California Environmental Protection Agency

Air Resources Board

Final Statement of Reasons for Rulemaking

Including Summary of Comments and Agency Responses

PUBLIC HEARING TO CONSIDER
THE PROPOSED AMENDMENTS TO THE ASBESTOS AIRBORNE TOXIC CONTROL MEASURE FOR SURFACING APPLICATIONS

Public Hearing Date: July 20, 2000
Agenda Item No.: 00-7-4

State of California
AIR RESOURCES BOARD

Final Statement of Reasons for Rulemaking,
Including Summary of Comments and Agency Responses

PUBLIC HEARING TO CONSIDER THE PROPOSED AMENDMENTS TO THE ASBESTOS AIRBORNE TOXIC CONTROL MEASURE FOR SURFACING APPLICATIONS

Public Hearing Date: July 20, 2000
Agenda Item No.: 00-7-4

I. GENERAL

On July 20, 2000, the Air Resources Board (ARB or Board) conducted a public hearing to consider amendments to the existing asbestos airborne toxic control measure (ATCM) contained in section 93106, title 17, California Code of Regulations (CCR). These amendments will essentially prohibit the use of aggregate most likely to contain asbestos in unpaved surfacing applications unless the asbestos content is measure and found to be less than 0.25 percent. The Staff Report: Initial Statement of Reasons for the Proposed Amendments to the Asbestos Airborne Toxic Control Measure for Surfacing Applications, released to the public on June 2, 2000 (staff report), is incorporated by reference herein. At the July 20, 2000, hearing, the Board approved the proposed amendments with various modifications. The modifications made to the ATCM were made available for a 15-day public comment from October 5, 2000, to October 20, 2000. This Final Statement of Reasons for Rulemaking (FSOR) updates the staff report by identifying and explaining the modifications that were made to the original proposal. The FSOR also summarizes the written and oral comments received during the 45-day comment period preceding the July 20, 2000, public hearing, the hearing itself, the 15-day comment period for proposed modifications, and contains the ARB's responses to those comments.

In 1990, the Board adopted the Asbestos ATCM for Asbestos-Containing Serpentine (Asbestos ATCM). This Asbestos ATCM prohibits the use of serpentine aggregate on unpaved surfaces if the asbestos content is greater than five percent.

Since the adoption of the Asbestos ATCM, additional information from ambient air monitoring studies and dust emission models has been developed. This information demonstrates a potential for elevated exposures and risks for individuals living near unpaved roads surfaced with asbestos-containing aggregates such as serpentine and ultramafic rock. Therefore, staff proposed to amend the Asbestos ATCM to further protect public health from asbestos exposures by prohibiting the use of aggregate most

likely to contain asbestos in unpaved surfacing applications unless the asbestos content is measured and found to be less than 0.25 percent.

II. MODIFICATIONS MADE TO THE ORIGINAL PROPOSAL

Various modifications to the original proposal were made to address comments received during the 45-day public comment period, and to clarify the regulatory language. These modifications are described below. A "Notice of Public Availability of Modified Text," together with a copy of the modified sections of the Asbestos ATCM, was mailed on June 2, 2000, to each of the individuals described in subsections (a)(1) through (a)(4) of section 44, Title 1, CCR. Additionally, this notice was made available on ARB's website. By these actions, the modified Asbestos ATCM was made available to the public for a 15-day minimum comment period from October 5, 2000, to October 20, 2000, pursuant to Government Code section 11346.8. Responses to comments made during the 15-day comment period for these modifications are presented in Section IV of this FSOR. After the close of the 15-day comment period, the Board's Execute Officer determined that no additional modifications should be made to the Asbestos ATCM (except for the non-substantive modifications described in section III of the FSOR). The Executive Officer subsequently issued Executive Order G-01-019, which adopted the modified Asbestos ATCM.

Effective Date (subsection (a))

The original proposal did not specifically address the effective date of the ATCM. Subsection (a) was added to clarify when the ATCM will be implemented and enforced by the local air pollution control and air quality management districts (districts). This subsection reflects language found in the California Health and Safety Code, section 39666(d), which governs effective dates of the airborne toxic control measures. The language included in the effective date section states that 120 days following the approval of the amended Asbestos ATCM by the Office of Administrative Law, the district must either implement and enforce the ATCM or propose a measure of their own that is at least as stringent as the amended Asbestos ATCM.

Applicability (subsection (b))

Subsection (b) was added to clarify the applicability of the ATCM. This subsection specifies that the ATCM applies to anyone who sells, supplies, offers for sale or supply, uses, applies, or transports any aggregate material that is:

- Extracted from any "geographic ultramafic rock unit," as shown on the maps listed in Appendix A of the ATCM; or

- Evaluated at the request of the air pollution control officer and found to be ultramafic rock or serpentine; or

- Tested at the request of the air pollution control officer and found to have an asbestos content of 0.25 percent or greater; or

- Determined by the owner/operator and be ultramafic rock or to have an asbestos content of 0.25 percent or greater.

The criteria listed above were chosen to specifically link the amended Asbestos ATCM to the areas of the state where asbestos is most like to be found or known to exist. The staff of the Department of Conservation, Division of Mines and Geology (DMG) has indicated that the ultramafic rock units are the areas in California where asbestos is most likely to be found. These areas are designated as ultramafic (or ultrabasic) rock units on the maps referenced in Appendix A of the ATCM. The applicability section also addresses situations where an owner/operator becomes aware that aggregate material contains asbestos or consists of ultramafic rock or serpentine.

Regulating Serpentine Rock and Ultramafic Rock Equivalently

The original proposal prohibited the use of any serpentine rock for surfacing purposes. The proposal also restricted the use of ultramafic rock; ultramafic rock could be used for unpaved surfacing, provided it was tested and determined to have an asbestos content of 0.25 percent or less. This addition of ultramafic rock was made at the suggestion of the DMG staff. The DMG staff also suggested that serpentine and ultramafic rock be regulated equivalently. Staff modified the proposal to allow serpentine rock to be used or sold for surfacing purposes if it was tested and if found to have an asbestos content that was less than 0.25 percent, just as ultramafic rock. This change results in serpentine rock and ultramafic rock being regulated equivalently.

According to DMG staff, with whom ARB staff consulted on geologic matters, areas containing ultramafic rock are favorable geologic environments for the occurrence of asbestos. Most serpentine rocks form as a result of the metamorphism (called serpentinization) of ultramafic rocks. During serpentinization or other metamorphic events, some of the minerals in ultramafic rocks can be transformed into asbestos minerals. Many ultramafic rocks in California are serpentinized or metamorphosed to some extent. Since geologic maps typically do not indicate the degree of metamorphism or alteration that an ultramafic rock has undergone, nor the presence or absence of asbestos minerals, DMG staff recommended treating ultramafic rock and serpentine rock equivalently.

APCO's Authority to Require Geologic Evaluations

The authority of the Air Pollution Control Officer (APCO) to test any material was expanded to allow for the evaluation for the presence of ultramafic rock or serpentine on any property where aggregate is extracted. This authority was specifically added to address the occurrence of asbestos, albeit rare, outside of the boundaries of the

ultramafic rock units. If district staff suspected the occurrence of asbestos, ultramafic rock, or serpentine at a facility operating outside of the ultramafic rock units designated on the referenced geologic maps, the APCO could require that a geologic evaluation be conducted for that property to verify the presence of the above materials.

Exemptions

The exemption for maintenance of existing unpaved surfaces, which was in the original 1990 Asbestos ATCM, was reinstated in the modifications to the proposed amendments. Although staff originally intended to address road maintenance in the second phase of the asbestos regulatory development (construction and quarrying), this exemption was reinstated to address concerns raised about whether maintenance operations could be conducted in the interim between implementation and enforcement of the two regulations.

Geologic Evaluation – 93106 (f)(7)

The geologic assessment exemption was modified to a geologic evaluation exemption. The difference between the two is that a geologic assessment would attempt to determine the likelihood of the presence of asbestos, whereas the geologic evaluation would determine and characterize the rock types present at a site. This change simplifies the procedures for the site characterization. The geologist would only need to identify and evaluate rock types instead of attempting to find asbestos occurrences, which would be much more difficult. The modification included specific tasks that should be included in the evaluation, such as a detailed site characterization of the property, descriptions of the sampling and analytical procedures used, and classifications of the rock types found. All this information is to be summarized into a geologic evaluation report that is to be submitted to the district as part of the application for the exemption.

Remote Location – 93106 (f)(9)

The remote location exemption was modified to limit the potential asbestos content of any material used under this exemption to one percent or less. However, if material with an asbestos content of one percent or less is not reasonably available, the APCO can consider raising the level to five percent at most. This change was added to address concerns about the potential use of aggregate material that may have an asbestos content in excess of the five-percent limit of the 1990 Asbestos ATCM. This change places an absolute cap of five percent for any aggregate material used for surfacing in California (unless one of the other exemptions applies).

In some situations where there is a receptor site within a mile of the unpaved surface, the district would still be allowed to provide a remote location exemption, under very limited circumstances. The receptor site could not be occupied or worked at for more than six months within a year, and the entrance points to the unpaved surface

must be gated and posted with a sign indicating the potential exposure to asbestos. Further, the proponent must provide the districts with estimates of the average traffic volume on the unpaved surface. Whenever the traffic volume exceeds or is anticipated to exceed 20 vehicle passes per day, a dust control method that is at least 70 percent effective must be employed. The proponent must also maintain records of the application of the dust control and provide those records to the district upon request. There are some locations in the state where ultramafic/serpentine rock is the only available aggregate material within 20 or more miles of a surfacing activity. These situations are typically forest service roads where there are no permanent residents or businesses nearby. Under the above limited circumstances, the proponent would be allowed to use aggregate material with an asbestos content of no more than five percent.

Also, the proponent must reapply for the exemption at least once every three years to address potential changes in the site's remote location status.

Roads Located at Construction Sites – 93106 (f)(10)

An exemption for use of material for unpaved roads located at ongoing construction sites was added, provided the road is not used for public traffic. This exemption was added because there was concern about the use of restricted material as road base and fill in constructing projects. During construction projects, restricted material is allowed to be used as base or fill material. However, construction equipment often drives over this material during the construction process. The original proposal could have been interpreted as prohibiting this activity, which was not the intent of ARB staff. In order to provide clarity, an exemption was added allowing the temporary use of restricted material for unpaved surfaces for construction equipment. However, these surfaces must be covered with non-asbestos-containing material upon completion of the construction project.

These surfaces will be regulated in the next phase of the regulation of naturally-occurring asbestos.

Riprap – 93106 (f)(11)

An exemption for riprap was added. This exemption allows the use of restricted material for riprap, since vehicular or pedestrian access to riprap is ordinarily very limited.

Structural and Organizational Changes to the Amended ATCM

A number of structural and organizational changes were made to improve the clarity and readability of the amended ATCM. The changes included moving the definitions to the end of the section, as well as placing the exact wording of several key definitions in their associated provisions. Additionally, a list of geologic maps

indicating the locations of the geographic ultramafic rock units was added to the proposed amendments. The referenced maps cover all areas of the state at a scale of at least 1:250,000. This list will be updated through the regulatory process as more maps become available.

III. OTHER NONSUBSTANTIAL OR SOLELY GRAMMATICAL MODIFICATIONS MADE AFTER THE CLOSE OF THE 15-DAY COMMENT PERIOD

In addition to the modifications described above, the following non-substantial or solely grammatical modifications were made after the close of the 15-day comment period.

Geologic Evaluation – 93106 (f)(7)

The list of procedures in the geologic evaluation exemption subsection was rearranged to provide a more logical order.

Applicable Test Methods – 93106 (h)

The term “indirect” was replaced with “inductively” in §93106(h)(1). The terms are used synonymously in the field of geology, however, DMG staff has indicated that the term “inductively” is the more appropriate of the two and it’s use would result in greater clarity (see the response to Comment No. 18 in the section of this FSOR entitled "Responses to Comments Received During the 15-day Comment Period).

List of Referenced Maps – Appendix A

The reference to the "Department of Conservation, Division of Mines and Geology maps" was removed from the definition of “geographic ultramafic rock unit.” This change was made because a map published by Lake County Air Pollution Control District was added to Appendix A as part of the 15-day modifications, and the addition of this non-DMG map made the DMG reference inaccurate. This is a non-substantial change, because the modified definition of “geographic ultramafic rock unit” still refers to the maps that are referenced in Appendix A.

Correction of Typographical Errors

There were several small typographical errors that were corrected after the release of the 15-day amendments. Specifically in:

- §93106(d)(1), the comma following the phrase “0.25 percent” was deleted;
- §93106(d)(2), the comma following the word “surfacing” was deleted;
- §93106(d)(3), the “or” in the first sentence of the subsection between the words “sells” and “supplies” was deleted and replaced with a comma;

- §93106(f)(3), the comma between the words “surface” and “if” was deleted;
- §93106(f)(5), the word “a” was replaced with “an” in the phrase “…or construction of a**n** asphalt or…”;
- §93106(f)(7)(A)2., the comma following the word “characterization” was deleted;
- §93106(f)(7)(A)2., the word “geological” was replaced with “geologic”; and
- §93106(f)(9)(C)6.iii., the superfluous word “must,” between “methods” and “to,” was deleted.

Note to Barclays

Although the ARB is providing the adopted amendments to section 93106 in an underline and strikeout version, the ARB recommends that Barclays not use this version when making changes to the existing ATCM in section 93106 of Barclays Official California Code of Regulations. The amendments to the existing ATCM are complex and very extensive. The odds are high that at least a few errors will be made in the process of adding and deleting text in Barclays official version of the existing ATCM. To avoid this potential problem, the ARB is providing a "clean" version of the complete ATCM, as amended, without underlines and strikeouts. The ARB suggests that Barclays simply strike out the entire text of the existing ATCM, and replace it with the clean version of the amended ATCM. [An electronic and paper copy of the clean version is included in the final rulemaking package.]

IV. SUMMARY OF COMMENTS AND AGENCY RESPONSES

The Board received numerous written and oral comments in connection with the 45-day comment period, the July 20, 2000, hearing, and the 15-day comment period for this regulatory action. A list of commenters is set forth below, identifying the date and form of all comments that were timely submitted. Following the list is a summary of each objection or recommendation made regarding the proposed action, together with an explanation of how the proposed action has been changed to accommodate the objection or recommendation, or the reasons for making no change.

A. Responses to Comments Received During the 45-day Public Comment Period

Comments Received During the 45-day Public Comment Period and Board Hearing

Abbreviation	Commenter
Abraham	Jerrold Abraham Director of Environmental and Occupational Pathology SUNY Upstate Medical University written testimony: July 16, 2000
ALAC	Bonnie Holmes Gen American Lung Association of California oral testimony: July 20, 2000
Applestein	Brittany Applestein written testimony: June 21, 2000
Bledsoe	Steven Bledsoe, et. Al. written testimony: July 18, 2000
Bloechl	Wayne V. Bloechl, M.S. written testimony: July 9, 2000 oral testimony: July 20, 2000
BMM	Ted Stevens Vice President and General Counsel Blue Mountain Minerals written testimony: July 19, 2000
Brewster	Arnold Brewster written testimony: June 25, 2000
Caltrans	Brian J. Smith, Program Manager Environmental Program State of California Department of Transportation written testimony: June 1, 2000 Gary R. Winters, Acting Program Manager Environmental Program State of California Department of Transportation written testimony: July 19, 2000 Julia Turney oral testimony: July 20, 2000

Carr	Helen Carr written testimony: July 16, 2000
CE	David B. Jermstad, R.G., C.E.G., R.E.A. II Director of Earth Science Carlton Engineering, Inc. written testimony: May 25, 2000
CFPA	Melinda Terry California Forestry Products Association oral testimony: July 20, 2000
CMAC	Linda A. Falasco, Executive Director Construction Materials Association of California written testimony: June 12, 2000, July 14, 2000 Charles Rea, Assistant Executive Director oral testimony: July 20, 2000 Michael Brady oral testimony: July 20, 2000
CMA	Denise M. Jones Executive Director California Mining Association written testimony: July 18, 2000 oral testimony: July 20, 2000
Coleman	Robert G. Coleman written testimony: July 14, 2000
Cook	Danielle Cook written testimony: June 21, 2000
Crump	Anne Crump written testimony: June 21, 2000
David	Donald G. David, Jr. written testimony: July 9, 2000
de Raat	M. de Raat written testimony: June 21, 2000
DHS	Diana M. Bonta, R.N., Dr. P.H. Director, Department of Health Services written testimony: July 13, 2000

Dold	Philip and Marilyn Dold written testimony: July 13, 2000
DSS	Daniel A. Silva, President DSS Engineering Contractors written testimony: July 10, 2000
DTSC	Edwin F. Lowry, Director Department of Toxic Substances Control written testimony: July 19, 2000
DTSC	Daniel Ziarkowski Department of Toxic Substances Control oral testimony: July 20, 2000
Eash	Connie Eash written testimony: July 16, 2000
EBHJ	Thomas Paine Ellman, Burke, Hoffman & Johnson A Professional Law Corporation written testimony: July 3, 2000
EDCTQG	Alice Howard El Dorado County Taxpayers for Quality Growth Maidu Group of the Mother Lode Chapter of the Sierra Club written testimony: June 26, 2000
EDCEMD	Jon A. Morgan, Director El Dorado County Environmental Management Department written testimony: July 19, 2000
Engelmann	George and Jill Engelmann written testimony: June 19, 2000 written testimony: July 10, 2000
FRC	James Holmes Chairman Forest Resources Council written testimony: July 20, 2000

GCI	Geoff Boraston, P.E. Environmental Services Granite Construction Incorporated written testimony: July 17, 2000
Goresuch	Joan C. Goresuch written testimony: July 18, 2000
GR	Paul C. Lessard, Ph.D. Environmental Affairs Granite Rock written testimony: July 14, 2000 oral testimony: July 20, 2000
Griffith	Marie Griffith written testimony: June 21, 2000 written testimony: July 10, 2000
Griffiths	Ray P. Griffiths written testimony: July 13, 2000
HA	Lawrence W. Appleton Manager of Engineering and Environmental Affairs Hanson Aggregates Mid Pacific Region written testimony: July 19, 2000 oral testimony: July 20, 2000
Hackelberg	Cherie Hackelberg written testimony: June 21, 2000
Hogan	Leonard and Willempje Hogan written testimony: July 12, 2000
Hooper	Jean Hooper written testimony: July 13, 2000
Howard	Alice Howard oral testimony: July 20, 2000
Innes	W. B. Innes, Ph.D. Consulting, R&D on Air Pollution written testimony: June 7, 2000
Jaynes	Mike Jaynes written testimony: July 9, 2000

JohnsonJ	Jerry Johnson written testimony: July 19, 2000
JohnsonT	James and Toni Johnson written testimony: July 17, 2000
KCAC	Edward J. Kleber President KCAC, Inc. written testimony: July 12, 2000
Klein	Megan Klein written testimony: June 21, 2000
Knecht	Susan Knecht written testimony: June 21, 2000
KNF	Margaret J. Boland, Forest Supervisor Klamath National Forest U.S. Department of Agriculture written testimony: July 14, 2000
Lake	D.W. “Bill” Merriman Chair Lake County Board of Supervisors written testimony: July 18, 2000
LCAQMD	Bob Reynolds Air Pollution Control Officer Lake County Air Quality Management District written testimony: July 20, 2000 oral testimony: July 20, 2000
Lee	Clare Lee written testimony: June 21, 2000
Lehrer	Debi Lehrer written testimony: June 21, 2000
Levy	Jennifer Levy written testimony: July 5, 2000
Lichaa	Stephanie Lichaa written testimony: June 21, 2000

Long	Kevin Long oral testimony: July 20, 2000
Marinaccio	Art Marinaccio oral testimony: July 20, 2000
Marks	Anna Marks written testimony: June 22, 2000
Marquez	Tony and Sharon Marquez written testimony: July 12, 2000
Martin	Sherry Martin written testimony: June 18, 2000
MBGE	Mitchell Brown, Vice President Mitchell Brown General Engineering, Inc. written testimony: June 6, 2000
McArthur	Lori McArthur written testimony: June 14, 2000
McElver	Linda McElver written testimony: July 5, 2000 written testimony: July 23, 2000
McLane	Bonnie McLane written testimony: July 16, 2000
McMahan	Lance K. McMahan, CE written testimony: June 19, 2000 oral testimony: July 20, 2000
MillerG	GC Miller written testimony: June 24, 2000
MillerR	Rob A. Miller written testimony: July 13, 2000
Moore	Thomas Moore written testimony: June 20, 2000
Neill	Todd Neill written testimony: June 23, 2000

Nelson	Grant Nelson written testimony: June 21, 2000
NMC	Craig Smith General Manager Newmont Mining Corporation written testimony: July 13, 2000
NRDC	Janet Hathaway National Resources Defense Council oral testimony: July 20, 2000
OEHHA	Val F. Siebal Chief Deputy Director Office of Environmental Health Hazard Assessment written testimony: July 19, 2000
OlivaJ	John Oliva written testimony: June 14, 2000
OlivaR	Raymond Oliva oral testimony: July 20, 2000
OMYA	Manfred Keil Plant Manager Omya (California) Inc. written testimony: July 12, 2000
Pechner	Freda D. Pechner Attorney At Law written testimony: June 8, 2000, June 15, 2000 oral testimony: July 20, 2000
Pender	Dr. Sarah Pender, Professor, Clinical Psychologist, Advisor Outdoors Club written testimony: July 12, 2000
Pierce	Mark Philip Pierce written testimony: June 23, 2000
PIT	A. Crawford Cooley, Trustee Porter Irrevocable Trust written testimony: July 7, 2000

Powell	Charley Powell written testimony: July, 2000
Price	Robert Price written testimony: July 10, 2000
Proe	Steven Proe oral testimony: July 20, 2000
REA	Robert J. King Redwood Empire Aggregates written testimony: July 7, 2000
Rodgers	Adrienne Rodgers written testimony: June 21, 2000
RP	E.A. “Rick” Navarro, PE Manager of Engineering and Environmental Affairs Raisch Products written testimony: July 7, 2000
RSS	Clyde Warren Rancho San Simeon written testimony: July 5, 2000
Saddik	Samuel Saddik written testimony: June 21, 2000
Sandford	Heather Sandford written testimony: June 21, 2000
Sbonelli	Sbonelli written testimony: June 21, 2000
SCDPW	D.A. Gravenkamp, Director of Public Works Brian McDermott, Deputy Director of Public Works/Roads Siskiyou County Department of Public Works written testimony: June 12, 2000 Brian McDermott, Deputy Director of Public Works oral comments: July 20, 2000
Scott	Catherine Scott written testimony: July 7, 2000

SRPI	James D. Hatler Sierra Rock Products, Inc. written testimony: June 10, 2000, July 13, 2000, July 14, 2000 oral testimony: July 20, 2000
STC	Mark Pawlicki Simpson Timber Company oral testimony: July 20, 2000
Steele	Ann L. Steele written testimony: July 24, 2000
TAOEDC	Virginia Crespo President Taxpayer's Association of El Dorado County written testimony: July 17, 2000 oral testimony: July 20, 2000
TDLF	Mark D. Harrison Michael V. Brady The Diepenbrock Law Firm written testimony: July 14, 2000 oral testimony (Mark D. Harrison): July 20, 2000
Tessa	Tessa written testimony: July 5, 2000
Thomas	Craig Thomas, Conservation Director Center for Sierra Nevada Conservation written testimony: July 12, 2000
Thompson	Rory B. Thompson written testimony: June 21, 2000
Trent	Terry Trent written testimony: July 2, 2000 oral testimony: July 20, 2000
USEPA	Deborah Jordan, Acting Director U.S. EPA Region IX written testimony: July 18, 2000

USEPA	Den Arnold U.S. EPA Region IX oral testimony: July 20, 2000
Vacum	Kitty Vacum written testimony: June 25, 2000
Vallance	Chuck Vallance written testimony: June 20, 2000
VargasJ	Joe Vargas oral testimony: July 20, 2000
VargasM	Melissa Vargas oral testimony: July 20, 2000
VGC	Robert J. Zaebest General Manager Castle Mountain Mine Viceroy Gold Corporation written testimony: July 17,2000
Vigus	E. Vigus written testimony: July 13, 2000
Wade	Wade and LaVonna written testimony: June 14, 2000
WCA	Richard O. DeAtley President West Coast Aggregates, Inc. written testimony: July 12, 2000
Weitzman	Larry Weitzman oral testimony: July 20, 2000
YCG	David C. Sederquist, C.E.G., C.HG., Project Engineering Geologist Youngdahl Consulting Group, Inc. written testimony: July 6, 2000

Comments and Responses

1.0 ATCM Development Process

1.1. Comment: The ARB cannot adopt any of the proposed amendments because none comply with the applicable provisions of the California Environmental Quality Act (CEQA), the California Health and Safety Code, or the California Government Code. (TDLF)

Agency Response: In adopting the amendments to the Asbestos ATCM, the ARB complied with all applicable provisions of California law. The commenter has supplemented this general comment with a number of more specific comments. These more specific comments describe in detail why the commenter believes that the ARB has violated applicable legal provisions. The commenter's more specific comments are set forth in this FSOR, followed by the ARB's detailed responses to these comments.

