodate nonumber missing=' ';
libname OUT 'f:/clayton';
libname IN 'F:/data';
ODS RTF FILE="f:/clayton/POPESTSX.RTF" STYLE=MINIMAL;

title ' ';
proc format;
value froomtyp 0='All' 1='Port' 2='Trad';
run;

data _ccc;   set out.combin4;
if P1WT10_3>0;
cwt=P1WT10_3;
cwtt=P1WT10_13;
cwtf=P1WT10_23;

keep meas lnmeas ndind100 apsu astratum  cwt cwtt cwtf roomtype
     &olist &tqlist &fqlist thr1pct thr2pct;
run;

*** compute % measurable and mean concentration and associated std. errors;
*** USING INITIAL CLASSROOM LEVEL SAMPLING WEIGHTS;
proc descript noprint design=wr data=_ccc;
   weight cwt;
   nest astratum apsu;
   var ndind100 thr1pct thr2pct meas lnmeas;
   subgroup roomtype;
   levels 2;
   tables roomtype;
   output mean semean nsum wsum /filename=_means1 meanfmt=f10.6 semeanfmt=f10.6;
   run;

*** compute selected percentiles and associated std. errors and confidence limits;
*** USING INITIAL CLASSROOM LEVEL SAMPLING WEIGHTS;
proc descript noprint design=wr data=_ccc;
   weight cwt;
   nest astratum apsu;
   var meas;
   subgroup roomtype;
   levels 2;
   tables roomtype;
   percentile 5 10 25 50 75 90 95;
   output qtile seqtile lowqtile upqtile
     /filename=_pct1 qtilefmt=f10.6 seqtilefmt=f10.6
     lowqtilefmt=f10.6  upqtilefmt=f10.6 ;
   run;

data aaM;set _means1;
keep v mm ss cll clu roomtype;
if variable =1 then do;
  v=-1;mm=nsum;ss=.;output;
  v=0;mm=round(wsum);ss=.;output;
end;
```

```
v=variable;
if 1<=v<=3 then do;
   mm=mean;ss=semean;cll=max(0,mean-2*semean);clu=min(100,mean+2*semean);
   mm=round(mm,.1);ss=round(ss,.1);cll=round(cll,.1);clu=round(clu,.1);
   output;
end;
else if variable=4 then do;
  mm=mean;ss=semean;cll=mean-2*semean;clu=mean+2*semean;
  mm=round(mm,.1);ss=round(ss,.1);cll=round(cll,.1);clu=round(clu,.1);
  output;
end;
else if variable=5 then do;
  mm=exp(mean);ss=exp(semean);cll=exp(mean-2*semean);clu=exp(mean+2*semean);
  mm=round(mm,.1);ss=round(ss,.01);cll=round(cll,.1);clu=round(clu,.1);
  output;
end;
data aaP;set _pct1;
keep v mm ss cll clu pctiles roomtype;
v=6;
mm=qtile;ss=seqtile;cll=lowqtile;clu=upqtile;
mm=round(mm,.1);ss=round(ss,.1);cll=round(cll,.1);clu=round(clu,.1);
run;
data aaa0(keep=v mm ss cll clu pctiles)
aaa1(keep=v mm ss cll clu pctiles
     rename=(mm=mm1 ss=ss1 cll=cll1 clu=clu1))
aaa2(keep=v mm ss cll clu pctiles
     rename=(mm=mm2 ss=ss2 cll=cll2 clu=clu2));
set aaM aaP;

if roomtype=0 then output aaa0;
if roomtype=1 then output aaa1;
if roomtype=2 then output aaa2;
run;
data aaa;merge aaa0 aaa1 aaa2;by v pctiles;
label v='Statistic'
      pctiles='_'
         mm='Estimate*for All*Clrooms'
         cll='Approx.*Lower*95% CL*for All*Clrooms'
         clu='Approx.*Upper*95% CL*for All*Clrooms'
         mm1='Estimate*for Port*Clrooms'
         cll1='Approx.*Lower*95% CL*for Port*Clrooms'
         clu1='Approx.*Upper*95% CL*for Port*Clrooms'
      mm2='Estimate*for Trad*Clrooms'
         cll2='Approx.*Lower*95% CL*for Trad*Clrooms'
         clu2='Approx.*Upper*95% CL*for Trad*Clrooms';
run;
proc format;
value fv -1='No. Obs' 0='Est. Pop. Size'
     1='% Pop. > LOD' 2='% Pop. > 27ppb' 3='% Pop. > 76ppb'
         4='Pop. Mean'
         5='Geom Mean'
              6='Percentile';
value fpt 1='5th' 2='10th' 3='25th' 4='50th' 5='75th' 6='90th' 7='95th';
proc print split='*' data=aaa;
id pctiles v;
var mm cll clu mm1 cll1 clu1 mm2 cll2 clu2;
format pctiles fpt. v fv. mm cll clu mm1 cll1 clu1 mm2 cll2 clu2 8.1;
title 'Table 3-z. Summary of Formaldehyde Levels';
run;
ODS RTF CLOSE;
```

```
*** pgm in f:/clayton/CDFPLOT.sas;
*** modified 12/28/2001;
************************************************************************
***   PURPOSE: To calculate weighted cumulative distribution function
               for formaldehyde concentrations, by classroom type;
***   NOTE: Use landscape, left hand margin of 1"
***   USES COMBIN4 FILE AS INPUT;
************************************************************************;

options ls=130 ps=45 nocenter mprint nodate nonumber;
libname OUT 'f:\clayton';

title ' ';
proc format;
value froomtyp 1='Port' 2='Trad' 3='Diff';
run;

data _ccc;   set out.combin4;
if P1WT10_3>0;
cwt=P1WT10_3;
keep meas   cwt  roomtype;
run;
*** prepare for plot of weighted distribution functions;

proc sort data=_ccc out=_ccc1;
by roomtype meas;
run;
proc means data=_ccc1 noprint sum;
by roomtype;
var cwt;
output out=ssss(keep=roomtype totwt) sum(cwt)=totwt;
run;
data _ccc1(keep=cumprob meas rename=(cumprob=cumprob1 meas=meas1))
_ccc2 (keep=cumprob meas rename=(cumprob=cumprob2 meas=meas2));
merge _ccc1 ssss;
by roomtype;
if first.roomtype then cumprob=0;
cumprob+cwt/totwt;
if roomtype=1 then output _ccc1;
else if roomtype=2 then output _ccc2;
run;
DATA _CCC1;SET _CCC1 _CCC2;
RUN;

*** set up annotations for plot;
data AAAA;
length text $ 12;
length style $ 8;
style='swiss   ';
xsys='2';ysys='2';position='C';
x=15;y=.8;text='Traditional';output;
x=35;y=.6;text='Portable';output;

x=80;y=.3;text='Portable';output;
x=100;y=.3;text='Traditional';output;
x=127;y=.3;text='All';output;
x=64;y=.25;text='Mean';output;
x=62;y=.20;text='Median';output;
x=52;y=.15;text='%Pop>27 ppb';output;
x=52;y=.10;text='%Pop>76 ppb';output;

x=85;y=.25;text='32.4';output;
x=105;y=.25;text='23.7';output;
```

```
x=125;y=.25;text='27.0';output;

x=85;y=.20;text='27.1';output;
x=105;y=.20;text='20.0';output;
x=125;y=.20;text='22.0';output;

x=85;y=.15;text='50.3';output;
x=105;y=.15;text='29.0';output;
x=125;y=.15;text='36.9';output;

x=85;y=.10;text=' 4.0';output;
x=105;y=.10;text=' 0.4';output;
x=125;y=.10;text=' 1.8';output;
run;

****  GOPTIONS FOR OUTPUTING TO LANDSCAPE Word  ***;

GOPTIONS RESET=ALL DEVICE=CGMOF97L colors=(black)
          GACCESS='SASGASTD>f:\clayton\cdfplot.cgm'
          GSFMODE=REPLACE
          FTEXT=SWISS HTEXT=1.2 LFACTOR=2 ROTATE=LANDSCAPE
          HBY=0 FBY=SWISS;

axis1 label=(rotate=0 angle=90 h=1.5 'Cumulative Probability')
  order=(0 to 1 by 0.1)
  minor=none
  value=(h=.8);
axis2 label=(j=c h=1.5 'Formaldehyde Concentration (ppb)')
  order=(0 to 140 by 20)
  minor=none
  value=(h=.8);

  symbol1 i=join line=1 width=3;
  symbol2 i=join line=2 width=3;

  proc gplot data=_ccc1;
  plot cumprob1*meas1=1 cumprob2*meas2=2
              /overlay nolegend skipmiss
               vaxis=axis1 haxis=axis2 href=27 76 annotate=AAAA;

RUN;
QUIT;
```

```
*** pgm in f:/clayton/wtdtest2.sas;
*** modified 12/11/2001;
************************************************************************
***   PURPOSE: To calculate summary stats for formaldehyde concentrations
***   NOTE: Use landscape, left hand margin of 1"
***   USES COMBIN4 FILE AS INPUT;
***   USES LABVAR FILE (CREATED BY CRLABVAR.SAS)
      TO PROVIDE LABELS AND FORMATS FOR OUTPUT;
************************************************************************;

options ls=85 ps=55 nocenter mprint nodate nonumber missing=' ';
libname OUT 'f:/clayton';
libname IN 'F:/data';
ODS RTF FILE="f:/clayton/POPTES2.RTF" STYLE=MINIMAL;

title ' ';
%let olist=overall popstat region schtype sampmo samptime pwdxposc;

%let olev=1 3 2 3 3 5 2;

%let tqlist=geninst carpet vinylfl vinylwl
windopen dooropen preswood preswod1 preswod2 preswod3
newfurn applian chempres paints pmarker wbmarker
gluflu corflu glues afresh afreshp afreshs newodor
const rtq31c_b rtq31b_a othconst
complan tq37
nosesym nosesymi thrtsym thrtsymi eyessym eyessymi;

%let tqlev=2 3 2 2
           3 3 2 2 2 2
           3 3 2 2 2 2
           2 2 2 2 2 2 3
           4 2 2 2
           3 5
           3 3 3 3 3 3 ;

%let fqlist=clrage clragex clrageu
renovat renovmaj renovele renovruf clrsiz dampset
newwood newcarp newfloor;
%let fqlev=5 5 2
                2 2 2 2 3 5
           3 2 3 ;

data _ccc;   set out.combin4;
if P1WT10_3>0;
cwt=P1WT10_3;
cwtt=P1WT10_13;
cwtf=P1WT10_23;
thr1=1+thr1pct/100;
keep apsu astratum  cwt cwtt cwtf roomtype
     &olist &tqlist &fqlist thr1;
run;
proc format;
value groomtyp 1='Port' 2='Trad' 0='All';
value $ fdatsor T='TQ    ' F='FMQ    ' O=' ';
value fthr_p 1='<=27ppb' 2='>27ppb' 0='All Port';
value fthr_a 1='<=27ppb' 2='>27ppb' 0='All Clrooms';
value fthr_x 1='<=27ppb' 2='>27ppb' 0='All';
run;

** FOLLOWING ANALYSIS FOR PORTABLE CLASSROOMS;

** ANALYSIS BASED ON FORMALDEHYDE SUBSAMPLE
```

```
   CLASSROOM-LEVEL SAMPLING WEIGHTS,
   RESULTS SAVED IN _MEANSI;
proc crosstab design=wr data=_ccc noprint;
   weight cwt;
   nest astratum apsu;
   subpopn roomtype=1;
   subgroup thr1 &olist;
   levels 2 &olev;
   tables (&olist)*thr1;
        test chisq;
   output rowper serow nsum wsum /filename=_meansi;
   output chisq chisqp /filename=_ctesti;
run;
data _meansi;merge _meansi _ctesti(keep=tableno chisq chisqp);
by tableno;
run;

** ANALYSIS BASED ON FORMALDEHYDE SUBSAMPLE
   CLASSROOM-LEVEL SAMPLING WEIGHTS,
   ADJUSTED FOR TQ RESPONSE, RESULTS SAVED IN _MEANST;
proc crosstab design=wr data=_ccc noprint;
   weight cwtt;
   nest astratum apsu;
   subpopn roomtype=1;
   subgroup thr1 &tqlist;
   levels 2 &tqlev;
   tables (&tqlist)*thr1;
        test chisq;
   output rowper serow nsum wsum /filename=_meanst;
   output chisq chisqp /filename=_ctestt;
run;
data _meanst;merge _meanst _ctestt(keep=tableno chisq chisqp);
by tableno;
run;

** ANALYSIS BASED ON FORMALDEHYDE SUBSAMPLE
   CLASSROOM-LEVEL SAMPLING WEIGHTS, ADJUSTED FOR
   FMQ RESPONSE, RESULTS SAVED IN _MEANSF;
proc crosstab design=wr data=_ccc noprint;
   weight cwtf;
   nest astratum apsu;
   subpopn roomtype=1;
   subgroup thr1 &fqlist;
  levels  2 &fqlev;
   tables (&fqlist)*thr1;
   test chisq;
   output rowper serow nsum wsum /filename=_meansf;
   output chisq chisqp /filename=_ctestf;
run;
data _meansf;merge _meansf _ctestf(keep=tableno chisq chisqp);
by tableno;
run;

** COMBINE RESULTS INTO ONE FILE AND RE-STRUCTURE IT FOR PRINTING;
data _means;set _meansi(in=ddd1)
               _meanst(in=ddd2)
               _meansf(in=ddd3);
length varnam $ 8;
if ddd1 then tableno=1000+tableno;
else if ddd2 then tableno=2000+tableno;
else if ddd3 then tableno=3000+tableno;
array x{*} &olist &tqlist &fqlist;
do ivar=1 to dim(x);
```

```
  if x{ivar}=0 then delete;
  else if x{ivar}>0 then do;
     lev=x{ivar};
     call vname(x{ivar},varnam);
        lcl=max(0,rowper-2*serow);
           ucl=min(100,rowper+2*serow);
  end;
end;
keep tableno chisq chisqp
    rowper serow nsum wsum thr1 varnam lev lcl ucl;
run;
proc sort;by varnam lev;run;

** ADD LABELS TO RESULTS AND SAVE RESULTS IN OUT.PORTPCT;
data _means;merge _means(in=dddd1) out.labvar(in=dddd2);
by varnam lev;
if dddd1;
if cat='All' then do;lcl=.;ucl=.;end;
label rowper='Est.*Pop.*Percent'
      serow='Std.*Error'
         nsum='Sample*Size'
         wsum='Est.*Pop.*Count'
         lcl='Approx.*Lower*95%*Limit'
         ucl='Approx.*Upper*95%*Limit'
      thr1='Formaldehyde*Level'
      vardesc='Classification*Variable'
      cat='Category'
      datsor='Data*Source'
      chisqp='p-Value*Wald*Chi^2';
run;
proc sort OUT=OUT.PORTPCT;by tableno thr1 lev;run;
data tmp;set out.portpct;
if thr1>0;
if not(thr1=1 and lev=1) then do;chisq=.; chisqp=.;end;
run;
** PRINT RESULTS;
proc print split='*';id thr1 vardesc;
by thr1 vardesc notsorted;
var cat chisqp nsum rowper lcl ucl;
format thr1 fthr_p. chisqp 6.2 rowper serow lcl ucl 5.1;
title 'CLASSIFICATION OF PORTABLE CLASSROOMS, BY FORMALDEHYDE LEVEL AND OTHER SELECTED
VARIABLES';
run;

*** REPEAT ABOVE FOR ALL CLASSROOMS;

** ANALYSIS BASED ON FORMALDEHYDE SUBSAMPLE
   CLASSROOM-LEVEL SAMPLING WEIGHTS,
   RESULTS SAVED IN _MEANSI;
proc crosstab design=wr data=_ccc noprint;
   weight cwt;
   nest astratum apsu;
   subgroup thr1 &olist;
   levels 2 &olev;
   tables (&olist)*thr1;
        test chisq;
   output rowper serow nsum wsum /filename=_meansi;
   output chisq chisqp /filename=_ctesti;
run;
data _meansi;merge _meansi _ctesti(keep=tableno chisq chisqp);
by tableno;
run;
```

```
** ANALYSIS BASED ON FORMALDEHYDE SUBSAMPLE
   CLASSROOM-LEVEL SAMPLING WEIGHTS, ADJUSTED FOR
   TQ RESPONSE, RESULTS SAVED IN _MEANST;
proc crosstab design=wr data=_ccc noprint;
   weight cwtt;
   nest astratum apsu;
   subgroup thr1 &tqlist;
   levels 2 &tqlev;
   tables (&tqlist)*thr1;
        test chisq;
   output rowper serow nsum wsum /filename=_meanst;
   output chisq chisqp /filename=_ctestt;
run;
data _meanst;merge _meanst _ctestt(keep=tableno chisq chisqp);
by tableno;
run;

** ANALYSIS BASED ON FORMALDEHYDE SUBSAMPLE
   CLASSROOM-LEVEL SAMPLING WEIGHTS, ADJUSTED FOR
   FMQ RESPONSE, RESULTS SAVED IN _MEANSF;
proc crosstab design=wr data=_ccc noprint;
   weight cwtf;
   nest astratum apsu;
   subgroup thr1 &fqlist;
   levels  2 &fqlev;
   tables (&fqlist)*thr1;
   test chisq;
   output rowper serow nsum wsum /filename=_meansf;
   output chisq chisqp /filename=_ctestf;
run;
data _meansf;merge _meansf _ctestf(keep=tableno chisq chisqp);
by tableno;
run;

** COMBINE RESULTS INTO ONE FILE AND RE-STRUCTURE IT FOR PRINTING;
data _means;set _meansi(in=ddd1)
                _meanst(in=ddd2)
                _meansf(in=ddd3);
length varnam $ 8;
if ddd1 then tableno=1000+tableno;
else if ddd2 then tableno=2000+tableno;
else if ddd3 then tableno=3000+tableno;
array x{*} &olist &tqlist &fqlist;
do ivar=1 to dim(x);
  if x{ivar}=0 then delete;
  else if x{ivar}>0 then do;
     lev=x{ivar};
     call vname(x{ivar},varnam);
        lcl=max(0,rowper-2*serow);
           ucl=min(100,rowper+2*serow);
  end;
end;
keep tableno chisq chisqp
    rowper serow nsum wsum thr1 varnam lev lcl ucl;
run;
proc sort;by varnam lev;run;

** ADD LABELS TO RESULTS AND SAVE RESULTS IN OUT.ALLCPCT;
data _means;merge _means(in=dddd1) out.labvar(in=dddd2);
by varnam lev;
if dddd1;
if cat='All' then do;lcl=.;ucl=.;end;
label rowper='Est.*Pop.*Percent'
```

```
      serow='Std.*Error'
         nsum='Sample*Size'
         wsum='Est.*Pop.*Count'
         lcl='Approx.*Lower*95%*Limit'
         ucl='Approx.*Upper*95%*Limit'
      thr1='Formaldehyde*Level'
      vardesc='Classification*Variable'
      cat='Category'
      datsor='Data*Source'
      chisqp='p-Value*Wald*Chi^2';
run;
proc sort OUT=OUT.ALLCPCT;by tableno thr1 lev;run;
data tmp;set out.allcpct;
if thr1>0;
if not(thr1=1 and lev=1) then do;chisq=.; chisqp=.;end;
run;
** PRINT RESULTS;
proc print split='*';id thr1 vardesc;
by thr1 vardesc notsorted;
var cat chisqp nsum rowper lcl ucl;
format thr1 fthr_a. chisqp 6.2 rowper serow lcl ucl 5.1;
title 'CLASSIFICATION OF ALL CLASSROOMS, BY FORMALDEHYDE LEVEL AND OTHER SELECTED
VARIABLES';
run;

ODS RTF CLOSE;
```

```
*** pgm in f:/clayton/prntab1.sas;
*** modified 12/07/2001;
*************************************************************************
***   PURPOSE: To print table summarizing formaldehyde concentrations;
***   run after wtdtest2;

options ls=130 ps=45 nocenter mprint nodate nonumber;
libname OUT 'f:/clayton';
ODS RTF FILE="f:/clayton/PRNTAB1.RTF" STYLE=MINIMAL;

proc format;
value groomtyp 1='Port' 2='Trad' 0='All';
value $ fdatsor T='TQ    ' F='FMQ    ' O=' ';
value fthr_p 1='<=27ppb' 2='>27ppb' 0='All Port';
value fthr_a 1='<=27ppb' 2='>27ppb' 0='All Clrooms';
value fthr_x 1='<=27ppb' 2='>27ppb' 0='All';
run;
DATA TMPP1;SET OUT.PORTPCT;BY VARNAM NOTSORTED;
IF FIRST.VARNAM;
tabn+1;
KEEP tabn VARNAM CHISQP;
RUN;
DATA TMPP;
SET OUT.PORTPCT;BY VARNAM NOTSORTED;
retain tabn;
if first.varnam then tabn+1;
KEEP tabn THR1 VARDESC CAT rowper lev nsum;
DATA TMPP;
MERGE TMPP TMPP1;BY tabn;
run;
DATA TMPA1;SET OUT.ALLCPCT;BY VARNAM NOTSORTED;
IF FIRST.VARNAM;
tabn+1;
KEEP tabn VARNAM CHISQP;
RUN;
DATA TMPA;
SET OUT.ALLCPCT;BY VARNAM NOTSORTED;
retain tabn;
if first.varnam then tabn+1;
KEEP tabn THR1 VARDESC CAT rowper lev nsum;
DATA TMPA(RENAME=(CHISQP=CHISQPA rowper=rowperA nsum=nsuma));
MERGE TMPA TMPA1;BY tabn;
run;
DATA TMPP;MERGE TMPP TMPA;RUN;
DATA TMPPLO
TMPPHI(DROP=chisqp chisqpa
       rename=(rowper=rowperh rowpera=rowperah
               nsum=nsumh nsuma=nsumah));
SET TMPP;
*** IF CHISQP<0.10 OR CHISQPA<0.10;
*** if cat='All' then delete;
if thr1>0;
if not(thr1=1 and lev=1) then do;chisqp=.;chisqpa=.;end;
if thr1=1 then output tmpplo;
else if thr1=2 then output tmpphi;
RUN;
data temp;merge tmpplo tmpphi;
nsum=nsum+nsumh;
nsuma=nsuma+nsumah;
label rowper='Est.*Pop.*Percent*Portable*Clrooms*<=27ppb'
      rowperh='Est.*Pop.*Percent*Portable*Clrooms*>27ppb'
      chisqp='p-Value*Wald*Chi^2*Portable*Clrooms'
         rowpera='Est.*Pop.*Percent*All*Clrooms*<=27ppb'
```

```
         rowperah='Est.*Pop.*Percent*All*Clrooms*>27ppb'
       chisqpa='p-Value*Wald*Chi^2*All*Clrooms'
         nsum='n for*Portable*Clrooms'
       nsuma='n for*All*Clrooms';
run;
proc print split='*';
by vardesc notsorted;
id vardesc;
var cat chisqp nsum rowper rowperh chisqpa nsuma rowpera rowperah;
format thr1 fthr_x. chisqp chisqpa 6.2
       rowper rowpera rowperh rowperah 5.1;
title 'Table 3-x. CLASSIFICATION OF CLASSROOMS, BY FORMALDEHYDE LEVEL AND OTHER SELECTED
VARIABLES';
run;
ODS RTF CLOSE;
```

```
*** pgm in f:/clayton/compar1.sas;
*** modified 12/11/2001;
************************************************************************
***   PURPOSE: To Compare portable and traditional classrooms
       with respect to formaldehyde concentrations, using log-scale conc,
       and % > trhesholds;
***   NOTE: Use landscape, left hand margin of 1"
***   USES COMBIN4 FILE AS INPUT;
************************************************************************;

options ls=150 ps=45 nocenter mprint nodate nonumber missing='N';
libname OUT 'f:/clayton';
libname IN 'F:/data';
ODS RTF FILE="f:/clayton/COMPAR1.RTF" STYLE=MINIMAL;

title ' ';
proc format;
value froomtyp 1='Port' 2='Trad' 3='Diff';
run;
%let olist=overall popstat region schtype sampmo samptime pwdxposc;

%let olev=1 3 2 3 3 5 2;

%let tqlist=geninst carpet vinylfl vinylwl
windopen dooropen preswood preswod1 preswod2 preswod3
newfurn applian chempres paints pmarker wbmarker
gluflu corflu glues afresh afreshp afreshs newodor
const rtq31c_b rtq31b_a othconst
complan tq37
nosesym nosesymi thrtsym thrtsymi eyessym eyessymi;

%let tqlev=2 3 2 2
           3 3 2 2 2 2
           3 3 2 2 2 2
           2 2 2 2 2 2 3
           4 2 2 2
           3 5
           3 3 3 3 3 3 ;

%let fqlist=clrage clragex clrageu
renovat renovmaj renovele renovruf clrsiz dampset
newwood newcarp newfloor;
%let fqlev=5 5 2
                2 2 2 2 3 5
           3 2 3 ;


data _ccc;   set out.combin4;

if P1WT10_3>0;

cwt=P1WT10_3;
cwtt=P1WT10_13;
cwtf=P1WT10_23;

keep meas lnmeas ndind100 apsu astratum  cwt cwtt cwtf roomtype
     &olist &tqlist &fqlist thr1pct thr2pct;
run;

*** compute %> thresholds and log scale mean and associated
    associated std. errors and contrasts;
*** USING INITIAL CLASSROOM LEVEL SAMPLING WEIGHTS;
proc descript noprint design=wr nomarg data=_ccc;
```

```
   weight cwt;
   nest astratum apsu;
   var lnmeas thr1pct thr2pct;
   subgroup roomtype &olist;
   levels 2 &olev;
   tables &olist;
   diffvar roomtype=(1 2)/name="Portable vs. Traditional";
   output /tablecell=default filename=_means1;
   run;

*** USING CLASSROOM LEVEL SAMPLING WEIGHTS, ADJUSTED FOR TQ RESPONSE;
proc descript noprint design=wr nomarg data=_ccc;
   weight cwtt;
   nest astratum apsu;
   var lnmeas thr1pct thr2pct;
   subgroup roomtype &tqlist;
   levels 2 &tqlev;
   tables &tqlist;
   diffvar roomtype=(1 2)/name="Portable vs. Traditional";
   output /tablecell=default filename=_means2;
run;

*** USING CLASSROOM LEVEL SAMPLING WEIGHTS, ADJUSTED FOR FMQ RESPONSE;
proc descript noprint design=wr nomarg data=_ccc;
   weight cwtf;
   nest astratum apsu;
   var lnmeas thr1pct thr2pct;
   subgroup roomtype &fqlist;
   levels 2 &fqlev;
   tables &fqlist;
   diffvar roomtype=(1 2)/name="Portable vs. Traditional";
   output /tablecell=default filename=_means3;
run;

*** re-structure means data set and determine approx. confidence limits;

data _t1pmean(keep=mean semean tablen varnam lev t_mean p_mean
      rename=(mean=t1pct semean=set1pct t_mean=t_p1 p_mean=p_p1))
        _t2pmean(keep=mean semean tablen varnam lev t_mean p_mean
      rename=(mean=t2pct semean=set2pct t_mean=t_p2 p_mean=p_p2))
     _gmeans(keep=mean semean tablen varnam lev t_mean p_mean
      nsum wsum t_mean p_mean
       rename=(nsum=n wsum=popsize mean=lnmean semean=selnmean));;
set _means1(in=ddd1) _means2(in=ddd2) _means3(in=ddd3);
length varnam $ 8;
array x{*} &olist &tqlist &fqlist;
if ddd1 then tablen=1000+tableno;
else if ddd2 then tablen=2000+tableno;
else if ddd3 then tablen=3000+tableno;
do ivar=1 to dim(x);
  if x{ivar}=0 then delete;
  else if x{ivar}>0 then do;
   lev=x{ivar};
   call vname(x{ivar},varnam);
   if variable=1 then output _gmeans;
   else if variable=2 then output _t1pmean;
   else if variable=3 then output _t2pmean;
  end;
end;
run;
proc sort data=_gmeans;by varnam lev;run;

data _gmeans;merge _gmeans(in=dddd1) out.labvar(in=dddd2);
```

```
by varnam lev;
if dddd1;
run;

*** combine output data sets;

proc sort data=_t1pmean;by tablen lev;run;
proc sort data=_t2pmean;by tablen lev;run;
proc sort data=_gmeans;by tablen lev;run;

data out.compar;merge _gmeans _t1pmean _t2pmean;
by tablen lev;

keep
 n popsize
 t1pct set1pct t_p1 p_p1
 t2pct set2pct t_p2 p_p2
tablen varnam lev vardesc cat
lnmean selnmean t_mean p_mean;

label
   lnmean='diff in log-scale mean'
   selnmean='std. error log-scale mean diff'
   t_mean='t value for lnmean test'
   p_mean='p value for lnmean test'
   t1pct='diff in % of pop. > 27ppb'
   set1pct='std. error of diff in % > 27ppb'
   t_p1='t value for t1pct test'
   p_p1='p value for t1pct test'
   t2pct='diff in % of pop. > 76ppb'
   set2pct='std. error of diff in % > 76ppb'
   t_p2='t value for t2pct test'
   p_p2='p value for t2pct test'
   n='number of observations'
   popsize='estimated population size';
run;

*** prepare for printing results of tests;

DATA compar;SET OUT.compar;
LABEL n='n'
      popsize='Est. No.*Classrms'
      t1pct='Diff in*% Pop*With*Level*>27ppb'
         t2pct='Diff in*% Pop*With*Level*>76ppb'
      lnmean='Diff in*Log-Scale*Mean'
         set1pct='Std.*Error'
         set2pct='Std.*Error'
      selnmean='Std.*Error'
         varnam='Variable Name'
         vardesc='Variable Description'
      cat='Category'
      t_mean='t*Value'
      p_mean='p*Value'
         t_p1='t*Value'
      p_p1='p*Value'
         t_p2='t*Value'
      p_p2='p*Value';
run;

*** print estimates;

proc print data=compar  split='*';id vardesc cat;by vardesc cat notsorted;
var n popsize lnmean selnmean t_mean p_mean
```

```
              t1pct set1pct t_p1 p_p1
              t2pct set2pct t_p2 p_p2;
format t1pct t2pct set1pct set2pct 6.1
       popsize 6. lnmean selnmean p_mean p_p1 p_p2 6.3
          t_mean t_p1 t_p2 6.2;
title 'TESTS FOR DIFFERENCES IN FORMALDEHYDE LEVELS FOR PORTABLE VS. TRADITIONAL
CLASSROOMS';
run;
ODS RTF CLOSE;
```

```
*** pgm in f:/clayton/prntab2.sas;
*** modified 12/13/2001;
*************************************************************************
***   PURPOSE: To print table summarizing formaldehyde concentrations;
***   run after compar1 and wtdtest2;

options ls=130 ps=45 nocenter mprint nodate nonumber;
libname OUT 'f:/clayton';
ODS RTF FILE="f:/clayton/PRNTAB2.RTF" STYLE=MINIMAL;

proc format;
value groomtyp 1='Port' 2='Trad' 0='All';
value $ fdatsor T='TQ    ' F='FMQ    ' O=' ';
value fthr_p 1='<=27ppb' 2='>27ppb' 0='All Port';
value fthr_a 1='<=27ppb' 2='>27ppb' 0='All Clrooms';
value fthr_x 1='<=27ppb' 2='>27ppb' 0='All';
run;
DATA TMPP1;SET OUT.PORTPCT;BY VARNAM NOTSORTED;
IF FIRST.VARNAM;
KEEP VARNAM CHISQP;
RUN;
proc sort;by varnam;run;
DATA TMPA1(rename=(chisqp=chisqpa));
SET OUT.ALLCPCT;BY VARNAM NOTSORTED;
IF FIRST.VARNAM;
KEEP VARNAM CHISQP;
RUN;
proc sort;by varnam;run;
data comp;set out.compar;
keep p_mean p_p1 p_p2 varnam tablen lev n cat vardesc;
run;
proc sort;by varnam lev;run;
DATA TMPP;MERGE TMPP1 TMPA1 comp;by varnam;
label chisqp='p-Value*Wald*Chi^2*Portable*Clrooms'
        chisqpa='p-Value*Wald*Chi^2*All*Clrooms'
      cat='Category';
run;
proc sort;by tablen lev;run;
proc print split='*';
by vardesc chisqp chisqpa notsorted;
id vardesc chisqp chisqpa;
var cat p_mean p_p1 p_p2;
format chisqp chisqpa p_mean p_p1 p_p2 6.2 ;
title 'Table 3-cc. SUMMARY OF FORMALDEHYDE TESTS';
run;
ODS RTF CLOSE;
```

```
*** pgm in f:/clayton/wtedreg.sas;
*** modified 12/14/2001;
*************************************************************************
***   PURPOSE: To compare formaldehyde conc for portable and traditional classrooms
***   NOTE: Use landscape, left hand margin of 1"
*************************************************************************;

options ls=130 ps=45 nocenter mprint nodate nonumber;
libname OUT 'f:/clayton';
libname IN 'F:/data';

title ' ';
proc format;
value froomtyp 0='All' 1='Port' 2='Trad';
run;
%let olist=overall popstat region schtype sampmo samptime pwdxposc;

%let olev=1 3 2 3 3 5 2;

%let tqlist=geninst carpet vinylfl vinylwl
windopen dooropen preswood preswod1 preswod2 preswod3
newfurn applian chempres paints pmarker wbmarker
gluflu corflu glues afresh afreshp afreshs newodor
const rtq31c_b rtq31b_a othconst
complan tq37
nosesym nosesymi thrtsym thrtsymi eyessym eyessymi;

%let tqlev=2 3 2 2
           3 3 2 2 2 2
           3 3 2 2 2 2
           2 2 2 2 2 2 3
           4 2 2 2
           3 5
           3 3 3 3 3 3 ;

%let fqlist=clrage clragex clrageu
renovat renovmaj renovele renovruf clrsiz dampset
newwood newcarp newfloor;
%let fqlev=5 5 2
                2 2 2 2 3 5
           3 2 3 ;

data _ccc;   set out.combin4;
if P1WT10_3>0;
cwti=P1WT10_3;
cwtt=P1WT10_13;
cwtf=P1WT10_23;

keep meas lnmeas ndind100 apsu astratum  cwti cwtt cwtf roomtype
     &olist &tqlist &fqlist;
run;

%macro reg(aopt,cwt,xvar,nlev);
proc regress design=wr data=_ccc ;
** proc regress design=wr data=_ccc noprint;
   nest astratum apsu;
   weight &cwt;
   subgroup roomtype &xvar;
   levels 2 &nlev;
   model lnmeas=roomtype &xvar roomtype*&xvar;
  output adjwaldp/filename=intmodl replace filetype=sas;
   run;
```

```
data intmodl(keep=ADJWALDP rename=(adjwaldp=p_int));
   set intmodl;
    if contrast=6;
run;
proc regress design=wr data=_ccc ;
** proc regress design=wr data=_ccc noprint;
   nest astratum apsu;
   weight &cwt;
   subgroup roomtype &xvar;
   levels 2 &nlev;
   model lnmeas=roomtype &xvar;
  output adjwaldp/filename=memodl replace filetype=sas;
   run;
data rtypeff(keep=ADJWALDP rename=(adjwaldp=p_rtyp))
     xvareff(keep=ADJWALDP rename=(adjwaldp=p_xvar));
set memodl;
    if contrast=4 then output rtypeff;
       else if contrast=5 then output xvareff;
run;
data cccc;merge rtypeff xvareff intmodl;
length varnam $ 8;
varnam=upcase("&xvar");
keep varnam p_rtyp p_xvar p_int;
run;
%if &aopt=0 %then %do;
data regout;set cccc;run;
%end;
%else %if &aopt=1 %then %do;
proc append base=regout data=cccc;run;
%end;
%mend reg;

%reg(0,cwti,popstat,3);
%reg(1,cwti,region,2);
%reg(1,cwti,schtype,3);
%reg(1,cwti,sampmo,3);
%reg(1,cwti,samptime,5);
%reg(1,cwti,pwdxposc,2);

%reg(1,cwtt,geninst,2);
%reg(1,cwtt,carpet,3);
%reg(1,cwtt,vinylfl,2);
%reg(1,cwtt,vinylwl,2);
%reg(1,cwtt,windopen,3);
%reg(1,cwtt,dooropen,3);
%reg(1,cwtt,preswood,2);
%reg(1,cwtt,preswod1,2);
%reg(1,cwtt,preswod2,2);
%reg(1,cwtt,preswod3,2);
%reg(1,cwtt,newfurn,3 );
%reg(1,cwtt,applian,3 );
%reg(1,cwtt,chempres,2);
%reg(1,cwtt,paints,2 );
%reg(1,cwtt,pmarker,2 );
%reg(1,cwtt,wbmarker,2 );
%reg(1,cwtt,gluflu,2 );
%reg(1,cwtt,corflu,2 );
%reg(1,cwtt,glues,2 );
%reg(1,cwtt,afresh,2 );
%reg(1,cwtt,afreshp,2 );
%reg(1,cwtt,afreshs,2);
%reg(1,cwtt,newodor,3)
%reg(1,cwtt,const,4 );
```

```
%reg(1,cwtt,rtq31c_b,2 );
%reg(1,cwtt,rtq31b_a,2);
%reg(1,cwtt,othconst,2);
%reg(1,cwtt,complan,3);
%reg(1,cwtt,tq37,5 );
%reg(1,cwtt,nosesym,3 );
%reg(1,cwtt,nosesymi,3 );
%reg(1,cwtt,thrtsym,3 );
%reg(1,cwtt,thrtsymi,3 );
%reg(1,cwtt,eyessym,3 );
%reg(1,cwtt,eyessymi,3);

%reg(1,cwtf,clrage,5);
%reg(1,cwtf,clragex,5);
%reg(1,cwtf,clrageu,2);
%reg(1,cwtf,renovat,2);
%reg(1,cwtf,renovmaj,2);
%reg(1,cwtf,renovele,2);
%reg(1,cwtf,renovruf,2);
%reg(1,cwtf,clrsiz,3);
%reg(1,cwtf,dampset,5);
%reg(1,cwtf,newwood,3);
%reg(1,cwtf,newcarp,2);
%reg(1,cwtf,newfloor,3);

data out.regout;set regout;run;
proc sort data=regout;by varnam;run;
proc print;run;
data wtdreg;set out.outpctl;
keep roomtype varnam tablen lev n popsize vardesc cat lnmean gm;
run;
proc sort;by varnam;run;
data wtdreg;merge regout(in=d1) wtdreg;by varnam;run;
proc sort out=out.wtdreg;by tablen lev roomtype;run;
```

```
*** pgm in f:/clayton/prntab3.sas;
*** modified 12/14/2001;
*************************************************************************
***   PURPOSE: To print table summarizing formaldehyde concentrations;
***   run after wtedreg;

options ls=130 ps=45 nocenter mprint nodate nonumber;
libname OUT 'f:/clayton';
ODS RTF FILE="f:/clayton/PRNTAB3.RTF" STYLE=MINIMAL;

