California Environmental Protection Agency

Air Resources Board

STAFF REPORT: INITIAL STATEMENT OF REASONS FOR PROPOSED RULEMAKING

PROPOSED AMENDMENTS TO THE REGULATION FOR LIMITING OZONE EMISSIONS FROM INDOOR AIR CLEANING DEVICES

Research Division
Health and Exposure Assessment Branch

October 23, 2009

To be considered by the California Air Resources Board
on December 9, 2009

at
California Environmental Protection Agency
1001 I Street
Sacramento, California 95814

State of California
AIR RESOURCES BOARD
P.O. Box 2815
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Arnold Schwarzenegger
Governor

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State of California
AIR RESOURCES BOARD

PROPOSED AMENDMENTS TO THE REGULATION TO LIMIT OZONE EMISSIONS FROM INDOOR AIR CLEANING DEVICES

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Research Division
California Air Resources Board

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October 23, 2009

ACKNOWLEDGEMENTS

We wish to acknowledge the assistance and cooperation we received from many individuals and organizations. In particular we would like to thank:

Bonnie Holmes-Gen, American Lung Association of California; Wayne Morris, Association of Home Appliance Manufacturers; Chanté White Maurio, Joseph Musso, and Todd Lumpkin of Underwriters Laboratories, Inc.; Stephany Mason, Marilyn Black, and Tony Worthan of Air Quality Sciences; Chris Stone, Victor Loomis, and Gordon Guest of Intertek Testing Laboratory; Steve Yerden of Orange Computing; and all stakeholders who participated in the public workshops and provided comments to ARB. We especially thank ARB staff member Susan Lum for her excellent organization and assistance in maintaining the website for implementation of this regulation, management of comment documents, sending listserv notices, and many other key tasks.

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ABBREVIATIONS AND ACRONYMS

AB	Assembly Bill
AHAM	Association of Home Appliance Manufacturers
ANSI	American National Standards Institute
AQS	Air Quality Sciences (private laboratory)
ARB	California Air Resources Board
Cal/OSHA	California Department of Industrial Relations, Occupational Safety and Health
CEQA	California Environmental Quality Act
CRD	UL Certification Requirement Decision
DPH	California Department of Public Health
ESP	electrostatic precipitator
FDA	U.S. Food and Drug Administration
FSOR	Final Statement of Reasons
HSC	California Health and Safety Code
ISOR	Initial Statement of Reasons (Staff Report)
NRTL	Nationally Recognized Testing Laboratory
OSHA	U.S. Occupational Safety and Health Administration
SOP	standard operating procedure
UL	Underwriters Laboratories, Inc.
U.S.	United States
UV	ultraviolet
VOC	volatile organic compound

UNITS

ppb	parts per billion by volume (such as one grain of sand in a billion grains of sand)
ppm	parts per million by volume (such as one grain of sand in a million grains of sand)
%	per cent

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EXECUTIVE SUMMARY

Existing Regulation

Assembly Bill (AB) 2276 (Pavley, 2006; Health and Safety Code [HSC] § 41985 and 41986) directed the Air Resources Board (ARB) to develop and adopt regulations, consistent with federal law, to protect public health from ozone emitted by indoor air cleaning devices used in occupied spaces. Indoor air cleaning devices that produce ozone intentionally have been shown to produce unhealthful ozone concentrations well above the health-based state and federal ambient air quality standards (ARB, 2006). Extensive scientific research has shown that exposure to ozone above these standard levels can cause respiratory symptoms (such as cough, wheeze, and difficulty breathing), reduced lung function, increased airway hyperreactivity, and increased airway inflammation. Additionally, exposure to ozone above the California standards has been associated with asthma onset and exacerbation, increased school absences, hospitalizations due to respiratory diseases, and premature death.

On September 27, 2007, the Board approved a regulation, which became effective on October 18, 2008, that requires all portable indoor air cleaners sold in California after October 18, 2010 to be tested, certified, and labeled as complying with an ozone emission concentration limit of 0.050 parts per million. The air cleaners must also meet applicable electrical safety requirements. Electronic air cleaners must be tested according to the American National Standards Institute (ANSI)/Underwriters Laboratories, Inc. (UL) Standard 867 (ANSI/UL 2007) for their ozone emissions and electrical safety. Testing for ANSI/UL Standard 867 must be conducted by a Nationally Recognized Testing Laboratory (NRTL) recognized by the U. S. Occupational Health and Safety Administration (OSHA) and approved by ARB to conduct the ozone emissions test specified in Section 37 of ANSI/UL 867. Air cleaners that use only filter materials to remove contaminants, called “mechanical filtration only” air cleaners, must be tested under ANSI/UL Standard 507 for their electrical safety; because they are known to emit little or no ozone, this type of air cleaner is not required to undergo ozone emissions testing.

Under the regulation, manufacturers must also notify all of their known distributors, retailers, and sellers about the regulation, provide them with a copy of the regulation, and send documentation of this notification and contact information for their distributors, retailers, and sellers to the ARB, by October 18, 2009. Finally, manufacturers, distributors, retailers, sellers, and testing laboratories must maintain production, quality control, sales, and testing records for at least three years, and make them available to ARB upon request.

The regulation addresses portable air cleaning devices designed for room, whole house, whole floor, and in-vehicle use, and those designed to be carried on one’s person. Devices that are exempt from this regulation include in-duct devices that are an integrated component of a heating, air conditioning, and ventilation system, and

industrial use air cleaners. Industrial use devices are defined in the regulation and are exempted as long as specified labeling and point-of-purchase requirements are met.

Testing and Certification Status

Air cleaner testing for ozone emissions for the regulation is available from two testing laboratories, UL and Intertek Testing Services (Intertek). The UL testing facility has been available for testing since the effective date of the regulation, and the Intertek facility was approved to provide testing on July 2, 2009. As of September 30, 2009, five manufacturers have applied and received certification for a total of 94 air cleaner models. Thirteen models were electronic air cleaners that required ozone testing and 81 were "mechanical filtration only" devices that did not require ozone testing. These totals do not include models currently in the certification review process. Staff estimate that about 70 to 109 models of air cleaners still needed ozone testing as of September 30, 2009.

Early in 2009, manufacturers expressed concern regarding their ability to meet the compliance dates in the regulation due to the delay in the availability of a second laboratory to conduct the ozone emissions test and the increased inventory caused by the slowdown of the economy. They requested an extension of the compliance date. To hear from all concerned stakeholders, ARB staff conducted a public workshop on June 12, 2009 to discuss the status of implementation of the regulation and possible amendments to the regulation, and to obtain stakeholder comments.

Shortly after the June workshop, the second laboratory, Intertek, was approved to conduct the Section 37 ozone emissions test. Because of this addition of a second laboratory and staff's reduced estimate for the number of models expected to require certification, staff concluded that an extension of the time allowed for testing and certification is not needed. The manufacturers that requested the extension generally concurred, as long as neither laboratory experiences significant down time in the coming year. However, additional time is needed for manufacturers to meet the labeling requirement for air cleaners already in the distribution or retail chain at the time the specific models are certified.

Additionally, early testing under the revised ANSI/UL Standard 867 Section 37 ozone emissions test identified areas in Section 37 where the test protocol was not clear, or caused the test for some models to take longer than anticipated. To clarify the test protocol, UL has issued two Certification Requirement Decisions (CRDs) to better specify steps that must be taken related to the chamber set-up, and for determination whether models meet the definition of "steady state" at hours 7 to 8 of the chamber test. UL anticipates release of a third CRD soon to clarify the selection of the appropriate filters for testing of models marketed with multiple filter options.

Proposed Amendments and Rationale

In response to manufacturers' requests, ARB staff proposes to extend the deadline for package labeling of certified models for one year, to October 18, 2011, and to allow the use of adhesive certification labels (rather than printing on the packaging) until October 1, 2012. These extensions apply only to air cleaner models that are tested and certified by the October 18, 2010 compliance date; all air cleaners must still be tested and certified by the current deadline of October 18, 2010 in order to be sold in California after that date. These labeling extensions will avoid the unnecessary costs of re-packaging or re-labeling certified air cleaners that are already in the distribution and retail chains at the time of certification, and will avoid loss of sales that would likely occur if re-packaging were required. The extension of the time allowed for use of adhesive labels rather than labels printed on the packaging will enable manufacturers to better plan their design and printing costs for the new packaging and/or spread those costs over a longer period of time.

These amendments are not expected to negatively impact public health because all testing and certification must still be completed by the original compliance date of October 18, 2010. Compliance with the testing and certification requirements would still be enforced beginning on that date, regardless of whether the packaging shows the required label.

Several additional amendments have also been identified by staff as necessary to improve implementation of the regulation. These amendments would: (1) incorporate three clarifications to the ozone test protocol issued by UL; (2) allow the electrical safety tests to be conducted at additional facilities under the oversight of an NRTL; (3) allow alternate, applicable electrical safety tests for multi-function appliances that include an air cleaning component that must meet the requirements of this regulation; and 4) revise the definition of "mechanical filtration only" air cleaners.

The first of these amendments would incorporate into the regulation the three CRDs issued by UL and described above, which clarify chamber set-up, "steady state" determinations, and filter selection for the ozone testing protocol of Section 37 of ANSI/UL Standard 867. These clarifications to the test protocol are minor but important refinements that would increase the consistency of testing across laboratories and shorten the time necessary for some ozone tests, thus increasing throughput at the testing laboratories.

The next amendment would allow electrical safety testing of air cleaners to be conducted not just by NRTLs, but also by facilities that meet the requirements of Supplemental Programs 2 through 6 of OSHA's NRTL recognition program (U. S. OSHA 1995, Federal Register 60:12980-12985). This amendment would increase the number of allowable testing facilities for the electrical safety testing, but with testing and program oversight by an NRTL. This is consistent with current industry practice. In fact, several manufacturers have submitted applications for mechanical filtration models tested at one of these NRTL Program facilities, because they assumed that the

Supplemental Program facilities were included in the definition of NRTL. Those applications have been put on hold pending the Board's decision on this amendment. The staff believes that electrical safety testing at these additional NRTL facilities is accurate and reliable and that the regulation should be amended to allow for the results of this type of testing to be accepted for certification. Ozone emissions testing would continue to be limited to NRTL Program 1 and 2 facilities that have been audited and approved by the ARB.

The regulation also would be amended to allow the applicable industry electrical safety tests other than ANSI/UL Standards 507 and 867 to be used for multi-function appliances that include an air cleaning component. Such appliances are normally tested for electrical safety under industry (UL) standards other than ANSI/UL Standards 507 and 867.

Finally, staff proposes a minor revision to the definition of "mechanical filtration only" in section 94801 of the air cleaner regulation to include all pollutants (not just particles) by replacing the phrase "suspended particles" with "contaminants". This will make the definition internally consistent and consistent with the rest of the regulation.

Economic and Environmental Impacts

The proposed measures are expected to result in no cost increases and will likely produce some (currently unquantifiable) time and cost reductions for manufacturers, distributors, retailers, and sellers. No significant changes in prices to consumers are expected; air cleaner prices are expected to remain the same or may decrease slightly in a few cases.

There would be no negative public health or environmental impacts anticipated from any of the proposed amendments.

Recommendation

Staff recommends that the proposed amendments be approved, because they would accommodate the needs of manufacturers, distributors, retailers, and sellers during this difficult economic period, and would have no negative impact on public health, or on the environment. The proposed amendments would clarify portions of the regulation that are not sufficiently explicit, or that require small but important refinements. Also, they will better assure consistency in conducting the ozone emission concentration test protocol and will maintain consistency with the industry test standards for air cleaners and for electrical safety of multi-function appliances.

STAFF REPORT

I. Introduction

A. Overview

On September 27, 2007, the California Air Resources Board (ARB/Board) adopted a regulation to limit ozone emissions from indoor air cleaning devices pursuant to AB 2276, Pavley (HSC § 41985 and 41986; see Appendix I). The regulation became effective on October 18, 2008. At the time the regulation was adopted, the Board asked that staff return to the Board with an update one year after the regulation took effect. This staff report provides that update and also recommends several amendments to the regulation to avoid excess costs for manufacturers, distributors, retailers, and sellers, and to facilitate the implementation of the regulation and improve its effectiveness.

This staff report provides background about the air cleaner regulation and the Board's action taken in 2007; summarizes the status of the ongoing testing and certification of indoor air cleaning devices required by the regulation; describes the proposed amendments and the rationale supporting them; and provides an analysis of the economic and environmental impacts of the proposed amendments. This report is part of the Initial Statement of Reasons (ISOR) for the Proposed Regulation Order amending Title 17 sections 94801, 94804, 94805, and 94806 of the California Code of Regulations. The proposed, revised regulation order is provided in Appendix II of this document.

