



California Environmental Protection Agency

Air Resources Board

**IMPLEMENTATION GUIDANCE DOCUMENT
FOR THE
ASBESTOS AIRBORNE TOXIC CONTROL
MEASURE FOR SURFACING APPLICATIONS**

**Stationary Source Division
Emissions Assessment Branch**

July 2002

**State of California
AIR RESOURCES BOARD**

**IMPLEMENTATION GUIDANCE DOCUMENT
Asbestos Airborne Toxic Control Measure
for Surfacing Applications**

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TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
I. Introduction.....	1
A. Overview of the Amended Asbestos ATCM.....	1
B. Areas Likely to be Affected by the ATCM	2
C. Effective Date	3
II. Applicability.....	5
A. Use of Geologic Maps.....	5
B. District Request for a Geologic Evaluation or Asbestos Testing	9
C. Owner/Operation Knowledge of Ultramafic Rock or Asbestos	10
D. Other Areas Where Asbestos May Be Present	10
E. Areas Where Asbestos Occurrence is Unlikely	11
III. Prohibitions on Use, Sale, and Supply of Restricted Material.....	12
IV. Noticing Requirements	13
V. Recordkeeping and Reporting Requirements.....	16
A. Recordkeeping Requirements for Persons Who Use Restricted Material	16
B. Recordkeeping Requirements for Persons Who Transport or Apply Restricted Material.....	16
C. Recordkeeping Requirements for Persons Who Sell or Supply Restricted Material.....	17
D. Recordkeeping Requirements for Persons Who Use, Sell, or Supply Restricted Material.....	17
VI. Exemptions.....	18
A. Sand and Gravel Operations	18
B. Roads Located at Quarries or Mines	19
C. Maintenance Operations on Existing Roads.....	19
D. Emergency Road Repairs.....	20
E. Asphalt and Concrete Materials.....	21
F. Landfill Operations.....	21
G. Geologic Evaluation.....	21
H. Limited Access Surfaces.....	22
I. Remote Location.....	25
J. Roads Located at Construction Sites.....	30

K.	Riprap	31
VII.	Requirements to Perform a Geologic Evaluation or Asbestos Testing	32
A.	Geologic Evaluations	32
B.	Information that May Warrant Asbestos Testing	35
VIII.	Test Methods and Procedures.....	36
A.	Testing for Ultramafic Rock.....	36
B.	Testing for Asbestos	36
C.	Alternative Sampling Frequency	38
IX.	References	39

Appendices

Appendix A:	Final Regulation Order: Asbestos Airborne Toxic Control Measure for Surfacing Applications
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**State of California
AIR RESOURCES BOARD**

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Asbestos Airborne Toxic Control Measure
for Surfacing Applications**

I. INTRODUCTION

In 1990, the Air Resources Board (ARB or Board) adopted the Asbestos Airborne Toxic Control Measure for Asbestos-Containing Serpentine (1990 Asbestos ATCM) that prohibits the use of serpentine aggregate on unpaved surfaces if the asbestos content is greater than five percent. The ARB staff developed amendments to the 1990 Asbestos ATCM that were adopted by the Board on July 20, 2000, as the Asbestos Airborne Toxic Control Measure for Surfacing Applications, section 93106, title 17, California Code of Regulations (amended Asbestos ATCM or amended ATCM). The amended ATCM became effective on November 13, 2001. A copy of the amended Asbestos ATCM is included as Appendix A. The amended Asbestos ATCM was developed to reduce the public's exposure to airborne asbestos emissions from surfacing applications, such as unpaved roads surfaced with aggregate containing naturally-occurring asbestos. This guidance document was prepared to assist the local air pollution control districts (districts) in the implementation of the amended Asbestos ATCM. This guidance document may also be a benefit to those who are subject to the amended ATCM.

A. Overview of the Amended Asbestos ATCM

The amended Asbestos ATCM prohibits the sale or use of **restricted material** for unpaved surfacing unless it has been tested and found to have an asbestos content that is less than 0.25 percent. The test method required to determine the asbestos content is either ARB Test Method 435 or a method approved by the Executive Officer of the ARB. If restricted material is being sold or supplied for surfacing purposes, the producer of the material (quarry operator) must provide the recipient the following information: the amount of material sold or supplied; the dates the material was sold or supplied, sampled and tested; and a statement verifying that the asbestos content of the material

Restricted material includes aggregate material extracted from an ultramafic (or ultrabasic) rock unit as shown on the geologic maps referenced in the amended ATCM; ultramafic rock including serpentine; or aggregate material shown to have an asbestos content of 0.25 percent or more; or any mixture containing 10% of these materials.

is less than 0.25 percent. Anyone who sells or supplies restricted material, but did not extract the material from the ground, must provide all of the above information with the exception of the date that the material was sampled and tested. If restricted material is being sold or supplied for non-surfacing purposes – such as fill or base – the supplier must notify the recipient with a warning statement that the material may contain asbestos (exact wording is specified in the ATCM).

The amended ATCM also contains 11 exemptions; six of which are carried over from the 1990 Asbestos ATCM. The carried over exemptions address sand and gravel operations, roads located at quarries and mines, maintenance operations on existing roads, emergency road repairs, asphalt and concrete materials, and landfill operations. The five new exemptions address the results of a geologic evaluation, steep surfaces with limited access, surfacing applications in remote locations, roads located at construction sites (which are covered in the ATCM for Construction, Grading, Quarrying and Surface Mining Adopted by the Board in July 2001), and riprap.

The amended ATCM also clarifies the district authority to require a geologic evaluation for the presence of rocks that may contain asbestos and the authority to require testing of any aggregate material for its asbestos content. This authority would typically be exercised if there is credible evidence indicating the potential presence of asbestos outside of an ultramafic rock unit.

This guidance document is divided into the following major areas of the amended Asbestos ATCM:

- Applicability
- Prohibition on the Use, Sale, and Supply of Restricted Material
- Noticing Requirements
- Recordkeeping and Reporting
- Exemptions
- Information on Geologic Evaluations
- Test methods

B. Areas Likely to be Affected by the ATCM

Table 1 lists the 42 counties that are known to have occurrences of ultramafic rock or serpentinite. On some older geologic maps, ultramafic rocks may be called ultrabasic rocks. In addition to the counties in Table 1, Riverside and Inyo counties have small serpentine and asbestos deposits related to localized metamorphism of certain carbonate rocks. Figure 1 is a State map showing identified locations of deposits of ultramafic rock units in California (DOC, 2000b).