1.2. Comment: For toxic air contaminants (such as asbestos) where the ARB has not set a threshold exposure level, Health and Safety Code section 39665(b) requires the ARB to design an airborne toxic control measure that reduces emissions to the lowest level achievable through the application of best available control technology (BACT). BACT is not normally understood to include total prohibition of a substance, but rather some type of emission control. While it cannot be said that BACT or the controlling provisions of the Health and Safety Code would absolutely disallow the prohibition contemplated by the proposed amendments, it should be viewed as atypical, and unusually stringent application of BACT. In light of this, the proposed amendments should merit special scrutiny by the ARB in terms of the data presented to support the stringent approach advocated. (TDLF)

Agency Response: While we agree that the proposed amendments represent BACT, we do not agree that there is anything atypical or unusual about the proposed method of control. For example, in the Chlorinated Toxic Air Contaminants ATCM for Automotive Maintenance and Repair Activities, which was adopted in April 2000, the ARB prohibited the use of perchloroethylene and other chlorinated solvents in several classes of automotive consumer products. The prohibition was justified because there are alternatives available that are as effective. The 1990 Hexavalent Chromium ATCM also prohibited the use of hexavalent chromium (Cr^{-6}) in cooling towers. As these examples indicate, it is not unusual to prohibit the use of a product that contains a toxic compound when there are alternatives available. This is the case with amended Asbestos ATCM. It is also worth noting that the aggregate produced at the 17 quarries potentially affected by the amended ATCM represents a small fraction (approximately 0.6 percent) of the total aggregate produced in the State. The affected products

in the Hexachromium ATCM represented the majority of the market share for that product class.

1.3. Comment: We do not believe that ARB has followed the provisions of the Health and Safety Code that require a comprehensive evaluation of emissions, exposure, risk, and cost benefit analysis. We do not believe that such an analysis would have resulted in a proposal to lower the permissible asbestos content level of asbestos in serpentine used for surfacing to 0.25 percent. (Bledsoe)

Agency Response: The ARB staff disagrees with these comments, which rather generally allege that the ARB has not followed the applicable provisions of the Health and Safety Code. The ARB staff's general response is that all of the provisions of the Health and Safety Code have been followed. This FSOR also summarizes a number of more specific comments, which contend that particular provisions of the Health and Safety Code were not followed. These more specific comments are responded to in detail in this FSOR. The commenter also generally contends that the ARB's analyses do not support staff's proposal to lower permissible asbestos content level to less than 0.25 percent. Staff's analysis is set forth in the ISOR, and is supplemented by additional analysis in the FSOR. Staff believes that these analyses fully support the proposed amendments.

1.4. Comment: We recently received the legal analysis provided by the Diepenbrock Law Firm dated July 17, 2000, to the Construction Materials Association of California (CMAC) regarding this ATCM and are alarmed by the fact that ARB failed to meet the minimum obligations under the Health and Safety Code and even failed to meet commitments made to the Board Members during the 1990 ATCM hearings. (GCI)

Agency Response: The commenter is indicating general agreement with the comments filed by the Diepenbrock Law Firm, dated July 17, 2000. This FSOR summarizes and responds to each of these comments, which are indicated by the abbreviation "TDLF." The ARB's responses to the TDLF comments address the concerns raised by the commenter, and are incorporated by reference herein.

1.5. Comment: The environmental impact analysis in the Initial Statement of Reasons (ISOR) does not comply with CEQA because:

The analysis in the ISOR states that the only potential adverse impacts of the Asbestos ATCM will be a slight increase in emissions of diesel particulates and criteria pollutants, as a result of increased truck travel between a quarry or mine and a delivery site. These conclusions are based on an analysis of only two mines. This analysis is flawed because it assumes, without any supporting

evidence, that the two mines analyzed are representative of all 799 mines that may be impacted by this ATCM in terms of distance between alternative aggregate sources and an affected mine. Presumably, the mines studied are the two mines in the “rapidly urbanizing” El Dorado County area. Thus, this analysis ignores the possibility that the impacts of the proposed amendments will be greater in areas that are not as developed – such as Siskiyou County or the Los Padres area – where there is not sufficient demand to support as many sources of aggregate. More importantly, a particular geographic locale is likely to have the same geologic composition. Accordingly, there may be hundreds of miles separating an area where aggregate is needed and a non-serpentine and non-ultramafic source. Thus, trucks may have to travel more miles than the 25 to 50 assumed in the analysis. (TDLF)

Agency Response: The 799 mines cited by the commenter are all the mines active in the state of California. This number includes mines and quarries that are not located in ultramafic rock units, are exempt sand and gravel operations, or do not produce aggregate for sale. The number of potentially affected mines is much lower. The ARB staff identified the potentially affected mines and quarries using the maps provided by the DOC/DMG and refined the estimate by calling the potentially affected mines and quarries and the districts in which they were located. Staff's investigation identified only 17 that might have to do aggregate testing and only 3 of those that would experience a potentially significant economic impact due to the prohibition against selling aggregate with an asbestos content of 0.25 percent or greater. Staff identified the location of the nearest alternative source of aggregate for all three including the one in Siskiyou County. In Siskiyou County, the nearest alternative source was only a mile away. The evaluation in the ISOR is based on the greatest distance trucks would have to travel to obtain alternative materials. Therefore this analysis represents an upper-bound estimate of the increased diesel particulate emissions.

The geology of California is highly variable. There are some counties for which the maps indicate as much as one third of the surface area is in GURUs. However, even in these counties, the occurrence of ultramafic rock is discontinuous. Therefore it should not be necessary to travel hundreds of miles to find a source of rock suitable for surfacing.

Staff believes the analysis does evaluate the reasonably foreseeable impacts of the proposed revisions. It is not possible for staff to anticipate what mines or quarries might be developed in the future and further this would be an impact of increasing population and development not of this proposed ATCM.

The Health and Safety Code (H&SC) requires that the regulatory impacts be analyzed using the best data that is reasonably available. The H&SC does not require that we speculate on what sources may or may not be developed in the

future. The analysis did not indicate that reduction of the public health risk from this emission source would be outweighed by the potential public health risk from the reasonably foreseeable effects of the control measure.

1.6 Comment: A more fundamental flaw in the ARB's CEQA analysis is that it fails to consider the environmental impacts of the project as a whole, and thereby violates CEQA's prohibition against "project splitting." In assessing the impacts of a project, agencies are required to assess the impacts of the current project viewed in conjunction with other current projects and probable future projects. The ISOR states that staff intends to present to the Board in the fall of 2000 another phase of the Asbestos ATCM. This future phase would be designed to control asbestos emissions resulting from quarrying, grading, and surfacing mining. The environmental impacts of this future phase must be analyzed now, before the current Asbestos ATCM can be adopted by the ARB. CEQA does not allow these two phases to be split into two separate projects, because doing so would artificially understate the potential cumulative impacts on the environment.

In this case, in phase 2 of the Asbestos ATCM, the aggregate industry will face a new series of regulations and concomitant increased costs of complying with those regulations. The elimination of revenue streams, caused by prohibiting the sale of serpentine for surfacing, along with new control measures at the mine or quarry, will affect aggregate operations in serpentine and ultramafic deposits. This may result in the closure of some operations. While we cannot provide specific information because staff's proposal for future controls has not yet been released, it is certainly foreseeable that in order to meet the demand for aggregate in these markets, new mines will have to be opened. These new mines could result in the conversion of open space to extractive uses, thereby impacting habitats for flora and fauna. Accordingly, the impacts of this plethora of mining regulations must be viewed together. (TDLF)

Agency Response: We do not agree with the commenter. For the following reasons, the ARB believes that the analysis contained in the ISOR fully meets the requirements of CEQA.

The commenter cites various CEQA cases that address splitting a single project into segments in order to artificially minimize the adverse environmental impacts of the project. A typical situation involving project "splitting" is one where a particular area of land is being developed or altered in some way (e.g., construction of a subdivision or commercial development, etc.), and adverse impacts like traffic and waste generation are artificially minimized by splitting the project into several little projects that relate to the same general land area.

The ARB's actions do not violate the CEQA prohibition against project "splitting," because the current ATCM and the future ATCM for Construction, Grading, Quarrying, and Surface Mining Operations (future ATCM) are separate projects.

The current ATCM regulates the sale and use of surfacing material for roads and other surfaces. The future ATCM will regulate individual emission sources like surface mining operations, grading activities, and construction sites, and would basically require such sources to use appropriate dust mitigation practices to reduce the potential for asbestos emissions from these activities. The adoption of the future ATCM will not change the scope or nature of the current ATCM, or the environmental impacts of the current ATCM. Although both ATCMs are designed to reduce asbestos emissions into the atmosphere, the two ATCMs are separate regulations that apply to different activities and a different universe of sources.

However, both ATCMs will require some quarries to do certain things, or refrain from doing certain things, even though the two ATCMs regulate different activities and impose different regulatory requirements. The affected quarries are basically ones that have serpentine, ultramafic rock, or naturally-occurring asbestos. So even though the future ATCM will affect a large number of sources in addition to just quarries, the fact that some quarries are impacted by both ATCMs is the basis of the commenter's argument that the two ATCMs are really a single "project." The commenter believes that CEQA requires both ATCMs to be analyzed together because the hypothetical economic impact of the future ATCM on some quarries, in combination with the economic impact of the current ATCM, will supposedly result in reasonably foreseeable physical changes to the environment that were not analyzed by the ARB. The commenter provides a description of the consequences that he believes to be "reasonably foreseeable." Basically, the commenter's argument is based on the implausible premise that whatever requirements are ultimately adopted by the ARB in the future ATCM will be so onerous (when combined with the economic impact of the current ATCM) that some quarries will be forced to shut down after the future ATCM is adopted. All of the alleged "foreseeable" environmental impacts result from the quarry closures that will supposedly result from these onerous requirements. As explained below, the ARB believes that these consequences are <u>not</u> reasonably foreseeable, because the commenter's conclusions are based on a number of very speculative assumptions and an implausible chain of reasoning.

First, the commenter assumes (on page 31 of the comment letter) that the future ATCM will impose such draconian control requirements that some quarries will be forced to close because they will no longer be profitable for them to continue in operation. Then the commenter assumes that after these quarries close down, the demand for aggregate will not be able to be met by increased production at the existing quarries that remain in operation, but that new quarries will have to open up somewhere in California. The final chain in this reasoning is that these new quarries (which will have to comply with CEQA and other environmental laws) will be allowed by permitting agencies to begin operating and to continue operating in areas where significant adverse environmental

impacts will occur to open space, flora, and fauna. The commenter concludes, therefore, that these adverse environmental impacts are "certainly foreseeable" and must be analyzed now.

It takes a leap of the imagination to call such impacts "foreseeable." The adoption of the current ATCM does not commit the ARB or take any particular approach in the future ATCM. The future ATCM can be structured in many different ways, and the ARB staff has not yet decided exactly what control measures are reasonable to propose. In making this decision, the ARB will hold public workshops and solicit input from the regulated industry. One major purpose of this process is to arrive at control measures that can be implemented without causing significant adverse impacts on the environment, or draconian economic impacts on businesses. The controls being considered at this time are "best management practices" that are currently required in many areas to minimize dust emissions. They include such reasonable, common sense measures as wetting material to be graded or excavated, stopping work if the wind speed is to high, limiting vehicle speed, keeping stockpiles of material moist during transfers, etc. Most existing quarries in California are currently operating under local air district operating permits that already contain these sorts of dust control requirements. Because of these existing requirements, it is likely that the economic impacts of the future ATCM on these quarries will be very small.

As mentioned previously, all of the "foreseeable" impacts mentioned by the commenter are based on the implausible premise that whatever requirements are ultimately adopted by the ARB in the future ATCM will be so onerous (when combined with the economic impact of the current ATCM) that some quarries will be forced to shut down. But such economic and environmental impacts are what the regulatory development and adoption process is designed to minimize. If proposed control measures are infeasible, counterproductive, or too costly, the regulated industry can point this out to the ARB, and the proposal can be appropriately modified before any controls are adopted.

To summarize, the commenter's analysis is based on assumptions that are speculative and improbable. CEQA does not require agencies to engage in such speculation when conducting an environmental analysis. All potential environmental effects of the future ATCM will be analyzed when the ATCM is proposed at which time a concrete proposal will actually be available to analyze. The requirements of the current ATCM will be part of the baseline environmental setting for the future ATCM, and the combined effect of both the current and the future ATCM will be considered as part of the environmental analysis prepared for the future ATCM.

1.7. Comment: Because staff has deferred consideration of the quarry and construction ATCM, the ARB cannot fulfill its obligations under CEQA to analyze

the whole of a project at one time. The industry most directly affected will not know the full impact of the ARB's actions until the second ATCM is circulated. By splitting the ATCM between surfacing and mining, quarrying, and construction, the ARB is not addressing the long-term economic and environmental impacts and thus not meeting the requirements of CEQA. (CMA, DSS, GR, RP, RSS, SRPI, TDLF, WCA)

Agency Response: This comment is addressed in the response to the previous comment.

1.8. Comment: Health and Safety Code section 57004 requires that an external scientific peer review be conducted for the Asbestos ATCM. The ARB has not conducted an external scientific peer review, as required by section 57004. Unless such a review is conducted, we will immediately file litigation to invalidate the rule and/or preclude enforcement thereof, until such time as a scientific peer review has been done. We are confident that if such a review is conducted, it will result in the conclusion that sound scientific knowledge, methods, and practices do not support the conclusion that further regulation is needed to protect the public health and welfare. (Pechner)

Agency Response: Section 57004 does not require an external scientific peer review of the amended ATCM. This section requires an independent review as part of the process for identifying and establishing health values for a toxic air contaminant. The Scientific Review Panel, which is an independent group of scientists established by Health and Safety Code section 39670. The Scientific Review Panel conducts this peer review as part of the identification process for the toxic air contaminant (or contaminants) that are being controlled by the ATCM (see Health and Safety Code section 39661(b) and (c)). For asbestos, the Scientific Review Panel performed this review in 1986, when asbestos was identified by the ARB as a toxic air contaminant. Health and Safety Code section 57004 does not require a separate peer review to be performed for the Asbestos ATCM, because section 57004 specifically exempts ATCMs from the peer review requirements of this section, if the peer review procedures of the toxic air contaminant identification process have been complied with (see Health and Safety Code section 57004(b), which refers to the toxic air contaminant provisions of Chapter 3.5 (commencing with section 39650) of Division 26 of the Health and Safety Code). This exemption applies to the Asbestos ATCM, because the peer review procedures for asbestos have been complied with.

The commenter also asserts that if a peer review were performed today, it would not support the need for further regulation. We do not agree with this statement. We do not believe that any peer review would find chrysotile asbestos to be benign. Although there is debate about the relative potencies of chrysotile asbestos and the amphiboles – mainly tremolite-actinolite – to cause mesothelioma, chrysotile is still considered as potent as the amphiboles in

causing lung cancer.

Further, the amended Asbestos ATCM addresses all forms of asbestos in the same manner, which is the appropriate approach because both chrysotile and to a lesser extent, tremolite-actinolite asbestos can be found in ultramafic-serpentine rock units across California. In many of the locations where chrysotile asbestos has been found, small occurrences of tremolite-actinolite occurrences have also been identified. It stands to reason that because both chrysotile and tremolite asbestos can be found in the same parent material (ultramafic/serpentine rock) that tremolite-actinolite asbestos will be emitted from surfaces covered with ultramafic/serpentine rock. Because both forms of asbestos can be found in the same source material and because chrysotile and the amphiboles have statistically equivalent potencies in causing lung cancer, the ARB would be remiss if we attempted to develop different control measures for the various forms of cancer based on a debated difference in their potencies to cause mesothelioma.

1.9. Comment: There is no new scientific evidence that indicates a reason for a change from the five-percent limit as established in the 1990 decision. The proposed change to 0.25 percent limit will result in extreme costs to El Dorado County and many other counties without justifiable health or public safety rationale. To date, neither the Air Resources Board, nor any other responsible agency has conducted peer reviewed epidemiological research that would justify the proposed changes. (TAOEDC)

Agency Response: There is new evidence which supports the need to lower the five percent limit adopted by the ARB in 1990. This evidence is summarized in Chapter III of the ISOR, and is also discussed in the responses to Comments 16.1 to 16.5. The economic impacts of the proposed ATCM are discussed in Chapter V of the ISOR, and in the responses to Comments No. 5.1 to 5.13. As these discussions indicate, the costs imposed by this ATCM would not be "extreme." Finally, the ARB believes that the requirements of the ATCM are justified to protect public health, and that the available evidence and research shows that the proposed changes are necessary. The ARB's rationale for this conclusion can be found throughout the ISOR and the FSOR.

1.10. Comment: The ARB has not provided sufficient “new” scientific data to revise an ATCM adopted by a previous Board. The ATCM adopted in 1990 utilized the same OEHHA risk assessment upon which the ARB is being asked to rely today. No new science has been peer reviewed by the OEHHA concerning asbestos, however you are being asked to reduce the acceptable level of asbestos in serpentine material from five-percent to the non-detect level (0.25 percent). (CMA)

Agency Response: As discussed in the response to the previous comment,

there is new data which supports the need to revise the 1990 ATCM. The commenter's issues about the risk assessment and the peer review process are addressed in the response to Comment No. 1.8.

1.11. Comment: There is no environmental study to show that there is a health risk in El Dorado County. Before the ATCM is adopted, have the data and studies analyzed by the foremost epidemiologists regarding the subject in the world. Have it analyzed by other people. ARB has a biased, one-sided view and their studies are biased. (Weitzman)

Agency Response: The data and analysis set forth in the ISOR demonstrate that a health risk exists for persons living near unpaved roads surfaced with asbestos-containing aggregate. This health risk exists throughout California, including El Dorado County, in areas where individuals are exposed to such conditions. The ARB staff is confident that the revisions to the ATCM are justified by the evidence, and does not see the need to have additional analysis performed by "the foremost epidemiologists… in the world." The data supporting the ARB's conclusions is further discussed in the responses to Comments No.14.1 to 16.5.

1.12. Comment: It is not clear to me that the hearing process that has been conducted by your organization has adequately or completely addressed the scientific aspects of your proposed rule making. It certainly has not considered the economic impacts of the proposed changes. (PIT)

Agency Response: We believe that the rulemaking process conducted by the ARB has thoroughly and accurately analyzed both the scientific and economic aspects of the proposed amendments. The analysis conducted by ARB staff is set forth in detail in the ISOR, and the commenter is referred to that document.

1.13. Comment: The Health and Safety Code has detailed provisions regarding the process the Board must go through before adopting an ATCM. These provisions essentially require a cost-benefit analysis. It is our position that the process has not been followed throughout, and therefore the Board has been deprived of the opportunity to select what is the best control measure. Our position is that there is out there that staff has not yet gathered (i.e. information regarding ultramafic rock and the aggregate facilities that may lie in ultramafic rock deposits). What we would like to see staff do is go in and gather the rest of the information to justify the measure, if it’s justifiable for the regulation of ultramafic rock. (CMAC)

Agency Response: The ARB staff has fully complied with all applicable provisions of the Health and Safety Code. In developing the proposed amendments, staff gathered and considered all relevant and reasonably available information. Additional comments alleging that the ARB has not

adequately investigated specific types of information are addressed in the Responses to Comments No. 1.2, 1.3, 1.4, 1.8, 1.27.

1.14. Comment: In 1990, the ARB adopted a content level of 5% for surface applications. This rule has been in effect for 10 years and proved to be an effective public health measure. (DSS, GR, RP, RSS, WCA)

Comment: The ARB asbestos staff report from 1990 is just as valid today as it was in 1990. I believe the staff was unable to make their case in 1990 that lower than five percent was necessary to protect public health. I don't believe they have come up with any new information that would indicate another standard is justified. The 1990 report suggested it would be a good idea to look at a rule where serpentine was not allowed to be used on high traffic paved surfaces, where the material was subject to abrasion, and then by addition of non-serpentine material over the years the problem would resolve itself. Any rule that you would put into place beyond that simple change is unjustified and unnecessary. (Marinaccio)

Agency Response: The ARB staff and other agencies have conducted additional monitoring studies since the adoption of the 1990 Asbestos ATCM. These studies show potentially significant public exposures to asbestos even when surfacing materials containing less than one percent asbestos (see Section III of the ISOR and the responses to Comments No. 16.1 to 16.5). Staff believes that this information justifies reconsideration of the limits of the 1990 ATCM.

1.15. Comment: I feel that control needs to be left with the local APCO and that the rules under the 1991 guidelines are sufficient and need not be expanded to ultramafic rock. Expanding the rule to include ultramafic rock would place a huge expense on suppliers for continuous testing, which we deem to be unnecessary. I do not feel that a statewide solution is warranted. I feel that individual counties should still have the power to enact more stringent guidelines as they deem necessary for the use of serpentine material in surfacing applications, which should be sufficient for the State of California. (SRPI)

Agency Response: The response to Comment No. 1.28 addresses the commenter's assertion that the ATCM should not be expanded to include ultramafic rock. Discussion of the cost impacts of the ATCM is contained in the responses to Comments No. 5.1 to 5.3. As these responses indicate, the cost to test ultramafic rock is estimated at approximately $0.06 to $0.10 per ton, which staff does not consider to be a "huge expense." Regarding the commenter's belief that adopting more stringent levels should be left completely to the discretion of individual counties, the ARB does not agree. Naturally-occurring asbestos exists throughout the state of California, and statewide standards are appropriate to address this problem. Moreover, many local counties and air pollution control districts (districts) have been understandably reluctant to

undertake the considerable work of amending the 1990 ATCM, without statewide guidance. A case in point is El Dorado County, which specifically declined to lower the allowable asbestos content of surfacing materials below five percent, and the Chairman of the Board of Supervisors stated his belief that this is a statewide issue best dealt with by the ARB. However, individual counties and districts would still retain the power under state law to adopt rules that are more stringent than the amended statewide ATCM (see Health and Safety Code sections 39666(d) and 39002).

1.16. Comment: We object to the proposed bifurcation of the requirements of the ATCM into surfacing and other uses of such materials. One fundamental flaw of this approach is that quarry operators cannot control how the materials they sell are used. The same materials can be used in many different applications and there is no way that the quarry can assure that materials containing threshold amounts of asbestos will not be used for surface applications. Equally fundamental is the fact that both the benefits and costs of increased regulation cannot be assessed on a use by use basis. (EBHJ)

Agency Response: The amended ATCM retains the same basic approach as the 1990 ATCM, which has been in effect for 10 years without causing any of the problems alleged by the commenter. The ATCM does not require quarry operators to control how aggregate is used after it leaves the quarry. If quarry owners are selling restricted material, they can simply ask prospective purchasers how they plan to use the material, and not sell restricted material to persons who plan to use it for surfacing. For restricted material that is intended for use in non-surfacing applications, the ATCM simply requires the quarry owner to provide the written warning notice set forth in subsection (d)(3). If a quarry operator has no reasonable basis to believe that a purchaser intends to use restricted material for surfacing, the operator would not be liable for subsequent misuse of the material by the purchaser or anyone else.