proc format;
value groomtyp 1='Port' 2='Trad' 0='All';
run;
DATA TMPP1;SET OUT.WTDREG;
label lnmean='Mean of*Log(Conc)'
      p_xvar='Adj*Wald F*p_Value*for*Variable'
         p_rtyp='Adj*Wald F*p_Value*for*Room Type'
         p_int='Adj*Wald F*p_Value*for*Interaction'
      n='No.*Obs'
      roomtype='Clroom*Type'
      varnam='Variable*Name'
      vardesc='Description'
      lnmean='Est.*Log-Scale*Mean'
         gm='Est.*Geometric*Mean'
         popsize='Est.*Pop.*Size'
      cat='Category';
run;
proc sort;by tablen lev roomtype;run;
proc print split='*';
by varnam vardesc p_xvar p_rtyp p_int notsorted;
id varnam vardesc p_xvar p_rtyp p_int ;
var cat roomtype n popsize lnmean gm;
format p_rtyp p_xvar p_int  6.3 lnmean 8.4 gm 6.1 roomtype groomtyp.
       popsize 8.;
title 'Table 3-ww. SUMMARY OF ANOVA RESULTS FOR LN(FORMALDEHYDE CONC)';
run;
ODS RTF CLOSE;
```

APPENDIX D

Estimated Population Distributions
of Schools and Classrooms

Appendix D consists of two parts.

Part I. The first part characterizes the schools in the target population. The schools are classified by several school-level variables (e.g., region) and estimated percentages of the schools falling into each category (e.g., north and south) are shown. The table also shows the sample size (number of schools) and the approximate 95% confidence intervals for the population percentages. Intervals ending at 0 or 100 have been truncated and indicate (a) cases where the coverage probability is actually less than 0.95 and (b) cases where the relative precision is likely to be poor.

Part II. This part characterizes the classrooms in the target population. The classrooms are classified by several classroom-level variables (e.g., temperature, with levels of okay, cold, and hot), and estimated percentages of the classrooms falling into each category are estimated; this is done for all classrooms, for portable classrooms, and for traditional classrooms. The table also shows the sample size (number of classrooms) and the approximate 95% confidence intervals for the population percentages. Intervals ending at 0 or 100 have been truncated and indicate (a) cases where the coverage probability is actually less than 0.95 and (b) cases where the relative precision is likely to be poor. In addition, for each variable the table gives the p-value associated with the Wald chi-square test of independence—i.e., a test that the distribution over the levels of the given variable is the same for portable and traditional classrooms.

Estimated Distributions for School-level Variables

Variable	Description	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
POPSTAT	School location	Urban	164	17.2	14.8	19.7
		Suburb	703	73.8	71.0	76.7
		Rural	85	8.9	7.1	10.8
REGION	Geographic region	North	430	45.2	41.9	48.4
		South	522	54.8	51.6	58.1
SCHTYPE	School type	Elem	565	59.3	56.2	62.5
		Middle	193	20.3	17.7	22.9
		High	194	20.4	17.8	23.0
P_CALWOR	Percent students on AFDC	<=25%	804	86.4	84.1	88.6
		>25%	127	13.6	11.4	15.9
P_MEAL	Percent students on Meal Assistance	<=55%	554	59.5	56.3	62.7
		>55%	377	40.5	37.3	43.7
PAVGCOST	Avg Student Expenditure	<=$5500	427	44.9	41.6	48.1
		>$5500	525	55.1	51.9	58.4
SCHAGE	School age (yrs)	<=10yr	42	10.0	7.0	13.1
		11-20yr	27	6.6	4.1	9.2
		21-30yr	37	9.9	6.7	13.0
		31-40yr	74	19.9	15.6	24.1
		41-50yr	90	24.3	19.7	28.8
		50+yr	77	19.8	15.7	24.0
		Unspec	37	9.6	6.5	12.6
NUMPORT	Number of portable classrooms	1-10	197	54.4	49.0	59.7
		11-20	120	32.4	27.4	37.5
		21-30	32	8.8	5.8	11.8
		>30	17	4.4	2.2	6.5
NUMTRAD	Number of traditional classrooms	1-20	149	77.0	70.9	83.2
		21-40	25	13.3	8.2	18.4
		41-60	18	8.6	4.7	12.6
		>60	2	1.0	N	N
NUMTOT	Total number classrooms	1-30	174	49.3	43.8	54.7
		31-60	137	37.6	32.3	42.8
		61-100	32	9.9	6.5	13.2
		>100	12	3.3	1.4	5.2
HVACLOG	HVAC maintenance logs kept	Yes	248	66.9	61.9	71.9
		No	34	9.8	6.5	13.0
		DK	88	23.3	18.8	27.8

Variable	Description	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
RFQ15	Regular HVAC inspection/maintenance	Yes	356	94.1	91.6	96.7
		No/NA	21	5.9	3.3	8.4
FQ15AA	HVAC I&M: outdr damper setting	Monthly	20	6.3	3.5	9.0
		Quarterly	75	22.0	17.4	26.6
		Yearly	94	26.0	21.2	30.7
		>Year	24	7.3	4.4	10.3
		Never	15	4.9	2.4	7.3
		DK	96	28.6	23.5	33.6
		NA	17	5.0	2.6	7.5
FQ15AB	HVAC I&M: coils cleaned	Monthly	7	2.2	N	N
		Quarterly	46	13.6	9.8	17.4
		Yearly	136	40.4	34.9	45.9
		>Year	39	11.6	8.0	15.2
		Never	10	3.6	N	N
		DK	91	27.1	22.1	32.0
		NA	6	1.5	N	N
FQ15AC	HVAC I&M: condensate pan/drain	Monthly	10	3.1	N	N
		Quarterly	55	16.6	12.5	20.8
		Yearly	117	33.2	28.1	38.4
		>Year	31	9.0	5.8	12.2
		Never	16	5.3	2.7	7.9
		DK	98	28.4	23.4	33.3
		NA	15	4.3	2.0	6.5
FQ15AD	HVAC I&M: filter replaced	Monthly	27	7.5	4.7	10.4
		Quarterly	190	53.9	48.4	59.3
		Yearly	45	12.9	9.2	16.6
		>Year	37	10.4	7.1	13.8
		Never	0	0.0	N	N
		DK	51	14.8	10.9	18.8
		NA	2	0.4	N	N
FQ15AE	HVAC I&M: exchanger checked	Monthly	8	2.5	N	N
		Quarterly	46	14.4	10.4	18.3
		Yearly	111	30.9	25.8	35.9
		>Year	29	8.7	5.5	11.8
		Never	13	4.0	1.8	6.3
		DK	100	28.8	23.8	33.8
		NA	37	10.8	7.4	14.3

Variable	Description	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
FQ16A	Freq of trash removal	5/wk	358	96.1	94.0	98.2
		3-4/wk	9	2.3	N	N
		1-2/wk	5	1.6	N	N
		1-2/mo	0	0.0	N	N
		<1/mo	0	0.0	N	N
FQ16B	Freq of vacuuming/sweeping/dusting	5/wk	208	57.1	51.8	62.4
		3-4/wk	100	26.4	21.7	31.1
		1-2/wk	47	14.0	10.1	17.8
		1-2/mo	7	1.9	N	N
		<1/mo	2	0.6	N	N
FQ16C	Freq of carpet steam/dry cleaning	5/wk	62	16.4	12.4	20.3
		3-4/wk	247	68.5	63.5	73.5
		1-2/wk	36	10.0	6.8	13.2
		1-2/mo	14	4.0	1.8	6.2
		<1/mo	4	1.2	N	N
FQ19A	Aware of EPA IAQ Tools for Schools Pgm	Yes	113	34.6	29.2	40.1
		No	208	65.4	59.9	70.8
USETOL	Awareness/use of EPA IAQ Tools	Aware/yes	35	10.7	7.1	14.2
		Aware/no	43	13.6	9.6	17.6
		Aware/DK	22	7.6	4.4	10.7
		Unaware	208	68.1	62.7	73.6
FQ25	Any major complaints of envir cond	Yes	170	52.1	46.4	57.8
		No	138	42.6	36.9	48.2
		DK	17	5.4	2.8	8.0
RFQ25AA	Roof leak complaint last yr: Port	None	98	39.1	32.7	45.4
		1	41	16.4	11.6	21.2
		2-4	84	34.3	28.1	40.5
		5-9	21	8.9	5.1	12.7
		10+	3	1.3	N	N
RFQ25BA	Roof leak complaint last yr: Trad	None	176	55.8	50.1	61.5
		1	37	10.6	7.2	14.0
		2-4	69	21.9	17.1	26.7
		5-9	18	6.0	3.2	8.8
		10+	16	5.7	2.9	8.5

Variable	Description	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
RFQ25AB	Plumbing leak complaint last yr: Port	None	172	79.6	74.0	85.1
		1	18	7.7	4.1	11.3
		2-4	22	10.1	5.9	14.4
		5-9	4	1.7	N	N
		10+	2	0.8	N	N
RFQ25BB	Plumbing leak complaint last yr: Trad	None	211	69.9	64.4	75.3
		1	27	9.1	5.7	12.5
		2-4	44	14.9	10.6	19.1
		5-9	13	4.5	2.0	7.0
		10+	5	1.7	N	N
RFQ25AC	Air/odor complaint last yr: Port	None	119	48.8	42.2	55.4
		1	50	21.7	16.2	27.3
		2-4	58	23.0	17.6	28.5
		5-9	11	5.1	2.0	8.1
		10+	4	1.4	N	N
RFQ25BC	Air/odor complaint last yr: Trad	None	211	69.0	63.5	74.5
		1	33	11.7	7.8	15.6
		2-4	39	12.7	8.8	16.6
		5-9	15	5.6	2.8	8.4
		10+	3	1.0	N	N
RFQ25AD	Mold complaint last yr: Port	None	171	74.5	68.6	80.4
		1	34	14.6	9.8	19.4
		2-4	19	8.2	4.5	12.0
		5-9	4	1.9	N	N
		10+	2	0.7	N	N
RFQ25BD	Mold complaint last yr: Trad	None	246	83.7	79.1	88.2
		1	16	6.0	3.0	8.9
		2-4	21	7.2	4.1	10.3
		5-9	7	2.7	N	N
		10+	1	0.4	N	N
RFQ25AE	Temperature complaint last yr: Port	None	119	50.0	43.3	56.7
		1	11	4.2	1.7	6.8
		2-4	56	23.4	17.7	29.0
		5-9	23	10.9	6.6	15.3
		10+	26	11.5	7.2	15.9

Variable	Description	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
RFQ25BE	Temperature complaint last yr: Trad	None	181	59.1	53.3	64.9
		1	8	2.3	N	N
		2-4	47	15.2	11.0	19.4
		5-9	31	10.4	6.8	14.0
		10+	37	13.0	9.0	17.1
RFQ25AF	Noise complaint last yr: Port	None	177	80.3	74.8	85.9
		1	12	5.2	2.2	8.2
		2-4	18	8.8	4.8	12.8
		5-9	5	2.3	N	N
		10+	7	3.3	N	N
RFQ25BF	Noise complaint last yr: Trad	None	249	85.2	80.9	89.5
		1	9	3.1	N	N
		2-4	17	6.0	3.1	8.8
		5-9	7	2.6	N	N
		10+	9	3.2	N	N
PORTCP	Port classroom envir complaints	Yes	149	43.6	38.1	49.1
		No	176	51.6	46.0	57.2
		DK	16	4.8	2.4	7.2
TRADCP	Trad classroom envir complaints	Yes	131	41.9	36.1	47.6
		No	167	53.0	47.2	58.8
		DK	16	5.2	2.6	7.8

Estimated Distributions for Classroom-level Variables, Overall and by Room Type

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
All	School location	0.24	Urban	216	20.9	15.9	26.0
			Suburb	942	72.3	66.9	77.7
			Rural	114	6.8	4.2	9.4
Port	School location		Urban	149	18.7	14.1	23.4
			Suburb	682	74.3	69.1	79.4
			Rural	76	7.0	4.3	9.7
Trad	School location		Urban	67	22.2	16.4	28.1
			Suburb	260	71.1	64.9	77.3
			Rural	38	6.6	3.8	9.5
All	Geographic region	0.98	North	561	37.9	32.2	43.7
			South	711	62.1	56.3	67.8
Port	Geographic region		North	400	37.9	32.2	43.6
			South	507	62.1	56.4	67.8
Trad	Geographic region		North	161	37.9	31.4	44.5
			South	204	62.1	55.5	68.6
All	School type	0.00	Elem	783	50.2	44.1	56.4
			Middle	224	20.3	15.6	25.1
			High	265	29.5	22.8	36.1
Port	School type		Elem	555	57.5	51.3	63.7
			Middle	153	18.2	13.4	23.0
			High	199	24.3	18.6	30.1
Trad	School type		Elem	228	45.9	39.2	52.7
			Middle	71	21.6	16.0	27.1
			High	66	32.5	24.7	40.2
All	General instruction classroom	0.00	Yes	1039	80.8	75.7	85.8
			No	130	19.2	14.2	24.3
Port	General instruction classroom		Yes	754	90.4	87.8	93.0
			No	81	9.6	7.0	12.2
Trad	General instruction classroom		Yes	285	75.1	67.6	82.7
			No	49	24.9	17.3	32.4
All	Typical number students in class	0.07	0-9	62	3.2	1.8	4.6
			10-19	191	12.4	9.4	15.4
			20-29	576	45.6	40.5	50.7
			30-39	318	34.7	29.4	40.0
			>40	29	4.1	1.4	6.8

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
Port	Typical number students in class		0-9	48	5.0	2.7	7.3
			10-19	142	14.0	10.8	17.2
			20-29	400	46.9	42.2	51.5
			30-39	233	32.3	27.6	37.1
			>40	17	1.8	0.8	2.8
Trad	Typical number students in class		0-9	14	2.2	0.4	3.9
			10-19	49	11.4	7.4	15.5
			20-29	176	44.9	37.7	52.0
			30-39	85	36.1	28.7	43.5
			>40	12	5.4	1.5	9.4
All	Type of flooring	0.00	Carpet_only	711	46.6	41.8	51.5
			Vinyl/linol	125	22.2	17.1	27.3
			Both	291	24.0	19.9	28.0
			Carpet_comb	32	3.4	1.9	4.8
			Other	17	3.9	1.4	6.4
Port	Type of flooring		Carpet_only	594	68.8	63.4	74.1
			Vinyl/linol	60	10.3	6.7	13.9
			Both	171	19.1	14.5	23.6
			Carpet_comb	14	1.5	0.5	2.5
			Other	2	0.3	0.0	0.9
Trad	Type of flooring		Carpet_only	117	33.4	26.6	40.2
			Vinyl/linol	65	29.2	21.7	36.7
			Both	120	26.9	21.3	32.5
			Carpet_comb	18	4.5	2.1	6.8
			Other	15	6.0	2.0	10.0
All	Carpeted classroom	0.00	Full	741	47.8	42.9	52.7
			Partial	293	25.4	21.4	29.5
			None	147	26.8	21.3	32.2
Port	Carpeted classroom		Full	618	70.7	65.4	76.0
			Partial	161	18.4	13.9	23.0
			None	65	10.9	7.2	14.6
Trad	Carpeted classroom		Full	123	34.3	27.5	41.1
			Partial	132	29.6	23.8	35.4
			None	82	36.1	28.5	43.8
All	Vinyl/linoleum floor	0.00	Yes	416	45.7	40.7	50.7
			No	765	54.3	49.3	59.3

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
Port	Vinyl/linoleum floor		Yes	231	29.3	24.1	34.5
			No	613	70.7	65.5	75.9
Trad	Vinyl/linoleum floor		Yes	185	55.3	48.1	62.6
			No	152	44.7	37.4	51.9
All	Vinyl tackable wallboard	0.00	Yes	759	47.0	42.1	51.8
			No	404	53.0	48.2	57.9
Port	Vinyl tackable wallboard		Yes	653	78.6	74.6	82.6
			No	179	21.4	17.4	25.4
Trad	Vinyl tackable wallboard		Yes	106	28.4	22.0	34.9
			No	225	71.6	65.1	78.0
All	Primary wall material	0.00	Sh_rock/pls	146	25.5	20.7	30.4
			vinyl_tack	759	47.8	42.9	52.7
			cinderblk	25	5.2	2.5	8.0
			other/DK	219	21.4	17.1	25.8
Port	Primary wall material		Sh_rock/pls	29	4.1	2.4	5.9
			vinyl_tack	653	79.1	75.2	83.1
			cinderblk	1	0.2	0.0	0.6
			other/DK	142	16.5	13.2	19.9
Trad	Primary wall material		Sh_rock/pls	117	38.3	31.0	45.6
			vinyl_tack	106	29.1	22.5	35.7
			cinderblk	24	8.2	3.8	12.6
			other/DK	77	24.3	17.8	30.8
All	Open windows	0.00	Never	207	26.2	21.4	31.0
			Infrequent	613	43.8	38.9	48.7
			Frequent	344	30.0	25.1	34.9
Port	Open windows		Never	100	13.0	8.7	17.4
			Infrequent	478	54.6	49.5	59.7
			Frequent	257	32.3	27.7	37.0
Trad	Open windows		Never	107	34.1	27.1	41.2
			Infrequent	135	37.3	30.3	44.2
			Frequent	87	28.6	21.5	35.7
All	Freq of open windows	0.00	Unopenable	207	26.2	21.4	31.0
			Rarely	346	25.6	21.7	29.6
			Occasional	267	18.2	14.6	21.8
			Frequently	183	14.1	10.9	17.3
			Most_time	111	10.8	7.1	14.4
			Always	50	5.1	2.9	7.3

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
Port	Freq of open windows		Unopenable	100	13.0	8.7	17.4
			Rarely	262	29.3	25.1	33.5
			Occasional	216	25.3	21.4	29.3
			Frequently	139	16.5	13.1	19.9
			Most_time	83	11.3	8.2	14.3
			Always	35	4.6	2.7	6.5
Trad	Freq of open windows		Unopenable	107	34.1	27.1	41.2
			Rarely	84	23.4	17.6	29.2
			Occasional	51	13.9	8.9	18.9
			Frequently	44	12.7	8.0	17.4
			Most_time	28	10.5	4.8	16.2
			Always	15	5.4	2.0	8.7
All	Open door to outside	0.00	Infreq	587	46.2	41.1	51.3
			Freq	507	39.1	34.4	43.8
			NA	52	14.7	9.9	19.5
Port	Open door to outside		Infreq	425	52.3	47.3	57.4
			Freq	388	47.6	42.6	52.7
			NA	3	0.1	0.0	0.1
Trad	Open door to outside		Infreq	162	42.6	35.5	49.8
			Freq	119	34.2	27.4	40.9
			NA	49	23.2	15.9	30.5
All	Freq of open exterior door	0.00	NA	234	19.8	15.7	23.9
			Rarely	353	26.4	22.1	30.6
			Occasional	304	24.2	20.2	28.2
			Frequently	170	11.5	8.9	14.1
			Most_time	33	3.4	1.4	5.4
			Always	52	14.7	9.9	19.5
Port	Freq of open exterior door		NA	165	21.1	16.4	25.9
			Rarely	260	31.2	26.7	35.7
			Occasional	228	28.5	24.2	32.9
			Frequently	136	15.7	12.5	18.9
			Most_time	24	3.4	1.7	5.1
			Always	3	0.1	0.0	0.1

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
Trad	Freq of open exterior door		NA	69	19.0	13.6	24.5
			Rarely	93	23.6	17.7	29.4
			Occasional	76	21.6	15.9	27.4
			Frequently	34	9.1	5.4	12.8
			Most_time	9	3.4	0.6	6.3
			Always	49	23.2	15.9	30.5
All	Air conditioning in room	0.00	Yes	1067	83.9	79.6	88.2
			No	100	16.1	11.8	20.4
Port	Air conditioning in room		Yes	799	95.4	93.1	97.6
			No	36	4.6	2.4	6.9
Trad	Air conditioning in room		Yes	268	77.1	70.6	83.6
			No	64	22.9	16.4	29.4
All	Thermostat in room	0.00	Yes	1063	83.6	79.3	88.0
			No	93	15.6	11.2	19.9
			DK	9	0.8	0.2	1.4
Port	Thermostat in room		Yes	793	94.8	92.4	97.2
			No	34	4.2	2.0	6.4
			DK	5	1.0	0.0	2.1
Trad	Thermostat in room		Yes	270	77.1	70.8	83.5
			No	59	22.2	15.8	28.5
			DK	4	0.7	0.0	1.4
All	Thermostat adjustment	0.00	Adjustable	848	60.0	54.6	65.4
			Locked_up	181	17.9	14.0	21.8
			Not_working	20	4.9	1.8	8.0
			Unspecified	14	0.8	0.2	1.4
			NA/DK	102	16.4	12.0	20.7
Port	Thermostat adjustment		Adjustable	663	77.4	72.7	82.1
			Locked_up	113	15.0	11.2	18.7
			Not_working	7	1.5	0.1	2.9
			Unspecified	10	1.0	0.2	1.8
			NA/DK	39	5.2	2.8	7.6
Trad	Thermostat adjustment		Adjustable	185	49.9	42.6	57.3
			Locked_up	68	19.6	14.0	25.1
			Not_working	13	6.9	2.1	11.7
			Unspecified	4	0.7	0.0	1.5
			NA/DK	63	22.9	16.5	29.2

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
All	Pressed wood furniture	0.14	Yes	1066	86.9	83.0	90.7
			No	115	13.1	9.3	17.0
Port	Pressed wood furniture		Yes	767	90.0	87.2	92.9
			No	77	10.0	7.1	12.8
Trad	Pressed wood furniture		Yes	299	85.1	79.2	91.0
			No	38	14.9	9.0	20.8
All	Pressed wood table/desks	0.11	Yes	953	77.9	73.6	82.1
			No	228	22.1	17.9	26.4
Port	Pressed wood table/desks		Yes	690	81.8	78.1	85.5
			No	154	18.2	14.5	21.9
Trad	Pressed wood table/desks		Yes	263	75.6	69.0	82.1
			No	74	24.4	17.9	31.0
All	Pressed wood bookcases	0.07	Yes	666	50.6	45.4	55.8
			No	515	49.4	44.2	54.6
Port	Pressed wood bookcases		Yes	483	55.3	50.2	60.3
			No	361	44.7	39.7	49.8
Trad	Pressed wood bookcases		Yes	183	47.8	40.6	55.0
			No	154	52.2	45.0	59.4
All	Pressed wood cabinets	0.22	Yes	558	43.9	38.7	49.0
			No	623	56.1	51.0	61.3
Port	Pressed wood cabinets		Yes	415	47.0	42.0	52.0
			No	429	53.0	48.0	58.0
Trad	Pressed wood cabinets		Yes	143	42.0	34.8	49.2
			No	194	58.0	50.8	65.2
All	Plastic furniture	0.14	Yes	356	33.7	28.7	38.7
			No	825	66.3	61.3	71.3
Port	Plastic furniture		Yes	252	29.9	25.7	34.1
			No	592	70.1	65.9	74.3
Trad	Plastic furniture		Yes	104	35.9	28.6	43.2
			No	233	64.1	56.8	71.4
All	New furnishings this school yr	0.12	Yes	296	22.0	18.1	25.9
			No	827	74.2	70.0	78.3
			DK	41	3.8	2.0	5.7
Port	New furnishings this school yr		Yes	226	26.3	22.6	30.1
			No	575	69.7	65.9	73.5
			DK	30	4.0	2.0	5.9

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
Trad	New furnishings this school yr		Yes	70	19.5	13.7	25.2
			No	252	76.8	70.7	82.9
			DK	11	3.7	1.2	6.3
All	Copiers present in room	0.58	Yes	236	18.6	14.2	23.1
			No	945	81.4	76.9	85.8
Port	Copiers present in room		Yes	188	20.0	15.6	24.4
			No	656	80.0	75.6	84.4
Trad	Copiers present in room		Yes	48	17.8	11.4	24.3
			No	289	82.2	75.7	88.6
All	Type appliances in room	0.43	Stove/burnr	39	6.0	2.8	9.2
			Other	331	29.9	25.1	34.6
			None	693	64.1	59.1	69.1
Port	Type appliances in room		Stove/burnr	26	5.2	1.3	9.1
			Other	251	33.1	28.5	37.8
			None	488	61.7	56.8	66.6
Trad	Type appliances in room		Stove/burnr	13	6.5	2.1	11.0
			Other	80	27.9	20.8	34.9
			None	205	65.6	58.0	73.2
All	Chemical present in room	0.08	Yes	551	48.8	43.8	53.7
			No	630	51.2	46.3	56.2
Port	Chemical present in room		Yes	383	44.0	39.2	48.8
			No	461	56.0	51.2	60.8
Trad	Chemical present in room		Yes	168	51.6	44.3	58.9
			No	169	48.4	41.1	55.7
All	Paints/pens used	0.03	Yes	1131	93.1	89.8	96.3
			No	50	6.9	3.7	10.2
Port	Paints/pens used		Yes	813	96.6	95.0	98.1
			No	31	3.4	1.9	5.0
Trad	Paints/pens used		Yes	318	91.0	86.1	96.0
			No	19	9.0	4.0	13.9
All	Glues/fluids used	0.85	Yes	783	66.3	61.6	71.0
			No	398	33.7	29.0	38.4
Port	Glues/fluids used		Yes	569	66.8	62.5	71.0
			No	275	33.2	29.0	37.5
Trad	Glues/fluids used		Yes	214	66.1	59.4	72.7
			No	123	33.9	27.3	40.6

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
All	Air freshener used	0.04	Yes	436	34.3	29.5	39.0
			No	745	65.7	61.0	70.5
Port	Air freshener used		Yes	335	39.3	35.1	43.5
			No	509	60.7	56.5	64.9
Trad	Air freshener used		Yes	101	31.3	24.5	38.1
			No	236	68.7	61.9	75.5
All	Candles used	0.01	Yes	74	10.7	6.8	14.5
			No	1107	89.3	85.5	93.2
Port	Candles used		Yes	46	5.4	3.4	7.5
			No	798	94.6	92.5	96.6
Trad	Candles used		Yes	28	13.8	8.0	19.6
			No	309	86.2	80.4	92.0
All	Air cleaners used	0.34	Yes	23	1.3	0.1	2.5
			No	1158	98.7	97.5	99.9
Port	Air cleaners used		Yes	21	1.9	0.9	3.0
			No	823	98.1	97.0	99.1
Trad	Air cleaners used		Yes	2	0.9	0.0	2.7
			No	335	99.1	97.3	100.0
All	Portable air purifier used	0.44	Yes	20	1.2	0.1	2.4
			No	1161	98.8	97.6	99.9
Port	Portable air purifier used		Yes	18	1.7	0.7	2.8
			No	826	98.3	97.2	99.3
Trad	Portable air purifier used		Yes	2	0.9	0.0	2.7
			No	335	99.1	97.3	100.0
All	Pesticide use past yr (teacher)	0.30	Current	33	3.2	1.4	4.9
			Previous	210	19.4	15.1	23.6
			Never	922	77.4	73.0	81.9
Port	Pesticide use past yr (teacher)		Current	18	1.8	0.7	2.9
			Previous	149	18.7	15.3	22.1
			Never	663	79.5	76.0	83.0
Trad	Pesticide use past yr (teacher)		Current	15	4.0	1.3	6.7
			Previous	61	19.8	13.6	26.0
			Never	259	76.2	69.7	82.7
All	Pesticide spray use past yr	0.18	Yes	184	18.3	13.9	22.7
			No	997	81.7	77.3	86.1
Port	Pesticide spray use past yr		Yes	127	15.6	12.4	18.7
			No	717	84.4	81.3	87.6

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
Trad	Pesticide spray use past yr		Yes	57	19.9	13.6	26.2
			No	280	80.1	73.8	86.4
All	Pesticide powder use past yr	0.01	Yes	27	1.8	0.9	2.6
			No	1154	98.2	97.4	99.1
Port	Pesticide powder use past yr		Yes	21	3.2	1.6	4.8
			No	823	96.8	95.2	98.4
Trad	Pesticide powder use past yr		Yes	6	0.9	0.0	1.8
			No	331	99.1	98.2	100.0
All	Pesticide trap use past yr	0.12	Yes	92	8.7	5.8	11.7
			No	1089	91.3	88.3	94.2
Port	Pesticide trap use past yr		Yes	59	6.4	4.1	8.7
			No	785	93.6	91.3	95.9
Trad	Pesticide trap use past yr		Yes	33	10.1	5.8	14.5
			No	304	89.9	85.5	94.2
All	Teacher classroom preference	0.00	Permanent	582	65.9	61.9	69.9
			Portable	276	13.3	11.0	15.7
			No_Opinion	304	20.8	17.1	24.5
Port	Teacher classroom preference		Permanent	304	34.7	30.1	39.3
			Portable	263	30.1	25.9	34.3
			No_Opinion	259	35.2	30.2	40.2
Trad	Teacher classroom preference		Permanent	278	84.0	78.9	89.1
			Portable	13	3.5	0.9	6.2
			No_Opinion	45	12.4	7.9	17.0
All	Classroom temperature	0.00	Okay	881	69.9	65.0	74.8
			Cold	168	14.4	10.9	17.9
			Hot	119	15.7	11.5	19.9
Port	Classroom temperature		Okay	643	78.1	74.4	81.9
			Cold	118	13.0	10.0	16.0
			Hot	71	8.9	6.4	11.3
Trad	Classroom temperature		Okay	238	65.1	57.9	72.3
			Cold	50	15.3	10.0	20.5
			Hot	48	19.6	13.2	26.0
All	Classroom humidity	0.81	Okay	967	82.8	78.6	87.1
			Humid	118	10.9	7.5	14.4
			Dry	66	6.2	3.5	8.9

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
Port	Classroom humidity		Okay	680	82.8	79.3	86.3
			Humid	89	11.6	8.5	14.8
			Dry	51	5.6	3.6	7.6
Trad	Classroom humidity		Okay	287	82.9	77.0	88.7
			Humid	29	10.5	5.8	15.3
			Dry	15	6.6	2.7	10.4
All	Classroom air	0.01	Okay	659	58.8	53.6	63.9
			Drafty	30	3.6	1.6	5.6
			Stuffy	479	37.6	32.6	42.6
Port	Classroom air		Okay	430	53.2	48.5	57.8
			Drafty	19	2.1	1.1	3.2
			Stuffy	384	44.7	40.1	49.3
Trad	Classroom air		Okay	229	62.1	54.8	69.4
			Drafty	11	4.5	1.3	7.7
			Stuffy	95	33.4	26.2	40.6
All	Classroom light	0.00	Okay	891	81.7	78.3	85.0
			Dim	194	13.5	10.6	16.5
			Bright	71	4.8	2.8	6.8
Port	Classroom light		Okay	599	72.5	68.2	76.9
			Dim	163	20.9	16.7	25.1
			Bright	60	6.5	4.5	8.6
Trad	Classroom light		Okay	292	87.0	82.3	91.7
			Dim	31	9.2	5.3	13.1
			Bright	11	3.8	0.9	6.6
All	Disruptive inside noise	0.03	Yes	607	52.1	47.1	57.2
			No	535	47.9	42.8	52.9
Port	Disruptive inside noise		Yes	457	57.9	53.3	62.5
			No	361	42.1	37.5	46.7
Trad	Disruptive inside noise		Yes	150	48.7	41.2	56.1
			No	174	51.3	43.9	58.8
All	Disruptive outside noise	0.30	Yes	717	64.3	59.3	69.3
			No	386	35.7	30.7	40.7
Port	Disruptive outside noise		Yes	518	66.9	62.7	71.1
			No	270	33.1	28.9	37.3
Trad	Disruptive outside noise		Yes	199	62.8	55.5	70.0
			No	116	37.2	30.0	44.5

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
All	Turn off heat/AC due to noise	0.00	Yes	581	36.8	32.3	41.2
			No	572	63.2	58.8	67.7
Port	Turn off heat/AC due to noise		Yes	498	60.1	55.4	64.9
			No	326	39.9	35.1	44.6
Trad	Turn off heat/AC due to noise		Yes	83	23.0	17.2	28.8
			No	246	77.0	71.2	82.8
All	Bug problems in room	0.49	Current	164	14.4	10.9	17.9
			Previous	471	42.3	37.2	47.5
			Never	507	43.3	38.1	48.4
Port	Bug problems in room		Current	114	13.9	10.9	16.9
			Previous	334	39.7	34.9	44.5
			Never	372	46.4	41.3	51.4
Trad	Bug problems in room		Current	50	14.7	9.7	19.6
			Previous	137	43.9	36.4	51.3
			Never	135	41.5	34.2	48.7
All	Rodent problems in room	0.29	Current	32	1.9	0.8	3.0
			Previous	198	17.8	13.8	21.8
			Never	851	80.3	76.2	84.4
Port	Rodent problems in room		Current	25	2.4	1.2	3.6
			Previous	130	15.0	12.0	18.1
			Never	611	82.6	79.2	85.9
Trad	Rodent problems in room		Current	7	1.6	0.0	3.3
			Previous	68	19.4	13.6	25.2
			Never	240	79.0	73.0	84.9
All	Musty odor	0.00	Never	410	37.4	32.6	42.3
			Sometimes	520	46.0	41.2	50.8
			Often	237	16.6	13.0	20.2
Port	Musty odor		Never	261	30.7	26.4	34.9
			Sometimes	379	47.3	42.6	51.9
			Often	197	22.0	18.3	25.8
Trad	Musty odor		Never	149	41.5	34.3	48.6
			Sometimes	141	45.3	37.9	52.6
			Often	40	13.3	8.0	18.6
All	New furnishings odor	0.01	Never	972	88.3	85.8	90.9
			Sometimes	147	10.2	7.8	12.6
			Often	23	1.5	0.6	2.3

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
Port	New furnishings odor		Never	681	83.6	80.1	87.2
			Sometimes	110	13.9	10.5	17.3
			Often	20	2.5	1.2	3.7
Trad	New furnishings odor		Never	291	91.0	87.7	94.4
			Sometimes	37	8.1	4.9	11.2
			Often	3	0.9	0.0	2.0
All	Musty odor at times	0.01	Yes	757	62.6	57.7	67.4
			No	410	37.4	32.6	42.3
Port	Musty odor at times		Yes	576	69.3	65.1	73.6
			No	261	30.7	26.4	34.9
Trad	Musty odor at times		Yes	181	58.5	51.4	65.7
			No	149	41.5	34.3	48.6
All	Cleaning products odor at times	0.03	Yes	396	37.3	32.5	42.1
			No	739	62.7	57.9	67.5
Port	Cleaning products odor at times		Yes	263	31.5	27.5	35.5
			No	544	68.5	64.5	72.5
Trad	Cleaning products odor at times		Yes	133	40.7	33.5	47.9
			No	195	59.3	52.1	66.5
All	Vehicle exhaust odor at times	0.60	Yes	62	5.8	2.9	8.6
			No	1072	94.2	91.4	97.1
Port	Vehicle exhaust odor at times		Yes	47	6.5	4.3	8.6
			No	759	93.5	91.4	95.7
Trad	Vehicle exhaust odor at times		Yes	15	5.4	1.4	9.4
			No	313	94.6	90.6	98.6
All	New carpet/furniture odor at times	0.00	Yes	170	11.7	9.1	14.2
			No	972	88.3	85.8	90.9
Port	New carpet/furniture odor at times		Yes	130	16.4	12.8	19.9
			No	681	83.6	80.1	87.2
Trad	New carpet/furniture odor at times		Yes	40	9.0	5.6	12.3
			No	291	91.0	87.7	94.4
All	Fresh paint odor at times	0.00	Yes	92	11.9	8.2	15.5
			No	1050	88.1	84.5	91.8
Port	Fresh paint odor at times		Yes	54	6.6	4.5	8.8
			No	756	93.4	91.2	95.5
Trad	Fresh paint odor at times		Yes	38	14.9	9.4	20.3
			No	294	85.1	79.7	90.6

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
All	Cooking odor at times	0.01	Yes	163	18.7	14.2	23.2
			No	973	81.3	76.8	85.8
Port	Cooking odor at times		Yes	96	12.0	8.1	16.0
			No	711	88.0	84.0	91.9
Trad	Cooking odor at times		Yes	67	22.6	16.0	29.2
			No	262	77.4	70.8	84.0
All	Pesticide odor at times	0.73	Yes	110	9.0	5.7	12.3
			No	1030	91.0	87.7	94.3
Port	Pesticide odor at times		Yes	81	9.6	6.8	12.4
			No	729	90.4	87.6	93.2
Trad	Pesticide odor at times		Yes	29	8.7	3.9	13.5
			No	301	91.3	86.5	96.1
All	Asphalt/tar odor at times	0.92	Yes	67	8.0	5.1	10.8
			No	1068	92.0	89.2	94.9
Port	Asphalt/tar odor at times		Yes	47	8.1	5.2	11.0
			No	760	91.9	89.0	94.8
Trad	Asphalt/tar odor at times		Yes	20	7.9	3.7	12.0
			No	308	92.1	88.0	96.3
All	Tobacco smoke odor at times	0.72	Yes	23	2.1	0.0	4.3
			No	1118	97.9	95.7	100.0
Port	Tobacco smoke odor at times		Yes	17	1.7	0.7	2.6
			No	795	98.3	97.4	99.3
Trad	Tobacco smoke odor at times		Yes	6	2.3	0.0	5.8
			No	323	97.7	94.2	100.0
All	Trash/dumpster odor at times	0.47	Yes	97	8.9	5.9	11.8
			No	1040	91.1	88.2	94.1
Port	Trash/dumpster odor at times		Yes	72	10.1	7.2	12.9
			No	737	89.9	87.1	92.8
Trad	Trash/dumpster odor at times		Yes	25	8.2	3.9	12.5
			No	303	91.8	87.5	96.1
All	Sewer/compost odor at times	0.82	Yes	55	5.6	3.1	8.1
			No	1082	94.4	91.9	96.9
Port	Sewer/compost odor at times		Yes	41	5.3	2.9	7.7
			No	768	94.7	92.3	97.1
Trad	Sewer/compost odor at times		Yes	14	5.8	2.1	9.5
			No	314	94.2	90.5	97.9

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
All	Fire/smoke odor at times	0.48	Yes	75	8.2	4.8	11.7
			No	1060	91.8	88.3	95.2
Port	Fire/smoke odor at times		Yes	53	6.9	4.4	9.5
			No	754	93.1	90.5	95.6
Trad	Fire/smoke odor at times		Yes	22	9.0	3.8	14.2
			No	306	91.0	85.8	96.2
All	Construction activity this yr	0.58	Current	275	27.0	21.6	32.4
			Previous	553	45.7	40.6	50.8
			Never	309	25.0	20.8	29.2
			Unknown	27	2.3	0.9	3.7
Port	Construction activity this yr		Current	202	25.8	21.1	30.5
			Previous	397	48.9	44.2	53.5
			Never	215	23.6	19.6	27.6
			Unknown	20	1.8	0.9	2.7
Trad	Construction activity this yr		Current	73	27.7	20.6	34.9
			Previous	156	43.8	36.5	51.0
			Never	94	25.9	19.8	31.9
			Unknown	7	2.6	0.5	4.7
All	Carpentry activity this yr	0.34	Yes	360	33.2	28.0	38.3
			No	821	66.8	61.7	72.0
Port	Carpentry activity this yr		Yes	254	30.8	26.3	35.3
			No	590	69.2	64.7	73.7
Trad	Carpentry activity this yr		Yes	106	34.6	27.3	41.8
			No	231	65.4	58.2	72.7
All	In-room construction this yr	0.57	Yes	170	14.5	11.2	17.8
			No	1003	85.5	82.2	88.8
Port	In-room construction this yr		Yes	123	15.6	12.3	18.9
			No	714	84.4	81.1	87.7
Trad	In-room construction this yr		Yes	47	13.8	8.9	18.8
			No	289	86.2	81.2	91.1
All	Other school construction this yr	0.34	Yes	795	69.2	64.6	73.8
			No	386	30.8	26.2	35.4
Port	Other school construction this yr		Yes	576	71.4	67.0	75.7
			No	268	28.6	24.3	33.0
Trad	Other school construction this yr		Yes	219	67.9	61.4	74.4
			No	118	32.1	25.6	38.6

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
All	Same building construction this yr	0.00	Yes	141	18.9	14.6	23.2
			No	1040	81.1	76.8	85.4
Port	Same building construction this yr		Yes	63	7.3	5.0	9.5
			No	781	92.7	90.5	95.0
Trad	Same building construction this yr		Yes	78	25.8	19.3	32.3
			No	259	74.2	67.7	80.7
All	Evidence of water problems (teacher)	0.11	Current	291	24.0	19.8	28.1
			Previous	315	27.5	23.2	31.8
			Never	547	46.9	41.8	52.1
			Unknown	25	1.6	0.8	2.4
Port	Evidence of water problems (teacher)		Current	210	25.2	20.7	29.6
			Previous	207	23.8	20.1	27.4
			Never	404	48.4	44.0	52.9
			Unknown	21	2.6	1.4	3.9
Trad	Evidence of water problems (teacher)		Current	81	23.2	17.1	29.3
			Previous	108	29.7	23.2	36.3
			Never	143	46.0	38.8	53.3
			Unknown	4	1.0	0.0	2.0
All	Leak or flood in room	0.04	Current	129	11.5	8.3	14.6
			Previous	380	33.7	29.0	38.4
			Never	598	51.5	46.4	56.5
			Unknown	53	3.3	2.1	4.5
Port	Leak or flood in room		Current	90	11.3	8.3	14.2
			Previous	255	31.3	26.6	35.9
			Never	440	52.0	47.6	56.4
			Unknown	45	5.5	3.7	7.3
Trad	Leak or flood in room		Current	39	11.6	6.9	16.3
			Previous	125	35.2	28.2	42.2
			Never	158	51.2	43.8	58.5
			Unknown	8	2.1	0.5	3.6
All	Type leak or flood	0.01	Roof	291	22.6	18.7	26.6
			Other	135	14.1	10.5	17.8
			Both	85	7.6	5.1	10.2
			No_Leaks	670	55.6	50.6	60.6

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
Port	Type leak or flood		Roof	219	26.9	22.9	30.9
			Other	76	8.3	6.0	10.6
			Both	53	7.1	4.7	9.5
			No_Leaks	496	57.7	53.1	62.3
Trad	Type leak or flood		Roof	72	20.1	14.2	26.0
			Other	59	17.6	12.0	23.2
			Both	32	8.0	4.2	11.7
			No_Leaks	174	54.3	47.1	61.6
All	Water stains in room	0.69	Current	243	20.3	16.4	24.3
			Previous	257	21.5	17.5	25.6
			Never	595	53.0	47.8	58.2
			Unknown	49	5.1	2.8	7.4
Port	Water stains in room		Current	179	22.7	18.1	27.2
			Previous	180	21.5	17.9	25.1
			Never	424	51.7	47.1	56.3
			Unknown	34	4.1	2.6	5.6
Trad	Water stains in room		Current	64	19.0	13.2	24.8
			Previous	77	21.6	15.5	27.6
			Never	171	53.8	46.4	61.1
			Unknown	15	5.7	2.1	9.2
All	Type water stains	0.64	Ceiling	279	21.7	17.8	25.7
			Floor	51	4.7	2.2	7.3
			Both	68	5.6	3.2	8.0
			Other	783	67.9	63.3	72.6
			No_Stains	0	0.0	0.0	0.0
Port	Type water stains		Ceiling	201	24.4	20.1	28.6
			Floor	39	4.4	2.8	6.1
			Both	51	6.0	4.1	7.9
			Other	553	65.2	60.8	69.6
			No_Stains	0	0.0	0.0	0.0
Trad	Type water stains		Ceiling	78	20.2	14.7	25.7
			Floor	12	4.9	0.9	8.9
			Both	17	5.4	1.6	9.1
			Other	230	69.5	62.7	76.3
			No_Stains	0	0.0	0.0	0.0

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
All	Visible mold in room (teacher)	0.23	Current	56	3.9	2.4	5.4
			Previous	69	5.5	3.2	7.8
			Never	862	77.5	73.3	81.8
			Unknown	164	13.1	9.5	16.7
Port	Visible mold in room (teacher)		Current	47	5.6	3.6	7.7
			Previous	49	5.0	3.2	6.7
			Never	604	75.5	71.8	79.1
			Unknown	123	13.9	11.1	16.8
Trad	Visible mold in room (teacher)		Current	9	2.8	0.8	4.8
			Previous	20	5.8	2.3	9.2
			Never	258	78.7	72.6	84.9
			Unknown	41	12.6	7.4	17.9
All	No. locations with mold	0.60	No mold	1045	90.0	87.3	92.7
			1-2_loc	121	9.0	6.4	11.6
			3+loc	15	1.0	0.1	1.9
Port	No. locations with mold		No mold	740	88.5	85.8	91.2
			1-2_loc	93	10.3	7.8	12.9
			3+loc	11	1.2	0.4	2.0
Trad	No. locations with mold		No mold	305	90.9	86.9	94.9
			1-2_loc	28	8.2	4.4	12.0
			3+loc	4	0.9	0.0	2.2
All	Freq of floor cleaning	0.59	Daily	140	42.9	33.1	52.7
			2-3/wk	97	34.4	24.5	44.4
			1/wk	42	11.5	5.8	17.2
			Other	17	5.9	1.4	10.3
			DK	14	5.3	1.6	9.0
Port	Freq of floor cleaning		Daily	102	41.7	33.6	49.8
			2-3/wk	72	29.9	22.9	36.9
			1/wk	36	16.3	10.2	22.5
			Other	14	7.3	2.7	12.0
			DK	9	4.8	0.9	8.6
Trad	Freq of floor cleaning		Daily	38	43.7	28.5	59.0
			2-3/wk	25	37.4	22.1	52.7
			1/wk	6	8.3	0.0	16.8
			Other	3	4.9	0.0	11.2
			DK	5	5.6	0.0	11.6

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
All	Custodial services needed	0.62	More_freq	83	7.9	4.9	10.8
			More_effctv	150	13.6	10.0	17.2
			Both	165	12.9	9.7	16.0
			Unspecified	14	1.3	0.4	2.1
			NA	755	64.4	59.3	69.5
Port	Custodial services needed		More_freq	62	7.7	5.2	10.3
			More_effctv	102	11.1	8.5	13.8
			Both	121	14.8	11.6	17.9
			Unspecified	9	1.3	0.2	2.4
			NA	539	65.1	60.7	69.4
Trad	Custodial services needed		More_freq	21	7.9	3.7	12.2
			More_effctv	48	15.0	9.6	20.5
			Both	44	11.7	7.5	16.0
			Unspecified	5	1.3	0.1	2.4
			NA	216	64.0	57.0	71.1
All	# teacher complaints in school yr	0.77	0	467	38.9	34.2	43.7
			1-5	603	53.0	48.3	57.8
			>5	88	8.0	5.1	10.9
Port	# teacher complaints in school yr		0	331	40.4	35.8	45.0
			1-5	431	51.1	46.7	55.5
			>5	67	8.5	5.7	11.3
Trad	# teacher complaints in school yr		0	136	38.1	31.1	45.0
			1-5	172	54.2	46.9	61.5
			>5	21	7.7	3.4	12.1
All	Overall air quality (teacher)	0.19	Excellent	190	16.8	13.2	20.4
			Good	426	36.9	32.1	41.7
			Adequate	376	33.8	28.8	38.8
			Poor	140	10.6	7.9	13.3
			Very_poor	31	1.9	0.8	3.1
Port	Overall air quality (teacher)		Excellent	122	16.5	12.8	20.3
			Good	291	33.7	29.8	37.7
			Adequate	277	33.6	29.6	37.5
			Poor	112	13.1	10.2	16.0
			Very_poor	28	3.0	1.6	4.5

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
Trad	Overall air quality (teacher)		Excellent	68	16.9	12.1	21.8
			Good	135	38.8	31.7	45.9
			Adequate	99	33.9	26.6	41.2
			Poor	28	9.1	5.2	13.1
			Very_poor	3	1.3	0.0	2.9
All	Overall air quality (teacher)	0.08	Excel/Good	616	53.7	48.6	58.8
			Adequate	376	33.8	28.8	38.8
			Poor	171	12.5	9.6	15.5
Port	Overall air quality (teacher)		Excel/Good	413	50.3	45.8	54.7
			Adequate	277	33.6	29.6	37.5
			Poor	140	16.2	12.9	19.4
Trad	Overall air quality (teacher)		Excel/Good	203	55.7	48.3	63.1
			Adequate	99	33.9	26.6	41.2
			Poor	31	10.4	6.2	14.6
All	Days absent last 2 weeks	0.45	None	835	72.8	68.6	77.0
			1-2_days	276	22.4	18.4	26.4
			>2_days	56	4.8	2.7	6.9
Port	Days absent last 2 weeks		None	581	69.7	65.4	73.9
			1-2_days	215	25.2	21.2	29.2
			>2_days	39	5.2	3.3	7.0
Trad	Days absent last 2 weeks		None	254	74.6	68.2	81.0
			1-2_days	61	20.8	14.8	26.8
			>2_days	17	4.6	1.5	7.7
All	Reason for absence	0.07	Cold/flu	81	7.1	5.1	9.2
			Allerg/resp	58	5.7	3.4	7.9
			NA	835	87.2	84.2	90.2
Port	Reason for absence		Cold/flu	64	10.1	7.2	13.1
			Allerg/resp	43	5.5	3.4	7.6
			NA	581	84.4	80.9	87.8
Trad	Reason for absence		Cold/flu	17	5.4	2.7	8.2
			Allerg/resp	15	5.7	2.4	9.0
			NA	254	88.8	84.6	93.1
All	Nose symptoms past 2 weeks	0.05	None	469	43.4	38.1	48.7
			Occasional	407	35.8	30.8	40.8
			Frequent	274	20.8	17.0	24.7

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
Port	Nose symptoms past 2 weeks		None	325	41.1	36.2	46.0
			Occasional	282	33.1	28.6	37.6
			Frequent	214	25.8	21.7	29.9
Trad	Nose symptoms past 2 weeks		None	144	44.8	37.4	52.1
			Occasional	125	37.3	30.1	44.5
			Frequent	60	17.9	12.6	23.2
All	Nose symptoms at home	0.17	Same/worse	358	32.2	27.4	37.0
			Improves	244	21.9	17.3	26.4
			NA	469	45.9	40.5	51.4
Port	Nose symptoms at home		Same/worse	250	30.1	26.1	34.1
			Improves	192	26.5	21.6	31.4
			NA	325	43.4	38.3	48.5
Trad	Nose symptoms at home		Same/worse	108	33.4	26.3	40.5
			Improves	52	19.1	12.7	25.6
			NA	144	47.4	39.8	55.1
All	Throat symptoms past 2 weeks	0.06	None	603	56.6	51.7	61.6
			Occasional	345	30.6	25.8	35.3
			Frequent	187	12.8	10.3	15.3
Port	Throat symptoms past 2 weeks		None	415	53.3	48.8	57.9
			Occasional	248	30.0	26.0	34.1
			Frequent	146	16.6	13.3	20.0