**Table 1. Counties with Serpentine and Ultramafic Rock
that May Contain Asbestos**

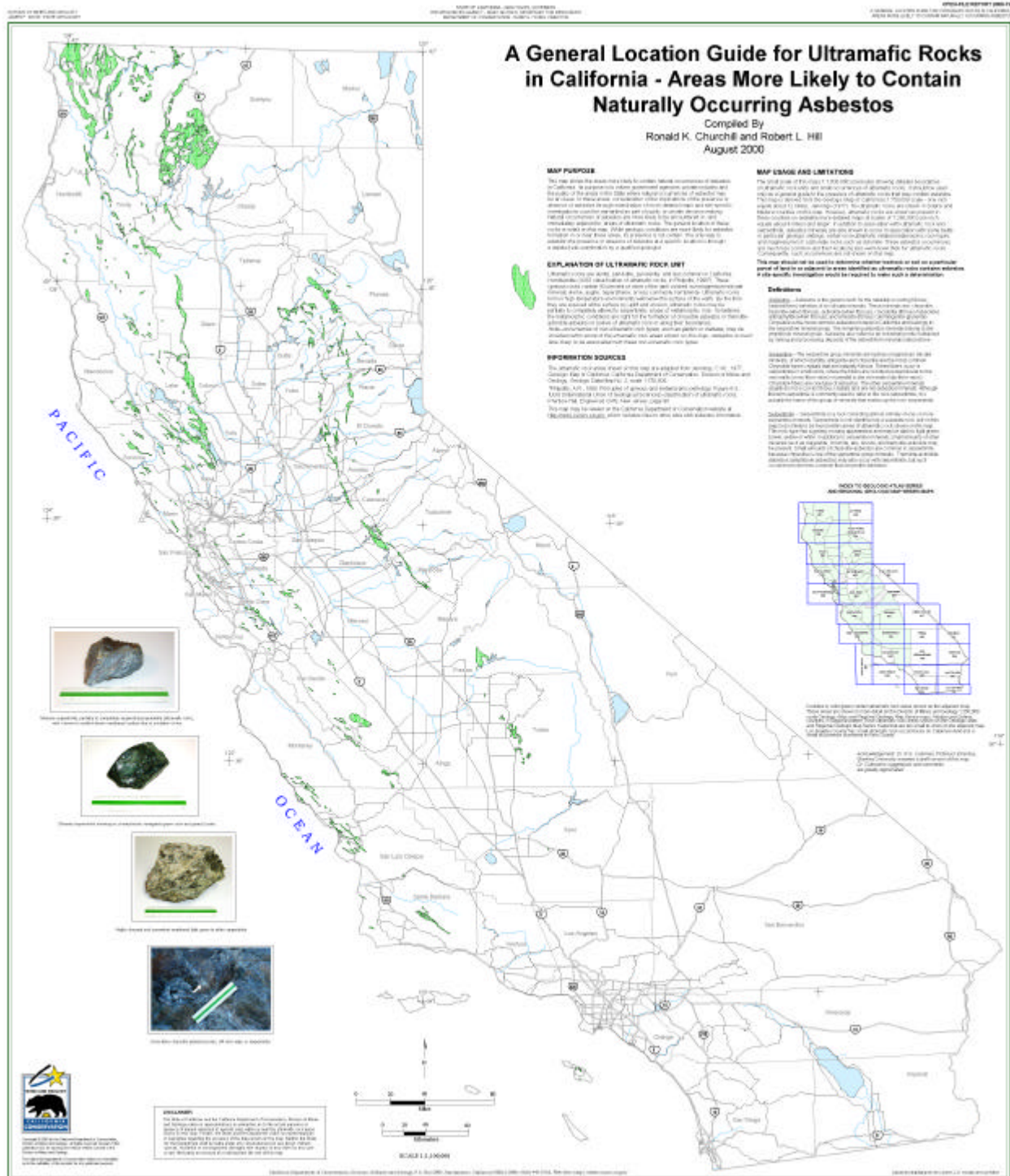
Alameda	Imperial	Nevada	Siskiyou
Amador	Kern	Placer	Sonoma
Butte	Kings	Plumas	Stanislaus
Calaveras	Lake	San Benito	Tehama
Colusa	Los Angeles	San Francisco	Trinity
Contra Costa	Marin	San Luis Obispo	Tuolumne
Del Norte	Mariposa	San Mateo	Tulare
El Dorado	Mendocino	Santa Barbara	Yolo
Fresno	Merced	Santa Clara	Yuba
Glenn	Monterey	Shasta	
Humbolt	Napa	Sierra	

Source: DOC, 2000a.

C. Effective Date

The amended Asbestos ATCM includes subsection 93106(a), which clarifies when the amended ATCM would become effective at the district level. The subsection states that 120 days following the date of approval of the amended Asbestos ATCM by the Office of Administrative Law (OAL), the district must either (1) implement and enforce the amended ATCM as approved, or (2) propose the adoption of their own asbestos control measure that is at least as effective as the amended Asbestos ATCM. The date that the amended ATCM was approved by the OAL was June 13, 2001, as a result, the effective date for the districts to implement and enforce the ATCM is November 13, 2001. If the district chooses to adopt their own control measure, HSC section 39666 (d) requires that they adopt and enforce their equally or more stringent measure within six months of the OAL approval of the amended Asbestos ATCM adopted by the State Board, which is December 13, 2001.

Figure 1.
Map of California Showing Ultramafic Rock Units



Source: DMG Open-File Report 2000-19: A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos (DOC, 2000b)

II. APPLICABILITY

Who the ATCM applies to	Aggregate material regulated by the ATCM
Anyone who sells, supplies, offers for sale or supply, transports, or use or applies restricted material .	Material extracted from a geographic ultramafic rock unit (including the unit boundaries);
	Material evaluated or tested at district's request and determined to be ultramafic rock, serpentine rock, or to contain asbestos (0.25% or more);
	Material found to be ultramafic rock, serpentine rock, or to contain asbestos (0.25% or more).
	Aggregate mixture that contains 10% or more of above materials

In general, this ATCM applies to anyone who sells, supplies, offers for sale or supply, transports or uses **restricted material**. **Restricted material** is aggregate material that is:

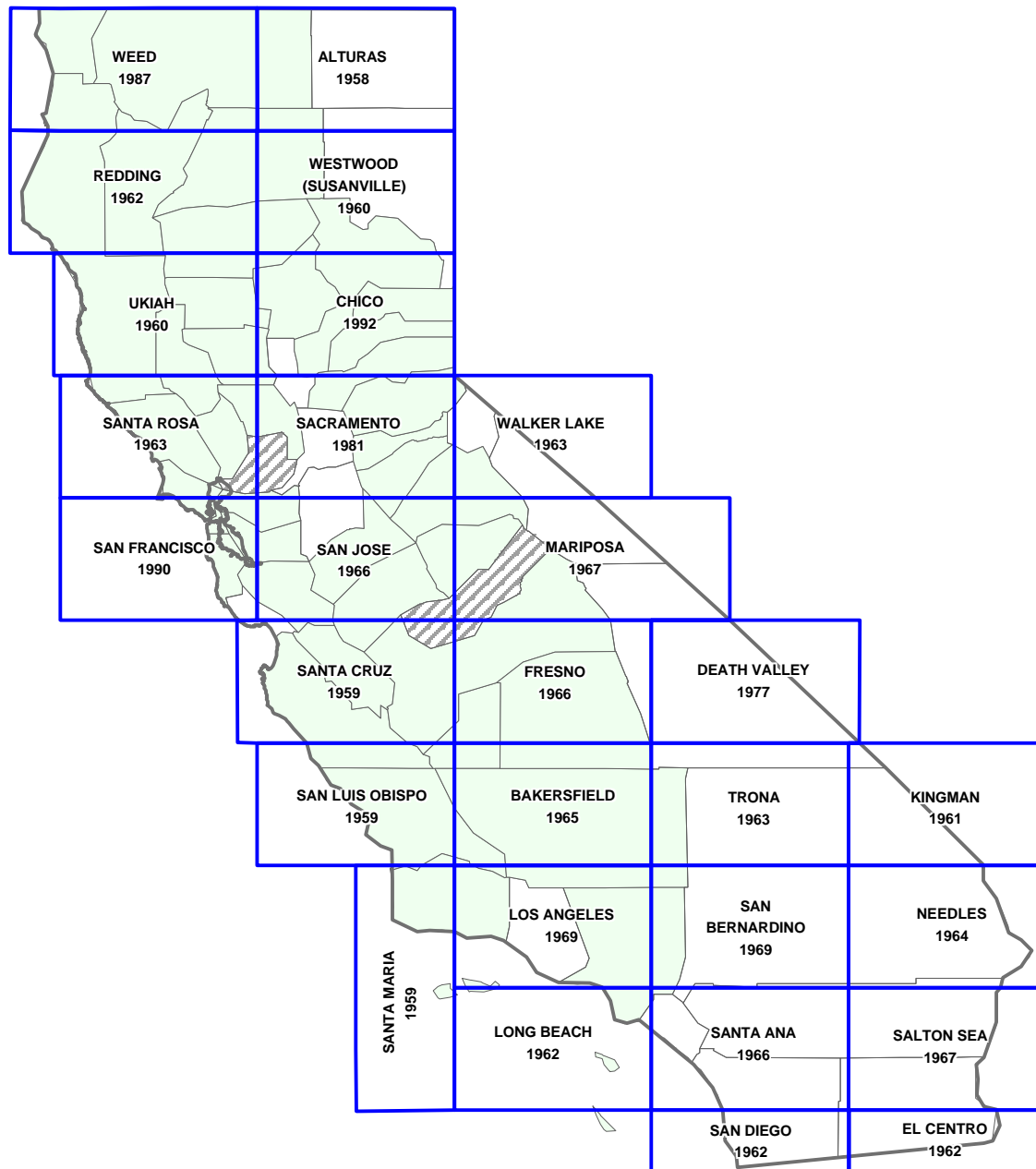
- Extracted from an ultramafic rock unit shown on one of the referenced geologic maps (see Appendix A of the ATCM);
- Evaluated at the request of the air pollution control officer and found to be ultramafic rock;
- Tested at the request of the air pollution control officer and found to have an asbestos content of 0.25 percent or greater;
- Determined by the owner/operator to be ultramafic rock or to have an asbestos content of 0.25 percent or greater; or
- Any mixture of aggregate material that contains ten percent or greater of the materials listed above.

Restricted material cannot be sold, supplied, or offered for sale or supply for surfacing purposes. Therefore, any quarry operator or reseller, such as a nursery or home improvement retailer, would be affected by this control measure if selling or supplying restricted material, even if the material was not intended for surfacing. The amended ATCM also applies to the recipient (or end user) of any restricted material.