1.17. Comment: Under the 1990 regulation, maintenance operations on existing roads, and construction of new roads in serpentine deposits are exempt from regulation. The proposed regulation removes the reference to maintenance operations. The ARB states that maintenance operations will be covered in the proposed new regulations for mining, quarrying, construction and grading in asbestos-bearing rocks. It is impossible to fully evaluate the impacts of revisions to the surfacing regulation without an understanding of how the new proposed regulations will affect road maintenance practices on roads with existing serpentine aggregate. The two proposed new regulations (ATCM for Surfacing Applications and the ATCM for quarrying, mining, construction, and grading) should be put forward for public comments together, as the two regulations are closely related. We are concerned about how both regulations will impact current road management operations of the National Forest. (KNF)

Agency Response: To address the commenter's concerns, the exemption for maintenance operations on existing roads was reinstated as part of the 15-day modifications to the original proposal (see subsection (f)(3)).

1.18. Comment: Health and Safety Code section 39665(f) allows operators of stationary sources to submit an alternative method of compliance to the local APCO. If the alternative compliance method reduces the emissions and risks of the contaminant, and if there is a means of enforcing the proposed alternative compliance method, the APCO is required to approve the alternative compliance method.

Because the ISOR does not quantify the reduction in emissions and risks under the proposed amendments compared to the current ATCM, sources lack the information necessary to develop such alternative compliance methods. Accordingly, the proposed ATCM vitiates the alternative compliance provisions of the Health and Safety Code. Administrative agencies cannot abrogate by regulation what the Legislature has provided by statue, yet the proposed amendments do just that. (TDLF)

Agency Response: The commenter is incorrect in asserting that the ATCM cannot legally be adopted because of Health and Safety Code section 39666(f). The commenter has confused the ability to reliably quantify the total asbestos emissions and risk reductions throughout the state of California (for which it would be necessary to have a detailed statewide inventory of unpaved serpentine roads and other sources of naturally-occurring asbestos) with the ability to estimate the emissions from an individual source.

For an individual source of asbestos emissions, the requirements of the ATCM essentially result in a reduction in asbestos emissions to the limit of detection under the specified test method. Section 39666(f) provides an option for an individual source that wishes to use an alternative method or methods of compliance. An individual source would still be able to use an alternative method of compliance, as provided by section 39666(f), if the source can demonstrate that its proposed alternative method would reduce the asbestos content of aggregate material used for surfacing to such an extent that there are no asbestos detectable using the specified test method (and that the alternative method is enforceable, and will achieve reductions within the same time period required by the ATCM.)

Such a demonstration would meet the criteria in section 39666(f) that the alternative will achieve "equal or greater amounts of reductions in emissions and risk." This is obviously true with regard to "reductions in emissions" (since an emission reduction is associated with a reduction to non-detectable asbestos contents occurs in each case). But it is also true, with regard to "reductions in risk," because reducing emissions from a source to levels associated with

non-detectable asbestos contents by using an alternative method should result in the same reduction of risk as applying the ATCM requirements to that source, even if the exact numerical risk reduction cannot be quantified. To make a demonstration that the risk reduction would be "equal or greater" for an individual source, it would thus be unnecessary to quantify the reduction in risk for either the entire state or an individual source – all one needs to know is whether the source of emissions (the aggregate material) will have its asbestos content reduced to non-dectable levels. Therefore, the commenter is incorrect in asserting that the lack of statewide emission reduction estimates, or the lack of risk reduction estimates (either statewide or for an individual source), would preclude a source from utilizing the provisions of section 39666(f).

1.19. Comment: The government does not want to adequately protect the public from asbestos. (Trent)

Agency Response: We disagree with comment. The adoption of the amendments to the Asbestos ATCM is an example of the ARB's commitment to protecting the public from asbestos.

1.20. Comment: Our understanding is that the proposed rule is primarily intended to restrict the use of asbestos-containing material from use as a road surfacing material. We recommend that an introduction to the ATCM define the intent of the measure. (Caltrans)

Agency Response: It is not necessary to add an introduction to the ATCM. The "Applicability" section of the ATCM (subsection (b)) describes the activities regulated by the ATCM, and subsections (c), (d), and (e) succinctly set forth the basic requirements of the ATCM. The ARB staff spent considerable time revising these sections to make the language as clear and nontechnical as possible. We do not believe that adding an introduction would improve the overall clarity of the ATCM.

1.21. Comment: Changing the title from "for Asbestos Containing Serpentine" to "for Surfacing Applications" changes the ATCM from a toxic substance control to a construction process control (surfacing). (HA)

Agency Response: We disagree with this comment. Both the 1990 Asbestos ATCM and the amended ATCM are designed to control asbestos emissions, and they both do this by imposing restrictions on the sale and use of certain aggregate material for surfacing applications. The new title is appropriate because it accurately describes the scope of the amended ATCM.

1.22. Comment: The rulemaking process was not well publicized. State agencies are encouraged to visit local agencies and public meetings to keep citizens informed. (Goresuch, SCDPWT)

Agency Response: We disagree with this comment. The rulemaking process was very well publicized. Staff held three public workshops that were not only noticed via mail and electronic mail, but were also noticed in the local press, including the Sacramento Bee and the Mountain Democrat. Furthermore, any individual that requested to be placed on our mailing list received notice of the workshops and copies of draft documents if requested. All draft documents and public notices were also made available on the ARB's website along with other documents that provided information on asbestos. Staff also offered to meet individually (and did meet) with interested parties that wanted to discuss issues associated with the development of the amendments. These meetings included local air districts, community groups, county planning agencies, Caltrans, CalOSHA, Department of Mines and Geology, the U.S. Geological Survey, the U.S. Forest Service, the Bureau of Land Management, the U.S. EPA, and aggregate-producing, mining, and timber industry associations. Staff also made numerous site visits to quarries, other impacted industries, and affected community meetings during the regulatory development process. Staff held hundreds of telephone conversations with various members of the public and responded to numerous emails and letters received regarding the development of the amended ATCM.

1.23. Comment: The Initial Statement of Reasons does not address the handling of toxic materials such as disturbing it at the site by blasting, loading it onto trucks and unloading, and using conveyors for transport. (Goresuch)

Agency Response: These activities will be addressed as part of a follow-up rulemaking action that will cover construction, grading, quarrying, and surface mining activities.

1.24. Comment: The ATCM constitutes a regulatory "taking" of the property of my client and other owners of serpentine rock quarries. Therefore, my clients will be entitled to compensation from the State of California under Article 1, section 19 of the California Constitution. The State will be required to purchase the quarries at fair market value. (Freda Pechner)

1.25. Comment: While the asbestos problems of El Dorado County are acute, it does not follow that the remainder of the state should be saddled with restraints so great as to destroy the economic viability of a needed resource. The end result will be a “taking” in the legal sense, without compensation to the owners. (PIT)

Agency Response: The commenters’ interpretation of the law is not correct. The courts have consistently held that pollution control regulations like the Asbestos ATCM are not regulatory “takings” that violate the U.S. and California Constitutions. To briefly summarize a complex area of law, the courts have basically held that regulations do not constitute a “taking” unless they fail to

advance a legitimate state interest, or they deprive a property owner of substantially all reasonable use of their property. The Asbestos ATCM does not constitute a taking because it advances the legitimate state interest of protecting public health by reducing asbestos exposure, and quarry owners are not deprived of all uses of their property because they can continue to sell rock – regardless of its asbestos content – for non-surfacing uses.

1.26. Comment: Our company holds a leasehold interest to a quarry, which will be destroyed if the proposed regulation is adopted. This deposit contains some serpentine, with asbestos content substantially below the existing threshold, but greater than the proposed level. Implementation of the proposed regulations will destroy all economic value of this leasehold interest and is likely to constitute a taking of that interest. We suspect that there are many other quarries, which are similarly situated and that the proposed regulations will subject the State of California, and taxpayers, to substantial damage exposure. (EBHJ)

Agency Response: As explained in the response to the previous comment, the Asbestos ATCM does not constitute a "taking" of property under California or federal law. The amended Asbestos ATCM only prohibits the use of certain aggregate material for surfacing, if its asbestos content is 0.25 percent or greater. The regulation does not prohibit the use of this material for non-surfacing purposes such as base rock or fill. Therefore, we do not believe the regulation “will destroy all economic value" of the commenter's leasehold interest.

1.27. Comment: The ARB cannot legally expand its current ATCM beyond "serpentine" to regulate the entire class of "ultramafic rocks," because the ARB has not complied with its information-gathering duty under Health and Safety Code section 39665(b).

All of the ARB's efforts during the 1990 ATCM process and afterward have focused on emissions of naturally-occurring asbestos from serpentine. The Initial Statement of Reasons (ISOR) does not explain why the decision was made to include the entire universe of ultramafic rocks as the regulatory target, and the ISOR presents no evidence that would justify this decision. Serpentine is the chief source of naturally-occurring asbestos in surfacing applications throughout the state. The ISOR presents no evidence that any asbestos emissions are occurring from unpaved roads surfaced with "non-serpentine ultramafic rock." The ISOR presents no evidence that since 1990, any confusion has existed as to what constitutes "serpentine" or “serpentine material" regulated under the existing ATCM. The ISOR presents no evidence regarding the frequency of occurrence of asbestos in non-serpentine ultramafic rock, or the levels of asbestos that may be present within documented occurrences. The decision to include "ultramafic rocks" is simply not supported by the evidence. (TDLF)

Agency Response: The commenter is not correct in stating that the ISOR gave no reason why staff included ultramafic rock for regulation. The following is an excerpt from page II-1 of the ISOR:

> "The host rock for chrysotile asbestos is serpentinite (hereafter referred to as serpentine or serpentine rock). Serpentine is widely distributed in California. It is mostly derived from the ultramafic rock, peridotite. Serpentine usually occurs near major faults or within fault zones. Chrysotile asbestos veins can be found in many of the serpentine masses in California.
>
> "Ultramafic rocks are those igneous rocks composed mainly of the iron-magnesium silicate minerals. They include the rock types dunite, peridotite and pyroxenite. Metamorphism of ultramafic rocks usually results in the formation of the rock serpentine. Because metamorphism of ultramafic rocks to produce serpentine normally proceeds in successive steps rather than all at once, many ultramafic rocks will only be partially converted to serpentine when they are finally exposed at the surface of the earth. Asbestos may form at any time during the conversion of ultramafic rocks to serpentine if the physical and chemical conditions are right. Consequently, depending on its metamorphic history, serpentine may contain chrysotile asbestos, tremolite-actinolite asbestos, or both.
>
> "Tremolite and actinolite asbestos are the most common amphibole mineral group asbestos types in California. Tremolite asbestos has been found in most of the counties of the Sierra Nevada and the Klamath Mountains. It generally occurs in veins associated with fault or shear zones in serpentine. Such veins are ordinarily no more than a few inches wide, but some contain pockets several feet wide and maximum lengths on the order of 50 to 110 feet (Churchill, 2000). Tremolite and actinolite asbestos also occurs along serpentine contacts with other metamorphic rocks (rocks that have been transformed from their original state due to temperature, pressure, and chemical environment)."

Further, staff discussed the potential for ultramafic rock to contain asbestos in the staff's presentation given at the July 20, 2000 Board Hearing. The information that staff provided was supported by the State Geologist, Mr. Jim Davis, in oral testimony he provided during the Board hearing. Mr. Davis remarked that the Department of Conservation, Division of Mines and Geology (DMG) produced a map (for El Dorado County) which indicated the areas where asbestos is most likely to be found, which are the ultramafic rock units. The staff

of the DMG also suggested that serpentine and ultramafic rocks be regulated in the same fashion because of difficulty in consistently distinguishing between ultramafic rock and serpentine rock. In short, the administrative record for this rulemaking action contains ample evidence regarding why it is appropriate to include ultramafic rock in the ATCM.

1.29. Comment: The commenter is concerned that the draft revisions to the ATCM unfairly restrict the property rights of Californians. The current threshold of five percent for naturally-occurring asbestos may be appropriate for many situations. The concern is that the ATCM will serve as the Standard of Care and be interpreted as a threshold for exposure and mitigation in environmental studies at schools and residences. In other words, the environmental specialist will be bound to report that rock and soil concentrations exceed the levels established in the ATCM. Logically, it follows that remedial measures may include covering such exposures with asphalt or concrete. The potential impacts to the environment from covering such exposures are very significant. (CE)

Agency Response: The ATCM addresses the sale or use of aggregate material for surfacing applications. For such applications, the ARB has concluded that an asbestos content of 0.25 percent is an appropriate regulatory level. Specifying a 0.25 percent level in the ATCM is not a determination by the ARB that this same threshold level should be utilized in all other situations where naturally-occurring asbestos is present (such as situations where the naturally occurring asbestos is left in place and not disturbed). It is not appropriate for the ARB to speculate regarding the level of asbestos concentration (i.e., five percent, 0.25 percent, or some other percentage) that an environmental specialist might consider to be significant in a particular situation. Such a determination should be based on all the facts in a particular case, and would not be dictated by the provisions of the ATCM. Therefore, it is simply not realistic for the commenter to assume that wholesale paving of surfaces with asphalt or concrete will occur as a result of the ATCM. Furthermore, even in situations where someone concludes that covering naturally occurring asbestos is desirable, there are other options besides using concrete or asphalt (such as using aggregate or soil that does not contain asbestos).

1.30. Comment: The Board cannot exercise balance and judgement in the absence of quantitative estimates of the risk reduction that would be attained. (TDLF)

Agency Response: We do not agree with this comment. It is basic common sense that the ARB does not need to quantify the exact level of risk reduction in order to decide that reducing the public's exposure to asbestos emissions is good public policy. To cite more specific legal references regarding the Board's responsibilities, Health and Safety Code section 39666(c) states that for toxic air contaminants for which the Board has not specified a threshold exposure level, the Board is required to develop an ATCM that will reduce emissions to the

lowest level achievable through the application of best available control technology." Health and Safety Code section 39650(c) also states that it is necessary for the Board to take action to protect the public health, even when absolute and undisputed scientific evidence may not be available to determine the exact nature and extent of risk from toxic air contaminants. These directives indicate that the Legislature expected the ARB to take action even when it is not possible to specifically quantify the risk reduction of the proposed ATCM. Further discussion of risk reduction quantification issues can also be found in the response to Comment No. 1.20.

1.31. Comment: Many members of the Construction Materials Association of California (CMAC) were extensively involved in the administrative process that produced the 1990 Asbestos ATCM. Because some of the same issues arise in connection with the amendments to the 1990 ATCM that are now being proposed, and because ARB staff have incorporated by reference much of the 1990 material, CMAC requests that the industry comments submitted in 1990 also be included in the record for the proposed amendments. (TDLF)

Agency Response: The ARB does not believe it is necessary to nonselectively include every single comment letter from 1990. Some of the issues raised in the 1990 comment letters may be relevant to the current rule, but others are not. In response to the commenter's request, however, in the 15-day notice ARB staff added to the rulemaking record the Final Statement of Reasons (FSOR) for the 1990 ATCM. The FSOR for the 1990 ATCM includes summaries of all the 1990 comment letters, and the responses of ARB staff. Staff believes that including the FSOR in the record should satisfy the commenter's basic concern.

1.32. Comment: The County of El Dorado does not feel it is appropriate for them to comment on the amended ATCM.

Agency Response: No response required.

2.0 ATCM Implementation

2.1. Comment: Implementation of the ATCM by all of the air pollution control officers needs to be consistent. The content and form of the receipts required for transporting serpentine and ultramafic rock material should be uniform. (Caltrans)

Agency Response: The ARB agrees that statewide consistency is desirable in the content and form of receipts. The ARB staff has committed to work with the local districts to develop non-binding models that can be used by the districts and industry to help promote uniformity in the contents of the receipt. The ARB is requiring that producers of ultramafic rock for surfacing, other persons – other

than producers of ultramafic rock for surfacing – and persons who sell material for non-surfacing applications follow the requirements in subsection (d). To promote consistency, the ARB staff, in consultation with the districts, is developing an implementation guidance document that the districts and affected industry can use as a resource document for implementation and compliance with the amended ATCM. It is intended that the local air districts will utilize this document to create a form that will contain the required information; however, the district can create forms that will be in the format that is suitable for that individual district.

2.2. Comment: The document does not contain enforcement or penalties for non-compliance. These penalties should be at such a level so businesses cannot afford to buy non-compliance. (Goresuch, Marquez)

Agency Response: It is not necessary to include enforcement or penalty provisions in the text of the Asbestos ATCM, because the Legislature has already specified appropriate civil and criminal penalties in Health and Safety Code sections 39674 and 39675. These penalties apply to any person who violates any requirement of an airborne toxic control measure, including the Asbestos ATCM.

2.3. Comment: We would like to work with ARB staff on how the regulation is finally implemented because a secondary activity to harvesting timber is building roads. (CFPA)

Agency Response: The ARB is aware of and appreciates the timber industry's concerns and has and will continue to work closely with the local air districts and industry to address these concerns during implementation.

2.4. Comment: Will Cal-OSHA have any new roles? If asbestos is present, their health and safety requirements might have to be followed. (YCG)

Agency Response: This regulation does nothing to enhance or diminish the role of Cal-OSHA. Cal-OSHA requirements apply to worker health and safety and must be complied with independently of the amended ATCM.

2.5. Comment: The inclusion of ultramafic rock greatly expands the number of quarries subject to the regulation. There is no time frame indicating when regulated parties must comply. (CMA, EBHJ, RSS, WCA)

Agency Response: As provided in Health & Safety Code section 93666 (d), subsection (a) of the ATCM requires that local air pollution control and air quality management districts must take specific implementation actions no later than 120 days after the approval by the Office of Administrative Law. Quarry operators are encouraged to work with their local district in regard to the

districts' implementation and enforcement time frames.

2.6. Comment: There should be a consistent and scientifically-based rationale behind the authority given the Air Pollution Control Officers for requiring additional geologic evaluations of areas for serpentine and asbestos-containing materials. (Caltrans)

Agency Response: Subsection 93106 (g) of the amended ATCM provides the district with explicit authority to request the owner or operator to either perform a geologic evaluation of property from which aggregate material is being extracted or conduct asbestos testing of aggregate material being sold for surfacing. This authority does not mean that the district will arbitrarily make such a request. The district would act on a reasonable indication that the property may have ultramafic rock or other asbestos-bearing rocks. Reasonable indications include geologic reports or evaluations, more detailed geologic maps, information that the property is located in alluvial fans directly downstream of ultramafic rock deposits and may be contaminated with asbestos, or asbestos found in aggregate that originated from the property. The amended ATCM would apply if the geologic evaluation demonstrates that ultramafic rock or another asbestos-bearing material is present on the property or if asbestos testing resulted in an asbestos content of 0.25 percent or greater.

2.7. Comment: What scientific reasons are valid for the Air Pollution Control Officers to exercise their authority under subsection (g)? Currently, the regulation states that the Air Pollution Control Officer may require testing, but provides no minimum criteria that must be met before the Air Pollution Control Officer exercises that authority. (CMA)

Agency Response: The ARB and others, including the U.S. EPA, have conducted studies that indicate that unpaved surfaces containing material even with an asbestos content of less than one percent continue to present a potential health risk from exposure to airborne asbestos. As indicated in the staff report, health officials agree that all forms of asbestos are carcinogens and that exposure to asbestos should be minimized. In efforts to minimize asbestos exposure, the ATCM prohibits the use of serpentine, serpentine material, and ultramafic rock that has an asbestos content of more than 0.25 percent on unpaved surfaces. Therefore, the ATCM has given the Executive Officer of either the local air district or the ARB the authority to require testing of any surfacing material that he or she has reason to believe may contain a detectable asbestos content.

2.8. Comment: Denial of a discretionary exemption should be accompanied with a statement of reasons explaining the Air Pollution Control Officer's basis for denial. (CMA)

Agency Response: The ARB agrees with this comment, therefore, we have incorporated into the 15-day changes that if an exemption is denied, the APCO shall provide written reasons for the denial.

2.9. Comment: The Air Pollution Control Officer is not given a time limit under Section (f)(7) to act on a request for exemption. General language should be adopted to ensure local districts consider exemptions in a timely fashion. (CMA)

Agency Response: The ARB agrees with this comment and has added a provision that requires the APCO to respond to a request for an exemption within 90 days of the receipt of the application.

2.10. Comment: The additional requirement for testing by the Air Pollution Control Officers should be based on standard procedures used statewide. (Caltrans)

2.11. Comment: The criteria for allowing the Executive Officer discretion in determining whether aggregate from sand and gravel operations should be tested should specify the circumstances under which aggregate from sand and gravel operations will be tested. (USEPA)

Agency Response (Comments No. 2.10 and 2.11): The amended ATCM allows the district to require the testing of any aggregate material. The district's decision to require testing can be based on whether there may be reason to believe that there may be a detectable asbestos content in the surfacing material or based on information from a geologic evaluation. The ATCM, however, does not specify the conditions under which the district can make this requirement. In light of this, the ARB, in consultation with district staff and the DMG, is developing implementation guidelines that would suggest the criteria to be used when requiring testing of aggregate material that originates outside the boundaries of a geographic ultramafic rock unit. These criteria would address aggregate extracted from sand and gravel operations. These guidelines will provide suggested criteria and the districts have the prerogative to develop criteria of their own and the final determination of when to require testing resides with the district.

2.12. Comment: The Air Pollution Control Officer should be allowed latitude in approving testing, and that it not be reserved exclusively to the ARB Executive Officer. (Lake)

Agency Response: As noted in the ATCM, the approval of testing is not reserved exclusively to the ARB Executive Officer. The ATCM specifies that the APCO has the authority to request and approve testing of aggregate material that originates outside of a geographic ultramafic rock unit. What is specific to the Executive Officer of the ARB is the authority to approve an alternative test method to be used for testing if Test Method 435 is not being used. The district

also has the authority to reduce the frequency at which aggregate material is tested, provided certain criteria specified in the amended ATCM are met.

3.0 ATCM Focus/Rock Type

3.1. Comment: The ATCM should be rejected and it should focus on only serpentine rock. The scope of the ATCM should be returned to the original proposal to only apply to aggregate operations, all references to ultramafic rock units should be removed, and technical changes should be made to the exemption process. Adoption will set a dangerous precedent for other potential regulations affecting this industry. (CE, CMA, GCI, HA, SRPI, TAOEDC, TDLF)

Agency Response: According to the staff at the Department of Conservation, Division of Mines and Geology (DMG), with whom ARB staff consulted on geologic matters, serpentine rock is a metamorphic derivative of ultramafic rock. Depending on the degree of this transformation (called serpentinization), it may be difficult for a geologist to consistently identify serpentinized ultramafic rock as serpentine rock. Most occurrences of serpentine consist of transformed ultramafic rock that has been partially to almost completely serpentinized. Since the identification of serpentine is somewhat subjective and varies from geologist to geologist, the staff at the DMG recommended regulating ultramafic rock and serpentine rock equivalently.

Furthermore, the DMG staff has indicated that asbestos is more likely to be found not only in serpentine, but also in ultramafic rock, which is referenced on the State's geologic maps. The occurrence of asbestos beyond ultramafic rock is rare in California. Therefore, we believe that these amendments further reduce the potential for health risks associated with asbestos emissions from unpaved surfaces.

3.2. Comment: If serpentine rock does not contain asbestos, it should not be restricted from use. (YCG)

Agency Response: Staff agrees with this comment. The amended ATCM does not prohibit the use of serpentine that has been demonstrated to be compliant with the asbestos limit. If serpentine or ultramafic rock is tested according to ARB Test Method 435 and determine to have an asbestos content that is less than 0.25 percent, then the material can be used without restriction.