Trad	Throat symptoms past 2 weeks		None	188	58.6	51.4	65.8
			Occasional	97	30.9	24.0	37.7
			Frequent	41	10.5	6.9	14.2
All	Throat symptoms at home	0.29	Same/worse	223	18.8	15.1	22.5
			Improves	241	21.3	17.0	25.5
			NA	603	59.9	54.9	65.0
Port	Throat symptoms at home		Same/worse	158	18.6	15.2	22.0
			Improves	188	25.0	21.0	29.0
			NA	415	56.4	51.8	61.1
Trad	Throat symptoms at home		Same/worse	65	18.9	13.6	24.3
			Improves	53	19.1	12.7	25.4
			NA	188	62.0	54.6	69.4
All	Eyes symptoms past 2 weeks	0.50	None	658	59.2	54.3	64.2
			Occasional	309	27.3	22.8	31.9
			Frequent	163	13.4	10.3	16.6

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
Port	Eyes symptoms past 2 weeks		None	462	59.4	54.9	63.9
			Occasional	218	25.4	21.7	29.2
			Frequent	121	15.2	11.8	18.6
Trad	Eyes symptoms past 2 weeks		None	196	59.2	51.9	66.4
			Occasional	91	28.5	21.6	35.3
			Frequent	42	12.4	8.0	16.7
All	Eyes symptoms at home	0.05	Same/worse	212	21.7	17.3	26.1
			Improves	197	16.8	13.0	20.5
			NA	658	61.5	56.4	66.6
Port	Eyes symptoms at home		Same/worse	141	16.8	13.4	20.2
			Improves	152	20.5	16.6	24.4
			NA	462	62.7	58.1	67.3
Trad	Eyes symptoms at home		Same/worse	71	24.5	17.9	31.1
			Improves	45	14.7	9.3	20.0
			NA	196	60.9	53.5	68.3
All	Skin symptoms past 2 weeks	0.06	None	831	77.1	73.0	81.2
			Occasional	196	14.2	10.7	17.8
			Frequent	108	8.6	6.1	11.2
Port	Skin symptoms past 2 weeks		None	577	73.7	69.8	77.5
			Occasional	153	18.5	15.0	22.0
			Frequent	77	7.8	5.8	9.9
Trad	Skin symptoms past 2 weeks		None	254	79.2	73.2	85.2
			Occasional	43	11.7	6.7	16.7
			Frequent	31	9.1	5.3	12.9
All	Skin symptoms at home	0.01	Same/worse	194	15.5	11.7	19.4
			Improves	68	4.9	3.3	6.4
			NA	831	79.6	75.5	83.7
Port	Skin symptoms at home		Same/worse	146	16.0	12.9	19.1
			Improves	58	8.2	5.6	10.8
			NA	577	75.8	72.0	79.6
Trad	Skin symptoms at home		Same/worse	48	15.3	9.6	21.0
			Improves	10	2.9	1.0	4.8
			NA	254	81.8	75.9	87.8
All	Headache/sinus pain past 2 weeks	0.91	None	547	49.3	44.1	54.4
			Occasional	396	34.3	29.7	38.9
			Frequent	194	16.4	12.7	20.1

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
Port	Headache/sinus pain past 2 weeks		None	386	49.4	44.9	53.9
			Occasional	285	35.0	30.7	39.4
			Frequent	135	15.6	12.3	18.8
Trad	Headache/sinus pain past 2 weeks		None	161	49.2	41.8	56.5
			Occasional	111	33.9	27.0	40.8
			Frequent	59	16.9	11.3	22.5
All	Headache/sinus pain at home	0.31	Same/worse	274	27.4	22.7	32.1
			Improves	236	20.2	16.0	24.3
			NA	547	52.5	47.1	57.8
Port	Headache/sinus pain at home		Same/worse	184	24.5	20.5	28.5
			Improves	179	23.0	19.0	27.1
			NA	386	52.5	47.8	57.1
Trad	Headache/sinus pain at home		Same/worse	90	29.1	22.1	36.0
			Improves	57	18.5	12.7	24.3
			NA	161	52.4	44.8	60.1
All	Drowsiness past 2 weeks	0.32	None	788	73.4	69.1	77.6
			Occasional	276	21.2	17.3	25.2
			Frequent	68	5.4	3.5	7.4
Port	Drowsiness past 2 weeks		None	554	69.9	66.0	73.9
			Occasional	206	24.5	20.8	28.3
			Frequent	49	5.5	3.7	7.3
Trad	Drowsiness past 2 weeks		None	234	75.4	69.0	81.7
			Occasional	70	19.3	13.4	25.2
			Frequent	19	5.3	2.4	8.3
All	Drowsiness at home	0.09	Same/worse	111	10.6	7.7	13.5
			Improves	177	13.2	9.7	16.6
			NA	788	76.2	72.0	80.4
Port	Drowsiness at home		Same/worse	70	9.5	6.9	12.1
			Improves	143	17.5	13.9	21.0
			NA	554	73.0	69.1	77.0
Trad	Drowsiness at home		Same/worse	41	11.3	7.0	15.6
			Improves	34	10.7	5.5	15.8
			NA	234	78.1	71.8	84.4
All	Dizziness/faintness past 2 weeks	0.43	None	1022	92.4	90.2	94.5
			Occasional	88	6.1	4.2	8.0
			Frequent	17	1.5	0.5	2.5

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
Port	Dizziness/faintness past 2 weeks		None	724	91.9	89.8	94.1
			Occasional	68	7.1	5.0	9.2
			Frequent	9	1.0	0.3	1.7
Trad	Dizziness/faintness past 2 weeks		None	298	92.7	89.5	95.8
			Occasional	20	5.6	2.8	8.3
			Frequent	8	1.8	0.2	3.3
All	Dizziness/faintness at home	0.76	Same/worse	27	2.0	0.9	3.0
			Improves	68	5.0	3.1	6.8
			NA	1022	93.1	91.0	95.1
Port	Dizziness/faintness at home		Same/worse	20	2.5	1.1	3.9
			Improves	50	5.0	3.4	6.5
			NA	724	92.6	90.5	94.6
Trad	Dizziness/faintness at home		Same/worse	7	1.7	0.2	3.2
			Improves	18	4.9	2.2	7.7
			NA	298	93.4	90.3	96.5
All	Lung symptoms past 2 weeks	0.33	None	982	89.4	86.8	92.0
			Occasional	104	8.1	5.7	10.5
			Frequent	42	2.5	1.5	3.6
Port	Lung symptoms past 2 weeks		None	692	87.7	85.0	90.3
			Occasional	76	9.0	6.7	11.3
			Frequent	32	3.3	2.0	4.7
Trad	Lung symptoms past 2 weeks		None	290	90.4	86.5	94.2
			Occasional	28	7.5	3.9	11.2
			Frequent	10	2.1	0.6	3.6
All	Lung symptoms at home	0.59	Same/worse	55	3.9	2.0	5.9
			Improves	75	5.9	4.1	7.7
			NA	982	90.2	87.6	92.7
Port	Lung symptoms at home		Same/worse	40	4.2	2.7	5.7
			Improves	55	6.9	4.9	9.0
			NA	692	88.9	86.3	91.4
Trad	Lung symptoms at home		Same/worse	15	3.8	0.8	6.8
			Improves	20	5.3	2.8	7.9
			NA	290	90.9	87.1	94.7
All	Upset stomach past 2 weeks	0.95	None	901	80.6	77.0	84.2
			Occasional	195	16.6	13.2	20.0
			Frequent	34	2.8	1.6	4.0

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
Port	Upset stomach past 2 weeks		None	642	79.9	76.4	83.5
			Occasional	143	17.3	14.0	20.5
			Frequent	21	2.8	1.2	4.4
Trad	Upset stomach past 2 weeks		None	259	81.0	75.5	86.5
			Occasional	52	16.2	10.9	21.5
			Frequent	13	2.7	1.1	4.4
All	Upset stomach at home	0.27	Same/worse	92	9.2	6.3	12.1
			Improves	97	8.1	5.6	10.5
			NA	901	82.7	79.1	86.2
Port	Upset stomach at home		Same/worse	61	7.4	5.2	9.6
			Improves	72	9.9	7.1	12.8
			NA	642	82.6	79.2	86.1
Trad	Upset stomach at home		Same/worse	31	10.3	5.8	14.7
			Improves	25	7.0	3.4	10.6
			NA	259	82.7	77.2	88.2
All	No. health symptoms past 2 weeks	0.25	None	276	26.4	21.8	31.0
			1-2	279	25.4	21.0	29.9
			3+	595	48.1	43.1	53.2
Port	No. health symptoms past 2 weeks		None	188	24.5	20.4	28.7
			1-2	197	22.8	19.3	26.3
			3+	436	52.7	47.9	57.4
Trad	No. health symptoms past 2 weeks		None	88	27.5	20.9	34.2
			1-2	82	27.0	20.2	33.7
			3+	159	45.5	38.2	52.8
All	Chronic hay fever/allergies	0.44	Yes	416	32.5	28.1	36.9
			No	765	67.5	63.1	71.9
Port	Chronic hay fever/allergies		Yes	309	34.5	30.5	38.4
			No	535	65.5	61.6	69.5
Trad	Chronic hay fever/allergies		Yes	107	31.3	24.5	38.2
			No	230	68.7	61.8	75.5
All	Chronic asthma/bronchitis	0.37	Yes	139	10.3	7.6	13.0
			No	1042	89.7	87.0	92.4
Port	Chronic asthma/bronchitis		Yes	103	11.7	8.8	14.6
			No	741	88.3	85.4	91.2
Trad	Chronic asthma/bronchitis		Yes	36	9.5	5.5	13.5
			No	301	90.5	86.5	94.5

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
All	Chronic hypertension/heart disease	0.69	Yes	74	6.4	4.1	8.6
			No	1107	93.6	91.4	95.9
Port	Chronic hypertension/heart disease		Yes	51	5.8	3.8	7.9
			No	793	94.2	92.1	96.2
Trad	Chronic hypertension/heart disease		Yes	23	6.7	3.2	10.1
			No	314	93.3	89.9	96.8
All	Inhaled asthma med past 2 weeks	0.14	Never	34	3.2	1.3	5.1
			Some	73	4.6	3.0	6.2
			NA	1071	92.2	89.8	94.7
Port	Inhaled asthma med past 2 weeks		Never	22	2.7	1.3	4.2
			Some	59	6.5	4.5	8.5
			NA	762	90.8	88.1	93.4
Trad	Inhaled asthma med past 2 weeks		Never	12	3.4	0.5	6.3
			Some	14	3.5	1.2	5.8
			NA	309	93.1	89.4	96.7
All	No. students taking asthma med	0.04	DK	447	43.1	37.8	48.4
			None	165	12.2	9.4	15.0
			1-2	323	24.2	20.3	28.1
			3-5	171	12.2	9.5	14.9
			6+	51	8.3	4.8	11.7
Port	No. students taking asthma med		DK	321	39.8	34.8	44.9
			None	116	12.6	9.6	15.5
			1-2	234	28.4	24.2	32.6
			3-5	122	14.5	11.5	17.6
			6+	33	4.7	2.4	6.9
Trad	No. students taking asthma med		DK	126	45.0	37.5	52.5
			None	49	12.0	8.0	16.0
			1-2	89	21.7	16.3	27.1
			3-5	49	10.9	7.3	14.6
			6+	18	10.4	5.1	15.7
All	Type of Classroom	0.00	Port-DSA	338	15.0	12.3	17.6
			Port-DOH	11	0.4	0.1	0.7
			Port-Unk	462	21.7	19.0	24.4
			Trad	277	55.6	51.7	59.4
			Trad?	44	7.4	4.9	9.9

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
Port	Type of Classroom		Port-DSA	338	40.4	34.2	46.6
			Port-DOH	11	1.1	0.3	2.0
			Port-Unk	462	58.5	52.2	64.7
			Trad	0	0.0	0.0	0.0
			Trad?	0	0.0	0.0	0.0
Trad	Type of Classroom		Port-DSA	0	0.0	0.0	0.0
			Port-DOH	0	0.0	0.0	0.0
			Port-Unk	0	0.0	0.0	0.0
			Trad	277	88.3	84.2	92.3
			Trad?	44	11.7	7.7	15.8
All	Classroom age (yrs)	0.00	<=10yr	370	29.0	24.0	34.0
			11-20yr	172	17.5	13.4	21.6
			21-30yr	67	14.6	8.9	20.3
			31-40yr	72	13.0	8.3	17.7
			41+yr	95	25.9	20.2	31.6
Port	Classroom age (yrs)		<=10yr	340	55.3	48.4	62.2
			11-20yr	150	30.5	24.0	37.0
			21-30yr	41	8.0	4.4	11.5
			31-40yr	32	4.9	2.5	7.3
			41+yr	7	1.3	0.0	2.9
Trad	Classroom age (yrs)		<=10yr	30	12.4	6.7	18.1
			11-20yr	22	9.4	4.1	14.6
			21-30yr	26	18.8	10.7	26.9
			31-40yr	40	18.0	10.7	25.4
			41+yr	88	41.4	32.1	50.6
All	Classroom age (yrs)	0.00	0-3yr	149	11.9	8.3	15.5
			4-5yr	110	8.3	5.8	10.8
			6-10yr	111	8.8	5.7	11.9
			11-15yr	124	13.2	9.6	16.8
			16+yr	282	57.8	52.4	63.3
Port	Classroom age (yrs)		0-3yr	140	22.6	16.7	28.5
			4-5yr	105	18.6	13.7	23.5
			6-10yr	95	14.1	9.7	18.5
			11-15yr	108	22.1	16.8	27.5
			16+yr	122	22.5	17.3	27.8

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
Trad	Classroom age (yrs)		0-3yr	9	5.2	0.8	9.5
			4-5yr	5	1.8	0.0	3.5
			6-10yr	16	5.5	1.9	9.1
			11-15yr	16	7.6	2.6	12.6
			16+yr	160	80.0	72.8	87.2
All	Classroom age (known/unknown)	0.26	Known	776	65.9	60.3	71.5
			Unknown	357	34.1	28.5	39.7
Port	Classroom age (known/unknown)		Known	570	68.7	62.8	74.6
			Unknown	242	31.3	25.4	37.2
Trad	Classroom age (known/unknown)		Known	206	64.3	57.2	71.5
			Unknown	115	35.7	28.5	42.8
All	Major renovations/additions	0.00	Yes	316	38.8	33.2	44.5
			No	747	61.2	55.5	66.8
Port	Major renovations/additions		Yes	174	23.7	18.6	28.8
			No	589	76.3	71.2	81.4
Trad	Major renovations/additions		Yes	142	47.7	39.9	55.5
			No	158	52.3	44.5	60.1
All	Addition/wall/floor renovations	0.00	Yes	122	14.7	10.7	18.7
			No	941	85.3	81.3	89.3
Port	Addition/wall/floor renovations		Yes	60	7.5	4.3	10.7
			No	703	92.5	89.3	95.7
Trad	Addition/wall/floor renovations		Yes	62	18.9	13.0	24.7
			No	238	81.1	75.3	87.0
All	HVAC or lighting renovations	0.00	Yes	215	30.0	24.4	35.5
			No	848	70.0	64.5	75.6
Port	HVAC or lighting renovations		Yes	101	14.9	10.2	19.5
			No	662	85.1	80.5	89.8
Trad	HVAC or lighting renovations		Yes	114	38.8	31.1	46.5
			No	186	61.2	53.5	68.9
All	Roof renovations	0.00	Yes	132	19.4	14.8	24.0
			No	931	80.6	76.0	85.2
Port	Roof renovations		Yes	55	8.9	5.2	12.6
			No	708	91.1	87.4	94.8
Trad	Roof renovations		Yes	77	25.5	18.8	32.3
			No	223	74.5	67.7	81.2

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
All	Classroom size (sq. ft.)	0.00	<600	87	9.1	5.5	12.7
			600-1100	746	59.1	53.2	65.0
			>1100	300	31.8	26.0	37.6
Port	Classroom size (sq. ft.)		<600	60	7.1	4.2	10.0
			600-1100	560	69.3	63.7	75.0
			>1100	192	23.5	18.3	28.8
Trad	Classroom size (sq. ft.)		<600	27	10.3	5.6	15.0
			600-1100	186	53.1	45.5	60.6
			>1100	108	36.7	29.2	44.1
All	Building foundation type	0.74	<Grade	700	65.5	60.1	70.9
			Slab	365	34.5	29.1	39.9
			Raised_Flr	0	0.0	0.0	0.0
Port	Building foundation type		<Grade	500	66.3	61.9	70.8
			Slab	258	33.7	29.2	38.1
			Raised_Flr	0	0.0	0.0	0.0
Trad	Building foundation type		<Grade	200	65.1	57.7	72.5
			Slab	107	34.9	27.5	42.3
			Raised_Flr	0	0.0	0.0	0.0
All	Floor Height (in)	0.00	<6	22	1.7	0.5	2.9
			6-11	197	15.0	11.1	18.9
			12-17	268	17.7	13.8	21.5
			18+	170	15.0	10.7	19.4
			NA/Unk	284	50.6	45.3	55.8
Port	Floor Height (in)		<6	20	3.3	0.7	5.8
			6-11	184	28.0	22.1	33.9
			12-17	250	33.8	27.5	40.2
			18+	149	23.8	18.2	29.5
			NA/Unk	87	11.0	7.4	14.6
Trad	Floor Height (in)		<6	2	0.7	0.0	1.8
			6-11	13	6.4	1.5	11.3
			12-17	18	7.0	2.7	11.2
			18+	21	9.2	3.2	15.2
			NA/Unk	197	76.7	68.8	84.6

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
All	Roof type	0.00	Membrane	71	10.1	6.4	13.8
			Composite	277	35.7	29.4	42.1
			Tar/gravel	95	16.7	11.2	22.1
			Metal	456	29.5	24.6	34.5
			Other	55	8.0	4.9	11.1
Port	Roof type		Membrane	35	4.1	1.9	6.3
			Composite	164	29.1	22.5	35.6
			Tar/gravel	50	8.7	4.4	12.9
			Metal	413	54.2	47.4	61.0
			Other	25	4.0	1.6	6.4
Trad	Roof type		Membrane	36	13.6	8.2	19.1
			Composite	113	39.7	31.8	47.6
			Tar/gravel	45	21.4	13.9	28.9
			Metal	43	15.0	8.9	21.1
			Other	30	10.3	5.9	14.8
All	Roof pitch	0.28	Flat	458	46.5	40.5	52.5
			Sloped	419	42.1	36.3	47.9
			Both	100	11.4	7.3	15.5
Port	Roof pitch		Flat	350	48.5	41.6	55.4
			Sloped	289	43.1	36.3	50.0
			Both	63	8.4	4.7	12.0
Trad	Roof pitch		Flat	108	45.3	37.2	53.4
			Sloped	130	41.5	33.7	49.3
			Both	37	13.2	7.5	18.9
All	Suspended ceilings	0.00	Yes	736	71.6	66.1	77.1
			No	196	28.4	22.9	33.9
Port	Suspended ceilings		Yes	591	86.5	81.9	91.1
			No	88	13.5	8.9	18.1
Trad	Suspended ceilings		Yes	145	62.4	54.6	70.2
			No	108	37.6	29.8	45.4
All	Load dock/parking/road in 50ft	0.07	Yes	507	44.0	38.4	49.6
			No	556	56.0	50.4	61.6
Port	Load dock/parking/road in 50ft		Yes	386	49.1	43.1	55.2
			No	377	50.9	44.8	56.9
Trad	Load dock/parking/road in 50ft		Yes	121	41.0	33.3	48.7
			No	179	59.0	51.3	66.7

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
All	Dumpster within 50ft	0.39	Yes	85	6.5	4.0	8.9
			No	978	93.5	91.1	96.0
Port	Dumpster within 50ft		Yes	63	7.4	4.7	10.2
			No	700	92.6	89.8	95.3
Trad	Dumpster within 50ft		Yes	22	5.9	2.8	9.0
			No	278	94.1	91.0	97.2
All	Spec purpose rooms within 50ft	0.00	Yes	466	50.3	44.6	55.9
			No	597	49.7	44.1	55.4
Port	Spec purpose rooms within 50ft		Yes	287	35.9	30.2	41.7
			No	476	64.1	58.3	69.8
Trad	Spec purpose rooms within 50ft		Yes	179	58.7	51.2	66.2
			No	121	41.3	33.8	48.8
All	Peeling paint inside	0.01	Yes	14	2.3	0.7	3.8
			No	1049	97.7	96.2	99.3
Port	Peeling paint inside		Yes	3	0.4	0.0	1.0
			No	760	99.6	99.0	100.0
Trad	Peeling paint inside		Yes	11	3.3	1.0	5.7
			No	289	96.7	94.3	99.0
All	Peeling paint outside	0.25	Yes	130	10.6	7.6	13.5
			No	933	89.4	86.5	92.4
Port	Peeling paint outside		Yes	91	12.3	8.3	16.3
			No	672	87.7	83.7	91.7
Trad	Peeling paint outside		Yes	39	9.5	5.9	13.1
			No	261	90.5	86.9	94.1
All	Peeling paint in or out	0.50	Yes	137	11.5	8.4	14.5
			No	926	88.5	85.5	91.6
Port	Peeling paint in or out		Yes	92	12.6	8.5	16.6
			No	671	87.4	83.4	91.5
Trad	Peeling paint in or out		Yes	45	10.9	7.1	14.6
			No	255	89.1	85.4	92.9
All	Packaged HVAC	0.00	Yes	760	69.6	63.8	75.4
			No	86	16.1	11.2	20.9
			DK	118	11.8	7.5	16.2
			NA	18	2.5	0.7	4.3

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
Port	Packaged HVAC		Yes	585	80.8	75.6	86.1
			No	32	5.2	2.2	8.2
			DK	84	12.5	8.0	17.1
			NA	10	1.4	0.1	2.7
Trad	Packaged HVAC		Yes	175	62.9	54.8	71.0
			No	54	22.6	15.1	30.1
			DK	34	11.4	6.6	16.3
			NA	8	3.1	0.5	5.7
All	Main AHU Location	0.00	Wall	670	51.1	45.5	56.6
			Roof	201	34.7	29.1	40.2
			Floor/Othr	27	4.3	1.8	6.8
			DK	47	5.8	2.4	9.2
			NA	26	4.1	0.9	7.4
Port	Main AHU Location		Wall	590	81.4	75.8	87.0
			Roof	66	10.8	6.0	15.7
			Floor/Othr	9	1.3	0.0	2.8
			DK	32	4.4	2.0	6.7
			NA	16	2.0	0.4	3.7
Trad	Main AHU Location		Wall	80	31.6	23.9	39.4
			Roof	135	50.0	41.5	58.4
			Floor/Othr	18	6.2	2.6	9.8
			DK	15	6.7	1.9	11.4
			NA	10	5.5	0.4	10.6
All	Central cooling system	0.66	Yes	783	78.4	73.2	83.7
			No	194	20.3	15.1	25.4
			DK	0	0.0	0.0	0.0
			NA	14	1.3	0.1	2.5
Port	Central cooling system		Yes	569	77.4	71.9	82.9
			No	149	20.9	15.5	26.3
			DK	0	0.0	0.0	0.0
			NA	11	1.7	0.0	3.4
Trad	Central cooling system		Yes	214	79.1	72.2	86.1
			No	45	19.9	12.9	26.8
			DK	0	0.0	0.0	0.0
			NA	3	1.0	0.0	2.2

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
All	HVAC supply fan operation	0.00	Auto	795	70.0	63.7	76.2
			Always_on	144	17.5	12.4	22.6
			Other/unspe	73	12.5	7.5	17.5
Port	HVAC supply fan operation		Auto	594	78.1	72.4	83.9
			Always_on	92	12.8	8.2	17.4
			Other/unspe	46	9.1	4.9	13.2
Trad	HVAC supply fan operation		Auto	201	65.2	57.2	73.1
			Always_on	52	20.4	14.0	26.7
			Other/unspe	27	14.5	7.8	21.2
All	Outdoor damper min setting	0.43	<=10%	57	5.8	2.2	9.3
			11-20%	160	20.1	14.7	25.4
			21-40%	45	4.1	1.3	6.9
			>40%	37	3.2	1.0	5.3
			Unknown	678	66.9	60.4	73.4
Port	Outdoor damper min setting		<=10%	43	7.3	2.6	11.9
			11-20%	107	18.4	13.0	23.9
			21-40%	34	3.2	1.5	5.0
			>40%	28	3.7	1.1	6.4
			Unknown	496	67.4	60.6	74.1
Trad	Outdoor damper min setting		<=10%	14	4.8	1.3	8.4
			11-20%	53	21.0	14.7	27.4
			21-40%	11	4.7	1.0	8.4
			>40%	9	2.9	0.7	5.0
			Unknown	182	66.6	59.1	74.1
All	Plenum open	0.00	Yes	253	20.7	15.7	25.7
			No	810	79.3	74.3	84.3
Port	Plenum open		Yes	208	28.4	22.3	34.5
			No	555	71.6	65.5	77.7
Trad	Plenum open		Yes	45	16.2	10.1	22.3
			No	255	83.8	77.7	89.9
All	HVAC fiberglass mesh filter	0.01	Yes	414	34.6	28.4	40.7
			No	649	65.4	59.3	71.6
Port	HVAC fiberglass mesh filter		Yes	309	40.2	33.7	46.8
			No	454	59.8	53.2	66.3
Trad	HVAC fiberglass mesh filter		Yes	105	31.3	24.3	38.3
			No	195	68.7	61.7	75.7

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
All	HVAC pleated filter	0.27	Yes	259	26.2	20.0	32.3
			No	804	73.8	67.7	80.0
Port	HVAC pleated filter		Yes	186	24.1	18.4	29.8
			No	577	75.9	70.2	81.6
Trad	HVAC pleated filter		Yes	73	27.4	20.1	34.6
			No	227	72.6	65.4	79.9
All	HVAC high efficiency filter	0.83	Yes	149	13.3	9.4	17.2
			No	914	86.7	82.8	90.6
Port	HVAC high efficiency filter		Yes	105	13.0	8.9	17.1
			No	658	87.0	82.9	91.1
Trad	HVAC high efficiency filter		Yes	44	13.4	8.8	18.1
			No	256	86.6	81.9	91.2
All	Thermostat control	0.00	Teacher	458	33.6	28.1	39.2
			Others	117	10.2	6.6	13.8
			Both	458	54.0	48.1	59.9
			DK	2	0.4	0.0	1.1
			NA	13	1.8	0.3	3.2
Port	Thermostat control		Teacher	366	45.1	38.7	51.5
			Others	84	11.2	7.2	15.3
			Both	295	42.1	35.5	48.7
			DK	1	0.4	0.0	1.2
			NA	8	1.1	0.0	2.4
Trad	Thermostat control		Teacher	92	26.8	20.3	33.3
			Others	33	9.6	5.2	13.9
			Both	163	61.1	53.8	68.5
			DK	1	0.4	0.0	1.1
			NA	5	2.1	0.0	4.3
All	Space heaters used	0.55	Yes	114	11.5	7.5	15.6
			No	949	88.5	84.4	92.5
Port	Space heaters used		Yes	80	12.3	7.8	16.7
			No	683	87.7	83.3	92.2
Trad	Space heaters used		Yes	34	11.1	6.8	15.5
			No	266	88.9	84.5	93.2
All	Water damage past 3 yrs (FM)	0.14	Yes	207	23.5	18.0	29.0
			No	756	71.4	65.4	77.4
			DK	58	5.0	2.2	7.9

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
Port	Water damage past 3 yrs (FM)		Yes	147	22.9	18.0	27.8
			No	545	69.9	64.4	75.4
			DK	45	7.2	3.7	10.7
Trad	Water damage past 3 yrs (FM)		Yes	60	23.9	16.6	31.2
			No	211	72.4	64.8	79.9
			DK	13	3.8	0.6	6.9
All	Roof leaks last 3 yrs (FM)	0.87	Yes	185	19.7	14.7	24.7
			No	878	80.3	75.3	85.3
Port	Roof leaks last 3 yrs (FM)		Yes	134	19.4	14.8	23.9
			No	629	80.6	76.1	85.2
Trad	Roof leaks last 3 yrs (FM)		Yes	51	19.9	13.1	26.7
			No	249	80.1	73.3	86.9
All	Visible mold past 3 yrs (FM)	0.33	Yes	48	3.8	2.1	5.5
			No	921	90.0	86.0	93.9
			DK	51	6.3	2.6	9.9
Port	Visible mold past 3 yrs (FM)		Yes	33	4.9	2.4	7.3
			No	670	89.6	85.7	93.4
			DK	36	5.6	2.5	8.7
Trad	Visible mold past 3 yrs (FM)		Yes	15	3.1	1.3	4.9
			No	251	90.2	85.3	95.1
			DK	15	6.7	2.0	11.3
All	Standing water within 50ft	0.47	Yes	365	34.1	28.2	40.0
			No	638	61.2	55.0	67.4
			DK	33	4.7	0.7	8.7
Port	Standing water within 50ft		Yes	276	36.3	30.3	42.2
			No	446	60.2	54.1	66.3
			DK	24	3.5	1.1	5.9
Trad	Standing water within 50ft		Yes	89	32.8	25.5	40.0
			No	192	61.8	54.0	69.6
			DK	9	5.4	0.1	10.8
All	New pressed wood last yr	0.27	Yes	332	31.5	25.4	37.5
			No	572	57.5	50.9	64.1
			DK	105	11.0	6.7	15.4
Port	New pressed wood last yr		Yes	248	33.9	27.7	40.0
			No	408	54.0	47.4	60.6
			DK	74	12.1	7.1	17.2

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
Trad	New pressed wood last yr		Yes	84	30.0	22.9	37.2
			No	164	59.5	51.7	67.3
			DK	31	10.4	5.5	15.3
All	Paint/caulk/seal last yr	0.56	Yes	226	23.0	17.7	28.3
			No	719	69.8	63.8	75.8
			DK	63	7.2	3.3	11.2
Port	Paint/caulk/seal last yr		Yes	159	20.6	15.5	25.7
			No	520	71.8	66.0	77.5
			DK	47	7.6	3.9	11.4
Trad	Paint/caulk/seal last yr		Yes	67	24.4	17.5	31.4
			No	199	68.6	60.9	76.3
			DK	16	7.0	2.1	11.9
All	New carpet past yr	0.21	Yes	217	18.4	14.0	22.8
			No	846	81.6	77.2	86.0
Port	New carpet past yr		Yes	166	20.9	15.7	26.1
			No	597	79.1	73.9	84.3
Trad	New carpet past yr		Yes	51	16.9	11.5	22.3
			No	249	83.1	77.7	88.5
All	New flooring past yr	0.96	Yes	278	25.2	20.0	30.3
			No	589	55.1	48.7	61.4
			DK	196	19.8	14.0	25.6
Port	New flooring past yr		Yes	205	25.8	20.2	31.4
			No	413	54.7	48.4	60.9
			DK	145	19.5	14.5	24.5
Trad	New flooring past yr		Yes	73	24.8	18.3	31.2
			No	176	55.3	47.5	63.1
			DK	51	19.9	12.9	27.0
All	Pesticide use past yr (FM)	0.17	Yes	231	19.0	14.1	23.9
			No	700	72.8	67.0	78.7
			DK	74	8.2	4.4	12.0
Port	Pesticide use past yr (FM)		Yes	163	21.7	15.9	27.6
			No	509	71.3	65.1	77.5
			DK	52	7.0	3.9	10.1
Trad	Pesticide use past yr (FM)		Yes	68	17.4	12.2	22.6
			No	191	73.7	67.1	80.3
			DK	22	8.9	4.2	13.7

Classroom Type	Classification Variable	p-Value Wald Chi^2	Category	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
All	Crack/crevice pesticides last yr	0.07	Yes	83	5.7	3.0	8.4
			No	980	94.3	91.6	97.0
Port	Crack/crevice pesticides last yr		Yes	60	7.6	3.4	11.8
			No	703	92.4	88.2	96.6
Trad	Crack/crevice pesticides last yr		Yes	23	4.6	2.4	6.8
			No	277	95.4	93.2	97.6
All	Spray can pesticides last yr	0.34	Yes	91	7.7	4.5	11.0
			No	972	92.3	89.0	95.5
Port	Spray can pesticides last yr		Yes	62	8.8	5.1	12.5
			No	701	91.2	87.5	94.9
Trad	Spray can pesticides last yr		Yes	29	7.1	3.5	10.7
			No	271	92.9	89.3	96.5
All	Fluorescent bulbs	0.17	T8	559	51.6	45.2	57.9
			T12	283	25.4	19.8	31.1
			Both	3	0.2	0.0	0.6
			No/DK	218	22.8	17.0	28.6
Port	Fluorescent bulbs		T8	401	47.2	40.8	53.5
			T12	205	29.8	23.5	36.1
			Both	2	0.2	0.0	0.5
			No/DK	155	22.9	17.3	28.5
Trad	Fluorescent bulbs		T8	158	54.1	46.4	61.9
			T12	78	22.9	16.2	29.6
			Both	1	0.2	0.0	0.6
			No/DK	63	22.8	16.1	29.4

APPENDIX E

Formaldehyde Distributions

Appendix E consists of three parts. The first part contains estimates that characterize the distributions of formaldehyde levels in various subsets of eligible classrooms. The second part of the appendix shows approximate standard errors of the estimates that appeared in the first part (it repeats the column with the estimated number of classrooms from the first part). The third part of the appendix provides approximate 95% confidence limits for the population parameters for each subset. The population subsets (rows of the tables) are defined by crossing a given categorical variable (e.g., school type, with levels equal to elementary, middle, and high school) with the roomtype variable (categories = all, portable, and traditional). For each such subset, the reported statistics are:

n	=	sample size = number of sample classrooms with usable data in the subset
Est. No. Clrooms	=	estimated number of eligible classrooms in the subset
% > LOD	=	the estimated percentage of eligible classrooms in the subset with formaldehyde concentrations exceeding the limit of detection (6 ppb)
% > 27 ppb	=	the estimated percentage of eligible classrooms in the subset with formaldehyde concentrations exceeding 27 ppb
% > 76 ppb	=	the estimated percentage of eligible classrooms in the subset with formaldehyde concentrations exceeding 76 ppb
mean	=	the estimated population mean for the subset of eligible classrooms
Geom. Mean	=	the estimated population geometric mean for the subset of eligible classrooms
P05	=	the estimated 5^{th} percentile for the distribution of eligible classrooms in the subset
P10	=	the estimated 10^{th} percentile for the distribution of eligible classrooms in the subset
P25	=	the estimated 25^{th} percentile for the distribution of eligible classrooms in the subset
P50	=	the estimated 50^{th} (median) percentile for the distribution of eligible classrooms in the subset
P75	=	the estimated 75^{th} percentile for the distribution of eligible classrooms in the subset
P90	=	the estimated 90^{th} percentile for the distribution of eligible classrooms in the subset
P95	=	the estimated 95^{th} percentile for the distribution of eligible classrooms in the subset.

Parameter Estimates Characterizing Distributions of Formaldehyde Levels (ppb) in California Classrooms

Variable Description	Category	Room Type	n	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
All classrooms	All	All	911	230156	97.0	36.9	1.8	27.0	20.6	8.1	10.8	14.6	22.0	34.3	50.3	61.7
		Port	644	85416	96.6	50.3	4.0	32.4	24.9	9.1	12.9	19.2	27.1	41.3	57.1	71.5
		Trad	267	144740	97.2	29.0	0.4	23.7	18.4	8.1	10.4	13.6	20.0	29.3	42.8	55.0
School location	Urban	All	147	40824	98.3	37.1	0.3	25.8	21.0	7.9	11.5	15.9	22.0	32.4	48.2	53.3
		Port	102	13035	98.9	51.8	1.1	31.2	25.4	9.6	12.8	16.9	27.7	41.0	53.4	67.6
		Trad	45	27788	98.1	30.2	0.0	23.3	19.3	5.6	10.4	15.4	20.8	29.2	39.3	48.8
School location	Suburb	All	684	173419	96.5	37.8	2.2	27.6	20.6	8.1	10.8	14.6	22.1	35.2	51.8	63.3
		Port	487	66262	96.2	50.8	4.9	32.9	24.9	7.8	13.1	20.1	27.3	41.3	58.5	74.0
		Trad	197	107157	96.7	29.7	0.6	24.3	18.4	8.1	10.4	13.4	19.9	30.0	47.2	59.6
School location	Rural	All	80	15913	98.6	27.2	0.4	23.0	19.8	7.8	10.2	12.7	19.9	27.7	39.6	48.7
		Port	55	6118	96.4	42.2	1.0	29.5	24.9	10.1	12.6	16.8	23.5	38.9	49.4	56.4
		Trad	25	9795	100.0	17.8	0.0	18.9	17.2	7.5	8.7	10.5	19.1	23.4	29.0	31.7
Geographic region	North	All	397	86702	95.5	25.9	1.3	23.5	17.5	6.5	10.4	13.5	19.9	27.7	45.3	53.4
		Port	283	32659	95.6	44.6	2.4	29.9	22.2	7.1	12.4	17.3	24.6	39.8	52.8	64.3
		Trad	114	54043	95.5	14.6	0.7	19.6	15.2	6.5	9.4	12.7	17.4	21.9	32.1	39.4
Geographic region	South	All	514	143454	97.9	43.6	2.1	29.0	22.8	8.5	11.4	16.2	24.6	36.3	53.6	63.5
		Port	361	52757	97.2	53.9	5.1	33.9	26.8	9.3	13.8	20.6	29.4	41.7	60.2	78.7
		Trad	153	90697	98.3	37.6	0.3	26.2	20.7	8.4	10.7	14.1	22.1	32.7	49.3	60.6
School type	Elem	All	592	119045	96.8	41.7	1.9	28.2	21.8	8.4	10.7	16.1	24.4	35.3	51.5	58.3
		Port	419	50580	96.8	54.2	3.6	33.1	25.7	7.8	13.1	20.2	28.9	42.9	57.0	70.8
		Trad	173	68465	96.8	32.6	0.7	24.5	19.3	8.4	10.4	13.7	21.2	30.5	47.1	54.0
School type	Middle	All	149	46772	98.6	31.4	0.9	25.9	21.3	7.3	11.7	16.2	22.0	30.9	46.6	57.2
		Port	103	15540	95.8	47.9	2.8	30.9	23.3	9.1	12.5	18.0	26.3	42.8	49.8	58.1
		Trad	46	31232	100.0	23.2	0.0	23.5	20.4	7.2	9.2	14.5	20.2	25.6	39.7	50.5
School type	High	All	170	64339	96.2	32.0	2.1	25.4	18.2	7.2	10.6	13.4	20.1	32.8	44.7	63.6
		Port	122	19296	96.8	42.3	6.2	31.8	24.2	9.2	12.3	18.8	23.3	35.4	61.4	89.4

Variable Description	Category	Room Type	n	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
		Trad	48	45043	95.9	27.6	0.4	22.7	16.0	6.7	8.8	11.9	18.7	27.2	38.6	56.3
Month of formaldehyde sample	April	All	241	70689	95.7	13.9	0.0	18.4	15.0	6.5	8.8	12.1	16.9	23.1	29.2	35.5
		Port	165	24201	94.3	30.8	0.0	23.0	17.9	3.8	9.7	15.1	21.2	28.7	36.0	45.5
		Trad	76	46488	96.4	5.2	0.0	16.0	13.7	6.5	8.7	11.5	14.1	20.0	25.3	26.6
Month of formaldehyde sample	May	All	471	111745	96.7	40.3	2.1	28.6	21.6	7.9	11.8	17.0	23.0	36.3	51.3	63.1
		Port	335	42578	96.8	54.0	5.2	34.8	27.1	10.3	14.5	21.0	30.7	45.9	61.1	79.3
		Trad	136	69167	96.6	31.9	0.2	24.8	18.7	7.4	10.7	14.6	21.5	30.8	46.5	52.7
Month of formaldehyde sample	June/July	All	199	47722	99.6	63.0	3.6	35.7	29.9	10.3	13.6	21.2	31.7	43.0	64.0	65.4
		Port	144	18637	99.0	67.4	6.6	39.2	31.9	10.8	15.3	23.1	33.9	46.3	61.3	89.0
		Trad	55	29085	100.0	60.2	1.6	33.5	28.7	10.2	12.6	18.3	29.6	38.3	60.6	65.4
Time of formaldehyde sample	Early_April	All	64	14554	96.7	3.5	0.0	14.0	12.4	6.4	7.8	11.5	11.7	16.5	24.9	26.0
		Port	43	4966	90.3	9.4	0.0	15.9	12.6	.	5.9	9.7	15.8	19.3	25.0	30.4
		Trad	21	9589	100.0	0.5	0.0	13.1	12.4	.	7.7	11.5	11.6	13.1	16.9	25.5
Time of formaldehyde sample	Late_April	All	177	56135	95.4	16.6	0.0	19.6	15.7	7.0	8.8	13.3	18.8	24.1	32.3	39.5
		Port	122	19235	95.3	36.3	0.0	24.8	19.6	6.9	12.2	18.0	23.2	32.2	41.2	46.4
		Trad	55	36899	95.4	6.4	0.0	16.8	14.0	6.7	8.7	12.9	14.7	20.0	25.0	26.4
Time of formaldehyde sample	Early_May	All	219	50538	98.0	47.4	2.2	30.6	24.8	10.7	13.1	17.9	25.2	37.6	57.7	63.0
		Port	154	18970	97.6	55.1	5.1	34.7	28.7	12.9	14.5	21.3	30.7	44.1	59.7	77.3
		Trad	65	31569	98.3	42.7	0.5	28.2	22.7	10.6	10.8	17.2	24.0	35.5	53.3	60.3
Time of formaldehyde sample	Late_May	All	252	61207	95.6	34.5	2.0	26.9	19.2	6.3	9.6	16.2	22.1	34.7	48.9	54.7
		Port	181	23608	96.3	53.1	5.3	34.8	25.8	7.6	14.1	20.6	30.0	46.1	61.2	75.6
		Trad	71	37599	95.2	22.8	0.0	22.0	15.9	0.7	8.0	14.2	20.5	26.6	40.1	48.1
Time of formaldehyde sample	June/July	All	195	47116	99.6	63.6	3.6	36.0	30.2	10.4	14.3	21.9	31.8	43.1	64.6	65.4
		Port	141	18421	99.0	67.5	6.7	39.3	32.0	11.3	16.0	23.1	33.8	46.3	61.3	89.0
		Trad	54	28695	100.0	61.0	1.7	33.8	29.1	10.2	13.2	18.8	29.7	38.5	60.8	65.4
<25% non-weekday in samp period	Yes	All	475	127884	97.1	34.1	1.1	25.0	19.8	8.6	10.7	14.5	21.2	32.1	42.7	54.7
		Port	332	45716	95.8	47.1	3.0	30.0	23.4	8.5	13.0	18.8	26.0	37.4	52.1	62.3

Variable Description	Category	Room Type	n	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
		Trad	143	82168	97.8	26.9	0.0	22.1	18.1	8.6	10.2	13.6	19.8	28.6	37.5	44.6
<25% non-weekday in samp period	No	All	432	101666	96.8	40.5	2.7	29.5	21.8	8.0	10.8	15.3	23.5	38.4	54.9	63.8
		Port	309	39484	97.5	54.1	5.3	35.2	26.9	9.8	12.6	20.2	29.2	45.9	60.9	77.5
		Trad	123	62182	96.4	31.9	1.0	25.9	19.0	7.3	10.3	13.1	20.9	31.1	52.0	61.4
General instruction classroom	Yes	All	744	188161	96.3	35.3	1.6	26.1	19.7	7.9	10.3	14.6	21.7	33.0	48.7	57.2
		Port	529	75614	96.3	48.4	3.6	31.6	24.5	7.9	13.1	19.1	26.3	41.1	54.2	66.9
		Trad	215	112546	96.3	26.6	0.3	22.4	17.1	7.4	8.8	13.6	19.3	27.7	39.0	50.6
General instruction classroom	No	All	93	39852	99.8	37.8	1.4	28.5	23.0	10.3	10.8	12.4	23.6	33.7	62.9	64.0
		Port	64	9080	99.3	54.9	5.9	37.4	29.7	11.7	13.0	19.5	27.7	46.5	62.5	101.1
		Trad	29	30773	100.0	32.7	0.1	25.8	21.4	10.1	10.8	11.6	20.0	30.0	47.9	62.4
Carpeted classroom	Full	All	528	111611	95.9	37.5	2.1	26.6	20.0	8.6	10.8	16.3	22.2	34.3	46.6	57.1
		Port	433	59952	96.2	46.8	3.8	31.0	24.0	9.1	12.8	19.8	25.6	39.2	52.3	64.1
		Trad	95	51659	95.6	26.7	0.1	21.6	16.1	7.4	10.7	13.6	19.8	27.2	37.2	43.8
Carpeted classroom	Partial	All	221	58271	95.2	36.0	1.2	26.3	19.4	7.9	9.9	14.5	21.9	32.5	50.6	55.8
		Port	128	18174	95.2	54.3	2.8	33.5	24.2	3.7	13.9	18.8	30.0	45.8	59.6	69.9
		Trad	93	40097	95.2	27.6	0.5	23.1	17.5	6.2	9.3	13.2	19.5	29.4	41.6	50.5
Carpeted classroom	None	All	95	60274	100.0	34.0	1.0	27.0	21.8	7.9	8.8	13.3	20.1	34.3	62.7	64.4
		Port	37	7290	100.0	54.9	6.3	39.0	31.1	9.6	14.1	19.0	32.2	48.6	62.3	.
		Trad	58	52984	100.0	31.1	0.2	25.4	20.8	7.7	8.6	12.9	20.0	32.5	56.5	64.1
Vinyl/linoleum floor	Yes	All	305	109034	97.6	33.3	1.2	26.6	20.4	7.9	9.0	13.9	20.7	32.6	55.5	63.7
		Port	171	26050	96.6	54.4	3.7	35.3	26.2	7.8	13.9	18.8	30.7	46.0	61.4	73.4
		Trad	134	82984	98.0	26.6	0.4	23.9	18.8	7.6	8.7	13.0	18.8	29.5	50.2	61.9
Vinyl/linoleum floor	No	All	539	121122	96.1	38.8	1.9	26.7	20.2	8.8	10.8	16.4	22.5	34.4	46.2	52.5
		Port	427	59366	96.2	46.7	3.8	30.8	23.9	9.1	12.8	19.8	25.5	38.9	51.7	63.0
		Trad	112	61756	96.0	31.2	0.1	22.7	17.2	8.6	10.7	13.6	20.1	29.2	37.5	44.1
Vinyl tackable wallboard	Yes	All	541	109990	96.2	44.0	2.4	30.5	22.6	7.9	11.7	17.5	25.0	38.1	58.3	64.4
		Port	464	66725	95.6	49.7	3.6	32.2	24.1	7.1	12.7	18.9	26.9	41.1	57.0	70.5

Variable Description	Category	Room Type	n	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
		Trad	77	43265	97.0	35.0	0.6	27.8	20.5	7.2	9.9	14.3	22.9	36.3	57.9	63.0
Vinyl tackable wallboard	No	All	292	116536	97.3	28.5	0.8	23.0	18.2	8.3	10.4	13.6	19.5	29.3	40.9	50.2
		Port	128	17315	98.8	47.9	4.8	32.5	26.5	13.0	14.9	18.9	25.6	41.7	58.0	64.3
		Trad	164	99221	97.1	25.1	0.1	21.4	17.0	7.8	9.4	13.0	18.5	26.9	38.5	46.4
Open windows	Never	All	145	59295	96.5	31.0	0.9	25.4	19.4	9.7	10.7	14.4	20.5	31.3	46.8	60.5
		Port	63	10196	97.4	49.4	4.0	31.8	24.5	9.4	14.6	18.8	26.4	41.0	51.9	61.1
		Trad	82	49100	96.3	27.2	0.2	24.1	18.5	9.7	10.6	13.6	19.7	29.3	42.9	58.4
Open windows	Infrequent	All	447	102420	95.6	41.5	2.1	28.4	20.6	6.5	8.8	14.6	23.3	36.3	51.5	64.8
		Port	349	47645	95.1	50.7	4.1	32.7	24.5	6.0	12.7	19.8	27.6	41.9	58.0	70.8
		Trad	98	54775	96.1	33.5	0.4	24.6	17.8	5.6	8.5	13.7	20.9	31.2	46.2	58.8
Open windows	Frequent	All	238	61938	99.0	33.6	1.5	25.2	20.6	8.3	10.8	13.2	20.1	32.2	46.0	55.3
		Port	179	26269	98.6	45.5	3.4	31.4	25.4	10.7	12.9	18.9	25.2	38.1	59.2	67.1
		Trad	59	35669	99.3	24.9	0.1	20.6	17.7	7.9	9.6	12.0	18.4	26.7	35.2	40.1
Open door to outside	Infreq	All	427	105524	96.8	38.9	2.2	27.3	20.9	8.0	9.2	14.6	23.3	34.9	48.7	58.4
		Port	308	45164	96.5	47.4	5.0	32.9	25.9	8.1	13.6	20.3	26.1	40.9	60.2	74.3
		Trad	119	60360	97.0	32.5	0.2	23.0	17.8	7.4	8.7	12.5	20.5	29.5	40.7	48.8
Open door to outside	Freq	All	356	87860	97.8	39.7	1.3	27.9	22.5	10.5	12.4	16.2	22.5	34.3	51.3	65.0
		Port	268	36926	95.9	51.3	2.5	31.2	23.0	8.6	12.1	18.6	27.5	41.3	53.1	61.9
		Trad	88	50934	99.1	31.4	0.5	25.5	22.2	10.7	12.3	14.6	20.4	30.1	42.8	59.4
Open door to outside	NA	All	36	29830	93.6	16.6	0.2	20.3	12.9	.	6.8	11.5	14.7	19.9	44.6	56.7
		Port	3	66	100.0	100.0	62.7	81.5	70.6	.	.	.	.	.	.	.
		Trad	33	29764	93.5	16.4	0.1	20.2	12.8	.	6.8	11.5	14.6	19.9	43.6	56.5
Pressed wood furniture	Yes	All	769	203508	96.8	35.7	1.3	26.2	20.1	8.0	10.6	14.6	21.8	33.1	48.8	60.8
		Port	548	77934	96.0	48.0	2.9	31.2	23.8	7.9	12.8	18.8	26.1	40.0	54.4	65.0
		Trad	221	125574	97.2	28.1	0.3	23.2	18.1	7.6	9.7	13.6	19.8	29.1	40.9	54.2
Pressed wood furniture	No	All	75	26648	97.3	39.8	3.7	29.9	21.5	8.0	10.7	11.5	24.1	40.1	58.1	65.3
		Port	50	7482	99.1	60.7	13.1	42.3	34.4	12.6	16.6	22.7	39.2	53.3	87.9	91.0

Variable Description	Category	Room Type	n	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
		Trad	25	19165	96.6	31.6	0.0	25.0	17.9	4.6	10.4	11.1	20.4	33.1	46.0	.
Pressed wood table/desks	Yes	All	681	180549	96.4	35.8	1.2	26.1	19.8	7.8	10.1	14.6	21.6	32.9	48.8	61.3
		Port	489	71065	95.9	47.9	2.7	31.2	23.8	7.8	12.8	18.8	26.1	40.2	53.5	64.2
		Trad	192	109484	96.8	28.0	0.2	22.9	17.6	7.2	8.8	13.6	19.5	28.7	39.5	54.8
Pressed wood table/desks	No	All	163	49607	98.2	37.5	2.9	28.6	22.0	10.0	11.2	13.6	23.7	39.0	51.7	65.0
		Port	109	14351	98.3	55.1	9.4	37.2	29.0	12.0	14.6	20.6	29.1	48.8	63.3	90.3
		Trad	54	35256	98.1	30.3	0.3	25.0	19.7	9.5	10.8	12.2	20.9	33.6	46.1	51.0
Pressed wood bookcases	Yes	All	492	123865	97.0	38.6	1.2	27.1	21.3	8.3	11.8	15.3	23.2	34.1	49.0	60.5
		Port	353	49635	97.3	51.1	2.5	31.9	25.5	10.1	14.1	19.5	27.3	41.1	53.6	63.2
		Trad	139	74231	96.8	30.2	0.3	23.9	18.9	7.8	10.6	13.9	20.6	29.5	42.4	50.6
Pressed wood bookcases	No	All	352	106291	96.6	33.4	2.0	26.2	19.2	7.1	9.4	13.5	20.3	34.3	51.7	65.0
		Port	245	35781	94.9	46.2	5.6	32.6	23.4	5.4	12.2	18.9	25.7	41.8	59.7	87.5
		Trad	107	70509	97.5	26.9	0.2	22.9	17.3	7.0	8.8	12.2	18.8	29.1	41.4	54.8
Pressed wood cabinets	Yes	All	403	103903	96.2	37.1	1.3	26.9	20.3	7.9	9.7	14.3	22.0	36.3	50.5	61.7
		Port	296	41483	96.9	55.0	2.8	32.8	26.1	11.6	14.4	20.7	29.6	41.2	52.7	66.9
		Trad	107	62419	95.8	25.2	0.2	23.0	17.1	6.6	8.7	13.6	19.8	27.1	45.0	55.3
Pressed wood cabinets	No	All	441	126253	97.3	35.4	1.8	26.5	20.3	8.0	10.8	14.6	21.9	32.6	49.9	61.9
		Port	302	43933	95.8	43.5	4.7	31.6	23.3	7.0	12.4	17.9	24.7	41.2	58.0	73.5
		Trad	139	82321	98.1	31.2	0.3	23.7	18.9	8.2	10.8	13.1	19.8	29.9	41.0	52.9
New furnishings this school yr	Yes	All	214	49215	97.3	38.5	1.7	26.6	20.8	10.6	11.4	13.7	20.9	34.3	49.9	60.9
		Port	162	21446	98.2	55.6	4.0	33.9	27.4	11.5	14.0	17.5	29.8	42.2	61.3	70.4