A. Use of Geologic Maps

The amended Asbestos ATCM references geologic maps developed by the Department of Conservation, Division of Mines and Geology (DMG). These maps indicate the areas where ultramafic rock is most likely to be found and have a scale of 1:250,000. The DMG staff may develop other 1:100,000 scale maps similar to the referenced El Dorado County map for other areas of the State in the future. The list of referenced geologic maps in the amended Asbestos ATCM will be updated periodically as these maps are published by the DMG and other maps become available. Figure 2 provides an index for the referenced geologic maps (DOC, 2000b).

Figure 2.
Index to Geologic Atlas Series
and Regional Geologic Map Series Maps



Counties in solid green contain ultramafic rock areas shown on the adjacent map. These areas are shown in more detail on the Division of Mines and Geology 1:250,000 scale Geologic Atlas and Regional Geologic Map Series maps. Madera and Solano counties, in diagonal pattern, have ultramafic rock areas shown on the Geologic Atlas and Regional Geologic Map Series maps that are too small to show on the adjacent map. Los Angeles County has small ultramafic rock occurrences on Catalina Island and a small occurrence is present in Kern County. Source: DMG Open-File Report 2000-19: A General Location Guide for Ultramafic Rocks in California - Areas More Likely to Contain Naturally Occurring Asbestos (DOC 2000b)

It is important to note that the focus of the amended Asbestos ATCM is primarily directed at crushed stone quarries operating in geographic ultramafic rock units indicated on the referenced geologic maps. The focus of the ATCM is on the ultramafic rock units because these geographic areas are the location where naturally occurring asbestos is most likely to be found. The amended ATCM recognizes that these maps do not have the detail necessary to indicate every deposit of ultramafic rock in California and, therefore, some deposits may not be shown on these maps. In a similar fashion, the maps also may indicate that there may be ultramafic rock units in locations where in fact there are not. To address these issues, the ATCM allows for ultramafic rock units and the existence of asbestos-bearing rock outside the geographic ultramafic rock units to be addressed by the district as indicated in the applicability subsection. Areas within a geographic ultramafic rock unit that can be demonstrated to not contain ultramafic rock are addressed in the exemptions.

1. How to Use the Referenced Geologic Maps

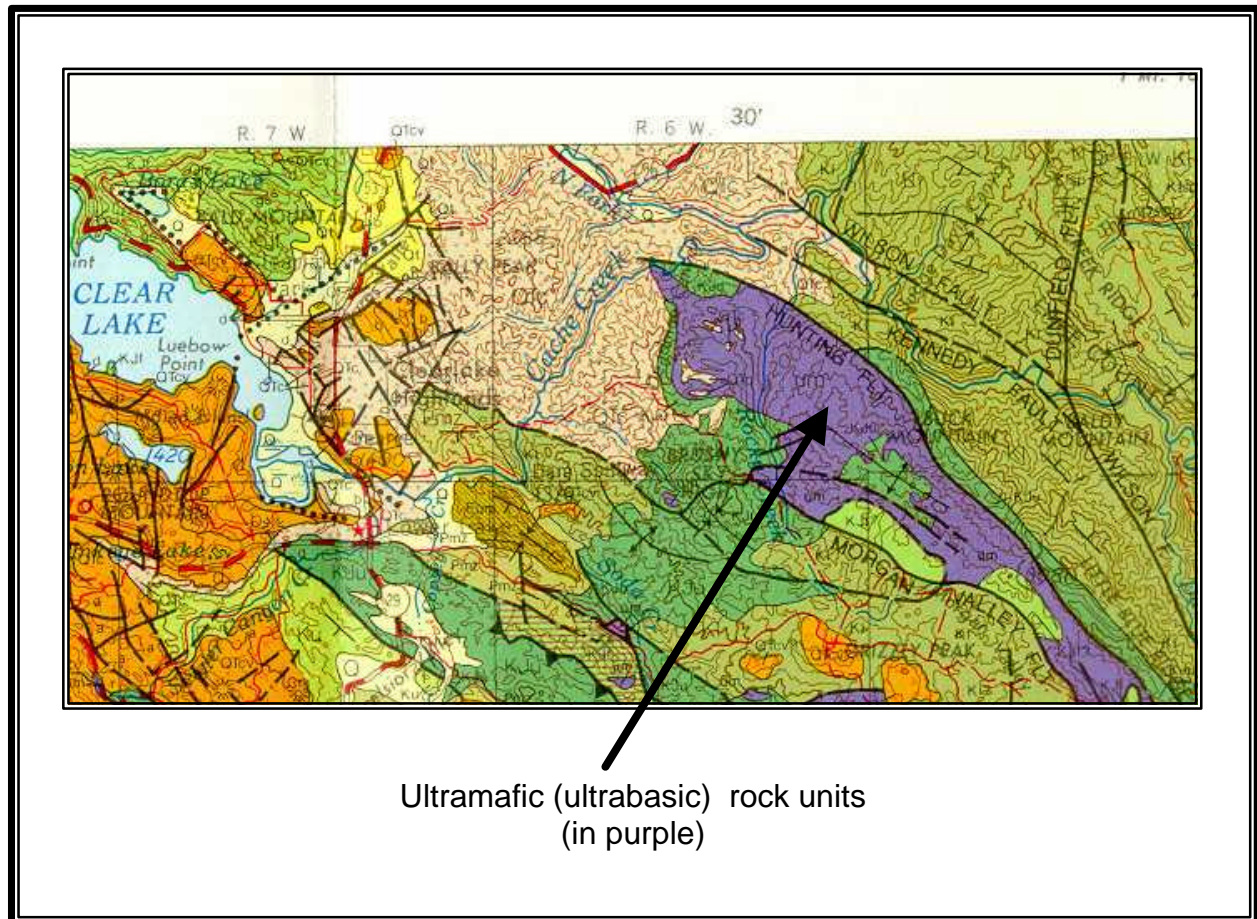
Geographic ultramafic rock units are indicated on many of the 26 geologic maps that are referenced by the amended ATCM. These maps show the rock units as either ultramafic or ultrabasic rock and are typically indicated as the deep purple regions (aquamarine regions on the western El Dorado County map). Figure 2 indicates the areas covered by each of the referenced geologic maps. The green areas and the diagonal pattern areas in Figure 2 indicate the counties that contain ultramafic rock areas.

For the purposes of the amended Asbestos ATCM, 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 statewide 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), these maps should be used for determining the applicability of the amended ATCM.

At the 1:250,000 scale, the lines showing the boundaries of the ultramafic rock units can be as wide as 1000 feet. Also, these rock units are often bounded by thick black lines indicating earthquake fault zones. The lines indicating the fault zones can also be considered the boundaries of the rock units and, therefore, should be included as part of the rock units.

Figure 3 shows a portion of the Santa Rosa Quadrangle Geologic Map. The rock units indicated by the arrows are where ultramafic rock or serpentinitized ultramafic rock is most likely to be found. (Note: on a colored map, ultramafic rock units are typically shown in purple.)

Figure 3.
Example Geologic Map Illustrating Geographic Ultramafic Rock Units
 (Santa Rosa Quadrangle)