3.3. Comment: There is much concern about the expansion of the proposed amendments that were included in the July 12, 2000, draft of the ATCM. These changes included the application of the ATCM to all mined materials, not just surfacing materials. (CMA)

Agency Response: ARB staff recognized that there existed the potential for the language of the proposed amendments to be interpreted as including any material originated within a geographic ultramafic rock unit. In consideration of this potential interpretation, staff clarified the definition of "restricted material" to mean aggregate material, which would exclude material that would not typically be used in the construction of roads and surfaces, such as ore, gemstones, and timber.

3.4. Comment: It is likely that most, but not all, serpentinite (serpentine rock) contains 0.25 percent fibrous chrysotile. (Coleman)

Agency Response: Staff does not disagree with this comment. The likelihood of serpentine containing asbestos depends on many geological factors. While we agree that there is a high probability that serpentine may contain asbestos, we are aware of situations where serpentine had been tested and no asbestos was detected in the samples. This is why we do allow the use of serpentine if tested and no asbestos detected.

3.5. Comment: Are other minerals besides the six regulated asbestos minerals going to be included in the ATCM? (CE)

Agency Response: The amended ATCM only addresses asbestos as defined as the six asbestiform minerals listed in subsection 93106: chrysotile (fibrous serpentine), crocidolite (fribrous riebeckite), amosite (fribrous cummingtonite-grunerite), fibrous tremolite, fibrous actinolite, and fibrous anthophylite.

3.6. Comment: Ultramafic rock does not necessarily contain serpentine. (Bloechl)

Agency Response: The ATCM seeks to control all varieties of asbestos, not just the variety of asbestos most commonly found in serpentine, which is chrysotile. Other varieties of asbestos can also be found in ultramafic rock. According to the staff at the DMG, natural occurrences of asbestos are more likely to be found in and immediately adjacent to areas of ultramafic rock than in other rock types common in California. Because of the likelihood of asbestos being found in ultramafic rock, staff believes it is prudent to have the material tested for the presence of asbestos before it can be used for unpaved surfacing.

3.7. Comment: The proposed amendments suggest that the ARB can impose the burden on a source to "prove the negative." In other words, a source would have to prove that they do not have the specific rock types of concern or asbestos then, use this "proof" as evidence to apply for an exemption, even when no data connects the source to emissions subject to the control measure. (CMAC, TDLF, Bledsoe)

Agency Response: Staff believes the amended ATCM effectively balances the "burden of proff" with an "assumption of innocence." Aggregate extracted within a geologic ultramafic rock unit is assumed to contain asbestos unless the producer demonstrates that the material is not ultramafic rock (including serpentine) or that the rock does not contain asbestos. Outside of the geographic unit, it is assumed that extracted aggregate does not contain asbestos and is, therefore, not subject to this measure unless naturally-occurring asbestos is found.

3.8. Comment: There is a huge body of work in the scientific community that says that chrysotile and amphiboles are two different types of asbestos. (Weitzman)

Agency Response: Staff agrees with the commenter. There are two classes of asbestos: serpentine and amphibole. Chrysotile is the only asbestiform variety of the mineral, serpentine. The remaining five identified asbestiform mineral types (actinolite, tremolite, amosite, crocidolite, anthophyllite) fall under the amphibole class heading. This information has been documented in the staff report and in staff's presentation to the Board.

3.9. Comment: When regulating asbestos, the federal community does not distinguish between chrysotile and amphiboles. They are all lumped together. (USEPA)

Agency Response: The ARB agrees with this comment. The ARB has taken a similar approach in the identification of asbestos as a toxic air contaminant and the determination of appropriate health values.

4.0 ATCM – Limit

4.1. Comment: The allowable asbestos content should be reported as numbers of fibers per gram rather than as percentage by weight. (Abraham)

Agency Response: The fiber per gram unit is an esoteric designation that would be virtually meaningless to the lay population and, consequently, would add unnecessary confusion to the regulation.

4.2. Comment: The 0.25 percent limit value is unreasonable and difficult to enforce. (Coleman)

Agency Response: Both modeling and monitoring data indicate that unpaved roads surfaced with aggregate with very small asbestos contents can result in significant potential risks to nearby receptors. Because of this, the amended ATCM was developed to eliminate the use of asbestos-containing material for surfacing applications. The approved test method for measuring the asbestos

content of aggregate material has a minimum detection limit of 0.25 percent. This minimum detection limit defines the regulatory limit for asbestos content. This level of 0.25 percent has an associated level of uncertainty of 0.14 percent, which makes the test method a reliable means of testing suspected aggregate for its asbestos content.

4.3. Comment: Existing Air Quality Management District programs should have the option of only changing five percent or one percent to 0.25 percent and the definition of serpentine to include ultrabasic and ultramafic rock in their adoption programs. (Lake)

Agency Response: Health and Safety Code section 39666(d) allows districts the option of changing the amended Asbestos ATCM as the district deems appropriate, as long as the changes results in a control measure that is equally effective (or more stringent) than the amended Asbestos ATCM.

4.4. Comment: The "less than ten percent clause" for ultramafic rock and serpentine could easily result in the exemption of material that is more than 0.25 percent asbestos (i.e. eight percent of the rock has four percent asbestos equals 0.32 percent, etc.). (Lake)

Agency Response: The commenter is referring to the definition of "restricted material," which specifies that any mixture of aggregate material will qualify as "restricted material" if the mixture contains ten percent or more of rock (such as ultramafic rock) that otherwise meets the definition of restricted material (see subsection (i)(20)(C)). The commenter is correct that there exists some potential that a mixture could contain a small percentage of ultramafic rock with a high asbestos content, thereby causing the mixture as a whole to exceed 0.25 asbestos content when tested using Method 435. On the other hand, some percentage cut-off for mixtures of aggregate must be specified in order to avoid imposing unreasonable costs on aggregate producers. This is because some quarries may contain small percentages of ultramafic rock in addition to the dominant rock type, and without a percentage cut-off there exists the potential that large amounts of aggregate would have to be tested because some ultramafic rock might be present. The ten percent cut-off threshold was selected as a way to reasonably balance both those potentials. If a district suspects that aggregate from a particular source may have a high asbestos content, the district has the authority to require testing of the material (see subsection (g)). If the material is determined to have an asbestos content of 0.25 percent or greater, it would qualify as "restricted material" under subsection (i)(20)(B)2.

5.0 Impact of ATCM

5.1. Comment: The ATCM will decrease aggregate supplies, increase cost, and

impact the ability for the state to meet infrastructure needs. (CMAC, DSS, GR, PIT, REA, RP, RSS, WCA)

Agency Response: As discussed in the ISOR, the amended ATCM is expected to have an insignificant impact on aggregate supplies. Only a small percentage of aggregate producers are expected to be impacted, which should have an insignificant impact on the State's infrastructure needs. There will be increased costs associated with testing quarries located in a serpentine or ultramafic rock formation. Staff estimates the cost for testing to be between $0.06 and $0.10 per ton of aggregate material.

5.2. Comment: The ATCM will restrict operations, result in financial hardship and will affect the lives of individuals and families. (CMA, FRC, MBGE, RSS, WCA)

Agency Response: The number of existing quarries potentially affected by this regulation will be less than 30. The amended ATCM will reduce the production and sale of aggregate with greater than 0.25 percent asbestos for surfacing applications. Quarries and surface mines that currently sell a significant quantity of asbestos-containing rock for surfacing would potentially experience a loss of revenue. However, this material can be still used for as road fill or base (if paved) and other alternative uses.

5.3. Comment: Expanding the ATCM to include ultramafic rock makes the test method more expensive and places a large burden on continual testing. (CMA, CMAC, GR, SRPI)

Agency Response: The testing required for ultramafic rock has the same cost as testing any aggregate for asbestos ($0.6 to $0.10 per ton). This cost is relatively modest and does not represent a large burden as claimed by the commenter. In addition, section (h)(4)(A) of the ATCM states that the APCO may approve an alternative sampling frequency if a quarry can establish a history of analytical test results demonstrating that no aggregate material sampled and tested had an asbestos content that was 0.25 percent or greater. The provisions allows testing costs to be significantly reduced in appropriate situations.

5.4. Comment: Health and Safety Code section 39665(a) requires the Staff Report to reflect that "affected sources" have been consulted, and to address "the categories, numbers, and relative contribution of present or anticipated sources of the substance." The ARB staff did not gather this information. The ISOR identified three serpentine quarries that would be affected by the proposed amendments, but never consulted with any non-serpentine ultramafic sources even though staff believed that such operations did exist and, therefore, would be seriously affected by the proposed amendments. The Staff Report contains no quantitative data at all on the actual presence of asbestos in non-serpentine extraction operations, or on the existence of roadways or other areas that use

non-serpentine ultramafic rock. (TDLF)

Agency Response: In developing the amendments, staff utilized all reasonably available sources of information. Neither the ARB staff nor the aggregate industry was able to identify any non-serpentine ultramafic aggregate producers. ARB staff believes that all potentially affected quarries have been identified. ARB staff contacted all mines and quarries in or near ultramafic formations that may be potentially affected. To do this, the staff used the Department of Conservation Geologic Map Sheets of California (1:250,000 scale), which show formations of ultramafic rock and the locations of all mines and quarries in California that hold current permits under the Surface Mining and Reclamation Act.

5.5. Comment: If the ATCM is adopted, the serpentine pit owned by Siskiyou County would become a liability and it would cost $60,000 to replace the material with commercially available alternatives. Furthermore, the long-term fiscal impacts to local governments, because of the loss of aggregate, have not been analyzed. (CMA, SCDPWT)

Agency Response: Quarries that do not meet the 0.25 percent asbestos limit will not be able to use or sell the rock for use on unpaved surfaces. County-owned quarries are not affected any differently than commercial quarries. The ISOR and the "Economic and Fiscal Impacts Statement (Form 399) contain long-term cost estimates for local governments. Specifically for Siskiyou County, staff estimates an increased cost of $31,000 to $60,000 per year.

5.6. Comment: Subsection (d) should have an exemption or be eliminated because if a company that is operating in an ultramafic rock zone is not buying or selling the material, then the recordkeeping requirement would be a burden that would have to be absorbed and would have no benefit. (CMA, FRC, STC)

Agency Response: It is not appropriate to include the suggested exemption in the recordkeeping requirements (which are now located in subsection (e) of the modified ATCM). A company located in an ultramafic rock zone could still use or apply restricted material for surfacing, even if they are not buying or selling it. For example, they could produce aggregate from a quarry located on a large parcel of property and use it to surface a road somewhere else on the property or on another parcel of property that the company owns. This surfacing material would have to be tested (as provided in subsection (c)) and records would have to be maintained (as provided in susection (e)(1)) so that a government inspector or a future purchaser of the property could verify that the road material does not contain asbestos. Similarly, subsection (e)(1) should continue to apply in such a situation because it would allow an inspector to verify that a truckload of material in transit could be used for surfacing. Regarding the remaining recordkeeping requirement, which is contained subsection (e)(3), it is not

necessary to include an exemption because, by its terms, subsection (e)(3) applies only to persons who sell, supply, or offer for restricted material for sale or supply.

5.7. Comment: The loss of aggregate sources will mean that more product will have to be transported longer distances resulting in increased cost, more air pollution, wear and tear of the road, and traffic congestion. (CMA, EBHJ, PIT, RSS)

Agency Response: The cost to purchase crushed aggregate includes the cost of the material plus the cost of transportation when it is delivered. If the quarry nearest to the consumer cannot supply material that does not contain asbestos, there may be an increase in the delivery cost and emissions from diesel-fueled delivery trucks. The cost to consumers is estimated to be less than a ten percent increase in the cost of the job. Most homeowners would experience no additional costs. Emission increases are estimated to be extremely small and insignificant when compared to statewide emissions of diesel exhaust from on-road diesel vehicles.

5.8. Comment: The analysis of the financial effect of the ATCM was wholly inadequate. I think that estimating that only an additional 500 miles a day of truck traffic would be caused by the ATCM is completely unrealistic of the realities of El Dorado County. A great portion of El Dorado County will be left with no material, and it will have to be trucked either out of Sacramento or Marysville. (Marinaccio)

Agency Response: The commenter seems to be implying that facilities affected by the ATCM in El Dorado County are the sole source of aggregate for "a great portion of El Dorado County." This is not correct. El Dorado County currently produces approximately one-third of the aggregate it consumes. Approximately two-thirds of local demand for sand, gravel, and construction aggregates is currently supplied by producers in Sacramento and Placer counties, and by producers in the State of Nevada. However, the ATCM only affects aggregate that will be used for unpaved surfacing applications from ultramafic or serpentine rock quarries, which is a very small percentage of the total aggregate used in the county. Therefore, the ATCM's effect on the total aggregate supply of El Dorado County will be minimal.

In the analysis conducted for the ISOR, staff identified three quarries that have asbestos contents of 0.25 percent or greater in their aggregate, and produce serpentine aggregate for unpaved surfacing applications. Staff then identified the next nearest source of alternate materials (and in the case of the facilities located in El Dorado County, sources were identified in El Dorado, Sacramento, and Placer Counties). The analysis of environmental impacts is based on the greatest distance to the alternate source and on the quantity of material sold in previous years for unpaved surfacing as reported by the sources. Staff has

determined that in some cases alternative sources of aggregate may have to be transported an additional 25 to 50 miles. This situation could occur if the alternative source of aggregate was not available in the near vicinity of a quarry producing serpentine or asbestos-containing ultramafic rock. (ISOR p. V-11) Staff's analysis does not understate the impacts of the ATCM; the analysis takes a conservative approach and, if anything, may overstate these impacts. The analysis is based on worst-case scenarios which may not occur, but are within the realm of possibility.

5.9. Comment: Additional testing and recordkeeping requirements make operations economically infeasible. (EBHJ)

Agency Response: As discussed in the ISOR, there will be increased costs associated with testing at quarries located in serpentine or ultramafic rock formations. Staff estimates the cost for testing to be between $0.06 and $0.10 per ton of aggregate material. The cost of additional recordkeeping is expected to be negligible. A dull discussion of the economic impacts of the amendments can be found in Chapter II of the ISOR. There is an option to reduce the frequency of testing. Subsection (h)(4)(A) of the amended ATCM allows the APCO to approve an alternative sampling frequency if a quarry can establish a history of analytical test results demonstrating that no aggregate material sampled and tested had an asbestos content that was 0.25 percent or greater.

5.10. Comment: The inclusion of ultramafic rock greatly expands the number of quarries subject to the regulation. There is not enough time to identify all mine operations that will be impacted by the ATCM. (CMA, EBHJ, RSS, WCA)

Agency Response: ARB staff believes that all affected quarries have been identified. ARB staff contacted all mines and quarries in or near ultramafic formations that may be potentially affected. The staff used the Department of Conservation Geologic Map Sheets of California (1:250,000 scale), which show formations of ultramafic rock and the locations of all mines and quarries in California that hold current permits under the Surface Mining and Reclamation Act.

5.11. Comment: The proposed ordinance concerning asbestos is not in the best interests of either the public or private sectors of El Dorado County. Since the Initial Statement of Reasons makes absolute assertions unsupported by science or fact, the Taxpayers Association requests that the County retain the five percent standard until a need for a change is verified by science. Present unfounded assertions can result in wide and substantial taxpayer liabilities such as unnecessary road paving, the purchase of businesses and property which are the actual target of this exercise, and result in widespread property devaluation. (TAOEDC)

Agency Response: There are no provisions in the amended Asbestos ATCM that require roads to be paved or businesses or properties to be sold or purchased, and there is no evidence that the ATCM will result in "widespread property devaluation." The amended ATCM will reduce asbestos emissions to the air from unpaved surfaces. Airborne asbestos is a toxic air contaminant and a known human carcinogen, and a public health benefit will result from reducing asbestos emissions. Staff believes that the statements in the ISOR are scientifically and factually supported, and that the evidence justifies the need to reduce the current five percent level to 0.25 percent.

5.12. Comment: An effort to evaluate the extensive reporting requirements, given the last decade's use, should be performed and assessed as to benefit. To leave the evaluation out is to disregard a large ARB paper requirement and to propagate it without established benefit. It would be good if persons working with such material were informed of any potential hazard. (Lake)

Agency Response: It would not be easy to conduct an evaluation of the reporting requirements that have been in effect for the last ten years. The ARB staff believes that such an evaluation is not necessary, because the reporting requirements in the amended ATCM are appropriate and necessary. The amended ATCM specifies a minimal amount of reporting requirements. These requirements include providing copies of receipts and tests results to the district upon request (subsection (e)(4)), a requirement that makes obvious sense as a way to check compliance with the ATCM. There are additional reporting requirements within the "Exemptions" section (subsection (f)), which are necessary to ensure that the district is informed when the changes occur in the conditions under which an exemption has been granted. The suggestion to inform workers that the material may contain asbestos falls under the purview of State and federal worker safety laws. It is not appropriate for the ARB to address this issue in the ATCM.

5.13. Comment: There is concern that the ATCM, even at a threshold of one percent, unfairly limits the mining industry in California. The basis for this concern is that serpentine and ultramafic rock is proposed to be potentially prohibited for use as surfacing, bituminous and concrete materials, non-wearing surfaces, and landscaping. It also appears that these materials may not be used for aggregate base rock even if paved pursuant to the definition of "road surface" because aggregate base usually extends beyond the paved surface on the shoulders. (CE)

Agency Response: The regulated material may be used as road base if it is paved before the completion of the project. The ATCM prohibits the use of the restricted material on road shoulders if the material is left exposed. The material can be used on road shoulders if the shoulders are paved. There is an exemption for construction activities, subsection (f)(10), that states, "The

requirements of subsections (c), (d), and (e) shall not apply to restricted material used for the construction of temporary road surfaces located at on-going construction sites where vehicle traffic is limited to construction personnel and equipment. This exemption does not apply to the use of restricted material for temporary roads for public use." There is also an exemption for restricted material that is used as an integral part of asphalt and concrete materials. For the reasons discussed in the ISOR, the ARB staff believes that all of these provisions are reasonable and do not unfairly impact the mining industry in California.

6.0 ATCM Definitions

6.1. Comment: Definitions of "serpentine materials," "naturally-occurring asbestos," and "ultramafic rock" are unclear. This could lead to the inclusion of many types of materials that do not contain asbestos and make it difficult for producers to know the impact of the ATCM. The regulation would place the burden on producers to resolve uncertainties interpreting definitions and test results. (BMM, CMAC, Coleman, DSS, EBHJ, GR, HA, KCAC, NMC, OMYA, RP, RSS, TDLF, VGC, WCA)

Agency Response: In the 15-day version of the amended ATCM, the definitions for "serpentine materials" and "naturally-occurring asbestos" have been removed. The definition for "ultramafic rock," "serpentine," and "serpentinite" have been modified in accordance to recommendations provided by the Division of Mines and Geology staff. These modified definitions are very precise and should result in no confusion.

6.2. Comment: The twenty percent or greater slope criteria should be removed from the definition of non-wearing surfaces. (KNF)

Agency Response: Staff does not agree with this comment. In the 15-day notice, the definition of non-wearing surfaces was replaced with the definition of "limited access surface." This definition includes a 20 percent or greater slope criteria. The slope of a surface is one factor the helps to determine if it is passable by vehicles. There are very few unpaved roads that have a slope in excess of 20 ercent. Using the slope as a criterion when defining a limited access surface provides a simple physical means to determine if a surface would be used for vehicular traffic.

7.0 ATCM Economics

7.1. Comment: Health and Safety Code section 39665(b)(5) requires the ISOR to set forth the approximate cost of each control measure for the ARB's consideration.

Related to cost is the requirement set forth in Health and Safety Code section 39665(b)(6) that requires staff to provide information on the availability, suitability and relative efficacy of substitute compounds. In regards to both cost and the availability of substitute materials, the ISOR provides incorrect information to the ARB.

The ISOR states that 232 mines in California sell product (stone, sand and gravel, and aggregate) that is appropriate for use in surfacing materials. The ISOR did not identify any quarries selling non-serpentine ultramafic rocks for surfacing in California and only three quarries (two of which are located in El Dorado County) which sell serpentine and would be affected by the ATCM in the proposed amendments. As to one of the three serpentine quarries the ISOR states, "No information is available from the third quarry." Based on this extremely limited data the picture drawn by the ISOR of direct financial impact on affected quarries is not grave. (TDLF)

Agency Response: Staff believes that the ISOR correctly characterizes the economic impact of the ATCM. Neither ARB staff nor the aggregate industry was able to identify any non-serpentine ultramafic aggregate producers. ARB staff contacted all quarries in ultramafic areas that were identified using information from the Department of Conservation, the air pollution control district, and/or county planning departments. The economic impact on districts on a non-serpentine ultramafic producer would be the same as any other quarry in an ultramafic rock unit. All quarries in the affected areas will have to conduct the same tests for asbestos. Information on cost and availability came from discussions with aggregate producers, suppliers and Department of Conservation maps.

Although staff did not characterize the potential effects of this ATCM as being "grave," these effects were not minimized as implied by the commenter. The ISOR stated:

> "While most California quarries are able to withstand the impact of the proposed revisions to the ATCM without a significant impact on their revenues, there are three small quarries with a significant portion of their revenues coming from serpentine sale for use in unpaved surfacing applications. These three small quarries may be adversely impacted if they are unable to find alternative uses for their asbestos-containing materials. Staff believes the chances for such a scenario are high for one quarry, low for another, and unknown for the third quarry."
> (Staff Report, ISOR p. V-1)

In the Staff Presentation, ARB staff also reiterated the potential for significant impact to three small quarries where serpentine for surfacing purposes is a

large fraction of their gross sales:

> "Based on the information we received, we also believe that three of these quarries, where surfacing material is at least 25 percent of their gross sales, may be significantly impacted unless they can find 'non-surfacing' uses for the material that can no longer be sold for surfacing applications."
> (Staff Presentation, July 20, 2000).

7.2. Comment: The ARB proposes to split the ATCM into two regulations; one for surfacing applications, and one for mining and construction. This complicates matters because the benefits and costs of increased regulation cannot be assessed on a use by use basis. (EBHJ)

Agency Response: We disagree with this comment. Early in the rule development process, ARB staff considered amending the 1990 Asbestos ATCM to include non-surfacing activities, including construction, grading, quarrying, and surface mining activities. As we progressed with the rule development, it became apparent that a logical split existed between surfacing applications and non-surfacing activities. The number of sources affected, the type of sources affected, and the type of mitigation available differ significantly between surfacing applications and non-surfacing activities. The ARB staff therefore decided it would be best to have separate regulations for surfacing and non-surfacing activities. We believe this split simplified the regulations and focused the regulation development process so that both the public and ARB staff could more effectively address the issues.

7.3. Comment: Two schools in El Dorado County have used serpentine rock at their sites. When buses drive over the serpentine rock, children and adults are being exposed to serpentine material. Is there money to treat people being exposed to these particulates? (Proe)

Agency Response: In 1991, the ARB issued a statewide advisory to schools concerning the potential health risk associated with using serpentine on unpaved surfaces. In 1999, the ARB again issued an advisory to schools in El Dorado County and school districts throughout the State on this same issue. It is up to local agencies and school districts to decide how best to respond to the information presented in these advisories.

7.4. Comment: The economic analysis is woefully lacking, and based upon entirely erroneous assumptions. (Pechner)

Agency Response: Staff disagrees with this comment. Staff performed a thorough economic analysis of the all affected quarries that were identified. From this analysis, staff concluded that one or two of the affected quarries may

experience significant impacts, as was discussed in the ISOR (Chapter V) and the staff presentation at the July 2000 Board Hearing.

8.0 Test Method

8.1. Comment: The test method proposed by staff, ARB Test Method 435, is of little use considering the scope of the proposed amendments. ARB Method 435 is grossly inaccurate at the 0.25 percent asbestos level. It was originally developed to measure levels equal to or greater than five percent. According to the method, the uncertainty of a sample containing five percent asbestos is two percent. Because there are only several asbestos fibers in a one percent asbestos sample, the level of uncertainty skyrockets to about 200 percent. (Coleman, GR, Lake, TDLF)

Agency Response: Test Method 435 was developed to measure asbestos concentrations from 0.25 percent to 100 percent. In 1990, the statistically derived uncertainty of Method 435 at the regulatory asbestos limit of five percent was estimated to be 2.0 percent. However, in the latter part of 1999, the ARB sponsored a laboratory round robin to better determine the uncertainty of Test Method 435. The uncertainty of the method at the minimum detection limit of 0.25 percent was determined to be 0.14 percent. This was a vast improvement over the uncertainty given in the method. The reported uncertainty in 1990 was based on a statistical analysis of counting theory. The uncertainty derived from the laboratory round robin testing is based on actual empirical data and more accurately portrays the uncertainty of the method.