		Trad	52	27769	96.7	25.4	0.0	21.0	16.8	10.0	10.8	11.9	18.5	26.9	37.7	49.0
New furnishings this school yr	No	All	591	169405	96.4	35.9	1.6	26.8	20.1	7.8	9.8	14.6	22.2	34.1	50.5	62.9
		Port	406	59010	95.3	47.2	3.9	31.5	23.4	6.7	12.7	19.6	25.7	40.3	54.0	67.4
		Trad	185	110394	97.0	29.8	0.3	24.3	18.5	7.4	8.9	13.7	20.1	29.8	46.2	59.0
New furnishings this school yr	DK	All	28	8564	100.0	24.2	1.0	21.4	18.4	8.2	8.7	10.7	16.6	25.7	39.3	44.1
		Port	22	3579	100.0	41.5	2.5	29.8	26.3	11.8	14.4	16.8	25.1	39.1	44.8	48.1

Variable Description	Category	Room Type	n	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
		Trad	6	4985	100.0	11.8	0.0	15.4	14.2	.	.	9.5	11.7	16.7	.	.
Type appliances in room	Stove/burnr	All	27	13483	96.9	52.3	3.1	36.9	24.5	2.2	7.5	12.1	28.3	63.0	64.2	65.1
		Port	19	4829	96.3	69.7	8.7	40.6	28.0	5.9	13.7	18.2	32.0	36.4	61.7	.
		Trad	8	8654	97.3	42.6	0.0	34.9	22.8	1.7	5.1	11.3	16.3	49.3	.	.
Type appliances in room	Other	All	254	65172	97.8	35.2	1.3	26.8	21.6	8.1	11.7	16.3	20.9	34.5	50.5	62.3
		Port	194	28596	95.0	46.5	2.1	29.4	22.0	6.0	12.1	17.5	25.2	38.1	51.2	62.1
		Trad	60	36576	100.0	26.4	0.6	24.7	21.2	9.1	11.6	13.6	19.9	29.2	44.1	55.2
Type appliances in room	None	All	475	125947	95.9	34.8	1.8	25.6	19.1	6.6	9.3	14.6	22.1	32.1	46.6	53.7
		Port	329	45014	97.3	47.4	4.7	32.8	26.1	9.3	14.1	20.2	25.9	41.7	60.1	73.5
		Trad	146	80933	95.1	27.8	0.2	21.6	16.0	6.2	8.7	12.6	19.8	27.9	36.7	46.6
Chemical present in room	Yes	All	407	111686	97.6	37.6	1.8	27.7	21.8	8.0	10.8	15.3	21.8	34.2	51.6	63.2
		Port	285	39052	96.1	55.0	4.5	34.4	26.8	7.8	14.3	20.5	29.9	41.2	61.0	73.7
		Trad	122	72634	98.4	28.2	0.3	24.1	19.5	8.0	10.7	14.1	19.8	30.0	43.9	59.2
Chemical present in room	No	All	437	118470	96.1	34.9	1.4	25.7	19.0	7.2	9.9	13.6	22.0	34.1	48.5	55.9
		Port	313	46364	96.5	44.0	3.2	30.3	22.9	9.1	12.7	17.8	24.7	41.2	53.2	61.8
		Trad	124	72106	95.8	29.0	0.2	22.7	16.8	6.5	8.8	13.2	19.9	28.7	37.7	53.3
Oil/acrylic paints used	Yes	All	119	28768	96.4	26.1	3.6	26.1	19.5	6.8	11.3	15.4	21.0	27.4	46.1	62.8
		Port	86	10240	93.1	54.3	10.2	36.5	23.9	0.3	12.9	20.8	27.6	48.9	74.7	89.2
		Trad	33	18528	98.2	10.6	0.0	20.4	17.5	7.8	10.7	14.0	19.8	23.0	29.1	39.8
Oil/acrylic paints used	No	All	725	201387	96.9	37.6	1.3	26.7	20.4	8.0	10.7	14.3	22.0	34.3	50.3	61.8
		Port	512	75176	96.7	48.4	2.9	31.6	24.7	9.2	13.0	18.8	26.2	40.7	54.1	62.7
		Trad	213	126212	97.0	31.2	0.3	23.9	18.2	7.6	9.7	13.2	19.9	30.0	46.4	55.9
Permanent marker/pen used	Yes	All	690	177758	97.6	34.9	1.5	26.6	21.3	9.6	11.5	14.9	22.0	33.8	47.8	58.4
		Port	493	67984	97.0	48.6	3.3	31.9	25.2	9.2	13.9	19.8	26.3	41.2	56.4	66.9
		Trad	197	109774	98.0	26.5	0.3	23.2	19.2	9.6	10.9	13.8	19.8	29.3	40.1	49.9
Permanent marker/pen used	No	All	154	52398	94.1	40.4	1.9	27.0	17.2	0.3	7.4	12.4	21.3	33.9	55.3	65.3
		Port	105	17432	93.8	50.8	5.7	33.2	22.3	0.7	12.4	17.6	27.3	41.7	60.1	82.1

Variable Description	Category	Room Type	n	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
		Trad	49	34966	94.3	35.3	0.0	23.9	15.0	0.1	7.0	10.6	19.3	30.4	52.8	63.1
Whiteboard marker used	Yes	All	713	188179	96.3	37.0	1.9	27.5	20.5	7.9	10.8	15.1	22.2	34.8	52.4	63.3
		Port	507	71394	96.1	50.0	4.4	33.2	25.3	7.8	13.2	19.8	27.0	42.9	60.2	73.3
		Trad	206	116785	96.4	29.1	0.3	24.0	18.1	7.5	10.4	13.3	19.9	29.8	47.8	57.7
Whiteboard marker used	No	All	131	41977	99.1	32.4	0.2	22.8	19.2	7.3	9.1	13.9	20.0	32.4	40.5	43.1
		Port	91	14022	97.2	44.3	0.5	26.9	21.4	9.2	12.7	16.7	25.5	32.9	42.5	51.2
		Trad	40	27955	100.0	26.4	0.1	20.7	18.2	7.0	8.1	13.4	16.3	27.2	35.3	40.1
Glues/fluids used	Yes	All	570	152451	98.2	34.9	1.4	26.5	21.7	8.6	11.2	15.2	22.0	33.7	47.2	58.5
		Port	410	57549	96.8	48.1	3.2	31.7	25.2	9.1	13.1	18.9	26.2	41.1	57.1	63.8
		Trad	160	94902	99.1	26.9	0.4	23.4	19.8	8.6	10.7	13.6	20.0	27.8	40.0	49.1
Glues/fluids used	No	All	274	77705	94.0	38.7	1.8	27.0	17.8	0.1	8.7	14.1	21.6	34.2	53.9	64.6
		Port	188	27867	95.4	51.2	5.0	33.2	23.4	6.6	12.9	19.3	27.6	41.5	58.7	73.6
		Trad	86	49838	93.3	31.8	0.1	23.5	15.2	.	8.0	12.7	17.5	31.1	51.3	60.8
Correction fluid used	Yes	All	526	140218	98.2	34.7	1.4	26.2	21.4	8.6	10.8	14.6	21.8	32.9	46.2	60.2
		Port	378	52388	96.9	48.7	3.1	31.5	25.4	9.0	12.8	18.8	26.8	41.1	57.4	64.1
		Trad	148	87829	99.0	26.4	0.4	23.0	19.3	8.5	10.6	13.5	19.6	27.2	39.3	46.7
Correction fluid used	No	All	318	89938	94.6	38.5	1.8	27.5	18.6	5.5	9.3	14.3	22.0	34.7	52.4	63.7
		Port	220	33027	95.4	49.7	4.8	33.3	23.4	7.5	13.0	20.3	26.7	41.7	56.5	73.5
		Trad	98	56911	94.1	32.0	0.0	24.1	16.3	0.2	8.3	13.1	20.0	31.8	50.2	59.4
Epoxy/rubber cement used	Yes	All	126	29778	98.6	35.2	2.0	27.9	23.5	12.3	13.5	17.8	21.4	35.0	48.7	52.6
		Port	93	12924	96.7	42.6	4.5	31.8	24.4	9.4	12.7	18.5	24.6	42.6	53.0	67.6
		Trad	33	16854	100.0	29.6	0.1	24.8	22.8	12.5	13.7	17.2	20.1	30.8	39.8	46.9
Epoxy/rubber cement used	No	All	718	200378	96.6	36.3	1.5	26.5	19.8	7.9	10.3	14.3	22.0	34.0	50.0	62.7
		Port	505	72492	96.2	50.2	3.7	32.3	24.6	8.2	13.4	19.4	27.0	41.2	57.9	70.3
		Trad	213	127886	96.7	28.5	0.3	23.2	17.5	7.3	8.9	12.9	19.8	29.3	42.4	55.5
Air freshener used	Yes	All	311	74849	96.4	42.3	1.5	27.3	21.9	9.0	11.7	16.2	24.3	35.3	47.3	54.1
		Port	238	33106	94.0	52.3	2.7	30.7	22.3	1.7	10.8	18.9	27.6	40.2	51.1	61.7

Variable Description	Category	Room Type	n	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
		Trad	73	41743	98.3	34.4	0.5	24.6	21.5	10.4	11.7	14.3	21.0	30.0	39.4	50.0
Air freshener used	No	All	533	155307	97.0	33.2	1.6	26.4	19.5	7.9	10.1	13.9	20.8	33.2	51.5	63.3
		Port	360	52310	97.8	47.0	4.5	33.1	26.2	11.2	13.1	19.1	25.6	41.8	60.5	72.6
		Trad	173	102997	96.6	26.3	0.2	22.9	16.9	7.0	8.7	12.9	18.9	27.9	46.1	57.2
Air freshener used - plug-in	Yes	All	161	36508	94.9	38.6	1.4	26.0	19.6	5.6	9.6	15.3	21.7	33.9	47.7	52.3
		Port	123	17274	93.4	46.2	2.9	29.6	19.6	.	8.7	17.3	25.8	39.8	51.0	61.6
		Trad	38	19234	96.3	31.8	0.0	22.6	19.7	7.3	10.4	12.4	20.1	29.6	38.4	46.9
Air freshener used - plug-in	No	All	683	193648	97.2	35.7	1.6	26.8	20.4	8.0	10.8	14.5	22.0	34.2	50.7	63.1
		Port	475	68142	97.1	49.8	4.0	32.8	26.1	10.7	13.3	19.8	26.9	41.6	58.3	70.5
		Trad	208	125506	97.2	28.1	0.3	23.5	17.9	7.7	9.8	13.4	19.8	29.1	43.9	56.1
Air freshener used - spray	Yes	All	172	45884	96.7	43.2	1.7	27.8	22.5	10.8	11.8	15.6	24.3	36.7	45.8	56.6
		Port	132	19393	93.6	54.6	3.0	31.0	23.0	4.0	10.9	18.4	28.9	39.8	51.0	61.1
		Trad	40	26492	98.9	34.9	0.8	25.4	22.1	10.5	11.9	14.1	21.7	30.6	39.7	51.2
Air freshener used - spray	No	All	672	184271	96.8	34.4	1.5	26.4	19.8	7.9	10.2	14.3	21.2	33.2	50.4	63.1
		Port	466	66023	97.1	47.5	4.0	32.5	25.1	9.7	13.1	19.2	26.0	41.3	58.3	71.8
		Trad	206	118248	96.7	27.2	0.1	23.0	17.3	7.2	8.8	13.2	18.9	29.0	45.7	54.7
New furnishings odor	Never	All	699	203163	97.1	35.0	1.4	26.1	19.9	8.0	10.7	14.3	21.2	33.2	49.8	61.2
		Port	481	68750	96.5	46.3	3.7	31.3	23.9	8.3	12.8	18.7	25.4	41.1	53.7	64.4
		Trad	218	134412	97.4	29.2	0.3	23.5	18.1	8.0	9.9	13.2	19.9	29.7	42.7	55.1
New furnishings odor	Sometimes	All	102	19471	95.8	41.7	3.1	29.6	23.4	6.4	11.9	17.0	24.5	36.1	49.8	62.2
		Port	78	10683	98.7	59.1	5.5	35.9	30.1	12.5	13.9	18.8	30.7	43.2	61.1	85.0
		Trad	24	8788	92.4	20.6	0.3	21.9	17.2	2.8	6.5	14.8	20.1	25.9	34.8	46.0
New furnishings odor	Often	All	17	2488	100.0	76.9	0.0	41.0	38.0	16.9	24.2	26.7	36.4	51.5	62.6	.
		Port	16	2132	100.0	73.1	0.0	41.3	37.8	15.4	23.7	25.3	33.0	60.0	.	.
		Trad	1	356	100.0	100.0	0.0	39.1	39.1	.	.	.	.	.	.	.
Construction activity this yr	Current	All	186	55860	98.6	47.0	1.3	29.8	23.7	10.4	11.2	14.6	24.8	39.4	62.6	64.2
		Port	136	20271	99.0	55.1	3.4	32.8	27.7	9.8	12.6	18.6	29.3	39.6	61.0	64.9

Variable Description	Category	Room Type	n	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
		Trad	50	35589	98.4	42.4	0.1	28.0	21.7	10.5	10.8	12.3	22.0	39.4	57.0	63.3
Construction activity this yr	Previous	All	404	107657	95.2	36.0	2.3	27.0	19.4	6.4	8.9	16.2	22.2	34.3	48.9	61.2
		Port	287	42790	96.2	46.4	5.1	32.7	24.7	8.4	13.4	19.7	25.7	41.5	57.9	75.1
		Trad	117	64867	94.5	29.2	0.5	23.3	16.6	3.3	8.7	13.8	19.8	30.7	38.7	50.6
Construction activity this yr	Never	All	227	58874	98.5	28.8	0.5	23.6	19.6	7.9	10.7	13.6	20.0	29.0	46.1	53.0
		Port	155	19464	95.5	49.4	1.5	31.0	24.0	6.4	13.1	18.8	26.3	41.3	53.4	58.9
		Trad	72	39410	100.0	18.7	0.0	20.0	17.7	7.6	10.6	12.7	17.0	24.3	30.9	44.8
Construction activity this yr	Unknown	All	16	3686	95.1	19.2	0.0	23.2	17.6	0.3	11.5	17.0	24.1	26.4	32.9	37.0
		Port	13	1638	88.9	43.2	0.0	24.0	13.1	.	.	13.2	24.1	32.8	37.7	.
		Trad	3	2048	100.0	0.0	0.0	22.7	22.2	.	.	.	.	.	.	.
Carpentry activity this yr	Yes	All	263	76690	98.2	40.0	1.4	29.0	22.2	8.7	10.7	14.6	22.0	39.1	60.8	64.4
		Port	185	26825	98.3	46.5	3.4	32.5	26.2	12.1	12.8	18.7	25.2	41.9	54.1	65.9
		Trad	78	49866	98.2	36.4	0.3	27.0	20.3	8.6	8.8	12.1	20.5	37.2	57.6	64.3
Carpentry activity this yr	No	All	581	153465	96.1	34.3	1.7	25.5	19.4	7.0	10.7	14.6	21.8	31.4	46.3	55.3
		Port	413	58591	95.4	50.3	4.0	32.0	23.9	6.6	13.0	19.9	27.0	41.1	57.6	71.4
		Trad	168	94874	96.5	24.5	0.2	21.5	17.0	7.0	10.0	13.6	19.6	26.8	35.1	46.2
In-room construction this yr	Yes	All	117	34581	98.0	42.1	0.2	29.1	22.3	9.0	10.4	14.6	23.0	39.5	62.9	63.6
		Port	77	10769	97.2	44.6	0.6	27.9	21.6	7.9	9.8	17.2	22.8	37.5	46.7	52.2
		Trad	40	23813	98.3	40.9	0.0	29.7	22.6	8.9	10.4	13.7	22.2	41.7	62.0	.
In-room construction this yr	No	All	721	195135	96.7	35.2	1.8	26.3	20.0	7.9	10.8	14.4	21.8	32.9	47.7	57.2
		Port	516	74240	96.4	50.0	4.3	32.9	25.4	9.1	13.1	20.2	27.0	41.7	58.1	72.9
		Trad	205	120896	96.9	26.2	0.3	22.2	17.3	7.4	9.3	13.3	19.8	27.2	37.8	48.0
Other school construction this yr	Yes	All	568	157936	96.2	40.4	2.0	28.2	20.8	8.0	10.5	15.0	23.1	36.3	52.0	63.6
		Port	409	61681	97.1	49.4	4.5	32.8	25.7	9.5	13.0	19.3	26.9	41.2	60.4	73.0
		Trad	159	96255	95.7	34.7	0.4	25.2	18.2	7.0	8.8	13.6	20.5	34.3	48.8	60.5
Other school construction this yr	No	All	276	72220	98.1	27.0	0.6	23.4	19.1	8.0	10.8	13.6	20.0	28.3	45.6	52.4
		Port	189	23734	94.3	48.3	1.9	30.5	22.0	4.0	12.5	18.8	25.7	41.2	53.2	58.7

Variable Description	Category	Room Type	n	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
		Trad	87	48485	100.0	16.6	0.0	19.9	17.9	8.2	10.7	13.1	17.2	24.3	30.0	38.8
# teacher complaints in school yr	0	All	335	91495	96.0	36.7	1.6	26.9	19.8	8.9	11.0	15.6	23.2	33.7	49.7	58.4
		Port	232	33620	95.8	46.0	4.2	31.9	23.4	8.3	13.0	20.2	25.5	40.9	57.3	71.6
		Trad	103	57876	96.1	31.3	0.0	24.0	18.0	8.9	10.7	14.6	20.9	29.4	40.0	50.1
# teacher complaints in school yr	1-5	All	430	115248	96.9	36.4	1.7	26.7	20.6	7.9	9.1	14.3	21.3	34.3	50.4	61.4
		Port	308	43361	96.1	51.7	4.1	33.1	25.5	7.8	12.8	18.7	28.3	42.5	58.1	70.3
		Trad	122	71887	97.3	27.2	0.2	22.9	18.2	7.5	8.7	13.6	18.9	29.3	43.5	54.8
# teacher complaints in school yr	>5	All	62	19744	99.7	33.5	1.2	25.4	19.6	7.0	10.4	11.4	18.7	33.1	62.4	64.2
		Port	47	7289	99.1	45.4	0.4	28.0	24.1	9.1	14.6	18.7	22.8	33.9	46.9	58.1
		Trad	15	12454	100.0	26.6	1.7	23.8	17.4	.	9.3	10.8	11.5	27.3	49.9	59.1
Overall air quality (teacher)	Excellent	All	132	36264	97.9	36.7	1.7	27.0	22.0	10.8	11.4	16.0	22.0	35.5	46.5	56.6
		Port	87	14035	98.2	50.7	4.4	34.3	27.5	12.4	16.5	21.1	27.0	43.8	59.2	70.5
		Trad	45	22229	97.7	27.9	0.0	22.4	19.0	10.6	10.8	12.9	19.3	28.4	36.5	45.1
Overall air quality (teacher)	Good	All	307	85306	94.6	30.5	2.1	24.0	16.6	3.8	8.6	13.5	20.5	29.2	46.1	53.4
		Port	206	28049	95.1	48.2	5.3	32.2	23.9	6.1	12.6	17.9	26.1	43.6	58.6	77.4
		Trad	101	57257	94.4	21.9	0.6	20.0	13.9	0.1	8.4	12.9	17.2	25.7	33.7	40.1
Overall air quality (teacher)	Adequate	All	277	75748	98.3	43.6	1.1	30.1	24.6	10.7	11.6	17.0	25.0	37.5	61.0	64.5
		Port	204	29544	97.2	50.5	2.6	32.0	24.9	9.4	13.1	20.2	27.1	37.7	52.2	65.8
		Trad	73	46204	99.1	39.2	0.1	28.8	24.4	10.7	11.3	15.2	22.6	36.5	58.0	64.4
Overall air quality (teacher)	Poor	All	100	26212	97.8	35.0	1.3	25.4	19.7	5.8	7.9	13.5	20.8	33.7	45.1	54.3
		Port	78	10797	94.6	48.1	3.2	31.4	22.8	0.8	12.1	18.4	24.9	41.0	47.6	62.1
		Trad	22	15415	100.0	25.8	0.0	21.1	17.8	.	7.2	11.5	18.8	25.3	39.7	44.8
Overall air quality (teacher)	Very_poor	All	17	4550	100.0	29.8	0.0	24.7	20.3	8.4	9.9	10.4	20.8	27.1	48.0	52.2
		Port	14	1910	100.0	41.6	0.0	25.4	21.9	.	8.0	13.8	21.2	33.2	41.9	44.1
		Trad	3	2640	100.0	21.3	0.0	24.1	19.3	.	.	.	.	.	.	.
Nose symptoms past 2 weeks	None	All	342	101233	98.5	32.5	1.9	25.6	20.4	8.3	9.9	13.9	20.6	33.1	47.3	61.1
		Port	239	35064	95.6	47.2	5.5	33.3	24.1	6.5	13.0	18.2	25.6	42.7	61.2	87.4

Variable Description	Category	Room Type	n	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
		Trad	103	66169	100.0	24.7	0.0	21.5	18.7	8.3	9.3	13.0	17.4	26.9	36.7	44.4
Nose symptoms past 2 weeks	Occasional	All	291	76978	92.8	38.4	1.4	25.9	17.4	0.2	9.6	14.5	23.3	31.8	46.6	58.3
		Port	194	26192	94.7	50.3	3.6	31.3	23.3	3.9	12.5	18.8	27.3	38.7	56.1	61.5
		Trad	97	50786	91.8	32.2	0.3	23.1	15.0	.	8.6	12.0	19.9	29.7	40.3	50.1
Nose symptoms past 2 weeks	Frequent	All	194	48946	99.6	40.7	1.1	30.2	25.3	10.6	12.6	17.4	23.7	40.5	54.9	63.0
		Port	150	21696	99.0	51.8	1.6	31.8	27.0	10.6	14.4	20.4	27.3	41.6	51.4	62.1
		Trad	44	27250	100.0	31.8	0.8	28.8	24.0	8.2	12.2	16.0	20.9	39.6	57.2	61.1
Nose symptoms at home	Same/worse	All	264	69745	94.0	37.7	0.8	26.7	18.9	2.3	10.6	16.3	22.8	34.4	49.5	57.6
		Port	179	23742	97.2	54.5	2.3	32.4	26.6	10.3	13.1	21.1	28.5	41.5	53.3	60.3
		Trad	85	46004	92.3	29.1	0.1	23.7	15.8	.	8.7	14.4	20.0	30.0	45.5	50.4
Nose symptoms at home	Improves	All	166	43426	98.2	39.0	1.7	28.7	22.2	8.5	10.8	15.1	22.2	37.3	58.3	63.1
		Port	129	20137	96.0	44.7	2.1	29.8	22.5	6.9	11.8	18.6	23.8	37.7	51.2	61.5
		Trad	37	23289	100.0	34.2	1.4	27.8	22.0	9.0	10.5	11.5	19.4	35.1	59.2	61.8
Nose symptoms at home	NA	All	342	101233	98.5	32.5	1.9	25.6	20.4	8.3	9.9	13.9	20.6	33.1	47.3	61.1
		Port	239	35064	95.6	47.2	5.5	33.3	24.1	6.5	13.0	18.2	25.6	42.7	61.2	87.4
		Trad	103	66169	100.0	24.7	0.0	21.5	18.7	8.3	9.3	13.0	17.4	26.9	36.7	44.4
Throat symptoms past 2 weeks	None	All	436	125701	98.4	33.0	1.9	26.1	20.9	8.6	10.7	14.3	20.6	33.2	48.6	64.4
		Port	302	44338	96.6	49.9	5.2	34.0	25.7	9.4	14.3	18.8	27.0	43.1	61.3	83.9
		Trad	134	81363	99.4	23.8	0.1	21.9	18.7	8.6	10.3	13.2	18.1	26.6	38.2	48.1
Throat symptoms past 2 weeks	Occasional	All	250	68293	95.3	40.5	1.4	27.4	20.1	6.4	9.2	16.3	24.0	32.8	51.5	62.7
		Port	175	25125	94.4	48.6	2.4	30.0	22.5	2.5	11.0	20.3	26.3	36.2	51.8	61.2
		Trad	75	43167	95.8	35.8	0.8	25.8	18.9	6.1	8.3	13.5	21.0	30.5	50.6	59.6
Throat symptoms past 2 weeks	Frequent	All	129	26844	97.1	37.8	0.8	28.0	21.8	9.9	12.4	16.9	24.5	38.1	48.8	54.7
		Port	99	13276	98.4	45.8	1.7	29.6	24.3	9.5	11.9	18.2	24.9	40.5	48.1	56.1
		Trad	30	13568	95.9	30.0	0.0	26.5	19.7	9.2	12.5	15.7	24.2	32.0	48.8	54.4
Throat symptoms at home	Same/worse	All	167	40813	94.9	38.0	0.6	25.8	18.9	5.6	8.6	16.9	24.6	31.5	48.3	50.7
		Port	117	15009	99.4	47.2	1.7	30.3	26.3	10.1	14.0	20.7	25.8	35.5	51.6	60.3

Variable Description	Category	Room Type	n	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
		Trad	50	25804	92.3	32.6	0.0	23.2	15.6	.	6.7	13.2	20.6	29.8	45.9	49.4
Throat symptoms at home	Improves	All	167	42734	97.1	41.4	1.8	29.1	22.1	6.6	10.9	16.1	24.4	37.9	57.2	63.1
		Port	128	19333	93.6	46.2	2.3	29.0	20.3	0.8	9.9	17.8	25.6	39.1	50.8	59.7
		Trad	39	23401	100.0	37.4	1.4	29.1	23.6	9.0	10.4	15.0	21.9	34.6	59.2	61.8
Throat symptoms at home	NA	All	436	125701	98.4	33.0	1.9	26.1	20.9	8.6	10.7	14.3	20.6	33.2	48.6	64.4
		Port	302	44338	96.6	49.9	5.2	34.0	25.7	9.4	14.3	18.8	27.0	43.1	61.3	83.9
		Trad	134	81363	99.4	23.8	0.1	21.9	18.7	8.6	10.3	13.2	18.1	26.6	38.2	48.1
Eyes symptoms past 2 weeks	None	All	458	129615	97.1	35.1	1.7	25.7	20.0	8.5	10.6	14.2	21.6	33.2	46.0	57.0
		Port	320	47001	96.2	49.2	4.6	32.1	23.8	8.9	12.8	18.1	26.5	41.1	58.1	73.5
		Trad	138	82614	97.7	27.1	0.1	22.1	18.1	8.5	9.9	13.1	19.6	27.6	38.2	46.1
Eyes symptoms past 2 weeks	Occasional	All	224	62270	98.7	40.8	1.3	29.2	23.3	8.0	11.4	16.4	23.2	39.2	57.9	63.5
		Port	152	20476	98.8	54.4	2.3	33.9	29.4	12.9	16.4	20.3	30.1	45.6	57.6	62.5
		Trad	72	41793	98.6	34.2	0.8	26.8	20.7	7.2	10.0	14.5	19.1	30.1	55.2	63.2
Eyes symptoms past 2 weeks	Frequent	All	121	30342	97.2	31.9	0.9	26.1	21.7	10.6	11.3	17.0	22.0	31.9	47.3	55.8
		Port	91	13734	93.8	40.5	2.0	28.1	21.3	2.7	9.2	16.7	24.0	34.3	48.5	61.6
		Trad	30	16609	100.0	24.7	0.0	24.5	22.1	.	12.3	16.3	20.9	25.0	38.3	54.4
Eyes symptoms at home	Same/worse	All	158	49361	98.8	31.2	1.1	26.2	21.7	8.4	11.4	14.6	21.0	30.0	50.3	62.0
		Port	101	13068	98.0	55.7	1.7	34.1	29.9	11.6	14.5	22.0	30.5	46.3	56.3	61.3
		Trad	57	36293	99.1	22.4	0.9	23.4	19.3	8.0	11.2	13.5	18.9	25.7	42.2	52.0
Eyes symptoms at home	Improves	All	139	34000	98.0	45.8	1.4	31.1	24.7	6.9	10.4	17.6	24.6	44.4	61.9	63.2
		Port	108	16471	95.8	43.7	2.9	29.9	23.0	6.6	10.7	19.0	24.4	40.8	50.6	62.6
		Trad	31	17529	100.0	47.8	0.0	32.2	26.4	6.8	9.8	16.8	23.4	49.6	.	.
Eyes symptoms at home	NA	All	458	129615	97.1	35.1	1.7	25.7	20.0	8.5	10.6	14.2	21.6	33.2	46.0	57.0
		Port	320	47001	96.2	49.2	4.6	32.1	23.8	8.9	12.8	18.1	26.5	41.1	58.1	73.5
		Trad	138	82614	97.7	27.1	0.1	22.1	18.1	8.5	9.9	13.1	19.6	27.6	38.2	46.1
Classroom age (yrs)	<=10yr	All	273	44801	96.0	45.5	2.9	30.6	23.0	10.5	12.2	19.2	25.0	38.1	57.8	65.7
		Port	250	32673	95.3	57.3	4.0	34.8	26.2	6.4	14.7	21.2	30.7	45.1	61.7	71.5

Variable Description	Category	Room Type	n	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
		Trad	23	12128	98.0	13.8	0.2	19.2	16.2	9.2	12.0	12.4	16.2	21.8	30.7	35.1
Classroom age (yrs)	11-20yr	All	123	27029	95.7	48.7	3.9	34.1	26.7	7.3	11.3	18.8	26.3	46.2	62.1	63.5
		Port	110	19747	96.4	48.3	5.3	32.9	25.6	8.2	12.5	18.8	26.3	41.3	52.1	82.7
		Trad	13	7282	93.5	49.8	0.0	37.2	29.7	.	7.5	21.6	25.2	.	.	.
Classroom age (yrs)	21-30yr	All	50	24429	96.8	7.2	1.2	20.1	15.7	8.4	12.6	13.9	18.0	20.6	24.0	39.8
		Port	28	5389	97.3	15.1	5.5	26.8	18.2	4.2	9.5	12.8	17.9	22.6	50.2	84.1
		Trad	22	19040	96.7	5.0	0.0	18.2	15.1	8.6	12.7	13.9	17.7	20.2	22.3	24.5
Classroom age (yrs)	31-40yr	All	50	18353	97.7	44.5	0.0	26.5	21.1	4.1	10.3	15.9	22.6	37.3	40.2	48.6
		Port	20	3019	100.0	27.8	0.0	27.1	23.3	9.6	11.6	16.6	21.0	27.3	.	.
		Trad	30	15334	97.2	47.8	0.0	26.4	20.7	2.8	8.9	15.2	23.2	37.0	39.8	40.5
Classroom age (yrs)	41+yr	All	69	39339	96.8	33.9	0.3	25.6	18.7	8.2	10.7	12.7	19.9	31.1	50.1	63.7
		Port	4	343	100.0	66.0	0.0	46.4	41.0	.	.	.	.	.	.	.
		Trad	65	38996	96.7	33.7	0.3	25.5	18.6	8.2	10.7	12.6	19.9	30.9	50.0	62.5
Classroom age (yrs)	0-3yr	All	119	18008	96.1	51.7	3.5	32.1	23.7	10.8	11.8	15.7	27.7	41.0	62.1	71.7
		Port	113	14176	96.8	65.7	4.4	37.1	29.7	11.1	17.9	22.1	32.3	46.3	64.2	72.8
		Trad	6	3833	93.8	0.0	0.0	13.6	10.4	.	1.0	4.8	11.1	13.9	17.3	19.7
Classroom age (yrs)	4-5yr	All	77	12024	98.4	63.6	4.4	36.0	31.1	10.7	16.3	21.7	33.4	45.4	52.6	65.0
		Port	73	10438	98.1	59.9	5.1	36.2	31.2	11.4	16.3	21.4	33.4	45.4	56.3	76.6
		Trad	4	1586	100.0	87.8	0.0	34.5	30.5	.	.	.	.	.	.	.
Classroom age (yrs)	6-10yr	All	77	14768	94.0	23.2	1.1	24.3	17.4	0.5	11.6	16.6	20.3	26.5	45.5	59.9
		Port	64	8059	89.0	39.1	1.7	28.9	16.9	.	0.6	18.2	24.4	38.1	59.0	61.6
		Trad	13	6709	100.0	4.2	0.4	18.8	18.0	10.8	11.9	13.5	19.3	20.0	23.9	26.2
Classroom age (yrs)	11-15yr	All	91	21006	95.2	48.8	5.0	35.3	27.2	6.3	9.9	18.6	26.8	47.4	62.5	67.9
		Port	82	14911	96.5	49.6	7.1	33.8	25.9	7.7	11.6	18.2	26.8	41.1	52.4	89.4
		Trad	9	6095	92.3	46.7	0.0	39.1	30.5	.	6.7	21.2	25.0	.	.	.
Classroom age (yrs)	16+yr	All	201	88144	97.0	29.7	0.5	24.6	18.6	8.1	10.8	14.3	19.9	30.5	46.1	61.2
		Port	80	13588	97.6	29.6	2.2	28.7	21.9	9.1	12.6	17.2	21.3	31.4	57.2	65.9

Variable Description	Category	Room Type	n	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
		Trad	121	74557	96.9	29.7	0.2	23.8	18.1	8.0	10.8	14.1	19.8	30.4	40.7	54.2
Classroom age (known/unknown)	Known	All	565	153951	96.5	36.9	1.8	27.8	20.9	8.3	11.5	15.3	21.8	35.6	52.5	63.6
		Port	412	61172	96.1	49.3	4.3	33.2	25.1	9.1	12.8	19.8	26.9	42.5	60.9	73.0
		Trad	153	92780	96.7	28.8	0.2	24.2	18.5	8.0	10.8	13.7	19.9	30.4	47.8	59.6
Classroom age (known/unknown)	Unknown	All	245	76204	97.4	30.8	1.2	24.4	19.1	7.9	8.8	13.4	21.2	30.9	45.7	53.3
		Port	162	24244	97.1	48.9	3.7	31.2	24.7	8.4	14.2	18.8	26.0	40.6	53.3	63.8
		Trad	83	51960	97.5	22.3	0.0	21.2	16.9	7.0	8.5	12.2	18.8	26.3	36.1	47.2
Major renovations/additions	Yes	All	233	85572	95.6	33.2	0.3	24.5	18.0	9.1	10.7	14.3	20.9	32.1	43.2	53.9
		Port	124	20170	95.8	40.1	0.5	27.8	21.8	9.1	10.5	18.6	23.2	36.5	46.2	57.0
		Trad	109	65402	95.5	31.0	0.2	23.4	17.0	8.6	10.7	13.9	20.0	30.5	41.6	51.2
Major renovations/additions	No	All	535	133876	97.3	35.6	2.4	28.0	21.6	8.0	10.4	14.6	22.0	36.3	54.1	63.6
		Port	421	60699	96.3	50.5	5.3	34.0	25.8	8.5	13.3	20.2	27.4	44.7	61.2	79.5
		Trad	114	73177	98.1	23.3	0.0	23.0	18.7	7.8	8.7	13.2	19.4	25.7	47.0	57.2
Addition/wall/floor renovations	Yes	All	87	32354	92.6	32.0	0.3	24.7	15.4	.	10.7	14.3	19.4	31.4	50.1	62.1
		Port	42	6191	99.0	50.3	1.6	31.4	26.9	10.5	14.1	20.2	26.7	35.1	58.9	61.1
		Trad	45	26163	91.1	27.7	0.0	23.1	13.5	.	9.1	13.1	17.6	29.2	49.9	.
Addition/wall/floor renovations	No	All	681	187094	97.3	35.1	1.8	27.0	21.1	8.3	10.7	14.6	22.0	34.8	50.6	62.7
		Port	503	74678	95.9	47.7	4.3	32.6	24.5	7.9	12.9	19.2	26.1	41.7	58.0	73.0
		Trad	178	112416	98.2	26.8	0.1	23.3	19.0	8.3	9.9	13.2	20.0	28.2	41.0	54.1
HVAC or lighting renovations	Yes	All	167	67109	94.5	34.9	0.2	24.2	16.9	0.4	10.7	13.7	20.4	32.2	42.9	54.3
		Port	79	13864	94.8	35.0	0.0	25.8	19.7	0.8	9.4	18.2	22.0	34.2	42.8	52.9
		Trad	88	53244	94.5	34.9	0.2	23.8	16.2	0.1	10.7	12.6	19.6	31.6	42.7	54.7
HVAC or lighting renovations	No	All	601	152339	97.5	34.5	2.2	27.7	21.7	8.1	10.8	14.6	22.0	35.1	52.5	63.4
		Port	466	67005	96.5	50.5	5.0	33.9	25.9	9.7	13.1	20.2	27.5	43.5	61.2	75.5
		Trad	135	85335	98.4	22.0	0.0	22.9	18.9	8.1	8.8	13.4	19.9	25.6	44.6	56.1
Roof renovations	Yes	All	92	42388	98.8	30.9	0.3	24.9	21.2	10.7	10.9	15.6	20.9	30.4	41.3	57.8
		Port	36	7744	98.8	39.7	0.0	26.4	23.6	9.8	11.7	18.5	22.3	33.3	43.2	45.0

Variable Description	Category	Room Type	n	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
		Trad	56	34644	98.8	28.9	0.3	24.6	20.6	10.7	10.8	14.6	20.6	29.5	37.5	58.7
Roof renovations	No	All	676	177059	96.1	35.6	1.9	27.1	19.9	7.9	10.3	13.9	21.8	34.8	52.0	63.1
		Port	509	73124	95.9	48.7	4.6	33.1	24.8	7.9	13.0	20.1	26.8	41.9	60.3	73.7
		Trad	167	103935	96.2	26.3	0.0	22.8	17.0	7.3	8.8	12.9	19.3	27.2	45.9	54.4
Classroom size (sq. ft.)	<600	All	66	20541	98.1	23.8	1.0	24.1	19.5	10.6	11.9	16.2	18.9	25.1	45.4	50.2
		Port	44	5160	92.4	48.0	3.9	31.1	18.7	.	9.6	16.4	25.0	40.9	51.0	65.4
		Trad	22	15381	100.0	15.6	0.0	21.8	19.8	10.2	12.1	15.5	17.8	22.7	40.8	46.1
Classroom size (sq. ft.)	600-1100	All	538	135029	98.0	38.6	1.6	28.2	22.9	9.6	11.5	16.5	22.4	35.3	54.2	63.6
		Port	401	60372	96.3	45.4	3.2	31.3	24.7	9.2	13.1	18.8	24.5	40.5	55.2	66.9
		Trad	137	74657	99.3	33.0	0.2	25.8	21.5	9.7	10.7	14.1	20.4	31.2	54.0	62.7
Classroom size (sq. ft.)	>1100	All	206	74585	94.3	31.3	1.9	24.5	16.4	0.1	8.5	13.2	20.7	32.1	44.9	56.1
		Port	129	19883	97.5	60.7	7.0	36.9	28.0	10.7	14.3	22.0	31.3	45.3	63.7	80.8
		Trad	77	54702	93.1	20.6	0.0	20.0	13.5	.	7.1	12.5	15.6	26.1	37.2	41.1
Outdoor damper min setting	<=10%	All	48	13182	100.0	28.7	0.4	24.0	22.4	12.0	13.3	18.8	20.4	31.2	37.6	39.3
		Port	36	6504	100.0	34.8	0.8	25.6	23.6	10.5	14.6	18.8	22.1	31.7	36.9	41.0
		Trad	12	6677	100.0	22.7	0.0	22.5	21.2	12.0	12.3	16.1	20.2	23.3	36.2	.
Outdoor damper min setting	11-20%	All	122	43599	96.1	29.6	1.6	24.9	18.4	9.8	10.8	14.6	20.7	29.0	42.8	58.8
		Port	80	14728	98.2	41.8	4.8	31.0	25.8	12.0	14.4	20.2	23.7	34.5	44.0	57.8
		Trad	42	28872	95.1	23.4	0.0	21.7	15.5	0.6	10.4	12.9	18.8	24.4	39.7	.
Outdoor damper min setting	21-40%	All	22	8033	100.0	12.2	0.0	20.4	17.5	.	.	.	21.7	25.2	36.0	42.5
		Port	16	2086	100.0	25.9	0.0	26.0	24.4	.	.	19.2	22.0	28.5	38.5	40.9
		Trad	6	5947	100.0	7.3	0.0	18.5	15.5	.	.	.	10.7	25.0	25.6	.
Outdoor damper min setting	>40%	All	22	4833	96.4	56.7	10.0	34.3	23.8	5.6	6.1	8.8	30.5	48.6	64.0	.
		Port	16	2106	91.7	56.6	22.9	43.1	29.4	1.6	8.4	24.9	29.3	63.3	.	.
		Trad	6	2727	100.0	56.8	0.0	27.5	20.1	.	.	.	18.3	37.5	.	.
Outdoor damper min setting	Unknown	All	484	126550	95.6	35.2	1.7	26.7	19.5	7.9	10.8	14.0	21.7	34.6	51.6	62.6
		Port	351	48665	94.5	50.2	4.0	32.9	23.4	4.6	11.4	18.9	27.1	44.1	60.3	73.3

Variable Description	Category	Room Type	n	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
		Trad	133	77885	96.3	25.7	0.2	22.8	17.4	7.3	10.7	13.3	18.8	28.6	42.3	54.2
New pressed wood last yr	Yes	All	228	61685	98.0	45.3	2.5	30.9	24.3	9.7	12.0	16.3	23.8	41.1	63.0	64.5
		Port	167	24777	97.5	57.1	6.1	35.8	29.0	9.7	12.7	21.2	31.9	49.4	62.6	79.9
		Trad	61	36907	98.3	37.4	0.0	27.6	21.5	9.5	11.9	14.6	19.9	33.0	59.5	63.2
New pressed wood last yr	No	All	429	122979	95.9	28.4	1.3	24.6	18.0	7.7	9.4	13.5	20.6	29.2	46.2	55.1
		Port	303	42260	95.1	44.0	3.4	31.7	23.3	6.2	13.1	20.2	24.7	38.3	56.0	71.1
		Trad	126	80719	96.3	20.2	0.1	20.8	15.7	7.3	8.7	12.0	18.6	24.7	38.9	47.9
New pressed wood last yr	DK	All	81	25704	96.5	40.5	1.5	27.8	22.6	8.6	13.0	16.9	25.2	37.1	40.7	53.3
		Port	57	10719	98.3	43.2	3.3	29.8	23.9	11.0	14.8	18.0	23.0	34.5	54.0	65.2
		Trad	24	14984	95.3	38.6	0.2	26.4	21.7	6.2	11.4	15.0	23.1	37.2	39.7	43.6
New carpet past yr	Yes	All	138	29489	99.6	42.5	4.2	31.7	26.3	10.4	12.0	18.4	22.1	39.7	63.1	71.9
		Port	108	14656	99.1	55.8	8.5	37.3	31.5	14.9	18.7	21.0	29.8	47.2	72.3	83.1
		Trad	30	14833	100.0	29.3	0.0	26.1	22.0	9.3	10.7	14.8	19.7	32.7	.	.
New carpet past yr	No	All	630	189959	96.2	33.4	1.2	25.9	19.3	7.9	10.6	14.2	21.1	32.9	49.1	58.8
		Port	437	66213	95.5	46.1	3.2	31.4	23.4	7.8	12.7	18.4	25.7	40.8	54.3	65.1
		Trad	193	123746	96.5	26.7	0.1	22.9	17.4	7.6	9.8	13.2	19.8	28.7	41.3	54.1
New flooring past yr	Yes	All	183	46531	99.6	40.7	2.9	29.4	24.5	10.7	12.0	16.1	21.3	36.2	58.4	65.0
		Port	135	18350	98.9	53.8	7.4	36.1	30.0	13.5	18.6	20.9	27.7	44.2	67.3	80.8
		Trad	48	28181	100.0	32.1	0.0	25.1	21.5	10.6	11.7	13.2	19.9	32.2	51.4	.
New flooring past yr	No	All	441	130552	96.9	34.4	1.5	26.5	20.0	7.9	10.4	14.6	22.1	33.9	47.4	56.0
		Port	303	45538	97.1	49.1	3.9	33.4	26.2	12.1	14.3	20.6	26.9	42.8	57.0	71.5
		Trad	138	85013	96.8	26.5	0.2	22.8	17.4	7.4	8.7	13.8	20.0	27.6	40.1	49.1
New flooring past yr	DK	All	144	42365	92.4	28.8	0.4	24.1	16.4	0.9	9.2	12.7	17.5	32.0	53.4	63.1
		Port	107	16981	90.6	38.1	1.1	26.1	17.1	0.6	7.8	14.0	21.2	35.4	53.0	57.3
		Trad	37	25384	93.6	22.5	0.0	22.7	15.9	3.5	10.0	11.6	16.3	23.8	56.1	.

Approximate Standard Errors of Estimates

Variable Description	Category	Room Type	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Std. Error	P05	P10	P25	P50	P75	P90	P95
All classrooms	All	All	230156	0.9	2.8	0.4	1.0	1.06	1.6	0.8	0.8	0.9	1.7	3.2	8.1
		Port	85416	1.0	2.6	1.0	1.2	1.06	1.7	1.0	0.8	1.5	1.8	3.0	7.4
		Trad	144740	1.1	3.6	0.3	1.2	1.08	2.1	0.8	0.8	0.9	1.9	4.5	7.3
School location	Urban	All	40824	1.3	6.2	0.3	1.7	1.10	1.5	1.6	1.5	1.7	3.2	4.0	4.8
		Port	13035	1.1	6.7	0.8	2.4	1.10	2.6	1.3	2.0	3.0	4.1	6.1	6.0
		Trad	27788	1.9	7.6	0.0	1.8	1.13	N	2.9	1.8	1.9	3.3	4.9	N
School location	Suburb	All	173419	1.1	3.3	0.6	1.3	1.07	2.0	0.9	1.0	1.2	1.9	3.9	7.5
		Port	66262	1.2	3.0	1.2	1.4	1.07	2.4	1.3	0.8	1.6	2.2	3.3	7.1
		Trad	107157	1.5	4.4	0.3	1.6	1.10	2.6	0.8	0.8	1.6	2.8	5.7	6.9
School location	Rural	All	15913	0.7	7.2	0.3	2.0	1.10	1.6	1.8	2.2	2.0	3.4	5.1	6.1
		Port	6118	2.1	9.3	0.8	3.0	1.11	1.8	1.6	2.1	3.6	5.3	5.2	4.7
		Trad	9795	0.0	8.2	0.0	1.8	1.11	N	1.9	2.6	3.0	2.3	3.3	3.5
Geographic region	North	All	86702	1.6	3.3	0.6	1.1	1.08	2.4	1.2	0.6	0.9	2.1	3.3	7.0
		Port	32659	1.8	4.1	0.9	1.5	1.10	N	1.4	1.0	1.7	3.0	2.9	6.6
		Trad	54043	1.9	3.4	0.4	1.1	1.10	N	1.4	0.7	1.3	1.6	3.5	6.4
Geographic region	South	All	143454	1.0	3.9	0.6	1.5	1.08	2.0	1.3	1.4	1.5	2.1	4.3	7.2
		Port	52757	1.1	3.4	1.5	1.7	1.06	2.0	1.3	0.8	1.9	2.1	4.9	8.0
		Trad	90697	1.4	5.2	0.3	1.8	1.11	2.6	1.3	1.6	1.9	2.5	5.9	N
School type	Elem	All	119045	1.1	3.0	0.6	1.1	1.06	N	0.7	0.9	1.0	2.1	1.8	5.2
		Port	50580	1.3	3.3	1.2	1.4	1.07	2.3	1.1	1.1	1.8	2.2	3.0	6.6
		Trad	68465	1.3	4.0	0.5	1.2	1.08	1.9	0.7	0.9	1.4	1.8	4.0	2.4
School type	Middle	All	46772	0.8	6.6	0.5	2.1	1.09	2.5	1.9	1.7	1.7	4.2	5.5	4.7
		Port	15540	2.2	6.6	1.6	2.4	1.14	N	2.0	1.3	3.1	3.6	3.4	N
		Trad	31232	0.0	7.4	0.0	2.4	1.10	N	1.9	1.9	1.8	3.2	N	N

Variable Description	Category	Room Type	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Std. Error	P05	P10	P25	P50	P75	P90	P95
School type	High	All	64339	2.3	6.5	0.9	2.8	1.17	N	1.6	1.7	2.4	4.2	7.6	14.2
		Port	19296	2.0	5.7	2.8	3.3	1.12	2.7	2.0	1.4	2.0	3.7	12.7	N
		Trad	45043	3.0	8.4	0.3	3.1	1.21	N	N	1.0	2.6	4.4	8.9	7.5
Month of formaldehyde sample	April	All	70689	1.7	2.6	0.0	0.9	1.09	1.9	0.9	0.7	1.5	1.2	1.7	3.3
		Port	24201	2.7	4.2	0.0	1.2	1.13	2.8	2.4	1.6	1.1	1.8	2.8	4.3
		Trad	46488	1.9	3.1	0.0	1.0	1.10	2.2	1.3	1.0	1.4	1.6	1.7	N
Month of formaldehyde sample	May	All	111745	1.4	3.9	0.6	1.4	1.09	N	1.3	1.2	1.2	2.2	3.7	2.7
		Port	42578	1.1	3.7	1.5	1.5	1.07	N	1.2	0.7	2.2	2.5	4.8	6.1
		Trad	69167	2.0	5.1	0.2	1.7	1.13	N	1.5	1.4	1.2	2.8	4.8	4.3
Month of formaldehyde sample	June/July	All	47722	0.3	5.7	1.4	2.7	1.07	1.8	1.6	2.6	2.5	4.7	4.4	9.4
		Port	18637	0.7	5.0	2.6	3.2	1.09	3.0	2.2	2.2	2.5	4.2	9.5	N
		Trad	29085	0.0	8.2	1.2	3.0	1.09	1.9	1.9	3.1	2.2	6.5	6.8	4.0
Time of formaldehyde sample	Early_April	All	14554	1.8	1.8	0.0	1.4	1.12	N	1.1	0.8	1.3	2.9	3.2	3.7
		Port	4966	6.5	4.7	0.0	1.9	1.27	N	N	N	N	N	3.0	N
		Trad	9589	0.0	0.5	0.0	1.1	1.08	N	N	1.1	0.4	1.3	3.6	3.7
Time of formaldehyde sample	Late_April	All	56135	2.1	3.1	0.0	1.0	1.10	2.7	1.1	0.9	1.3	1.4	2.3	3.2
		Port	19235	2.9	4.7	0.0	1.3	1.14	N	3.0	1.4	1.3	1.5	3.2	N
		Trad	36899	2.4	3.8	0.0	1.1	1.12	2.8	1.6	1.4	1.6	1.4	1.7	N
Time of formaldehyde sample	Early_May	All	50538	1.2	6.3	0.9	2.1	1.10	2.6	1.3	1.7	2.3	4.4	4.7	4.3
		Port	18970	1.4	5.5	2.3	2.2	1.08	2.3	1.3	1.3	3.0	3.6	6.1	8.5
		Trad	31569	1.7	8.3	0.4	3.0	1.14	3.4	1.5	2.0	2.9	6.0	6.6	5.5
Time of formaldehyde sample	Late_May	All	61207	2.3	4.6	0.8	1.6	1.15	N	2.1	1.4	1.2	3.5	2.1	5.6
		Port	23608	1.7	4.9	2.1	2.1	1.11	N	2.6	1.1	2.8	2.7	5.7	7.2
		Trad	37599	3.4	5.2	0.0	1.6	1.21	N	N	1.8	1.6	2.6	4.7	N
Time of formaldehyde sample	June/July	All	47116	0.3	5.7	1.4	2.7	1.07	2.0	1.7	2.5	2.5	4.8	4.4	9.6
		Port	18421	0.7	5.1	2.6	3.2	1.09	3.1	2.2	2.2	2.6	4.2	9.7	N
		Trad	28695	0.0	8.2	1.2	3.0	1.09	2.1	2.1	2.9	2.5	6.5	6.8	3.9
<25% non-weekday in samp period	Yes	All	127884	1.0	3.7	0.5	1.1	1.07	1.7	1.1	1.0	1.0	1.7	3.1	5.9

Variable Description	Category	Room Type	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Std. Error	P05	P10	P25	P50	P75	P90	P95
		Port	45716	1.6	3.4	1.3	1.3	1.08	2.6	1.4	1.2	1.4	2.0	3.4	5.5
		Trad	82168	1.1	4.9	0.0	1.4	1.08	2.1	1.1	0.9	1.2	2.5	2.8	N
<25% non-weekday in samp period	No	All	101666	1.5	4.2	0.8	1.8	1.10	N	1.0	1.5	1.4	3.7	3.9	10.2
		Port	39484	1.0	4.0	1.5	2.0	1.08	2.3	1.5	0.9	2.4	2.5	5.0	11.6
		Trad	62182	2.2	5.4	0.6	2.2	1.14	N	1.3	1.2	2.0	5.0	6.1	7.4
General instruction classroom	Yes	All	188161	1.1	2.9	0.4	1.0	1.07	1.9	0.9	0.8	0.8	1.8	2.5	6.7
		Port	75614	1.1	2.9	0.9	1.2	1.06	2.1	1.2	0.8	1.3	1.8	2.7	5.1
		Trad	112546	1.5	3.8	0.2	1.2	1.09	N	1.0	0.7	1.1	2.2	3.5	4.3
General instruction classroom	No	All	39852	0.1	8.9	0.9	3.8	1.13	1.6	1.0	2.4	4.0	9.2	7.8	5.9
		Port	9080	0.5	8.3	4.1	5.0	1.11	1.1	1.7	2.7	3.8	6.7	N	N
		Trad	30773	0.0	10.8	0.1	4.2	1.16	N	0.8	2.3	4.4	6.5	9.0	8.8
Carpeted classroom	Full	All	111611	1.5	3.5	0.6	1.1	1.09	N	0.8	1.1	1.0	2.2	2.4	5.1
		Port	59952	1.1	3.2	1.1	1.3	1.06	2.2	1.1	1.0	1.2	2.0	2.7	5.6
		Trad	51659	2.8	6.0	0.1	1.5	1.17	N	2.6	1.4	1.2	3.7	3.6	4.2
Carpeted classroom	Partial	All	58271	2.1	4.3	0.5	1.4	1.10	2.4	1.2	1.1	1.7	2.5	2.7	5.4
		Port	18174	3.1	5.7	1.2	2.4	1.17	N	4.2	1.4	N	N	N	N
		Trad	40097	2.2	5.0	0.5	1.5	1.12	2.5	1.3	1.0	1.9	2.1	4.6	N
Carpeted classroom	None	All	60274	0.0	7.1	0.7	3.1	1.11	1.3	1.3	1.3	3.2	6.5	7.1	6.6
		Port	7290	0.0	11.1	4.8	7.0	1.16	N	N	N	N	7.3	N	N
		Trad	52984	0.0	7.6	0.2	3.0	1.12	1.4	1.4	1.0	2.8	5.8	7.6	N
Vinyl/linoleum floor	Yes	All	109034	1.1	4.3	0.5	1.9	1.08	1.5	1.1	0.7	1.7	3.7	4.9	7.4
		Port	26050	2.2	5.2	1.6	2.7	1.13	3.4	2.3	1.3	2.8	4.6	4.4	10.6
		Trad	82984	0.9	4.9	0.3	2.0	1.08	1.6	1.1	0.8	2.1	2.9	7.2	N
Vinyl/linoleum floor	No	All	121122	1.4	3.5	0.6	1.0	1.09	N	0.8	1.1	1.2	1.9	2.0	4.6
		Port	59366	1.2	3.2	1.1	1.3	1.06	2.2	1.0	1.0	1.2	1.8	2.7	5.6
		Trad	61756	2.4	5.9	0.1	1.4	1.15	N	1.0	1.5	1.2	3.2	2.2	3.4
Vinyl tackable wallboard	Yes	All	109990	1.1	3.8	0.7	1.5	1.08	2.1	1.3	1.4	1.5	2.9	3.5	4.2
		Port	66725	1.3	3.0	1.0	1.4	1.07	2.3	1.2	1.0	1.6	2.2	3.3	8.1

Variable Description	Category	Room Type	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Std. Error	P05	P10	P25	P50	P75	P90	P95
		Trad	43265	1.9	7.8	0.5	3.0	1.15	N	1.7	2.1	1.9	6.8	7.0	4.8
Vinyl tackable wallboard	No	All	116536	1.3	3.7	0.4	1.2	1.08	2.4	0.8	0.8	1.1	1.9	2.9	7.2
		Port	17315	1.2	5.5	2.6	2.2	1.10	2.9	0.9	1.2	2.7	3.5	4.7	7.5
		Trad	99221	1.5	4.2	0.1	1.2	1.09	2.7	0.8	0.8	1.1	2.1	3.1	4.0
Open windows	Never	All	59295	1.7	5.8	0.5	2.1	1.11	2.8	0.9	1.3	1.8	3.5	8.7	11.8
		Port	10196	2.6	6.1	2.1	2.7	1.16	N	3.1	1.7	2.7	3.6	5.2	N
		Trad	49100	1.9	6.9	0.2	2.4	1.13	N	0.9	1.3	2.1	4.2	N	N
Open windows	Infrequent	All	102420	1.7	4.1	0.7	1.7	1.11	N	1.4	1.3	1.5	2.6	4.8	10.4
		Port	47645	1.6	3.6	1.2	1.8	1.09	2.7	1.7	1.3	1.8	2.4	2.8	10.5
		Trad	54775	2.5	6.1	0.4	2.3	1.17	N	1.9	2.1	2.1	3.8	6.8	N
Open windows	Frequent	All	61938	0.6	4.8	0.8	1.5	1.07	2.2	1.2	1.4	1.6	2.4	4.1	6.1
		Port	26269	1.0	4.6	1.9	1.8	1.08	2.3	1.3	1.2	2.0	2.4	5.1	6.6
		Trad	35669	0.7	7.3	0.1	1.8	1.10	1.2	1.3	1.4	1.9	3.7	3.8	5.5
Open door to outside	Infreq	All	105524	1.0	3.8	0.7	1.3	1.07	1.5	1.0	1.4	1.3	2.0	3.2	6.6
		Port	45164	1.3	3.4	1.6	1.8	1.06	2.2	1.1	1.1	1.4	2.6	4.7	9.2
		Trad	60360	1.4	5.7	0.2	1.5	1.10	2.1	0.9	1.5	2.4	2.9	3.5	2.8
Open door to outside	Freq	All	87860	0.9	4.4	0.5	1.5	1.06	1.8	0.9	1.2	1.5	2.2	5.7	6.8
		Port	36926	1.8	4.0	0.9	1.5	1.10	N	1.5	1.0	2.1	2.5	3.2	6.0
		Trad	50934	0.9	6.6	0.4	2.2	1.07	1.4	1.0	1.2	1.6	3.4	7.5	N
Open door to outside	NA	All	29830	4.7	8.1	0.1	3.9	1.32	N	N	1.6	2.1	7.0	9.9	9.6
		Port	66	0.0	0.0	28.7	22.7	1.41	N	N	N	N	N	N	N
		Trad	29764	4.7	8.1	0.1	3.9	1.32	N	N	1.6	2.0	6.8	9.9	9.7
Pressed wood furniture	Yes	All	203508	1.0	3.0	0.4	1.1	1.06	1.6	0.8	0.7	0.9	1.7	3.4	8.8
		Port	77934	1.1	2.8	0.8	1.3	1.06	2.1	1.1	0.8	1.2	1.9	2.9	6.2
		Trad	125574	1.3	4.0	0.2	1.3	1.08	2.1	1.0	0.6	1.1	2.1	4.9	6.9
Pressed wood furniture	No	All	26648	2.5	9.0	2.1	3.8	1.20	N	2.4	3.0	5.8	6.9	6.3	7.5
		Port	7482	0.9	8.3	6.8	4.5	1.12	3.7	2.6	2.9	5.9	9.9	9.8	N
		Trad	19165	3.4	11.2	0.0	4.4	1.27	N	N	2.5	5.2	6.4	N	N

Variable Description	Category	Room Type	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Std. Error	P05	P10	P25	P50	P75	P90	P95
Pressed wood table/desks	Yes	All	180549	1.1	3.2	0.4	1.1	1.07	N	0.9	0.7	0.9	1.7	3.8	9.2
		Port	71065	1.2	3.0	0.8	1.3	1.07	2.2	1.3	0.8	1.2	2.0	3.0	6.7
		Trad	109484	1.4	4.4	0.2	1.5	1.09	2.3	1.1	0.7	1.2	2.0	5.6	5.5
Pressed wood table/desks	No	All	49607	1.4	6.0	1.2	2.3	1.11	2.8	0.7	2.1	2.4	4.0	5.7	4.9
		Port	14351	1.1	5.8	3.9	2.9	1.10	3.0	1.1	2.0	3.7	3.7	9.3	8.6
		Trad	35256	1.9	7.7	0.3	2.7	1.15	N	0.9	2.2	3.2	4.4	N	N
Pressed wood bookcases	Yes	All	123865	1.2	3.6	0.5	1.2	1.08	2.3	0.9	1.0	1.1	2.0	3.7	8.4
		Port	49635	0.9	3.4	0.9	1.3	1.06	2.3	0.8	0.9	1.7	2.0	3.1	5.1
		Trad	74231	1.9	5.1	0.3	1.7	1.12	N	1.3	0.9	1.7	2.1	5.8	N