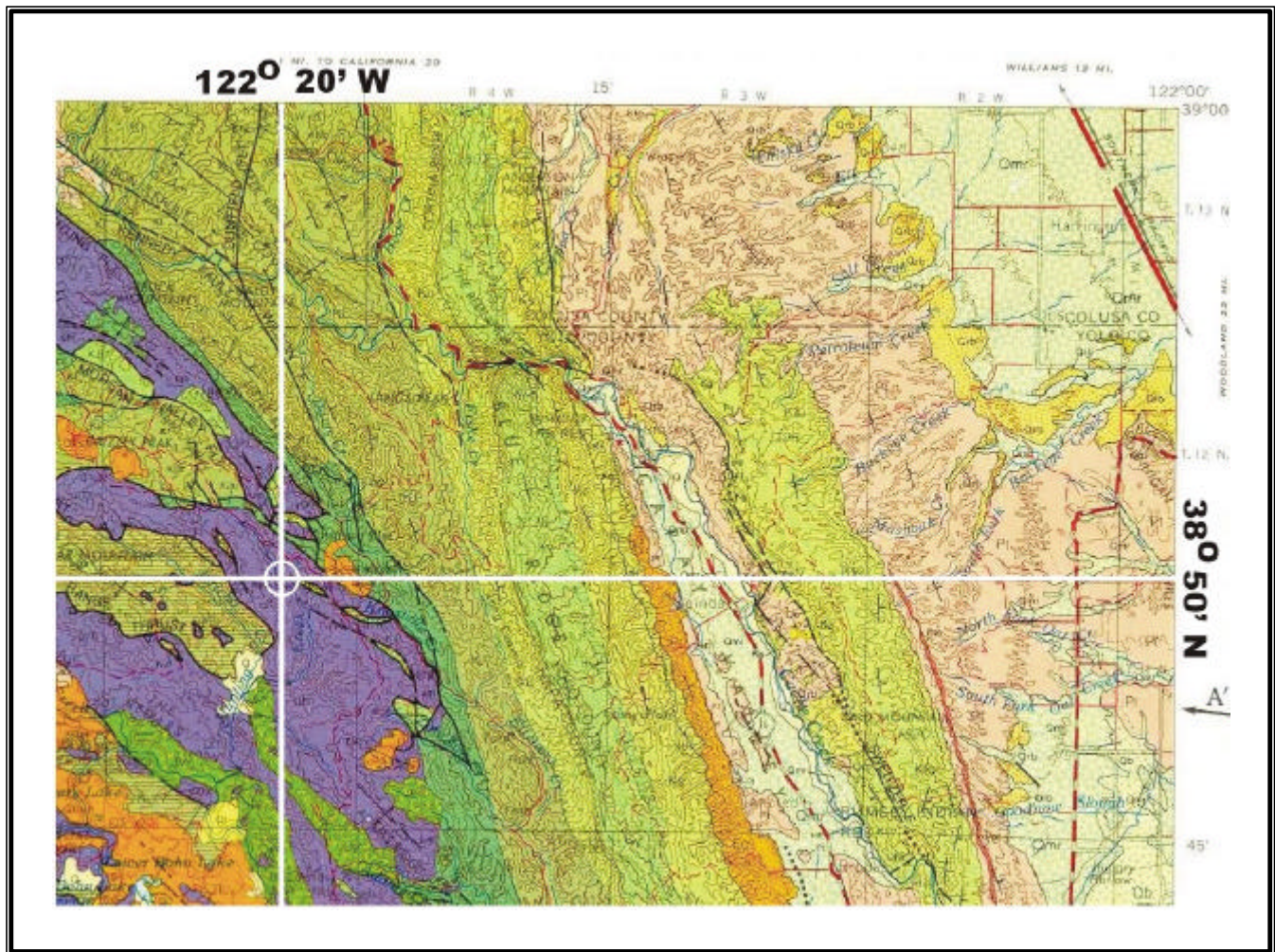


Longitudes, Latitudes and UTM Coordinates:

The longitude and latitude of the site can be used to determine if it is within the boundaries of the geographic ultramafic rock units. Longitude is the angular distance, measured in degrees, east or west of a reference meridian. Latitude is the angular distance, measured in degrees, north or south from the equator. On many maps the Universal Transverse Mercator (UTM) grid can also be used to locate positions on the map. The UTM grid is defined in northings and eastings (measured in feet) from a selected reference point. Most modern Global Positioning System (GPS) instruments can be set to provide locations in different formats including degrees, minutes, seconds; decimal degrees; and UTM coordinates. Such handheld instruments are relatively inexpensive and accurate enough to be used to locate sites for the purposes of this ATCM. Using the portion of the Santa Rosa quadrangle map shown in Figure 4 as an

example, the following will show how to plot a hypothetical facility located at a longitude of $122^{\circ}, 20'N$, and a latitude of $38^{\circ}, 50'W$.

Figure 4.
Example Geologic Map Illustrating Plotting a Location Using
Longitudes and Latitudes
(Santa Rosa Quadrangle)



B. District Request for a Geologic Evaluation or Asbestos Testing

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. Typically, a district would make such a request if the property was in a boundary region or if there was a reasonable indication

that the property may have ultramafic rock, serpentinite, or other asbestos-bearing rocks. Reasonable indications include geologic reports or investigations, more detailed geologic maps, information that the property is located in alluvial deposits directly downstream of ultramafic source rocks 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 indicated an asbestos content of 0.25 percent or greater. The district may also request a geologic evaluation if the property is in a boundary region. A boundary region is one where it is difficult to determine from the geologic maps if a property is in or out of the ultramafic rock unit. This situation arises because what appears as a fine, discrete line on geologic maps can represent an area 1000 feet wide. If there is any doubt, the district should request a geologic evaluation. **Requirements to perform a geologic evaluation or asbestos testing are further discussed in Section VII of this guidance.**

C. Owner/Operator Knowledge of Ultramafic Rock or Asbestos

The amended ATCM would also apply to aggregate extracted from property where the owner/operator either determined or discovered that there is ultramafic rock or serpentine present or that the aggregate contained asbestos. Under this circumstance, the amended ATCM would apply irrespective of whether or not the information is consistent with the evaluation procedures or test methods referenced in the amended ATCM, as long as the information is credible. For instance, if an unapproved asbestos bulk sampling method was used to confirm the presence of asbestos, the information would be sufficient for the ATCM to apply. It should be noted, however, that an approved asbestos bulk test method must be used to demonstrate compliance with the amended ATCM.

D. Other Areas Where Asbestos May Be Present

There are several situations under which asbestos may be found outside of the geographic ultramafic rock units. These situations include:

- 1) Ultramafic rock outcroppings that are either too small to be depicted or undetected at the time of publication and, therefore, not included on the geologic maps referenced by the amended Asbestos ATCM;
- 2) The occurrence of other non-ultramafic rock types, which may include carbonates (limestone, dolomite and marble), or other rock types such as schists or albitites; and
- 3) Alluvial deposits derived from ultramafic source rocks.

The most favorable areas for asbestos occurrences within the non-ultramafic rocks are along faults or within fault zones. There are documented occurrences of

chrysotile asbestos in altered dolomitic rocks and tremolite in altered limestone, dolomite and marble within California. These asbestos occurrences are associated with zones of contact metamorphism where intrusive igneous rocks invade carbonate rocks. Examples of these types of asbestos occurrences are found in Inyo and Riverside Counties and may occur in other areas of the state. For more information regarding these types of asbestos occurrence, contact the Mineral Hazards staff at DMG at (916) 322-6183.

In most cases, if surfacing materials are obtained from an area outside of a geographic ultramafic rock unit, the material is not subject to the ATCM. However, the district can still request a geologic evaluation if there is a reasonable indication that the property may have ultramafic rock, serpentinite, or other asbestos-bearing rocks. Also, should ultramafic rock or serpentine be discovered in the future, the ATCM would apply.

E. Areas Where Asbestos Occurrence Is Unlikely

Most areas of the state, other than those discussed in Sections C and D above, have little or no occurrence of serpentinite or other ultramafic rock. Metamorphic rocks remote from faults zones, non-metamorphic rocks, and granitic intrusive rocks usually have little or no potential for asbestos occurrences. (DOC, 2000a)

III. PROHIBITIONS ON USE, SALE, AND SUPPLY OF RESTRICTED MATERIAL

Who the requirements apply to	What is prohibited by ATCM
Any person who uses, applies, sells, supplies, or offers for sale or supply restricted material	Any restricted material for surfacing unless it was tested using an approved test method and found to have an asbestos content that is less than 0.25%.

Subsection 93106 (c) is the foundation of the amended Asbestos ATCM. With the exception of the exemptions, this subsection prohibits the use, application, sale or supply, or the offer for sale or supply of any restricted material for **surfacing** purposes unless the material was tested and found to have an asbestos content that was less than 0.25 percent. The test method used to determine the asbestos content for compliance with the amended ATCM would either be ARB Test Method 435 or a method approved by the Executive Officer of the ARB. However, if the owner or the operator of a facility is aware that material is ultramafic rock or has an asbestos content of 0.25 percent or more, then the requirements of the ATCM apply to that material. **Test methods are discussed further in Section VIII of this guidance.**

“Surfacing” is the covering of a surface for pedestrians, vehicles, decoration, landscaping, soil stabilization, or erosion control. Examples of surfaces include roads and shoulders, streets, alleys, driveways, parking lots, playgrounds, trails, squares, plazas, and

IV. NOTICING REQUIREMENTS

Who must supply a notice	What must be provided in notices
Producers of restricted material	Must provide the recipient: 1) the amount of restricted material sold or supplied; 2) the date that the restricted material was sold or supplied; 3) the dates that the restricted material was sampled and tested, or verification that the material is exempt; 4) a statement that the asbestos content is less than 0.25%.
Persons other than producers of restricted material	Must provide the recipient: 1) the amount of restricted material sold or supplied; 2) the date that the restricted material was sold or supplied; 3) a statement that the asbestos content is less than 0.25%.
All suppliers of restricted material for non-surfacing purposes	Must provide any purchaser: A warning notice that the material may contain asbestos as specified in the ATCM.

The amended ATCM has several requirements for noticing that are located in subsection 93106 (d). The producer or supplier of restricted material must provide a notice to the recipient whenever this material is sold or supplied. The content of the notice is dependent upon who provides the restricted material and the intended purpose. If the material is intended for surfacing purposes, the notice must either indicate that the material is suitable for surfacing and must contain additional information including the asbestos content of the material. Restricted material provided for non-surfacing applications must include a warning indicating that it is illegal to use the material for surfacing and that precautions should be taken against exposure to the material.