B. Background

A number of manufacturers produce and sell devices represented to be air purifiers or air cleaners, but which purposely generate large quantities of ozone, the primary component of photochemical smog. Also known as "ozone generators," these devices can produce sufficient concentrations of ozone indoors to cause unhealthful exposures, that is, room concentrations several times greater than the health-based state and federal ambient air quality standards for ozone (ARB, 2005; ARB, 2006; ARB, 2007).

Other common types of air cleaners include electrostatic precipitators (ESPs), ionizers, mechanical filtration air cleaners, and other types that include mixed technologies. ESPs and ionizers may emit ozone as a byproduct of their design and technology, but the ozone levels are usually much lower than those produced by intentional ozone generators. Mechanical filtration air cleaners most often use a pleated fiber filter to remove particles, and emit little or no ozone.

Exposure to ozone is a serious public health concern. Ozone is a highly reactive molecule and can damage the lungs and airways. Ozone inflames and irritates respiratory tissues, and can worsen asthma symptoms. Exposure to ozone can cause

coughing, chest tightness, and impaired breathing. Exposures to elevated levels of ozone have the potential to induce permanent lung damage, and chronic exposure to ozone can increase the risk of premature death in persons with poor health. For these reasons, California and the U.S. have regulated outdoor levels of ozone for decades by setting ambient air quality standards and implementing various plans and strategies to reduce public exposure to ozone and meet the state and federal standards. Additional information on the health effects of ozone is available in the Initial Statement of Reasons for the current regulation (ARB, 2007).

C. Requirements of the Existing Regulation

Because of concern for public health, AB 2276 was signed into law in 2006 to enact Health and Safety Code sections 41985-41986. The bill directed ARB to regulate ozone emissions from portable air cleaners sold in California that are used in occupied spaces, by December 31, 2008. The legislation specified that the ozone emission concentration limit should be equivalent to that of the U.S. Food and Drug Administration (FDA, 2007a) which is 0.05 parts per million (ppm) and applies only to medical devices. The legislation also specified that ARB may ban from sale in California air cleaners emitting more than this level of ozone.

On September 27, 2007, the Board approved a regulation, which became effective on October 18, 2008, that requires all portable indoor air cleaners sold in California after October 18, 2010 to have been tested, certified, and labeled as complying with an ozone emission concentration limit of 0.050 ppm. The air cleaners must also meet applicable electrical safety requirements. Ozone generators, ESPs, ionizers, and other electronic air cleaners must be tested according to the ANSI/UL Standard 867 for their ozone emissions and electrical safety. Testing for ANSI/UL Standard 867 must be conducted by a Nationally Recognized Testing Laboratory (NRTL) recognized by the U.S. Occupational Health and Safety Administration (OSHA). Laboratories also must be audited and approved by ARB to conduct the ozone emissions test specified in the revised Section 37 of ANSI/UL 867. Air cleaners that use only filter materials to remove contaminants, called “mechanical filtration only” air cleaners in the current regulation, must be tested under ANSI/UL Standard 507 for their electrical safety; because they are known to emit little or no ozone, this type of air cleaner is not required to undergo ozone emissions testing.

After October 18, 2010, all indoor air cleaning devices (that are not exempt) must display a certification label on the product packaging prior to sale within California (Section 94806 of the regulation). For non-medical air cleaners (those not approved by the FDA as medical devices), the label must be displayed after successfully completing the required testing and receiving ARB certification. Label dimensions must be at least one inch by two inches in size, be easily readable, and must state: “This air cleaner complies with the federal ozone emissions limit. ARB certified”. Medical devices must be labeled to comply with federal law (by satisfying the requirements of Section 801.415 of Title 21 of the Code of Federal Regulations; see FDA, 2007b) and the label must also state that the device is “ARB certified”.

In response to manufacturers concerns that two years may not be enough time to allow them to test, certify, and label all of their air cleaners, the regulation includes a 180 day labeling extension for devices submitted to an approved laboratory for testing within one year of the effective date of the regulation (by October 18, 2009) but not certified by the end of the 18th month after the effective date of the regulation (April 1, 2010).

Under the regulation, manufacturers must also notify all of their known distributors, retailers, and sellers about the regulation, provide them with a copy of the regulation, and send documentation of this notification and contact information for their distributors, retailers, and sellers to the ARB, by October 18, 2009. Finally, manufacturers, distributors, retailers, sellers, and testing laboratories must maintain production, quality control, sales, and testing records for at least three years, and make them available to ARB upon request.

The regulation applies to portable air cleaning devices designed for room, whole house, whole floor, and in-vehicle use, and those designed to be carried on one's person. Two types of air cleaners were exempted from the regulation. Those used for certain industrial uses, as defined in the regulation, are exempt, provided they are marketed solely through industrial supply outlets or businesses and are prominently labeled "Solely for industrial use. Potential health hazard: emits ozone." The definition of "industrial use" in the regulation limits such uses to certain industrial processing uses and to specified commercial uses in unoccupied settings. "In-duct" air cleaners − those designed, marketed, and used solely as a physically integrated part of a central heating, air conditioning, or ventilating system − also are exempt.

D. Implementation of the Regulation

Staff held a public workshop on December 4, 2008 to explain the final regulation, including the specific deadlines for compliance, to manufacturers and others affected by the regulation, and to respond to questions. Staff also responded to many questions received from manufacturers by phone and email, and developed responses to Frequently Asked Questions and questions from the December 2008 workshop, which are available at http://www.arb.ca.gov/research/indoor/aircleaners/aircleaners.htm. Additionally, multiple listserv notices were sent to those registered on the air cleaner regulation listserv initiated during the development of the regulation as new materials and information became available.

Staff developed a certification application form and instructions which were posted on ARB's website to assist manufacturers in supplying all of the information required in Section 94804 of the regulation, such as the ozone test results and manufacturer contact information. Staff also developed a database for recording receipt of certification applications and tracking their progress. As required in Section 94804 of the regulation (CCR, title 17), ARB is required to notify applicants whether their application is complete within 30 days of receipt, and to approve or disapprove an application within 30 days after notification that the application is complete. Thus, an

effective tracking system was needed to assure that all applications are handled in the required timeframes.

Finally, staff spent substantial time developing audit procedures for laboratories interested in conducting the ANSI/UL Section 37 ozone emission concentration test for the regulation. When each laboratory was ready, staff conducted both a paper audit and an onsite audit, checking first for proper written Standard Operating Procedures (SOPs), and then traveling to the laboratory to inspect the test chamber and review all related procedures and conditions. As a result of these audits, corrections and additions to the laboratories' SOPs were made. An annual audit review process was also developed.

II. Current Status of Testing and Certification of Air Cleaners

A. Testing Facilities

Prior to development of ARB's regulation, ozone emissions from air cleaners were tested under a previous version of Section 37 of the ANSI/UL Standard 867. Due to problems with inconsistent results across test laboratories and the test's general lack of robustness, ARB staff joined a UL committee to revise the Section 37 ozone test. The revised Section 37 test is required under ARB's regulation. The revised version requires a room-sized chamber that meets specific temperature, humidity, airflow, clean air, and other requirements, and is made of specified (nonreactive) materials.

The current regulation requires ARB to audit and approve laboratories for the Section 37 ozone emissions concentration test. Two laboratories − UL and Intertek − indicated interest in conducting the Section 37 test for compliance with ARB's regulation. Because UL did not have a chamber suitable for the revised Section 37 test protocol, they contracted with Air Quality Sciences (AQS), a private testing laboratory that has an appropriate chamber available that meets the revised Section 37 requirements, to provide the Section 37 ozone emission concentration testing as a Program 2 facility, with UL providing the NRTL oversight. ARB staff audited UL/AQS and approved them for Section 37 testing by the effective date of the regulation.

At the time the Board adopted the regulation, it was expected that two testing facilities would be certified and available soon after the regulation became effective. However, the second test facility, Intertek, determined that their old chamber also could not meet the Section 37 requirements, and so constructed a new test chamber for the Section 37 test. Intertek was audited and approved by ARB on July 2, 2009 to perform the Section 37 ozone test.

A few other laboratories, such as ONSpeX/CSA International and QPS Certification, Testing and Inspection have inquired about requirements for obtaining approval, but none has pursued formal approval. There are several reasons for this; some do not have a suitable chamber for conducting the test, some are not an NRTL as required, and some do not see a sufficient market for the test once the initial testing is completed.

B. Testing and Certifications Completed to Date

The status of air cleaner certifications as of September 30, 2009 is shown in Table II-1, below. A total of 94 air cleaner models have been certified by ARB.

Table II-1. Air Cleaner Certification Progress as of September 30, 2009

	Models That Require Ozone Testing (ANSI/UL 867)	**Mechanical Filtration Models (ANSI/UL 507)**	**Total**
Manufacturers with Approved Models [a]	1	5	5
Applications Approved	5	23	28
Total Models Certified [b]	**13**	**81**	**94**

Notes:

a. Manufacturers may have some models requiring ozone testing and others (mechanical filtration air cleaners) that do not require ozone testing. Here, one manufacturer had both types of devices, and therefore, the total is not the sum of all the entries in the row.

b. The number of models certified is greater than the number of applications approved because additional models may be certified along with the model tested when they belong to the same model group as the model tested, i.e. they share the same design, operational features, device output, and performance characteristics and are produced by the same manufacturer, but may have minor cosmetic differences for marketing purposes.

Five manufacturers have completed the testing and certification process and have at least one approved air cleaner model. To date only one manufacturer has models certified that required ozone emissions testing, but several others have either completed ozone emissions testing and have applications pending with ARB, or are in the process of having their models tested for ozone emissions.

A total of 28 applications have been approved by ARB. An additional 20 applications are in various stages of processing and approval. Of the 28 approved applications, five have been for devices that required the ozone test outlined in Section 37 of ANSI/UL Standard 867, and 23 have been for devices that use only mechanical filtration for pollutant removal. More mechanical filtration models have been approved because the regulation allows manufacturers of such models tested before October 18, 2008, the effective date of the air cleaner regulation, to submit documentation of the models having previously passed the electrical safety test in ANSI/UL Standard 507; a new electrical safety test is not required.

In addition to the 28 tested and certified air cleaners, many more air cleaner models have been certified by ARB. The regulation allows additional air cleaners in the same "model group" to be certified without further testing. (A model group includes models that are identical to the model that has been tested except for minor, usually cosmetic, differences that do not impact their safety or ozone emissions.) As a result of this provision, a total of 94 air cleaners have been certified to date, of which 13 are ionizers, electrostatic precipitators, or other electronic technologies used for pollutant removal, and 81 are mechanical filtration only models.

C. Remaining Models to Be Tested and Certified

In the Initial Statement of Reasons (Staff Report) for the air cleaner regulation dated August 10, 2007, staff estimated that 61 manufacturers would be affected by the regulation. It was also estimated that 136 air cleaner models would require ozone emissions testing prior to being sold in California. This estimate was based on ARB's knowledge of existing ozone generators, ionizers, and electrostatic precipitators on the market (from a consumer survey previously funded by ARB; see Piazza *et al*., 2006) and input from a limited number of manufacturers who responded to an ARB manufacturer survey. Based on recent conversations with industry stakeholders and news reports, staff now expect fewer applications to be submitted due to lower than expected consumer demand with the slowdown in the economy, a more rapid phasing out of older models by some manufacturers, the higher than expected cost of testing relative to manufacturers' expectations, and the loss or merging of some manufacturers due to bankruptcy or legal proceedings.

We estimate that about 70 to 109 air cleaner models still need to complete the ozone testing and certification process. Since the effective date of the air cleaner regulation, the two testing facilities for the Section 37 ozone test have tested a combined total of 27 air cleaners for their ozone emissions (this figure is greater than those in Table II-1 because some manufacturers have not yet submitted their certification applications or the certification process is not yet complete). Subtracting this number from the 136 models in the 2007 staff report for the regulation yields an upper bound estimate of 109 models yet to be tested. The lower bound of 70 was estimated by adjusting for several factors that have changed since the original staff report was prepared in 2007. First, the number of ozone generator models to be tested has been reduced from the original estimate of 42 models, because few ozone generator manufacturers appear to be redesigning their models to meet the regulation, and only one ozone generator manufacturer has requested a certification application number. Also, at least one ozone generator company has merged with another company. Accordingly, staff now estimate that only about one-fourth (10) of the 42 ozone generator models identified in 2007 will be re-designed or replaced with non-ozone generator models for certification and sale in California. This reduces the current estimate of air cleaner models still to be tested by 32, to 77. Another six models were subtracted because the air cleaner manufacturer with the largest market share in California in 2007 is no longer producing air cleaners due to legal proceedings; while other brands will fill the gap, those are not expected to be new models relative to the

2007 estimate. Finally, staff has noticed that some manufacturers have reduced the number of air cleaners advertised on their websites compared to offerings in 2007, and it is assumed that this is in response to the general economic contraction. Thus staff's final lower bound estimate is 70 or fewer.