Pressed wood bookcases	No	All	106291	1.2	4.4	0.7	1.8	1.09	2.3	0.9	1.1	1.3	3.2	5.9	7.9
		Port	35781	2.2	4.6	1.9	2.3	1.11	3.0	2.2	1.2	2.2	3.7	6.4	11.1
		Trad	70509	1.4	5.6	0.2	2.0	1.11	N	1.1	1.2	1.5	4.2	5.8	N
Pressed wood cabinets	Yes	All	103903	1.6	4.2	0.4	1.5	1.10	2.4	1.3	1.1	1.5	2.2	4.6	9.4
		Port	41483	1.5	3.8	0.9	1.5	1.08	2.6	1.0	1.1	1.8	2.1	3.2	6.0
		Trad	62419	2.3	6.0	0.2	2.2	1.15	N	1.6	1.3	1.8	3.9	N	N
Pressed wood cabinets	No	All	126253	0.9	3.8	0.6	1.5	1.07	1.9	0.7	1.1	1.2	2.0	4.8	8.8
		Port	43933	1.4	3.9	1.6	1.9	1.08	2.7	1.2	1.1	1.4	3.3	3.3	9.0
		Trad	82321	1.1	4.9	0.3	1.6	1.09	2.3	0.8	1.2	1.6	2.5	4.9	N
New furnishings this school yr	Yes	All	49215	1.2	5.5	1.0	1.9	1.09	N	0.7	1.7	2.3	2.7	4.2	5.8
		Port	21446	1.2	5.2	2.2	2.1	1.09	2.6	1.1	1.6	2.5	3.4	4.4	5.7
		Trad	27769	2.0	6.9	0.0	2.0	1.12	1.9	0.8	1.5	2.5	3.3	5.2	N
New furnishings this school yr	No	All	169405	1.1	3.5	0.5	1.3	1.07	2.1	1.0	1.0	1.1	2.5	4.6	7.1
		Port	59010	1.4	3.1	1.1	1.5	1.08	2.6	1.6	0.9	1.2	2.3	3.2	6.9
		Trad	110394	1.5	4.5	0.2	1.6	1.10	N	1.2	0.7	1.5	2.6	5.8	6.1
New furnishings this school yr	DK	All	8564	0.0	8.8	1.1	2.9	1.14	1.7	1.7	2.1	3.7	4.5	6.4	6.2
		Port	3579	0.0	12.8	2.5	3.3	1.11	N	3.0	2.7	4.0	4.9	5.1	N
		Trad	4985	0.0	11.9	0.0	2.6	1.16	N	N	N	2.1	N	N	N
Type appliances in room	Stove/burnr	All	13483	3.2	14.6	2.6	8.8	1.36	N	4.4	6.5	13.0	11.2	8.2	N

Variable Description	Category	Room Type	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Std. Error	P05	P10	P25	P50	P75	P90	P95
		Port	4829	3.9	10.6	8.1	9.9	1.29	N	N	4.8	4.6	8.2	N	N
		Trad	8654	2.9	21.8	0.0	11.2	1.49	N	4.3	7.1	12.1	N	N	N
Type appliances in room	Other	All	65172	1.1	4.6	0.7	1.6	1.07	2.3	1.3	1.2	1.5	3.0	5.6	8.0
		Port	28596	2.4	4.9	1.0	1.5	1.12	3.0	2.3	1.3	1.7	2.2	3.7	5.5
		Trad	36576	0.0	6.9	0.6	2.6	1.09	N	N	1.3	1.9	5.0	6.9	6.3
Type appliances in room	None	All	125947	1.4	3.7	0.5	1.2	1.09	N	1.0	1.3	1.2	1.6	2.3	5.5
		Port	45014	1.0	3.4	1.4	1.5	1.06	2.0	1.0	0.9	1.4	2.5	4.7	6.6
		Trad	80933	2.1	4.7	0.2	1.2	1.12	N	1.2	1.1	1.9	2.1	3.0	3.8
Chemical present in room	Yes	All	111686	1.1	4.1	0.6	1.6	1.07	1.9	1.2	1.3	1.4	2.5	5.3	9.5
		Port	39052	1.7	4.0	1.5	1.9	1.09	N	1.9	1.0	1.8	2.9	4.2	8.5
		Trad	72634	1.0	5.3	0.3	2.0	1.09	2.3	1.2	1.3	1.4	3.4	6.5	N
Chemical present in room	No	All	118470	1.4	3.6	0.5	1.2	1.09	N	0.9	0.8	1.0	2.3	2.9	6.8
		Port	46364	1.3	3.6	1.2	1.4	1.08	2.8	1.2	1.1	1.3	2.8	2.7	5.4
		Trad	72106	2.1	5.4	0.2	1.7	1.13	N	1.4	0.9	2.1	2.8	5.3	N
Oil/acrylic paints used	Yes	All	28768	2.2	5.5	1.5	1.8	1.13	N	2.0	1.7	1.1	4.4	5.8	8.8
		Port	10240	5.1	7.1	3.9	3.5	1.30	N	5.0	2.1	3.6	6.0	9.7	N
		Trad	18528	1.8	6.7	0.0	1.8	1.13	N	1.7	1.8	1.9	1.5	4.4	4.3
Oil/acrylic paints used	No	All	201387	0.9	3.2	0.4	1.2	1.07	1.6	0.7	0.9	1.1	2.0	3.7	9.3
		Port	75176	0.9	2.9	0.9	1.3	1.06	1.8	1.0	0.9	1.4	2.0	2.8	7.4
		Trad	126212	1.3	4.2	0.2	1.5	1.09	2.3	0.9	0.8	1.6	2.4	4.8	6.0
Permanent marker/pen used	Yes	All	177758	0.8	3.1	0.4	1.0	1.05	1.5	0.6	0.8	1.1	2.0	3.0	7.8
		Port	67984	1.1	3.0	0.8	1.2	1.06	1.9	1.1	0.7	1.4	2.0	2.5	4.7
		Trad	109774	0.9	4.2	0.2	1.3	1.07	1.7	0.6	0.8	1.2	2.4	3.6	6.6
Permanent marker/pen used	No	All	52398	2.9	6.7	1.0	3.1	1.20	N	3.0	2.5	2.7	5.3	7.1	4.3
		Port	17432	3.0	6.8	3.1	3.7	1.17	N	3.8	2.0	2.8	5.2	9.7	N
		Trad	34966	3.8	8.7	0.0	3.4	1.27	N	N	2.4	3.8	6.5	N	N
Whiteboard marker used	Yes	All	188179	1.1	3.2	0.5	1.2	1.07	1.9	0.7	1.0	1.1	2.1	3.7	7.5
		Port	71394	1.2	3.1	1.1	1.4	1.06	2.1	1.1	0.8	1.6	2.2	3.6	6.0

Variable Description	Category	Room Type	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Std. Error	P05	P10	P25	P50	P75	P90	P95
		Trad	116785	1.5	4.2	0.2	1.5	1.09	N	1.0	1.0	1.4	2.2	5.8	4.1
Whiteboard marker used	No	All	41977	0.6	6.7	0.1	1.6	1.09	2.2	1.7	1.3	2.5	3.1	2.2	5.8
		Port	14022	1.9	7.3	0.3	1.5	1.13	N	1.4	1.8	2.5	2.4	3.1	3.9
		Trad	27955	0.0	8.6	0.1	2.2	1.12	N	1.8	1.8	2.2	3.8	3.8	N
Glues/fluids used	Yes	All	152451	0.6	3.5	0.4	1.2	1.05	1.2	1.0	1.2	1.2	2.1	3.3	9.0
		Port	57549	1.1	3.3	0.9	1.3	1.06	1.9	1.2	1.0	1.4	2.6	2.6	5.2
		Trad	94902	0.7	4.8	0.3	1.5	1.07	1.4	0.9	1.2	N	N	N	N
Glues/fluids used	No	All	77705	2.2	4.9	0.8	2.2	1.14	N	2.8	1.0	1.8	3.4	5.5	8.7
		Port	27867	1.7	4.4	2.2	2.4	1.11	N	1.8	1.1	1.9	2.6	6.7	11.4
		Trad	49838	3.1	6.3	0.1	2.4	1.20	N	N	N	N	4.1	7.4	N
Correction fluid used	Yes	All	140218	0.7	3.6	0.5	1.2	1.06	1.2	1.0	1.1	1.3	2.2	3.6	8.8
		Port	52388	1.2	3.5	0.9	1.3	1.06	2.0	1.2	1.1	1.7	2.6	2.5	4.8
		Trad	87829	0.7	5.0	0.3	1.6	1.07	1.6	0.9	1.0	1.7	2.8	3.7	4.7
Correction fluid used	No	All	89938	1.9	4.5	0.7	1.9	1.12	N	1.6	1.1	1.4	3.4	4.6	8.1
		Port	33027	1.6	4.1	1.9	2.2	1.10	N	1.4	1.1	1.9	2.6	6.3	10.6
		Trad	56911	2.7	5.8	0.0	2.2	1.17	N	3.1	1.1	1.8	4.6	6.8	N
Epoxy/rubber cement used	Yes	All	29778	1.0	6.3	1.2	1.9	1.07	2.0	0.9	1.3	1.5	3.8	3.6	7.0
		Port	12924	2.2	6.3	2.7	2.9	1.13	3.3	1.4	2.0	2.3	5.0	5.5	N
		Trad	16854	0.0	9.6	0.2	2.3	1.09	1.2	1.5	1.5	1.7	4.7	5.3	4.6
Epoxy/rubber cement used	No	All	200378	1.0	3.1	0.4	1.2	1.07	1.8	0.8	0.9	1.1	2.1	4.0	8.9
		Port	72492	1.2	3.0	1.0	1.3	1.06	2.2	1.2	0.8	1.5	1.8	2.8	6.5
		Trad	127886	1.3	4.1	0.2	1.4	1.09	2.3	0.9	0.7	1.3	2.2	5.1	4.9
Air freshener used	Yes	All	74849	1.3	4.8	0.7	1.3	1.07	1.8	1.1	1.5	1.5	2.3	2.7	5.2
		Port	33106	2.0	4.3	1.1	1.5	1.10	N	2.5	1.4	1.9	2.0	3.0	6.2
		Trad	41743	1.3	7.4	0.5	1.7	1.07	1.7	0.9	1.6	2.3	3.1	4.9	N
Air freshener used	No	All	155307	1.1	3.4	0.5	1.4	1.08	2.2	0.9	0.9	1.0	2.4	4.9	8.4
		Port	52310	0.9	3.5	1.4	1.7	1.06	1.8	0.7	0.9	1.6	2.8	3.4	9.5
		Trad	102997	1.6	4.3	0.1	1.7	1.11	N	1.0	0.8	1.4	2.6	6.1	5.4

Variable Description	Category	Room Type	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Std. Error	P05	P10	P25	P50	P75	P90	P95
Air freshener used - plug-in	Yes	All	36508	2.2	6.0	0.7	1.7	1.10	2.6	1.6	1.7	1.9	2.7	3.3	5.4
		Port	17274	2.7	5.4	1.4	2.1	1.16	N	N	N	2.1	2.9	3.5	8.9
		Trad	19234	2.7	9.6	0.0	2.1	1.10	2.3	1.9	2.0	3.5	3.7	N	N
Air freshener used - plug-in	No	All	193648	0.9	3.2	0.5	1.2	1.07	1.9	0.8	0.9	1.0	2.2	4.1	6.7
		Port	68142	1.0	3.0	1.1	1.4	1.05	1.7	0.8	0.7	1.6	2.2	3.1	8.0
		Trad	125506	1.3	4.1	0.2	1.5	1.09	2.5	0.9	0.7	1.3	2.6	5.0	6.9
Air freshener used - spray	Yes	All	45884	1.4	6.3	1.0	1.8	1.09	2.3	1.1	2.0	2.1	2.4	3.7	7.5
		Port	19393	2.7	6.0	1.6	2.1	1.14	N	3.2	1.9	2.5	2.9	3.7	7.4
		Trad	26492	1.1	9.9	0.8	2.4	1.10	1.0	1.2	2.3	3.4	3.7	N	N
Air freshener used - spray	No	All	184271	1.0	3.1	0.4	1.2	1.07	1.9	0.8	0.9	1.0	2.0	4.2	6.9
		Port	66023	1.1	3.2	1.1	1.4	1.06	2.1	0.7	0.7	1.3	2.2	3.0	8.3
		Trad	118248	1.4	4.0	0.1	1.5	1.09	N	1.0	0.8	1.2	2.2	5.1	4.8
New furnishings odor	Never	All	203163	1.0	3.1	0.4	1.2	1.06	1.9	0.7	0.9	0.9	2.0	3.9	8.3
		Port	68750	1.1	3.1	1.1	1.3	1.06	2.2	1.0	0.9	1.3	2.2	2.3	5.9
		Trad	134412	1.2	4.0	0.2	1.4	1.08	2.3	0.8	0.7	1.2	2.4	4.7	4.6
New furnishings odor	Sometimes	All	19471	2.6	6.5	1.5	2.3	1.10	3.2	2.4	1.6	2.3	4.0	4.3	10.1
		Port	10683	1.1	8.5	2.7	3.6	1.09	1.3	1.7	2.7	4.0	4.6	10.3	N
		Trad	8788	5.5	8.4	0.3	2.4	1.20	N	3.6	3.0	2.4	3.4	6.0	5.8
New furnishings odor	Often	All	2488	0.0	10.9	0.0	4.4	1.11	N	4.0	3.2	6.1	N	N	N
		Port	2132	0.0	12.2	0.0	5.1	1.13	N	4.3	2.6	9.3	N	N	N
		Trad	356	0.0	0.0	0.0	0.0	1.00	N	N	N	N	N	N	N
Construction activity this yr	Current	All	55860	0.8	6.6	0.6	2.7	1.10	2.0	0.8	2.4	2.8	5.2	6.3	8.0
		Port	20271	0.9	5.3	1.5	2.3	1.07	2.0	1.7	1.6	2.3	3.2	4.7	7.5
		Trad	35589	1.2	9.2	0.1	3.8	1.15	N	1.0	2.5	4.2	7.5	N	N
Construction activity this yr	Previous	All	107657	1.7	4.1	0.8	1.6	1.11	N	1.4	1.1	1.3	2.4	4.6	9.3
		Port	42790	1.5	3.9	1.7	1.9	1.08	2.8	1.0	1.0	1.5	2.3	4.9	8.8
		Trad	64867	2.5	5.7	0.4	1.8	1.16	N	2.3	1.7	1.9	2.9	4.4	N
Construction activity this yr	Never	All	58874	0.6	4.6	0.2	1.3	1.06	1.8	1.2	0.8	1.4	2.4	4.0	5.0

Variable Description	Category	Room Type	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Std. Error	P05	P10	P25	P50	P75	P90	P95
		Port	19464	1.9	5.8	0.7	1.8	1.10	3.0	1.8	1.5	2.7	4.1	2.6	5.9
		Trad	39410	0.0	5.7	0.0	1.4	1.07	N	1.3	0.7	1.8	2.3	4.8	N
Construction activity this yr	Unknown	All	3686	5.0	10.1	0.0	2.4	1.34	N	N	2.9	2.4	3.8	N	N
		Port	1638	10.3	14.8	0.0	4.2	1.80	N	N	N	5.0	3.7	N	N
		Trad	2048	0.0	0.0	0.0	2.8	1.13	N	N	N	N	N	N	N
Carpentry activity this yr	Yes	All	76690	1.0	5.6	0.6	2.5	1.10	1.8	1.1	1.6	2.3	4.1	5.4	9.6
		Port	26825	1.0	4.8	1.7	2.6	1.08	1.8	0.8	1.4	2.5	3.1	3.9	N
		Trad	49866	1.4	7.8	0.2	3.2	1.14	2.6	0.9	1.7	3.9	6.5	6.7	N
Carpentry activity this yr	No	All	153465	1.2	3.1	0.5	0.9	1.07	2.1	1.0	0.9	0.9	1.5	2.3	4.8
		Port	58591	1.4	3.3	1.1	1.3	1.08	2.7	1.7	0.9	1.5	2.1	3.4	5.3
		Trad	94874	1.6	4.0	0.2	1.0	1.10	N	1.2	0.7	1.2	1.5	4.0	4.0
In-room construction this yr	Yes	All	34581	1.4	7.4	0.2	3.4	1.13	2.2	1.3	1.6	3.5	8.4	6.1	4.3
		Port	10769	2.4	6.6	0.5	1.8	1.14	N	2.3	1.5	3.0	2.8	3.2	3.4
		Trad	23813	1.7	10.4	0.0	4.8	1.19	N	N	N	N	9.1	N	N
In-room construction this yr	No	All	195135	1.0	3.0	0.5	1.1	1.07	1.8	0.9	0.9	0.9	1.7	2.7	7.9
		Port	74240	1.1	2.9	1.1	1.4	1.06	2.0	0.9	0.7	1.4	2.2	3.1	7.5
		Trad	120896	1.4	4.0	0.2	1.1	1.09	N	1.0	0.8	1.1	1.9	3.0	5.8
Other school construction this yr	Yes	All	157936	1.2	3.7	0.6	1.5	1.08	2.2	0.9	1.3	1.3	2.1	4.6	8.3
		Port	61681	1.0	3.3	1.3	1.6	1.06	2.1	1.2	0.9	1.5	2.1	3.8	6.2
		Trad	96255	1.8	5.1	0.3	1.8	1.12	N	1.1	1.2	1.9	3.0	5.9	6.2
Other school construction this yr	No	All	72220	0.7	4.0	0.2	1.1	1.06	1.8	1.1	0.8	1.2	1.8	4.2	5.8
		Port	23734	2.0	5.2	0.7	1.6	1.11	N	2.3	1.3	2.7	3.7	2.4	6.4
		Trad	48485	0.0	4.9	0.0	1.2	1.06	N	1.1	0.8	1.4	2.1	2.9	N
# teacher complaints in school yr	0	All	91495	1.8	4.2	0.5	1.3	1.11	N	1.0	1.2	1.4	2.5	3.8	6.6
		Port	33620	1.6	4.1	1.4	1.6	1.10	N	1.4	1.0	1.5	3.1	4.1	6.6
		Trad	57876	2.5	5.7	0.0	1.7	1.16	N	1.5	1.4	1.9	2.7	4.2	N
# teacher complaints in school yr	1-5	All	115248	1.0	4.1	0.6	1.5	1.07	1.4	1.2	0.9	1.2	2.8	4.4	9.7
		Port	43361	1.4	3.8	1.4	1.8	1.08	2.2	1.2	1.2	1.8	2.1	3.2	9.2

Variable Description	Category	Room Type	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Std. Error	P05	P10	P25	P50	P75	P90	P95
		Trad	71887	1.3	5.6	0.2	1.9	1.09	1.9	1.2	1.0	1.4	3.9	6.3	N
# teacher complaints in school yr	>5	All	19744	0.3	10.1	1.1	4.6	1.17	2.3	1.8	2.0	4.6	11.2	8.7	8.1
		Port	7289	0.9	11.1	0.4	2.6	1.11	3.3	2.6	1.9	3.7	3.9	6.5	5.7
		Trad	12454	0.0	14.2	1.8	7.0	1.26	N	N	0.6	4.4	10.1	12.7	N
Overall air quality (teacher)	Excellent	All	36264	1.4	5.8	1.0	1.8	1.10	2.4	1.2	2.0	1.8	3.6	2.7	6.4
		Port	14035	1.3	5.9	2.5	2.4	1.10	N	2.0	0.9	3.2	3.8	5.8	N
		Trad	22229	1.7	8.0	0.0	2.0	1.11	2.3	0.9	1.9	2.9	3.5	4.5	N
Overall air quality (teacher)	Good	All	85306	2.0	4.1	0.8	1.3	1.12	N	1.9	0.8	1.5	1.7	3.2	5.6
		Port	28049	1.9	4.9	2.0	2.0	1.10	3.0	1.7	1.3	2.1	4.1	5.3	7.5
		Trad	57257	2.8	5.1	0.4	1.4	1.17	N	N	1.1	1.7	2.1	3.1	4.3
Overall air quality (teacher)	Adequate	All	75748	0.8	5.8	0.6	2.4	1.08	1.8	1.1	1.8	2.7	4.1	5.5	7.5
		Port	29544	1.3	4.8	1.4	2.2	1.09	3.1	1.5	1.2	2.0	2.6	4.6	10.4
		Trad	46204	0.9	8.1	0.1	3.1	1.11	1.6	1.1	2.2	3.5	6.6	7.2	N
Overall air quality (teacher)	Poor	All	26212	1.7	6.9	0.9	2.3	1.11	3.0	2.3	2.8	2.1	4.3	3.9	4.3
		Port	10797	4.0	6.9	2.1	3.0	1.18	3.8	4.3	2.1	2.8	2.9	4.6	N
		Trad	15415	0.0	9.8	0.0	2.8	1.14	N	N	2.9	1.9	5.2	N	N
Overall air quality (teacher)	Very_poor	All	4550	0.0	15.4	0.0	6.1	1.28	N	3.1	3.4	6.3	9.7	7.9	N
		Port	1910	0.0	14.7	0.0	3.6	1.17	N	N	3.8	4.5	5.5	N	N
		Trad	2640	0.0	20.9	0.0	9.5	1.46	N	N	N	N	N	N	N
Nose symptoms past 2 weeks	None	All	101233	0.5	4.1	0.7	1.6	1.06	1.7	1.0	0.8	1.4	2.6	4.9	9.0
		Port	35064	1.5	4.3	2.0	2.2	1.09	N	1.6	1.2	2.0	3.3	6.8	9.4
		Trad	66169	0.0	5.5	0.0	1.6	1.07	0.9	1.1	0.9	1.6	N	N	N
Nose symptoms past 2 weeks	Occasional	All	76978	2.3	4.8	0.5	1.6	1.14	N	2.8	1.7	1.7	2.2	4.5	9.9
		Port	26192	2.3	4.3	1.4	1.7	1.10	3.0	2.8	1.3	2.1	2.5	3.8	7.2
		Trad	50786	3.3	6.4	0.2	2.1	1.20	N	N	N	N	N	5.2	N
Nose symptoms past 2 weeks	Frequent	All	48946	0.4	5.8	0.5	2.3	1.08	1.8	1.4	1.3	2.1	4.5	4.3	3.1
		Port	21696	0.8	5.6	0.7	1.7	1.07	2.7	1.6	1.2	2.3	2.8	3.9	5.6
		Trad	27250	0.0	9.1	0.8	3.8	1.13	N	2.3	1.9	2.3	9.2	6.2	4.9

Variable Description	Category	Room Type	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Std. Error	P05	P10	P25	P50	P75	P90	P95
Nose symptoms at home	Same/worse	All	69745	2.4	4.8	0.3	1.5	1.14	N	2.6	1.5	1.5	2.8	3.9	7.4
		Port	23742	1.5	4.6	0.9	1.4	1.08	2.2	1.6	1.3	2.0	2.5	3.0	5.7
		Trad	46004	3.5	6.4	0.1	2.1	1.21	N	N	N	N	4.1	N	N
Nose symptoms at home	Improves	All	43426	1.0	6.8	0.9	3.0	1.13	2.5	1.6	2.1	2.7	5.6	5.8	4.1
		Port	20137	2.4	5.4	1.2	2.2	1.12	3.7	2.9	1.2	2.5	2.9	4.7	9.7
		Trad	23289	0.0	10.7	1.1	4.9	1.18	N	N	2.1	5.2	10.1	8.0	7.0
Nose symptoms at home	NA	All	101233	0.5	4.1	0.7	1.6	1.06	1.7	1.0	0.8	1.4	2.6	4.9	9.0
		Port	35064	1.5	4.3	2.0	2.2	1.09	N	1.6	1.2	2.0	3.3	6.8	9.4
		Trad	66169	0.0	5.5	0.0	1.6	1.07	0.9	1.1	0.9	1.7	3.5	3.4	N
Throat symptoms past 2 weeks	None	All	125701	0.6	3.7	0.6	1.5	1.06	1.3	1.0	0.6	1.0	2.7	5.2	9.0
		Port	44338	1.2	3.9	1.7	1.9	1.08	2.8	0.8	1.0	2.1	2.4	5.3	11.5
		Trad	81363	0.5	4.6	0.1	1.6	1.06	1.5	0.9	0.7	1.5	3.1	4.4	N
Throat symptoms past 2 weeks	Occasional	All	68293	1.6	5.5	0.7	2.1	1.11	2.4	1.9	1.9	2.2	3.3	5.6	3.7
		Port	25125	2.3	5.4	1.1	1.7	1.12	3.4	3.2	1.5	2.0	2.7	4.0	7.1
		Trad	43167	2.2	7.4	0.6	2.8	1.15	N	1.9	2.0	2.8	4.8	7.5	5.9
Throat symptoms past 2 weeks	Frequent	All	26844	2.2	5.6	0.5	1.7	1.14	N	1.3	1.8	1.4	4.0	3.1	2.4
		Port	13276	1.4	6.6	1.1	1.9	1.10	2.9	1.9	1.7	2.4	2.8	3.2	3.5
		Trad	13568	4.1	8.9	0.0	2.8	1.27	N	N	2.3	1.8	6.1	N	N
Throat symptoms at home	Same/worse	All	40813	2.5	5.8	0.4	1.5	1.15	N	1.9	2.1	1.7	2.4	3.4	4.1
		Port	15009	0.5	5.9	1.0	1.6	1.06	2.9	2.3	1.6	1.7	2.5	4.8	5.6
		Trad	25804	3.9	8.2	0.0	2.1	1.23	N	N	N	N	2.9	5.0	N
Throat symptoms at home	Improves	All	42734	1.2	6.7	1.1	2.9	1.13	2.1	2.0	2.3	2.7	5.4	5.7	3.9
		Port	19333	3.0	6.0	1.3	1.9	1.15	N	3.5	2.1	2.7	2.9	3.1	7.5
		Trad	23401	0.0	10.8	1.1	4.8	1.18	N	N	2.8	4.0	8.9	8.0	6.9
Throat symptoms at home	NA	All	125701	0.6	3.7	0.6	1.5	1.06	1.3	1.0	0.6	1.0	2.7	5.2	9.0
		Port	44338	1.2	3.9	1.7	1.9	1.08	2.8	0.8	1.0	2.1	2.4	5.3	11.5
		Trad	81363	0.5	4.6	0.1	1.6	1.06	1.5	0.9	0.7	1.5	3.1	4.4	N
Eyes symptoms past 2 weeks	None	All	129615	1.0	3.6	0.6	1.3	1.07	1.9	0.8	0.7	1.2	2.2	3.3	8.4

Variable Description	Category	Room Type	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Std. Error	P05	P10	P25	P50	P75	P90	P95
		Port	47001	1.5	3.8	1.5	1.7	1.09	2.9	1.1	1.3	1.7	2.5	5.2	8.4
		Trad	82614	1.2	5.0	0.1	1.4	1.08	2.0	0.9	0.7	1.8	2.9	3.1	4.5
Eyes symptoms past 2 weeks	Occasional	All	62270	0.7	6.0	0.8	2.3	1.09	1.9	2.0	1.9	2.4	5.3	4.3	7.2
		Port	20476	0.7	5.4	1.3	1.7	1.05	2.1	1.3	1.0	3.1	2.6	3.0	3.7
		Trad	41793	1.0	7.8	0.6	3.3	1.13	2.6	1.9	1.7	3.0	7.0	N	N
Eyes symptoms past 2 weeks	Frequent	All	30342	1.7	6.6	0.5	1.7	1.09	2.3	1.2	1.8	1.1	2.9	4.7	7.2
		Port	13734	3.6	7.0	1.1	2.1	1.15	3.1	3.8	2.3	2.4	3.9	5.8	7.9
		Trad	16609	0.0	8.8	0.0	2.4	1.10	N	N	2.2	1.4	3.2	8.0	N
Eyes symptoms at home	Same/worse	All	49361	0.9	6.1	0.6	2.1	1.09	2.5	1.8	2.0	1.8	3.9	7.3	8.0
		Port	13068	1.8	5.6	1.2	1.9	1.07	N	2.1	1.5	3.0	3.2	3.2	3.5
		Trad	36293	0.9	7.2	0.7	2.6	1.11	2.9	2.3	1.9	2.2	4.0	7.5	8.2
Eyes symptoms at home	Improves	All	34000	1.3	7.2	0.8	2.9	1.11	2.7	2.5	1.9	3.3	6.3	4.2	3.0
		Port	16471	2.7	6.3	1.6	2.1	1.12	3.0	2.7	1.4	2.6	3.3	4.4	8.0
		Trad	17529	0.0	11.9	0.0	5.2	1.18	N	N	3.1	7.1	N	N	N
Eyes symptoms at home	NA	All	129615	1.0	3.6	0.6	1.3	1.07	1.9	0.8	0.7	1.2	2.2	3.3	8.4
		Port	47001	1.5	3.8	1.5	1.7	1.09	2.9	1.1	1.3	1.7	2.5	5.2	8.4
		Trad	82614	1.2	5.0	0.1	1.4	1.08	2.0	0.9	0.7	1.8	2.9	3.1	4.5
Classroom age (yrs)	<=10yr	All	44801	1.8	4.8	1.0	1.7	1.10	3.3	1.1	1.9	2.2	3.3	3.3	5.4
		Port	32673	2.1	4.3	1.4	1.8	1.12	N	2.7	0.9	1.8	3.5	3.7	5.3
		Trad	12128	2.0	7.2	0.2	1.9	1.14	N	1.5	1.3	2.0	3.3	4.7	5.5
Classroom age (yrs)	11-20yr	All	27029	2.4	7.2	2.3	3.8	1.13	2.9	2.8	2.2	3.1	7.1	4.6	N
		Port	19747	2.2	5.9	3.1	3.3	1.13	3.0	2.7	1.9	2.7	3.3	N	N
		Trad	7282	6.6	20.5	0.0	10.0	1.36	N	N	N	N	N	N	N
Classroom age (yrs)	21-30yr	All	24429	2.7	3.3	0.9	1.9	1.16	N	1.9	1.0	1.5	1.2	5.0	10.5
		Port	5389	2.7	8.3	4.0	6.4	1.21	N	3.3	1.5	1.4	5.3	N	N
		Trad	19040	3.3	3.1	0.0	1.4	1.20	N	3.6	1.3	1.6	1.4	2.9	5.3
Classroom age (yrs)	31-40yr	All	18353	2.4	11.4	0.0	2.8	1.19	N	3.7	2.5	4.7	3.8	3.6	N
		Port	3019	0.0	12.3	0.0	5.2	1.17	N	N	2.2	2.3	N	N	N

Variable Description	Category	Room Type	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Std. Error	P05	P10	P25	P50	P75	P90	P95
		Trad	15334	2.8	13.0	0.0	3.2	1.23	N	4.2	3.4	4.9	4.1	N	N
Classroom age (yrs)	41+yr	All	39339	3.2	7.6	0.3	3.1	1.22	N	3.1	1.7	2.8	5.7	8.0	5.9
		Port	343	0.0	26.3	0.0	11.3	1.32	N	N	N	N	N	N	N
		Trad	38996	3.2	7.6	0.3	3.1	1.22	N	3.1	1.7	2.7	6.2	N	N
Classroom age (yrs)	0-3yr	All	18008	2.5	7.6	1.9	3.1	1.17	N	2.2	2.8	3.2	4.8	6.5	6.4
		Port	14176	1.7	6.1	2.3	2.6	1.11	4.4	2.0	1.9	2.0	6.1	4.9	6.1
		Trad	3833	6.8	0.0	0.0	1.6	1.39	N	N	N	N	N	N	N
Classroom age (yrs)	4-5yr	All	12024	1.6	6.8	2.4	2.7	1.08	N	2.7	2.8	2.4	3.2	4.2	N
		Port	10438	1.9	6.7	2.8	3.0	1.09	N	2.6	1.8	N	N	N	N
		Trad	1586	0.0	12.5	0.0	5.3	1.26	N	N	N	N	N	N	N
Classroom age (yrs)	6-10yr	All	14768	4.3	6.0	0.7	2.1	1.22	N	4.2	1.7	1.4	3.1	7.8	6.9
		Port	8059	7.3	8.4	1.2	3.5	1.44	N	N	N	N	N	6.0	N
		Trad	6709	0.0	4.0	0.4	1.2	1.07	N	N	1.9	1.6	1.7	N	N
Classroom age (yrs)	11-15yr	All	21006	2.9	9.1	3.0	4.7	1.17	N	3.2	3.0	5.1	7.4	N	N
		Port	14911	2.8	8.0	4.1	4.1	1.16	N	2.7	2.5	3.0	3.6	11.7	N
		Trad	6095	8.0	24.7	0.0	11.3	1.43	N	N	N	N	N	N	N
Classroom age (yrs)	16+yr	All	88144	1.8	5.0	0.3	1.8	1.12	N	1.3	1.3	1.0	3.6	6.1	6.1
		Port	13588	1.4	6.7	1.6	3.1	1.11	N	1.7	1.4	1.2	6.4	6.5	N
		Trad	74557	2.0	5.5	0.2	1.9	1.13	N	1.4	1.4	1.2	3.9	N	N
Classroom age (known/unknown)	Known	All	153951	1.2	3.7	0.5	1.5	1.08	2.3	0.8	1.1	1.1	2.5	4.5	9.3
		Port	61172	1.4	3.3	1.3	1.7	1.08	2.2	1.3	0.9	1.8	2.8	3.8	8.5
		Trad	92780	1.7	5.0	0.1	1.9	1.11	N	1.0	1.1	1.1	3.8	6.0	6.3
Classroom age (known/unknown)	Unknown	All	76204	1.1	4.5	0.7	1.5	1.08	1.9	1.1	1.3	1.9	2.4	3.1	5.9
		Port	24244	1.5	5.0	2.1	2.0	1.09	3.2	1.6	1.5	2.1	2.8	4.2	7.5
		Trad	51960	1.5	5.2	0.0	1.6	1.11	2.4	1.1	1.4	2.6	2.3	4.3	4.7
Major renovations/additions	Yes	All	85572	1.9	5.0	0.2	1.6	1.13	N	1.0	1.5	1.3	3.0	3.9	5.2
		Port	20170	2.4	5.4	0.5	1.9	1.13	3.1	1.9	1.8	1.5	3.2	3.8	4.5
		Trad	65402	2.4	6.0	0.2	1.9	1.15	N	1.2	1.2	1.6	3.6	4.9	N

Variable Description	Category	Room Type	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Std. Error	P05	P10	P25	P50	P75	P90	P95
Major renovations/additions	No	All	133876	0.9	3.6	0.7	1.5	1.06	1.4	1.1	1.1	1.1	2.9	4.1	8.8
		Port	60699	1.3	3.5	1.5	1.6	1.07	2.5	0.9	0.9	1.7	2.7	4.2	8.5
		Trad	73177	1.0	5.0	0.0	2.1	1.08	1.4	1.1	1.0	1.6	3.3	6.7	N
Addition/wall/floor renovations	Yes	All	32354	4.5	7.3	0.3	3.0	1.29	N	N	1.7	2.2	5.6	7.8	6.6
		Port	6191	0.7	7.1	1.5	3.3	1.10	3.8	2.5	1.1	2.9	6.6	7.1	N
		Trad	26163	5.4	8.5	0.0	3.6	1.36	N	N	N	N	N	N	N
Addition/wall/floor renovations	No	All	187094	0.8	3.2	0.5	1.2	1.06	1.5	0.8	1.1	1.0	1.9	3.8	9.1
		Port	74678	1.2	3.0	1.2	1.4	1.07	2.3	1.1	0.9	1.4	2.2	3.4	8.2
		Trad	112416	0.8	4.4	0.1	1.5	1.07	1.8	0.9	0.7	1.3	2.9	4.8	5.6
HVAC or lighting renovations	Yes	All	67109	2.4	6.0	0.2	1.9	1.16	N	3.2	1.3	2.1	3.3	4.5	4.8
		Port	13864	3.3	6.8	0.0	2.1	1.18	N	4.4	2.1	1.7	4.0	4.7	N
		Trad	53244	3.0	7.0	0.2	2.2	1.19	N	N	1.4	2.5	3.8	N	N
HVAC or lighting renovations	No	All	152339	0.8	3.4	0.6	1.4	1.06	1.6	1.0	1.1	0.9	2.6	4.2	7.6
		Port	67005	1.2	3.2	1.3	1.5	1.07	2.0	1.0	0.9	1.6	2.5	4.0	8.3
		Trad	85335	0.8	4.5	0.0	1.8	1.07	1.7	1.1	0.7	1.5	3.1	N	N
Roof renovations	Yes	All	42388	1.0	7.4	0.3	2.3	1.10	2.5	1.1	1.5	1.4	4.0	N	N
		Port	7744	1.3	8.7	0.0	2.1	1.09	3.9	2.9	2.2	3.3	4.5	3.3	N
		Trad	34644	1.3	8.6	0.3	2.7	1.12	2.6	1.2	1.7	1.9	3.9	8.2	8.3
Roof renovations	No	All	177059	1.2	3.2	0.5	1.4	1.08	2.2	0.9	1.0	1.1	2.5	3.7	5.8
		Port	73124	1.2	3.2	1.2	1.5	1.07	2.4	1.1	0.9	1.5	2.3	3.8	7.8
		Trad	103935	1.6	4.3	0.0	1.6	1.10	N	1.0	0.7	1.5	3.2	4.8	N
Classroom size (sq. ft.)	<600	All	20541	1.4	7.1	0.6	2.2	1.11	3.5	1.4	1.3	2.1	5.4	6.1	6.4
		Port	5160	5.0	7.5	2.5	3.9	1.35	N	N	N	4.0	5.1	7.4	N
		Trad	15381	0.0	7.3	0.0	2.3	1.09	N	1.7	1.5	1.1	5.7	7.1	N
Classroom size (sq. ft.)	600-1100	All	135029	0.8	3.8	0.5	1.6	1.07	1.5	0.8	1.4	1.2	2.7	4.4	8.2
		Port	60372	1.3	3.4	1.1	1.5	1.07	2.0	1.4	0.9	1.5	2.6	3.0	6.3
		Trad	74657	0.5	5.4	0.2	2.2	1.08	1.7	0.8	1.6	1.5	N	N	N
Classroom size (sq. ft.)	>1100	All	74585	2.3	4.9	0.9	1.7	1.14	N	2.9	1.1	2.5	3.1	3.7	6.4

Variable Description	Category	Room Type	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Std. Error	P05	P10	P25	P50	P75	P90	P95
		Port	19883	1.6	4.8	3.0	2.8	1.12	N	2.3	1.8	2.1	5.4	6.7	7.2
		Trad	54702	3.1	6.0	0.0	1.7	1.19	N	N	N	N	N	3.4	3.5
Outdoor damper min setting	<=10%	All	13182	0.0	9.3	0.4	1.5	1.06	N	1.9	1.5	1.3	4.0	2.8	3.5
		Port	6504	0.0	8.8	0.8	1.5	1.06	N	N	1.3	3.0	2.6	2.4	5.3
		Trad	6677	0.0	13.6	0.0	2.2	1.09	N	N	2.0	2.6	N	N	N
Outdoor damper min setting	11-20%	All	43599	2.1	6.0	1.0	2.4	1.14	N	1.1	1.7	1.3	3.4	7.2	6.9
		Port	14728	1.4	6.5	3.0	3.5	1.08	1.3	1.9	1.5	2.1	2.9	N	N
		Trad	28872	2.9	7.8	0.0	3.0	1.20	N	N	N	N	N	N	N
Outdoor damper min setting	21-40%	All	8033	0.0	8.2	0.0	4.2	1.27	N	N	N	N	N	5.7	5.6
		Port	2086	0.0	13.4	0.0	3.0	1.12	N	N	N	3.0	3.8	N	N
		Trad	5947	0.0	8.0	0.0	5.4	1.37	N	N	N	N	N	N	N
Outdoor damper min setting	>40%	All	4833	2.4	14.7	7.4	7.9	1.42	N	N	6.4	10.4	9.1	N	N
		Port	2106	6.6	8.1	13.6	6.4	1.38	N	N	N	9.7	N	N	N
		Trad	2727	0.0	24.0	0.0	9.0	1.52	N	N	N	N	N	N	N
Outdoor damper min setting	Unknown	All	126550	1.5	3.9	0.5	1.5	1.09	N	1.1	1.1	1.3	2.7	4.2	8.8
		Port	48665	1.8	3.7	1.3	1.7	1.10	2.8	1.9	1.3	1.8	2.4	4.4	6.7
		Trad	77885	2.0	4.9	0.2	1.9	1.12	N	1.4	0.8	1.6	3.2	6.2	N
New pressed wood last yr	Yes	All	61685	1.1	6.0	1.1	2.3	1.10	2.2	0.9	1.5	2.9	5.8	3.3	2.5
		Port	24777	1.2	4.9	2.7	2.1	1.07	1.9	1.8	1.7	2.3	3.7	6.1	6.0
		Trad	36907	1.7	8.1	0.0	3.5	1.15	N	1.3	1.4	3.1	8.9	N	N
New pressed wood last yr	No	All	122979	1.5	3.6	0.5	1.6	1.09	N	0.9	1.0	1.1	2.8	3.7	9.3
		Port	42260	1.9	3.9	1.3	2.1	1.10	3.2	2.0	1.2	1.3	2.7	4.9	10.5
		Trad	80719	1.9	4.2	0.1	1.5	1.12	N	1.0	0.9	1.6	2.2	4.5	N
New pressed wood last yr	DK	All	25704	2.5	9.8	0.8	2.5	1.14	3.7	2.2	1.7	4.5	3.4	4.5	8.3
		Port	10719	1.7	7.5	2.0	2.9	1.13	N	1.8	1.0	3.0	4.7	8.3	N
		Trad	14984	3.6	14.9	0.2	3.2	1.18	3.7	3.3	3.0	5.6	4.4	5.3	N
New carpet past yr	Yes	All	29489	0.3	6.3	2.3	2.8	1.08	1.8	1.7	1.2	2.6	7.1	5.8	8.3
		Port	14656	0.7	6.1	4.3	3.1	1.08	2.8	1.3	1.4	3.4	6.2	8.7	8.4

Variable Description	Category	Room Type	Est. No. Classrms	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Std. Error	P05	P10	P25	P50	P75	P90	P95
		Trad	14833	0.0	10.8	0.0	4.9	1.16	N	N	1.8	2.8	N	N	N
New carpet past yr	No	All	189959	1.1	3.3	0.4	1.3	1.07	2.0	0.8	0.9	0.9	2.3	3.7	7.9
		Port	66213	1.4	3.4	1.0	1.5	1.07	2.5	1.2	1.0	1.4	2.5	2.9	7.1
		Trad	123746	1.4	4.1	0.1	1.4	1.09	N	0.9	0.7	1.3	2.7	4.7	5.3
New flooring past yr	Yes	All	46531	0.3	5.7	1.4	2.3	1.08	1.8	1.1	1.8	2.2	4.4	5.3	6.3
		Port	18350	0.7	5.2	3.4	2.5	1.07	3.0	1.3	1.2	2.6	5.2	7.1	7.3
		Trad	28181	0.0	8.6	0.0	3.1	1.11	N	N	N	N	6.7	N	N
New flooring past yr	No	All	130552	1.3	3.8	0.5	1.5	1.09	2.5	1.1	1.3	1.0	2.7	3.3	8.7
		Port	45538	1.1	4.0	1.3	1.9	1.07	2.4	0.8	1.0	2.0	2.7	3.3	9.3
		Trad	85013	1.8	4.8	0.1	1.5	1.12	N	1.1	1.2	1.2	3.1	3.6	N
New flooring past yr	DK	All	42365	3.0	7.3	0.3	3.2	1.18	N	3.0	1.3	2.6	7.3	7.5	5.6
		Port	16981	4.2	6.4	0.8	2.4	1.22	N	3.2	2.0	2.6	3.8	4.6	3.6
		Trad	25384	3.6	9.9	0.0	4.7	1.23	N	2.9	1.4	2.9	N	N	N

Approximate 95% Confidence Limits

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
All classrooms	All	All	Lower	95.3	31.3	0.9	24.9	18.5	3.5	9.1	13.5	20.7	31.0	44.7	54.5
		All	Upper	98.7	42.5	2.6	29.0	23.1	9.8	12.3	16.8	24.3	37.8	57.3	86.3
		Port	Lower	94.7	45.1	2.1	30.0	22.4	4.6	10.7	17.8	24.9	37.9	51.5	62.5
		Port	Upper	98.5	55.6	6.0	34.8	27.8	11.5	14.8	21.0	30.6	45.0	63.2	91.5
		Trad	Lower	94.9	21.8	0.0	21.3	16.0	2.0	8.9	12.3	18.3	25.9	36.1	43.8
		Trad	Upper	99.5	36.2	0.9	26.2	21.3	10.3	11.9	15.3	21.7	33.5	53.6	72.7
School location	Urban	All	Lower	95.7	24.8	0.0	22.4	17.4	7.1	7.8	13.7	20.1	27.0	37.3	43.6
		All	Upper	100.0	49.5	0.9	29.3	25.5	13.0	14.2	19.7	26.6	39.7	53.0	62.5
		Port	Lower	96.6	38.5	0.0	26.5	20.9	3.1	9.7	14.6	22.3	34.2	44.6	50.4
		Port	Upper	100.0	65.1	2.8	36.0	30.8	13.4	14.9	22.6	34.0	50.2	68.8	74.0
		Trad	Lower	94.3	15.1	N	19.8	15.0	N	3.6	12.7	17.2	22.9	29.6	32.5
		Trad	Upper	100.0	45.4	N	26.8	24.8	13.6	15.1	20.0	24.6	35.7	48.8	N
School location	Suburb	All	Lower	94.3	31.1	1.1	25.0	17.9	2.4	9.0	13.2	20.5	31.2	45.8	54.6
		All	Upper	98.7	44.4	3.4	30.2	23.7	10.3	12.5	17.3	25.2	38.7	61.1	84.3
		Port	Lower	93.8	44.8	2.4	30.0	21.8	2.9	10.4	18.1	24.9	37.2	51.7	62.4
		Port	Upper	98.6	56.8	7.4	35.8	28.4	12.3	15.7	21.3	31.1	45.8	64.8	90.5
		Trad	Lower	93.8	20.9	0.0	21.1	15.3	0.4	8.8	11.7	17.0	25.9	37.2	45.4
		Trad	Upper	99.7	38.5	1.3	27.5	22.1	10.7	12.0	14.9	23.1	37.1	59.7	72.4
School location	Rural	All	Lower	97.1	12.8	0.0	19.0	16.4	6.4	7.6	10.8	16.3	22.2	28.5	33.7
		All	Upper	100.0	41.6	1.0	27.0	24.0	12.7	14.9	19.4	24.2	35.5	48.4	57.9
		Port	Lower	92.1	23.6	0.0	23.6	20.2	6.9	10.1	12.7	21.0	26.7	37.7	46.9
		Port	Upper	100.0	60.8	2.7	35.4	30.7	14.1	16.3	21.0	35.1	47.6	58.2	65.5
		Trad	Lower	N	1.5	N	15.3	13.9	N	7.1	9.0	10.6	18.9	20.0	23.3
		Trad	Upper	N	34.2	N	22.6	21.3	11.9	14.6	19.2	22.3	28.0	33.2	37.1

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Geographic region	North	All	Lower	92.4	19.3	0.1	21.2	14.9	0.5	7.6	12.7	17.7	24.5	36.7	47.8
		All	Upper	98.7	32.4	2.5	25.8	20.5	10.1	12.4	15.2	21.2	32.8	49.9	75.4
		Port	Lower	92.0	36.5	0.5	26.8	18.2	N	8.7	15.2	22.1	34.5	48.8	55.2
		Port	Upper	99.3	52.8	4.2	33.0	26.9	12.6	14.4	19.4	28.7	46.5	60.2	81.3
		Trad	Lower	91.6	7.7	0.0	17.4	12.5	N	6.5	11.6	14.8	20.1	25.4	31.7
		Trad	Upper	99.3	21.4	1.6	21.9	18.4	10.2	11.9	14.4	20.0	26.3	39.0	56.7
Geographic region	South	All	Lower	95.8	35.9	0.9	26.0	19.6	3.4	8.8	13.9	22.1	32.8	46.1	54.3
		All	Upper	99.9	51.3	3.2	32.0	26.5	11.4	13.7	19.4	27.8	41.2	63.1	82.7
		Port	Lower	95.1	47.1	2.2	30.6	23.7	5.2	11.4	19.0	25.6	37.7	49.7	61.9
		Port	Upper	99.3	60.7	8.0	37.3	30.4	12.9	16.5	22.3	32.9	46.1	69.0	93.5
		Trad	Lower	95.4	27.3	0.0	22.5	17.0	1.0	8.5	11.7	19.3	28.3	37.8	47.2
		Trad	Upper	100.0	47.9	0.9	29.8	25.3	11.3	13.6	18.1	26.7	38.1	61.1	N
School type	Elem	All	Lower	94.7	35.7	0.7	26.1	19.4	N	9.9	14.3	22.4	32.2	47.5	54.6
		All	Upper	98.9	47.8	3.2	30.3	24.5	10.2	12.6	17.9	26.4	40.4	54.8	75.2
		Port	Lower	94.3	47.7	1.2	30.4	22.4	3.1	10.8	17.9	26.0	39.0	52.2	60.8
		Port	Upper	99.3	60.7	5.9	35.9	29.6	12.1	15.3	22.4	33.0	47.6	64.0	86.9
		Trad	Lower	94.1	24.6	0.0	22.1	16.7	2.9	9.1	12.7	18.6	27.3	37.2	47.3
		Trad	Upper	99.5	40.5	1.7	27.0	22.4	10.4	12.0	16.4	24.3	34.4	52.8	56.7
School type	Middle	All	Lower	97.1	18.2	0.0	21.7	18.1	2.8	7.3	12.7	19.2	24.8	36.9	44.3
		All	Upper	100.0	44.7	2.0	30.1	25.2	12.6	14.8	19.5	25.8	41.4	58.6	62.8
		Port	Lower	91.3	34.8	0.0	26.0	17.9	N	9.2	16.7	21.8	33.1	44.8	47.4
		Port	Upper	100.0	61.0	6.0	35.7	30.4	13.5	17.2	21.9	34.0	47.1	58.2	N
		Trad	Lower	N	8.5	N	18.6	17.0	N	7.0	12.1	17.4	22.0	25.7	30.4
		Trad	Upper	N	38.0	N	28.3	24.6	13.4	14.6	19.7	24.5	34.7	N	N

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
School type	High	All	Lower	91.5	18.9	0.3	19.9	13.3	N	7.2	11.6	15.0	23.0	34.4	39.1
		All	Upper	100.0	45.1	3.9	31.0	24.7	11.9	13.3	18.1	24.4	39.5	64.4	95.0
		Port	Lower	92.8	31.0	0.7	25.1	19.4	4.3	9.1	15.1	21.4	30.8	39.3	51.2
		Port	Upper	100.0	53.7	11.8	38.4	30.3	15.0	17.1	20.5	29.5	45.5	89.4	N
		Trad	Lower	89.8	10.8	0.0	16.6	10.9	N	N	10.9	13.6	20.0	27.1	34.9
		Trad	Upper	100.0	44.4	0.9	28.9	23.6	11.4	12.8	14.8	23.8	37.3	61.9	64.6
Month of formaldehyde sample	April	All	Lower	92.2	8.7	N	16.6	12.7	2.3	8.3	11.3	14.0	20.3	26.3	30.8
		All	Upper	99.1	19.2	N	20.3	17.7	9.7	11.7	13.9	19.8	25.2	33.2	43.7
		Port	Lower	89.0	22.4	N	20.5	14.0	0.5	3.8	12.4	19.4	26.0	33.0	36.0
		Port	Upper	99.6	39.2	N	25.4	22.8	11.3	13.2	18.6	23.8	32.9	43.9	52.9
		Trad	Lower	92.6	0.0	N	14.1	11.3	2.1	6.6	9.7	13.0	16.1	20.0	22.2
		Trad	Upper	100.0	11.3	N	18.0	16.5	10.8	11.5	13.6	18.5	22.3	26.7	N
Month of formaldehyde sample	May	All	Lower	93.9	32.5	0.9	25.9	18.1	N	8.8	15.0	21.7	32.4	46.7	53.0
		All	Upper	99.5	48.2	3.4	31.3	25.7	11.8	14.0	19.8	26.5	41.2	61.2	63.6
		Port	Lower	94.6	46.6	2.1	31.7	23.6	N	12.3	19.4	25.4	40.1	53.0	64.9
		Port	Upper	99.1	61.3	8.3	37.8	31.0	14.1	16.9	22.3	34.2	49.8	72.0	88.8
		Trad	Lower	92.6	21.8	0.0	21.3	14.6	N	7.5	12.9	19.8	26.2	36.3	42.6
		Trad	Upper	100.0	42.0	0.6	28.3	24.0	11.6	13.5	18.5	24.4	37.2	55.0	59.6
Month of formaldehyde sample	June/July	All	Lower	99.0	51.7	0.8	30.4	26.0	6.8	11.2	17.0	27.7	37.6	48.1	56.1
		All	Upper	100.0	74.4	6.4	41.1	34.5	13.9	17.5	27.0	37.5	56.3	65.4	93.0
		Port	Lower	97.6	57.4	1.4	32.8	27.0	4.4	11.7	19.8	30.7	41.2	51.3	59.6
		Port	Upper	100.0	77.4	11.8	45.7	37.6	16.2	20.4	28.5	40.6	57.8	88.5	N
		Trad	Lower	N	43.9	0.0	27.5	24.1	8.2	10.2	15.6	26.3	32.5	38.6	49.8
		Trad	Upper	N	76.6	4.0	39.5	34.3	15.6	17.7	27.9	34.9	58.1	65.4	65.4

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Time of formaldehyde sample	Early_April	All	Lower	93.1	0.0	N	11.2	9.9	N	6.4	9.0	11.5	11.6	13.5	16.1
		All	Upper	100.0	7.2	N	16.9	15.6	9.3	10.8	12.2	16.5	22.9	26.2	30.6
		Port	Lower	77.3	0.0	N	12.0	7.8	N	N	N	N	N	19.3	21.7
		Port	Upper	100.0	18.9	N	19.8	20.2	N	N	16.3	17.4	24.3	31.1	N
		Trad	Lower	N	0.0	N	10.8	10.6	N	N	7.4	11.5	11.5	11.6	11.8
		Trad	Upper	N	1.5	N	15.4	14.4	N	N	11.6	12.9	16.8	25.9	26.3
Time of formaldehyde sample	Late_April	All	Lower	91.2	10.4	N	17.6	13.0	0.9	8.3	11.6	15.0	20.9	27.3	32.6
		All	Upper	99.6	22.8	N	21.5	19.1	11.3	12.9	15.0	20.2	26.5	36.4	45.1
		Port	Lower	89.6	27.0	N	22.2	15.0	N	3.7	14.4	21.1	27.4	33.2	40.4
		Port	Upper	100.0	45.6	N	27.4	25.6	13.2	15.3	20.0	26.0	33.2	45.8	N
		Trad	Lower	90.6	0.0	N	14.5	11.2	0.4	6.7	8.8	13.6	18.4	20.0	21.6
		Trad	Upper	100.0	14.0	N	19.1	17.6	11.4	12.9	14.2	19.9	23.7	26.6	N
Time of formaldehyde sample	Early_May	All	Lower	95.7	34.9	0.3	26.4	20.7	3.4	10.7	14.9	21.8	31.8	44.4	52.1
		All	Upper	100.0	59.9	4.1	34.9	29.8	13.7	15.9	21.4	31.0	49.0	62.9	69.1
		Port	Lower	94.7	44.1	0.5	30.2	24.5	5.7	13.1	18.1	23.7	37.2	51.1	58.2
		Port	Upper	100.0	66.1	9.6	39.1	33.5	14.6	18.2	23.0	35.5	51.3	75.1	91.5
		Trad	Lower	95.0	26.1	0.0	22.2	17.5	0.2	10.6	13.0	19.6	27.4	35.5	40.8
		Trad	Upper	100.0	59.3	1.3	34.2	29.6	13.6	16.3	21.0	31.0	50.8	61.3	62.6
Time of formaldehyde sample	Late_May	All	Lower	90.9	25.2	0.4	23.6	14.6	N	6.4	14.0	20.6	27.9	44.0	48.9
		All	Upper	100.0	43.7	3.7	30.2	25.3	12.3	14.6	19.6	25.3	41.8	52.2	71.0
		Port	Lower	92.9	43.2	1.1	30.7	20.9	N	7.8	18.4	24.3	40.4	51.1	59.8
		Port	Upper	99.6	62.9	9.5	38.9	31.9	15.2	17.9	22.8	35.5	51.0	73.7	88.0
		Trad	Lower	88.3	12.4	N	18.7	10.9	N	N	11.1	16.5	22.6	29.7	37.2
		Trad	Upper	100.0	33.2	N	25.2	23.3	11.8	13.7	18.1	22.7	32.8	48.2	N

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Time of formaldehyde sample	June/July	All	Lower	99.0	52.2	0.8	30.6	26.2	7.0	11.7	17.5	27.9	37.8	47.9	56.2
		All	Upper	100.0	75.0	6.4	41.3	34.8	14.8	18.2	27.2	37.7	56.6	65.4	93.9
		Port	Lower	97.5	57.4	1.5	32.8	27.1	4.8	12.1	19.9	30.6	41.3	50.9	59.2
		Port	Upper	100.0	77.6	11.9	45.8	37.8	17.1	20.6	28.7	40.7	57.6	88.9	N
		Trad	Lower	N	44.6	0.0	27.8	24.4	8.2	10.2	16.1	25.3	32.7	38.8	50.2
		Trad	Upper	N	77.5	4.0	39.8	34.7	16.3	18.3	27.6	35.2	58.3	65.4	65.4
<25% non-weekday in samp period	Yes	All	Lower	95.1	26.7	0.1	22.7	17.4	3.9	8.7	13.2	19.6	28.4	38.5	46.8
		All	Upper	99.1	41.6	2.0	27.2	22.6	10.7	13.2	17.2	23.5	35.0	50.6	70.0
		Port	Lower	92.7	40.2	0.4	27.4	20.1	2.8	9.5	16.3	23.6	34.0	45.5	53.7
		Port	Upper	99.0	54.0	5.6	32.7	27.3	12.9	15.0	20.9	29.2	41.7	59.0	75.2
		Trad	Lower	95.6	17.1	N	19.4	15.4	2.9	8.6	12.1	16.7	23.1	31.7	36.8
		Trad	Upper	100.0	36.7	N	24.9	21.2	11.0	13.0	15.7	21.6	32.9	42.6	N
<25% non-weekday in samp period	No	All	Lower	93.9	32.1	1.2	25.9	18.0	N	8.7	13.1	21.1	32.2	48.3	54.3
		All	Upper	99.8	48.9	4.2	33.2	26.3	10.8	12.5	18.8	26.8	46.8	63.6	94.3
		Port	Lower	95.6	46.0	2.3	31.1	23.2	3.4	10.7	18.2	25.2	40.1	52.1	61.6
		Port	Upper	99.4	62.1	8.2	39.2	31.1	12.4	16.6	21.7	34.5	49.9	71.7	107.2
		Trad	Lower	92.0	21.2	0.0	21.6	14.6	N	7.3	12.1	17.8	26.1	38.0	47.7
		Trad	Upper	100.0	42.6	2.2	30.3	24.8	11.0	12.3	16.8	25.6	45.6	62.1	76.8
General instruction classroom	Yes	All	Lower	94.1	29.6	0.7	24.2	17.4	2.3	8.8	13.7	20.3	30.0	43.4	52.3
		All	Upper	98.5	41.1	2.5	28.1	22.4	9.7	12.4	16.7	23.4	37.2	53.0	78.7
		Port	Lower	94.0	42.6	1.7	29.3	21.7	3.8	10.6	17.9	24.3	37.1	50.1	60.3
		Port	Upper	98.5	54.2	5.4	34.0	27.6	11.8	15.4	21.0	29.3	44.3	60.8	80.4
		Trad	Lower	93.3	18.9	0.0	20.0	14.3	N	8.0	12.3	16.9	24.3	34.6	40.3
		Trad	Upper	99.3	34.3	0.7	24.8	20.4	9.6	11.9	15.2	21.3	33.0	48.5	57.2

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
General instruction classroom	No	All	Lower	99.6	20.0	0.0	20.8	18.0	6.1	10.2	11.4	14.8	25.7	33.6	41.9
		All	Upper	100.0	55.6	3.3	36.1	29.4	12.2	14.2	20.8	30.5	61.9	64.4	65.3
		Port	Lower	98.2	38.3	0.0	27.5	23.9	11.1	11.6	13.9	23.1	34.2	50.3	58.4
		Port	Upper	100.0	71.6	14.2	47.3	36.8	15.6	18.3	24.4	38.2	60.5	N	N
		Trad	Lower	N	11.1	0.0	17.5	16.0	N	10.0	10.8	11.9	21.0	28.7	30.0
		Trad	Upper	N	54.3	0.3	34.1	28.6	11.9	13.3	20.0	29.4	46.5	64.1	64.8
Carpeted classroom	Full	All	Lower	92.9	30.6	0.8	24.5	16.8	N	9.7	14.1	20.8	29.8	42.3	51.2
		All	Upper	98.9	44.4	3.3	28.8	23.8	10.8	13.0	18.6	24.9	38.4	51.6	71.4
		Port	Lower	93.9	40.4	1.5	28.4	21.2	3.8	10.6	17.4	23.7	35.2	47.8	56.7
		Port	Upper	98.5	53.2	6.0	33.5	27.2	12.3	14.8	21.2	28.3	42.9	58.2	78.9
		Trad	Lower	90.1	14.7	0.0	18.6	11.7	N	2.3	11.5	16.6	21.2	28.8	35.2
		Trad	Upper	100.0	38.7	0.3	24.6	22.1	11.0	12.7	16.9	21.3	35.6	43.1	51.7
Carpeted classroom	Partial	All	Lower	91.1	27.4	0.2	23.6	15.9	0.5	8.1	12.9	19.2	29.0	43.5	51.4
		All	Upper	99.4	44.5	2.3	29.1	23.6	10.1	12.7	17.4	26.1	39.0	54.3	72.7
		Port	Lower	89.0	42.9	0.3	28.7	17.7	N	1.6	16.7	22.9	N	N	N
		Port	Upper	100.0	65.7	5.3	38.2	33.1	15.1	18.0	22.1	N	N	N	N
		Trad	Lower	90.8	17.6	0.0	20.1	14.1	0.1	6.9	11.9	16.9	25.4	32.2	39.3
		Trad	Upper	99.6	37.6	1.6	26.1	21.8	10.1	12.1	15.8	24.5	33.5	50.5	N
Carpeted classroom	None	All	Lower	N	19.8	0.0	20.8	17.7	7.3	7.9	11.7	14.8	24.9	37.0	43.5
		All	Upper	N	48.2	2.3	33.3	26.9	12.3	13.2	16.9	27.5	50.4	65.0	69.3
		Port	Lower	N	32.6	0.0	25.0	23.1	N	N	N	N	32.6	42.5	46.3
		Port	Upper	N	77.2	15.9	53.0	42.0	N	N	29.6	43.8	61.4	N	N
		Trad	Lower	N	15.9	0.0	19.4	16.7	6.6	7.5	11.5	14.2	23.4	34.6	39.4
		Trad	Upper	N	46.4	0.7	31.4	25.9	12.1	13.1	15.6	25.3	46.1	64.7	N

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Vinyl/linoleum floor	Yes	All	Lower	95.5	24.6	0.2	22.9	17.5	4.3	8.0	12.4	17.6	27.9	44.2	53.2
		All	Upper	99.8	41.9	2.1	30.4	23.7	10.3	12.5	15.3	24.2	42.5	63.6	82.3
		Port	Lower	92.3	44.1	0.4	29.9	20.6	1.0	7.9	17.2	24.8	38.5	54.6	60.6
		Port	Upper	100.0	64.8	7.0	40.8	33.4	14.5	17.1	22.5	35.9	56.6	71.9	102.4
		Trad	Lower	96.1	16.8	0.0	19.9	16.0	4.1	7.8	11.6	14.7	24.7	34.3	45.5
		Trad	Upper	99.9	36.5	1.0	27.9	22.1	10.3	12.0	14.6	23.0	35.9	62.6	N
Vinyl/linoleum floor	No	All	Lower	93.2	31.8	0.8	24.6	17.1	N	10.0	14.3	20.9	30.6	42.0	49.3
		All	Upper	98.9	45.8	3.1	28.8	23.9	10.8	13.0	18.8	25.5	38.1	49.7	67.3
		Port	Lower	93.9	40.3	1.5	28.3	21.1	3.7	10.7	17.4	23.7	35.1	47.7	56.2
		Port	Upper	98.5	53.1	6.1	33.3	27.1	12.3	14.8	21.2	28.4	42.2	58.4	78.4
		Trad	Lower	91.1	19.4	0.0	19.9	12.9	N	8.7	12.0	18.3	23.6	34.1	36.4
		Trad	Upper	100.0	43.0	0.2	25.5	22.8	11.0	12.6	18.0	22.9	36.3	42.8	49.8