These noticing requirements can be divided into two main categories: requirements for surfacing applications and requirements for non-surfacing applications. According to subsection 93106 (d)(1), the producers of restricted aggregate material that is intended for surfacing applications must provide the following information to the recipient of the material:

- The amount (volume/weight) of restricted material sold or supplied;
- The date that the restricted material was sold or supplied;
- The dates that the restricted material was sampled and tested or, instead of the testing information, verification that the material is exempt from the testing requirements; and
- A statement that the asbestos content of the restricted material is less than 0.25 percent.

Subsection 93106 (d)(2) requires those persons other than producers that sell or supply restricted aggregate material to provide the following information to the recipient when supplying or selling the restricted material intended for surfacing:

- The amount (volume/weight) of restricted material sold or supplied;
- The date that the restricted material was sold or supplied; and
- A statement that the asbestos content of the restricted material is less than 0.25 percent.

The above information could be included on the receipt or bill of lading provided during a transaction. Figures 5 and 6 illustrate how this information can be incorporated into a receipt.

Figure 5.
Example Receipt for Producers

XYZ Rock Products 12300 Quarry Road Rockville, CA 90000 (530) 555-4567	
<hr/>	
Date Sold:	<input type="text"/>
Amount Sold:	<input type="text"/>
Date Sampled:	<input type="text"/>
Date Tested:	<input type="text"/>
<p>This material has been tested in accordance with Section 93106 of the California Code of Regulations and found to contain less than 0.25 percent asbestos and is suitable for surfacing purposes.</p>	

Figure 6.
Example Receipt for Non-Producers

ABC Rock and Gravel 4321 Commerce Way Suburbia, CA 90001 (916) 555-1234	
<hr/>	
Date Sold:	<input type="text"/>
Amount Sold:	<input type="text"/>
<p>This material has been tested in accordance with Section 93106 of the California Code of Regulations and found to contain less than 0.25 percent asbestos and is suitable for surfacing purposes.</p>	

Whenever restricted material that has not been tested or that has an asbestos content of 0.25 percent or more is sold or supplied, it must be accompanied with the following notice of warning:

“WARNING!
This material may contain asbestos.

It is unlawful to use this material for surfacing or any application in which it would remain exposed and subject to possible disturbances.

Extreme care should be taken when handling this material to minimize the generation of dust.”

Either the producer or a non-producer must provide this notice to the recipient. This warning notice can be easily incorporated onto the receipts with a stamp.

V. RECORDKEEPING AND REPORTING REQUIREMENTS

Who must keep records	What must be kept
Persons who use or apply restricted material for surfacing	Any receipt or other record verifying the asbestos content of the material. These records must be kept for at least seven years.
Persons transporting restricted material	Must keep a copy of the receipt with the material at all times during transit.
Any person that sells, supplies or offers for sale or supply restricted material for surfacing	Must keep sale receipts or records for at least seven years.
The above information must be supplied to the District upon request.	

The amended Asbestos ATCM contains several recordkeeping and reporting requirements affecting the producers, suppliers, and recipients of ultramafic rock and other restricted materials.

A. Recordkeeping Requirements for Persons Who Use Restricted Material

Subsection 93106 (e)(1) of the amended ATCM requires that any person who uses restricted material for surfacing applications must retain any written receipt or other record received verifying that the material has an asbestos content of less than 0.25 percent for a minimum period of seven years. This record can be used to indicate that the material was used in accordance to the requirements of the amended ATCM.

B. Recordkeeping Requirements for Persons Who Transport or Apply Restricted Material

Subsection 93106 (e)(2) of the amended ATCM requires the driver of the vehicle transporting the restricted material to have a copy of the receipt containing the information discussed above during the transit of the restricted material. The owner or operator/contractor responsible for application of the restricted material must also maintain a copy of the receipt or similar record during the application of the material.

C. Recordkeeping Requirements for Persons Who Sell or Supply Restricted Material

Subsection 93106 (e)(3) requires persons who sell or supply restricted material to retain copies of all receipts or records required by the noticing requirements in subsection (d) for a minimum period of seven years from the date of the sale or supply.

D. Reporting Requirements for Persons Who Use, Sell, or Supply Restricted Material

Subsection 93106 (e)(4) requires any person who either sells or supplies, or uses or applies restricted material for surfacing to provide receipts and test results to the district upon request. This requirement is included for compliance purposes and gives the districts a way to verify that any questionable material sold or used was done so in accordance to the amended ATCM.

VI. EXEMPTIONS

Exemption	Subsection §93106	APCO Approval Required
Sand and Gravel Operations	(f)(1)	No
Surface Mining Operations	(f)(2)	No
Maintenance Operations on Existing Roads	(f)(3)	No
Emergency Road Repairs	(f)(4)	Yes
Asphalt and Concrete Material	(f)(5)	No
Landfill Operations	(f)(6)	No
Geologic Evaluation	(f)(7)	Yes
Limited Access Surfaces	(f)(8)	Yes
Remote Locations	(f)(9)	Yes
Roads Located at Construction Sites	(f)(10)	No
Riprap	(f)(11)	No

There are 11 exemptions to the prohibition on the use and/or sale and supply of serpentine and asbestos-containing ultramafic material for surfacing. Six of these exemptions were carried over from the 1990 Asbestos ATCM and the remaining five are new exemptions designed to provide greater flexibility to address special circumstances. There are two types of exemptions. The first type does not require the air district's approval. These exemptions address sand and gravel operations, unpaved roads at quarries or mines, maintenance operations on existing roads, asphalt and concrete materials, landfill operations, unpaved roads located at construction sites, and riprap. The other exemptions require the approval of the air district and specify conditions that the applicant must meet and findings that the air district must make to grant approval of the exemption application. The district-approved exemptions include emergency road repairs, geologic evaluations of property within an geographic ultramafic unit, limited access surfaces, and remote locations.

A. Sand and Gravel Operations

Subsection 93106 (f)(1) of the amended Asbestos ATCM exempts aggregate material extracted from a **sand and gravel operation**. This exemption does not require the approval of the air district. The basis for this exemption is that material found in alluvial deposits has a low probability of containing asbestos. Alluvial deposits are formed by the action of streams and rivers that transport and deposit geologic materials, sometimes over great distances. In alluvial sand and gravel deposits, rock type is variable and reflects the rocks present in the drainage basin of the stream or river. Since many rivers and streams do not have ultramafic rock or serpentinite within their drainage basins, or have only small amounts of ultramafic rock or serpentinite relative to other rock types in the

A **sand and gravel operation** is any aggregate-producing facility operating in an alluvial deposit (deposits laid down by flowing water, such as rivers, lakes, and streams).

drainage basin, these alluvial deposits have a low likelihood of containing asbestos. The alluvial deposits of rivers or streams that have significant amounts of ultramafic rock or serpentinite within their drainage basins have a higher likelihood of containing asbestos.

1. Identifying Sand and Gravel Operations

The Department of Conservation, Division of Mines and Geology (DMG) published Special Publication 103 (Revised 1999), Mines and Mineral Producers Active in California (1997 – 1998) which lists the mines and quarries active in California for that time period. This document lists 502 active sand and gravel operations in the state at the time of publication (DOC, 1999).

2. Limitations on the General Sand and Gravel Exemption

There are some locations in California where alluvial deposits are known to contain asbestos. One of these locations is downstream of the New Idria asbestos deposits in the Coast Range of central California, northwest of the City of Coalinga. The alluvial deposits of Los Gatos, White Creeks, and Arroyo Pasajera are also known to contain asbestos. Any aggregate material extracted from these alluvial deposits is subject to the testing and other associated requirements of the amended Asbestos ATCM. If the district has credible information that suggests a likelihood of the presence of asbestos in a particular alluvial deposit, the Air Pollution Control Officer may require the testing of the material extracted and processed for surfacing purposes. Credible information would include past asbestos analyses, information from the DMG, academic research activities, the United State Geologic Survey, or a geologic report, or a geologist.

B. Roads Located at Quarries or Mines

Subsection 93106 (f)(2) exempts the use of restricted material for unpaved road surfaces located at quarries or mines provided that the aggregate material was obtained on-site (i.e., within the property boundaries of the facility or operation). This exemption allows the use of aggregate material that was extracted from the property of a quarry or mining operation for surfacing purposes without testing or confirming the asbestos content as long as the material is used within the property boundaries. Control of potential asbestos emissions from this source (including unpaved roads) is addressed in the Asbestos ATCM for Construction, Grading, Quarrying, and Surface Mining Operations, which was approved by the Board in July 2001. This exemption does not require the approval of the air district.