In light of this revised estimate, manufacturers should have no problem meeting the regulation deadline as long as they submit their applications for existing models soon. This scenario assumes that: 1) the testing needs to be completed by October 14, 2010 in order to have time to process the paperwork and submit the application to ARB; 2) there are 48 weeks (240 days) in a year during which testing can occur in each laboratory (allowing for holidays and down time); 3) both laboratories will be fully utilized for testing; and 4) each model will require 3 to 4 days, on average, to be tested under the new UL CRDs (see CRD discussion in Section IV.C.). Under these assumptions, testing of all air cleaner models for ozone would be completed several weeks prior to October 18, 2010. To account for unforeseen problems or significant setbacks in testing, a conservative estimate that allows a full week for each air cleaner to be tested, on average, shows that at least 100 models (50 weeks X 2 laboratories X 1 model per week per laboratory = 100) could be tested from October 1, 2009 to October 14, 2010. Because staff believes the upper bound estimate of 109 models to be tested is unlikely, and that the most realistic number is closer to the lower bound estimate of 70, staff concluded that there is sufficient capacity for testing of all air cleaners that require testing prior to October 18, 2010. The manufacturers that requested extension of the testing and certification compliance date generally concurred that an extension of this date should not be necessary, as long as the laboratories do not experience any significant down times.

III. Development of Proposed Amendments to the Regulation

A. Public Outreach and Participation

Effort has been made to obtain input from manufacturers, the general public, and interested stakeholders throughout the regulation implementation process. Staff continued to provide information to the public via an email listserv and Internet webpage at http://www.arb.ca.gov/research/indoor/aircleaners/aircleaners.htm initially created during the regulation development process in order to facilitate public involvement. There are approximately 3,400 individuals or companies registered for the listserv. Also, as discussed above in Section I. D., a workshop was held on December 4, 2008 to explain the requirements of the final regulation to manufacturers and other interested parties, and to respond to questions. Staff also responded to many questions from manufacturers either by phone or email, and developed responses to Frequently Asked Questions and questions posed at the December 2008 workshop, which are available on the regulation website.

On June 12, 2009, ARB staff held a public workshop to discuss possible amendments to the air cleaner regulation requested by manufacturers and to respond to questions. While the public was able to attend the workshop in person, ARB staff

encouraged participation via teleconference and/or Webcast to reduce the economic burden of traveling on participants and to reduce negative impacts on climate change. Comments were received from nine stakeholders, including manufacturers, professional organizations, environmental consultants, and representatives from government agencies.

This report and associated materials have been released for public review 45 days prior to the planned Board public hearing date of December 9, 2009, as required for proposed regulations. Staff will fully consider all comments received during that period, and respond to those comments as part of the regulatory process. An oral report summarizing the staff recommendations for amending the air cleaner regulation may be presented to the Board at the December 9th hearing.

Staff is conducting additional outreach to retail associations, large retail chains, and other distributors and sellers to assure that all affected parties are aware of the regulatory changes. Under the current regulation, manufacturers are required to notify their distributors and retailers about this regulation, and provide contact information for those businesses to ARB. Staff plans to follow up to assure that all stakeholders on such lists are notified regarding any changes to the regulation adopted at the December 9, 2009 hearing, and to respond to any questions they may have.

B. Comment Period and Board Hearing

Release of this Staff Report opens the official 45-day public comment period required by the Administrative Procedure Act prior to the public meeting of the Air Resources Board to consider the staff's recommendations. The public may present comments relating to this matter orally or in writing at the hearing, and in writing or by e-mail before the hearing. To be considered by the Board, written submissions not physically submitted at the meeting must be received no later than 12:00 noon, December 8, 2009 and addressed to one of the following:

Postal mail: Clerk of the Board
Air Resources Board
1001 I Street, 23rd floor
Sacramento, California 95814

Electronic submittal: http://www.arb.ca.gov/lispub/comm/bclist.php

Facsimile submittal: to the Clerk of the Board at (916) 322-3928

Information on the public workshop, as well as summaries of the presentations from past workshops and meetings are available by calling (916) 445-0753 or by visiting http://www.arb.ca.gov/research/indoor/aircleaners/aircleaners.htm. Inquiries concerning the substance of the proposed regulation amendments may be directed to the designated agency contact persons, Ms. Peggy Jenkins, Manager of the Indoor

Exposure Assessment Section, at (916) 323-1504 or by email at mjenkins@arb.ca.gov, or Mr. Jim Behrmann, at (916) 322-8278 or by email at jbehrman@arb.ca.gov.

The agency representative and designated back-up contact persons to whom non-substantive inquiries concerning the proposed administrative action may be directed, are Ms. Lori Andreoni, Manager, Board Administration and Regulatory Coordination Unit, (916) 322-4011, or Ms. Trini Balcazar, Regulations Coordinator, (916) 445-9564. Requests for copies of the proposed regulation amendments also should be directed to these contacts. The Board has compiled a record for this rulemaking action, which includes all the information upon which the proposal is based. This material is available for inspection upon request to the contact persons.

C. Evaluation of Alternatives

Staff considered several alternatives to the proposed action, including taking no action. The assessment of these alternatives is discussed below.

1. Extend the Compliance Date for Testing and Certification

Early in 2009 when the economy had slumped, and when only one laboratory was available for conducting the ozone testing, some manufacturers requested an extension of the October 18, 2010 compliance date for testing and certification, in addition to labeling. This alternative was considered by ARB staff and discussed as an option at the June 12, 2009 workshop discussed in Section III. A., above. Soon after the workshop, the second laboratory, Intertek, was approved to conduct the ozone emissions test, which alleviated a portion of the concern regarding manufacturers' ability to obtain testing and have their air cleaners certified by the October 2010 compliance date. Also, staff's subsequent reassessment of the number of models requiring ozone testing showed a reduced number compared to the staff estimate in the 2007 staff report for several reasons: most ozone generator manufacturers are not expected to try to obtain certification for their models; the manufacturer with the largest market share in California had stopped producing air cleaners due to a lawsuit and other factors; several manufacturers had indicated that they would not certify some older models that they were phasing out of production; and other reasons discussed in Section II. C., above. In light of these and other factors, the manufacturers requesting an extension agreed that they expect to meet the original compliance date for testing and certification, but not for labeling.

Additionally, staff is aware that there were months when the first test laboratory approved for conducting the ozone test, UL, was idle because manufacturers had not submitted their models for testing. This was reportedly due to the weak economy and because testing costs were higher than anticipated by some manufacturers (however, UL's costs were consistent with ARB staff's estimates in the 2007 staff report). As of the date of this report, the queues for ozone testing at the two laboratories continue to be very short. Finally, extension of the testing and certification compliance date, unlike staff's proposal to extend just the labeling deadline, could have a serious impact on

public health, because high ozone-emitting air cleaners could continue to be sold in California.

For these reasons, there does not appear to be a real need for extension of the testing and certification compliance deadline, and such an action could adversely impact public health. Accordingly, this alternative was rejected.

2. Allow a Shorter Extension for the Labeling Requirements

ARB staff considered allowing a shorter extension time for compliance with the labeling requirements, because this would reduce the additional time that consumers would not be able to identify ARB-certified air cleaners based on package labeling. However, manufacturers have indicated several reasons why they need the flexibility of a full year's extension when no label would be required, and an additional year when an adhesive label would be acceptable. A key factor is that the weak economy has resulted in a large inventory of product in the distribution and retail chains, and while those products are nearly all expected to be certified, the logistics of recalling and re-packaging them would be onerous and costly. Small businesses especially would be heavily impacted, and because of their more limited turnover, are anticipated to most need the additional time to sell their compliant products that are already on the shelves. Manufacturers are concerned that some sellers would return their stock to the manufacturer or distributor, resulting in unnecessary cost to them and disruption of the market. Additionally, sales of air cleaners are seasonal, and production involves a lead time of more than a year; production and packaging changes can be costly.

Staff believes that providing relief by extending the labeling time as proposed will help avoid unnecessary costs to manufacturers, distributors, retailers, and sellers, especially small businesses, and will have no impact on consumer costs or public health. Interested consumers currently consult ARB's list of certified air cleaners on our webpage, and would be able to continue to do so. One representative of manufacturers has indicated that most larger manufacturers expect to meet the labeling requirements very close to the original compliance date; thus, we expect some compliant packages to be properly labeled well before the extended compliance date, and consumers should be able to find labeled products soon after the original compliance date.

3. Take No Action

This alternative would retain the *status quo*, that is, ARB would continue to implement the indoor air cleaner regulation as originally approved. Because the proposed amendments are relatively minor, the argument can be made that they are not really necessary and that no action should be taken. However, as discussed elsewhere in this staff report, the labeling extension date is critical to manufacturers, distributors, retailers, and sellerd, especially in this weak economy, and not taking that action would cause unnecessary hardship on some (especially small) businesses. Similarly, expanding the types of supplemental program facilities that can conduct electrical safety testing to include those facilities currently used by some manufacturers simply corrects

an oversight in the original regulation. The impacts on manufacturers if this correction is not made could be significant. Not allowing the use of Supplemental Program 2 through 6 facilities would likely increase manufacturers' testing costs by a small amount, but most importantly, could result in significant time delays in manufacturers obtaining testing and certification. According to one manufacturers association representative, this delay could result in possible fines on the order of tens of thousands of dollars if the product cannot be delivered to retailers on time. Similarly, the CRDs, while relatively minor refinements to the ozone emissions test protocol, are necessary clarifications to the current wording of the ozone test protocol that will assure consistency among the laboratories as they conduct the test, improve the efficiency of the test, and save time and possibly reduce testing costs. Additionally, because UL has issued two CRDs and will soon issue a third, ARB's test method would be somewhat inconsistent with the industry standard if no action were taken.

The intent of the original legislation and the regulation is to reduce the adverse health impact resulting from the unnecessary exposure to ozone emitted from ozone-generating air cleaners. Ideally that should be achieved in the most cost-effective manner. The proposed amendments would improve the clarity and cost effectiveness of the regulation, and thus staff rejected the "no action" alternative.

D. Potential Regulation Benefits

The air cleaner regulation provides significant public health benefits by greatly reducing the exposure of Californians to indoor ozone. The regulation was estimated to prevent the routine exposure of well over 500,000 Californians to ozone concentrations above the 8-hour CAAQS of 0.070 ppm resulting from the use of an indoor air cleaning device that emits ozone. Most importantly, many of these California residents could be exposed to ozone levels several times greater than the health-based standard.

Adoption of the proposed amendments would not affect the public health benefits from the air cleaner regulation, but would assure that they are achieved on the timetable adopted by the Board in 2007 and not delayed. Additionally, the amendments will reduce the economic burden on manufacturers and retailers who will have certified, but unlabelled, inventory.

IV. Proposed Changes to the Regulation and the Rationale for Each

This chapter discusses the proposed amendments to the air cleaner regulation, and the rationale or need for each amendment.

A. Summary of the Proposed Changes

The amendments being proposed to the air cleaner regulation include two requested by manufacturers and four amendments requested by staff, based on our initial experience with the testing and certification activities conducted to date. The amendments requested by manufacturers are to: 1) extend the deadline or compliance

date for the package labeling requirement by one year, to October 18, 2011 (while retaining the current testing and certification deadline of October 18, 2010); and 2) allow the use of adhesive certification labels (as opposed to printing on the package) for an additional 18 months past the current 6-month allowance for adhesive labels, to October 1, 2012. These amendments would effectively allow no labeling for the first year after the compliance date of October 18, 2010, and would allow adhesive labels to be used for two years after that date. The October 18, 2010 compliance date for testing and certification would still be enforced beginning on that date, regardless of whether the packaging shows the required label.

The staff's proposed amendments would: 1) incorporate three clarifications issued by UL for the ozone test protocol used by our regulation; 2) allow air cleaners to be tested for their electrical safety at other test facilities currently utilized by approved testing laboratories to conduct the ANSI/UL Standards 507 and 867 electrical safety tests; 3) allow alternate, applicable (UL) electrical safety testing for multi-function appliances that include an air cleaning component; and 4) refine the definition of "mechanical filtration only" to be fully consistent with other portions of the regulation.

B. Amendments Requested by Manufacturers

1. Extend the Labeling Compliance Date for One Year

The manufacturers' first requested amendment is to extend for one year the package labeling requirement that currently must be met by October 18, 2010; however, air cleaners would still have to be tested and certified by that date. In other words, all indoor air cleaners for sale and use in occupied spaces in California would still have to be tested and certified by the original compliance deadline (October 18, 2010), but they would not be required to show the certification label on their product packaging until October 18, 2011.