8.2. Comment: ARB Method 435 can give a false-positive (mistaken identification of an asbestos fiber) when the antigorite fiber is mistakenly counted as chrysotile. (Coleman, GR, Lake, TDLF)

Agency Response: As long as the analyst is a properly trained and experienced microscopist, antigorite fibers and chrysotile fibers can be distinguished. The laboratory should also be certified to perform asbestos analysis by National Voluntary Laboratory Program (NVLAP), which is run by National Institute of Standards and Technology (NIST).

8.3. Comment: There is concern that staff has not fully considered statistical averaging in the use of ARB Method 435, which calls for sampling every 1,000-ton stockpile. Many quarries stockpile in much larger increments, e.g., 50,000-ton loads. Because the proposed threshold is so low as to be essentially non-detect, aggregate producers will necessarily be required to change the way they do business vis-à-vis stockpiling in order to ensure that an entire load is not prohibited from surfacing based on a single sample result. There are obvious impacts to such behavior. A producer who previously segregated product in

50,000-ton lots would instead have 50 1,000-ton lots just to meet the ARB 435 sampling requirement. This would result in the need for greater stockpile space, greater reclamation obligations and larger financial assurance responsibilities under the Surface Mining and Reclamation Act. Not only are these impacts not discussed in the proposed amendments, they can be avoided through prudent modification of ARB Method 435 to allow statistical averaging of samples. (TDLF)

Agency Response: The 15-day amended Asbestos ATCM allows the averaging of multiple test results taken for one specific volume of aggregate material. The ATCM does not allow averaging of test results taken from different volumes of aggregate material. The use of an average would be inappropriate and have no statistical merit because of the lack of homogeneity of naturally-occurring materials. ARB Test Method 435 does not mandate that aggregate material be segregated into 1,000-ton piles as suggested by the commenter. The method requires that one sample be taken to represent one thousand tons of aggregate material. Therefore, if there is a 50,000-ton stockpile of material, 50 samples must be collected from that stockpile to be analyzed. The method also allows for the collection of samples from the drop point of conveyors. Further, the method has been used successfully over the past decade by quarry operators that had to comply with the 1990 Asbestos ATCM. Because of the flexibility allowed in Method 435, the impacts suggested by the commenter should not occur.

8.4. Comment: Ultimately, ARB Method 435 is designed for analysis of serpentine aggregate, not ultramafic rock. (DSS, EBHJ, GR, REA, RP, RSS, TDLF, WCA)

Agency Response: While Test Method 435 was developed for serpentine aggregate, it works equally well on aggregate derived from any ultramafic rock. The sample procedures and analytical procedure in Method 435 are not dependent on rock type. Since adoption, the method has been successfully used on a variety of aggregates and soils. The ARB staff has found no situation in which soil or aggregate samples could not be collected and analyzed using Test Method 435.

8.5. Comment: The allowance of multiple test methods would be helpful because ARB Test Method 435 is not suitable for all situations; especially risk assessment. (YCG)

Agency Response: Method 435 is not intended to be used as a tool for estimating risk. ARB Test Method 435 is intended to determine the presence of asbestos, which is the type of determination that is necessary to determine compliance with the regulatory requirements. The amended ATCM does allow the use of alternate test methods, provided those test methods are approved by the Executive Officer of the ARB.

8.6. Comment: The decision to use Test Method 435 should be looked at very seriously because it is based on old technology and the proposed threshold is below the limit of detection. (CE, Marinaccio)

Agency Response: Test Method 435 is based on Polarized Light Microscopy (PLM), which is a well-established procedure. For the situations addressed by the ATCM, there is no generally accepted test method based on newer technology. The limit of detection of Test Method 435 is 0.25 percent, which is the regulatory limit of the amended Asbestos ATCM.

8.7. Comment: If the intent of the ARB is to include all mined materials, then a test method must be provided for determining if non-aggregate materials contain asbestos. (CMA)

Agency Response: The amended Asbestos ATCM does not include all mined material, but only aggregate material.

8.8. Comment: There needs to be an alternative test method that allows sampling of drill cuttings, drill holes, and blast holes. (SRPI)

Agency Response: The ATCM allows alternative test methods to be approved by the ARB Executive Officer. The Board directed staff to review any submitted alternative sampling proposals. Test Method 435 also allows alternative sampling or analytical procedures. An alternative sampling procedure for Test Method 435 using samples from drill cuttings from blast holes is being evaluated for equivalency. Alternative sampling procedures of this nature will be addressed on a case-by-case basis.

8.9. Comment: Aggregate producers will be required to stockpile in 1000-ton increments to avoid having a larger stockpile prohibited from surfacing based on a single sample result. (TDLF)

Agency Response: There is no need to make 1000-ton stockpiles. Stockpiles greater than 1000-tons are easily handled by marking off the pile in 1000-ton (or less) segments. Each segment is sampled as if it were a separate stockpile. This has been demonstrated over the last decade by quarries complying with the testing requirements of the 1990 Asbestos ATCM.

8.10. Comment: Aggregate piles can change daily and even hourly. It is very difficult from a logistical point of view to track a sample over a four to five day period. (GR)

Agency Response: An aggregate producer can get results for a sample within 24 hours from most laboratories. This short time period for the analysis would allow the producer to sell his product within 48 hours of extraction and

processing.

8.11. Comment: There are other ways to distinguish between chrysotile and actinolite aside of Test Method 435. You can use oils. (LCAQMD)

Agency Response: ARB Method 435 can identify both of these forms of asbestos. But for the purposes of the ATCM it is not necessary to distinguish between these two types of asbestos, because both chrysotile and actinolite are forms of asbestos that are regulated by the ATCM. For the purposes of the ATCM, Test Method 435 is used to quantify the asbestos concentration. The amended asbestos ATCM restricts the use of aggregate with asbestos concentration 0.25 percent or greater, and requires that the determination of the total asbestos content, not specifically the type of asbestos found.

8.12. Comment: Heavy rock samples tested by a registered geologist is very important, but does not go far enough to protect public health and safety. The scenario of the "fox guarding the hen house" is likely unless independent testing is done. (Goresuch)

Agency Response: The requirement for testing of aggregate does not require the expertise of a registered geologist. The sampling procedures of Test Method 435 are straightforward and can be easily executed by anyone working at the facility. The 1990 Asbestos ATCM also allows facility personnel to collect the samples, which are then analyzed by a laboratory. The 1990 Asbestos ATCM has been in effect for almost ten years, and there has been no evidence of results being misrepresented. The ARB staff believes that this will continue to be the case with the amended ATCM.

9.0 Geologic Evaluation Exemption

9.1. Comment: Section (f)(7) should be clarified so that an operator can independently undertake a "Geologic Evaluation" and submit it without having to wait for the APCO to complete their own. (CMA)

Agency Response: To obtain the exemption under a geologic exemption, the operator is responsible for having a geologic evaluation conducted by a registered geologist. The operator must submit the results of the evaluation in the form of a report to the district for consideration when applying for an exemption under this subsection. The district is not expected to conduct their own evaluation.

9.2. Comment: The ATCM should not require a registered geologist for work required other than under (g)(7). Substitute the words "registered geologist, or qualified person as determined by the APCO." (Lake)

Agency Response: Staff believes it is best to have someone who has been identified by the State as a qualified geologist to be responsible for the results of the geologic evaluation. Otherwise any person with a layman's knowledge of geology could conduct an evaluation and submit the results to obtain an exemption. This could open the process to potential mistakes or misrepresentation of the facts. If a registered geologist conducted an evaluation and made gross mistakes or purposefully misrepresented the results to favor his client, there is the potential for recourse against the geologist through the actions of the Department of Consumer Affairs, Board of Geologists and Geophysicists.

9.3. Comment: Is a geologist liable if an evaluated site designated as not containing ultramafic rock or serpentine is found to have these rocks in the future? (HA)

Agency Response: This is a question that cannot be addressed in this process. It is a matter that must be addressed by the geologist and the client.

9.4. Comment: The rule relies on Department of Conservation quadrangle maps that have not been developed yet or released to the public. (DSS, RP, RSS, WCA)

Agency Response: This comment is not accurate. The geologic quadrangle maps upon which the amended ATCM rely are part of the Department of Conservation, Division of Mines and Geology Geologic Atlas of California or Regional Geologic Map series and are published maps. These maps are referenced in Appendix A in the 15-day changes to the amended Asbestos ATCM.

9.5. Comment: The following minerals by definition are not part of ultramafic rocks, but metamorphic rocks: Serpentine (serpentinite), actinolite, tremolite, cummingtonite-grunerite, amosite, crocidolite, anthopyllite, amphiboles. Chrysotile asbestos is not an ultramafic product. Ultramafic minerals are not the same as ultramafic rocks. (Bloechl)

Agency Response: Staff recognizes that from a strict geological perspective the above listed minerals are not primary minerals in ultramafic rock; however, in the regulation, "ultramafic rock" is defined as including the rock types: dunite, pyroxenite, and peridotite; **and** their metamorphic derivatives. While the listed minerals typically do not crystallize directly during the formation of ultramafic rocks, the mafic minerals which make up ultramafic rocks are often transformed to the listed minerals by subsequent processes such as metamorphism or hydrothermal alteration. In many instances, some metamorphism has occurred in ultramafic rock bodies by the time they are exposed at the earth's surface. Because of this, they may contain asbestos minerals even though they may still appear to be ultramafic rock rather than serpentinite. It is common on the

referenced 1:250,000 scale geologic maps for units designated as ultramafic or ultrabasic to contain serpentine or serpentinized rocks. While the asbestos minerals can occur in other geologic settings which do not contain ultramafic rocks (including their metamorphic derivatives), they are more likely to be found in and immediately adjacent to areas of ultramafic rock than other common rock types in California.

9.6. Comment: How will revisions apply to unpaved roads that cross deposits of naturally-occurring asbestos, especially during construction? (YCG)

Agency Response: The amended ATCM would prohibit the application of additional restricted material unless it was tested and determined to have an asbestos content that is less than 0.25 percent. The amended ATCM allows a road to be surfaced with restricted material during the construction phase as long as no public vehicles are allowed access to the road and that the final surface is covered with compliant material upon completion of the construction operation.

9.7. Comment: The protocol in the ATCM for a geologic site evaluation is extremely vague and is described as “at a minimum.” (HA)

Agency Response: The amended ATCM includes the minimum suggested procedures for conducting a geologic evaluation. The term “minimum” means that these procedures are needed to conduct and document a geologic evaluation to determine if ultramafic or serpentine rocks may be found on a property. However, additional procedures beyond those listed may be used to support the findings of the geologic evaluation. These procedures were developed in consultation with staff of the Department of Conservation, Division of Mines and Geology.

9.8. Comment: Subsection (g)(7) of the proposed amendments provides for a geologic assessment as a way to exempt an operation from some of the requirements of the regulation. This subsection cannot remedy the problem that there is inadequate data in the record to justify imposing requirements regarding ultramafic rock. Control measures must be grounded in a fact-based analysis. The existence of this exemption suggests that the ARB is trying to impose on a source the obligation to "prove" that the source is not a source of asbestos emissions. It is neither fair nor legal to take this approach when no data exists to connect the source to emissions that are subject to the control measure. (TDLF)

Agency Response: Areas containing ultramafic rock are favorable geologic environments for the occurrence of asbestos. Most serpentine rocks form as a result of the metamorphism (called serpentinization) of ultramafic rocks. During serpentinization or other metamorphic events, some of the minerals in ultramafic

rocks can be transformed into asbestos minerals. Many ultramafic rocks in California are serpentinized or metamorphosed to some extent. It is common on the referenced 1:250,000 scale geologic maps for units designated as ultramafic or ultrabasic to contain serpentine or serpentinized rocks. Since geologic maps typically do not indicate the degree of metamorphism or alteration that an ultramafic rock has undergone, nor the presence or absence of asbestos minerals, ultramafic rock and serpentine rock are treated equivalently. The geologic evaluation exemption provides a reasonable mechanism through which a facility located within the boundaries of a geographic ultramafic rock unit can demonstrate that ultramafic rock or serpentine is not likely to be found on the property. The use of these procedures listed in the exemption is not an attempt to require a source to prove a negative. The amended ATCM recognizes that the referenced maps may not be detailed enough to indicate every small occurrence of other rock types within the geographic area, and, therefore, a mechanism is needed to address such situations. The exemption procedures were developed in consultation with the Department of Conservation, Division of Mines and Geology. The procedures are a reasonable means of determining if ultramafic or serpentine rock is present on a parcel of land. The exemption also has provisions that will address the situation in which ultramafic or serpentine rocks or asbestos is found after the exemption is granted.

10.0 Exemptions – General Comments

10.1. Comment: Exemptions should be allowed for the following areas: low traffic volumes, low speed, low population density, existing dust abatement, high elevation, screening only and shoulder backing. (FRC, SCDPW, STC)

Agency Response: The conditions of low traffic and low population density have been addressed in the remote location exemption. A "remote location" is defined as a location in which the distance between the road surface and the nearest receptor is at least one mile. In cases where the distance to the receptor is less than a mile, the district may consider the following additional criteria: 1) the receptor must not reside or operate a business at the location more than six months per year, 2) the receptor must not be a school or daycare center, 3) the entrances to the road must be gated and be posted with signs, and 4) the applicant must provide an estimation of the average traffic volume for the road. Staff believes the above conditions provide enough flexibility in cases where the public would not be exposed to resultant dust emissions.

Regarding the other criteria mentioned by the commenter, staff does not believe it is appropriate to provide exemptions based on these criteria. The elevation of a road is not a condition that necessarily affects the ability of that road to generate dust. Staff also believes if the ATCM allowed restricted material to be used for screening and shoulders, the material could easily be tracked out onto

the paved surface and result in unnecessary emissions and potential exposures. Staff does not believe dust abatement for a permanent unpaved road surface is a viable option. Dust abatement would have to be maintained continuously for the life of the road surface. Staff does not believe this option to be practical. A "low speed" exemption is also not practical due to obvious enforcement problems, and the fact that dust can be generated even at low speeds.

10.2. Comment: Unpaved roads located at mines operating in serpentine deposits are exempt from surfacing requirements in paragraph (b) of the revised ATCM; reportedly, so that they don't have to import compliant material from other sources. However, this exemption may negatively impact nearby communities. If the exemption is eliminated, mining operations could pave or apply chemical/organic stabilizers to comply with the ATCM without importing aggregate from other sources. At a minimum, the exemption should be revised to apply strictly to unpaved roads at surface mining operations that meet the ATCM's definition of a remote location (i.e. at least one-mile away from any receptors). (ALAC, Marquez, NRDC, USEPA)

Comment: What is the rationale on surface mining that road material must come only from the mine site? (Goresuch)

Agency Response: The exemption to allow the use of in situ restricted material on surfaces for mines and quarries located in ultramafic or serpentine rock (see subsection (f)(2)) was provided so these facilities would not have to import materials for their unpaved roads, which are often temporary. These facilities conduct many dust-generating activities such as excavating and crushing along with dust generated from unpaved roadways. These activities will be addressed in the second phase of regulatory development for asbestos.

If a quarry or mine does not have ultramafic or serpentine rock on their property, then the requirements of the amended ATCM would apply to that facility the same as any other facility that had to perform a surfacing operation. There is no reason to allow additional asbestos-containing material to be imported to a mine or quarry that does not have the material present on its property. This would be tantamount to allowing this material to be used on any surface, irrespective of its location, which is contrary to the purpose of the amended ATCM.

10.3. Comment: There is confusion regarding subsections (b) and (f)(8) – Remote Locations. Companies that do not buy or sell rock believe the rules exempt them from the provisions of subsection (b). However, subsection (f)(8) says subsection (b) won't apply if one is exempt. (STC)

Agency Response: The commenter is referring to the language of the original proposal, which was extensively revised during the course of the rulemaking

action. The final version adopted by the Board should cause no confusion, since ARB staff spent considerable effort revising the language to make it as clear as possible. It is worth mentioning, however, that both the original proposal and the final version unambiguously state that section 93106 applies not only to persons who sell aggregate, but also to persons who use or apply aggregate for surfacing. It is therefore appropriate for the remote location exemption to provide an exemption from the requirements of subsection (c). (The provisions of subsection (c) were contained in subsection (b) of the original proposal.)

10.4. Comment: There is concern regarding exemptions for roads at quarries and mines, asphalt, concrete and temporary roads. ARB should take another look at the long-term public health impacts and occupational exposures related to the exemptions. The exemption that allows the continued use of both asbestos-containing rocks and concrete in Portland cement and asphalt is very problematic because over time these surfaces degrade and the problem is deferred. There is concern about the potential for exposure when these surfaces are ripped-up and replaced. How is the public going to keep track of these exempted surfaces that may change ownership over time and pose greater risks in the future? Why continue the exemption for asphaltic surfacing materials under (f)(5)? It would appear a significant wearing use and risk compared to other steps taken. (ALAC, NRDC, Lake)

Agency Response: It is appropriate to allow the use of ultramafic rock and serpentine in asphaltic materials irrespective of the asbestos content because the fibers are cemented to the material and if released, the fibers would be released very slowly over long periods of time as the material wears. Because materials are cemented together, even ripping up an asphalt or concrete surface causes mimimal dust release from the cemented materials. The durability of both concrete and asphalt is much greater than that of an unpaved road. Concrete roads can last up to 20 years, asphalt, up to eight, whereas gravel roads must be replenished at least once every five years. (See the 1990 Asbestos ATCM Technical Support Document). Furthermore, Caltrans has indicated that it has been their experience that most asbestos-containing aggregate, such as serpentine, would not meet their standards for asphalt or concrete and would not be used. Regarding the commenter's concerns about some of the other exemptions in the ATCM, the rationale for all of these exemptions can be found in the ISOR.

10.5. Comment: It is unclear how exemptions could be granted, what criteria will be used to grant the exemption, who could appeal those exemptions, and what time frame would be applied to those exemptions. A clear procedure must be defined to ensure that an exemption from testing and labeling is considered in a timely manner, granted based on science, and cannot be overturned or revoked without due process. (BMM, KCAC, NMC, OMYA, VGC)

Agency Response: Only four of the exemptions require approval (by the local air pollution control officer) before they can be utilized. These four exemptions are the emergency road repairs exemption, the geologic evaluation exemption, the limited access surfaces exemption, and the exemption for surfacing applications in remote areas. The emergency road repair exemption has been carried over from the 1990 ATCM with only a few modifications. This exemption has worked well for the last ten years in its current form, and staff does not believe that any changes are necessary. The other three exemptions are new ones that have been modified to address the commenter's concerns. These modifications clarify the process, time frames (90 days), and criteria for granting the exemptions. Staff believes that the modified versions of the exemptions address the basic thrust of the commenter's concerns. There is no appeal procedure specified in the ATCM, but an applicant that disagrees with the decision of the air pollution control officer could challenge this decision in court.

It should be noted, however, that under state law the districts are not required to include any exemptions when adopting their version of the ATCM. District rules are required to be at least as stringent as the ATCM adopted by the Air Resources Board (see Health and Safety Code section 39666(d)), and omitting any of the exemptions (or all of them) would not diminish the stringency of the control measure.

10.6. Comment: The exemption section and noticing references need to properly exempt, or incorporate, construction cut and fill operations that are often part of land development projects. Perhaps construction projects (cut and fill) could be exempt if they are regulated under other, or existing rules of a Air Pollution Control District, and wearing surfaces are prevented from resulting. (Lake)

Agency Response: As part of the 15-day changes for the amended ATCM, an exemption from the requirements of the ATCM was added in subsection (f)(10) for roads located at construction sites. This exemption allows the use of restricted material for road construction and cut and fill operations provided the final surface does not contain non-compliant material and that there is no public access to these surfaces during construction.

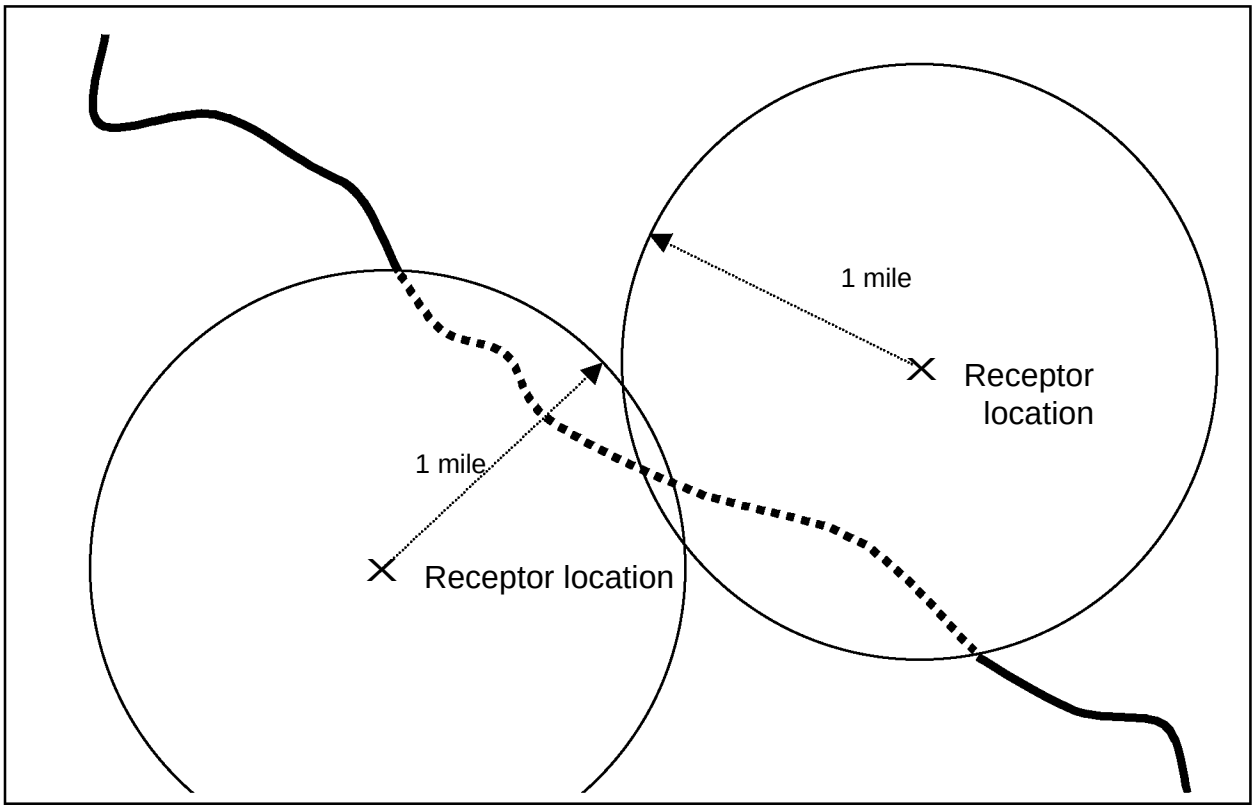
11.0 Exemptions – Remote Locations

11.1. Comment: In the exemption for isolated roads, it is not clear how the exemption applies if there is a home within a mile of the road. Is it just for that mile or the entire road? (STC)

Agency Response: The exemption applies to any portion of the road that **DOES NOT** lie within a one-mile radius of any receptor (as long as the other conditions

of the exemption are met, as specified in subsection (f)(9)). This is apparent from the last sentence of the definition, which provides that the "distance from the nearest receptor is to be measured from the outermost list of the area to be disturbed or road surface, whichever is closer." The following figure illustrates how the definition would apply:

Figure 1
Illustration of a Remote Location



The portion of the road shown by a dotted line would not be considered a remote location because it lies within a mile of one of the receptor locations. The portions of the road shown as solid lines meet the definition of a "remote location."