C. Maintenance Operations on Existing Roads

Subsection 93106 (f)(3) of the amended Asbestos ATCM allows for the maintenance of unpaved road surfaces as long as no additional restricted aggregate material is added to the road surface. This exemption allows grading operations to

occur as needed for maintenance of the unpaved surfaces, but additional restricted material cannot be added unless it complies with the amended Asbestos ATCM (tested with an approved asbestos bulk test method and found to contain less than 0.25 percent asbestos). This exemption does not require the approval of the air district; however, there may be local rules governing the emissions of dust associated with maintenance operations. Control of potential asbestos emissions from this activity is addressed in the Asbestos ATCM for Construction, Grading, Quarrying, and Surface Mining Operations, which was approved by the Board in July 2001.

D. Emergency Road Repairs

Subsection 93106 (f)(4) provides for an exemption to the use, sale, and supply limitations for emergency road repairs. The applicant must demonstrate to the air district that an emergency road repair is necessary due to the occurrence of a landslide, flood, or other disaster. The applicant must also demonstrate that the use of aggregate material other than restricted material is not feasible for the emergency repair.

1. Predetermined Conditions

The most effective way for this exemption to be useful would be for the District to establish a set of predetermined criteria that the responsible agency or entity and the district could agree would constitute meeting the conditions under which the exemption would be granted. First, the district should predefine the circumstances (natural and artificial) that could require the use of this exemption. Such circumstances may include landslides, floods, collapsed bridges, sink holes, wildfires, traffic accidents, earthquakes, volcanic eruptions, or other occurrences that can disrupt the flow of vehicular traffic on a thoroughfare where there is no reasonable alternative to the use of non-compliant material.

Second, the district should predefine the feasibility of using compliant aggregate. The feasibility of using compliant aggregate could be based on whether the aggregate material was available from a source (quarry or pit) within a specific distance, such as a mile from the site or at the location of the emergency repair. If neither of the two conditions is met, then compliant material would not be considered feasible for the repair.

If the responsible agency or entity determines that both the occurrence and the availability of compliant aggregate material meet the predefined conditions set by the district, then the agency/entity would be allowed to use restricted material to effect a repair without prior approval from the district to do so. The agency/entity would be required to report the use of restricted material to the district and the conditions under which it was used and the expected time for which it would remain in use as surfacing material. The amended Asbestos ATCM allows a maximum period of 90 days for the duration of this exemption. However, the district has the authority to shorten the 90-day exemption period.

2. Memoranda of Understanding

Agencies or entities that are responsible for road construction such as transportation departments, forest or park services, or utilities could enter into a memorandum of understanding (MOU) or agreement (MOA) with the district. The MOU or MOA would define how and when this exemption could be implemented and the responsibilities of both parties when it is implemented.

E. Asphalt and Concrete Materials

Subsection 93106 (f)(5) and the definition of “surfacing” explicitly exclude asphalt and concrete materials from the use and supply, associated notice, recordkeeping and reporting requirements that apply to restricted material. Therefore, serpentine and ultramafic rock can be used in the construction of asphalt and concrete surfaces. It should be noted that there may be other state or federal laws regulating the use of asbestos-containing materials in asphalt or concrete and the fact that the amended ATCM permits the use of restricted material in asphalt and concrete materials does not imply compliance with any other regulation.

F. Landfill Operations

Subsection 93106 (f)(6) allows the use of restricted material for surfacing at landfill operations in areas where there is not public access.

G. Geologic Evaluation

Subsection 93106 (f)(7) allows the district to consider the results of a geologic evaluation of property located within a geographic ultramafic rock unit to provide a general exemption from the amended Asbestos ATCM. The geologic evaluation must be conducted by a **registered geologist**.

The geologic evaluation would allow a detailed inspection of property where aggregate material would be extracted to determine the presence of ultramafic rock, including serpentine. This exemption was included because the

available geologic maps may not be detailed enough to identify all the small bodies of other rock types within the boundaries of the geographic ultramafic rock units.

Additionally, in some cases it may be difficult to determine, based on the maps alone, if a property is in an ultramafic rock unit. This situation arises because, at the 1:250,000 scale of the referenced maps, the lines showing the boundaries of the ultramafic rock units can be as wide as 1000 feet. In these cases, a geologic evaluation should be performed. DMG is working on guidance on how to conduct a geologic evaluation directed specifically toward the geologic professional. **Additional information on geologic evaluations can be found in Section VII of this guidance document.**

Registered geologist is a person that is currently licensed as a geologist with the State of California, Department of Consumer Affairs, Board for Geologists and Geophysicists.

H. Limited Access Surfaces

Subsection 93106 (f)(8) allows the district to consider granting an exemption for “**limited access surfaces**.” This exemption is designed to address road embankments, road cuts, and other similar surfaces that are not subject to vehicular or pedestrian traffic. In applying for this exemption, the applicant must demonstrate the following: 1) the surface meets the definition of a limited access surface; 2) no alternative aggregate materials are reasonably available; and 3) the surface is not located in an area zoned or otherwise identified in a land use plan for residential, recreational, or commercial use.

A **limited access surface** is any surface with an incline of 20 percent or more (≥ 11.5 degrees) that is not subject to vehicular traffic or pedestrian travel

The district must respond to the applicant within 90 days of the receipt of the application for exemption and if the district denies the exemption, the district must provide the applicant the rationale for the denial in writing.

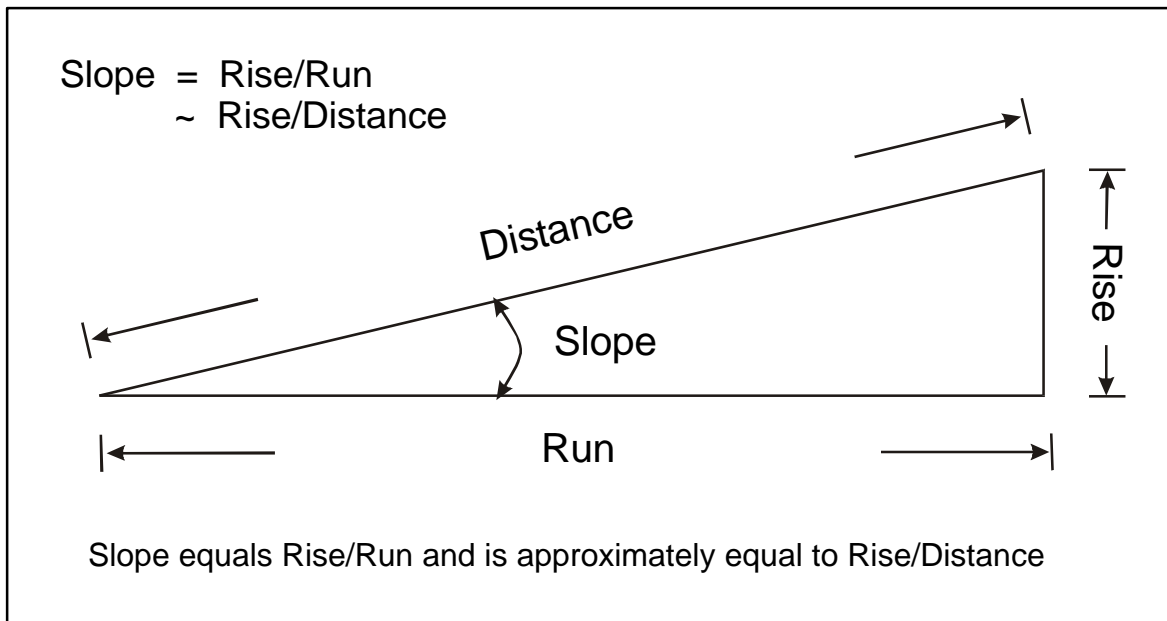
1. Demonstrating a Limited Access Surface

There are two criteria that must be demonstrated to define a surface as a limited access surface. The first criterion is the slope of the surface and the other is no vehicular travel and pedestrian access. The slope of the surface must be at least 20 percent or about 11 and a half degrees. Photographs, surveys, topography maps and an estimation of the slope can be used to make this demonstration. The slope is typically defined as the rise over the run. A 20 percent slope would rise one foot for every five feet of horizontal distance. However, at the smaller angles involved, a close approximation to the actual slope is a measure of the rise over the inclined distance. Figure 7 illustrates this point.

There are several methods that can be used to estimate the incline of a slope. One of the most effective method is using a surveying transit to measure the angle of incline. The tangent of the angle of incline is the measure of the slope of the incline. If the angle is 11.5 degrees or greater, the surface would meet the slope criterion of a limited access surface.