The downturn in the economy has created a large inventory of unsold air cleaners in the manufacturing, distribution, and retail pipelines, and many of these are expected to be in the retail and distribution chains past the October 2010 compliance date. According to some manufacturers, units that are at distribution centers and retail stores are effectively outside the manufacturers' control, and it is difficult and costly to try to label those packages post-certification due to lack of access at distribution centers and resistance of local retailers. Manufacturers want to avoid having retailers send back large numbers of air cleaners that comply with the ozone emission limit, but do not bear the required label, because this would be very costly and could result in the unnecessary disposal of units and packaging cartons.

The delay in having the second testing facility available for conducting the ozone test may result in some models being tested and certified right up to the certification deadline in 2010, so there will be insufficient time to have labels applied. This amendment would allow time for manufacturers and retailers with large inventories to be

able to sell those air cleaners. Small businesses that experience slower turnover could especially be affected, because they are likely to have older products.

This amendment is not expected to negatively impact public health because all testing and certification must still be completed by the original compliance deadline, and only certified devices could be sold. This amendment could potentially make it easier for uncertified devices to continue to be sold during the year labels are not required. Enforcement of the regulation during the first year would require inspectors to check models for sale against the ARB list of certified air cleaners rather than relying on product packaging, but inspectors would typically open the package and verify it is on the compliant product list anyway.

2. Allow the Use of Adhesive Certification Labels for Two Years

The regulation's definition of "label" [Section 94801(a)(16)] currently allows manufacturers to use adhesive certification labels on product packaging (in lieu of immediately requiring the printing of new packaging) for air cleaners manufactured prior to April 1, 2011, i.e. approximately six months beyond the current labeling deadline. The manufacturers' second requested amendment is to allow the use of adhesive labels on product packaging for an additional 18 months beyond the current April 1, 2011 deadline, to October 1, 2012. If the first amendment above is adopted, devices must have a certification label after October 18, 2011, and the practical effect of this second amendment is to allow manufacturers to use adhesive labels as certification labels for up to another year after that, i.e., until October 1, 2012.

Some air cleaner manufacturers have lengthy production cycles from manufacture to the point of consumer purchase. Most air cleaners are manufactured overseas, and orders are submitted about six months in advance. Manufacturers whose models are tested and certified near the compliance deadline will have units in production that will not be labeled as certified on the package. This amendment is being requested by manufacturers to address the time needed for some manufacturers to exhaust their existing product packaging stockpiles and to have new artwork added to their packaging to show ARB certification. This amendment also will allow time for those retailers who are not able to sell their existing inventory of certified models by October, 2011 to obtain and apply the adhesive labels to certified models. According to a representative of the Association of Home Appliance Manufacturers (AHAM), its members have committed to move to pre-printed packaging as quickly as they can, and some expect to meet the current compliance date for labeling.

This amendment would reduce the regulatory burden on manufacturers with little risk of harm to public health, because products must still be tested and certified by October 18, 2010 in order to be sold in California after that date. It also reduces the amount of packaging that has to be recycled or discarded and postpones costs to manufacturers for new packaging materials. On the downside, the potential for abuse with the use of stickers on non-complying products sold online or through direct marketing would be greater if the adhesive labels are allowed for a longer time.

C. Incorporate Into the Regulation Three Clarifications to the Ozone Test Protocol

The first of three staff-recommended amendments to the air cleaner regulation is the incorporation into the regulation of three Certification Requirement Decisions (or "CRDs") issued by UL that clarify the Section 37 ozone test protocol in ANSI/UL Standard 867. Underwriters Laboratories periodically publishes clarifications to testing standards, including Standards 507 and 867 that apply to indoor air cleaners. Certification Requirement Decisions are written clarifications or interpretations that address specific questions or relatively minor issues relating to testing procedures and are intended to provide guidance and direction to testing laboratories that use the UL standard.

The three CRDs recommended at this time relate to parts of the Standard 867 Section 37 ozone test protocol that include chamber setup, the definition of steady state, and filter tests. Prior to running any ozone test, the technician must check to make sure that the testing chamber continues to meet specific requirements, i.e., adequate air tightness, air mixing, and ozone half-life. This is accomplished by running several characterization or verification tests. The Chamber Setup CRD (see Appendix III) clarifies that only one of the chamber characterization tests (the ozone half-life test) needs to be repeated before the testing of each new model begins; the other tests to verify chamber performance only need to be conducted at less frequent intervals, specifically twice a year, or when any chamber modification or maintenance activities have occurred. Previously, about one to two days were required between model tests to conduct the chamber verification tests, which was not the intention when the protocol was originally drafted. Incorporating this CRD will reduce the time needed to verify the performance of the chamber between model tests by about one to one and a half days.

The second CRD, the Definition of Steady State CRD (see Appendix IV), slightly revises the definition of "steady state" for the ozone test to avoid the situation where very low emitting air cleaners (that emit just a few ppb ozone) must go through a full 24-hour test rather than an 8-hour test as originally intended. In early testing, the very low emitting air cleaners had to be tested for the full 24 hours because the definition of "steady state" was not appropriate for such low measurements and "steady state" as defined was not achieved, even though levels remained very low the entire time. This added time and cost to the testing. The CRD clarifies the definition of "steady state" and describes what should be done when air cleaners emit very low levels of ozone, and this will allow very low emitting devices to require only the 8-hour, rather than the 24-hour, test, which will shorten test time, reduce costs, and enable faster throughput.

The third CRD, the Filter Test Iterations CRD (see Appendix V), will clarify testing protocols when multiple types of filters are offered as alternate or optional filters with an air cleaner model. When the least reactive filter combination can be identified, that combination will be tested under the high and low fan speeds, and the test will be conducted using the settings determined in preliminary tests to produce the highest

ozone levels. This approach will assure that the "worst case" filter combination and operational setting is being tested. As before, if the air cleaner can be operated with the filters removed, it will also be tested with filters removed. For some air cleaners that are offered for sale with multiple filter choices, this CRD will reduce the number of tests required, saving one or more days of testing for each such model.

Staff thus recommends that these three CRDs be incorporated into the regulation. They will better assure that all laboratories conduct the testing in the same manner, thus improving the consistency of results across laboratories. Taken together, the CRDs are expected to reduce the testing time required for the Section 37 ozone test by at least one day, and sometimes by several days. Accordingly, this will speed up throughput in the test chambers and may allow reduction of test costs for some models in the future. Incorporation of the CRDs into the regulation test method will maintain consistency with the industry test protocol and standard. And finally, none of the proposed CRDs will result in negative health impacts because the tests will be conducted with the configurations and settings that would produce the highest potential ozone emissions.

D. Allow Electrical Safety Testing at Additional NRTL Program Test Facilities

Staff recommends that the Board amend the regulation to allow air cleaner models to be tested for electrical safety under ANSI/UL Standards 507 and 867 by test facilities that can perform the testing under the oversight of NRTLs. As explained below, such testing arrangements are formally part of U.S. OSHA's NRTL Program. The effect of this amendment would be to increase the number of test facilities available to manufacturers of "mechanical filtration only" air cleaners, and in many cases allow them to use the test facilities they currently use for their electrical safety test. By increasing the numbers of available testing locations, the testing of these low ozone risk air cleaners could be expedited. This amendment may be less utilized for air cleaners being tested under ANSI/UL Standard 867, because ozone testing must be conducted by one of the two NRTLs approved by the ARB, and they are not required to accept electrical safety testing data from other parties. In order for a certification mark to be placed on a product (which is required by our regulation), either the laboratory conducting the ozone test or the laboratory conducting the electrical safety test must be willing to accept the other's test data.

The air cleaner regulation currently requires that compliance testing for ANSI/UL Standard 507 be conducted by a recognized NRTL. Testing facilities apply to federal OSHA to be certified or "recognized" as being qualified and capable of performing the necessary testing for one or more product safety standards, including ANSI/UL Standard 867 (for electrostatic air cleaners, including an ozone testing protocol in Section 37) and Standard 507 (for mechanical filtration air cleaners). The OSHA NRTL Program also includes a number of supplemental programs where an NRTL controls and audits, but does not itself generate, the test data relied on for product certification. The OSHA Program allows these testing arrangements (including subcontracting and

witnessed testing) as long as there are safeguards related to training, oversight of testing, and the independence of the NRTL.

Further details about the supplemental programs are described in a formal notice published March 9, 1995 in the Federal Register (U.S. OSHA, 1995; U.S. OSHA, 1999). Staff recommends that the regulation be amended to allow air cleaner manufacturers to submit, as part of their certification application, electrical safety test data from an NRTL where the data were generated under Supplemental Programs 2, 3, 4, 5, or 6. In Program 2 the testing data are from an independent organization under contract to the NRTL. In Program 3, both testing and evaluation is conducted by an independent organization. Program 4 involves technical personnel from the NRTL witnessing the product testing, which is generally carried out at a location other than at the NRTL. Programs 5 and 6 mirror Programs 2 and 3, but the outside parties are not independent and may have a vested interest in the outcome of the test results. However, for all of these programs, the NRTL is required to retain control of, and responsibility for, all aspects of the product certification process under the specific standard, including procedures and records which demonstrate that the test data are unbiased.

ARB's original regulation specifies that Program 2 facilities may conduct the Section 37 (ozone test) portion of the ANSI/UL Standard 867 test, but only following an ARB audit of the ozone test facility. However, the regulation is silent on the NRTL arrangements for "mechanical filtration only" air cleaners for Standard 507. This was unintended and the regulation as written is therefore more stringent for "mechanical filter only" air cleaners in spite of the fact that they do not emit ozone. Some manufacturers have assumed that all program testing facilities under NRTLs could test for Standard 507 as they have always been able to do, and have submitted certification applications containing such documentation. Amending the regulation to allow testing under OSHA Supplemental Programs 2 through 6 for any NRTL recognized to conduct Standard 507 testing would remedy the situation and make this requirement more equitable relative to devices that emit ozone. The amended regulation will also allow Standard 867 electrical safety testing to be conducted under Programs 2 through 6; however, as explained above, the ozone test can only be performed at the two test facilities approved by the ARB, and those laboratories are not required to accept electrical safety test data from other parties.

This amendment facilitates the electrical safety testing of low risk air cleaners, and will not result in any negative public health impact. It potentially reduces the cost of complying with the regulation by enabling many manufacturers to continue obtaining testing services from facilities that presently conduct their safety testing for air cleaners, especially in Asia. This could save time and avoid possible fines in the tens of thousands of dollars that are imposed by retailers if certified product is not delivered by the time specified in delivery contracts, according to one manufacturers' representative. Finally, this amendment would reduce the burden on manufacturers of mechanical air cleaners with no public health impact, because "mechanical filtration only" air cleaners emit little or no ozone.

E. Allow Alternate Electrical Safety Tests for Multi-function Appliances

Some portable, multi-function appliances include an air cleaning technology and must therefore meet the requirements of this regulation. However, they are typically tested for electrical safety under industry (UL) test standards other than ANSI/UL Standards 507 and 867. For example, portable electric heaters or portable air conditioners that include an ionizer or other technology for cleaning the air, and that claim to clean the air, meet the definition of indoor air cleaning device, and must therefore meet the requirements of this regulation. Normally, they would be required to meet ANSI/UL Standards 1278 and 484, respectively. A modification to the regulation is needed to allow such devices to undergo electrical safety testing under the appropriate ANSI/UL test standard that is typically used for them, which varies depending on the primary purpose of the appliance. Such devices with air cleaning technologies that may emit ozone and that do not meet the definition of "mechanical filtration only" would be tested for their ozone emissions under Section 37 of ANSI/UL Standard 867, but would be tested for their electrical safety under the industry standard that is appropriate for the primary function of the device.

This amendment will correct an oversight of the original regulation, which did not address the different tests needed for electrical safety testing of multi-function appliances that include an air cleaning technology.

F. Refine the Definition of "Mechanical Filtration Only"

The final recommended amendment is a minor one: to revise the definition of "mechanical filtration only" in Section 94801(a)(20) of the regulation by replacing the phrase "suspended particles" with the phrase "contaminants", thereby making the overall regulation internally consistent and more accurate. Some mechanical air cleaners have carbon filters, for filtration of VOCs, not particles. Activated charcoal is included in the list of possible materials used in "mechanical filtration only" air cleaners in the second sentence of the definition of "mechanical filtration only" air cleaners. This inconsistency within the definition itself has caused some concern when staff had to determine whether certain air cleaners met the definition of "mechanical filtration only" air cleaners.

This proposed revised definition of "mechanical filtration only" also will remove an inconsistency in the regulation between the definition in section 94801(a)(20), which refers only to suspended particles, and section 94804(b) which refers to "pollutant removal." The 2007 staff report used the term "pollutant removal" as well in discussing the definition, and it was staff's intent to refer to more than particles, as evidenced by the fact that activated carbon filters, which remove VOCs, are listed as one of the types of materials included in the current definition of "mechanical filtration only" device. This proposed amendment would have no impact on public health.