11.2. Comment: No permit should be required if the aggregate material contains less than five percent asbestos (per 1000 tons applied) in a remote location. If the asbestos content is greater than five percent, then a remote location exemption should be sought. (KNF)

Agency Response: Staff believes that it is prudent that the district be aware of roads that are being surfaced with asbestos-containing material. Areas that may once have been remote can easily become developed, and it is important for the

district to be aware of such roads. There also needs to be some demonstration of the remote location status of a surface. This is why it is necessary for the district to grant the exemption, instead of just allowing a person to use asbestos-containing aggregate in remote locations without informing anyone.

11.3. Comment: The remote location exemption will add new burdens for permitting, public notification, waiting periods and coordination with the air pollution control district. (KNF)

Agency Response: Staff recognizes that requiring the application for a remote location exemption results in an additional burden to the proponent, but it is a necessary burden. There is a need for the district and the public to be aware of which roads are surfaced with asbestos-containing material. The remote status of a location can easily change and, consequently, both the proponent and the district should be made aware of that change. In addition, someone who does not wish to go through the application process has the option of using non-asbestos-containing aggregate to surface roads in remote locations.

11.4. Comment: The remote location exemptions should be monitored. Over time, what is remote today will not continue to be remote. There may need to be better notice and recordkeeping provisions so that if use is continued, there is awareness. (NRDC)

Agency Response: The 15-day changes to the amended ATCM address the issue raised by the commenter. Subsection (f)(9)(B)(4) provides that all remote location exemptions will expire after three years. At the end of this three-year period, the proponent must demonstrate that the surface still meets all criteria that define a remote location. If the proponent cannot make this demonstration, the district cannot continue to grant the exemption.

11.5. Comment: What is the definition of non-populated? Since there are truly no non-populated areas, will there be signs and fencing to keep people from climbing affected rocks or swimming in affected areas? (Goresuch)

Agency Response: The amended ATCM does not use the term “non-populated” in defining a remote location. A remote location is one in which there are no receptor locations within one mile of the surface. Figure 1 above illustrates this concept. In terms of public notice, the remote location exemption requires that a permanent sign be posted on the affected surface to alert the public to potential asbestos exposures.

11.6. Comment: The remote location exemption would result in increased use of asbestos-bearing aggregate and public episodic exposure. (KNF)

Agency Response: We do not agree that the remote location exemption will result in an increased use of asbestos-containing material for unpaved surfacing and therefore, an increase in public exposure should not occur. The exemption was modified in the 15-day changes to provide a cap of five percent which is consistent with the asbestos limit of the 1990 Asbestos ATCM. This five percent cap would prevent any increase use of asbestos-containing material that would result in an increase in public exposures to asbestos.

12.0 Exemptions – Use

12.1. Comment: We note that section (g)(7) of the most recent version of the proposed amendments likely contains a drafting error in that it appears to allow an exemption from the ATCM for operations in ultramafic rock units where it can be shown that no "ultramafic rock" is present. This makes no sense. In the proposed amendments released on June 2, the exemption is related to ultramafic rocks where the assessment has shown asbestos was not present. This makes some sense. We proceed on the assumption that the latter is the intent. (TDLF)

Agency Response: It appears that the commenter may have misinterpreted the meaning of a geographic ultramafic rock unit. The amended ATCM applies to any aggregate material extracted from a "geographic ultramafic rock unit." A geographic ultramafic rock unit is defined as a geographic area as indicated on a geologic map where ultramafic rock should be found. Because the referenced maps may lack the detail to indicate all non-ultramafic rock occurrences within these geographic areas, the amended ATCM allows a proponent to demonstrate that ultramafic rock is not present on the property even though it may be located in one of these geographic units. This demonstration must be made through the procedures outlined in the geologic evaluation exemption.

Furthermore, it is not appropriate to grant a geologic exemption based on the perceived absence of asbestos in the aggregate source (as opposed to the absence of ultramafic rock). This is because geologists (both in industry and the State Department of Mines and Geology) indicated to ARB staff that it would be very difficult to make such a determination with a high degree of confidence.

12.2. Comment: The ATCM should allow the reuse of material from non-wearing surfaces where it would not be placed on a road surface. (Caltrans)

Agency Response: The amended ATCM does not impose any restrictions on the use of material for non-surfacing applications. Therefore, any material (including asbestos-containing material) can be recycled or reused for non-surfacing applications without violating any provision of the ATCM.

12.3. Comment: The 1990 regulation provides an exemption for serpentine material used as riprap, and allows its use. The proposed regulation requires obtaining an exemption (permit) from the Executive Officer for use of serpentine or ultramafic rock as riprap. The public health threat for use of serpentine or ultramafic material as riprap (or for other non-wearing surface uses) is not apparent to us, and requiring a permit to use it is an unnecessary regulation. Most of the use of this material on the National Forest would be in a "remote location" by ARB's definition. We think that use of ultramafic and serpentine rock as riprap should be allowed outright as it is currently, without having to apply for an exemption or permit from the Executive Officer. (KNF)

Agency Response: As requested by the commenter, the ATCM was modified to provide an exemption for the use of restricted material for riprap, without requiring any governmental approval or permit.

12.4. Comment: The ATCM should allow maintenance operations on existing roads as long as non-asbestos material is applied and no asbestos-containing material is placed in such a way as to constitute surfacing. (Caltrans)

Agency Response: As requested by the commenter, the 15-day changes to the amended ATCM include an exemption for maintenance operations on existing roads (see subsection (f)(3)).

12.5. Comment: It would be reasonable to allow the county to use serpentine material from one of their pits as shoulder backing. Studies have never been done to determine if vehicles driving on a surfaced (paved) road with gravel shoulders generate fugitive dust. (SCDPW)

Agency Response: The ARB staff is not aware of any studies that specifically address emissions from road shoulders. However, the staff believes that it is appropriate to regulate surfacing of road shoulders in order to protect pubic health, because common sense indicates that dust can be generated from unpaved road shoulders. There are several ways in which dust can be generated from unpaved shoulders. Vehicles stopping and starting along the side of the road will generate dust as they drive on the unpaved shoulders. These same vehicles can track the aggregate material onto the paved portion of the road where it would be driven on by many vehicles, and thereby generate dust. Also, vehicles traveling along the paved portion of the road can cause a turbulent wake that disturbs the silt portion of the unpaved shoulder and can result in "dust devils" (plumes of swirling dust) that could result in asbestos emissions.

12.6. Comment: The ATCM should allow material with greater than 0.25 percent asbestos to be used at ongoing construction sites where traffic is restricted to construction personnel and equipment. (Caltrans)

Agency Response: As requested by the commenter, the 15-day changes to the amended ATCM include an exemption for roads located at ongoing construction sites (see subsection (f)(10)) where traffic is restricted to construction personnel and equipment.

13.0 Exemptions – Signing

13.1. Comment: The regulation is confusing and unclear about the purpose and need for signing and public notification in areas that are exempted such as remote locations. The ARB states on page IV-6 of its Initial Statement of Reasons report, that an exempted surface must be posted with a permanent warning to anyone who may travel on or use the surface. The content and wording of the signs are not stated or prescribed in the regulation. The signing will be confusing to the public especially where there are roads with existing serpentine material, or where roads are surfaced with native materials that are not regulated. Signing on the National Forest presents maintenance problems and costs for installation and upkeep after the signs have been vandalized or removed. The permanent signing provision for exempted surfaces in the regulation should be removed and replaced with some other simpler form of public notification such as a link to a website with a map of roads that are surfaced with asbestos-bearing aggregate. (KNF)

Agency Response: Staff believes the best way to inform the public of the potential for asbestos exposure is the placement of a sign at the entrance of a road surfaced with asbestos-containing material. This method ensures that all users of the road are notified, and there is no reason to believe that the public will be "confused" by a sign. Other methods of notification, such as noticing maps, internet websites, or placing a notice in the newspaper run a high potential to miss many potential users of the road that may not use an updated map, have internet access, or read the local newspaper.

13.2. Comment: It does not make sense to have to post signs and take public comments for roads that are isolated and gated. (STC)

Agency Response: The ARB staff believes that this requirement does make sense. California residents often engage in recreational and other activities in isolated rural areas. Gates in such areas are frequently either unlocked or easy to bypass. The people who may use the road should be informed of their potential exposure to asbestos as a result of this use.

13.3. Comment: There should be a specific size of the warning sign and ARB should use and existing warning. (Lake)

Agency Response: We disagree with this comment. Staff believes that the dimensions and nature of the lettering are best addressed on a case-by-case basis. Depending on the particular situation, the district granting the exemption may wish to specify the size and wording of the warning sign.

14.0 Health

14.1. Comment: Scientific information shows that chrysotile asbestos is not a harmful form of asbestos. (Innes, Pit, Weitzman)

Agency Response: The ARB does not agree with this comment. The administrative record contains ample evidence that chrysotile asbestos is harmful. A report on the health effects of asbestos was prepared in 1986 by the California Department of Health Services (DHS). In developing this report the DHS evaluated the available scientific information. The following are among the conclusions DHS reached as a result of this evaluation:

- Asbestos is an undisputed human and animal carcinogen, and has been documented to cause cancer in humans in both occupational and non-occupational settings.

- The carcinogenic effects of asbestos include mesothelioma and lung cancer.

- Ambient asbestos levels in California are not expected to cause any acute health effects nor to result in asbestosis, a frequently disabling lung disease.

- Although the mechanism of asbestos carcinogenicity is unknown, there is no compelling evidence that this process is characterized by a threshold.

- Risk assessment should not be segregated by fiber type.

- Although some epidemiological evidence suggests that the risk of mesothelioma from exposure to chrysotile may be lower than that from exposure to amphiboles, there is no compelling reason to differentiate between fiber types in risk assessment. Mixed exposures, lack of good quantitative exposure data, and the physical effects of different industrial processes on asbestos fibers makes the comparison of epidemiological studies problematical in this respect. Furthermore, in animal studies chrysotile has been shown to be at least as potent as the amphiboles in inducing lung cancer.

The Office of Environmental Health Hazard Assessment (OEHHA) has reviewed

several health studies that were published subsequent to the ARB's 1986 identification of asbestos as a TAC and found that they did not warrant revision to the toxicity factors. In addition, the ARB requested the SRP to review the claims that amphiboles are more potent with respect to inducing mesothelioma. The SRP found that the data did not warrant a change to the risk assessment. Finally, no studies have indicated that chrysotile is not equally potent in causing lung cancer.

14.2. Comment: What is the disease level related to the mining of asbestos and using serpentine rock in El Dorado County in the 1920s? (Weitzman)

Agency Response: The disease level related to the mining of asbestos and using serpentine rock in El Dorado County in the 1920s is unknown and is likely to be undetectable due to small numbers of people and unknown exposure levels. ARB staff is not aware of any studies conducted to characterize the exposure of miners or residents of El Dorado County to asbestos in the 1920's. The power of epidemiological studies to detect an excess of disease such as lung cancer depends among other things on the number of subjects exposed. Knowledge of the level of exposure is also necessary. ARB staff is not aware of any measurements of the asbestos levels in the ambient air of El Dorado County in the 1920's. Further, according to the U. S. Census Bureau, the population of El Dorado County in 1920 was 6,426 and in 1930 was 8,325. According to the DMG's quadrangle maps about two percent of the land surface in El Dorado County is in geographic ultramafic rock units. Therefore, the number of persons living near such deposits would be much smaller. Persons living near roads surfaced with serpentine at that time would be expected to experience lower exposure than people presently living near such roads because automobile traffic in the 1920's was slower, vehicles were lighter, and tires were narrower than at present. The same difficulties of small numbers and unknown exposure would also hamper any effort to detect an excess of cancer among miners who were working in serpentine or ultramafic rock in the 1920's.

14.3. Comment: The regulation should be rewritten to address and minimize exposure to respirable asbestos fibers. (GR)

Agency Response: The commenter's suggestion is not necessary or practical. The air sampling which indicated a need to revise Section 93106 collected particulate matter with an aerodynamic diameter of 10 microns or less. This is the size range generally considered to be respirable. The regulation uses a bulk test method (Method 435), which detects the presence of asbestos in the material. There may be other test methods that would as effectively identify material that should not be used in unpaved surfacing applications. However, to date, neither the commenter nor any other person has submitted such a test method to ARB staff for evaluation. No other bulk test method has been identified that would be as effective at a lower cost than Method 435. A

regulation based on air monitoring would be both more costly and less effective in reducing public exposure from unpaved surfaces. Furthermore, prohibiting the use of the material that is the source of asbestos emissions will reduce exposures to all asbestos fiber varieties since it is virtually impossible to selectively control asbestos fibers by size.

14.4. Comment: What is being accomplished with this new regulation is already obsolete, not because chrysotile is not carcinogenic, but because amphibole is more carcinogenic. (Trent)

Agency Response: Both chrysotile and amphibole asbestos are carcinogenic and found in ultramafic and serpentine rocks. Prohibiting the use of materials determined to contain more than 0.25 percent of any type of asbestos in unpaved surfacing applications will reduce public exposure to both types (chrysotile and amphibole).

14.5. Comment: There is no evidence of elevated rates of asbestos-related lung disease in California. There is no evidence of harmful effects from chrysotile asbestos in drinking water. (Innes)

Agency Response: Epidemiology studies compare the incidence of disease in an exposed population and in a comparable unexposed population. The ability of an epidemiologic study to detect elevated rates of mesothelioma in a population is limited by the level of exposure, the number of potentially exposed persons, the long latency period, and the availability of an unexposed comparison population. Most studies capable of demonstrating a connection between disease and exposure to an air pollutant are based on workplace exposure. The ability to connect an increased incidence of lung cancer due to asbestos exposure is complicated by the potential confounding exposures that could be responsible for the excess. Asbestosis has only been seen where air concentrations are high, which is typically in occupational settings. For all of these reasons, there is not, and is not likely to be, data which conclusively demonstrate elevated rates of asbestos-related disease among the general population of California or any particular county in California.

The Technical Support Document to the Initial Statement of Reasons for the Public Hearing to Identify Asbestos as a Toxic Air Contaminant, Part B- Health Effects of Asbestos, notes that ingestion studies have not demonstrated an increased incidence of asbestos-related cancers. The ATCM, however, is designed to reduce exposure to airborne asbestos particles that can be inhaled, not asbestos particles present in drinking water or other substances that may be ingested. The available evidence supports the need to reduce airborne asbestos, and information about the health effects of ingested asbestos is not relevant in evaluating the ATCM.

14.6. Comment: The definition of asbestos is misleading and continues to make all fibers equally dangerous. I know you are not able to change the U.S. EPA standards on this. At least acknowledge that chrysotile asbestos is the most common asbestos in California. Serpentinites and also the dominant asbestos in building construction is less toxic than the amphibole asbestos. This fact has been repeated many times by published medical research and even U.S. EPA acknowledges the differences. (Coleman)

Agency Response: There is some evidence that amphibole asbestos may be more likely to cause mesothelioma than chrysotile asbestos. However, the Office of Health Hazard Assessment (OEHHA) and the Scientific Review Panel examined the available evidence and concluded that there was not sufficient evidence to justify developing separate toxicity factors for the different types of asbestos. Further, there has been no evidence presented that suggests that chrysotile asbestos is any less likely to cause lung cancer than amphibole asbestos. To protect public health, the regulation reduces the exposure to naturally-occurring asbestos regardless of whether it is chrysotile or amphibole.

14.7. Comment: The health studies (study from Greece, occupational exposures) used to determine the health effects from asbestos exposure cannot be compared with California population exposures. (Weitzman)

Agency Response: The health studies used by the OEHHA to develop toxicity factors and to determine that no “safe” threshold can be identified are listed in the Technical Support Document – Part B Health Effects of Asbestos. These studies were typically carried out on populations with higher exposures that those expected in the California population. However, OEHHA has carefully evaluated the available evidence and determined that no threshold can be identified below which adverse health effects are not expected. Therefore, there is reason to believe that asbestos emissions from the sources ARB is proposing to regulate do represent a health hazard to the California population.

14.8. Comment: Chrysotile is a toxic component. It presents a serious health risk when exposed to it. USEPA classifies chrysotile and other forms of asbestos as a known human carcinogen. There is ample evidence that it causes nonmalignant diseases, particularly respiratory diseases. (USEPA)

Agency Response: The ARB agrees with this comment.

15.0 Supporting Data

15.1. Comment: No road study or other sampling results have been provided indicating the potential for asbestos to be found in ultramafic rock used for surfacing or whether the asbestos content of ultramafic rock can become

airborne in the way serpentine asbestos can become airborne. (CMA, HA, TDLF)

Comment: The proposed regulation fails to link asbestos concentrations measured in ambient air samples collected in El Dorado County to ultramafic rock units that will be the target of the regulation. (CMA, GR)

Agency Response: All of the sampling locations that experienced elevated asbestos levels were either located within the boundaries of ultramafic rock units as shown on geologic maps provided by the State Department of Mines and Geology (DMG), or were near unpaved roads surfaced with serpentine rock. In the development of the amended ATCM, ARB staff did not attempt to gather additional data to make a specific connection between the ultramafic rock units and the locations of elevated asbestos concentrations. It was not necessary to do this, because the ARB staff relied on the expertise of the staff at DMG. DMG staff's expert opinion is that ultramafic rock units are the locations where asbestos is more likely to be found, and that it is impractical to attempt to regulate serpentine and ultramafic rock as separate materials because of the metamorphic continuum between the two.

15.2. Comment: We recommend that ARB review the studies that were done with regard to sampling roadways paved with non-serpentine ultramafic rock and determine if there were asbestos emission from those surfaces. This would provide a baseline. (CMAC)

Agency Response: Staff is not aware of any studies that attempt to measure the asbestos emissions from roads surfaced with non-serpentine ultramafic rock, and the commenter did not provide any information on such a study.

15.3. Comment: Material to be regulated should only be added to the ATCM if there is a scientifically proven ability and propensity for it to become airborne. (CMA)

Agency Response: Based on air monitoring and modeling presented in the ISOR, the ARB staff has concluded that any aggregate material used for unpaved surfacing that has a detectable asbestos content has the potential to create asbestos emissions if disturbed, without mitigation measures.

15.4. Comment: ARB has no evidence as to the existence of any roads, or the number of miles paved with non-serpentine ultramafic rock. (CMAC, TDLF)

Agency Response: Staff does not disagree with this comment. However, the purpose of the ATCM is to prevent aggregate material with a detectable asbestos content from being used on unpaved surfaces, irrespective of whether the material is serpentine, ultramafic rock, or any other material that may contain asbestos. To accomplish this purpose, it is not necessary to have data on the number of roads that are currently surfaced with non-serpentine ultramafic rock.

15.5. Comment: Information readily available from the California Department of Conservation indicates that 799 mines in California produce materials that are available for use for surfacing applications as defined in the proposed amendments. Given that the ISOR was assuming only 232 mines were potentially affected by the proposed amendments, it is not possible for the ISOR's analysis of direct cost to the mining operations to be complete because the information used by the ISOR to calculate the number of potentially affected operations was not complete. In reading the ISOR one can sense the presence of this data gap and certain inconsistencies that exist with the ISOR itself. For example, as described on page 111-5 and 111-6 of the ISOR the Shasta, Trinity, Sierra and Los Padres [U.S. Forest Service] offices did not respond to ARB staffs telephone survey regarding the mileage of unpaved roads in their jurisdictions. The ISOR states, "These offices are located in areas of ultramafic rock formations. There is a strong likelihood that they will have serpentine roads." ISOR, 111-5. It is not possible that the serpentine used to surface the roads in these large mountainous counties could come from the three serpentine quarries mentioned in the ISOR as the only quarries that would be directly affected by the proposed amendments. (TDLF)

Agency Response: There are 799 mines and quarries that hold current permits under the Surface Mining and Reclamation Act in California. Not all of these mines and quarries produce aggregate and not all produce aggregate for sale. For the economic analysis, the U.S. Census Bureau data showed that there are approximately 281 non-metallic mineral mines and quarries in California, of which 232 (stone mining, and sand and gravel) sell aggregate for use in surfacing. This is the source of the 232 number referenced in the ISOR.

Subsequent to the release of the ISOR, staff was able to identify approximately 30 mines and quarries operating in ultramafic rock units based on information provided by DMG. Staff contacted each of those quarries by phone and was able to determine that only 17 of these were actually producing crushed stone for sale for surfacing, including a small number in the northwest area of the state. The other quarries were either closed, producing sand or gravel in an alluvial deposit, or were not producing aggregate for sale.

Staff agrees that the materials potentially used for serpentine roads in the Shasta-Trinity, Sierra, and Los Padres National Forests likely do not come from the three serpentine quarries identified in the Initial Statement of Reasons. Staff

believes that some of these “serpentine roads” will be unpaved roads constructed across native serpentine soils. It is common practice for the U.S. Forest Service and other agencies to use material obtained from borrow pits to maintain their unpaved roads. These borrow pits are exempt from the State Mining and Reclamation Act (SMARA) and were therefore not included in staff’s estimate of affected mines and quarries. Because these borrow pits are not permitted under SMARA, it is difficult to estimate the number of operating borrow pits in California. However, subsequent discussions with administrators for these forests led staff to conclude that no significant additional costs would be incurred if such borrow pits could no longer be used.

Staff acknowledges that the ARB did not determine how many miles of unpaved roads there are in California. Such information would be very difficult to obtain, and it is not necessary to know this information since the ATCM does not impose any regulatory requirements on existing roads that may be surfaced with asbestos-containing material.

15.6. Comment: The ARB does not have any modeling or monitoring data that is specific to non-serpentine ultramafic rock. There is no quantitative data on the actual presence of asbestos in non-serpentine ultramafic rock and how often asbestos would likely be encountered in non-serpentine ultramafic rock. (Bledsoe, TDLF)

Agency Response: It is not necessary to have such data. Due to the non-homogeneity of the distribution of asbestos in serpentine and ultramafic rock, it would be impractical and misleading to attempt to make such characterizations of these materials. However, the 1990 Technical Support Doucment indicates that the asbestos content of serpentine material obtained from quarries in a 1987 study ranged from six percent to over 40 percent. There are locations in California where the average asbestos content of serpentine material has been determined to be in excess of 60 percent.

There is also the issue of how precisely serpentine rock has been distinguished from ultramafic rock. Making this distinction involves a great amount of subjectivity. There is no firm definition of what degree of serpentinization (geologic conversion of ultramafic rock into serpentine rock over time) differentiates serpentine rock from ultramafic rock. Without an agreed upon definition, different geologists may characterize the same rock as either ultramafic or serpentine depending on the perspective of the geologists. This is one of the primary reasons DMG staff recommended that the ARB regulate serpentine and ultramafic rock in the same manner.

15.7. Comment: The analysis of environmental impacts is flawed because the analysis assumes that the two mines evaluated are representative of all 799

mines that may be affected in terms of distance between alternative aggregate sources and an affected mine. (TDLF)

Agency Response: This comment is addressed in the response to Comment No. 1.5.

15.8. Comment: There are some 25 additional data samples in the Initial Statement of Reasons, Section III that do not appear on the ARB website. A complete listing of all samples cited in the Initial Statement of Reasons needs to be created following the format used on the website to track the data used or omitted. (CMA)

Agency Response: The results on the website will be reviewed and, if necessary, updated to reflect all the finalized air monitoring data.