Another method approximates the rise over run. This method requires that a point on the slope be chosen as a reference. For this demonstration, it is suggested that a point on the surface along the slope with the least observable incline be used and that the point be no less than half way up the sloped surface. Another point should be chosen at the base of the slope such that the line between the two chosen points is perpendicular to the horizontal face of the slope. The distance between the two points should be measured along with the elevation difference between the points. The slope is approximately the ratio of the difference in elevation and distance between the two points.

Figure 7.
Illustration of Slope Relationships



2. Demonstrating No Vehicular Travel or Pedestrian Access

Demonstrating that there is no vehicular travel or pedestrian access to the sloped surface can be accomplished by a letter signed by the owner/operator to that effect. The letter should be accompanied with photographs of the sloped surface indicating that vehicular or pedestrian access is unlikely. The demonstration can also include a description of the surface including its proximity or remoteness to roads, trails, businesses, residential areas or homes, or other places where people or vehicles may gather.

3. Availability of Alternative Aggregate Material

When applying for this exemption, the applicant must demonstrate that there are no reasonably available alternative aggregate materials. The amended ATCM does not specifically define “reasonably available,” so the district would have to make this determination. The following is provided as suggestions on how to define “reasonably available.” One approach would be to determine if compliant material was located within a reasonable distance. This approach could be used when aggregate material would have to be obtained from a remote location, like a quarry or rock supplier. To make the determination, estimate the distance from the surface to the nearest source of alternative compliant material (alt. distance). Also estimate the distance from the surface to the nearest source of restricted material (restricted distance). Determine the ratio of the two distances (alt. distance ÷ restricted distance). If that ratio was less than three (or some other value chosen by the district), then the alternative aggregate

material could be considered reasonably available and the exemption application denied.

A second approach would compare the total cost of obtaining the nearest alternative compliant aggregate and the total cost of obtaining the restricted material. The total cost of the aggregate material would include the purchase price of the aggregate and the cost of transporting the aggregate to the site. Determine the ratio of the total cost of the alternative aggregate material to the total cost of the restricted aggregate material (cost alternative ÷ cost restricted). If this ratio was less than two (or some other value chosen by the district), then the alternative aggregate material could be deemed reasonably available and should be used for the project.

For the occasion when restricted material was available onsite and the alternative material available remotely, determine the ratio of the cost of transportation to the purchase price of the alternative aggregate (transportation cost ÷ price alternative). The alternative aggregate would be reasonably available if this ratio was less than three (or some other value chosen by the district).

4. Zoning and Land Use Planning

One of the criteria that must be met for the district to approve the exemption is that the site cannot be zoned residential, commercial, or recreational nor can it appear as such in any municipal land use plans. Documentation to this effect should be obtained from the city or county planning department and provided as part of the exemption application.

5. Exemption Application Checklist

The following checklist can help ensure that all of the components necessary to complete the application have been included.

LIMITED ACCESS EXEMPTION APPLICATION CHECKLIST

Applicant's Information:

- ☐ Name of Responsible Person
- ☐ Company Name
- ☐ Company Address, Phone, Fax, E-mail

Site Information:

- ☐ Address/Location:
- ☐ Size (acres)
- ☐ Intended Construction Start Date
- ☐ Demonstration of Slope (≥ 20 percent)
- ☐ Demonstration of No Vehicle or Pedestrian Access
- ☐ Demonstration of No Reasonably Available Compliant Aggregate Material
- ☐ Zoning and Land Use Planning Status

6. District Response

The amended Asbestos ATCM requires that the district provide a response to an exemption application within 90 days of the receipt of the application. If the district determines that the exemption should be denied, the reasons for the denial must be provided to the applicant in writing.

I. **Remote Location**

Subsection 93106 (f)(9) allows the district to provide an exemption to the use and supply requirements for a surface that is considered to be remotely located. There are two circumstances under which this exemption can be granted. The first is the case where there are no **receptors** located within a mile of the area to be surfaced. The other case is when there are receptors located within a mile of the area to be surfaced.

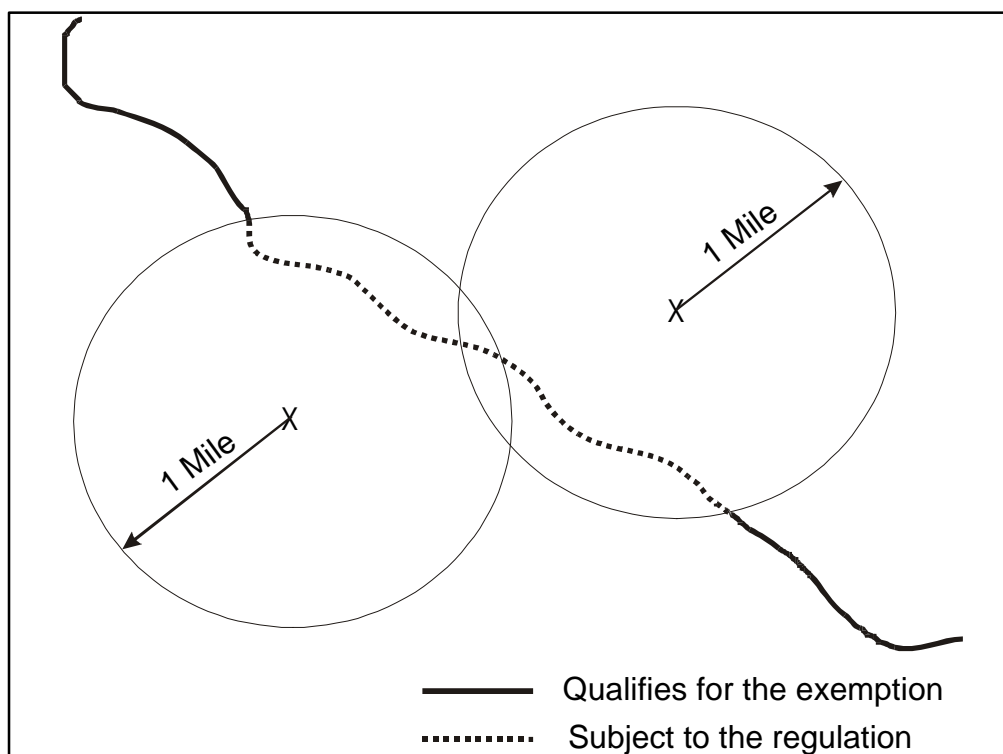
Receptor includes any residence, business, school, daycare center, work site, hospital, or permanent campground.

1. No Receptors within a Mile

This section will discuss the circumstance where there are no receptors located within a mile of the area to be surfaced. Figure 8 illustrates the concept of a remote

location. To determine if a road is remotely located, identify the nearest receptors on a map, draw a circle with a radius of one mile centered on each receptor location. If the circle intersects the road (or other surface) the portion that lies within the circle would not meet the criterion of a remote location.

Figure 8.
Illustration of a Remote Location



To qualify for this exemption, under this situation, the applicant must demonstrate that the surface is at a remote location, and that there is no alternative compliant aggregate material that is reasonably available. It is suggested that the districts use the criteria discussed in the section on the limited access exemption for establishing whether a source of alternative aggregate is reasonably available.

Any aggregate used under this exemption must be tested using ARB Test Method 435 and found to have an asbestos content that is no greater than one (1.0) percent. The district may raise the one percent limit to five (5.0) percent if the applicant can demonstrate that one percent material is not reasonably available. It is recognized that in some areas of the State it may be burdensome to secure aggregate material with an asbestos content that does not exceed one percent. For the few instances where this may be the circumstance, the five percent limit of the 1990 Asbestos ATCM was maintained as the upper limit to ensure that the current level of asbestos in surfacing material does not increase due to the application of this exemption.

The district must complete several responsibilities before this exemption can be approved. First, the district must review and consider county land use plans, zoning, and the current use of the surrounding land when granting this exemption. These plans will provide a reasonable indication of the type of development (if any) that will occur in the vicinity of the surface over the next decade or more. If development is indicated and the remote status of the surface would change, then allowing the use of asbestos-containing aggregate for the surface in question may not be health protective.

The district must also provide public notice regarding the consideration of this exemption and require that the surface be posted with signs alerting the public to the potential for asbestos exposures.

If the district decides to approve the exemption application, as a condition of that approval, the district must require that the surface/road be posted with a permanent sign that would inform the public of the potential for asbestos exposure from travel or use of the surface. At a minimum, the signs should be sized similarly to a truck weight limit sign.

The amended ATCM requires that the exemption cannot be valid longer than three years. By the end of the three-year period, the owner or operator must demonstrate that the criteria of a remote location and the lack of reasonably available alternative aggregate material are still valid. If these criteria cannot be demonstrated, then the district cannot renew the exemption.