V. Economic Impacts

A. Economic Impacts of Proposed Measures

The proposed measures are expected to result in no cost increases and likely some small, but currently unquantifiable, time and cost reductions for manufacturers, distributors, retailers, and sellers. No significant changes in consumer prices of air cleaners are expected; these prices are expected to remain the same or decrease slightly in a few cases. The proposed measure to use a consistent definition of mechanical-only devices would not have any economic impacts.

Over the past year since the original regulation went into effect, some manufacturers complained that ozone testing laboratories had raised their prices from their quotes originally given. Some manufacturers complained that these prices were too high in general, especially for a manufacturer with several models. For the original regulation, staff used information from testing laboratories to estimate the cost of testing ozone emissions from an air cleaner. The cost estimated by staff for ozone testing of three different device settings without any pre-testing of ozone emissions was $10,000 (ARB, 2007, p. 36). Current prices for ozone testing at the two ARB-approved laboratories − $8,200 to $9,500 for ozone testing and certification − are not markedly different than the previous staff estimate.

For the proposed amendments, quantification of potential cost reductions from individual measures is not currently feasible. Some of the proposed measures will apply only to a limited number of the air cleaner models and manufacturers, but those numbers are not available. Staff has requested data from ozone testing laboratories and manufacturers on how the proposed amendments may affect their costs and the costs to distributors, retailers, and consumers; staff has received very limited information in response. For mass-produced appliances with small profit margins, such as air cleaners, it is not expected that any cost savings to manufacturers will be passed on to distributors, retailers, or consumers, except possibly in a few niche markets for specialized air cleaners. Therefore, the following analysis mainly discusses the direction of the expected economic impact on manufacturers for each measure in the proposed amendment.

1. Extend Deadlines for Labeling and Use of Adhesive Labels

The postponement of the deadlines for package labeling and the use of adhesive certification labels will allow most manufacturers to spread their costs for labeling out over a longer period of time. This measure will also allow manufacturers to avoid additional costs because more of the excess inventory that has built up in the supply chain due to the economic recession could be sold. In addition, they will not have to replace original packaging material for products already in the supply chain. Distributors, retailers, and sellers will be able to avoid the additional time and costs of putting on adhesive labels themselves or returning excess inventory. Many of these are small businesses that would benefit substantially from the extension. The actual

economic impact of this measure will depend on how many manufacturers, distributors, retailers, and sellers take advantage of the extended labeling deadlines. The economic impact of this measure is expected to be positive (reduced costs to manufacturers, distributors, sellers, and retailers), but cannot be quantified at this time.

2. Incorporate Clarifications to the Ozone Test Protocol

The incorporation of the three new CRDs that clarify the ozone test protocol in Section 37 of ANSI/UL 867 is expected to reduce the time and potentially the cost of testing ozone emissions for most air cleaners, as discussed above in Section IV. The *Chamber Setup* CRD streamlines the preliminary testing of chamber performance. It is estimated to reduce the time for chamber performance verification by about one and a half days for each air cleaner model group. However, it is not clear how testing laboratories will factor this into their price schedule, or whether this will significantly affect the time to market for manufacturers. The economic impact of this CRD is expected to be neutral and may reduce costs for manufacturers.

The CRD entitled *Definition of Steady State at 7-8 Hours* will reduce the number of air cleaners that require the full 24 hours of testing and instead require only eight hours of chamber testing. This will result in faster throughput for some air cleaner models. The actual impact of this measure will depend on how many air cleaner models would meet the revised definition of steady state ozone levels. One testing laboratory has estimated that this CRD would affect 90 percent of the air cleaner models, based on units they have tested so far. However, the actual number of models affected cannot be known until the devices are actually tested. The economic impact of this CRD is expected to be a reduction in costs for manufacturers whose products are affected by it, but this potential benefit cannot yet be quantified.

The *Filter Test Iterations* CRD will clarify how testing laboratories should identify the filter that is least reactive with ozone for use in the ozone testing protocol when testing air cleaner models for which optional or alternate filters are available. For air cleaners with multiple types of filters available, this measure will reduce the number of repeated tests needed in the test chamber, thereby reducing the required test time by one to several days. For each day of repeat chamber testing of a different filter that is eliminated, the avoided cost would be about $1,800, based on current pricing by one testing laboratory. The number of air cleaner models and manufacturers and the potential number of filter repeat tests that will be affected by this CRD is unknown, but staff are aware of at least a few models that would be affected. The economic impact of this CRD is expected to be cost reductions for the manufacturers whose products are affected.

Both testing laboratories estimate that the CRDs would nearly double their throughput in the best case. The CRDs would not necessarily result in significant cost reductions, though – both laboratories have indicated that they do not plan to modify their pricing. However, manufacturers who use the laboratory with a scaled pricing structure would experience a reduced cost since their models would require fewer days

of testing than is currently be required. Each day of testing eliminated would reduce costs to manufacturers by $1800.

3. Allow Electrical Safety Testing at Additional NRTL Program Test Facilities

The increased options for NRTL Program 2-6 test facilities should increase the number of laboratories available for electrical safety testing. This will help provide manufacturers with more scheduling flexibility, and thereby expedite the testing process. According to one representative of manufacturers, this expedited testing is expected to provide substantial cost reductions by reducing the time to market for new models, and it will also help reduce the risk of fines on manufacturers when they miss deadlines for product delivery to retailers; such fines can cost on the order of tens of thousands of dollars per day. In addition, this measure may help reduce product shipping costs, especially where suitable testing facilities are at distant locations. However, the number of models and manufacturers affected by this measure cannot be quantified. The economic impact of this measure is expected to be reduced costs for manufacturers whose products are affected.

4. Allow Multi-function Devices to Utilize Appropriate Electrical Safety Tests

Allowing multi-function appliances to utilize the applicable UL (or ANSI/UL) electrical safety test normally used for such devices ensures the safety of the device and avoids the costs of additional, and possibly inappropriate, electrical safety testing for the manufacturer. Most such multi-function devices already receive electrical safety testing appropriate for the type of appliance; thus, this amendment avoids any costs for additional or duplicative electrical safety testing for the manufacturer. Those devices with air cleaning technologies that may emit ozone must continue to undergo the Section 37 portion (ozone emission test) of ANSI/UL Standard 867; however, this is not a new requirement. Only a small number of manufacturers would be affected by this amendment.

B. Affected Businesses and Agencies

The proposed regulation will affect the manufacturers, distributors, retailers, and sellers of portable air cleaners for use in occupied spaces if the products are marketed for sale in California. For the original regulation, staff estimated that approximately 60 manufacturers would be affected, including 23 manufacturers of “mechanical filtration only” air cleaners (ARB, 2007). Since adoption of the original regulation in 2007, the major manufacturer with the largest market share in California no longer manufactures air cleaners, another manufacturer has been bought out, and a few others appear to have either entered or left the air cleaner manufacturing industry. Staff estimates that the total number of manufacturers that could potentially be affected by the proposed amendments remains close to 60. The number of manufacturers likely to be affected immediately by the proposed amendments cannot be quantified. However, in the long term, the proposed amendments to clarify the ozone testing protocol and expand the

types of NRTL labs for electrical safety testing are expected to produce time and cost savings for many of the manufacturers as discussed above in Sections IV and V.A.

Only three manufacturers are based in California: Aqua Sun Ozone International, Zojirushi America Corporation, and Wein Products. Based on our assessment in the 2007 ISOR, these companies are small share manufacturers of air cleaners. A large majority of the actual manufacturing is done under contract with manufacturers in Asia, according to industry representatives.

Data on the number or percent of all air cleaner manufacturers, distributors, and retailers that are small businesses are not available. In the staff report (ARB, 2007, p. 34) for the original regulation, staff used recent survey data on household air cleaner purchases to estimate that 53 (87%) of the 61 manufacturers were "small share" manufacturers. Most, but not all, of this group would be small businesses as well. For the proposed amendments discussed in this document, distributors, retailers and sellers will also be affected. To estimate the current number of small businesses affected by the proposed regulation, staff assumed that the survey data have not changed significantly since the 2006 survey, and that national sales values parallel California sales values for indoor air cleaners. Staff adjusted the 87% value downward to 50% to reflect the substantial portion of distributors, retailers, and sellers that are estimated to be small businesses. While many large regional and national distributors and large discount and hardware store chains carry air cleaning devices, many air cleaners are also sold through small family businesses.

No government agency will be directly affected by this proposed regulation. Minimal ARB staff time would be needed to finalize the proposed amendments to the regulation, but this is covered by existing resources. The 2007 staff report (ARB, 2007) previously estimated ongoing costs of approximately $175,000 per year for one additional staff person and contract funds to implement the current regulation and enforce compliance; the proposed amendments do not change that estimate. Other state agencies such as the California Department of Public Health and local health departments and district attorneys are not expected to be affected by the proposed amendments.

C. Potential Impacts on Business Competitiveness

Because the proposed amendments to the regulation are expected to produce cost savings to manufacturers, they are expected to reduce the risk of business elimination and jobs elimination. They are not expected to have a noticeable impact on: 1) the ability of California manufacturers to compete with manufacturers of similar products in other states; 2) other California State or local agencies; or 3) business creation or expansions.

D. Costs and Benefits of Alternatives to the Regulation

1. Alternative 1, Extend the Compliance Date for Certification and Testing

This alternative is not currently needed, but if adopted, it would allow manufacturers to spread out their testing and certification costs over a longer time period, potentially resulting in a cost reduction. However, this alternative would adversely impact public health by permitting the sale of high ozone-emitting air cleaners to continue in California for an additional time period.

2. Alternative 2, Shorter Extension of Labeling Deadlines

This alternative would provide little or no economic benefits to manufacturers, distributors, or retailers. Manufacturers have stated that anything less than the proposed one-year extension would not adequately address the problem of inventory build up and long lead times for production and packaging. Therefore, it would not provide potential cost reductions for those affected parties. In addition, it would not affect consumer prices or public health.

3. Alternative 3, Take No Action

This alternative would not produce any significant benefits to the affected groups, and could increase the likelihood that small manufacturers and distributors would go out of business or be unable to sell their products in California. The failure to extend the labeling deadlines would retain anticipated manufacturer, distributor, and retailer costs for re-packaging and re-labeling, and thus create an unnecessary hardship, especially on small businesses. In addition, the lack of clarified and streamlined test procedures for the ozone test protocol and of additional facilities for electrical safety testing would prevent manufacturers from achieving reasonable time and cost reductions. Furthermore, failure to act could produce a shortage of ARB-certified devices on the California market. This would create an incentive for the marketing of counterfeit devices and the mislabeling of non-certified air cleaners, which would harm public health.

VI. Summary of Environmental Impacts

The existing regulation protects public health by avoiding any increases in human exposure to, and the health impacts of, ozone from portable indoor air cleaning devices. The regulation also provides public health benefits by avoiding any increases in human exposures to chemical reaction products of indoor ozone such as formaldehyde, a known human carcinogen, as well as ultrafine particles and other irritant compounds. In consideration of the analyses performed herein, staff has determined that no significant adverse environmental impacts or loss of benefits from the existing regulation should occur as a result of adopting these proposed amendments. This chapter assesses the potential impacts that the proposed amendment may have on the environment.

A. Legal Requirements

The California Environmental Quality Act (CEQA) and ARB policy require that an analysis be performed to determine the potential adverse environmental impacts of proposed regulations. To meet this requirement, ARB must assess the extent and severity of reasonably foreseeable environmental impacts, and respond (in writing) to all significant environmental issues raised in the public review period and at the Board hearing. Presently, ARB's regulatory program is certified by the Secretary of Resources (cf. Public Resources Code §21080.5), which allows ARB to include an environmental analysis in the ISOR instead of preparing an environmental impact report or negative declaration. Written responses to significant environmental issues raised by the public will be included in the Final Statement of Reasons (FSOR) for the proposed regulation. Public Resources Code §21159 requires that the environmental analysis prepared by ARB include analyses of the following "reasonably foreseeable" items:

- Impacts of the methods of compliance.
- Feasible mitigation measures.
- Alternate means of compliance with the proposed regulation.

With respect to mitigation measures, CEQA requires state agencies to identify and adopt feasible mitigation measures that would minimize any significant adverse environmental impacts described in the environmental analysis.

B. Foreseeable Environmental Impacts

1. Changes in Exposure to Ozone and Public Health Impacts

As discussed in Chapter IV, the proposed amendment is not expected to increase indoor ozone exposures from the use of indoor air cleaning devices, relative to the regulation currently in place. In addition, the amendment is not expected to significantly impact the level of electrical safety for "mechanical filtration only" devices. Therefore, staff expects the proposed regulation to produce a small public health benefit by clarifying the ozone testing procedures, which should result in more consistent and efficient testing procedures that still consider realistic worst-case operating conditions of the indoor air cleaning devices.