15.9. Comment: The lack of information in the ISOR regarding ultramafic rock is not excused by the language of Heath and Safety Code section 39665(b), which limits the scope of information to that which "can reasonably be made available." A list of all mining operations in the state is available from the Department of Conservation, as are maps indicating areas that, while not yet in production, are classified as zones with commercial mineral deposits. There was, therefore, reasonably available information by which the ARB could determine if any non-serpentine ultramafic aggregate operations exist in the state. If they do not exist, then there is no need to include requirements relating to ultramafic rock in the proposed amendments. If they do exist, then those operations should have been analyzed in detail by staff. (TDLF)

15.10. Comment: ARB has identified 17 quarries producing serpentine ultramafic rock. Has the asbestos content in any of those quarries been assessed? Were those serpentine or non-serpentine ultramafic quarries? Answers to these questions are needed to justify the regulation of ultramafic rock; otherwise ultramafic rock should be excluded from the regulation. (CMA, CMAC)

Agency Response (to Comments No. 15.9 and 15.10): ARB staff conducted an investigation of the quarries potentially impacted by the amended ATCM. Staff identified 17 quarries in or near geographic ultramafic rock units that produce aggregate for sale and contacted them by telephone. ARB staff visited nine of the 17 and took aggregate samples for asbestos testing from six of them. The aggregate samples from two of the six quarries had quantifiable asbestos. No quantifiable asbestos content was found in the aggregate samples from the remaining four quarries. Among the eight quarries not visited, there were two that were previously known to contain asbestos and serpentine and five that were found not to be in ultramafic rock units based on examination of more details geologic maps. The single remaining quarry of the eight was determined to not be producing aggregate. In this investigation, staff also found quantifiable

asbestos in a quarry in which hand samples did not identify any serpentine or ultramafic rock. However a previous geologic examination of this quarry had identified the presence of serpentine. Staff also found no quantifiable asbestos in two quarries in which serpentine or ultramafic rock was identified in the hand samples.

The commenters express their view that if non-serpentine ultramafic rock operations are not currently operating in California, then there is no justification for regulating ultramafic rock in the ATCM. There are at least two reasons why this view does not make sense. First, there is a continuous spectrum between what is geologically considered pure ultramafic rock and what is considered pure serpentinite (serpentine rock). Second, although individual samples (e.g., hand-held rocks) of both serpentine and ultramafic rocks can be found to contain no asbestos, macroscopic volumes of the ultramafic or serpentine rock material (tens of thousands of tons of rock extracted from a quarry) would be very likely to contain some occurrences of asbestos.

The commenter makes several references to “non-serpentine ultramafic rock,” as though a clear distinction between serpentine rock and ultramafic rock can made and that each can be found in large identifiable quantities throughout California. This is not the case. Serpentine rock is a metamorphic derivative of ultramafic rock and most ultramafic rock has undergone some degree of this transformation (called serpentinization) and exists somewhere along the spectrum between the extremes of pure serpentinite and pure ultramafic rock. The degree of serpentinization of ultramafic rock is difficult to reliably characterize, and the occurrence of asbestos is discontinuous in serpentine and ultramafic rock. Because of this, it may be difficult for a geologist to consistently identify serpentinized ultramafic rock as being either serpentine rock or ultramafic rock. Consequently, the identification of serpentinite is somewhat subjective and varies from geologist to geologist. When the DMG undertook the task of mapping regions of the State geologically, no distinction was made between ultramafic rock and serpentine rock in the regions identified as ultramafic rock units because of the spectrum between the two and inconsistent identification. All of the referenced DMG geologic maps identify these regions as being “ultramafic rock“ containing serpentine or as being partly to complete serpentinized. DMG also stated that the ultramafic regions are the areas most likely to contain asbestos and DMG staff recommended regulating ultramafic rock and serpentine rock equivalently. This approach was supported by the testimony at the July 2000 Board hearing of the State Geologist, who indicated that occurrences of ultramafic rock are the places where asbestos is most likely to be found. Therefore, from a geologic perspective and the perspective of the amended ATCM, the issue of non-serpentine ultramafic rock is academic. Further, as discussed in the response to Comment No. 15.6, these were reasons why staff concluded that both serpentine and ultramafic rock should be regulated equivalently.

Second, even if one concludes that all of the current quarries are better characterized as "serpentine" quarries rather than "non-serpentine ultramafic rock" quarries, this would be completely irrelevant. The point is that both serpentine and ultramafic rock deposits are where asbestos is most likely to be found in California. Even if no quarries are currently operating in material identified as ultramafic rock (as opposed to serpentine rock), such quarries could be opened in the future. Because 1) the ARB identified asbestos as a toxic air contaminant; 2) asbestos is most likely to be found in both ultramafic and serpentine rocks; and 3) available geologic maps identify ultramafic rock units, which contains both ultramafic and serpentine rocks) it, therefore, makes sense to regulate aggregate material that is extracted from both serpentine and ultramafic rock quarries.

15.11. Comment: ARB should identify viable aggregate resources outside of the ultramafic zones, but within the local area to support El Dorado County and other impacted communities. (CMA)

Agency Response: The DMG publishes a listing of all active mines and mineral producers in California, which is entitled “Mines and Mineral Producers Active in California.” This publication is a comprehensive listing that includes aggregate producing facilities and their locations. This listing would provide information on potential alternative sources of aggregate within California.

15.12. Comment: Health and Safety Code sections 39665(b)(4) and (b)(5) require the ISOR to provide detailed data on such matters as the anticipated effect of the ATCM on levels of exposure, the magnitude of risks posed by the substances as reflected in the amount of emissions from the source or category of sources, and the reduction in risk which can be attributed to the ATCM. The ISOR does not contain any of this information, and ARB staff did not take reasonable efforts to obtain it. With respect to ultramafic rock (as opposed to serpentine rock), there has been no collected data on the percentage of non-serpentine ultramafic rock that might contain asbestos, no monitoring near roadways with ultramafic rock, and no modeling or data that relates to asbestos emissions from ultramafic rock surfaces. Without this data, the ARB cannot legally expand its current ATCM beyond "serpentine" to regulate the entire class of "ultramafic rocks." (TDLF)

Agency Response: The ISOR does contain information on emissions and risks (see Chapter III of the ISOR). In the ISOR, modeling information is used to describe how emissions and risk would be reduced, based on emissions estimates from roads surfaced with asbestos-containing material. This information indicates that over time, as the asbestos contents of these roads decline with the addition of non-asbestos-containing aggregate material, the asbestos emissions would greatly diminish, as would the associated risks.

The commenter appears to be arguing that even though data exists on the emissions and risks from asbestos-containing serpentine roads, the ARB cannot take action to protect public health unless additional data is first compiled from roads surfaced with asbestos-containing non-serpentine ultramafic rock. The ARB does not agree. There is absolutely no reason to believe that when one drives a motor vehicle over a road covered with asbestos-containing non-serpentine rock, the result will be any different than driving a motor vehicle over a road covered with asbestos-containing serpentine – particularly given the close geologic similarities between these rock types (see the response to Comment No. 15.9 and 15.10). There is absolutely no evidence supporting the commenter's speculation in this regard. The responses to Comments No. 15.9 and 15.10 further explain why it is appropriate to regulate both serpentine and ultramafic rock in the ATCM.

The commenter has also confused the ability to estimate the emissions and risk from an individual source such as unpaved road surface (which the ARB has done in the ISOR), with the ability to reliably estimate the total emissions and risks from unpaved roads and other surfaces throughout California (which the ARB has not done). The response to the following comment explains in detail why data to estimate the total statewide risks is not reasonably available, and why it would not be feasible to make such an estimate.

Finally, the Legislative findings set forth in Health and Safety Code section 39650(e), state that “while absolute and undisputed scientific evidence may not be available to determine the exact nature and extent of risk from toxic air contaminants, it is necessary to take action to protect public health.” The ARB staff has utilized all reasonably available data in its analysis and has met the requirements of the Health and Safety Code.

15.13. Comment: Health and Safety Code section 39665(b)(1) states that the ISOR, "to the extent data can reasonably be made available," must address "the rate and extent of present and anticipated future emissions, the estimated levels of human exposure, and the risks associated with those levels." This data-collection requirement has not been met. On page III-5 of the ISOR, staff admits that it cannot provide even a reliable estimate on the effectiveness of the current ATCM in reducing asbestos emissions, because there is no reliable estimate of the amount of unpaved roads and other surfaces that are covered with serpentine. This information is necessary to establish a "baseline" against which the effectiveness and cost of the proposed ATCM can be compared. The fact that the ISOR is proposing amendments to the existing ATCM comes with the implied assumption that the existing ATCM is not reducing emissions as anticipated in 1990. The ISOR asks the ARB to take that assumption at face value without supporting data.

In addition to the lack of the required data on the existing ATCM, the ISOR also

does not provide the required data on the emissions and risk reductions that are anticipated from the proposed amendments. Staff concedes this on page IV-1 of the ISOR.

The ARB has had over 10 years to develop the type of quantitative data required by the Health and Safety Code. It would not have been difficult to develop this information, and therefore the data could have been "reasonably… made available" within the meaning of Health and Safety Code section 39665(b). Staff offers no explanation as to why no attempt was made to obtain this information. The statute requires that these data-collection requirements must be met before the ARB takes action on the proposed amendments, and they have not been met. (TDLF)

Agency Response: Since the adoption of the 1990 Asbestos ATCM, additional data from ambient air monitoring studies and dust emission models has been developed. This information demonstrates a potential for significant exposures and risks for individuals living near unpaved roads surfaced with material containing up to five percent asbestos (see pages III-1 to III-6 of the ISOR). This data supports staff's conclusion that the 1990 ATCM is not adequately protecting public health, and that the proposed amendments to the ATCM are necessary.

The information in the ISOR addresses exposures and risks from individual sources of naturally-occurring asbestos (i.e., unpaved roads in particular areas). The commenter is correct that the ISOR does not attempt to quantify the total asbestos emissions and risks throughout the state of California. There are several reasons why it would be unreasonably difficult to do this for either the 1990 ATCM or the amended Asbestos ATCM. An enormous amount of information would be necessary to make such an estimate of the total emissions and risks, including:

- identifying and estimating the total number of miles of roads in the state surfaced with asbestos-containing aggregate (this would include roads located in urban, rural, and wilderness settings);

- determining the average asbestos content of the road surface material for each of the identified roads;

- determining the traffic volume and the nature of that traffic on the identified roads;

- measuring the silt content; and

- determining the meteorological conditions at the location of each identified road surface.

Considering the immense amount of information needed to make these estimates, and the lack of readily available databases containing this information, staff concluded that making such estimates would not be feasible. As discussed previously, however, staff did address in the ISOR how emissions and risk would be reduced from individual sources of asbestos emissions. This information indicates that over time as the asbestos contents of these roads decline with the addition of non-asbestos-containing aggregate material, the asbestos emissions would greatly diminish, as would the associated risks.

16.0 Supporting Data - Monitoring Studies

16.1. Comment: The monitoring studies included in the ISOR do not assist in providing quantitative data that would support the need for the proposed amendments. This is true for three reasons:

The first reason is that the ARB has established no baseline of ambient asbestos in either El Dorado County or Nevada County, the focus area for the ARB's studies. Given the prevalence of exposed serpentine in these counties, concentrations of naturally-occurring asbestos are naturally present in the ambient air. Of the 277 samples taken to assess "background," 25 percent showed detectable levels of asbestos in the air that could not be attributed to any source, such as an unpaved road. We can assume that the ISOR put the word "background" in quotes to indicate that, from a statistical standpoint, 277 samples do not approach the quantity needed to establish a sense of a true ambient baseline for asbestos exposure for such large geographic areas. The results do suggest, however, that monitoring results near sources need to be measured against a baseline other than zero. The monitoring results shown on Table 3 of the ISOR do not, however, appear to be adjusted to account for any baseline exposure even though the ISOR shows such a baseline exposure to exist. (TDLF)

Agency Response: Staff disagrees with the commenter. The ARB staff is convinced that the monitoring data presented in the ISOR is more than adequate to establish a baseline for 'background" asbestos levels. This baseline is essentially zero for the areas of study. The "background" monitoring sites were locations in which a specific source of asbestos could not be identified. As the commenter stated, 277 samples were collected from 28 monitoring sites. The analysis of the samples indicated that less than 25 percent registered positive for asbestos, with a resulting range of one to ten chances in a million for mesothelioma and lung cancer. It is staff's belief that these monitoring data do indeed establish a background risk level that ranges between non-detection (with more than 75 percent indicating essentially no cancer risk) from asbestos to a ten in a million. Given this very low background level of asbestos exposure,

it would not be appropriate to do what the commenter has suggested and adjust the exposure data in Table III by utilizing a baseline of other than zero.

The commenter also states that the 277 samples collected at 28 sampling sites over a two-year period "do not approach the quantity needed to establish a sense of a true ambient baseline for asbestos exposure for such large geographic areas." Staff does not agree. To put this asbestos monitoring program into perspective, the ARB has only 17 permanent monitoring sites located throughout California that are used to establish background levels for over 60 toxic compounds for the entire state.

The second reason that the monitoring studies near unpaved roads provide little relevant quantitative data is that consistent monitoring techniques were not used**.** The Foresthill Study tested exposures from one pothole containing material at 0.20 percent asbestos at a range of one foot with ten vehicle passes per hour. The pothole sampling and the exposure monitoring were separated by several months. The Quarry Entrance Study tested exposures from serpentine dust with a 0.40 percent asbestos content placed on the paved surface by ARB staff. The measurements from this study were taken at a range of five feet with 20 vehicle passes per hour. Here as well the date of the serpentine sampling was separated by several months from the exposure monitoring. Other studies shown on Table 3 either do not contain any data concerning the asbestos concentration of the roadway being monitored or else monitored in the area of roadways with asbestos content far in excess of the existing ATCM. It is open to speculation how the range of detected risks from the Foresthill Study and the Quarry Entrance Study would relate if the same monitoring range had been used, the same number of vehicle passes per hour had been used and serpentine dust had not been physically placed on the road surface as part of the Quarry Entrance experiment. (TDLF)

Agency Response: The ISOR references five near-source asbestos monitoring studies that clearly and consistently indicate that asbestos will be emitted from unpaved roads surfaced with asbestos-containing material due to vehicular disturbances. This conclusion is a common-sense one, and cannot reasonably be called into question simply because the studies did not all use the same research design. The commenter criticized two of the studies because they failed to use the same input parameters. Staff does not dispute that the two studies in question involved different parameter values, as did all the studies referenced. Under the specific circumstances of each location it would nearly impossible to establish monitoring studies in different locations that would have the same parameters as the commenter suggests. Further, the two studies, the Foresthill Pothole and the Quarry Entrance studies were conducted to measure the airborne asbestos concentrations specific to each of those locations using the conditions that were natural to each location. Staff did not, as stated by the

commenter, place any additional serpentine dust onto the paved surface for any purpose before or during the collection of air samples.

The commenter also stated that the remaining studies either had asbestos contents far in excess of the 1990 Asbestos ATCM limit or the asbestos content was not provided. Staff believes this does not pose any significant issues. The available asbestos emission models indicate that the downwind concentration of asbestos is directly related to the asbestos content of the road surfacing material. Roads surfaced with material with asbestos contents of two to three times the 1990 asbestos limit resulted in risks that were three orders of magnitude greater than any of the background levels measured in El Dorado County. Given the reasonable assumption that there is a linear relationship between the asbestos content and downwind air levels, if the asbestos concentrations were close to the five percent limit in the Diamond XX and Valley studies, the risks would proportionately decline by a factor of two or three. These risk values would still be exceedingly high and be cause for concern.

The third reason that the monitoring studies do not provide the data required by the Health and Safety Code is that there is no data, produced using consistent monitoring techniques and protocols, that discloses the actual emission reduction that might be expected as a result of lowering the allowable concentration of asbestos from five percent to one percent, as the ISOR proposes. As a result, the model relied upon in the ISOR (ISOR Table 5, p. 111-5) is offered to the ARB with no empirical verification as to its accuracy.

Agency Response: Staff did indicate how emissions and risk would be reduced through the modeling information that is presented in the ISOR, based on emissions estimates from roads surfaced with asbestos-containing material. This information indicates that over time, as the asbestos contents of these roads decline with the addition of non-asbestos-containing aggregate material, the asbestos emissions would greatly diminish, as would the associated risks. The emissions and risk information provided in the ISOR represent limited scenarios. It would be impractical to estimate the risk from all roads due to the many factors involved in making this estimate. These factors include the total number of miles of roads surfaced with asbestos-containing aggregate, the asbestos content of the road surface material, the traffic volume and nature of that traffic on the roads, the silt content, and the meteorological conditions at the location of each road surface.

The commenter's assertion that the modeling information was developed based on a model with no supporting empirical data is incorrect. The modeling information used in the ISOR was developed using the California Serpentine-Covered Road Asbestos Model (CALSCRAM). CALSCRAM was an ARB-contracted model that was developed after the adoption of the 1990 Asbestos ATCM. The model was developed to verify and improve upon the

United Stated Environmental Protection Agency's 1990 asbestos road model. CALSCRAM development was based on the U.S. EPA's model and empirical data gathered in the Valley Road Model Study referenced in the ISOR.

16.2. Comment: The exposure assessment study on unpaved roads relies on a number of studies that we do not consider representative of true situations. One was based on a Sacramento Bee newspaper study that had a single sample. The other was near a quarry entrance. This doesn't seem representative of an unpaved road. Therefore, how representative are the six studies outlined in Table 3 of the Initial Statement of Reasons? (GR)

Agency Response: The monitoring studies referenced in the Initial Statement of Reasons are indeed representative of true situations, because they are based on actual measurements taken in the field, instead numbers that are estimated or modeled. Each of the studies indicated elevated concentrations of asbestos downwind of unpaved roads surfaced with asbestos-containing materials. Although the studies were not conducted in exactly the same manner, the studies clearly indicate elevated asbestos concentrations downwind of unpaved roads surfaced with asbestos-containing material during vehicular activities.

16.3. Comment: Measurements taken from monitoring sites which showed the highest levels of airborne asbestos on a roadway are questionable because they were taken near a quarry that was in violation for failing to control dust emissions. (CMA)

Agency Response: It is very unlikely that dust emissions from the quarry impacted the roadway monitoring. A monitoring site is equipped with a meteorological station for determining wind speed and direction. The meteorological data shows the wind at the roadway monitor was blowing towards the quarry during sampling.

16.4. Comment: The monitoring studies do not provide the data required by the Health and Safety Code because there is no data (none produced using consistent monitoring techniques and protocols) that discloses the actual emission reduction that might be expected as a result of lowering the allowable concentration of asbestos from five percent to one percent. (TDLF)

Agency Response: Adequate information is available in the ISOR to estimate the impact of reducing the allowable asbestos concentration from five to 0.25 percent. Modeling studies, not monitoring studies, typically provide an indication of emission reductions. The modeling information set forth in the ISOR shows that over time (with all other parameters being equal) a substantial emissions and risk reduction can be achieved from implementing the amended Asbestos ATCM. A general reduction in risk on the magnitude of 75 to 95 percent

(depending on the asbestos content of the road at present) can be expected as a result of implementing the amended Asbestos ATCM.

16.5. Comment: There is no scientific evidence for the need to change the existing regulation. The current ATCM has been in place for ten years and it has been an effective public health measure. It provides air districts the flexibility to require lower content levels where warranted. The proposed modifications imply that the existing ATCM is not reducing emissions as anticipated in 1990. A data set that only includes 255 air samples is not sufficient to assume that the existing ATCM is ineffective. (Carr, CMA, CMAC, DSS, EBHJ, GCI, GR, HA, KNF, Marinaccio, McLane, PIT, RP, RSS, SRPI, TAOEDC, TDLF, WCA, Weitzman)

Agency Response: The information contained in Chapter III of the ISOR clearly indicate that the 1990 Asbestos ATCM is not reducing asbestos emissions to the extent necessary to protect public health. Modeling information demonstrates that roads surfaced with material with asbestos contents as low as one percent present the potential for substantial exposures and risk. Furthermore, monitoring studies conducted since the adoption of the 1990 Asbestos ATCM show elevated asbestos concentrations near roads surfaced with asbestos-containing material. Finally, the 255 air samples indicate that while generally there is not widespread overall exposure to asbestos in El Dorado County, there do exist locations near potential sources of asbestos emissions (e.g., unpaved surfaces, construction sites, and quarries) that experience elevated concentrations of asbestos fibers. Based on this and other information contained in the ISOR, the ARB staff determined that it was necessary to develop and propose amendments to the ATCM to reduce the public's exposure to potential asbestos emissions.

17.0 Maps

17.1. Comment: We request that the following map and language be added to Appendix A: *Lake County Air Quality Management District (LCAQMD) Map A "Serpentine Survey of Lake County" included in Rule 467 Staff Report Dated 3/6/92, and any map as further modified by the Division of Mines and Geology, or the LCAQMD Board of Directors*. (LCAQMD)

Agency Response: The 15-day changes to the amended ATCM included the above referenced map along with the maps published by the Department of Conservation, Division of Mines and Geology.

17.2. Comment: The map designations should be looked at in much more detail on a case-by-case basis rather than a blanket approach. (Bloechl)

Agency Response: The DMG 1:250,000 scale geologic maps are currently the best tool available to identify, on a statewide basis, areas where ultramafic rock and serpentinite may be present. Numerous geologic maps at various scales cover portions of California and, when present, ultramafic rocks and serpentinite may be represented in different ways on different maps. The 1:250,000 scale maps provide complete coverage of the state. No other geologic map series at more detailed scales is available that provides complete state coverage. The 1:250,000 scale geologic maps have been selected in order to have a uniform standard for applying this control measure. In those areas where the ATCM references more detailed 1:100,000 scale maps (El Dorado and Lake counties) those maps should be used for regulatory purposes. If there is some doubt about whether a facility should be regulated under the ATCM, the operator can conduct a geologic evaluation which could, in part, rely upon information contained on more detailed geologic maps.

17.3. Comment: The Department of Conservation maps do not emphasize that non-serpentine rock also may contain one form of asbestos. (EDCTQG)

Agency Response: The 1:250,000-scale geologic maps are currently the best tool available to identify the areas of the State where asbestos is most likely to be found. It is recognized that there are some locations in California that are not within the geographic ultramafic rock units where asbestos can occur. The amended ATCM provides the district with authority to request the owner or operator to either perform a geologic evaluation of property from which aggregate material is being extracted or conduct asbestos testing of aggregate material being sold for surfacing in areas outside of geographic ultramafic rock units if there is a reasonable indication that the property may have ultramafic rock or other asbestos-bearing rock. Reasonable indications could include geologic reports or evaluations, more detailed geologic maps, information that the property is located in alluvial fans directly downstream of ultramafic rock deposits and may be contaminated with asbestos, or asbestos found in aggregate that originated from the property. This will ensure that asbestos outside of the geographic ultramafic rock units is accounted for and is not used for surfacing aggregate.

17.4. Comment: A map should be required to back up the sample collection and subsequent laboratory tests. (Coleman)

Agency Response: The purpose of testing is to determine if the material contains asbestos. Mapping would not assist in this endeavor, because all material to be sold or supplied for surfacing that originates from an ultramafic rock unit must be tested. While a map showing the sample locations would be appropriate for a geologic investigation, it is not necessary when sampling stockpiles at an operating quarry.

17.5. Comment: The scale on existing Division of Mines and Geology maps is too large to determine if a small parcel of land is in an asbestos area, and for mapping small associations of serpentine materials in ultramafic rocks. There is concern about the degree of confidence in using a map with a scale of 1:250,000. For example, a 40-acre parcel of land would measure 0.063 inches. (Bloechl, Coleman, HA, LCAQMD)

17.6. Comment: There is not a detailed map showing accurately where ultramafic source rock is located. (Coleman)

Agency Response (Comments No. 17.5 and 17.6): The DMG 1:250,000 scale geologic maps are currently the best tool available to identify, on a statewide basis, areas where ultramafic and serpentine rocks may be present. Numerous geologic maps at various scales cover portions of California and, when present, ultramafic and serpentine rocks may be represented in different ways on different maps. The 1:250,000 scale maps provide complete coverage of the state. No other geologic map series at more detailed scales is available that provides complete state coverage. The 1:250,000 scale geologic maps have been selected in order to have a uniform standard for applying this control measure. In those areas where the ATCM references more detailed 1:100,000 scale maps (El Dorado and Lake counties) those maps should be used for screening purposes. The amended ATCM contains a mechanism that would address this type of issue. The owner/operator can apply for an exemption from the amended ATCM based on a geologic evaluation even though the property is located within a region designated by one of the referenced maps as an ultramafic rock unit. If the evaluation indicates that ultramafic rock or serpentine rock is not present on the property, the facility would be exempt from the requirements of the amended ATCM. If there is doubt or confusion about whether a facility that is located within the boundaries of a geographic ultramafic rock unit is actually located within an ultramafic rock body, the owner/operator has the opportunity to conduct a geologic evaluation to make a more accurate determination.