Vinyl tackable wallboard	Yes	All	Lower	93.9	36.3	1.0	27.4	19.5	2.8	8.6	14.8	22.8	34.2	49.3	57.8
		All	Upper	98.4	51.6	3.8	33.5	26.2	10.9	13.6	20.3	28.6	45.6	62.9	74.5
		Port	Lower	93.0	43.7	1.6	29.5	21.1	2.5	9.7	17.4	24.5	37.0	50.5	61.8
		Port	Upper	98.2	55.8	5.6	34.9	27.6	11.7	14.5	21.3	30.8	45.7	63.4	93.7
		Trad	Lower	93.3	19.4	0.0	21.8	15.5	N	7.1	12.3	19.9	26.2	36.4	45.7
		Trad	Upper	100.0	50.6	1.6	33.8	27.2	12.1	13.7	20.6	27.5	52.9	63.9	64.7
Vinyl tackable wallboard	No	All	Lower	94.7	21.0	0.0	20.6	15.5	1.3	9.0	12.2	16.8	25.2	36.5	42.2
		All	Upper	100.0	36.0	1.7	25.4	21.3	10.6	12.1	15.3	21.3	32.7	47.8	70.4
		Port	Lower	96.3	36.8	0.0	28.2	22.1	3.4	13.0	16.7	22.1	33.8	46.4	55.3
		Port	Upper	100.0	59.0	10.1	36.9	31.8	15.0	16.7	21.3	32.7	47.5	65.0	84.8
		Trad	Lower	94.1	16.7	0.0	18.9	14.2	0.1	8.6	11.5	15.6	22.7	31.1	38.0
		Trad	Upper	100.0	33.5	0.4	23.8	20.3	10.6	11.7	14.6	20.1	30.8	43.2	53.9

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Open windows	Never	All	Lower	93.1	19.4	0.0	21.3	15.8	0.8	10.0	12.8	18.2	25.4	35.8	41.7
		All	Upper	99.8	42.6	1.8	29.5	23.9	11.9	13.4	18.0	25.2	39.1	70.1	87.9
		Port	Lower	92.2	37.3	0.0	26.3	18.4	N	6.7	16.5	22.9	33.5	41.1	46.3
		Port	Upper	100.0	61.5	8.2	37.2	32.8	18.2	18.7	23.2	33.5	47.7	61.6	N
		Trad	Lower	92.4	13.4	0.0	19.2	14.5	N	9.9	12.4	16.8	23.1	31.1	37.9
		Trad	Upper	100.0	41.0	0.7	28.9	23.6	11.4	13.4	17.4	25.2	39.7	N	N
Open windows	Infrequent	All	Lower	92.3	33.4	0.7	24.9	16.9	N	7.3	13.4	21.3	32.1	45.4	51.3
		All	Upper	99.0	49.6	3.5	31.9	25.2	9.8	12.9	18.7	27.3	42.4	64.3	92.1
		Port	Lower	91.8	43.4	1.6	29.2	20.7	2.1	8.0	16.6	24.4	37.4	50.9	58.9
		Port	Upper	98.3	57.9	6.5	36.3	28.9	12.7	14.8	21.6	31.6	46.8	62.1	100.2
		Trad	Lower	91.1	21.3	0.0	20.1	13.0	N	4.6	8.8	16.5	25.2	35.1	42.3
		Trad	Upper	100.0	45.6	1.1	29.1	24.2	10.4	12.1	17.1	24.9	40.3	61.7	N
Open windows	Frequent	All	Lower	97.9	23.9	0.0	22.1	18.0	3.1	8.3	12.1	18.0	26.2	37.1	46.5
		All	Upper	100.0	43.3	3.2	28.2	23.6	11.9	13.0	17.6	24.2	35.8	53.2	70.6
		Port	Lower	96.7	36.3	0.0	27.8	21.9	3.9	11.5	16.7	22.3	34.7	46.0	57.9
		Port	Upper	100.0	54.8	7.1	35.0	29.5	13.1	16.6	21.2	30.1	44.2	66.1	83.9
		Trad	Lower	98.0	10.4	0.0	16.9	14.7	6.8	7.5	10.8	13.2	19.9	27.3	30.5
		Trad	Upper	100.0	39.4	0.4	24.3	21.2	11.6	12.7	16.4	20.7	34.4	42.2	52.3
Open door to outside	Infreq	All	Lower	94.8	31.2	0.8	24.7	18.4	3.7	8.6	12.8	21.2	30.4	42.2	51.7
		All	Upper	98.7	46.5	3.7	29.9	23.7	9.8	12.4	18.2	26.2	38.4	54.7	77.7
		Port	Lower	93.9	40.6	1.7	29.3	22.9	4.2	11.7	17.7	24.0	35.2	49.3	60.6
		Port	Upper	99.0	54.1	8.2	36.6	29.2	12.8	16.1	22.1	29.6	45.4	67.8	96.6
		Trad	Lower	94.1	21.1	0.0	20.0	14.7	1.4	8.1	10.1	16.6	26.2	34.8	40.1
		Trad	Upper	99.8	43.9	0.6	26.1	21.6	9.8	11.7	16.1	26.0	37.8	48.7	51.0

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Open door to outside	Freq	All	Lower	95.9	30.9	0.4	25.0	20.0	5.3	11.0	14.6	20.4	30.9	42.7	51.0
		All	Upper	99.6	48.5	2.2	30.8	25.4	12.4	14.4	19.1	26.2	39.5	65.0	77.8
		Port	Lower	92.2	43.2	0.7	28.2	18.8	N	9.6	16.5	23.4	35.9	47.4	56.0
		Port	Upper	99.5	59.3	4.3	34.1	28.0	12.1	15.4	20.6	31.6	45.9	59.9	79.6
		Trad	Lower	97.4	18.2	0.0	21.2	19.3	7.8	10.7	14.0	18.2	24.2	33.1	37.4
		Trad	Upper	100.0	44.5	1.3	29.9	25.6	13.4	14.5	18.7	24.5	37.5	62.6	N
Open door to outside	NA	All	Lower	84.2	0.4	0.0	12.5	7.4	N	N	7.5	11.5	15.6	19.7	23.7
		All	Upper	100.0	32.7	0.5	28.1	22.3	11.5	12.6	13.9	19.6	43.3	58.8	61.3
		Port	Lower	N	N	5.3	36.2	35.7	N	N	N	N	N	N	N
		Port	Upper	N	N	100.0	126.9	139.4	N	N	N	N	N	N	N
		Trad	Lower	84.1	0.2	0.0	12.4	7.4	N	N	7.4	11.5	15.6	19.7	23.2
		Trad	Upper	100.0	32.6	0.3	28.0	22.2	11.5	12.5	13.9	19.6	42.4	58.7	61.2
Pressed wood furniture	Yes	All	Lower	94.8	29.7	0.6	24.1	17.9	3.5	9.2	13.7	20.3	29.8	42.8	52.5
		All	Upper	98.7	41.7	2.0	28.3	22.6	9.9	12.4	16.4	23.9	36.5	56.2	87.3
		Port	Lower	93.8	42.3	1.3	28.7	21.1	3.3	10.6	17.4	24.0	35.4	48.5	59.2
		Port	Upper	98.3	53.6	4.5	33.7	26.9	11.7	14.8	20.5	28.9	42.9	60.0	83.6
		Trad	Lower	94.7	20.0	0.0	20.5	15.4	1.9	8.3	12.6	17.2	25.1	34.7	40.5
		Trad	Upper	99.7	36.2	0.7	25.9	21.3	10.1	12.1	15.0	21.5	33.4	53.9	67.8
Pressed wood furniture	No	All	Lower	92.4	21.8	0.0	22.2	14.9	N	7.6	10.8	12.3	26.7	40.6	48.8
		All	Upper	100.0	57.8	7.9	37.5	31.0	11.7	17.1	22.7	35.3	53.8	65.4	78.4
		Port	Lower	97.4	44.2	0.0	33.4	27.2	4.5	12.4	16.7	26.3	46.8	52.8	57.4
		Port	Upper	100.0	77.3	26.7	51.3	43.3	19.1	22.7	28.1	49.7	85.7	91.4	N
		Trad	Lower	89.7	9.1	N	16.2	11.1	N	N	10.7	11.2	20.2	26.1	32.3
		Trad	Upper	100.0	54.1	N	33.7	28.7	11.3	12.4	20.6	31.5	45.3	N	N

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Pressed wood table/desks	Yes	All	Lower	94.3	29.5	0.4	23.9	17.4	N	8.7	13.7	20.2	29.7	42.5	52.1
		All	Upper	98.6	42.2	2.0	28.4	22.5	9.6	12.1	16.6	23.6	36.3	57.6	88.4
		Port	Lower	93.5	41.9	1.0	28.5	20.9	3.1	10.1	17.6	23.9	35.3	48.0	57.8
		Port	Upper	98.3	53.8	4.3	33.8	27.1	11.7	15.1	20.7	28.8	43.1	59.8	84.1
		Trad	Lower	93.9	19.3	0.0	19.9	14.7	0.5	7.7	12.2	16.8	24.8	32.8	38.7
		Trad	Upper	99.7	36.8	0.6	25.9	21.1	9.7	12.1	15.1	21.4	32.7	54.9	60.4
Pressed wood table/desks	No	All	Lower	95.5	25.4	0.5	24.1	17.8	1.3	10.7	11.4	19.0	28.9	42.5	49.4
		All	Upper	100.0	49.6	5.4	33.1	27.3	12.4	13.4	19.9	28.2	44.5	65.0	68.5
		Port	Lower	96.1	43.4	1.5	31.4	23.9	3.2	12.8	16.8	25.5	42.1	54.1	59.5
		Port	Upper	100.0	66.7	17.2	43.1	35.1	15.2	17.1	24.5	40.0	56.7	90.5	93.3
		Trad	Lower	94.4	14.9	0.0	19.7	14.9	N	9.4	11.0	13.9	24.8	34.9	40.2
		Trad	Upper	100.0	45.7	1.0	30.4	26.0	11.7	13.0	19.5	26.4	42.1	N	N
Pressed wood bookcases	Yes	All	Lower	94.5	31.5	0.3	24.6	18.3	2.3	9.7	14.1	21.4	30.2	42.6	49.8
		All	Upper	99.5	45.7	2.1	29.6	24.7	11.3	13.4	18.0	25.6	38.1	57.1	83.0
		Port	Lower	95.5	44.4	0.8	29.3	22.8	4.3	12.6	18.0	24.6	37.1	48.3	58.5
		Port	Upper	99.1	57.8	4.2	34.5	28.5	13.3	15.8	21.4	31.1	44.9	60.5	78.5
		Trad	Lower	93.0	20.0	0.0	20.5	15.1	N	7.7	12.9	17.9	25.8	33.2	38.2
		Trad	Upper	100.0	40.4	0.9	27.3	23.6	11.0	12.9	16.2	24.8	34.2	55.9	N
Pressed wood bookcases	No	All	Lower	94.2	24.5	0.7	22.6	16.1	1.3	8.4	12.0	18.6	27.1	41.1	50.9
		All	Upper	99.0	42.3	3.4	29.8	22.7	10.2	12.1	16.5	23.6	39.8	64.5	82.1
		Port	Lower	90.6	37.0	1.8	28.1	18.8	0.6	6.9	16.4	22.8	34.3	50.4	58.5
		Port	Upper	99.2	55.4	9.3	37.1	29.0	12.3	15.5	21.3	31.5	48.9	75.6	102.3
		Trad	Lower	94.7	15.6	0.0	19.0	14.1	N	7.4	10.9	15.1	21.3	33.5	39.8
		Trad	Upper	100.0	38.1	0.6	26.8	21.3	10.4	11.8	15.6	21.1	38.0	56.2	N

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Pressed wood cabinets	Yes	All	Lower	93.0	28.8	0.4	23.9	16.8	1.1	8.4	13.6	20.0	30.5	42.4	49.5
		All	Upper	99.5	45.5	2.1	30.0	24.5	10.6	13.5	17.9	25.8	39.2	60.7	86.6
		Port	Lower	93.8	47.3	0.9	29.8	22.3	3.9	12.9	18.3	25.5	36.7	47.4	55.9
		Port	Upper	99.9	62.7	4.7	35.8	30.6	14.2	17.0	22.4	32.7	45.1	60.0	79.5
		Trad	Lower	91.2	13.2	0.0	18.7	13.0	N	6.5	9.9	14.7	21.9	32.1	37.8
		Trad	Upper	100.0	37.2	0.6	27.4	22.6	10.2	12.7	14.9	21.9	37.2	N	N
Pressed wood cabinets	No	All	Lower	95.5	27.9	0.6	23.5	17.7	2.9	9.9	12.7	19.7	28.8	41.2	50.5
		All	Upper	99.1	42.9	3.1	29.4	23.3	10.4	12.7	17.2	24.5	36.5	60.2	85.2
		Port	Lower	93.0	35.7	1.6	27.8	19.8	1.8	9.7	16.0	22.5	34.6	51.6	58.1
		Port	Upper	98.6	51.2	7.9	35.4	27.4	12.2	14.5	20.4	27.9	47.6	64.7	93.4
		Trad	Lower	95.9	21.3	0.0	20.5	16.0	1.6	8.9	11.7	17.3	25.2	34.3	40.0
		Trad	Upper	100.0	41.0	0.8	26.9	22.3	10.8	12.2	16.4	23.5	35.0	53.6	N
New furnishings this school yr	Yes	All	Lower	94.9	27.6	0.0	22.9	17.6	N	10.8	11.5	17.9	29.1	40.6	49.8
		All	Upper	99.8	49.4	3.7	30.3	24.7	12.1	13.4	18.2	27.0	39.9	57.0	72.6
		Port	Lower	95.9	45.2	0.0	29.6	23.2	4.7	11.8	15.8	24.6	38.3	52.3	61.1
		Port	Upper	100.0	65.9	8.4	38.2	32.3	14.7	16.0	22.0	34.4	51.5	69.5	83.4
		Trad	Lower	92.7	11.5	N	17.0	13.4	4.5	10.0	11.3	12.5	19.3	28.9	32.3
		Trad	Upper	100.0	39.2	N	24.9	21.2	12.2	13.0	17.1	22.1	32.3	49.2	N
New furnishings this school yr	No	All	Lower	94.2	28.9	0.7	24.2	17.4	1.3	8.7	13.6	20.5	29.5	42.8	51.9
		All	Upper	98.7	42.8	2.5	29.5	23.2	9.5	12.5	17.4	24.7	39.2	60.7	79.9
		Port	Lower	92.5	41.0	1.7	28.5	20.1	1.7	8.9	17.7	23.7	34.8	48.0	57.9
		Port	Upper	98.2	53.3	6.0	34.6	27.1	12.0	15.2	21.2	28.5	44.0	60.7	85.0
		Trad	Lower	94.1	20.7	0.0	21.2	15.4	N	7.8	12.6	17.7	25.9	36.5	44.9
		Trad	Upper	100.0	38.9	0.8	27.5	22.4	9.7	12.5	15.5	23.6	36.3	59.4	68.9

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
New furnishings this school yr	DK	All	Lower	N	6.7	0.0	15.5	14.1	7.9	8.1	8.7	10.4	14.6	19.6	24.8
		All	Upper	N	41.8	3.2	27.3	24.0	14.6	14.6	16.9	25.1	32.4	44.8	49.3
		Port	Lower	N	15.9	0.0	23.1	21.5	N	9.1	14.5	17.8	25.0	31.5	37.9
		Port	Upper	N	67.1	7.5	36.5	32.2	17.8	20.9	25.2	33.6	44.4	51.8	N
		Trad	Lower	N	0.0	N	10.1	10.6	N	N	N	9.1	10.2	10.8	N
		Trad	Upper	N	35.6	N	20.6	19.0	N	N	N	17.4	N	N	N
Type appliances in room	Stove/burnr	All	Lower	90.6	23.1	0.0	19.2	13.3	N	0.4	7.3	11.9	20.2	33.0	34.1
		All	Upper	100.0	81.5	8.2	54.6	45.4	15.9	17.9	33.0	63.1	64.4	65.3	N
		Port	Lower	88.5	48.5	0.0	20.7	16.8	N	N	14.2	19.8	30.1	32.0	32.7
		Port	Upper	100.0	91.0	24.9	60.4	46.7	N	23.8	33.1	38.1	62.5	N	N
		Trad	Lower	91.4	0.0	N	12.5	10.3	N	0.5	4.6	10.9	12.1	15.3	17.8
		Trad	Upper	100.0	86.2	N	57.3	50.5	N	17.5	32.4	58.5	N	N	N
Type appliances in room	Other	All	Lower	95.6	26.0	0.0	23.5	18.7	3.2	8.4	13.6	20.0	27.9	40.5	48.2
		All	Upper	100.0	44.4	2.7	30.1	24.8	12.3	13.7	18.4	25.7	39.6	62.4	79.7
		Port	Lower	90.2	36.8	0.1	26.4	17.6	0.7	6.4	16.1	22.3	33.9	45.0	51.1
		Port	Upper	99.9	56.2	4.0	32.5	27.6	12.5	15.6	21.4	29.1	42.6	59.6	72.6
		Trad	Lower	N	12.6	0.0	19.6	17.8	N	N	13.2	16.6	20.8	30.9	37.8
		Trad	Upper	N	40.1	1.8	29.8	25.2	13.2	13.6	18.3	23.9	40.5	58.1	62.5
Type appliances in room	None	All	Lower	93.0	27.4	0.7	23.3	16.1	N	8.4	12.1	20.3	28.6	41.5	49.5
		All	Upper	98.8	42.2	2.9	28.0	22.6	9.5	12.3	17.2	24.8	35.0	50.5	71.0
		Port	Lower	95.3	40.6	1.9	29.8	23.3	5.3	11.7	17.9	23.9	37.3	51.0	62.8
		Port	Upper	99.3	54.2	7.6	35.9	29.2	13.2	15.7	21.4	29.5	47.0	69.7	88.7
		Trad	Lower	91.0	18.3	0.0	19.2	12.7	N	6.9	11.0	16.1	24.7	32.9	36.8
		Trad	Upper	99.3	37.3	0.5	24.1	20.2	9.5	11.6	15.3	23.4	32.9	44.7	51.9

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Chemical present in room	Yes	All	Lower	95.5	29.4	0.6	24.4	18.9	3.2	8.6	13.2	20.0	30.3	42.1	51.0
		All	Upper	99.7	45.8	3.0	31.0	25.0	10.8	13.4	18.3	25.5	40.3	63.0	88.5
		Port	Lower	92.7	47.0	1.6	30.6	22.7	N	10.9	18.7	25.8	36.9	52.3	63.4
		Port	Upper	99.5	63.1	7.4	38.2	31.6	13.8	18.2	22.7	32.9	48.3	68.7	96.8
		Trad	Lower	96.3	17.6	0.0	20.2	16.4	2.3	8.0	11.9	17.2	24.2	34.8	40.1
		Trad	Upper	100.0	38.9	0.9	28.1	23.1	11.2	12.9	17.0	22.9	37.7	60.5	N
Chemical present in room	No	All	Lower	93.2	27.6	0.4	23.2	16.0	N	8.9	12.9	20.1	28.5	41.9	50.0
		All	Upper	99.0	42.1	2.4	28.1	22.5	10.2	12.4	16.0	24.1	37.6	53.3	76.9
		Port	Lower	93.9	36.8	0.7	27.6	19.8	1.8	9.5	15.9	22.8	34.6	48.5	55.6
		Port	Upper	99.1	51.2	5.7	33.1	26.6	12.7	14.4	20.2	27.9	45.5	59.0	76.7
		Trad	Lower	91.6	18.2	0.0	19.3	13.1	N	6.6	11.2	15.3	24.5	32.8	37.1
		Trad	Upper	100.0	39.8	0.5	26.0	21.6	10.5	12.1	14.7	23.3	35.6	53.6	N
Oil/acrylic paints used	Yes	All	Lower	91.9	15.1	0.6	22.4	15.3	N	6.9	13.4	19.7	23.8	36.0	44.6
		All	Upper	100.0	37.2	6.6	29.8	24.9	13.1	14.9	20.0	24.1	41.0	59.0	79.4
		Port	Lower	82.9	40.1	2.4	29.6	14.2	N	0.1	16.4	24.4	37.1	50.9	65.2
		Port	Upper	100.0	68.5	18.0	43.4	40.3	17.6	19.8	24.6	38.5	60.6	89.2	N
		Trad	Lower	94.5	0.0	N	16.8	13.6	N	7.4	12.5	14.6	20.0	22.6	23.2
		Trad	Upper	100.0	24.0	N	23.9	22.4	13.6	14.1	19.6	22.0	26.1	39.9	40.1
Oil/acrylic paints used	No	All	Lower	95.0	31.2	0.5	24.3	17.9	3.6	9.3	13.0	20.3	30.8	44.1	53.1
		All	Upper	98.8	44.1	2.0	29.2	23.2	10.0	12.1	16.6	24.8	38.5	58.6	89.6
		Port	Lower	94.9	42.5	1.1	29.0	22.2	4.9	11.1	17.3	24.0	36.2	48.8	58.4
		Port	Upper	98.6	54.2	4.8	34.2	27.5	11.9	15.0	20.7	29.5	44.1	59.9	87.5
		Trad	Lower	94.3	22.8	0.0	20.9	15.3	1.1	8.3	11.8	16.9	26.4	36.6	45.4
		Trad	Upper	99.6	39.7	0.7	26.8	21.6	10.1	11.7	14.9	23.1	35.9	55.4	69.2

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Permanent marker/pen used	Yes	All	Lower	96.0	28.7	0.7	24.5	19.3	5.2	10.8	14.1	20.3	30.0	42.8	51.5
		All	Upper	99.2	41.2	2.3	28.6	23.6	11.0	13.2	17.1	24.5	38.0	54.5	82.0
		Port	Lower	94.8	42.6	1.6	29.6	22.5	4.8	11.4	18.2	24.3	36.9	51.2	60.7
		Port	Upper	99.1	54.7	5.0	34.3	28.3	12.2	15.6	21.1	29.7	45.0	61.1	79.3
		Trad	Lower	96.1	18.1	0.0	20.6	16.8	4.2	10.1	12.7	17.2	24.8	34.7	39.9
		Trad	Upper	99.9	34.8	0.8	25.9	21.8	10.7	12.6	15.8	21.8	34.1	48.9	66.0
Permanent marker/pen used	No	All	Lower	88.3	27.1	0.0	20.8	11.9	N	0.1	9.1	17.9	27.9	37.5	48.7
		All	Upper	99.9	53.8	4.0	33.2	24.7	9.6	12.0	18.9	28.4	48.9	65.4	65.4
		Port	Lower	87.7	37.2	0.0	25.9	16.3	N	0.6	13.8	22.1	32.8	45.8	52.4
		Port	Upper	99.9	64.4	11.9	40.6	30.7	12.8	15.7	21.8	33.0	53.3	83.9	N
		Trad	Lower	86.6	17.9	N	17.0	9.4	N	N	7.9	12.1	21.8	30.0	35.4
		Trad	Upper	100.0	52.6	N	30.8	24.1	9.6	10.8	17.4	27.1	47.3	N	N
Whiteboard marker used	Yes	All	Lower	94.1	30.7	0.9	25.0	17.9	2.4	9.5	13.3	20.6	30.7	46.7	55.1
		All	Upper	98.5	43.4	2.8	30.0	23.5	10.0	12.4	17.3	24.8	39.0	61.1	84.5
		Port	Lower	93.8	43.9	2.2	30.4	22.3	3.5	11.0	18.2	24.5	38.3	53.0	64.8
		Port	Upper	98.5	56.1	6.6	36.1	28.7	11.7	15.5	21.3	30.8	46.9	67.3	88.6
		Trad	Lower	93.5	20.7	0.0	21.0	15.1	N	8.1	11.9	17.8	25.9	35.9	46.2
		Trad	Upper	99.3	37.6	0.7	27.1	21.7	10.2	11.9	15.7	23.2	34.5	58.6	62.3
Whiteboard marker used	No	All	Lower	97.8	19.0	0.0	19.5	16.2	3.8	7.0	10.2	14.8	23.5	34.0	38.8
		All	Upper	100.0	45.8	0.5	26.1	22.7	12.7	13.8	15.3	24.8	35.6	42.8	61.5
		Port	Lower	93.5	29.8	0.0	23.9	16.9	N	9.2	14.1	20.8	30.3	38.6	41.5
		Port	Upper	100.0	58.8	1.0	30.0	27.1	13.5	14.7	21.3	30.8	39.8	51.0	57.0
		Trad	Lower	N	9.3	0.0	16.4	14.6	N	6.7	8.2	13.8	19.5	26.0	30.6
		Trad	Upper	N	43.5	0.3	25.0	22.6	13.6	13.9	15.2	22.5	34.3	40.8	N

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Glues/fluids used	Yes	All	Lower	96.9	27.9	0.6	24.2	19.5	6.4	8.9	13.1	20.3	29.3	42.0	50.0
		All	Upper	99.5	41.9	2.3	28.9	24.1	10.9	12.9	17.9	25.0	37.7	55.0	85.5
		Port	Lower	94.5	41.5	1.4	29.1	22.4	5.0	10.7	17.1	24.1	35.6	50.6	59.6
		Port	Upper	99.0	54.6	5.0	34.3	28.4	12.6	15.3	21.0	29.6	45.8	60.7	80.1
		Trad	Lower	97.8	17.4	0.0	20.3	17.3	5.8	8.6	12.0	17.8	N	N	N
		Trad	Upper	100.0	36.4	0.9	26.4	22.6	11.5	12.3	16.7	N	N	N	N
Glues/fluids used	No	All	Lower	89.6	29.0	0.3	22.6	13.6	N	1.3	12.3	18.4	29.6	42.7	51.2
		All	Upper	98.5	48.5	3.4	31.3	23.2	9.3	12.2	16.4	25.7	43.2	64.4	85.4
		Port	Lower	92.0	42.4	0.7	28.4	18.9	N	9.7	17.7	23.6	36.1	46.8	55.7
		Port	Upper	98.7	59.9	9.3	38.0	28.9	12.7	16.7	22.1	31.2	46.5	73.2	100.6
		Trad	Lower	87.1	19.3	0.0	18.6	10.7	N	N	N	N	21.9	34.1	39.9
		Trad	Upper	99.6	44.4	0.2	28.4	21.8	N	N	N	22.2	38.1	63.3	N
Correction fluid used	Yes	All	Lower	96.9	27.4	0.5	23.7	19.2	6.0	8.8	12.9	19.9	28.9	41.6	48.8
		All	Upper	99.6	42.0	2.3	28.6	23.9	10.8	12.9	17.4	25.2	37.6	55.8	83.5
		Port	Lower	94.5	41.6	1.3	28.9	22.6	4.7	10.4	16.5	24.1	35.4	50.9	59.9
		Port	Upper	99.2	55.7	4.9	34.0	28.5	12.7	15.3	20.8	30.7	45.7	60.9	78.8
		Trad	Lower	97.6	16.4	0.0	19.8	16.8	5.1	8.6	11.8	16.7	24.6	32.9	38.0
		Trad	Upper	100.0	36.3	1.0	26.2	22.3	11.2	12.2	15.8	23.2	35.5	47.5	56.4
Correction fluid used	No	All	Lower	90.8	29.6	0.4	23.6	14.8	N	6.4	13.0	19.6	30.2	44.9	51.2
		All	Upper	98.5	47.5	3.2	31.3	23.5	9.5	12.6	17.5	25.2	43.8	63.1	83.1
		Port	Lower	92.3	41.4	1.0	28.9	19.2	N	10.4	17.7	23.3	36.9	47.3	55.8
		Port	Upper	98.5	58.0	8.7	37.7	28.6	12.9	16.0	22.0	30.7	47.0	72.2	97.5
		Trad	Lower	88.6	20.3	0.0	19.7	11.9	N	0.1	11.1	15.4	22.8	34.9	44.4
		Trad	Upper	99.6	43.7	0.1	28.5	22.4	9.7	12.3	15.4	22.4	41.0	61.7	N

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Epoxy/rubber cement used	Yes	All	Lower	96.7	22.7	0.0	24.1	20.3	6.1	12.4	14.8	19.9	26.0	38.2	45.7
		All	Upper	100.0	47.8	4.5	31.7	27.1	13.9	16.0	20.1	26.0	40.8	52.4	73.4
		Port	Lower	92.3	30.0	0.0	26.0	19.1	0.2	9.9	13.7	21.6	31.2	46.1	50.7
		Port	Upper	100.0	55.3	9.9	37.7	31.2	13.4	15.6	21.4	30.8	51.1	67.9	N
		Trad	Lower	N	10.3	0.0	20.3	19.3	11.8	12.3	14.0	18.2	20.1	28.1	31.7
		Trad	Upper	N	48.8	0.5	29.4	27.0	16.6	18.1	20.0	25.0	38.4	48.9	49.8
Epoxy/rubber cement used	No	All	Lower	94.5	30.1	0.7	24.1	17.4	2.6	8.9	12.8	20.2	30.0	43.1	53.4
		All	Upper	98.6	42.6	2.3	28.9	22.6	9.6	11.9	16.5	24.4	38.1	58.9	88.4
		Port	Lower	93.9	44.3	1.7	29.7	21.7	3.3	10.6	17.9	24.7	37.5	51.2	60.9
		Port	Upper	98.5	56.1	5.7	34.9	27.9	12.0	15.5	21.2	30.8	44.7	62.2	86.5
		Trad	Lower	94.1	20.2	0.0	20.3	14.8	0.5	8.1	11.7	16.5	25.3	35.2	41.8
		Trad	Upper	99.4	36.7	0.7	26.1	20.8	9.5	11.6	14.4	21.8	34.0	55.4	60.9
Air freshener used	Yes	All	Lower	93.9	32.6	0.1	24.6	19.2	4.5	9.9	13.9	21.3	30.7	41.4	48.1
		All	Upper	98.9	52.0	2.8	29.9	24.9	11.8	14.1	19.8	27.1	39.6	51.9	68.6
		Port	Lower	90.0	43.8	0.6	27.8	18.3	N	6.2	16.4	24.8	35.6	45.7	52.6
		Port	Upper	97.9	60.9	4.8	33.6	27.2	12.2	16.1	21.8	32.2	43.6	57.4	76.9
		Trad	Lower	95.8	19.6	0.0	21.1	18.7	6.0	10.4	12.6	17.8	25.5	30.4	37.5
		Trad	Upper	100.0	49.2	1.5	28.0	24.8	12.6	14.0	19.0	26.9	37.7	49.5	N
Air freshener used	No	All	Lower	94.8	26.4	0.7	23.5	16.8	1.4	8.5	12.7	19.3	28.6	43.4	52.7
		All	Upper	99.3	40.1	2.6	29.2	22.7	10.0	12.1	16.0	23.2	37.9	62.9	85.5
		Port	Lower	96.0	40.1	1.8	29.7	23.2	5.6	12.6	17.9	23.3	36.8	52.7	62.5
		Port	Upper	99.6	54.0	7.2	36.5	29.5	12.8	15.3	21.3	29.5	47.8	66.0	99.8
		Trad	Lower	93.5	17.6	0.0	19.6	13.8	N	7.5	11.5	15.9	24.1	34.1	43.1
		Trad	Upper	99.8	34.9	0.4	26.3	20.7	9.5	11.6	14.5	21.3	34.3	58.2	64.2

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Air freshener used - plug-in	Yes	All	Lower	90.5	26.7	0.0	22.5	16.3	0.5	7.3	12.7	19.6	28.3	38.6	45.7
		All	Upper	99.3	50.5	2.7	29.4	23.7	10.9	13.5	19.2	27.1	39.0	51.7	66.8
		Port	Lower	88.0	35.4	0.0	25.5	14.6	N	N	N	22.6	33.9	44.0	49.0
		Port	Upper	98.7	57.0	5.7	33.8	26.3	N	N	21.5	30.7	45.4	57.8	84.1
		Trad	Lower	90.9	12.6	N	18.5	16.2	3.1	6.4	11.6	14.5	21.0	29.3	32.8
		Trad	Upper	100.0	51.0	N	26.8	24.0	12.3	13.8	19.3	28.4	35.6	N	N
Air freshener used - plug-in	No	All	Lower	95.3	29.4	0.7	24.3	17.9	2.7	9.2	13.2	20.3	30.2	43.6	53.7
		All	Upper	99.1	42.1	2.5	29.3	23.2	10.1	12.4	16.6	24.3	38.7	59.6	80.2
		Port	Lower	95.1	43.7	1.8	30.0	23.5	5.8	12.4	18.3	24.3	37.5	52.1	62.0
		Port	Upper	99.0	55.9	6.2	35.6	28.9	12.6	15.5	21.3	30.6	46.2	64.1	93.5
		Trad	Lower	94.7	19.8	0.0	20.6	15.0	0.3	8.2	12.1	16.8	25.2	36.1	42.6
		Trad	Upper	99.8	36.4	0.7	26.5	21.2	10.2	11.9	14.9	21.8	35.5	55.9	69.8
Air freshener used - spray	Yes	All	Lower	93.9	30.6	0.0	24.2	19.1	4.4	10.8	13.3	21.0	29.7	39.9	45.4
		All	Upper	99.5	55.9	3.8	31.4	26.5	13.6	15.1	21.1	29.4	39.3	54.3	75.0
		Port	Lower	88.2	42.6	0.0	26.9	17.7	N	4.2	15.7	23.7	34.0	44.6	50.4
		Port	Upper	99.1	66.6	6.2	35.2	29.9	15.1	16.8	23.3	33.5	45.5	59.1	79.3
		Trad	Lower	96.8	15.1	0.0	20.5	18.1	10.0	10.4	12.0	15.2	24.0	29.3	33.6
		Trad	Upper	100.0	54.7	2.4	30.2	26.9	13.9	14.9	20.9	28.5	38.4	N	N
Air freshener used - spray	No	All	Lower	94.8	28.2	0.7	23.9	17.3	2.3	8.8	13.0	19.7	29.4	43.7	53.3
		All	Upper	98.9	40.7	2.4	28.9	22.6	9.6	11.9	16.5	23.6	37.2	60.1	80.3
		Port	Lower	94.9	41.1	1.8	29.6	22.1	4.3	12.4	18.1	23.9	37.2	52.2	61.8
		Port	Upper	99.2	53.8	6.2	35.4	28.4	12.7	15.3	21.0	29.1	45.9	64.1	94.4
		Trad	Lower	93.9	19.1	0.0	20.0	14.5	N	7.9	11.8	16.6	24.8	34.8	41.4
		Trad	Upper	99.5	35.3	0.4	25.9	20.7	9.5	11.7	14.8	21.2	33.7	54.8	60.3

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
New furnishings odor	Never	All	Lower	95.1	28.7	0.6	23.8	17.6	2.6	9.3	13.0	20.1	29.5	42.4	52.4
		All	Upper	99.0	41.3	2.3	28.5	22.6	10.0	11.9	16.4	23.7	37.6	57.7	84.9
		Port	Lower	94.2	40.1	1.5	28.7	21.2	3.0	10.7	17.2	23.3	36.2	50.0	57.2
		Port	Upper	98.7	52.6	5.9	34.0	27.1	11.6	14.8	20.6	28.3	44.9	59.0	80.4
		Trad	Lower	95.0	21.1	0.0	20.7	15.4	1.3	8.5	12.0	17.0	25.4	36.1	42.2
		Trad	Upper	99.8	37.3	0.6	26.3	21.3	10.1	11.9	14.8	21.7	34.8	54.4	60.4
New furnishings odor	Sometimes	All	Lower	90.7	28.7	0.1	24.9	19.2	1.5	6.2	14.9	20.3	29.5	42.9	48.6
		All	Upper	100.0	54.7	6.1	34.2	28.4	14.2	15.8	21.0	29.3	45.3	59.7	88.2
		Port	Lower	96.6	42.1	0.2	28.7	25.2	11.5	12.2	16.5	22.4	35.7	44.6	53.9
		Port	Upper	100.0	76.0	10.8	43.0	36.0	16.4	18.8	27.0	38.3	53.7	85.1	N
		Trad	Lower	81.4	3.8	0.0	17.1	12.0	N	1.2	7.7	15.2	20.7	24.8	26.4
		Trad	Upper	100.0	37.3	0.9	26.8	24.6	13.6	15.3	19.4	24.5	33.9	48.3	49.3
New furnishings odor	Often	All	Lower	N	55.0	N	32.2	30.8	N	14.2	24.3	28.8	35.5	39.0	44.9
		All	Upper	N	98.8	N	49.7	46.8	28.7	29.9	36.9	52.8	N	N	N
		Port	Lower	N	48.7	N	31.2	29.6	N	13.0	24.2	25.5	32.0	44.1	46.6
		Port	Upper	N	97.4	N	51.4	48.2	26.8	29.9	34.3	62.0	N	N	N
		Trad	Lower	N	N	N	39.1	39.1	N	N	N	N	N	N	N
		Trad	Upper	N	N	N	39.1	39.1	N	N	N	N	N	N	N
Construction activity this yr	Current	All	Lower	96.9	33.8	0.1	24.3	19.5	4.7	10.8	11.4	20.4	31.1	42.0	51.2
		All	Upper	100.0	60.2	2.5	35.2	28.9	12.6	14.1	20.7	31.2	51.7	66.6	82.5
		Port	Lower	97.1	44.5	0.3	28.2	24.2	5.8	9.8	15.4	23.8	34.4	45.2	60.1
		Port	Upper	100.0	65.6	6.5	37.5	31.6	13.8	16.6	21.9	32.9	47.2	63.8	89.7
		Trad	Lower	96.0	23.9	0.0	20.5	16.4	N	10.7	11.0	14.6	26.4	38.5	42.2
		Trad	Upper	100.0	60.9	0.4	35.6	28.8	12.1	14.5	20.8	31.1	55.9	N	N

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Construction activity this yr	Previous	All	Lower	91.7	27.8	0.8	23.9	15.9	N	7.6	13.7	20.2	29.4	40.8	49.4
		All	Upper	98.6	44.2	3.8	30.2	23.8	9.8	13.0	18.2	25.3	38.8	59.0	86.0
		Port	Lower	93.3	38.5	1.7	28.9	21.2	2.1	12.2	17.8	23.6	37.0	48.4	57.9
		Port	Upper	99.1	54.3	8.4	36.5	28.9	13.0	16.1	21.8	29.6	46.2	67.5	92.6
		Trad	Lower	89.4	17.8	0.0	19.8	12.4	N	3.9	10.2	17.0	25.0	33.4	37.5
		Trad	Upper	99.5	40.6	1.2	26.8	22.1	10.2	12.9	16.9	24.5	36.4	50.6	N
Construction activity this yr	Never	All	Lower	97.2	19.6	0.0	21.1	17.4	3.7	8.0	12.4	16.9	24.6	36.2	46.1
		All	Upper	99.8	38.1	1.0	26.2	22.1	10.9	12.7	15.7	22.5	34.1	52.1	66.0
		Port	Lower	91.7	37.9	0.1	27.5	19.8	1.6	8.8	16.1	22.3	33.1	48.0	53.2
		Port	Upper	99.3	60.9	2.8	34.6	29.0	13.4	15.8	21.9	32.9	49.3	58.1	76.3
		Trad	Lower	N	7.2	N	17.2	15.5	N	7.1	11.5	13.8	20.3	25.5	28.9
		Trad	Upper	N	30.1	N	22.7	20.2	11.5	12.2	14.2	21.0	29.4	44.4	N
Construction activity this yr	Unknown	All	Lower	85.0	0.0	N	18.5	9.8	N	N	13.2	16.9	18.0	N	N
		All	Upper	100.0	39.3	N	28.0	31.6	N	22.0	24.8	26.3	32.8	39.0	N
		Port	Lower	68.2	13.7	N	15.6	4.1	N	N	N	13.2	23.3	28.1	N
		Port	Upper	100.0	72.8	N	32.4	42.4	N	17.7	24.1	32.8	37.9	N	N
		Trad	Lower	N	N	N	17.1	17.2	N	N	N	N	N	N	N
		Trad	Upper	N	N	N	28.2	28.6	N	N	N	N	N	N	N
Carpentry activity this yr	Yes	All	Lower	96.1	28.8	0.1	24.0	18.3	4.8	8.7	12.0	19.0	31.7	43.5	51.4
		All	Upper	100.0	51.1	2.7	34.0	27.1	11.8	13.0	18.3	28.0	47.9	64.5	89.3
		Port	Lower	96.3	36.9	0.0	27.3	22.6	6.2	12.2	15.7	22.2	35.5	47.0	51.8
		Port	Upper	100.0	56.1	6.9	37.8	30.4	13.3	15.5	21.4	32.0	47.7	62.4	N
		Trad	Lower	95.4	20.9	0.0	20.7	15.5	1.2	8.6	10.8	14.7	25.8	38.6	42.9
		Trad	Upper	100.0	52.0	0.8	33.4	26.6	11.5	12.2	17.5	29.9	51.4	64.9	N

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Carpentry activity this yr	No	All	Lower	93.6	28.0	0.8	23.6	16.9	1.6	8.6	13.6	20.2	28.6	42.0	50.8
		All	Upper	98.6	40.6	2.6	27.4	22.2	9.9	12.6	17.0	23.9	34.6	50.9	69.8
		Port	Lower	92.5	43.6	1.8	29.4	20.6	1.6	9.0	17.8	24.7	36.8	51.5	62.1
		Port	Upper	98.2	57.0	6.2	34.6	27.7	12.1	15.7	21.4	30.8	45.1	64.8	83.0
		Trad	Lower	93.3	16.4	0.0	19.5	14.2	N	7.4	12.5	16.9	23.8	30.2	35.3
		Trad	Upper	99.8	32.5	0.7	23.5	20.4	10.6	12.1	15.3	21.4	29.7	45.9	51.0
In-room construction this yr	Yes	All	Lower	95.2	27.2	0.0	22.4	17.3	3.6	9.2	12.8	17.8	29.7	40.1	47.7
		All	Upper	100.0	56.9	0.5	35.9	28.7	12.3	14.5	19.0	31.6	62.8	64.1	64.8
		Port	Lower	92.3	31.4	0.0	24.2	16.5	N	7.5	14.3	20.2	32.2	40.2	45.8
		Port	Upper	100.0	57.7	1.6	31.6	28.3	14.4	16.4	20.1	32.0	43.3	52.6	59.1
		Trad	Lower	95.0	20.2	N	20.1	16.1	N	N	N	N	26.1	36.5	41.5
		Trad	Upper	100.0	61.6	N	39.3	31.9	N	N	19.3	37.4	62.1	N	N
In-room construction this yr	No	All	Lower	94.6	29.2	0.9	24.1	17.6	2.7	9.0	13.2	20.4	29.8	42.6	51.3
		All	Upper	98.7	41.3	2.7	28.5	22.7	9.9	12.4	16.8	24.1	36.4	53.1	82.5
		Port	Lower	94.1	44.1	2.1	30.2	22.5	4.4	11.6	18.3	25.0	37.7	52.7	62.9
		Port	Upper	98.6	55.8	6.4	35.7	28.6	12.1	15.3	21.3	30.3	46.2	65.0	92.4
		Trad	Lower	94.1	18.3	0.0	19.9	14.7	N	8.0	12.0	16.9	24.6	33.7	38.8
		Trad	Upper	99.6	34.1	0.7	24.4	20.4	10.0	11.9	14.9	21.4	32.0	45.6	61.5
Other school construction this yr	Yes	All	Lower	93.8	33.0	0.9	25.2	17.8	1.5	9.1	13.0	21.1	32.4	45.0	53.5
		All	Upper	98.7	47.8	3.1	31.1	24.4	10.3	12.6	18.3	26.3	40.8	63.1	86.1
		Port	Lower	95.0	42.7	2.0	29.7	22.7	4.1	11.0	17.8	24.3	37.2	51.0	62.7
		Port	Upper	99.2	56.0	7.1	36.0	29.0	12.4	15.6	21.4	30.1	45.4	65.8	87.0
		Trad	Lower	92.1	24.5	0.0	21.5	14.6	N	7.6	11.7	18.1	26.9	37.9	46.3
		Trad	Upper	99.2	44.8	0.9	28.9	22.7	10.3	12.0	16.6	25.5	38.8	61.1	70.7

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Other school construction this yr	No	All	Lower	96.8	19.0	0.1	21.1	17.1	3.7	8.5	13.0	17.2	24.7	34.0	46.6
		All	Upper	99.5	35.0	1.1	25.6	21.4	10.8	12.9	16.2	21.9	31.9	50.4	69.5
		Port	Lower	90.2	38.0	0.4	27.4	17.8	N	6.1	16.2	22.3	33.2	47.5	52.9
		Port	Upper	98.3	58.6	3.3	33.7	27.1	12.4	15.3	21.4	32.7	47.7	57.1	78.1
		Trad	Lower	N	6.8	N	17.5	16.0	N	8.1	12.0	14.7	20.0	25.9	28.6
		Trad	Upper	N	26.3	N	22.2	20.0	11.4	12.6	15.0	20.0	28.1	37.5	N
# teacher complaints in school yr	0	All	Lower	92.5	28.2	0.5	24.3	16.1	N	9.6	13.8	20.8	28.5	40.9	50.6
		All	Upper	99.5	45.2	2.7	29.5	24.4	11.4	13.4	18.6	26.1	38.4	55.7	76.6
		Port	Lower	92.6	37.8	1.3	28.6	19.5	N	10.3	17.8	23.5	35.3	50.9	59.4
		Port	Upper	99.0	54.2	7.1	35.1	28.2	13.0	15.8	21.6	29.3	47.3	67.0	85.5
		Trad	Lower	91.1	20.0	0.0	20.6	13.4	N	7.4	12.8	18.5	26.3	34.1	39.0
		Trad	Upper	100.0	42.6	0.1	27.3	24.1	12.0	13.3	18.2	26.0	36.8	50.7	N
# teacher complaints in school yr	1-5	All	Lower	94.8	28.2	0.5	23.8	18.1	4.4	8.1	13.3	19.3	29.2	43.1	50.7
		All	Upper	98.9	44.6	2.8	29.6	23.6	9.9	12.9	16.8	24.2	40.0	60.6	88.7
		Port	Lower	93.4	44.1	1.2	29.4	22.1	4.0	10.0	17.1	24.7	38.4	49.8	58.6
		Port	Upper	98.9	59.4	7.0	36.7	29.5	12.8	14.8	21.7	31.9	46.7	62.3	94.8
		Trad	Lower	94.8	16.0	0.0	19.1	15.2	3.3	7.7	11.8	16.0	22.0	32.7	39.1
		Trad	Upper	99.9	38.3	0.5	26.7	21.7	10.6	12.6	15.8	21.6	37.6	57.7	N
# teacher complaints in school yr	>5	All	Lower	99.0	13.3	0.0	16.1	14.2	2.3	5.0	10.8	11.5	18.8	30.4	33.5
		All	Upper	100.0	53.7	3.4	34.6	27.1	11.4	12.0	18.7	29.4	62.7	64.6	65.2
		Port	Lower	97.3	23.2	0.0	22.8	19.7	5.9	8.6	15.2	18.8	23.9	33.4	39.6
		Port	Upper	100.0	67.6	1.2	33.2	29.6	18.7	18.9	22.5	33.3	39.3	59.2	62.1
		Trad	Lower	N	0.0	0.0	9.7	10.9	N	N	9.3	10.8	11.3	11.7	15.4
		Trad	Upper	N	55.0	5.2	37.9	27.8	N	N	11.8	28.0	51.1	61.8	N

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Overall air quality (teacher)	Excellent	All	Lower	95.1	25.1	0.0	23.4	18.3	4.0	10.8	12.1	19.3	27.1	41.2	46.4
		All	Upper	100.0	48.3	3.7	30.6	26.4	13.4	15.6	19.9	26.3	41.1	51.8	71.5
		Port	Lower	95.5	38.9	0.0	29.5	22.7	N	13.0	18.9	22.6	37.6	47.6	57.2
		Port	Upper	100.0	62.5	9.5	39.1	33.3	17.1	20.7	22.6	35.3	52.7	70.6	N
		Trad	Lower	94.3	11.9	N	18.4	15.4	3.3	10.6	11.1	14.8	21.7	28.2	32.4
		Trad	Upper	100.0	43.8	N	26.4	23.5	12.5	14.2	18.5	26.1	35.4	45.8	N
Overall air quality (teacher)	Good	All	Lower	90.6	22.3	0.6	21.4	13.3	N	5.0	12.3	17.2	26.2	38.4	48.1
		All	Upper	98.6	38.8	3.7	26.7	20.8	8.7	12.4	15.4	22.9	33.0	50.9	70.0
		Port	Lower	91.3	38.4	1.4	28.3	19.7	1.0	8.0	15.4	22.4	35.2	51.8	57.9
		Port	Upper	98.9	57.9	9.2	36.1	28.9	12.7	14.6	20.6	30.6	51.4	72.8	87.4
		Trad	Lower	88.8	11.6	0.0	17.2	10.2	N	N	10.4	14.5	21.0	27.6	31.7
		Trad	Upper	99.9	32.2	1.5	22.9	19.0	9.5	12.0	14.6	21.1	29.2	39.9	48.8
Overall air quality (teacher)	Adequate	All	Lower	96.8	32.0	0.0	25.3	21.0	6.3	10.9	13.4	21.2	32.5	42.8	52.2
		All	Upper	99.8	55.2	2.2	34.8	28.8	13.3	15.3	20.6	31.7	48.8	64.6	81.6
		Port	Lower	94.7	40.8	0.0	27.7	21.0	1.0	10.8	17.5	24.6	33.7	44.6	51.0
		Port	Upper	99.7	60.1	5.4	36.4	29.5	13.3	16.8	22.1	32.5	44.1	62.6	91.9
		Trad	Lower	97.2	23.1	0.0	22.6	19.9	7.5	10.7	11.5	19.0	28.4	36.6	45.3
		Trad	Upper	100.0	55.3	0.2	35.0	29.9	13.7	15.2	20.3	32.7	54.3	65.0	N
Overall air quality (teacher)	Poor	All	Lower	94.4	21.2	0.0	20.8	15.9	0.8	4.5	8.5	16.7	24.1	38.9	43.8
		All	Upper	100.0	48.8	3.1	29.9	24.5	12.7	13.5	19.4	25.1	41.0	54.3	60.6
		Port	Lower	86.6	34.4	0.0	25.3	16.3	0.1	0.6	15.3	23.2	34.3	44.0	46.0
		Port	Upper	100.0	61.8	7.4	37.4	31.9	15.2	17.4	23.4	34.3	45.6	62.2	N
		Trad	Lower	N	6.1	N	15.5	13.6	N	N	7.3	13.2	18.8	20.8	26.9
		Trad	Upper	N	45.5	N	26.7	23.3	12.7	13.4	18.8	20.9	39.4	N	N

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Overall air quality (teacher)	Very_poor	All	Lower	N	0.0	N	12.4	12.4	N	7.7	9.9	10.3	10.7	22.2	23.8
		All	Upper	N	60.6	N	36.9	33.2	17.2	19.8	23.4	34.9	49.0	53.4	N
		Port	Lower	N	12.3	N	18.3	15.9	N	N	8.0	13.0	19.9	26.2	27.4
		Port	Upper	N	70.9	N	32.5	30.1	16.7	18.3	22.8	30.7	41.7	N	N
		Trad	Lower	N	0.0	N	5.2	9.1	N	N	N	N	N	N	N
		Trad	Upper	N	63.0	N	43.0	41.0	N	N	N	N	N	N	N
Nose symptoms past 2 weeks	None	All	Lower	97.4	24.3	0.5	22.3	18.0	4.0	8.8	12.7	17.5	27.3	39.1	47.4
		All	Upper	99.5	40.7	3.3	28.8	23.0	10.7	12.7	15.9	22.9	37.4	58.4	82.7
		Port	Lower	92.6	38.6	1.5	28.9	20.1	N	9.2	16.8	22.6	37.1	51.4	60.9
		Port	Upper	98.5	55.7	9.5	37.7	28.8	12.7	15.7	21.4	30.5	50.3	78.3	98.0
		Trad	Lower	N	13.7	0.0	18.2	16.2	7.4	8.2	11.2	14.4	20.9	N	N
		Trad	Upper	N	35.7	0.1	24.8	21.5	11.1	12.5	14.6	20.7	N	N	N
Nose symptoms past 2 weeks	Occasional	All	Lower	88.1	28.7	0.4	22.7	13.4	N	1.6	11.8	19.6	29.4	39.8	46.1
		All	Upper	97.4	48.0	2.5	29.1	22.6	9.6	12.6	18.6	26.4	38.1	57.4	84.9
		Port	Lower	90.1	41.7	0.8	27.8	19.2	0.9	4.9	16.6	23.7	34.2	45.6	56.3
		Port	Upper	99.2	58.9	6.5	34.7	28.3	12.8	16.1	21.6	32.1	43.9	60.4	84.5
		Trad	Lower	85.2	19.5	0.0	19.0	10.4	N	N	N	N	N	30.5	37.1
		Trad	Upper	98.4	44.9	0.8	27.2	21.5	N	N	N	N	33.9	51.1	N
Nose symptoms past 2 weeks	Frequent	All	Lower	98.8	29.0	0.0	25.6	21.7	6.3	10.6	15.1	20.9	32.3	46.4	51.3
		All	Upper	100.0	52.3	2.2	34.7	29.5	13.4	16.0	20.4	29.1	49.9	63.1	63.5
		Port	Lower	97.4	40.6	0.1	28.5	23.4	4.1	11.6	18.4	24.0	35.3	46.3	51.1
		Port	Upper	100.0	62.9	3.1	35.2	31.2	14.7	17.9	22.9	32.9	46.2	61.5	73.0
		Trad	Lower	N	13.7	0.0	21.3	18.9	N	6.9	12.8	19.2	21.8	37.7	43.7
		Trad	Upper	N	50.0	2.3	36.4	30.4	13.9	16.0	20.2	28.1	58.1	61.9	63.0

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Nose symptoms at home	Same/worse	All	Lower	89.1	28.1	0.2	23.6	14.5	N	3.2	13.7	20.5	29.8	41.7	48.2
		All	Upper	98.8	47.4	1.5	29.8	24.6	10.8	13.3	19.5	26.4	40.9	57.0	77.4
		Port	Lower	94.1	45.3	0.5	29.5	23.0	4.6	11.0	18.5	25.5	36.4	47.5	54.8
		Port	Upper	100.0	63.8	4.1	35.3	30.8	13.2	17.1	23.7	33.5	46.4	59.4	77.3
		Trad	Lower	85.3	16.3	0.0	19.5	10.8	N	N	N	N	24.1	31.4	40.3
		Trad	Upper	99.3	41.8	0.2	27.9	23.3	N	N	N	25.7	40.3	N	N
Nose symptoms at home	Improves	All	Lower	96.1	25.5	0.0	22.8	17.5	3.4	9.2	11.2	18.7	27.9	40.3	47.4
		All	Upper	100.0	52.6	3.5	34.7	28.3	13.1	15.4	19.3	29.4	49.9	63.2	63.6
		Port	Lower	91.2	34.0	0.0	25.4	17.9	0.2	6.0	16.1	21.6	33.0	42.4	46.9
		Port	Upper	100.0	55.4	4.6	34.1	28.3	14.6	17.4	20.7	31.4	44.3	60.8	85.1
		Trad	Lower	N	12.7	0.0	18.1	15.8	N	N	10.8	11.5	19.9	30.9	35.6
		Trad	Upper	N	55.6	3.5	37.6	30.7	12.2	14.1	19.2	32.0	59.4	62.4	63.3
Nose symptoms at home	NA	All	Lower	97.4	24.3	0.5	22.3	18.0	4.0	8.8	12.7	17.5	27.3	39.1	47.4
		All	Upper	99.5	40.7	3.3	28.8	23.0	10.7	12.7	15.9	22.9	37.4	58.4	82.7
		Port	Lower	92.6	38.6	1.5	28.9	20.1	N	9.2	16.8	22.6	37.1	51.4	60.9
		Port	Upper	98.5	55.7	9.5	37.7	28.8	12.7	15.7	21.4	30.5	50.3	78.3	98.0
		Trad	Lower	N	13.7	0.0	18.2	16.2	7.4	8.2	11.2	14.4	21.3	30.9	35.4
		Trad	Upper	N	35.7	0.1	24.8	21.5	11.1	12.5	14.6	21.1	35.1	44.3	N
Throat symptoms past 2 weeks	None	All	Lower	97.2	25.6	0.7	23.2	18.8	5.6	8.8	13.2	18.7	27.3	41.0	49.4
		All	Upper	99.6	40.4	3.1	29.1	23.3	10.7	12.7	15.7	22.7	37.9	61.4	84.8
		Port	Lower	94.3	42.2	1.9	30.2	22.2	2.6	12.7	17.4	23.2	39.4	51.7	63.9
		Port	Upper	98.9	57.7	8.5	37.8	29.7	13.5	15.7	21.4	31.4	49.0	72.5	109.3
		Trad	Lower	98.4	14.5	0.0	18.7	16.5	5.3	8.7	11.9	14.9	21.7	31.8	36.2
		Trad	Upper	100.0	33.0	0.2	25.0	21.2	11.1	12.2	14.5	20.6	34.0	49.2	N

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Throat symptoms past 2 weeks	Occasional	All	Lower	92.1	29.6	0.0	23.3	16.3	0.9	6.6	12.5	20.4	30.1	40.6	49.0
		All	Upper	98.5	51.5	2.7	31.5	25.0	10.3	14.1	20.1	29.0	43.1	62.8	63.4
		Port	Lower	89.8	37.8	0.2	26.7	18.1	0.2	4.7	16.5	23.4	32.9	44.6	52.1
		Port	Upper	99.1	59.5	4.6	33.4	28.1	13.5	17.1	22.4	31.5	43.3	60.6	80.0
		Trad	Lower	91.4	21.1	0.0	20.2	14.2	N	6.1	11.6	17.5	26.2	31.3	39.2
		Trad	Upper	100.0	50.6	1.9	31.4	25.0	11.6	13.6	19.5	28.7	45.2	60.8	62.5
Throat symptoms past 2 weeks	Frequent	All	Lower	92.8	26.6	0.0	24.5	16.8	N	9.9	13.6	21.5	29.5	42.6	47.8
		All	Upper	100.0	49.1	1.9	31.5	28.4	13.0	14.8	20.8	27.1	45.3	54.7	57.2
		Port	Lower	95.7	32.5	0.0	25.7	19.9	2.1	9.2	15.2	23.2	33.5	43.4	46.1
		Port	Upper	100.0	59.1	3.8	33.4	29.5	13.4	16.6	21.7	32.7	44.4	56.0	60.0
		Trad	Lower	87.7	12.3	N	21.0	12.2	N	N	13.0	18.6	24.5	31.8	37.5
		Trad	Upper	100.0	47.8	N	32.0	31.8	13.5	16.5	21.9	25.5	48.4	N	N
Throat symptoms at home	Same/worse	All	Lower	90.0	26.3	0.0	22.7	14.4	N	6.2	12.2	20.5	28.3	37.3	46.2
		All	Upper	99.8	49.7	1.4	28.9	24.9	11.3	13.8	20.2	27.2	37.6	50.6	62.4
		Port	Lower	98.5	35.4	0.0	27.0	23.3	4.1	9.5	17.2	23.8	31.6	41.2	51.0
		Port	Upper	100.0	59.0	3.7	33.6	29.7	15.7	18.5	23.5	30.6	41.4	60.2	73.2
		Trad	Lower	84.5	16.2	N	19.0	10.3	N	N	N	N	25.6	30.2	33.9
		Trad	Upper	100.0	49.0	N	27.3	23.7	N	N	N	27.0	37.0	49.7	N
Throat symptoms at home	Improves	All	Lower	94.6	27.9	0.0	23.2	17.3	5.0	8.1	11.2	19.3	29.3	40.9	48.1
		All	Upper	99.6	54.8	4.1	34.9	28.2	13.2	16.1	20.3	29.9	50.6	63.2	63.6
		Port	Lower	87.6	34.2	0.0	25.3	15.5	N	0.8	12.9	22.5	33.8	45.0	48.8
		Port	Upper	99.5	58.3	4.9	32.7	26.7	11.8	14.6	21.1	33.2	45.3	57.1	78.2
		Trad	Lower	N	15.8	0.0	19.5	17.1	N	N	10.6	15.7	24.4	31.0	36.3
		Trad	Upper	N	59.0	3.5	38.6	32.7	16.3	17.3	21.5	31.3	59.4	62.3	63.3

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Throat symptoms at home	NA	All	Lower	97.2	25.6	0.7	23.2	18.8	5.6	8.8	13.2	18.7	27.3	41.0	49.4
		All	Upper	99.6	40.4	3.1	29.1	23.3	10.7	12.7	15.7	22.7	37.9	61.4	84.8
		Port	Lower	94.3	42.2	1.9	30.2	22.2	2.6	12.7	17.4	23.2	39.4	51.7	63.9
		Port	Upper	98.9	57.7	8.5	37.8	29.7	13.5	15.7	21.4	31.4	49.0	72.5	109.3
		Trad	Lower	98.4	14.5	0.0	18.7	16.5	5.3	8.7	11.9	14.9	21.7	31.8	36.2
		Trad	Upper	100.0	33.0	0.2	25.0	21.2	11.1	12.2	14.5	20.6	34.0	49.2	N
Eyes symptoms past 2 weeks	None	All	Lower	95.0	27.9	0.6	23.1	17.6	3.2	9.2	12.9	19.5	28.6	40.8	47.5
		All	Upper	99.2	42.3	2.8	28.4	22.7	10.6	12.5	15.9	24.1	37.4	53.6	80.4
		Port	Lower	93.2	41.7	1.6	28.6	20.2	1.4	10.4	16.3	23.6	34.9	48.8	60.0
		Port	Upper	99.1	56.8	7.6	35.6	28.1	12.6	14.7	21.4	30.1	44.8	69.3	93.0
		Trad	Lower	95.2	17.2	0.0	19.3	15.4	2.9	8.8	11.8	15.1	24.0	33.1	37.7
		Trad	Upper	100.0	37.0	0.2	24.9	21.2	10.9	12.1	14.6	22.3	35.3	45.2	55.4
Eyes symptoms past 2 weeks	Occasional	All	Lower	97.2	28.9	0.0	24.5	19.5	5.7	8.0	11.5	19.3	29.6	46.7	52.4
		All	Upper	100.0	52.8	2.8	33.9	27.7	13.3	15.8	19.2	28.7	50.3	63.7	80.6
		Port	Lower	97.3	43.6	0.0	30.5	26.4	7.9	13.9	19.2	24.5	39.7	50.1	57.4
		Port	Upper	100.0	65.2	4.9	37.3	32.7	16.2	19.1	23.0	36.7	49.9	62.0	72.2