2. Other Potential Environmental Impacts

As discussed in the Staff Report for the original regulation (ARB, 2007), ozone reacts chemically with terpenes, common fragrance compounds found in cleaning products and deodorants. The by-products of these chemical reactions include formaldehyde, a known human carcinogen and Toxic Air Contaminant, as well as ultrafine particles, and other airborne irritant compounds. The proposed amendment is not expected to significantly affect ozone emissions from indoor air cleaners, and hence, any resultant production of toxic and irritant by-products, either indoors or

outdoors. Therefore, staff does not expect the proposed regulation to have a significant impact on indoor or outdoor air quality.

C. Reasonably Foreseeable Feasible Mitigation Measures

Staff has concluded that no significant adverse environmental impacts would occur from implementing the proposed amendments to the regulation. Thus, no mitigation measures would be needed.

D. Alternate Means of Compliance

Not Applicable.

E. Environmental Justice

Environmental justice is a core consideration in ARB's efforts to provide clean air for all California communities (ARB, 2001). The proposed amendment would not adversely affect human exposure to ozone emissions from indoor air cleaning devices or increase the cost of such devices to consumers. Therefore, impacts on low income consumers or population groups that are sensitive to ozone's health effects, such persons with respiratory disease or allergies, are not expected.

VII. Staff Recommendation

Staff recommends that the proposed amendments be approved. The amendments would avoid unnecessary costs and onerous logistics for manufacturers, distributors, retailers and sellers during this difficult economic period, and would have no negative impact on public health or the environment. The proposed amendments would clarify portions of the test method that are not sufficiently explicit, which would better assure consistency in conducting the ozone emission concentration test protocol across laboratories and retain consistency with the industry test standards for air cleaners. Finally, they would incorporate small but important refinements into the regulation that would allow manufacturers to continue to utilize the test facilities and electrical safety tests they have always used for electrical testing, and clarify certain other provisions in the regulation.

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APPENDIX I: ASSEMBLY BILL 2276

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Assembly Bill No. 2276

CHAPTER 770

An act to add Article 8 (commencing with Section 41985) to Chapter 3 of Part 4 of Division 26 of the Health and Safety Code, relating to air pollution.

[Approved by Governor September 29, 2006. Filed with Secretary of State September 29, 2006.]

LEGISLATIVE COUNSEL'S DIGEST

AB 2276, Pavley. Ozone: indoor air cleaning devices.

(1) Existing law imposes various limitations on emissions of air contaminants for the control of air pollution from vehicular and nonvehicular sources, including emissions of volatile organic compounds from consumer products. Existing law generally designates the State Air Resources Board as the state agency with the primary responsibility for the control of vehicular air pollution, and air pollution control districts and air quality management districts with the primary responsibility for the control of air pollution from all sources other than vehicular sources. Existing law requires each district to attain ambient air standards for specified air pollutants, including, but not limited to, ozone. Existing law classifies emissions of ozone in nonattainment areas as moderate, serious, severe, or extreme. Existing law generally sets forth crimes and penalties for violations of air pollution laws and any rule, regulation, permit, or order of the state board.

This bill would require the state board, on or before December 31, 2008, to develop and adopt regulations, consistent with federal law and including specified elements, to protect public health from ozone emitted by indoor air cleaning devices, including both medical and nonmedical devices, used in occupied spaces. Because a violation of these regulations would come within the existing provision making a violation of state board regulations a crime, this bill would create a state-mandated local program by expanding an existing crime. The bill would make related legislative findings and declarations. The bill would authorize the state board to seek a preemption waiver from the federal government to authorize the state board to adopt regulations that are more stringent than federal law.

(2) The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

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The people of the State of California do enact as follows:

SECTION 1. Article 8 (commencing with Section 41985) is added to Chapter 3 of Part 4 of Division 26 of the Health and Safety Code, to read:

Article 8. Indoor Air Cleaning Devices

41985. The Legislature finds and declares all of the following:

(a) Ozone is a harmful air pollutant and lung irritant that has serious health impacts at current levels in outdoor air. The state board has determined that each year exposure to ozone results in significant numbers of premature deaths, hospitalizations due to respiratory and cardiac illnesses, emergency room visits for asthma for children under 18 years of age, school absences, and restricted activity days.

(b) Ozone exposure poses a serious health hazard, whether exposure is from outdoor or indoor sources.

(c) Research has demonstrated that long-term exposure to ozone may permanently damage lung tissue and reduce a person's breathing ability.

(d) According to recent studies, ozone-generating air cleaning devices have produced harmful levels of ozone indoors, up to three times the state outdoor air quality standard of 90 parts per billion within an hour or two of operation.

(e) Ozone is not an effective cleaner for indoor air when operated at levels that are safe for human occupation. Independent studies cited by the United States Environmental Protection Agency and the Consumers Union have shown that ozone-generating air cleaning devices do not destroy microbes or reduce indoor air pollutants effectively enough to provide any measurable health benefits.

(f) The state board, the State Department of Health Services, and other governmental agencies have issued warnings to advise the public not to use devices that are specifically designed to generate ozone indoors and advertised or marketed as air cleaning devices.

(g) Ozone emitted from indoor air cleaning devices poses an unnecessary risk to public health, and, therefore, it is the intent of the Legislature that the state board establish regulations to promote improved public health by restricting ozone emissions generated by these devices.

41985.5. For purposes of this article, the following terms have the following meanings:

(a) "Federal ozone emissions limit for air cleaning devices" means the level of generation of ozone above which the device would be considered adulterated or misbranded pursuant to Section 801.415 of Title 21 of the Code of Federal Regulations, specifically the generation of ozone at a level in excess of 0.05 part per million by volume of air circulating through the device or causing an accumulation of ozone in excess of 0.05 part per million by volume of air when measured under standard conditions at 25 degrees Celsius (77 degrees Fahrenheit) and 760

millimeters of mercury in the atmosphere of enclosed space intended to be occupied by people for extended periods of time.

(b) "Medical device" means "device" as defined in subsection (h) of Section 321 of Title 21 of the United States Code.

41986. (a) On or before December 31, 2008, the state board shall develop and adopt regulations, consistent with federal law, to protect public health from ozone emitted by indoor air cleaning devices, including both medical and nonmedical devices, used in occupied spaces.

(b) The regulations shall include all of the following elements:

(1) An emission concentration standard for ozone emissions that is equivalent to the federal ozone emissions limit for air cleaning devices.

(2) Testing procedures for manufacturers to utilize to determine ozone emissions from devices. In developing the procedures, the state board shall consider existing and proposed testing methods, including, but not limited to, those developed by the American National Standards Institute and Underwriters Laboratory.

(3) Certification procedures that enable the state board to verify that an indoor air cleaning device meets the emission concentration standard for ozone emissions using the testing procedures adopted by the state board.

(4) (A) Package labeling requirements that indicate that an indoor air cleaning device is certified as meeting the emission concentration standard for ozone emissions.

(B) The state board shall consider recommendations of affected industries and the public in developing the labeling requirements.

(C) The label for an indoor air cleaning device that is not a medical device shall include the following statement: "This air cleaner complies with the federal ozone emissions limit."

(D) The label for an indoor air cleaning device that is a medical device shall be labeled in compliance with federal law, including Section 801.415 of Title 21 of the Code of Federal Regulations.

(c) The regulations may include any or all of the following elements:

(1) A ban on the sale of air cleaning devices that exceed the emission concentration standard for ozone emissions from indoor air cleaning devices adopted by the state board.

(2) Procedures for authorizing independent laboratories or other approved certification organizations to verify products as meeting the emission concentration standard for ozone emissions from indoor air cleaning devices adopted by the state board. Any authorization shall ensure that verification shall be conducted consistent with the testing procedures adopted by the state board.

(3) An exemption for indoor air cleaning devices that, by design, emit de minimis levels of ozone during their operation, as determined by the state board.

(4) Any other element the state board determines to be necessary to protect the public health from emissions of ozone from indoor air cleaning devices that exceed the emission concentration standard for ozone emissions from air cleaning devices and are used in occupied spaces.

(d) Devices verified by the state board or the United States Food and Drug Administration as meeting the emission concentration standard for ozone emissions from indoor air cleaning devices and the labeling requirements adopted by the state board shall not be subject to further regulatory requirements for ozone pursuant to this article.

(e) It is the intent of the Legislature that this section be interpreted and applied in a manner that is consistent with federal law. The regulations adopted by the state board pursuant to this section shall be consistent with federal law. The state board may, to the extent a waiver is required, seek a preemption waiver from the federal government to authorize the state board to adopt regulations that are more stringent than federal law.

SEC. 2. No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because the only costs that may be incurred by a local agency or school district will be incurred because this act creates a new crime or infraction, eliminates a crime or infraction, or changes the penalty for a crime or infraction, within the meaning of Section 17556 of the Government Code, or changes the definition of a crime within the meaning of Section 6 of Article XIII B of the California Constitution.

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APPENDIX II: PROPOSED REVISIONS TO LANGUAGE

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[Note: Proposed amendments are shown in underline to indicate additions and ~~strikeout~~ to indicate deletions.]

Proposed Amendments to the
REGULATION FOR LIMITING OZONE EMISSIONS FROM INDOOR AIR CLEANING DEVICES

Subchapter 8.7 Indoor Air Cleaning Devices

Amend sections 94801, 94804, 94805, and 94806, title 17, California Code of Regulations, as follows:

Article 1. Indoor Air Cleaning Devices

§ 94800. Applicability.

Except as provided in Section 94803, this article shall apply to any person who manufactures, sells, supplies, offers for sale, or introduces into commerce in the state of California indoor air cleaning devices, including both medical and non-medical devices, used or intended for use in occupied spaces.

NOTE: Authority cited: Section 41986, Health and Safety Code. Reference: Sections 41985, 41985.5, and 41986, Health and Safety Code.

§ 94801. Definitions.

(a) For the purpose of this article, the following definitions apply:

(1) "Air exchange rate" means the rate at which outdoor air replaces the volume of indoor air within a given space.

(2) "ANSI" means American National Standards Institute.

(3a) "ANSI/UL Standard 507" means the version of ANSI/UL Standard 507 for Safety for Electric Fans, Ninth Edition, published on September 27, 2007 by Underwriters Laboratories, Inc. (UL).

(3b) "ANSI/UL Standard 867" means the version of ANSI/UL Standard 867 for Electrostatic Air Cleaners, Fourth Edition, published on December 21, 2007 by Underwriters Laboratories, Inc. (UL), and the associated Certification Requirement Decisions published by UL on March 4, 2008; April 17, 2008; ~~and~~ April 18, 2008; July 8, 2009; July 9, 2009; and (date to be determined), 2009.

(3c) "ANSI/UL Standard 484" means the version of UL's Standard for Room Air Conditioners, 8th Edition, published December 21, 2007, and most recently approved by ANSI on March 26, 2009.

(3d) "ANSI/UL Standard 1278" means the version of UL's Standard for Movable and Wall- or Ceiling-Hung Electric Room Heaters, 3rd Edition, published June 21, 2000, and most recently approved by ANSI on July 30, 2008.

(4) "ARB" means the California Air Resources Board.

(5) "Certification mark" means the symbol used by a recognized testing organization to indicate that a representative sample of the product bearing the symbol meets certain quality or safety criteria. For this regulation the organizations of interest are the nationally recognized testing laboratories that verify compliance with the applicable ANSI/UL Standards for indoor air cleaning devices.

(6) "CCR" means the California Code of Regulations.

(7) "CFR" means the U. S. Code of Federal Regulations.

(8) "Concentration" means the amount of a specified substance in a unit amount of another substance.

(9) "de minimis" refers to a quantity so little, small, miniscule or tiny that the law does not refer to it and will not consider it.

(10) "Distributor" means any person to whom an indoor air cleaning device is sold or supplied for the purposes of resale or distribution in commerce.

(11) "Emission" means the release or discharge of a substance into the environment.

(12) "Executive Officer" means the Executive Officer of the Air Resources Board or the Executive Officer's designee.

(13) "Half-life" means the time required for the concentration of a substance to be reduced to half of its initial value.

(14) "Indoor air cleaning device" means an energy-using product whose stated function is to reduce the concentration of airborne pollutants, including but not limited to allergens, microbes (e.g., bacteria, fungi, viruses, and other microorganisms), dusts, particles, smoke, fumes, gases or vapors, and odorous chemicals, from the air inside an enclosed space. Such devices include, but are not necessarily limited to, portable devices of any size intended for cleaning the air nearest a person, in a room of any size, in a whole house or building, or in a

motor vehicle; and stand-alone devices designed to be attached to a wall, ceiling, post, or other indoor surface.