17.7. Comment: The definition of the term “geographic ultramafic rock unit” (GURU) is hard to understand. (HA)

Agency Response: Staff recognizes that the term “geographic ultramafic rock unit” may pose some degree of confusion; but it is important to distinguish between the rock units as indicated on a geologic map (geographic ultramafic rock unit) and the actual rock units as they occur in nature, ultramafic rock units (without the term “geographic”). If an aggregate-producing facility operates within the boundaries of a geographic ultramafic rock unit as shown on a referenced geologic map, that facility would be addressed by the ATCM on some level; even if it is to demonstrate that the facility is not located in an actual ultramafic rock unit.

17.8. Comment: Serpentine/serpentinite bodies and ultramafic rocks, although usually intimately related, are quite different species and should be mapped separately. A map showing disturbed serpentine combined with a fibrous-soils map may be more effective. (Bloechl)

Agency Response: At this time, the available maps typically do not distinguish between ultramafic rock and serpentine rock. Because of the general continuum between ultramafic rock and serpentine rock in many situations, it may be impractical to make this distinction on geologic maps. Further, the DMG indicates that asbestos can be found in ultramafic rock as well as serpentine rock. Because asbestos can be found in both ultramafic and serpentine rocks, staff believes using the ultramafic (ultrabasic) designation is most appropriate until better maps are available.

18.0 Support Comments

18.1. Comment: We support the ARB's proposed revisions to the ATCM for Surfacing Applications in lowering the acceptable amount of asbestos form 5 percent to 0.25 percent for all surfaces. The science says that asbestos is harmful. ARB staff has complied and has met the Health and Safety Code standards. The current ATCM does not protect the public at the current five percent level without an adequate mechanism for enforcement. (Wade, McArthur, OlivaJ, Martin, Moore, McMahan, Vallance, Griffith, Miller, McElver, Tessa, Scott, Jaynes, Thomas, Pender, Hogan, Vigus, Hooper, Griffiths, Eash, Dold, Engelmann, JohnsonT, JohnsonJ, DTSC, Steele, Powell, Nelson, Thompson, Lehrer, Saddik, Lichaa, Knecht, Cook, Hackelberg, Sandford, de Raat, Lee, Crump, Klein, Applestein, Marks, Pierce, Vacum, Brewster, Rodgers, Sbonelli, Neill, Levy, David, Price, Miller, DTSC, USEPA, VargasM, Lance, VargasJ, Howard, OlivaR, Long, DHS, LCAQMD, OEHHA, EDCEMD)

Agency Response: The ARB agrees with this comment. The amended ATCM will further protect the public from exposure to naturally-occurring asbestos.

18.2. Comment: The proposed revisions, including dust mitigation/suppression measures for construction and quarrying activities, and limiting the amount of asbestos-containing aggregate for surfacing applications, are prudent responses to concerns raised in El Dorado County and that apply to all of California. DHS believes that the implementation of the revised ATCM will protect both the current and future state populations. (DHS)

Agency Response: The ARB agrees with this comment.

18.3. Comment: The scientific literature supports the ARB position that all forms of

asbestos, including chrysotile, can cause asbestos-related disease, and that such disease can occur even as a result of environmental exposures. (DHS)

Agency Response: The ARB agrees with this comment.

18.4. Comment: There are four reasons DHS believes the ATCMs are necessary additional precautions: 1) Known outcomes associated with asbestos exposure are extreme and include death; 2) The most serious outcomes have a latency period of decades and thus require thoughtful action now to prevent them; 3) The actions that can reduce potential exposures are clear, feasible, and limited; and 4) The restrictions being considered are not overly burdensome to very many parties. (DHS)

Agency Response: The ARB agrees with this comment.

18.5. Comment: One issue concerning the revised ATCM is the toxicity of chrysotile. Opponents of the revised ATCM argue that chrysotile is a "safe" form of asbestos, or at the worst, much less harmful than amphiboles. They therefore argue that chrysotile should not be included in the proposed ATCM. DHS respectfully disagrees with the contention that chrysotile is a "safe" form of asbestos, or even that it is significantly less harmful than amphiboles. Certainly chrysotile is chemically and structurally different from amphiboles. However, these differences do not mean that chrysotile is benign. According to references, all forms of asbestos are capable of causing asbestosis. In fact, most studies of asbestosis in humans have involved chrysotile. (DHS)

Agency Response: The ARB agrees with this comment.

18.6. Comment: An issue concerning the revised ATCM is whether environmental exposures (relatively low levels of exposure, compared especially to occupationally exposed workers) can cause asbestos-related disease. A number of factors make it difficult to determine whether residents of areas with deposits of natural-occurring asbestos are at greater risk for asbestos-related disease. However, DHS feels that there is enough evidence to support the position that long-term exposure to dust from exposed deposits of naturally-occurring asbestos can cause an increase in asbestos-related disease. While there are no rules, no matter how strict, that can completely eliminate exposure to asbestos, DHS believes that ARB's proposed ATCM for naturally-occurring asbestos go a long way in minimizing Californian's exposures and protecting the public's health. (DHS)

Agency Response: The ARB agrees with this comment.

18.7 Comment: The California Department of Health Services completed a risk assessment of asbestos under the Toxic Air Contaminant process in 1986 based

on epidemiological studies of exposed workers. The DHS risk assessment was reviewed and approved by the State's Scientific Review Panel (SRP) on Toxic Air Contaminants. The SRP revisited the issue of potential differences in potency in 1990 and concluded that the data were inadequate to quantify differences sufficiently to derive separate potency estimates for each form of asbestos. OEHHA staff have been monitoring the asbestos literature and have read the major studies on asbestos carcinogenicity published since the initial risk assessment was conducted. More studies have been published that support the conclusion that all forms of asbestos are human carcinogens. (OEHHA)

Agency Response: The ARB agrees with this comment.

18.8. Comment: The health effects of asbestos exposure include the following: 1) asbestosis, a disabling and sometimes fatal fibrotic lung disease resulting in progressive shortness of breath; 2) lung cancer; and 3) mesothelioma, a cancer of the tissue lining the chest and abdomen. (OEHHA)

Agency Response: The ARB agrees with this comment.

18.9. Comment: There is ample evidence that all forms of asbestos are capable of inducing lung cancer and mesothelioma in both humans and animals. The International Agency for Research on Cancer, the U.S. Environmental Protection Agency, California Environmental Protection Agency's Office of Environmental Health Hazard Assessment, the Consumer Products Safety Commission, the World Health Organization, and many other countries consider both chrysotile and amphiboles to be human carcinogens. (OEHHA)

Agency Response: The ARB agrees with this comment.

18.10. Comment: USEPA has in the past paved roads that had serpentine under the Superfund Program. However, they feel that Superfund is not to be used as a public works program, and it's best for the state and local governments to regulate.

Agency Response: This comment reflects USEPA's position concerning use of federal funds. No response is necessary.

B. Responses to Comments Received During the 15-day Comment Period (September 28, 2000, to October 13, 2000)

Abbreviation	Commenter
Abraham	Jerrold Abraham, MD

	Director of Environmental and Occupational Pathology SUNY Upstate Medical University written testimony: October 19, 2000
Case	Bruce Case, M.D., M.Sc., Dipl. Occupational Hygiene, F.R.C.P.(C) Director, Environmental Pathology Associate Professor, Pathology Associate Member, Epidemiology/Biostatistics/Occupational Health McGill University, Montreal, Canada written testimony: October 20, 2000
DMG	Ron Churchill Department of Conservation Division of Mines and Geology written comments: October 20, 2000
KNF	Margaret J. Boland, Forest Supervisor Klamath National Forest U.S. Department of Agriculture written testimony: October 18, 2000
LCAQMD	Bob Reynolds Air Pollution Control Officer Lake County Air Quality Management District written testimony: October 20, 2000
Rubin	Donna Rubin written testimony: October 13, 2000
Trent	Terry Trent written testimony: October 10, 2000, October 15, 2000, October 20, 2000, October 22, 2000

Comments and Responses

1. Comment: The revised ATCM does not address exposure of El Dorado County residents who live on top of long fiber tremolite asbestos deposits or next to quarries operating in violation of federal and state regulations. (Trent)

   Agency Response: The 1990 and amended Asbestos ATCMs were developed to address the issue of asbestos emissions from new surfacing applications

using asbestos-containing materials. These measures do not attempt to redress existing road surfaces covered with asbestos-containing material, or residents who live on asbestos deposits. Effectively addressing such issues presents very difficult practical problems and is beyond the scope of the current ATCM. The issue of asbestos emissions from construction, grading, quarrying operations, and surface mining will be addressed in the development of the asbestos ATCM for construction and quarrying operations, which is currently scheduled to be considered at the July 2001 Board hearing.

2. Comment: Sections of El Dorado County that are on tremolite deposits should not be developed. (Rubin)

   Agency Response: The Air Resources Board does not have the authority to make decisions with respect to local land use planning. Land use planning issues should be addressed on a local level by the county or city that has jurisdiction over the area.

3. Comment: There should not be an exemption that allows the use of serpentine material as riprap for stability to a watercourse or shoreline because the construction industry has a broader definition of riprap. The Southern Pacific Railroad uses asbestos-containing serpentine when laying track. Asbestos containing riprap is seen along many California road banks. (Trent)

   Agency Response: The amended Asbestos ATCM has a narrow and precise definition of “riprap,” and only those uses that meet the definition in the amended ATCM will be allowed irrespective of how other agencies or entities may define the term.

4. Comment: The regulation should include some air measurements. (Abraham)

   Agency Response: It is not necessary to take asbestos air measurements to prevent the use of material with a detectable amount of asbestos. Air measurements would place an additional and unnecessary burden on the industry without the benefit of providing information that would aid in the implementation of the control measure.

5. Comment: Materials capable of releasing very high concentrations of asbestos fibers will not be regulated with a lower limit of 0.25 percent. (Abraham)

   Agency Response: Staff does not agree with this comment. Staff is unaware of any naturally-occurring materials with an asbestos content that is less than the detection limit of Method 435 (0.25 percent) that has the capability of releasing very high concentrations of asbestos. No definitive information regarding such a material as described by the commenter has been presented to staff for review.

6. Comment: Is there some way to regulate and label more informatively and honestly. For example, the label for products containing less than 0.25 percent asbestos by weight would say “contains less than about one billion asbestos fibers per gram.” For products containing more than 0.25 percent asbestos by weight the label would say “contains at least a few billion asbestos fibers per gram.” (Abraham)

   Agency Response: The labeling requirement suggested by the commenter would be incomprehensible to the general public and would not provide any useful information. In addition, the test method specified by the amended ATCM (ARB Test Method 435) provides the asbestos content in a numerical percent, not in a fibers per weight basis. It would be inappropriate to make a conversion to such a unit for the purposes of this control measure. A fibers-per-weight unit can imply a risk-based approach to regulating naturally-occurring asbestos, which the amended ATCM does not take.

7. Comment: Is the ARB going to indemnify developers and others who make roads and sell land to people, claiming “the ARB said we did not need to inform you or regulate this particular project because it has only 0.2 percent asbestos” or, “with the methods the ARB recommended, the lowest concentration of asbestos we can easily detect is 0.25 percent, so if we can’t detect it, there is no problem, and we guarantee your safety.” (Abraham)

   Agency Response: The commenter appears to be asking a rhetorical question, and is not suggesting that any particular changes be made to the ATCM. To respond literally to the question posed by the commenter, it is of course obvious that the ARB would not indemnify persons who make such statements.

8. Comment: The ARB proposal was missing any discussion of health or any required involvement of public health or medical or other asbestos experts. (Abraham)

   Agency Response: This comment is not correct. The Initial Statement of Reasons (ISOR) discusses the health affects of asbestos. The administrative record for this rulemaking action also contains numerous comments from public health and asbestos experts which discuss in great detail the health effects of asbestos.

9. Comment: The proposed amendments: 1) do not refer to any measure by which concentration of fibers by weight may be translated in human risk assessment for known asbestos-related diseases and; 2) specifically allow, in a large number of proposed exemptions, probable exposure to concentrations of this particular fiber type (tremolite) which would indeed still exceed 0.25 percent asbestos by weight, even given the revisions proffered; and 3) allow, even at the proposed

maximum concentration by weight of 0.25 percent, exposures to lethal concentrations of asbestos fibers to ordinary citizens. (Case)

Agency Response: The amended ATCM is a technology-based control measure and, as such, does not contain a specific risk component. The ATCM relies upon the use of best available control technology (i.e., it prohibits the use of aggregate with a detectable asbestos content). Because of this, there is no need to make a translation between the asbestos content of the aggregate material and air concentrations to estimate potential risk. Regarding the exemptions allowed in the ATCM, the ARB staff believes that they have been carefully crafted to minimize adverse public health impacts. The rationale for each exemption is contained in the ISOR, and in the various responses to comments in this Final Statement of Reasons**.**

10. Comment: All exposures to asbestos have a possible impact on the health of the citizens of El Dorado County and should be minimized to the maximum extent possible. A serious program of accelerated research should be implemented to assess the extent of health hazard and the magnitude of resulting risk. This should involve all stakeholders and provide long-term solutions. (Case)

    Agency Response: The intent of the amended Asbestos ATCM is to minimize exposures to asbestos by eliminating the addition of asbestos-containing material to unpaved surfaces. The upcoming asbestos ATCM for construction and quarrying operations will address asbestos emissions from those activities. The ARB, along with other state, federal, and local agencies, has formed a task force that is actively evaluating issues associated with naturally-occurring asbestos, including conducting a health study to investigate whether there is a higher incidence of asbestos-related illnesses in areas in and near ultramafic rock zones. The results of this investigation may lead to additional regulatory development in the future.

11. Comment: I object to the use of “registered geologists” for anything other than identification of naturally-occurring asbestos deposits. There is a large gap of professional advice required by residents who reside in naturally-occurring asbestos areas that cannot be offered by a registered geologist. (Trent)

    Agency Response: It is appropriate to use a registered geologist to conduct geologic evaluations, as discussed in the response to comment 9.2. Persons who reside in areas with naturally-occurring asbestos may wish to obtain the advice of other professionals, but this is beyond the scope of the ATCM.

12. Comment: The conclusion (in the ISOR and on page 5 of the Board Resolution) of no significant impact with the exception of a small increase in diesel emissions due to additional transportation is supported by a long discussion of

an insignificant impact. A more general conclusion of the negative impacts on air, water, land use and social issues in the absence of timely actions seems more appropriate. (LCAQMD)

Agency Response: The discussion in the ISOR (Chapter V) is designed to meet the requirements of the California Environmental Quality Act (CEQA) by analyzing all potential adverse environmental impacts that that may result from the ATCM. Consistent with CEQA requirements, this discussion identifies and analyzes a small potential adverse air quality impact from increased diesel emissions. The positive, beneficial impacts of the ATCM are not emphasized in this discussion for CEQA purposes, but are discussed in other portions of the ISOR. Similarly, the findings set forth on page 5 of the Board Resolution are designed to meet CEQA requirements, and do not emphasize the beneficial aspects of the ATCM.

13. Comment: Enclosure 3, Proposed Regulation Order, Section 93106 (b) Applicability, (3): The ten percent mixture applicability captures all materials listed in (b)(1) and (b)(2) even when the total asbestos content is below detection limits, or considerably less than 0.25 percent. A test method for determining the ten percent content should be provided, and if this is not the intent, it should be made clear. (LCAQMD)

Agency Response: The purpose of the ten percent criteria is discussed in the response to Comment No. 4.4. If the operator estimates that an aggregate source contains about ten percent ultramafic rock or serpentine, then the material should be tested in accordance to the requirements of the amended ATCM. The ARB staff was unable to identify a practical test method that would measure the percentage of restricted materials in aggregate, so the ATCM does not specify one.

14. Comment: The exclusion of alluvial material containing serpentine is inconsistent with the intent of the ATCM for alluvial deposits in or near serpentine or ultramafic rock units. Evidence suggests that some alluvial deposits in close proximity to serpentine areas will contain detectable asbestos at 0.25 percent. (LCAQMD)

Agency Response: Sand and gravel operations that are located in alluvial deposits are specifically exempt from the prohibition on use, sale, and supply and also the noticing, recordkeeping and reporting requirements (see subsection (f)(1)). The exemption for sand and gravel operations was carried over from the 1990 ATCM, and reflects the fact that in general, aggregate obtained from alluvial deposits has a low probability of containing asbestos (see page IV-5 of the ISOR).

However, potential problems at facilities operating outside the boundaries of a

geographic ultramafic rock unit--including sand and gravel operations--can be addressed subsection 93106(g) of the ATCM. This subsection provides that either the districts or the ARB may require a geologic evaluation of property where a problem may exist, or may require the testing for asbestos of any aggregate material sold, supplied, or offered for sale. If the geologic evaluation indicates the presence of ultramafic rock, serpentine, or asbestos, the facility would be required to comply with the requirements of the amended ATCM. If the district is made aware of alluvial deposits that are contaminated with serpentine or ultramafic rock, this information can be used as the basis for requiring a geologic evaluation of the facility property or for requiring asbestos testing of the material sold for surfacing.

15. Comment: The geologic evaluation exemption requires a geologist currently licensed with State of California, Department of Consumer Affairs, Board of Geology and Geophysics. This requirement restricts the availability of geologists that can conduct investigation and disallows otherwise highly qualified geologists from conducting evaluations with elements that are specifically identified in the ATCM. This section should be modified further to allow the APCO discretion. (LCAQMD)

    Agency Response: The ARB staff does not believe that the requested modification is appropriate. It is important that the geologic evaluation for the purposes of granting an exemption be conducted by a person that is recognized by the State as being competent in geology. A geologist licensed by the State would also provide greater credibility to the affected public than someone who claims to be knowledgeable about geology. The public needs to know that the evaluation is conducted in a consistent and professional manner and that there would be substantial consequences to the geologist for falsifying results or performing negligent work. Requiring a registered geologist provides some of these assurances. It is not necessary for district staff reviewing the exemption request to be registered geologists.

16. Comment: We are opposed to the use of the term “serpentine rock” and recommends “serpentinite” as the geologically correct term. The use of the term “serpentine rock” will be inconsistent with Division of Mines and Geology maps and documents, particularly those directly related to the naturally-occurring asbestos issue. (DMG)

    Agency Response: It is important that the amended ATCM can be understood not only by professionals, but lay persons as well. The terms “serpentine” and “serpentine rock,” which is synonymous with serpentinite, are the terms that the general public are most familiar and they are also the terms used in the 1990 Asbestos ATCM. Replacing “serpentine” with “serpentinite” in the amended ATCM would cause unnecessary confusion in the lay population. Further, the term “serpentinite” has been defined in the amended ATCM using the term

"serpentine."

17. Comment: We suggest reordering the items 1-7 in subsection (f)(7) "Exemptions, Geologic Evaluation." The new suggested order is 1,4,5,2,3,6, and 7. This will place information on what a detailed site characterization involves ahead of details on rock analysis and rock definitions needed in the site evaluation. (DMG)

    Agency Response: Subsection (f)(7) was reordered as suggested by the commenter. The actual language of subsection (f)(7) has not been changed: the only change is to the order in which the geologic evaluation procedures are listed. This is a nonsubstantive change, which was made after the close of the 15-day comment period.

18. Comment: We suggest a new test method for ultramafic rock under subsection (h)(1): "Determination of rock type for the geologic evaluation shall be by an accepted technique, or appropriate combination of techniques, including but not limited to, hand specimen evaluation, petrographic analysis, or chemical methods such as X-ray fluorescence spectrometry (XRF) or Inductively Coupled Plasma Spectroscopy (ICP). The classification of igneous rock types shall conform to the nomenclature of the International Union of Geological Sciences system for igneous rocks." (DMG)

    Agency Response: Subsection (h)(1) was modified to replace the term "indirect coupled plasma analysis" with the term "Inductively Coupled Plasma Spectroscopy," as suggested by the commenter. The terms are used synonymously in the field of geology, but the Department of Mines and Geology staff has indicated that the term "inductively" is more commonly used and would result in greater clarity. Because the two terms mean the same thing, this is a nonsubstantive change which was made after the close of the 15-day comment period. The other modifications suggested by the commenter were not made because they do not improve the clarity of subsection (f)(7). Also, the ARB staff does not see any good reason to impose a regulatory requirement that all "classification of igneous rock types shall conform to the nomenclature of the International Union of Geological Sciences system for igneous rock."

19. Comment: The proposed ATCM will add new burdens of permits, public notification, waiting periods for public comments, and much new coordination with the Siskiyou County Air Pollution Control District regarding the Klamath National Forest's road maintenance program. Hazard warning signs on remote National Forest roads surfaced with asbestos-bearing aggregate, present maintenance problems and cost for installation and upkeep after the signs have been vandalized or removed. The geologic evaluation and sampling costs, permit processes, and compliance issues will effectively preclude utilization of the rock pits that we have in ultramafic rock, except for use as riprap. The new

regulation will increase road maintenance costs on the national forests as well as on private timber lands. This is due to increased haul costs necessary to utilize alternate (non-ultramafic) aggregate sources. (KNF)

Agency Response: The commenter is referring to the impact of the ATCM as a whole, and to the specific provisions of the remote location exemption (subsection (f)(9)). The issues regarding the remote location exemption are addressed in the responses to Comments No. 11.1 to 11.6. The posting of warning signs is addressed in the responses to Comments No. 13.1 to 13.3. In general, the commenter is correct that in certain areas the ATCM will result in increased burdens and costs for persons and organizations who apply aggregate to surfaces. But these increased burdens and costs are necessary to protect the public from exposure to asbestos emissions.

20. Comment: Economic and procedural impacts would be greatly lessened if no permits were required to use aggregate material with less than five-percent asbestos (per 1000 tons applied) in a remote location. The current reporting and recordkeeping rules would also apply. This would be similar to the existing regulation and would be protective of public health. The Executive Officer or local Air Pollution Control District at any time can request information from the National Forest about the location and amount of serpentine and ultramafic aggregate and riprap used anywhere on the National Forest. (KNF)

Agency Response: This comment is addressed in the responses to Comments No. 11.2 and 11.3.

C. Responses to Comments Made By the Office of Small Business Advocate and the Trade and Commerce Agency

Abbreviation	Commenter
CTCA	Denise Ebery, Analyst Regulation Review Unit California Trade and Commerce Agency written testimony: July 19, 2000

Comments and Responses

1. Comment: The proposed regulation does not indicate a time frame within which regulated parties must comply with the regulation. It is not clear why the March 2001 effective date was selected by the Board. The Board should consider working with quarry operators to develop a compliance schedule that would preserve the intended health benefits while providing quarry operators with an opportunity to find alternative safe uses for serpentine rock. (CTCA)

   Agency Response: The commenter is referring to an earlier draft of the ATCM, which specified an effective date of March 1, 2001. In the version of the ATCM made available for a 15-day comment period, the March 1 effective date was eliminated and replaced by the provisions of subsection (a). Subsection (a) reflects the implementation provisions of Health and Safety Code section 39666(d). Staff believes these implementation provisions will provide ample time for the affected facilities to explore possible alternatives uses and markets for the restricted material produced at the facilities.

2. Comment: It is not clear why the use or sale of all serpentine material is being prohibited, given that the ARB has only deemed material with asbestos content above 0.25 percent to be a source of significant exposure. (CTCA)

   Agency Response: The original proposal prohibited all sale or use of serpentine material for surfacing (unless one of the exemptions applied). This original approach was modified, and the modified ATCM adopted by the Board allows serpentine and ultramafic rock to sold or used for surfacing, if the material has been tested and determined to have an asbestos content that is less than 0.25 percent.

3. Comment: The Board should consider allowing the sale of serpentine material with an asbestos content of less than 0.25 percent for use in unpaved surfacing to alleviate some cost impacts on quarry operators. (CTCA)

   Agency Response: As explained in the response to the previous comment, the ATCM has been modified as suggested by the commenter.