		Trad	Lower	96.6	18.5	0.0	20.3	16.3	2.5	7.0	11.5	16.7	25.5	31.1	43.3
		Trad	Upper	100.0	49.9	2.0	33.3	26.5	12.7	14.6	18.2	28.3	52.9	N	N
Eyes symptoms past 2 weeks	Frequent	All	Lower	93.9	18.8	0.0	22.7	18.4	4.5	10.8	13.5	20.6	24.8	36.0	45.7
		All	Upper	100.0	45.0	1.9	29.5	25.6	13.5	15.7	20.6	24.9	36.1	54.5	74.1
		Port	Lower	86.7	26.6	0.0	23.8	16.2	0.2	0.8	12.9	21.9	29.1	38.6	46.2
		Port	Upper	100.0	54.4	4.2	32.4	27.9	12.5	15.7	21.8	31.3	44.6	61.5	77.1
		Trad	Lower	N	7.1	N	19.7	18.3	N	N	12.1	18.8	21.0	24.6	29.9
		Trad	Upper	N	42.4	N	29.2	26.6	14.5	18.4	20.8	24.5	33.4	56.0	N

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Eyes symptoms at home	Same/worse	All	Lower	97.1	19.1	0.0	22.0	18.2	2.9	7.6	11.5	18.7	25.6	36.9	47.1
		All	Upper	100.0	43.3	2.3	30.5	25.7	12.9	14.6	19.2	25.8	40.8	65.8	78.6
		Port	Lower	94.4	44.4	0.0	30.2	26.3	N	12.0	19.0	25.4	38.5	48.8	53.2
		Port	Upper	100.0	66.9	4.1	38.0	33.9	15.6	20.4	24.9	37.0	51.2	61.3	67.0
		Trad	Lower	97.2	8.1	0.0	18.1	15.6	1.8	5.8	11.3	16.2	21.1	26.1	29.7
		Trad	Upper	100.0	36.8	2.2	28.7	23.9	13.2	15.0	18.7	24.7	36.6	55.7	61.9
Eyes symptoms at home	Improves	All	Lower	95.3	31.5	0.0	25.3	20.0	2.6	6.4	13.4	20.9	33.3	46.6	51.9
		All	Upper	100.0	60.2	2.9	36.9	30.7	13.1	16.2	21.0	33.9	58.3	63.3	63.6
		Port	Lower	90.4	31.2	0.0	25.8	18.3	1.7	6.2	15.6	22.0	32.7	44.9	48.8
		Port	Upper	100.0	56.2	6.0	34.0	29.1	13.4	16.8	21.3	32.3	45.8	62.4	80.2
		Trad	Lower	N	24.0	N	21.8	18.9	N	N	10.1	18.5	24.6	39.4	45.6
		Trad	Upper	N	71.6	N	42.6	37.0	15.9	17.6	22.2	46.5	N	N	N
Eyes symptoms at home	NA	All	Lower	95.0	27.9	0.6	23.1	17.6	3.2	9.2	12.9	19.5	28.6	40.8	47.5
		All	Upper	99.2	42.3	2.8	28.4	22.7	10.6	12.5	15.9	24.1	37.4	53.6	80.4
		Port	Lower	93.2	41.7	1.6	28.6	20.2	1.4	10.4	16.3	23.6	34.9	48.8	60.0
		Port	Upper	99.1	56.8	7.6	35.6	28.1	12.6	14.7	21.4	30.1	44.8	69.3	93.0
		Trad	Lower	95.2	17.2	0.0	19.3	15.4	2.9	8.8	11.8	15.1	24.0	33.1	37.7
		Trad	Upper	100.0	37.0	0.2	24.9	21.2	10.9	12.1	14.6	22.3	35.3	45.2	55.4
Classroom age (yrs)	<=10yr	All	Lower	92.5	36.0	0.9	27.1	18.9	0.3	11.5	13.7	21.6	33.7	49.2	58.9
		All	Upper	99.6	55.0	5.0	34.0	28.0	13.4	15.8	21.0	30.2	46.5	62.4	80.0
		Port	Lower	91.0	48.7	1.2	31.2	21.1	N	8.5	20.1	27.0	38.4	54.7	61.9
		Port	Upper	99.5	65.8	6.7	38.4	32.7	14.7	19.3	23.7	34.0	52.3	69.3	82.9
		Trad	Lower	94.0	0.0	0.0	15.3	12.4	N	7.8	12.0	12.3	15.4	19.9	21.8
		Trad	Upper	100.0	28.1	0.6	23.0	21.2	13.4	13.5	17.0	20.2	28.4	38.3	43.4

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Classroom age (yrs)	11-20yr	All	Lower	91.0	34.4	0.0	26.5	20.7	3.0	6.8	15.0	23.4	33.6	45.4	48.8
		All	Upper	100.0	63.1	8.5	41.7	34.3	14.5	17.8	23.9	35.6	61.6	63.5	N
		Port	Lower	92.0	36.5	0.0	26.4	20.2	3.4	7.1	14.8	23.1	34.1	46.3	48.8
		Port	Upper	100.0	60.2	11.6	39.5	32.5	15.1	17.6	22.5	33.8	47.2	N	N
		Trad	Lower	80.3	8.7	N	17.2	16.2	N	N	7.1	21.5	24.8	25.2	26.9
		Trad	Upper	100.0	90.9	N	57.1	54.6	24.8	25.4	N	N	N	N	N
Classroom age (yrs)	21-30yr	All	Lower	91.5	0.7	0.0	16.3	11.7	N	7.9	13.3	14.2	18.6	20.3	22.5
		All	Upper	100.0	13.8	3.1	24.0	21.1	13.7	15.3	17.3	20.2	23.1	40.0	63.7
		Port	Lower	92.0	0.0	0.0	14.0	12.4	N	2.0	11.4	15.8	20.7	21.5	22.7
		Port	Upper	100.0	31.8	13.4	39.6	26.9	12.7	15.0	17.4	21.4	41.6	N	N
		Trad	Lower	90.1	0.0	N	15.5	10.5	N	0.7	12.9	13.9	16.4	19.7	20.0
		Trad	Upper	100.0	11.2	N	20.9	21.6	N	14.9	18.2	20.1	21.9	31.2	40.9
Classroom age (yrs)	31-40yr	All	Lower	92.9	21.8	N	20.9	15.0	N	2.2	11.7	18.6	24.9	36.8	37.4
		All	Upper	100.0	67.2	N	32.1	29.7	13.1	16.9	21.6	37.1	39.8	51.1	N
		Port	Lower	N	3.1	N	16.7	16.9	N	N	12.1	18.2	21.0	23.2	24.6
		Port	Upper	N	52.4	N	37.5	31.9	15.1	18.6	20.9	27.1	N	N	N
		Trad	Lower	91.5	21.7	N	19.9	13.7	N	1.1	10.1	17.6	23.2	35.5	36.6
		Trad	Upper	100.0	73.9	N	32.8	31.2	13.3	17.6	23.3	36.8	39.5	N	N
Classroom age (yrs)	41+yr	All	Lower	90.4	18.8	0.0	19.5	12.6	N	2.1	11.6	15.9	24.3	33.7	42.4
		All	Upper	100.0	49.1	0.9	31.8	27.8	12.1	14.4	18.3	26.8	46.8	65.3	65.4
		Port	Lower	N	13.4	N	23.7	23.6	N	N	N	N	N	N	N
		Port	Upper	N	100.0	N	69.0	71.2	N	N	N	N	N	N	N
		Trad	Lower	90.3	18.5	0.0	19.2	12.5	N	1.7	11.6	15.9	24.0	32.8	39.0
		Trad	Upper	100.0	48.9	0.9	31.7	27.7	12.2	14.0	18.2	26.7	48.6	N	N

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Classroom age (yrs)	0-3yr	All	Lower	91.1	36.4	0.0	26.0	17.3	N	10.7	11.9	20.7	33.3	46.0	57.2
		All	Upper	100.0	67.0	7.2	38.2	32.6	15.2	19.2	23.0	33.2	52.4	71.7	82.5
		Port	Lower	93.3	53.5	0.0	31.9	24.3	1.5	13.4	20.5	28.5	35.1	53.6	59.9
		Port	Upper	100.0	77.8	9.1	42.3	36.2	18.7	21.2	28.1	36.5	59.0	72.7	83.8
		Trad	Lower	80.2	N	N	10.3	5.4	N	N	N	N	N	N	N
		Trad	Upper	100.0	N	N	16.9	20.1	12.5	12.9	13.7	14.2	18.0	20.5	21.4
Classroom age (yrs)	4-5yr	All	Lower	95.1	50.1	0.0	30.5	26.5	N	10.6	19.7	29.2	37.8	47.6	50.3
		All	Upper	100.0	77.1	9.2	41.4	36.4	19.6	21.3	30.7	38.7	50.5	64.2	N
		Port	Lower	94.3	46.6	0.0	30.1	26.4	N	10.9	19.4	25.4	N	N	N
		Port	Upper	100.0	73.2	10.6	42.3	36.8	19.6	20.9	26.7	N	N	N	N
		Trad	Lower	N	62.8	N	23.9	19.1	N	N	N	N	N	N	N
		Trad	Upper	N	100.0	N	45.0	48.6	N	N	N	N	N	N	N
Classroom age (yrs)	6-10yr	All	Lower	85.5	11.2	0.0	20.1	11.6	N	0.2	13.3	18.4	22.1	29.0	37.0
		All	Upper	100.0	35.2	2.5	28.5	26.0	14.0	16.7	19.8	24.1	34.2	59.8	64.1
		Port	Lower	74.3	22.3	0.0	22.0	8.2	N	N	N	N	N	38.6	46.7
		Port	Upper	100.0	55.8	4.1	35.9	34.9	N	N	N	30.9	57.3	62.2	N
		Trad	Lower	N	0.0	0.0	16.3	15.6	N	N	11.9	13.5	16.9	N	N
		Trad	Upper	N	12.1	1.1	21.2	20.6	14.4	17.0	19.5	20.0	23.5	27.6	30.3
Classroom age (yrs)	11-15yr	All	Lower	89.4	30.7	0.0	25.9	19.8	N	5.3	13.1	22.6	33.3	44.6	47.4
		All	Upper	100.0	66.9	11.0	44.7	37.3	14.5	17.7	24.9	42.7	62.2	N	N
		Port	Lower	90.9	33.6	0.0	25.5	19.2	N	6.3	13.1	22.4	33.6	44.8	48.4
		Port	Upper	100.0	65.6	15.2	42.0	35.1	15.0	17.1	23.0	34.1	47.8	90.7	N
		Trad	Lower	76.2	0.0	N	16.5	15.0	N	N	6.1	15.5	24.2	24.9	25.0
		Trad	Upper	100.0	96.1	N	61.7	62.0	28.8	N	N	N	N	N	N

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Classroom age (yrs)	16+yr	All	Lower	93.5	19.7	0.0	21.1	15.0	N	8.4	12.1	18.1	24.0	37.4	44.4
		All	Upper	100.0	39.7	1.1	28.1	23.2	11.6	13.4	17.4	22.2	38.1	61.3	68.5
		Port	Lower	94.8	16.2	0.0	22.4	17.8	N	9.1	13.8	19.2	23.6	38.9	48.9
		Port	Upper	100.0	43.0	5.4	34.9	26.9	12.9	15.8	19.4	24.0	49.0	64.6	N
		Trad	Lower	92.9	18.7	0.0	20.1	14.2	N	8.2	11.6	17.3	22.9	35.4	39.6
		Trad	Upper	100.0	40.8	0.5	27.6	23.1	11.6	13.7	17.2	22.0	38.1	N	N
Classroom age (known/unknown)	Known	All	Lower	94.1	29.5	0.8	24.7	17.8	2.2	10.0	13.6	20.2	30.6	45.4	53.3
		All	Upper	98.8	44.3	2.9	30.8	24.4	11.1	13.2	18.1	24.3	40.6	63.2	90.0
		Port	Lower	93.4	42.6	1.8	29.9	21.7	3.7	10.5	17.9	24.1	36.9	52.6	63.4
		Port	Upper	98.8	55.9	6.8	36.5	29.1	12.5	15.7	21.4	31.2	47.8	67.4	96.8
		Trad	Lower	93.4	18.7	0.0	20.5	14.9	N	8.8	12.0	17.4	23.7	37.1	40.3
		Trad	Upper	100.0	38.8	0.4	28.0	22.8	11.4	12.9	16.3	21.8	38.7	60.8	65.3
Classroom age (known/unknown)	Unknown	All	Lower	95.1	21.9	0.0	21.5	16.2	2.5	8.0	11.4	18.0	26.2	39.0	46.1
		All	Upper	99.7	39.7	2.6	27.3	22.4	10.1	12.2	16.3	25.5	35.8	51.4	69.2
		Port	Lower	94.0	38.8	0.0	27.3	20.6	1.6	9.9	16.5	23.1	34.0	44.5	52.8
		Port	Upper	100.0	58.9	7.9	35.1	29.6	14.3	16.2	22.4	31.2	45.1	61.1	82.4
		Trad	Lower	94.5	12.0	0.0	18.1	13.8	0.8	7.0	9.1	14.1	23.3	29.9	34.6
		Trad	Upper	100.0	32.7	0.1	24.4	20.7	10.4	11.4	14.5	24.3	32.2	46.7	53.3
Major renovations/additions	Yes	All	Lower	91.7	23.1	0.0	21.2	14.2	N	9.6	11.8	18.3	26.0	37.7	43.0
		All	Upper	99.4	43.2	0.6	27.7	22.8	10.7	13.3	17.9	23.4	37.7	53.1	63.5
		Port	Lower	91.1	29.2	0.0	24.0	17.1	1.9	9.1	14.5	21.6	30.3	41.9	45.2
		Port	Upper	100.0	51.0	1.4	31.5	27.7	14.2	16.7	21.6	27.4	42.8	57.0	63.0
		Trad	Lower	90.7	19.0	0.0	19.7	12.7	N	8.8	12.2	16.5	22.9	33.2	39.4
		Trad	Upper	100.0	43.0	0.5	27.2	22.6	11.6	13.5	17.1	22.7	37.0	52.5	N

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Major renovations/additions	No	All	Lower	95.4	28.5	1.1	25.0	19.2	5.1	8.7	13.2	20.4	30.6	46.9	54.4
		All	Upper	99.1	42.8	3.8	31.1	24.4	10.6	12.9	17.4	24.9	41.9	63.2	89.0
		Port	Lower	93.7	43.5	2.4	30.9	22.4	2.8	12.1	18.1	24.7	38.0	54.5	66.1
		Port	Upper	98.9	57.4	8.3	37.2	29.7	12.7	15.6	21.7	31.4	48.5	71.0	99.5
		Trad	Lower	96.1	13.2	0.0	18.9	15.9	4.9	7.9	11.2	15.3	22.9	32.8	39.7
		Trad	Upper	100.0	33.4	0.1	27.2	22.0	10.3	12.2	15.0	21.7	36.0	59.4	N
Addition/wall/floor renovations	Yes	All	Lower	83.7	17.5	0.0	18.6	9.3	N	N	10.8	16.1	21.7	32.4	38.6
		All	Upper	100.0	46.6	0.9	30.7	25.7	13.7	14.4	17.6	24.6	43.8	63.0	64.4
		Port	Lower	97.5	36.2	0.0	24.7	22.2	4.1	10.3	17.9	21.9	30.9	33.5	37.0
		Port	Upper	100.0	64.5	4.6	38.1	32.6	19.2	20.1	22.3	33.4	56.9	61.3	N
		Trad	Lower	80.2	10.7	N	15.9	7.3	N	N	N	N	N	N	N
		Trad	Upper	100.0	44.7	N	30.2	25.0	N	N	N	N	N	N	N
Addition/wall/floor renovations	No	All	Lower	95.8	28.7	0.8	24.5	18.9	4.4	9.4	13.0	20.4	30.4	44.1	53.5
		All	Upper	98.9	41.6	2.8	29.5	23.5	10.1	12.5	17.2	24.1	38.1	59.1	89.1
		Port	Lower	93.5	41.7	1.9	29.8	21.6	3.2	10.8	17.6	24.0	37.8	52.5	62.9
		Port	Upper	98.4	53.7	6.8	35.3	27.9	12.0	15.2	21.1	29.4	46.3	65.7	95.3
		Trad	Lower	96.5	18.0	0.0	20.3	16.6	3.5	8.7	11.9	17.0	24.4	35.5	40.3
		Trad	Upper	99.9	35.5	0.3	26.3	21.8	10.5	12.1	14.7	22.0	36.0	54.2	62.1
HVAC or lighting renovations	Yes	All	Lower	89.7	22.9	0.0	20.3	12.6	N	0.6	11.9	16.6	25.7	36.9	41.7
		All	Upper	99.4	46.9	0.5	28.1	22.7	10.8	13.2	17.2	25.0	38.7	54.7	60.7
		Port	Lower	88.1	21.5	N	21.5	14.1	N	0.7	12.9	19.4	25.4	34.3	41.5
		Port	Upper	100.0	48.5	N	30.1	27.4	16.0	17.8	21.2	26.1	41.2	52.7	N
		Trad	Lower	88.5	20.9	0.0	19.3	11.4	N	N	11.4	16.1	23.5	33.2	39.3
		Trad	Upper	100.0	48.8	0.7	28.2	23.0	11.2	12.4	16.8	26.0	38.6	N	N

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
HVAC or lighting renovations	No	All	Lower	95.9	27.8	1.0	24.9	19.5	4.4	9.0	13.4	20.4	30.1	46.6	53.7
		All	Upper	99.2	41.3	3.4	30.6	24.3	10.6	13.0	17.7	24.0	40.5	63.0	83.7
		Port	Lower	94.1	44.1	2.3	30.8	22.8	4.2	11.6	18.2	24.8	38.3	54.2	65.5
		Port	Upper	98.8	57.0	7.6	36.9	29.5	12.2	15.5	21.8	31.2	48.2	70.0	98.3
		Trad	Lower	96.7	13.0	0.0	19.3	16.4	3.7	8.1	12.1	15.7	22.5	33.0	38.9
		Trad	Upper	100.0	31.0	0.1	26.5	21.8	10.6	12.5	14.9	21.5	34.7	N	N
Roof renovations	Yes	All	Lower	96.7	16.1	0.0	20.4	17.6	4.2	10.7	14.0	18.3	22.6	30.9	35.7
		All	Upper	100.0	45.6	0.9	29.5	25.5	14.0	14.9	19.8	24.0	38.4	N	N
		Port	Lower	96.2	22.4	N	22.1	19.8	3.1	7.5	13.3	18.7	24.4	32.6	34.0
		Port	Upper	100.0	57.1	N	30.6	28.1	18.3	19.1	21.9	31.7	42.3	45.7	N
		Trad	Lower	96.3	11.7	0.0	19.2	16.6	3.6	10.7	13.2	17.1	21.5	28.4	30.6
		Trad	Upper	100.0	46.1	1.0	30.0	25.8	14.0	15.6	19.8	24.5	36.8	60.7	63.3
Roof renovations	No	All	Lower	93.8	29.1	0.8	24.3	17.2	1.2	8.6	12.7	20.2	30.6	46.1	54.3
		All	Upper	98.4	42.0	2.9	29.8	23.0	9.7	12.2	16.6	24.4	40.3	60.6	77.1
		Port	Lower	93.4	42.4	2.1	30.2	21.7	2.9	11.0	17.7	24.3	38.1	53.9	65.1
		Port	Upper	98.4	55.1	7.0	36.1	28.5	12.2	15.5	21.2	30.2	47.3	68.8	95.6
		Trad	Lower	93.0	17.8	0.0	19.5	13.9	N	7.7	11.6	15.2	23.5	36.3	42.4
		Trad	Upper	99.5	34.8	0.1	26.0	20.7	9.8	11.7	14.3	21.0	36.2	55.1	N
Classroom size (sq. ft.)	<600	All	Lower	95.3	9.6	0.0	19.7	15.9	0.8	10.6	13.9	16.3	20.2	26.0	39.0
		All	Upper	100.0	37.9	2.2	28.6	24.0	14.7	16.2	18.8	24.7	41.5	50.1	64.1
		Port	Lower	82.4	33.0	0.0	23.3	10.3	N	N	N	21.6	28.9	40.6	43.5
		Port	Upper	100.0	63.0	8.8	38.9	34.0	N	N	23.7	37.3	49.0	69.6	N
		Trad	Lower	N	1.0	N	17.3	16.6	N	9.7	12.4	16.2	17.1	19.9	23.5
		Trad	Upper	N	30.3	N	26.4	23.6	16.2	16.3	18.5	20.4	39.4	48.1	N

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Classroom size (sq. ft.)	600-1100	All	Lower	96.3	30.9	0.5	25.0	20.1	5.3	10.3	13.4	20.6	30.9	45.5	53.8
		All	Upper	99.6	46.2	2.6	31.5	25.9	11.3	13.5	19.0	25.3	41.5	62.9	86.0
		Port	Lower	93.7	38.6	0.9	28.3	21.6	5.0	10.1	17.2	23.0	34.8	48.5	57.4
		Port	Upper	99.0	52.3	5.5	34.4	28.3	12.8	15.5	20.5	28.8	45.1	60.2	82.1
		Trad	Lower	98.2	22.1	0.0	21.4	18.4	4.7	9.8	11.9	18.9	25.5	N	N
		Trad	Upper	100.0	43.9	0.5	30.1	25.0	11.3	12.8	18.3	24.7	N	N	N
Classroom size (sq. ft.)	>1100	All	Lower	89.6	21.5	0.2	21.1	12.6	N	0.8	10.4	15.5	26.4	38.2	44.7
		All	Upper	98.9	41.2	3.6	27.9	21.5	8.8	12.3	14.9	25.2	38.7	52.9	69.9
		Port	Lower	94.2	51.2	1.1	31.4	22.4	N	11.4	19.1	27.7	37.1	54.3	62.4
		Port	Upper	100.0	70.3	13.0	42.4	35.0	15.0	20.3	26.1	36.1	58.5	80.5	90.7
		Trad	Lower	86.9	8.7	0.0	16.6	9.6	N	N	N	N	N	27.7	33.8
		Trad	Upper	99.3	32.6	0.1	23.4	19.0	N	N	N	N	35.2	40.9	47.4
Outdoor damper min setting	<=10%	All	Lower	N	10.0	0.0	21.1	20.0	N	11.4	14.3	19.8	20.7	28.5	32.6
		All	Upper	N	47.4	1.2	27.0	25.0	18.7	18.8	20.3	24.8	36.5	39.3	46.4
		Port	Lower	N	17.2	0.0	22.5	20.9	N	N	14.9	18.8	23.5	31.4	32.2
		Port	Upper	N	52.5	2.4	28.7	26.7	18.7	18.8	19.9	30.7	33.8	41.1	53.2
		Trad	Lower	N	0.0	N	18.1	17.8	N	N	12.4	15.8	N	N	N
		Trad	Upper	N	49.9	N	27.0	25.3	20.0	20.1	20.4	26.1	N	N	N
Outdoor damper min setting	11-20%	All	Lower	91.9	17.6	0.0	20.1	14.2	N	9.8	11.8	17.8	22.7	31.8	37.2
		All	Upper	100.0	41.6	3.7	29.7	23.8	11.9	14.1	18.7	22.8	36.2	60.2	64.3
		Port	Lower	95.3	28.8	0.0	24.1	21.9	10.1	11.7	16.4	22.6	31.1	35.4	42.8
		Port	Upper	100.0	54.8	10.9	38.0	30.3	15.1	19.1	22.3	30.9	42.6	N	N
		Trad	Lower	89.2	7.8	N	15.8	10.8	N	N	N	N	N	N	29.6
		Trad	Upper	100.0	39.0	N	27.7	22.1	N	N	N	N	35.5	N	N

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
Outdoor damper min setting	21-40%	All	Lower	N	0.0	N	11.9	10.8	N	N	N	N	N	22.0	24.1
		All	Upper	N	28.5	N	28.9	28.3	16.4	19.9	24.4	25.2	35.6	44.3	46.3
		Port	Lower	N	0.0	N	19.9	19.5	N	N	N	17.0	21.9	23.9	25.2
		Port	Upper	N	52.7	N	32.0	30.6	N	21.1	22.0	28.8	36.7	N	N
		Trad	Lower	N	0.0	N	7.7	8.3	N	N	N	N	N	N	N
		Trad	Upper	N	23.3	N	29.3	29.1	N	24.4	24.7	25.2	25.7	N	N
Outdoor damper min setting	>40%	All	Lower	91.5	27.3	0.0	18.6	11.8	N	5.5	6.1	6.9	27.5	32.0	38.2
		All	Upper	100.0	86.2	24.7	50.0	47.9	N	N	31.4	47.9	63.3	N	N
		Port	Lower	78.5	40.4	0.0	30.3	15.4	N	N	8.8	25.2	39.1	60.6	N
		Port	Upper	100.0	72.9	50.0	55.8	56.4	N	N	N	63.5	N	N	N
		Trad	Lower	N	8.8	N	9.5	8.7	N	N	N	N	N	11.8	N
		Trad	Upper	N	100.0	N	45.4	46.6	N	N	N	N	N	N	N
Outdoor damper min setting	Unknown	All	Lower	92.7	27.4	0.6	23.7	16.4	N	8.6	12.8	18.9	29.2	44.5	52.5
		All	Upper	98.5	43.0	2.8	29.7	23.2	10.1	13.0	17.0	24.2	39.8	60.9	87.2
		Port	Lower	91.0	42.9	1.4	29.5	19.4	0.2	7.5	16.4	24.3	38.7	52.1	63.2
		Port	Upper	98.1	57.6	6.7	36.3	28.2	11.2	14.7	21.5	31.5	48.3	69.3	89.6
		Trad	Lower	92.4	15.8	0.0	19.0	13.8	N	7.5	12.2	15.6	22.8	33.4	39.3
		Trad	Upper	100.0	35.6	0.5	26.5	21.9	11.3	12.9	15.4	21.7	35.5	57.6	N
New pressed wood last yr	Yes	All	Lower	95.7	33.3	0.2	26.2	20.1	3.6	10.8	13.9	20.3	32.2	51.2	57.8
		All	Upper	100.0	57.3	4.7	35.5	29.3	12.2	14.2	19.8	31.7	55.0	64.3	67.8
		Port	Lower	95.2	47.2	0.6	31.5	25.2	5.6	10.2	17.8	26.2	41.1	55.8	62.5
		Port	Upper	99.9	66.9	11.6	40.0	33.5	12.9	17.3	24.4	35.1	55.5	79.7	86.0
		Trad	Lower	94.9	21.2	N	20.6	16.2	N	9.3	13.0	17.4	23.9	33.1	43.8
		Trad	Upper	100.0	53.6	N	34.6	28.6	13.2	14.5	18.6	29.6	58.9	N	N

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
New pressed wood last yr	No	All	Lower	92.9	21.2	0.3	21.4	15.0	N	8.3	12.0	18.6	25.3	38.9	46.2
		All	Upper	98.9	35.6	2.2	27.7	21.6	9.9	11.9	15.8	22.8	36.3	53.5	82.8
		Port	Lower	91.3	36.3	0.9	27.5	19.2	1.0	8.2	17.3	23.2	34.6	46.6	55.9
		Port	Upper	98.9	51.8	6.0	35.8	28.3	13.7	16.3	21.8	28.2	45.2	66.0	97.2
		Trad	Lower	92.5	11.7	0.0	17.9	12.6	N	7.4	10.7	14.2	21.6	29.8	37.4
		Trad	Upper	100.0	28.6	0.4	23.8	19.6	10.1	11.5	14.1	20.6	30.2	47.6	N
New pressed wood last yr	DK	All	Lower	91.6	21.0	0.0	22.8	17.4	0.4	8.4	14.7	18.9	26.5	35.2	38.3
		All	Upper	100.0	60.0	3.1	32.8	29.3	14.9	16.9	21.4	36.8	40.1	52.7	70.8
		Port	Lower	94.9	28.2	0.0	23.9	18.8	N	10.8	16.1	19.7	30.7	34.5	40.2
		Port	Upper	100.0	58.2	7.3	35.6	30.5	16.8	18.1	19.9	31.5	49.0	67.0	N
		Trad	Lower	88.0	8.9	0.0	20.1	15.6	0.3	4.3	12.3	15.3	22.3	26.4	N
		Trad	Upper	100.0	68.4	0.5	32.7	30.1	14.9	17.2	24.1	37.2	39.6	47.2	52.8
New carpet past yr	Yes	All	Lower	98.9	29.8	0.0	26.0	22.4	6.9	10.3	16.0	20.6	31.1	45.4	54.8
		All	Upper	100.0	55.1	8.7	37.3	30.9	13.9	17.1	20.8	30.8	59.0	68.1	87.6
		Port	Lower	97.7	43.6	0.0	31.1	27.1	9.0	15.7	18.8	24.1	37.2	52.4	62.1
		Port	Upper	100.0	67.9	17.1	43.4	36.6	20.1	20.9	24.3	37.4	61.7	86.5	95.2
		Trad	Lower	N	7.7	N	16.4	16.4	N	N	11.7	15.8	20.5	26.0	30.0
		Trad	Upper	N	50.9	N	35.9	29.4	13.1	15.4	18.8	26.9	N	N	N
New carpet past yr	No	All	Lower	93.9	26.8	0.5	23.3	16.8	2.0	8.9	12.7	20.0	29.0	41.9	51.0
		All	Upper	98.4	40.1	1.9	28.4	22.2	9.9	12.1	16.2	23.4	38.2	56.6	82.1
		Port	Lower	92.8	39.4	1.2	28.4	20.3	2.3	9.7	16.8	23.4	35.6	49.5	57.9
		Port	Upper	98.2	52.9	5.1	34.4	27.1	12.2	14.3	20.9	28.9	45.5	61.0	85.9
		Trad	Lower	93.7	18.4	0.0	20.0	14.6	N	8.2	11.9	16.4	24.3	35.4	40.9
		Trad	Upper	99.3	35.0	0.3	25.8	20.8	10.2	11.9	14.6	21.5	35.1	53.8	61.6

Variable Description	Category	Room Type	Conf. Limit	% > LOD	% > 27ppb	% > 76ppb	Mean	Geom. Mean	P05	P10	P25	P50	P75	P90	P95
New flooring past yr	Yes	All	Lower	99.0	29.3	0.1	24.9	21.2	5.8	10.7	13.1	20.0	30.7	43.4	54.4
		All	Upper	100.0	52.1	5.8	33.9	28.4	13.1	14.9	20.1	28.6	47.9	64.4	79.3
		Port	Lower	97.6	43.4	0.6	31.0	26.3	7.3	15.4	18.8	24.1	36.4	53.3	63.7
		Port	Upper	100.0	64.3	14.2	41.1	34.3	19.0	20.5	23.5	34.1	57.1	81.1	92.4
		Trad	Lower	N	15.0	N	18.8	17.4	N	N	N	N	21.1	32.1	34.9
		Trad	Upper	N	49.2	N	31.4	26.5	N	N	N	27.4	47.5	N	N
New flooring past yr	No	All	Lower	94.4	26.7	0.5	23.6	17.0	0.8	8.4	13.5	20.4	28.4	41.1	47.8
		All	Upper	99.5	42.1	2.5	29.4	23.7	10.5	12.7	18.5	24.3	39.2	54.1	81.9
		Port	Lower	95.0	41.1	1.3	29.7	22.9	4.5	12.9	18.4	23.8	36.8	49.3	57.3
		Port	Upper	99.2	57.2	6.6	37.2	30.0	14.0	16.1	22.4	31.7	47.4	62.4	94.0
		Trad	Lower	93.3	16.9	0.0	19.9	13.9	N	7.6	11.0	17.9	24.5	34.3	39.7
		Trad	Upper	100.0	36.1	0.5	25.7	21.6	10.1	12.1	15.8	22.4	36.7	48.6	N
New flooring past yr	DK	All	Lower	86.4	14.3	0.0	17.6	11.8	N	1.5	11.5	14.0	20.7	33.7	41.6
		All	Upper	98.4	43.3	1.1	30.5	22.8	10.1	13.5	16.5	24.1	49.3	63.3	63.5
		Port	Lower	82.2	25.2	0.0	21.4	11.6	N	0.4	10.3	18.0	28.4	39.3	47.3
		Port	Upper	99.1	51.0	2.7	30.8	25.3	10.7	13.1	18.0	28.4	43.3	57.4	61.5
		Trad	Lower	86.4	2.8	N	13.3	10.5	N	2.2	10.3	11.6	16.3	21.5	23.9
		Trad	Upper	100.0	42.3	N	32.1	24.1	13.1	13.5	16.0	23.0	N	N	N

APPENDIX F

Comparison of Formaldehyde Concentration Levels in Portable and Traditional Classrooms

Appendix F provides statistical tests for various population subsets that compare the distributions of formaldehyde levels in portable and traditional classrooms. Tests are provided for the following null hypotheses:

(1) Geometric mean (portable) = Geometric mean (traditional)
(2) % Pop. > 27 ppb (portable) = % Pop > 27 ppb (traditional)
(3) % Pop. > 76 ppb (portable) = % Pop > 76 ppb (traditional)

Hypothesis (1) is tested by employing a t test of form

$$t = \frac{d}{\text{s.e.}(d)},$$

where
d = estimated mean of ℓn (H_2CO concentration) for portable classrooms minus estimated mean of ℓn (H_2CO concentration) for traditional classrooms, and s.e.(d) = the estimated standard error of d. The table shows the value of d (labeled "diff in log-scale mean"), the s.e.(d) value (labeled "std. error"), the t value, and the associated p-value. Hypotheses (2) and (3) are tested in an analogous manner, but d is defined as

d = estimated percent of portable classrooms with H_2CO levels > 27 ppm (or 75 ppb) minus estimated percent of traditional classrooms with H_2CO levels > 27 ppm (or 76 ppb).

SAS code for constructing the variable "<25% non-weekday in samp period" is given on page C-10. The logic for constructing this variable (denoted as Z* below) is as follows:

Y = number of days in sampling period = stop date – start date,
X = 0.5 [start date = weekend or holiday]
+0.5 [stop date = weekend or holiday]
+ number of weekend days or holidays between (start date + 1) and (stop date – 1), inclusive,

$$Z = 100\left(\frac{X}{Y}\right) = \text{percent of non-weekday days in sampling period,}$$

$$Z^* = \begin{cases} \text{yes, if } Z < 25\% \\ \text{no, if } Z \geq 25\% \end{cases}.$$

Tests for Differences in Formaldehyde Levels for Portable vs. Traditional Classrooms

Variable Description	Category	n	Est. No. Classrms	Diff in Log-Scale Mean	Std. Error	t Value	p Value	Diff in % Pop With Level >27ppb	Std. Error	t Value	p Value	Diff in % Pop With Level >76ppb	Std. Error	t Value	p Value
All classrooms	All	911	230156	0.302	0.077	3.90	0.000	21.4	3.8	5.67	0.000	3.6	1.0	3.70	0.000
School location	Urban	147	40824	0.274	0.150	1.82	0.069	21.6	8.8	2.45	0.015	1.1	0.8	1.31	0.190
School location	Suburb	684	173419	0.304	0.096	3.17	0.002	21.1	4.5	4.73	0.000	4.3	1.2	3.49	0.001
School location	Rural	80	15913	0.369	0.120	3.07	0.002	24.3	10.7	2.27	0.024	1.0	0.8	1.28	0.202
Geographic region	North	397	86702	0.379	0.119	3.18	0.002	30.1	4.2	7.08	0.000	1.7	0.7	2.26	0.024
Geographic region	South	514	143454	0.259	0.100	2.58	0.010	16.3	5.4	3.05	0.003	4.8	1.5	3.22	0.001
School type	Elem	592	119045	0.287	0.087	3.28	0.001	21.6	4.4	4.93	0.000	2.9	1.2	2.47	0.014
School type	Middle	149	46772	0.133	0.145	0.91	0.363	24.7	6.4	3.86	0.000	2.8	1.6	1.72	0.087
School type	High	170	64339	0.414	0.179	2.31	0.021	14.8	9.1	1.63	0.104	5.9	2.8	2.13	0.034
Month of formaldehyde sample	April	241	70689	0.270	0.133	2.03	0.043	25.6	5.7	4.52	0.000	0.0	0.0	N	N
Month of formaldehyde sample	May	471	111745	0.368	0.126	2.92	0.004	22.1	5.1	4.36	0.000	5.0	1.5	3.23	0.001
Month of formaldehyde sample	June/July	199	47722	0.103	0.100	1.03	0.302	7.2	8.8	0.82	0.412	5.0	2.6	1.95	0.052
Time of formaldehyde sample	Early_April	64	14554	0.018	0.213	0.08	0.934	8.9	4.7	1.89	0.060	0.0	0.0	N	N
Time of formaldehyde sample	Late_April	177	56135	0.335	0.156	2.14	0.033	29.9	6.8	4.38	0.000	0.0	0.0	N	N
Time of formaldehyde sample	Early_May	219	50538	0.232	0.140	1.65	0.100	12.4	8.0	1.56	0.120	4.5	2.2	2.02	0.045
Time of formaldehyde sample	Late_May	252	61207	0.484	0.193	2.51	0.013	30.3	5.9	5.11	0.000	5.3	2.1	2.52	0.012
Time of formaldehyde sample	June/July	195	47116	0.097	0.100	0.96	0.336	6.5	8.9	0.73	0.464	5.0	2.6	1.95	0.052
<25% non-weekday in samp period	Yes	475	127884	0.260	0.095	2.75	0.006	20.2	5.2	3.86	0.000	3.0	1.3	2.29	0.023
<25% non-weekday in samp period	No	432	101666	0.345	0.131	2.63	0.009	22.2	5.6	3.99	0.000	4.2	1.5	2.90	0.004
General instruction classroom	Yes	744	188161	0.360	0.095	3.79	0.000	21.8	4.2	5.14	0.000	3.3	0.9	3.64	0.000
General instruction classroom	No	93	39852	0.328	0.160	2.05	0.041	22.2	12.8	1.73	0.085	5.9	4.1	1.42	0.155
Carpeted classroom	Full	528	111611	0.400	0.161	2.48	0.014	20.1	6.7	3.00	0.003	3.7	1.1	3.26	0.001
Carpeted classroom	Partial	221	58271	0.322	0.168	1.92	0.056	26.7	6.8	3.95	0.000	2.3	1.3	1.72	0.087
Carpeted classroom	None	95	60274	0.405	0.167	2.43	0.016	23.8	12.9	1.85	0.066	6.1	4.8	1.28	0.201
Vinyl/linoleum floor	Yes	305	109034	0.334	0.127	2.62	0.009	27.8	6.4	4.33	0.000	3.3	1.6	2.02	0.044

Variable Description	Category	n	Est. No. Classrms	Diff in Log-Scale Mean	Std. Error	t Value	p Value	Diff in % Pop With Level >27ppb	Std. Error	t Value	p Value	Diff in % Pop With Level >76ppb	Std. Error	t Value	p Value
Vinyl/linoleum floor	No	539	121122	0.330	0.145	2.29	0.023	15.5	6.6	2.35	0.019	3.7	1.1	3.28	0.001
Vinyl tackable wallboard	Yes	541	109990	0.162	0.146	1.11	0.268	14.7	7.9	1.87	0.062	3.0	1.0	3.11	0.002
Vinyl tackable wallboard	No	292	116536	0.444	0.125	3.56	0.000	22.8	6.9	3.33	0.001	4.7	2.6	1.81	0.071
Open windows	Never	145	59295	0.283	0.187	1.51	0.131	22.2	9.1	2.45	0.015	3.7	2.0	1.86	0.064
Open windows	Infrequent	447	102420	0.321	0.159	2.02	0.045	17.2	6.3	2.71	0.007	3.7	1.2	3.15	0.002
Open windows	Frequent	238	61938	0.364	0.115	3.16	0.002	20.6	8.8	2.33	0.020	3.3	1.9	1.75	0.082
Open door to outside	Infreq	427	105524	0.374	0.112	3.35	0.001	14.9	6.2	2.40	0.017	4.8	1.6	2.93	0.004
Open door to outside	Freq	356	87860	0.034	0.120	0.28	0.778	19.9	7.2	2.78	0.006	2.0	1.0	2.03	0.043
Open door to outside	NA	36	29830	1.705	0.437	3.90	0.000	83.6	8.1	10.33	0.000	62.6	28.7	2.18	0.030
Pressed wood furniture	Yes	769	203508	0.273	0.090	3.04	0.003	19.8	4.3	4.59	0.000	2.6	0.7	3.53	0.000
Pressed wood furniture	No	75	26648	0.653	0.263	2.48	0.014	29.1	14.4	2.03	0.044	13.1	6.8	1.92	0.056
Pressed wood table/desks	Yes	681	180549	0.301	0.101	2.97	0.003	19.8	4.7	4.18	0.000	2.4	0.8	3.19	0.002
Pressed wood table/desks	No	163	49607	0.387	0.169	2.29	0.023	24.7	9.6	2.58	0.010	9.0	3.9	2.30	0.022
Pressed wood bookcases	Yes	492	123865	0.302	0.113	2.66	0.008	20.9	5.6	3.72	0.000	2.2	0.8	2.89	0.004
Pressed wood bookcases	No	352	106291	0.301	0.131	2.29	0.023	19.4	6.5	2.98	0.003	5.4	1.9	2.85	0.005
Pressed wood cabinets	Yes	403	103903	0.422	0.149	2.84	0.005	29.8	6.7	4.43	0.000	2.6	1.0	2.68	0.008
Pressed wood cabinets	No	441	126253	0.210	0.099	2.13	0.034	12.3	5.7	2.15	0.032	4.5	1.5	2.94	0.003
New furnishings this school yr	Yes	214	49215	0.485	0.141	3.44	0.001	30.2	8.3	3.64	0.000	4.0	2.2	1.80	0.072
New furnishings this school yr	No	591	169405	0.231	0.108	2.13	0.034	17.3	4.7	3.69	0.000	3.5	1.0	3.37	0.001
New furnishings this school yr	DK	28	8564	0.618	0.182	3.40	0.001	29.6	20.7	1.43	0.154	2.5	2.5	0.99	0.325
Type appliances in room	Stove/burnr	27	13483	0.207	0.347	0.60	0.551	27.1	23.2	1.17	0.243	8.7	8.1	1.07	0.283
Type appliances in room	Other	254	65172	0.040	0.142	0.28	0.778	20.1	8.3	2.42	0.016	1.4	0.7	2.07	0.039
Type appliances in room	None	475	125947	0.485	0.116	4.19	0.000	19.6	5.1	3.87	0.000	4.6	1.4	3.21	0.001
Chemical present in room	Yes	407	111686	0.318	0.104	3.05	0.002	26.8	6.0	4.45	0.000	4.2	1.4	3.02	0.003
Chemical present in room	No	437	118470	0.310	0.138	2.25	0.025	15.1	6.5	2.32	0.021	3.0	1.3	2.39	0.017
Oil/acrylic paints used	Yes	119	28768	0.313	0.288	1.09	0.278	43.8	9.6	4.55	0.000	10.2	3.9	2.61	0.010

Variable Description	Category	n	Est. No. Classrms	Diff in Log-Scale Mean	Std. Error	t Value	p Value	Diff in % Pop With Level >27ppb	Std. Error	t Value	p Value	Diff in % Pop With Level >76ppb	Std. Error	t Value	p Value
Oil/acrylic paints used	No	725	201387	0.306	0.084	3.63	0.000	17.1	4.3	3.95	0.000	2.6	0.9	2.83	0.005
Permanent marker/pen used	Yes	690	177758	0.273	0.076	3.61	0.000	22.2	4.6	4.86	0.000	2.9	0.8	3.74	0.000
Permanent marker/pen used	No	154	52398	0.395	0.247	1.60	0.111	15.5	10.3	1.50	0.134	5.7	3.1	1.86	0.064
Whiteboard marker used	Yes	713	188179	0.336	0.095	3.55	0.000	20.9	4.6	4.59	0.000	4.1	1.1	3.88	0.000
Whiteboard marker used	No	131	41977	0.162	0.162	1.00	0.319	17.9	10.5	1.70	0.090	0.4	0.3	1.30	0.194
Glues/fluids used	Yes	570	152451	0.242	0.078	3.12	0.002	21.2	5.3	4.01	0.000	2.8	0.8	3.49	0.001
Glues/fluids used	No	274	77705	0.427	0.180	2.37	0.018	19.3	6.5	2.96	0.003	4.9	2.2	2.30	0.022
Correction fluid used	Yes	526	140218	0.271	0.080	3.40	0.001	22.3	5.6	3.97	0.000	2.7	0.8	3.35	0.001
Correction fluid used	No	318	89938	0.362	0.163	2.22	0.027	17.7	6.2	2.87	0.004	4.8	1.9	2.49	0.013
Epoxy/rubber cement used	Yes	126	29778	0.069	0.148	0.46	0.644	13.1	11.4	1.14	0.255	4.3	2.7	1.60	0.111
Epoxy/rubber cement used	No	718	200378	0.339	0.090	3.78	0.000	21.8	4.4	4.90	0.000	3.4	1.0	3.53	0.000
Air freshener used	Yes	311	74849	0.037	0.110	0.34	0.736	17.9	8.0	2.26	0.025	2.2	0.9	2.57	0.011
Air freshener used	No	533	155307	0.439	0.108	4.06	0.000	20.8	4.8	4.29	0.000	4.3	1.4	3.16	0.002
Air freshener used - plug-in	Yes	161	36508	-0.008	0.161	-0.05	0.959	14.4	10.4	1.39	0.167	2.9	1.4	2.00	0.046
Air freshener used - plug-in	No	683	193648	0.379	0.088	4.30	0.000	21.7	4.5	4.77	0.000	3.7	1.1	3.47	0.001
Air freshener used - spray	Yes	172	45884	0.041	0.159	0.26	0.797	19.7	11.7	1.68	0.093	2.3	1.2	1.90	0.058
Air freshener used - spray	No	672	184271	0.372	0.099	3.74	0.000	20.3	4.5	4.47	0.000	3.9	1.1	3.46	0.001
New furnishings odor	Never	699	203163	0.279	0.089	3.13	0.002	17.1	4.5	3.79	0.000	3.4	1.0	3.29	0.001
New furnishings odor	Sometimes	102	19471	0.563	0.203	2.77	0.006	38.5	11.8	3.25	0.001	5.2	2.7	1.94	0.054
New furnishings odor	Often	17	2488	-0.036	0.122	-0.29	0.770	-26.9	12.2	-2.21	0.028	0.0	0.0	N	N
Construction activity this yr	Current	186	55860	0.241	0.147	1.64	0.102	12.6	9.9	1.28	0.201	3.2	1.5	2.11	0.035
Construction activity this yr	Previous	404	107657	0.401	0.144	2.78	0.006	17.2	6.3	2.74	0.007	4.6	1.6	2.84	0.005
Construction activity this yr	Never	227	58874	0.304	0.107	2.83	0.005	30.7	7.8	3.97	0.000	1.5	0.7	2.14	0.033
Construction activity this yr	Unknown	16	3686	-0.526	0.600	-0.88	0.381	43.2	14.8	2.93	0.004	0.0	0.0	N	N
Carpentry activity this yr	Yes	263	76690	0.255	0.137	1.86	0.064	10.0	8.5	1.17	0.241	3.1	1.8	1.78	0.076
Carpentry activity this yr	No	581	153465	0.339	0.108	3.14	0.002	25.8	4.7	5.49	0.000	3.7	1.1	3.30	0.001

Variable Description	Category	n	Est. No. Classrms	Diff in Log-Scale Mean	Std. Error	t Value	p Value	Diff in % Pop With Level >27ppb	Std. Error	t Value	p Value	Diff in % Pop With Level >76ppb	Std. Error	t Value	p Value
In-room construction this yr	Yes	117	34581	-0.046	0.218	-0.21	0.832	3.7	12.2	0.30	0.765	0.6	0.5	1.32	0.188
In-room construction this yr	No	721	195135	0.382	0.087	4.37	0.000	23.8	4.4	5.41	0.000	4.0	1.0	3.82	0.000
Other school construction this yr	Yes	568	157936	0.344	0.109	3.16	0.002	14.7	5.4	2.73	0.007	4.1	1.2	3.38	0.001
Other school construction this yr	No	276	72220	0.207	0.113	1.84	0.067	31.8	6.8	4.67	0.000	1.9	0.7	2.61	0.009
# teacher complaints in school yr	0	335	91495	0.264	0.160	1.65	0.100	14.7	6.2	2.39	0.017	4.1	1.4	2.85	0.005
# teacher complaints in school yr	1-5	430	115248	0.339	0.105	3.22	0.001	24.6	6.1	4.00	0.000	3.9	1.4	2.74	0.007
# teacher complaints in school yr	>5	62	19744	0.328	0.257	1.27	0.204	18.8	18.4	1.02	0.307	-1.3	1.8	-0.72	0.474
Overall air quality (teacher)	Excellent	132	36264	0.369	0.108	3.42	0.001	22.8	10.0	2.29	0.023	4.4	2.5	1.75	0.081
Overall air quality (teacher)	Good	307	85306	0.538	0.175	3.07	0.002	26.3	6.8	3.89	0.000	4.7	1.9	2.49	0.013
Overall air quality (teacher)	Adequate	277	75748	0.022	0.112	0.20	0.843	11.3	8.1	1.39	0.164	2.6	1.4	1.82	0.069
Overall air quality (teacher)	Poor	100	26212	0.246	0.217	1.14	0.257	22.3	12.0	1.86	0.064	3.2	2.1	1.51	0.132
Overall air quality (teacher)	Very_poor	17	4550	0.127	0.386	0.33	0.742	20.3	23.7	0.86	0.393	0.0	0.0	N	N
Nose symptoms past 2 weeks	None	342	101233	0.254	0.104	2.44	0.015	22.4	6.9	3.27	0.001	5.4	2.0	2.75	0.006
Nose symptoms past 2 weeks	Occasional	291	76978	0.442	0.189	2.33	0.020	18.1	6.8	2.66	0.008	3.3	1.4	2.33	0.021
Nose symptoms past 2 weeks	Frequent	194	48946	0.117	0.130	0.90	0.369	19.9	10.0	1.99	0.047	0.8	1.1	0.76	0.447
Nose symptoms at home	Same/worse	264	69745	0.519	0.202	2.57	0.011	25.5	7.1	3.56	0.000	2.3	0.9	2.48	0.014
Nose symptoms at home	Improves	166	43426	0.022	0.163	0.13	0.894	10.5	11.0	0.95	0.341	0.7	1.5	0.47	0.637
Nose symptoms at home	NA	342	101233	0.254	0.104	2.44	0.015	22.4	6.9	3.27	0.001	5.4	2.0	2.75	0.006
Throat symptoms past 2 weeks	None	436	125701	0.318	0.085	3.72	0.000	26.2	5.4	4.82	0.000	5.1	1.7	3.08	0.002
Throat symptoms past 2 weeks	Occasional	250	68293	0.179	0.156	1.15	0.251	12.8	8.3	1.55	0.122	1.6	0.9	1.91	0.058
Throat symptoms past 2 weeks	Frequent	129	26844	0.210	0.258	0.82	0.416	15.7	10.9	1.45	0.149	1.7	1.1	1.53	0.127
Throat symptoms at home	Same/worse	167	40813	0.522	0.213	2.45	0.015	14.6	9.7	1.51	0.133	1.7	1.0	1.73	0.084
Throat symptoms at home	Improves	167	42734	-0.151	0.175	-0.86	0.391	8.9	12.0	0.74	0.462	0.9	0.7	1.26	0.209
Throat symptoms at home	NA	436	125701	0.318	0.085	3.72	0.000	26.2	5.4	4.82	0.000	5.1	1.7	3.08	0.002
Eyes symptoms past 2 weeks	None	458	129615	0.278	0.105	2.64	0.009	22.1	6.1	3.62	0.000	4.5	1.5	2.98	0.003
Eyes symptoms past 2 weeks	Occasional	224	62270	0.348	0.126	2.75	0.006	20.2	8.7	2.32	0.021	1.5	1.0	1.49	0.137

Variable Description	Category	n	Est. No. Classrms	Diff in Log-Scale Mean	Std. Error	t Value	p Value	Diff in % Pop With Level >27ppb	Std. Error	t Value	p Value	Diff in % Pop With Level >76ppb	Std. Error	t Value	p Value
Eyes symptoms past 2 weeks	Frequent	121	30342	-0.037	0.158	-0.23	0.817	15.8	9.6	1.65	0.101	2.0	1.1	1.75	0.081
Eyes symptoms at home	Same/worse	158	49361	0.438	0.120	3.64	0.000	33.2	8.3	3.98	0.000	0.8	1.4	0.56	0.577
Eyes symptoms at home	Improves	139	34000	-0.137	0.202	-0.68	0.498	-4.1	12.9	-0.32	0.752	2.9	1.6	1.85	0.066
Eyes symptoms at home	NA	458	129615	0.278	0.105	2.64	0.009	22.1	6.1	3.62	0.000	4.5	1.5	2.98	0.003
Classroom age (yrs)	<=10yr	273	44801	0.482	0.152	3.17	0.002	43.5	8.0	5.46	0.000	3.8	1.4	2.72	0.007
Classroom age (yrs)	11-20yr	123	27029	-0.148	0.324	-0.46	0.647	-1.5	21.2	-0.07	0.944	5.3	3.1	1.71	0.089
Classroom age (yrs)	21-30yr	50	24429	0.192	0.264	0.73	0.467	10.1	8.6	1.17	0.242	5.5	4.0	1.38	0.169
Classroom age (yrs)	31-40yr	50	18353	0.117	0.260	0.45	0.653	-20.0	18.2	-1.10	0.273	0.0	0.0	N	N
Classroom age (yrs)	41+yr	69	39339	0.792	0.337	2.35	0.020	32.3	26.8	1.20	0.230	-0.3	0.3	-0.99	0.325
Classroom age (yrs)	0-3yr	119	18008	1.047	0.271	3.87	0.000	65.7	6.1	10.80	0.000	4.4	2.3	1.90	0.058
Classroom age (yrs)	4-5yr	77	12024	0.023	0.245	0.09	0.926	-27.9	13.8	-2.02	0.045	5.1	2.8	1.82	0.069
Classroom age (yrs)	6-10yr	77	14768	-0.060	0.369	-0.16	0.871	34.9	9.0	3.87	0.000	1.3	1.3	1.03	0.306
Classroom age (yrs)	11-15yr	91	21006	-0.161	0.382	-0.42	0.673	2.8	25.9	0.11	0.913	7.1	4.1	1.73	0.084
Classroom age (yrs)	16+yr	201	88144	0.190	0.133	1.42	0.155	-0.1	7.8	-0.01	0.988	2.0	1.6	1.28	0.200
Classroom age (known/unknown)	Known	565	153951	0.308	0.111	2.77	0.006	20.5	5.2	3.97	0.000	4.2	1.3	3.32	0.001
Classroom age (known/unknown)	Unknown	245	76204	0.381	0.129	2.96	0.003	26.5	6.5	4.06	0.000	3.7	2.1	1.77	0.078
Major renovations/additions	Yes	233	85572	0.250	0.169	1.47	0.142	9.1	7.2	1.27	0.206	0.3	0.5	0.58	0.564
Major renovations/additions	No	535	133876	0.322	0.096	3.37	0.001	27.2	5.4	4.98	0.000	5.3	1.5	3.61	0.000
Addition/wall/floor renovations	Yes	87	32354	0.687	0.311	2.21	0.028	22.7	10.4	2.18	0.030	1.6	1.5	1.01	0.315
Addition/wall/floor renovations	No	681	187094	0.254	0.080	3.17	0.002	20.9	4.6	4.53	0.000	4.2	1.2	3.48	0.001
HVAC or lighting renovations	Yes	167	67109	0.193	0.219	0.88	0.380	0.1	8.5	0.01	0.991	-0.2	0.2	-0.99	0.323
HVAC or lighting renovations	No	601	152339	0.314	0.084	3.74	0.000	28.6	4.8	5.99	0.000	5.0	1.3	3.71	0.000
Roof renovations	Yes	92	42388	0.133	0.133	0.99	0.321	10.9	11.4	0.95	0.340	-0.3	0.3	-0.98	0.326
Roof renovations	No	676	177059	0.379	0.104	3.63	0.000	22.4	4.6	4.88	0.000	4.5	1.2	3.70	0.000
Classroom size (sq. ft.)	<600	66	20541	-0.060	0.307	-0.19	0.846	32.4	8.9	3.64	0.000	3.9	2.5	1.57	0.117
Classroom size (sq. ft.)	600-1100	538	135029	0.141	0.075	1.88	0.061	12.4	5.4	2.31	0.022	3.0	1.2	2.64	0.009

Variable Description	Category	n	Est. No. Classrms	Diff in Log-Scale Mean	Std. Error	t Value	p Value	Diff in % Pop With Level >27ppb	Std. Error	t Value	p Value	Diff in % Pop With Level >76ppb	Std. Error	t Value	p Value
Classroom size (sq. ft.)	>1100	206	74585	0.728	0.195	3.74	0.000	40.1	7.3	5.52	0.000	7.0	3.0	2.34	0.020
Outdoor damper min setting	<=10%	48	13182	0.106	0.104	1.02	0.310	12.1	14.4	0.84	0.401	0.8	0.8	0.95	0.344
Outdoor damper min setting	11-20%	122	43599	0.511	0.179	2.86	0.005	18.4	9.6	1.91	0.057	4.8	3.0	1.58	0.115
Outdoor damper min setting	21-40%	22	8033	0.454	0.362	1.26	0.210	18.5	13.5	1.37	0.172	0.0	0.0	N	N
Outdoor damper min setting	>40%	22	4833	0.381	0.383	1.00	0.321	-0.2	23.6	-0.01	0.994	22.9	13.6	1.69	0.093