(15) "Industrial use" or "industrial application" means the use of ozone in the following manner:
  (A) purification of water in an industrial plant, water treatment facility, municipal water facility, or similar facility, and swimming pools and spas
  (B) the destruction of microbes on produce in an agricultural processing plant, refrigerated transport truck, or related facility
  (C) chemical oxidation and disinfection in the electronics, pharmaceutical, biotechnology and chemical industries
  (D) bleaching and other processing purposes in the pulp and paper industry
  (E) odor control from industrial stack gases or wastewater treatment facilities
  (F) odor and smoke control in the hotel industry, provided no people are physically present
  (G) mold remediation, provided no people are physically present
  (H) fire and smoke damage remediation, provided no people are physically present
  (I) odor control in the motor vehicle reconditioning and detailing industry provided no people are physically present.

(16) "Label" means an area containing the required statement in an easily readable format, separate from unrelated text. This is printing on the product packaging, or, for air cleaners ~~manufactured~~ sold prior to ~~April 1, 2011~~ October 1, 2012, may be an adhesive sticker.

(17) "Listing mark" means the symbol used by Underwriters Laboratories, Inc. to indicate that a representative sample of the product bearing the symbol meets certain UL safety criteria. The safety criteria are found in UL nationally recognized Standards 867 and 507 for air cleaning device safety.

(18) "Manufacturer" means any person who imports, manufactures, assembles, produces, or packages an indoor air cleaning device.

(19) "Medical device" means "device" as defined in subsection (h) of Section 321 of Title 21 of the United States Code.

(20) "Mechanical filtration only" means removal of ~~suspended particles~~ contaminants from air only via filtration with physical barrier, non-electronic techniques, i.e. air is forced through a filter medium. Materials used in the construction of the filter media may include substances such as activated charcoal, paper, foam, synthetics, ceramics, or natural fibers.

(21) "Model group" means indoor air cleaning devices sharing the same design, operational features, device output, and performance characteristics, and

manufactured by the same manufacturer. Units in the same model group may be marketed under different brand names. Units that differ only in decorative treatments such as color, remote control, or other cosmetic features not related to ozone output would belong to the same model group.

(22) “NIST” means the U. S. National Institute of Standards and Technology.

(23) “Non-medical device” means any indoor air cleaning device that does not meet the definition of “medical device” above.

(24) “NRTL” means Nationally Recognized Testing Laboratory, as recognized by U. S. OSHA per section 1910.7 of Title 29 of the Code of Federal Regulations.

(25) “Occupied space” means an enclosed space intended to be occupied by people for extended periods of time, e.g., houses, apartments, hospitals and offices.

(26) “OSHA” means U. S. Occupational Safety and Health Administration.

(27) “Packaging” means the materials around the consumer or institutional product which serve only to contain, enclose, incorporate, deliver, dispense, wrap or store the product. “Packaging” includes any article onto or into which the principal display panel and other accompanying literature or graphics are incorporated, etched, printed or attached. “Packaging” does not refer to a secondary container used for shipping purposes.

(28) “ppm” is a unit of concentration measure meaning parts per million by volume. For the purposes of this regulation the volume considered is air and the substance of interest is ozone.

(29) “Retailer” means any person who sells, supplies, or offers for sale, indoor air cleaning devices, directly to consumers.

(30) “Supply” means to make available for purchase or use.

(31) “UL” means Underwriters Laboratories, Inc.

(32) U. S.” means United States of America.

NOTE: Authority cited: Section 41986, Health and Safety Code. Reference: Sections 41985, 41985.5, and 41986, Health and Safety Code; 21 C.F.R. § 801.415; 29 C.F.R. § 1910.7; and 21 U.S.C. § 321.

§ 94802. Standards for Indoor Air Cleaning Devices.

Except as provided in Section 94803 (Exclusions and Exemptions), title 17, California Code of Regulations, no person shall manufacture for use in California 24 months after the effective date of this regulation, or sell, supply, offer for sale, or introduce into commerce, any indoor air cleaning device for use or intended for use in occupied spaces unless the device is certified by ARB to produce an ozone emission concentration not exceeding 0.050 ppm, as specified in Section 94804; is labeled as required in Section 94806; meets all requirements of this article; and continues to meet all requirements of this article, including the ozone emissions limit as determined by the test procedure in Section 94805.

NOTE: Authority cited: Section 41986, Health and Safety Code. Reference: Sections 41985, 41985.5, and 41986, Health and Safety Code; 21 C.F.R. § 801.415.

§ 94803. Exclusions and Exemptions.

(a) *Industrial use*: The provisions of this article do not apply to indoor air cleaning devices manufactured, advertised, marketed, labeled, and used solely for industrial use as defined in Section 94801(a)(15) above, provided that they are marketed solely through industrial supply outlets or businesses and prominently labeled as “Solely for industrial use. Potential health hazard: emits ozone.”

(b) *In-duct systems:* Air cleaning devices designed, marketed, and used solely as a physically integrated part of a central heating, air conditioning, or ventilating system, such as an “in-duct system,” are exempt from this regulation.

NOTE: Authority cited: Section 41986, Health and Safety Code. Reference: Sections 41985, 41985.5, and 41986, Health and Safety Code.

§ 94804. Certification Requirements.

(a) Each manufacturer of an indoor air cleaning device subject to Section 94802 is required to submit an application for certification to the ARB Executive Officer, P.O. Box 2815, Sacramento, CA 95812, Attn: Indoor Air Cleaning Device Certification. Information submitted on the certification application must be true and correct. Applications may be submitted by a professional association or certification organization on behalf of a manufacturer, as long as all required information and signatures from the manufacturer and test laboratory representatives are included. Upon verification of compliance with the test methods described in Section 94805, from a laboratory meeting the performance specifications in Section 94805(d), the ARB will issue an Executive Order that the indoor air cleaning device has completed certification for sale of the device within

California. Certification will be granted to manufacturers, who have the responsibility to comply with all provisions of this article.

(b) Any indoor air cleaning device using only mechanical filtration for pollutant removal is exempt from the testing requirement for the ozone emission standard of 0.050 ppm as determined in Section 94805, based on their known de minimis ozone emissions. Verification of this mechanical-filtration-only exclusion from ozone emission testing will be made by the ARB Executive Officer based on the submission of product design specifications and documentation by the manufacturer, distributor, or retailer. Documentation to the ARB shall include a description of the air cleaning performance technology employed, as well as a block diagram and schematic of the model. Indoor air cleaning devices qualifying as "mechanical filtration only" devices shall be certified under ANSI/UL Standard 507, which is hereby incorporated by reference as defined in Section 94801. Multi-function devices that include an air cleaning component that would qualify as "mechanical filtration only" but would normally be tested for their electrical safety under another ANSI/UL Standard shall be tested for electrical safety under the applicable ANSI/UL Standard . Mechanical filtration only d~~D~~evices certified to ANSI/UL Standard 507 or to another applicable ANSI/UL Standard for their electrical safety prior to the enactment of this regulation are eligible for certification without further testing provided documentation of compliance with ANSI/UL Standard 507 or the relevant ANSI/UL Standard is submitted and the model continues to comply with requirements of that standard. To be certified under this regulation, manufacturers of such indoor air cleaning devices must submit the information required in Sections 94804(c)(1) through 94804(c)(3) below, and Sections 94804(c)(4)(A) and 94804(c)(4)(F) below. These products are still subject to the labeling requirements specified in Sections 94806(b) and 94806(d).

(c) The application for certification of air cleaning devices other than those covered in Section 94804(b) above must include the information in subsections (c)(1) through (c)(5) below, and any other information deemed necessary by the ARB Executive Officer. If the requested information is not applicable to the indoor air cleaning device in question, the applicant must indicate "not applicable". If the Executive Officer concurs with the applicant's judgment, the Executive Officer may waive the requirement to provide the information requested.

(1) Manufacturer name, mailing address, physical address, phone number, email address, and website, and name and phone number of the primary contact person for purposes of this certification;

(2) Applicant or representative name, mailing address, physical address, phone number, and email address, if different from manufacturer;

(3) Indoor air cleaning device information:

(A) Brand name
(B) Model name
(C) Model number
(D) Serial number of devices submitted for testing (where applicable)
(E) Manufacture date of devices submitted for testing
(F) Model group, and other models included in model group, where applicable
(G) Discussion of the principles of operation and design
(H) Device schematics depicting operation
(I) Maintenance requirements
(J) Operations manual, if available
(K) Marketing materials, if available

(4) Indoor air cleaning device test information:

(A) Test facility identification and proof of current Nationally Recognized Testing Laboratory (NRTL) accreditation
(B) Ozone emission concentrations for all units tested, as measured according to Section 94805, including both the 24-hour measurement as well as information regarding whether any transitory measurements exceeded 0.050 ppm
(C) Whether a device failed the ozone emission test for any reason during final certification testing, and if so, the reason (e.g., excess transitory excursions, motor failure during the test, device not received with packaging intact, electrical part overheated/unsafe to continue, etc.)
(D) Chain of custody of test device(s)
(E) Statement from the testing laboratory that the ozone emissions were determined in accordance with the protocols in the December 21, 2007 Revision of Section 37 of ANSI/UL Standard 867, and the associated Certification Requirement Decisions published by UL
(F) Notification by a testing laboratory or certification organization of compliance with the electrical safety provisions of ANSI/UL Standard 867, ~~or~~ ANSI/UL Standard 507, or other applicable ANSI/UL Standard, where applicable, for all units tested.

(5) Any additional information the laboratory needs to communicate.

(d) A written notification will be provided within 30 days of receipt indicating whether the certification application has been accepted for review or, if incomplete, what additional information is required. Within 30 days after application acceptance, written notification of certification approval or disapproval will be provided. These time periods may be extended by the Executive Officer if deemed necessary because of extenuating circumstances.

(e) Notification must be provided to the Executive Officer within 30 days if the indoor air cleaning device fails any post-certification testing conducted to verify

compliance with ANSI/UL Standard 867 or ANSI/UL Standard 507, whichever is applicable.

(f) ARB may revoke certification for any device deemed noncompliant in the future when tested according to procedures described in Section 94805, or if any other ARB certification requirements are no longer met.

NOTE: Authority cited: Section 41986, Health and Safety Code. Reference: Sections 41985, 41985.5, and 41986, Health and Safety Code; 21 C.F.R. § 801.415.

§ 94805. Test Method.

(a) For the purpose of compliance with this regulation only a single model of indoor air cleaning device within a model group, if one exists, must be evaluated under the test methods.

(b) Testing to determine compliance with the requirements of this article, shall be performed following the ANSI/UL Standard 867 or ANSI/UL Standard 507, whichever is applicable, in their entirety, which are hereby incorporated by reference as defined in Section 94801. Appliances with a primary purpose other than air cleaning that include an air cleaning component that meets the definition of an indoor air cleaning device given in Section 94801 shall meet the applicable ANSI/UL electrical safety standard for its primary purpose, including but not limited to ANSI/UL Standards 484 and 1278, which are hereby incorporated by reference as defined in Sections 94801(3c) and 94801(3d).

(c) Ozone emissions will be determined using Section 37 of ANSI/UL Standard 867 and the associated Certification Requirement Decisions, which are hereby incorporated by reference as defined in Section 94801.

(d) Testing of indoor air cleaning devices must be conducted by a laboratory currently recognized as an NRTL by the U. S. Occupational Safety and Health Administration (OSHA), to perform testing for the entire ANSI/UL Standard 867, ~~or~~ ANSI/UL Standard 507, or other UL or ANSI/UL Standard, ~~where~~ as applicable. If included within its scope of recognition, ~~S~~such an NRTL may also utilize OSHA Supplemental Programs #2, 3, 4, 5, and 6, as published in Volume 60, Federal Register, pages 12980 to 12985 (March 9, 1995), which is hereby incorporated by reference, for the ANSI/UL Standard 507, 867, or other ~~ozone testing~~electrical safety testing required in this regulation. ~~Laboratories, including those qualifying for use in OSHA Program #2, also must pass~~ However, the ANSI/UL Standard 867 Section 37 ozone testing required in this regulation may only be performed by an NRTL or an NRTL utilizing a Supplemental Program 2 testing laboratory that has passed an ARB audit to verify their ability to accurately perform the ozone emissions testing procedure as described in ANSI/UL Standard 867 Section 37. The ARB audit may include, and is not necessarily

limited to, review of written test protocol operating procedures, test chamber and analyzer configuration, background ozone measurements, air exchange rate, ozone half-life test results, equipment calibration and maintenance records, and other related information; and an onsite review. The audit may also include a requirement for annual submittal of internal audit reports on the ANSI/UL Standard 867 Section 37 test protocol and the performance of the chamber(s) in which ANSI/UL Standard 867 Section 37 tests are conducted, and any related follow up internal audit reports.

NOTE: Authority cited: Section 41986, Health and Safety Code. Reference: Sections 41985, 41985.5, and 41986, Health and Safety Code.

§ 94806. Labeling and Safety Mark Requirements.

(a) All indoor air cleaning devices are required to display an ozone emissions certification label [as defined in Section 94801(a)(16)] on the product packaging after completion of requirements of Section ~~95804~~94804 prior to sale in California, unless satisfying the requirements for exemption as specified in Section 94803. Indoor air cleaning devices submitted to an approved laboratory for certification testing within 12 months of the effective date of this regulation, but unable to obtain certification pursuant to Section 94804 by the end of the 18th month after the effective date of this regulation, shall be allowed an additional 180 days after the postmark date of notification of product certification by ARB to meet the labeling requirements of this section. Indoor air cleaning devices that have been certified by October 18, 2010 may still be sold without the required labeling on the package until October 18, 2011, and may use an adhesive label until October 1, 2012.

(b) For non-medical devices, the label shall be at least 1 inch by 2 inches in size, easily readable, and shall state “This air cleaner complies with the federal ozone emissions limit. ARB certified” in bold type whose uppercase letters are not less than 3 mm high.

(c) For medical devices, the label shall be in compliance with federal law, including Section 801.415 of Title 21 of the Code of Federal Regulations. The label shall also state “ARB certified”.

(d) All indoor air cleaning devices (both medical and non-medical) are required to display the ANSI/UL Standard 867 safety certification or listing mark on the device, consistent with the ANSI/UL Standard 867 requirements of the appropriate NRTL safety certification organization, after completion of requirements of Sections 94804 and 94805 and prior to sale in California, unless the device satisfies the requirements for exemption as specified in Section 94803. Devices qualifying as “mechanical filtration only” devices as

described in Section 94801(a)(20) and Section 94804(b) shall display the ANSI/UL Standard 507 certification mark.

(e) Any indoor air cleaning device for non-industrial use that is advertised or sold via the Internet or by catalog but that has not been certified according to Section 94804 must display the following advisory in a prominent place on the primary web pages, catalog pages, and related materials where such device is advertised or displayed for sale: "Does not meet California requirements; cannot be shipped to California."

NOTE: Authority cited: Section 41986, Health and Safety Code. Reference: Sections 41985, 41985.5, and 41986, Health and Safety Code; 21 C.F.R. §§ 801 and 801.415.

§ 94807. Notice to distributors, retailers, and sellers.

Within 12 months of the effective date of this regulation, manufacturers of indoor air cleaning devices manufactured, sold, supplied, offered for sale, or introduced into commerce in California must submit documentation that they have provided to all of their known distributors, retailers, and sellers true and accurate copies of the final regulation adopted by the ARB and filed with the California Secretary of State. Accepted documentation of a mailed notification will include a hard copy of the materials mailed and the associated mailing list with complete contact information for each address submitted to the ARB Executive Officer. Accepted documentation of an email notification will include a copy of the email and the complete contact information for each email address submitted to the ARB Executive Officer. Such information may be kept confidential upon request as specified in Sections 91000 et seq. of title 17, chapter 1, subchapter 4 (Disclosure of Records) of the California Code of Regulations. For new distributors, retailers and sellers who become known to manufacturers after manufacturers' initial notification to their distributors and retailers, manufacturers must provide similar notice to them and provide contact information to the ARB. Non-compliance with this provision may result in rejection or revocation of certification.

NOTE: Authority cited: Section 41986, Health and Safety Code. Reference: Sections 41985, 41985.5, and 41986, Health and Safety Code; Sections 91000 et seq. of title 17, chapter 1, subchapter 4 of the California Code of Regulations.

§ 94808. Recordkeeping Requirements.

Manufacturers, distributors, retailers, sellers, and test laboratories are required to maintain production, quality control, sales, or testing records for products sold, supplied, offered for sale, introduced into commerce, or manufactured for sale within California for at least three years, and to make them available to the ARB upon request. Such information may be kept confidential upon request as specified in Sections 91000

et seq. of title 17, chapter 1, subchapter 4 (Disclosure of Records) of the California Code of Regulations.

NOTE: Authority cited: Section 41986, Health and Safety Code. Reference: Sections 41985, 41985.5, and 41986, Health and Safety Code, Sections 91000 et seq. of title 17, chapter 1, subchapter 4 of the California Code of Regulations.

§ 94809. Rejection, Revocation, Recall, and Penalties.

An application for certification may be denied, or a certification may be revoked or suspended, for failure to comply with any provision of this article. If the Executive Officer determines that a violation of this article has occurred, he or she may order that the products involved in or affected by the violation be recalled and replaced with products that comply with this article. In the event of a violation of this article, all other penalties authorized by law apply as well.

NOTE: Authority cited: Sections 41986 and 42300 et seq., Health and Safety Code. Reference: Sections 41985, 41985.5, and 41986, Health and Safety Code.

§ 94810. Severability.

Each part of this article shall be deemed severable, and in the event that any part of this article is held to be invalid, the remainder of this article shall continue in full force and effect.

NOTE: Authority cited: Section 41986, Health and Safety Code. Reference: Sections 1985, 41985.5, and 41986, Health and Safety Code.

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APPENDIX III: CHAMBER SETUP CRD

July 8, 2009

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UNDERWRITERS LABORATORIES INC. CERTIFICATION REQUIREMENT DECISION

This Certification Requirement Decision is prepared and published by Underwriters Laboratories Inc. (UL). It is normative for the applicable UL Product Certification Program(s); however, it is currently not part of the UL Standard(s) referenced below.

Product Category (CCN): AGGZ, OETX
Standard Number: UL 867
Edition Date: October 9, 2000
Edition Number: 4
Section / Paragraph Reference: 37.2.3
Subject: Chamber Setup

DECISION:

37.2.3 Performance of the test chamber shall be verified prior to each test and after any modification or cleaning through:

a) Determination of the chamber ozone half-life at 0 forced air changes,

b) Calculation of the chamber deposition velocity under these conditions using the equation defined in 37.2.4,

c) Calculation of the air exchange rate necessary to maintain an overall chamber ozone removal rate (Napparent) value of 1.33 using the equation defined in 37.2.5,

d) Verification of the chamber ozone half-life of 31 ± 2 minutes under the air exchange rate calculated in c), and if necessary, adjustment of the air exchange rate to achieve an ozone half-life of 31 ± 2 minutes, repeating the verification as needed after adjustment of the air exchange rate.

The chamber ozone half-life is determined using an initial steady state concentration of 0.100 to 0.200 ppm ozone. For the purpose of this measurement, steady state is defined as a fluctuation not greater than ± 10 percent or 0.0020 ppm, whichever is greater, during a fifteen minute period.

Exception: If the chamber has initially demonstrated compliance with the requirements of steps a) through d), and with step d) in three or more consecutive tests over a two-day minimum timeframe, only step d) need be repeated immediately prior to the testing of each model. However, steps a) through d) and three or more consecutive step d) tests shall be repeated, at a minimum, bi-annually or after any chamber modification or maintenance activities.

RATIONALE FOR DECISION:

Steps a) through c) of paragraph 37.2.3 allow the test laboratory to easily dial in the necessary chamber air exchange rate based upon theoretical calculations. These steps are intended to assist laboratories during initial chamber setup and following routine maintenance, and are not considered necessary prior to individual test runs.

Additionally, if the laboratory can demonstrate a stable ozone half-life, via compliance with the standard specification over three or more consecutive tests, it can be assumed that the chamber will typically remain stable over the course of testing an air cleaner model at various settings and samples. Also, any

significant change in chamber performance would become evident during the next ozone half-life test and would be corrected to meet the standard specifications. This CRD clarifies, under stable chamber conditions, only step d) as necessary between the testing of air cleaner models.

APPENDIX IV: STEADY STATE DEFINITION CRD

July 9, 2009

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UNDERWRITERS LABORATORIES INC. CERTIFICATION REQUIREMENT DECISION

This Certification Requirement Decision is prepared and published by Underwriters Laboratories Inc. (UL). It is normative for the applicable UL Product Certification Program(s); however, it is currently not part of the UL Standard(s) referenced below.

Product Category (CCN): AGGZ, OETX
Standard Number: UL 867
Edition Date: October 9, 2000
Edition Number: 4
Section / Paragraph Reference: 37.4.6
Subject: Definition of Steady State at Hours 7- 8

DECISION:

37.4.6 The emission of ozone is to be monitored for 24 hours to determine the concentration.

Exception: : The monitoring of ozone can be stopped after 8 hours if the measured chamber ozone concentration has reached steady-state. For the purpose of this measurement steady state is defined as:

a) Negative or zero slope for the plot of chamber ozone concentration vs. time ([C(t)] vs. t), during hour 7 to 8 of monitoring, and fluctuation not greater than ± 10 percent or 2 ppb around the mean, whichever is greater during the same time period.

b) Positive slope for the plot of chamber ozone concentration vs. time([C(t)] vs. t), during hour 7 to 8 of monitoring, mean ozone concentration less than 20 ppb, and fluctuation not greater than ± 2 ppb around the mean, during the same time period, or

c) Positive slope for the plot of chamber ozone concentration vs. time ([C(t)] vs. t), during hour 7 to 8 of monitoring, mean ozone concentration greater than or equal to 20 ppb and less than 38 ppb, a normalized slope (slope divided by hourly mean) for hour 7- 8 less than or equal to 0.0153 (ppb/hr)/mean ppb, and fluctuation not greater than ± 10 percent around the mean during the same time period.

RATIONALE FOR DECISION:

Throughout the ozone test development process, the steady state reference of paragraph 37.4.6 assumed steady state to be defined as: 1) no positive slope for the plot of concentration versus time for Hour 7 to 8, and 2) a fluctuation of less than 10% Relative Standard Deviation (RSD) during any 15 minute period for Hour 7 to 8.

In practice, however, the specified laboratory measurement precision (+ 2%) is such that it is inevitable that there will be random variation about the mean (i.e. some positive slope). Additionally, % RSD is equal to 100 x Standard Deviation / Mean, so it increases as the mean ozone level decreases. At low ozone concentrations, the ratio of standard deviation and mean may result in disproportionate increase in RSD. That could result in a very low-emitting device to failing to achieve steady state, leading to extended test times without any clear benefit.

This clarification establishes criteria for determining steady state that is consistent with the original intent, addresses the identified concerns and assures that variance about the mean will not result in a maximum ozone concentration that exceeds 0.050 ppm.

APPENDIX V: FILTER TEST ITERATIONS CRD

UL has not yet issued their final Filter Test Iterations Certification Requirement Decision (CRD), but is expected to do so soon. A copy will be posted on our website as soon as it is available. Assuming approval of the amendments by the Board in December, 2009, ARB will release the final CRD language for a 15-day public review and comment period early in 2010. Below is a summary of the refinements that this CRD is expected to make to the test protocol.

Currently, when a model of air cleaner to be tested under ANSI/UL Standard 867 comes with optional or alternate main and/or pre-filters, the Section 37 protocol would require several repeat chamber tests to be conducted to test most or all possible combinations of filters. This is so because filters can affect the ozone emissions of the device in some cases. If the air cleaner can be operated with its filters removed, a test with all filters removed also is required, since this would represent the operational condition that would likely result in the highest ozone emissions. For models with more than one or two filter combination options, all of the required tests together could take substantial time and increase the cost of testing a single device by several times the base cost

To clarify which filter combinations should be tested in cases where multiple filters are available for a given model of air cleaner, and to gain efficiencies in testing while not impacting the ability of the test protocol to identify any possible ozone emission exceedances above the allowable limit of 0.050 ppm, UL is developing a third 2009 CRD. It is expected that the CRD will retain the requirement for air cleaners to be tested with all filters removed when the device can be operated with filters removed, because that is likely the highest ozone-emitting operating condition. It also is expected that UL will indicate that the combination of filters considered least reactive to ozone be tested (because such a combination would result in the highest ozone emissions from that device when filters are in place.) Paper filters would generally be considered least reactive to ozone, with HEPA filters next, and then carbon filters considered most reactive to ozone. Filter coatings typically make filters more reactive to ozone, so UL would request an uncoated filter for testing, if available. If only coated filters are available, then all filter combination would be tested, because the relative levels of reactivity to ozone amongst coatings is not currently known.

For air cleaner models with several pre-filters and several main filters, then, the CRD would greatly reduce the number of repeated tests needed for most such air cleaners. Only a few models would be expected to require several repeat tests for multiple filter combinations. ARB staff has reviewed drafts of UL's anticipated CRD and are generally in agreement with their approach. UL is working on the final details of the CRD, and ARB staff will review it to assure it maintains adequate testing and assessment of each model, and is consistent with the regulation's intent.