Outdoor damper min setting	Unknown	484	126550	0.296	0.134	2.21	0.028	24.5	5.1	4.83	0.000	3.8	1.3	2.93	0.004
New pressed wood last yr	Yes	228	61685	0.300	0.150	2.00	0.046	19.7	7.6	2.61	0.010	6.1	2.7	2.24	0.026
New pressed wood last yr	No	429	122979	0.394	0.128	3.08	0.002	23.9	4.8	4.93	0.000	3.3	1.3	2.60	0.010
New pressed wood last yr	DK	81	25704	0.098	0.136	0.72	0.473	4.5	15.1	0.30	0.765	3.1	2.0	1.59	0.114
New carpet past yr	Yes	138	29489	0.360	0.161	2.24	0.026	26.4	12.0	2.20	0.028	8.5	4.3	1.96	0.051
New carpet past yr	No	630	189959	0.297	0.096	3.08	0.002	19.5	4.5	4.28	0.000	3.1	1.0	3.18	0.002
New flooring past yr	Yes	183	46531	0.334	0.117	2.86	0.005	21.7	9.8	2.22	0.027	7.4	3.4	2.18	0.030
New flooring past yr	No	441	130552	0.412	0.112	3.67	0.000	22.6	5.5	4.10	0.000	3.8	1.3	2.83	0.005
New flooring past yr	DK	144	42365	0.073	0.238	0.31	0.760	15.6	9.7	1.61	0.110	1.1	0.8	1.40	0.163

APPENDIX G

Classification of Portable Classrooms, by
Formaldehyde Level and Other Selected Variables

Classification of Portable Classrooms, by Formaldehyde Level and Other Selected Variables

Formaldehyde Level	Classification Variable	Category	p-Value Wald Chi^2	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
<=27ppb	All classrooms	All		295	49.7		
>27ppb	All classrooms	All		349	50.3		
<=27ppb	School location	Urban	0.68	47	48.2	34.9	61.5
		Suburb		217	49.2	43.2	55.2
		Rural		31	57.8	39.2	76.4
>27ppb	School location	Urban		55	51.8	38.5	65.1
		Suburb		270	50.8	44.8	56.8
		Rural		24	42.2	23.6	60.8
<=27ppb	Geographic region	North	0.09	139	55.4	47.2	63.5
		South		156	46.1	39.3	52.9
>27ppb	Geographic region	North		144	44.6	36.5	52.8
		South		205	53.9	47.1	60.7
<=27ppb	School type	Elem	0.19	181	45.8	39.3	52.3
		Middle		52	52.1	39.0	65.2
		High		62	57.7	46.3	69.0
>27ppb	School type	Elem		238	54.2	47.7	60.7
		Middle		51	47.9	34.8	61.0
		High		60	42.3	31.0	53.7
<=27ppb	Month of formaldehyde sample	April	0.00	114	69.2	60.8	77.6
		May		136	46.0	38.7	53.4
		June/July		45	32.6	22.6	42.6
>27ppb	Month of formaldehyde sample	April		51	30.8	22.4	39.2
		May		199	54.0	46.6	61.3
		June/July		99	67.4	57.4	77.4
<=27ppb	Time of formaldehyde sample	Early_April	0.00	38	90.6	81.1	100.0
		Late_April		76	63.7	54.4	73.0
		Early_May		56	44.9	33.9	55.9
		Late_May		80	46.9	37.1	56.8
		June/July		44	32.5	22.4	42.6
>27ppb	Time of formaldehyde sample	Early_April		5	9.4	0.0	18.9
		Late_April		46	36.3	27.0	45.6
		Early_May		98	55.1	44.1	66.1
		Late_May		101	53.1	43.2	62.9
		June/July		97	67.5	57.4	77.6

Formaldehyde Level	Classification Variable	Category	p-Value Wald Chi^2	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
<=27ppb	<25% non-weekday in samp period	Yes	0.19	156	52.9	46.0	59.8
		No		138	45.9	37.9	54.0
>27ppb	<25% non-weekday in samp period	Yes		176	47.1	40.2	54.0
		No		171	54.1	46.0	62.1
<=27ppb	General instruction classroom	Yes	0.46	250	51.6	45.8	57.4
		No		27	45.1	28.4	61.7
>27ppb	General instruction classroom	Yes		279	48.4	42.6	54.2
		No		37	54.9	38.3	71.6
<=27ppb	Carpeted classroom	Full	0.45	209	53.2	46.8	59.6
		Partial		52	45.7	34.3	57.1
		None		18	45.1	22.8	67.4
>27ppb	Carpeted classroom	Full		224	46.8	40.4	53.2
		Partial		76	54.3	42.9	65.7
		None		19	54.9	32.6	77.2
<=27ppb	Vinyl/linoleum floor	Yes	0.20	75	45.6	35.2	55.9
		No		204	53.3	46.9	59.7
>27ppb	Vinyl/linoleum floor	Yes		96	54.4	44.1	64.8
		No		223	46.7	40.3	53.1
<=27ppb	Vinyl tackable wallboard	Yes	0.77	213	50.3	44.2	56.3
		No		63	52.1	41.0	63.2
>27ppb	Vinyl tackable wallboard	Yes		251	49.7	43.7	55.8
		No		65	47.9	36.8	59.0
<=27ppb	Open windows	Never	0.67	28	50.6	38.5	62.7
		Infrequent		158	49.3	42.1	56.6
		Frequent		88	54.5	45.2	63.7
>27ppb	Open windows	Never		35	49.4	37.3	61.5
		Infrequent		191	50.7	43.4	57.9
		Frequent		91	45.5	36.3	54.8
<=27ppb	Open door to outside	Infreq	0.16	153	52.6	45.9	59.4
		Freq		118	48.7	40.7	56.8
		NA		0	0.0	0.0	0.0
>27ppb	Open door to outside	Infreq		155	47.4	40.6	54.1
		Freq		150	51.3	43.2	59.3
		NA		3	100.0	100.0	100.0
<=27ppb	Pressed wood furniture	Yes	0.15	261	52.0	46.4	57.7
		No		18	39.3	22.7	55.8

Formaldehyde Level	Classification Variable	Category	p-Value Wald Chi^2	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
>27ppb	Pressed wood furniture	Yes		287	48.0	42.3	53.6
		No		32	60.7	44.2	77.3
<=27ppb	Pressed wood table/desks	Yes	0.25	234	52.1	46.2	58.1
		No		45	44.9	33.3	56.6
>27ppb	Pressed wood table/desks	Yes		255	47.9	41.9	53.8
		No		64	55.1	43.4	66.7
<=27ppb	Pressed wood bookcases	Yes	0.39	168	48.9	42.2	55.6
		No		111	53.8	44.6	63.0
>27ppb	Pressed wood bookcases	Yes		185	51.1	44.4	57.8
		No		134	46.2	37.0	55.4
<=27ppb	Pressed wood cabinets	Yes	0.04	122	45.0	37.3	52.7
		No		157	56.5	48.8	64.3
>27ppb	Pressed wood cabinets	Yes		174	55.0	47.3	62.7
		No		145	43.5	35.7	51.2
<=27ppb	New furnishings this school yr	Yes	0.28	62	44.4	34.1	54.8
		No		202	52.8	46.7	59.0
		DK		11	58.5	32.9	84.1
>27ppb	New furnishings this school yr	Yes		100	55.6	45.2	65.9
		No		204	47.2	41.0	53.3
		DK		11	41.5	15.9	67.1
<=27ppb	Type appliances in room	Stove/burnr	0.10	5	30.3	9.0	51.5
		Other		91	53.5	43.8	63.2
		None		158	52.6	45.8	59.4
>27ppb	Type appliances in room	Stove/burnr		14	69.7	48.5	91.0
		Other		103	46.5	36.8	56.2
		None		171	47.4	40.6	54.2
<=27ppb	Chemical present in room	Yes	0.04	120	45.0	36.9	53.0
		No		159	56.0	48.8	63.2
>27ppb	Chemical present in room	Yes		165	55.0	47.0	63.1
		No		154	44.0	36.8	51.2
<=27ppb	Oil/acrylic paints used	Yes	0.43	37	45.7	31.5	59.9
		No		242	51.6	45.8	57.5
>27ppb	Oil/acrylic paints used	Yes		49	54.3	40.1	68.5
		No		270	48.4	42.5	54.2
<=27ppb	Permanent marker/pen used	Yes	0.77	230	51.4	45.3	57.4
		No		49	49.2	35.6	62.8

Formaldehyde Level	Classification Variable	Category	p-Value Wald Chi^2	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
>27ppb	Permanent marker/pen used	Yes		263	48.6	42.6	54.7
		No		56	50.8	37.2	64.4
<=27ppb	Whiteboard marker used	Yes	0.48	234	50.0	43.9	56.1
		No		45	55.7	41.2	70.2
>27ppb	Whiteboard marker used	Yes		273	50.0	43.9	56.1
		No		46	44.3	29.8	58.8
<=27ppb	Glues/fluids used	Yes	0.56	189	51.9	45.4	58.5
		No		90	48.8	40.1	57.6
>27ppb	Glues/fluids used	Yes		221	48.1	41.5	54.6
		No		98	51.2	42.4	59.9
<=27ppb	Correction fluid used	Yes	0.84	170	51.3	44.3	58.4
		No		109	50.3	42.0	58.6
>27ppb	Correction fluid used	Yes		208	48.7	41.6	55.7
		No		111	49.7	41.4	58.0
<=27ppb	Epoxy/rubber cement used	Yes	0.27	51	57.4	44.7	70.0
		No		228	49.8	43.9	55.7
>27ppb	Epoxy/rubber cement used	Yes		42	42.6	30.0	55.3
		No		277	50.2	44.3	56.1
<=27ppb	Air freshener used	Yes	0.34	109	47.7	39.1	56.2
		No		170	53.0	46.0	59.9
>27ppb	Air freshener used	Yes		129	52.3	43.8	60.9
		No		190	47.0	40.1	54.0
<=27ppb	Air freshener used - plug-in	Yes	0.55	56	53.8	43.0	64.6
		No		223	50.2	44.1	56.3
>27ppb	Air freshener used - plug-in	Yes		67	46.2	35.4	57.0
		No		252	49.8	43.7	55.9
<=27ppb	Air freshener used - spray	Yes	0.31	61	45.4	33.4	57.4
		No		218	52.5	46.2	58.9
>27ppb	Air freshener used - spray	Yes		71	54.6	42.6	66.6
		No		248	47.5	41.1	53.8
<=27ppb	New furnishings odor	Never	0.08	234	53.7	47.4	59.9
		Sometimes		29	40.9	24.0	57.9
		Often		5	26.9	2.6	51.3
>27ppb	New furnishings odor	Never		247	46.3	40.1	52.6
		Sometimes		49	59.1	42.1	76.0
		Often		11	73.1	48.7	97.4

Formaldehyde Level	Classification Variable	Category	p-Value Wald Chi^2	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
<=27ppb	Construction activity this yr	Current	0.58	55	44.9	34.4	55.5
		Previous		136	53.6	45.7	61.5
		Never		77	50.6	39.1	62.1
		Unknown		8	56.8	27.2	86.3
>27ppb	Construction activity this yr	Current		81	55.1	44.5	65.6
		Previous		151	46.4	38.5	54.3
		Never		78	49.4	37.9	60.9
		Unknown		5	43.2	13.7	72.8
<=27ppb	Carpentry activity this yr	Yes	0.52	87	53.5	43.9	63.1
		No		192	49.7	43.0	56.4
>27ppb	Carpentry activity this yr	Yes		98	46.5	36.9	56.1
		No		221	50.3	43.6	57.0
<=27ppb	In-room construction this yr	Yes	0.45	37	55.4	42.3	68.6
		No		238	50.0	44.2	55.9
>27ppb	In-room construction this yr	Yes		40	44.6	31.4	57.7
		No		278	50.0	44.1	55.8
<=27ppb	Other school construction this yr	Yes	0.87	185	50.6	44.0	57.3
		No		94	51.7	41.4	62.0
>27ppb	Other school construction this yr	Yes		224	49.4	42.7	56.0
		No		95	48.3	38.0	58.6
<=27ppb	# teacher complaints in school yr	0	0.54	111	54.0	45.8	62.2
		1-5		145	48.3	40.6	55.9
		>5		19	54.6	32.4	76.8
>27ppb	# teacher complaints in school yr	0		121	46.0	37.8	54.2
		1-5		163	51.7	44.1	59.4
		>5		28	45.4	23.2	67.6
<=27ppb	Overall air quality (teacher)	Excellent	0.97	36	49.3	37.5	61.1
		Good		95	51.8	42.1	61.6
		Adequate		98	49.5	39.9	59.2
		Poor		37	51.9	38.2	65.6
		Very_poor		7	58.4	29.1	87.7
>27ppb	Overall air quality (teacher)	Excellent		51	50.7	38.9	62.5
		Good		111	48.2	38.4	57.9
		Adequate		106	50.5	40.8	60.1
		Poor		41	48.1	34.4	61.8
		Very_poor		7	41.6	12.3	70.9

Formaldehyde Level	Classification Variable	Category	p-Value Wald Chi^2	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
<=27ppb	Nose symptoms past 2 weeks	None	0.77	121	52.8	44.3	61.4
		Occasional		85	49.7	41.1	58.3
		Frequent		65	48.2	37.1	59.4
>27ppb	Nose symptoms past 2 weeks	None		118	47.2	38.6	55.7
		Occasional		109	50.3	41.7	58.9
		Frequent		85	51.8	40.6	62.9
<=27ppb	Nose symptoms at home	Same/worse	0.29	75	45.5	36.2	54.7
		Improves		60	55.3	44.6	66.0
		NA		121	52.8	44.3	61.4
>27ppb	Nose symptoms at home	Same/worse		104	54.5	45.3	63.8
		Improves		69	44.7	34.0	55.4
		NA		118	47.2	38.6	55.7
<=27ppb	Throat symptoms past 2 weeks	None	0.87	144	50.1	42.3	57.8
		Occasional		81	51.4	40.5	62.2
		Frequent		46	54.2	40.9	67.5
>27ppb	Throat symptoms past 2 weeks	None		158	49.9	42.2	57.7
		Occasional		94	48.6	37.8	59.5
		Frequent		53	45.8	32.5	59.1
<=27ppb	Throat symptoms at home	Same/worse	0.87	54	52.8	41.0	64.6
		Improves		61	53.8	41.7	65.8
		NA		144	50.1	42.3	57.8
>27ppb	Throat symptoms at home	Same/worse		63	47.2	35.4	59.0
		Improves		67	46.2	34.2	58.3
		NA		158	49.9	42.2	57.7
<=27ppb	Eyes symptoms past 2 weeks	None	0.32	154	50.8	43.2	58.3
		Occasional		63	45.6	34.8	56.4
		Frequent		46	59.5	45.6	73.4
>27ppb	Eyes symptoms past 2 weeks	None		166	49.2	41.7	56.8
		Occasional		89	54.4	43.6	65.2
		Frequent		45	40.5	26.6	54.4
<=27ppb	Eyes symptoms at home	Same/worse	0.36	42	44.3	33.1	55.6
		Improves		53	56.3	43.8	68.8
		NA		154	50.8	43.2	58.3
>27ppb	Eyes symptoms at home	Same/worse		59	55.7	44.4	66.9
		Improves		55	43.7	31.2	56.2
		NA		166	49.2	41.7	56.8

Formaldehyde Level	Classification Variable	Category	p-Value Wald Chi^2	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
<=27ppb	Classroom age (yrs)	<=10yr	0.01	97	42.7	34.2	51.3
		11-20yr		53	51.7	39.8	63.5
		21-30yr		22	84.9	68.2	100.0
		31-40yr		15	72.2	47.6	96.9
		41+yr		1	34.0	0.0	86.6
>27ppb	Classroom age (yrs)	<=10yr		153	57.3	48.7	65.8
		11-20yr		57	48.3	36.5	60.2
		21-30yr		6	15.1	0.0	31.8
		31-40yr		5	27.8	3.1	52.4
		41+yr		3	66.0	13.4	100.0
<=27ppb	Classroom age (yrs)	0-3yr	0.00	36	34.3	22.2	46.5
		4-5yr		28	40.1	26.8	53.4
		6-10yr		33	60.9	44.2	77.7
		11-15yr		39	50.4	34.4	66.4
		16+yr		52	70.4	57.0	83.8
>27ppb	Classroom age (yrs)	0-3yr		77	65.7	53.5	77.8
		4-5yr		45	59.9	46.6	73.2
		6-10yr		31	39.1	22.3	55.8
		11-15yr		43	49.6	33.6	65.6
		16+yr		28	29.6	16.2	43.0
<=27ppb	Classroom age (known/unknown)	Known	0.95	188	50.7	44.1	57.4
		Unknown		80	51.1	41.1	61.2
>27ppb	Classroom age (known/unknown)	Known		224	49.3	42.6	55.9
		Unknown		82	48.9	38.8	58.9
<=27ppb	Major renovations/additions	Yes	0.13	68	59.9	49.0	70.8
		No		192	49.5	42.6	56.5
>27ppb	Major renovations/additions	Yes		56	40.1	29.2	51.0
		No		229	50.5	43.5	57.4
<=27ppb	Addition/wall/floor renovations	Yes	0.72	21	49.7	35.5	63.8
		No		239	52.3	46.3	58.3
>27ppb	Addition/wall/floor renovations	Yes		21	50.3	36.2	64.5
		No		264	47.7	41.7	53.7
<=27ppb	HVAC or lighting renovations	Yes	0.06	46	65.0	51.5	78.5
		No		214	49.5	43.0	55.9
>27ppb	HVAC or lighting renovations	Yes		33	35.0	21.5	48.5
		No		252	50.5	44.1	57.0

Formaldehyde Level	Classification Variable	Category	p-Value Wald Chi^2	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
<=27ppb	Roof renovations	Yes	0.37	22	60.3	42.9	77.6
		No		238	51.3	44.9	57.6
>27ppb	Roof renovations	Yes		14	39.7	22.4	57.1
		No		271	48.7	42.4	55.1
<=27ppb	Classroom size (sq. ft.)	<600	0.04	19	52.0	37.0	67.0
		600-1100		197	54.6	47.7	61.4
		>1100		52	39.3	29.7	48.8
>27ppb	Classroom size (sq. ft.)	<600		25	48.0	33.0	63.0
		600-1100		204	45.4	38.6	52.3
		>1100		77	60.7	51.2	70.3
<=27ppb	Outdoor damper min setting	<=10%	0.21	20	65.2	47.5	82.8
		11-20%		43	58.2	45.2	71.2
		21-40%		9	74.1	47.3	100.0
		>40%		8	43.4	27.1	59.6
		Unknown		161	49.8	42.4	57.1
>27ppb	Outdoor damper min setting	<=10%		16	34.8	17.2	52.5
		11-20%		37	41.8	28.8	54.8
		21-40%		7	25.9	0.0	52.7
		>40%		8	56.6	40.4	72.9
		Unknown		190	50.2	42.9	57.6
<=27ppb	New pressed wood last yr	Yes	0.09	64	42.9	33.1	52.8
		No		154	56.0	48.2	63.7
		DK		32	56.8	41.8	71.8
>27ppb	New pressed wood last yr	Yes		103	57.1	47.2	66.9
		No		149	44.0	36.3	51.8
		DK		25	43.2	28.2	58.2
<=27ppb	New carpet past yr	Yes	0.18	40	44.2	32.1	56.4
		No		220	53.9	47.1	60.6
>27ppb	New carpet past yr	Yes		68	55.8	43.6	67.9
		No		217	46.1	39.4	52.9
<=27ppb	New flooring past yr	Yes	0.17	52	46.2	35.7	56.6
		No		147	50.9	42.8	58.9
		DK		61	61.9	49.0	74.8
>27ppb	New flooring past yr	Yes		83	53.8	43.4	64.3
		No		156	49.1	41.1	57.2
		DK		46	38.1	25.2	51.0

Formaldehyde Level	Classification Variable	Category	p-Value Wald Chi^2	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
<=27ppb	All classrooms	All		479	63.1		
>27ppb	All classrooms	All		432	36.9		
<=27ppb	School location	Urban	0.49	76	62.9	50.5	75.2
		Suburb		354	62.2	55.6	68.9
		Rural		49	72.8	58.4	87.2
>27ppb	School location	Urban		71	37.1	24.8	49.5
		Suburb		330	37.8	31.1	44.4
		Rural		31	27.2	12.8	41.6
<=27ppb	Geographic region	North	0.00	228	74.1	67.6	80.7
		South		251	56.4	48.7	64.1
>27ppb	Geographic region	North		169	25.9	19.3	32.4
		South		263	43.6	35.9	51.3
<=27ppb	School type	Elem	0.20	297	58.3	52.2	64.3
		Middle		87	68.6	55.3	81.8
		High		95	68.0	54.9	81.1
>27ppb	School type	Elem		295	41.7	35.7	47.8
		Middle		62	31.4	18.2	44.7
		High		75	32.0	18.9	45.1
<=27ppb	Month of formaldehyde sample	April	0.00	185	86.1	80.8	91.3
		May		224	59.7	51.8	67.5
		June/July		70	37.0	25.6	48.3
>27ppb	Month of formaldehyde sample	April		56	13.9	8.7	19.2
		May		247	40.3	32.5	48.2
		June/July		129	63.0	51.7	74.4
<=27ppb	Time of formaldehyde sample	Early_April	0.00	58	96.5	92.8	100.0
		Late_April		127	83.4	77.2	89.6
		Early_May		93	52.6	40.1	65.1
		Late_May		131	65.5	56.3	74.8
		June/July		68	36.4	25.0	47.8
>27ppb	Time of formaldehyde sample	Early_April		6	3.5	0.0	7.2
		Late_April		50	16.6	10.4	22.8
		Early_May		126	47.4	34.9	59.9
		Late_May		121	34.5	25.2	43.7
		June/July		127	63.6	52.2	75.0
<=27ppb	<25% non-weekday in samp period	Yes	0.25	261	65.9	58.4	73.3
		No		216	59.5	51.1	67.9

Formaldehyde Level	Classification Variable	Category	p-Value Wald Chi^2	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
>27ppb	<25% non-weekday in samp period	Yes		214	34.1	26.7	41.6
		No		216	40.5	32.1	48.9
<=27ppb	General instruction classroom	Yes	0.79	402	64.7	58.9	70.4
		No		46	62.2	44.4	80.0
>27ppb	General instruction classroom	Yes		342	35.3	29.6	41.1
		No		47	37.8	20.0	55.6
<=27ppb	Carpeted classroom	Full	0.88	275	62.5	55.6	69.4
		Partial		118	64.0	55.5	72.6
		None		57	66.0	51.8	80.2
>27ppb	Carpeted classroom	Full		253	37.5	30.6	44.4
		Partial		103	36.0	27.4	44.5
		None		38	34.0	19.8	48.2
<=27ppb	Vinyl/linoleum floor	Yes	0.29	169	66.7	58.1	75.4
		No		281	61.2	54.2	68.2
>27ppb	Vinyl/linoleum floor	Yes		136	33.3	24.6	41.9
		No		258	38.8	31.8	45.8
<=27ppb	Vinyl tackable wallboard	Yes	0.00	262	56.0	48.4	63.7
		No		183	71.5	64.0	79.0
>27ppb	Vinyl tackable wallboard	Yes		279	44.0	36.3	51.6
		No		109	28.5	21.0	36.0
<=27ppb	Open windows	Never	0.21	89	69.0	57.4	80.6
		Infrequent		221	58.5	50.4	66.6
		Frequent		130	66.4	56.7	76.1
>27ppb	Open windows	Never		56	31.0	19.4	42.6
		Infrequent		226	41.5	33.4	49.6
		Frequent		108	33.6	23.9	43.3
<=27ppb	Open door to outside	Infreq	0.07	235	61.1	53.5	68.8
		Freq		178	60.3	51.5	69.1
		NA		26	83.4	67.3	99.6
>27ppb	Open door to outside	Infreq		192	38.9	31.2	46.5
		Freq		178	39.7	30.9	48.5
		NA		10	16.6	0.4	32.7
<=27ppb	Pressed wood furniture	Yes	0.65	416	64.3	58.3	70.3
		No		34	60.2	42.2	78.2
>27ppb	Pressed wood furniture	Yes		353	35.7	29.7	41.7
		No		41	39.8	21.8	57.8

Formaldehyde Level	Classification Variable	Category	p-Value Wald Chi^2	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
<=27ppb	Pressed wood table/desks	Yes	0.80	369	64.2	57.8	70.5
		No		81	62.5	50.4	74.6
>27ppb	Pressed wood table/desks	Yes		312	35.8	29.5	42.2
		No		82	37.5	25.4	49.6
<=27ppb	Pressed wood bookcases	Yes	0.35	265	61.4	54.3	68.5
		No		185	66.6	57.7	75.5
>27ppb	Pressed wood bookcases	Yes		227	38.6	31.5	45.7
		No		167	33.4	24.5	42.3
<=27ppb	Pressed wood cabinets	Yes	0.75	201	62.9	54.5	71.2
		No		249	64.6	57.1	72.1
>27ppb	Pressed wood cabinets	Yes		202	37.1	28.8	45.5
		No		192	35.4	27.9	42.9
<=27ppb	New furnishings this school yr	Yes	0.48	95	61.5	50.6	72.4
		No		333	64.1	57.2	71.1
		DK		16	75.8	58.2	93.3
>27ppb	New furnishings this school yr	Yes		119	38.5	27.6	49.4
		No		258	35.9	28.9	42.8
		DK		12	24.2	6.7	41.8
<=27ppb	Type appliances in room	Stove/burnr	0.56	11	47.7	18.5	76.9
		Other		132	64.8	55.6	74.0
		None		259	65.2	57.8	72.6
>27ppb	Type appliances in room	Stove/burnr		16	52.3	23.1	81.5
		Other		122	35.2	26.0	44.4
		None		216	34.8	27.4	42.2
<=27ppb	Chemical present in room	Yes	0.59	203	62.4	54.2	70.6
		No		247	65.1	57.9	72.4
>27ppb	Chemical present in room	Yes		204	37.6	29.4	45.8
		No		190	34.9	27.6	42.1
<=27ppb	Oil/acrylic paints used	Yes	0.09	67	73.9	62.8	84.9
		No		383	62.4	55.9	68.8
>27ppb	Oil/acrylic paints used	Yes		52	26.1	15.1	37.2
		No		342	37.6	31.2	44.1
<=27ppb	Permanent marker/pen used	Yes	0.45	370	65.1	58.8	71.3
		No		80	59.6	46.2	72.9
>27ppb	Permanent marker/pen used	Yes		320	34.9	28.7	41.2
		No		74	40.4	27.1	53.8

Formaldehyde Level	Classification Variable	Category	p-Value Wald Chi^2	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
<=27ppb	Whiteboard marker used	Yes	0.53	379	63.0	56.6	69.3
		No		71	67.6	54.2	81.0
>27ppb	Whiteboard marker used	Yes		334	37.0	30.7	43.4
		No		60	32.4	19.0	45.8
<=27ppb	Glues/fluids used	Yes	0.51	304	65.1	58.1	72.1
		No		146	61.3	51.5	71.0
>27ppb	Glues/fluids used	Yes		266	34.9	27.9	41.9
		No		128	38.7	29.0	48.5
<=27ppb	Correction fluid used	Yes	0.50	277	65.3	58.0	72.6
		No		173	61.5	52.5	70.4
>27ppb	Correction fluid used	Yes		249	34.7	27.4	42.0
		No		145	38.5	29.6	47.5
<=27ppb	Epoxy/rubber cement used	Yes	0.87	74	64.8	52.2	77.3
		No		376	63.7	57.4	69.9
>27ppb	Epoxy/rubber cement used	Yes		52	35.2	22.7	47.8
		No		342	36.3	30.1	42.6
<=27ppb	Air freshener used	Yes	0.12	156	57.7	48.0	67.4
		No		294	66.8	59.9	73.6
>27ppb	Air freshener used	Yes		155	42.3	32.6	52.0
		No		239	33.2	26.4	40.1
<=27ppb	Air freshener used - plug-in	Yes	0.66	82	61.4	49.5	73.3
		No		368	64.3	57.9	70.6
>27ppb	Air freshener used - plug-in	Yes		79	38.6	26.7	50.5
		No		315	35.7	29.4	42.1
<=27ppb	Air freshener used - spray	Yes	0.19	85	56.8	44.1	69.4
		No		365	65.6	59.3	71.8
>27ppb	Air freshener used - spray	Yes		87	43.2	30.6	55.9
		No		307	34.4	28.2	40.7
<=27ppb	New furnishings odor	Never	0.03	385	65.0	58.7	71.3
		Sometimes		46	58.3	45.3	71.3
		Often		5	23.1	1.2	45.0
>27ppb	New furnishings odor	Never		314	35.0	28.7	41.3
		Sometimes		56	41.7	28.7	54.7
		Often		12	76.9	55.0	98.8

Formaldehyde Level	Classification Variable	Category	p-Value Wald Chi^2	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
<=27ppb	Construction activity this yr	Current	0.06	81	53.0	39.8	66.2
		Previous		216	64.0	55.8	72.2
		Never		135	71.2	61.9	80.4
		Unknown		11	80.8	60.7	100.0
>27ppb	Construction activity this yr	Current		105	47.0	33.8	60.2
		Previous		188	36.0	27.8	44.2
		Never		92	28.8	19.6	38.1
		Unknown		5	19.2	0.0	39.3
<=27ppb	Carpentry activity this yr	Yes	0.36	136	60.0	48.9	71.2
		No		314	65.7	59.4	72.0
>27ppb	Carpentry activity this yr	Yes		127	40.0	28.8	51.1
		No		267	34.3	28.0	40.6
<=27ppb	In-room construction this yr	Yes	0.38	62	57.9	43.1	72.8
		No		383	64.8	58.7	70.8
>27ppb	In-room construction this yr	Yes		55	42.1	27.2	56.9
		No		338	35.2	29.2	41.3
<=27ppb	Other school construction this yr	Yes	0.01	284	59.6	52.2	67.0
		No		166	73.0	65.0	81.0
>27ppb	Other school construction this yr	Yes		284	40.4	33.0	47.8
		No		110	27.0	19.0	35.0
<=27ppb	# teacher complaints in school yr	0	0.96	179	63.3	54.8	71.8
		1-5		234	63.6	55.4	71.8
		>5		29	66.5	46.3	86.7
>27ppb	# teacher complaints in school yr	0		156	36.7	28.2	45.2
		1-5		196	36.4	28.2	44.6
		>5		33	33.5	13.3	53.7
<=27ppb	Overall air quality (teacher)	Excellent	0.45	67	63.3	51.7	74.9
		Good		170	69.5	61.2	77.7
		Adequate		144	56.4	44.8	68.0
		Poor		52	65.0	51.2	78.8
		Very_poor		9	70.2	39.4	100.0
>27ppb	Overall air quality (teacher)	Excellent		65	36.7	25.1	48.3
		Good		137	30.5	22.3	38.8
		Adequate		133	43.6	32.0	55.2
		Poor		48	35.0	21.2	48.8
		Very_poor		8	29.8	0.0	60.6

Formaldehyde Level	Classification Variable	Category	p-Value Wald Chi^2	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
<=27ppb	Nose symptoms past 2 weeks	None	0.42	195	67.5	59.3	75.7
		Occasional		151	61.6	52.0	71.3
		Frequent		94	59.3	47.7	71.0
>27ppb	Nose symptoms past 2 weeks	None		147	32.5	24.3	40.7
		Occasional		140	38.4	28.7	48.0
		Frequent		100	40.7	29.0	52.3
<=27ppb	Nose symptoms at home	Same/worse	0.57	136	62.3	52.6	71.9
		Improves		81	61.0	47.4	74.5
		NA		195	67.5	59.3	75.7
>27ppb	Nose symptoms at home	Same/worse		128	37.7	28.1	47.4
		Improves		85	39.0	25.5	52.6
		NA		147	32.5	24.3	40.7
<=27ppb	Throat symptoms past 2 weeks	None	0.48	243	67.0	59.6	74.4
		Occasional		126	59.5	48.5	70.4
		Frequent		67	62.2	50.9	73.4
>27ppb	Throat symptoms past 2 weeks	None		193	33.0	25.6	40.4
		Occasional		124	40.5	29.6	51.5
		Frequent		62	37.8	26.6	49.1
<=27ppb	Throat symptoms at home	Same/worse	0.50	87	62.0	50.3	73.7
		Improves		84	58.6	45.2	72.1
		NA		243	67.0	59.6	74.4
>27ppb	Throat symptoms at home	Same/worse		80	38.0	26.3	49.7
		Improves		83	41.4	27.9	54.8
		NA		193	33.0	25.6	40.4
<=27ppb	Eyes symptoms past 2 weeks	None	0.56	254	64.9	57.7	72.1
		Occasional		108	59.2	47.2	71.1
		Frequent		67	68.1	55.0	81.2
>27ppb	Eyes symptoms past 2 weeks	None		204	35.1	27.9	42.3
		Occasional		116	40.8	28.9	52.8
		Frequent		54	31.9	18.8	45.0
<=27ppb	Eyes symptoms at home	Same/worse	0.28	84	68.8	56.7	80.9
		Improves		69	54.2	39.8	68.5
		NA		254	64.9	57.7	72.1
>27ppb	Eyes symptoms at home	Same/worse		74	31.2	19.1	43.3
		Improves		70	45.8	31.5	60.2
		NA		204	35.1	27.9	42.3

Formaldehyde Level	Classification Variable	Category	p-Value Wald Chi^2	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
<=27ppb	Classroom age (yrs)	<=10yr	0.00	115	54.5	45.0	64.0
		11-20yr		62	51.3	36.9	65.6
		21-30yr		41	92.8	86.2	99.3
		31-40yr		36	55.5	32.8	78.2
		41+yr		43	66.1	50.9	81.2
>27ppb	Classroom age (yrs)	<=10yr		158	45.5	36.0	55.0
		11-20yr		61	48.7	34.4	63.1
		21-30yr		9	7.2	0.7	13.8
		31-40yr		14	44.5	21.8	67.2
		41+yr		26	33.9	18.8	49.1
<=27ppb	Classroom age (yrs)	0-3yr	0.00	42	48.3	33.0	63.6
		4-5yr		29	36.4	22.9	49.9
		6-10yr		44	76.8	64.8	88.8
		11-15yr		46	51.2	33.1	69.3
		16+yr		136	70.3	60.3	80.3
>27ppb	Classroom age (yrs)	0-3yr		77	51.7	36.4	67.0
		4-5yr		48	63.6	50.1	77.1
		6-10yr		33	23.2	11.2	35.2
		11-15yr		45	48.8	30.7	66.9
		16+yr		65	29.7	19.7	39.7
<=27ppb	Classroom age (known/unknown)	Known	0.29	297	63.1	55.7	70.5
		Unknown		137	69.2	60.3	78.1
>27ppb	Classroom age (known/unknown)	Known		268	36.9	29.5	44.3
		Unknown		108	30.8	21.9	39.7
<=27ppb	Major renovations/additions	Yes	0.68	140	66.8	56.8	76.9
		No		277	64.4	57.2	71.5
>27ppb	Major renovations/additions	Yes		93	33.2	23.1	43.2
		No		258	35.6	28.5	42.8
<=27ppb	Addition/wall/floor renovations	Yes	0.69	52	68.0	53.4	82.5
		No		365	64.9	58.4	71.3
>27ppb	Addition/wall/floor renovations	Yes		35	32.0	17.5	46.6
		No		316	35.1	28.7	41.6
<=27ppb	HVAC or lighting renovations	Yes	0.96	100	65.1	53.1	77.1
		No		317	65.5	58.7	72.2
>27ppb	HVAC or lighting renovations	Yes		67	34.9	22.9	46.9
		No		284	34.5	27.8	41.3

Formaldehyde Level	Classification Variable	Category	p-Value Wald Chi^2	Sample Size	Est. Pop. Percent	Approx. Lower 95% Limit	Approx. Upper 95% Limit
<=27ppb	Roof renovations	Yes	0.55	61	69.1	54.4	83.9
		No		356	64.4	58.0	70.9
>27ppb	Roof renovations	Yes		31	30.9	16.1	45.6
		No		320	35.6	29.1	42.0
<=27ppb	Classroom size (sq. ft.)	<600	0.18	35	76.2	62.1	90.4
		600-1100		290	61.4	53.8	69.1
		>1100		109	68.7	58.8	78.5
>27ppb	Classroom size (sq. ft.)	<600		31	23.8	9.6	37.9
		600-1100		248	38.6	30.9	46.2
		>1100		97	31.3	21.5	41.2
<=27ppb	Outdoor damper min setting	<=10%	0.42	28	71.3	52.6	90.0
		11-20%		74	70.4	58.4	82.4
		21-40%		14	87.8	71.5	100.0
		>40%		11	43.3	13.8	72.7
		Unknown		254	64.8	57.0	72.6
>27ppb	Outdoor damper min setting	<=10%		20	28.7	10.0	47.4
		11-20%		48	29.6	17.6	41.6
		21-40%		8	12.2	0.0	28.5
		>40%		11	56.7	27.3	86.2
		Unknown		230	35.2	27.4	43.0
<=27ppb	New pressed wood last yr	Yes	0.05	100	54.7	42.7	66.7
		No		250	71.6	64.4	78.8
		DK		48	59.5	40.0	79.0
>27ppb	New pressed wood last yr	Yes		128	45.3	33.3	57.3
		No		179	28.4	21.2	35.6
		DK		33	40.5	21.0	60.0
<=27ppb	New carpet past yr	Yes	0.19	60	57.5	44.9	70.2
		No		357	66.6	59.9	73.2
>27ppb	New carpet past yr	Yes		78	42.5	29.8	55.1
		No		273	33.4	26.8	40.1
<=27ppb	New flooring past yr	Yes	0.41	83	59.3	47.9	70.7
		No		246	65.6	57.9	73.3
		DK		88	71.2	56.7	85.7
>27ppb	New flooring past yr	Yes		100	40.7	29.3	52.1
		No		195	34.4	26.7	42.1
		DK		56	28.8	14.3	43.3

APPENDIX H

Recommendations from the Formaldehyde Lab
(Air Quality Research)

Tom Phillips July 16, 2001

Mr. Phillips,

You should have received the July 10th 'cutoff' data in an Excel spreadsheet from Mike Phillips. If not, please give AQR a call and I can get one to you immediately.

Phil asked me to make any recommendations I may have regarding the process of delivering, receiving and analyzing the monitors that may make any further work more efficient. Although the process from my viewpoint went fairly smoothly, there are a few items we might consider…

There was a greater percentage of breakage than I would have expected. Although the causes spring from many sources there are two that AQR might address. The first is the number of vials that "fell and broke" according to the users. This implies that the pins used to fix the vial to the ceiling might be insufficient for the task. Perhaps the acoustical ceiling panels (as opposed to drywall or wood) found in many commercial buildings, won't hold the small push pin under the weight of the vial. Secondly, a number of vials were found cracked or broken possibly during shipment from, not to, the user. AQR might include some cushioning approach to protect the vials after removal from the PE bag.
Preventing breakage would have yielded about 20 more viable results in this round.

Additionally, there remains a 'misfit' collection of vials that cannot be recorded due to missing paperwork, missing ID labels or any other incomplete data matching making location/data of vials unavailable. This group represents nine school systems to date. I understand the purpose of anonymity regarding the school ID's. However, our experience over the years has shown the more that vials can be pre-labeled and have the data sheets included with each box of vials, the fewer these incidents will be.

Finally, there were a number of Analysis Request Forms that were not filled out completely leaving out information of START or STOP times and especially AM and/or PM indications. Any clarity on what the customer must properly record will avoid losing data or making interpretations would help. I think another 25 or 30 so monitors were affected by partial data recording.

Other than these issues I think the process went reasonably well.

Please contact Phil or myself with any questions you may have regarding this response.

Sincerely,

Jim Johnson – AQR

APPENDIX I

Recommendations from ARB and DHS for
Reducing Formaldehyde in Schools

REMEDIES FOR REDUCING FORMALDEHYDE IN SCHOOLS

Recommendations of the
California Air Resources Board
and Department of Health Services
March 2002

When a classroom has been measured with elevated formaldehyde levels (more than 27 parts per billion--ppb), we recommend that the school implement the basic measures listed below. Classrooms with formaldehyde levels below 27 ppb would benefit from these measures as well, because formaldehyde is a carcinogen, and it is desirable to achieve the lowest formaldehyde levels reasonably feasible. However, achieving very low indoor levels (below 5 -10 ppb) generally is not possible. Outdoor levels average about 3 ppb, but can range up to 20 ppb in some areas, such as near traffic.

1. Reduce the total amount of formaldehyde sources in the classroom.

Removing sources is often the most effective way to assure that formaldehyde concentrations are reduced in classroom air. The primary indoor sources are typically pressed wood building materials and furnishings; consumer products and combustion sources can also contribute to indoor levels.

- **Newer, removable sources such as new, freestanding bookshelves and desks made with pressed wood products (e.g., particleboard) should be aired out** in a different, well-ventilated location for as long as conveniently possible, preferably at least two to three weeks. This process will not remove all of the formaldehyde, but it can accelerate the initial off-gassing of formaldehyde, and keep the highest emissions out of the classroom.

- **Avoid using noxious consumer products in the classroom.** Cleaning products, carpet shampoos, surface cleaners, glass cleaners, markers, and cosmetics such as fingernail polish can emit formaldehyde as well as other undesirable chemicals. If some of these products must be used, make sure the ventilation is turned on and run at proper levels.

- **Assure that all combustion appliances are exhausted directly to the outdoors.** Combustion appliances such as gas heaters and ovens produce formaldehyde. They should be checked annually by a professional to assure proper functioning.

2. Provide sufficient ventilation to the classroom.

- **Check the outdoor air flow rate and controls.** An inspection should be conducted to assure that the heating and air conditioning (HVAC) unit is drawing 15 to 20 cubic feet per minute per person of outdoor air into the room. Keep motor vehicles and combustion engines away from the air intakes.

- **To be effective, the HVAC system must be used (turned on).** Verify that the HVAC fan is continuously operating whenever the classroom is being used. If HVAC noise is a problem, consider installing a rubber gasket between the air handler and building shell. Consult with the manufacturer for assistance with noise attenuation.

- **Keep doors and windows open as much as possible**. Additional ventilation can be provided by operating oscillating fans inside the classroom (or in a window) while doors and windows are open. Fleecy materials such as carpet, upholstery, and wall surfaces will adsorb formaldehyde that is in the air and re-emit it as environmental conditions change. Additional ventilation and air circulation will help accelerate the removal of formaldehyde from these surfaces and from the room.

- **Assure that the classroom is maintained at 30% to 50% relative humidity and a comfortable temperature.** Formaldehyde emissions generally increase with higher temperatures and higher humidity.

3. Testing the Air

The following information may be helpful to schools that wish to obtain a follow-up measurement in classrooms after taking steps to reduce formaldehyde levels:

- **Be sure to hire a qualified consultant** or obtain the services of a trained industrial hygienist from the district or a local government agency to conduct the testing. Private consultants may charge about $1000 - $1500 to test several classrooms for one day. Advice on hiring an indoor air quality consultant and lists to help locate consultants can be found on-line at http://www.cal-iaq.org/FIRMS/.

- **Use an accepted test method**. An active DNPH (dinitrophenylhydrazine) sampler is the preferred method, although other methods may be adequate.

- **Obtain measurements during school hours with the ventilation system in normal operating mode**. This will provide a good estimate of the levels the occupants are actually exposed to in their classrooms. Ideally, a 6-8 hour test is desired, to cover the hours the rooms are occupied.

If Levels Are Still Higher Than Desired

If test results show that formaldehyde concentrations remain elevated after the measures above have been taken, then some additional action may be necessary.

Sealing all exposed surfaces of particleboard furnishings with multiple layers of water resistant sealants--such as polyurethane, vinyl laminate, lacquers, alkyd paints or other water-resistant coatings--can reduce formaldehyde emissions. The effectiveness of these sealants varies greatly by product, thickness of the layer applied, and the thoroughness of application. It is advisable to seal all surfaces, including the back and edges of the board, and use multiple layers of coatings. Sealants themselves may release other chemicals for a period of time, so application and initial off-gassing during

drying must be conducted under high ventilation conditions and/or at an alternate location.

For newer classrooms that show especially high formaldehyde levels even after the measures above have been taken, schools may also want to consider measures such as extensive airing out of the building or sealing of surfaces over the summer.

Future Purchases

When new classrooms or furnishings are ordered or constructed, materials can be specified that emit low or no formaldehyde and other volatile chemicals. Schools may also want to request that any furnishings that might emit chemicals be aired out prior to installation. Airing of carpet for several days at an alternate location, such as at a warehouse, can greatly reduce the chemical levels in the classrooms after installation of the carpet. Specification language for low formaldehyde elements was developed by the Collaborative for High Performance Schools (CHPS) and can be found at the website below.

For More Information

For more information on formaldehyde, visit:

http://www.arb.ca.gov/toxics/compwood/background.htm
http://www.arb.ca.gov/research/indoor/formald.htm and
http://www.arb.ca.gov/research/resnotes/notes/97-9.htm.

For information on designing, constructing, and maintaining healthier school buildings, visit:

CHPS: http://www.chps.net/.

Advisory on Relocatable and Renovated Classrooms
http://www.cal-iaq.org/ADVISORY.pdf

IAQ Tools for Schools, U.S. Environmental Protection Agency
http://www.epa.gov/iaq/schools/index.html