2. Receptors within a Mile

Under very limited conditions, the district is allowed to grant an exemption under the remote location provision when there is a receptor located within a mile of the area to be surfaced. To grant this exemption, the conditions of no reasonably available alternative aggregate material and the asbestos limits of one percent or five percent if the one percent material is not reasonably available must be met.

In addition to the two criteria listed above, the applicant must demonstrate all of the following conditions:

1. Any receptor located within one mile of the road or surface cannot be a permanent resident, a permanent business, or a school or daycare center (a permanent resident is a person that resides at the receptor point for six months or more in a single year and a permanent business is one that operates at a receptor location for six months or more in a single year);
2. The road or surface must be located on private property;
3. The entrance points to the road/surface from a public road must be gated and posted with a sign alerting the public to the potential for asbestos exposures;

4. The applicant must provide the district an estimate of the average volume of traffic on the road/surface and the method used to make the estimate; and
5. Whenever the traffic volume is expected to exceed 20 vehicle passes per day, the proponent must meet several additional requirements that include:
 - treating the road/surface with a dust control method that is at least 70 percent effective,
 - maintaining records of the application and type of dust control method used for a minimum of seven years, and
 - providing records of the applications of dust control to the district upon request.

The reason there is a requirement for the road to be located on private property is to ensure an avenue through which access to the road could be controlled and monitored. Although there is no requirement for the gate to be locked, the presence of a gate indicates that the owner/operator can limit the volume of traffic on the road and has knowledge of the traffic patterns. As required in the amended ATCM, the owner/operator must implement a dust control method that is at least 70 percent effective. Furthermore, they would have to keep records of the application and type of dust control method for a minimum period of seven years. These records must be made available to the district upon request.

The amended Asbestos ATCM requires that the district must provide a response to an exemption application within 90 days of the receipt of the application. If the district determines that the exemption should be denied, the reasons for the denial must be provided to the applicant in writing.

3. Dust Control Methods for Unpaved Roads

The United States Environmental Protection Agency (U.S. EPA) lists the following control techniques for unpaved travel surfaces: (1) source reduction such as speed reduction, and/or traffic reduction, (2) source improvement such as paving, or surfacing with gravel, (3) surface treatment such as watering and/or chemical stabilization (U.S. EPA, 1992).

The emission control obtainable through the use of source reduction activities is readily calculated through application of the emission factor equation (Equation 1). Paving is expensive and may not be a practical option for industrial plant roads subject to very heavy vehicles. The emission reductions attainable through covering the surface of haul roads with gravel is a result of substituting a material with a lower silt and asbestos content (which must be less than 0.25 percent as determined by an approved asbestos bulk test method) than the original surface. Because emissions are directly related to silt and asbestos content, any reduction of the silt content and/or the asbestos content will achieve an equivalent reduction in emissions. This option is less expensive than paving but will require periodic maintenance.

Equation 1 illustrates the relationship of the factors that affect the magnitude of emissions.

$$(1) \quad E = 2.12 \left(\frac{s}{12} \right) \left(\frac{S}{30} \right) \left(\frac{W}{3} \right)^{0.7} \left(\frac{w}{4} \right)^{0.5} \left[\frac{(365 - p)}{365} \right] \frac{lb}{VMT}$$

where: E = PM₁₀ emission factor, pounds/vehicle miles traveled (lb/VMT)
s = silt content of surface material, (%)
S = mean vehicle speed, miles per hour (mph)
W = mean vehicle weight, (ton)
w = mean number of wheels
p = number of days with at least 0.01 inches of precipitation per year

Source: AP42, 1985 edition

To estimate the dust emissions based on the moisture content of the surfacing material instead of the amount of precipitation, the factor utilizing the number of days of precipitation per year can be replaced with a factor for measured moisture content. The resulting equation would appear as follows:

$$(2) \quad E = 2.12 \left(\frac{s}{12} \right) \left(\frac{S}{30} \right) \left(\frac{W}{3} \right)^{0.7} \left(\frac{w}{4} \right)^{0.5} \left[\frac{0.2}{M} \right]^{0.3} \frac{lb}{VMT}$$

where: M = surface material moisture content (%)

Source: AP42, 1985 and 1998 editions

As the above equations indicate, dust emissions from unpaved surfaces are highly dependent upon several factors which include the silt content of the surface material, the vehicle speed and weight, and the moisture content of the road surface material. To control the emissions of dust (and associated asbestos) reducing vehicle speed and/or increasing the moisture content of the surface material can be very effective. In regions where the air has a high moisture content or periodic fog or marine layer – the Northwest coastal area of California, dust emissions from unpaved roads would be much lower than more arid regions such as the foothills of the Western Sierra Nevada Mountain. The differences in humidity and precipitation may affect the amount and the frequency of the application of surface treatments.

Surface treatments require periodic reapplication. Wet suppression is a temporary measure and may need to be reapplied several times an hour in hot summertime conditions. Chemical dust suppressants such as calcium or magnesium chloride, urea formaldehyde resins and ligno-sulfonate require much less frequent reapplication. Frequency of application may be affected by track-on from adjacent untreated areas or spillage. The effectiveness of dust suppressants varies greatly and is dependent on a wide variety of factors such as dilution factor, the application rate,

frequency of application, and area to be treated, the volume of traffic on the road, the weight of the vehicles, and the chemical stability of the suppressant. Over time, the efficiency of these measures will be decreased as a result of track-on and spillage on the treated surface. Increasing the freeboard in trucks and wetting and/or covering loads can reduce spillage, which affects control efficiency or frequency of reapplication. Over a period of time with continued application, treated surfaces can approach the level of emissions from paved roads.

Table 3 compares the effectiveness and application rates of several dust suppression methods. It should be noted that the use of these methods may require obtaining a permit from the regional water quality control board.

Table 3. Comparisons of Dust Control Treatments

Dust Suppressant	Estimated Effectiveness ¹ (percent)	Amount Needed (gallons per sq. yard)	Frequency of Application (per year)
Water	40 – 90	0.1	Daily ²
Asphalt Emulsions	80 – 95	2.4	1
Dust Oil	95	0.6	2
Polymers	65 – 90	1	3
Ligno-Sulfonates	60 – 80	2	2
Calcium Chloride	80 – 95	0.6	3
Urea-Formaldehyde	45	0.08	3

1. Based on the reduction of airborne asbestos fiber concentration as determined by TEM.

2. The number of applications required for water can vary greatly and is strongly dependent on the weather conditions (especially rainfall and humidity).

J. Roads Located at Construction Sites

The amended Asbestos ATCM allows the use of restricted material for temporary surfacing at construction sites during construction activities. The exemption is conditional; the final road surface must comply with the 0.25 percent asbestos limit and any temporary road for public use is not included. Basically, this exemption allows the use of restricted material for road construction and allows construction equipment to utilize the base and sub-base as driving surfaces, but the final road surface must be covered with compliant material. This exemption is not applicable for temporary roads open for public use. Roads for public use, such as detours or shoulders, must have an asbestos content less than 0.25 percent. Roads located at construction sites are specifically addressed in the Asbestos ATCM for Construction, Grading, Quarrying, and Surface Mining Operations.

K. Riprap

The amended Asbestos ATCM includes an exemption for the use of restricted material for **riprap**. The use of restricted material for riprap along waterways for erosion prevention and stabilization should not result in significant asbestos exposures because there would be no vehicular traffic and very little pedestrian access to these surfaces. The material used for riprap is made of large stones that are usually twelve inches or more in cross section, which makes vehicular travel or walking difficult.

Riprap is the material used to construct a loose assemblage of stones along a waterway or shoreline to prevent erosion or provide stability.

VII. REQUIREMENTS TO PERFORM A GEOLOGIC EVALUATION OR ASBESTOS TESTING

The amended Asbestos ATCM allows the districts to require a geologic evaluation or the testing of aggregate for the presence of asbestos. In addition, the ATCM allows for an operator to apply for an exemption from the regulation if a geologic evaluation is performed which shows that the presence of serpentine or ultramafic rock is not likely to be found on the property. This section will discuss when geologic evaluations may be necessary, some of the basic elements of a geologic evaluation, and when asbestos testing of aggregate may be necessary.

A. Geologic Evaluations

A geologic evaluation is an investigation of the surface and subsurface geology of a property. The geologic evaluation is limited, for the purposes of the amended Asbestos ATCM, to determining the presence or absence of ultramafic rock, serpentinite, or other potentially asbestos-containing rocks. The finding of either of these rock types or other asbestos-containing rocks automatically negates the need to continue with the geologic evaluation. A geologic evaluation will be required when requested by the district or when the owner/operator wants to apply for an exemption from the ATCM.

1. Geologic Evaluations at the Request of the District

In most cases, if surfacing materials are obtained from an area outside of a geographic ultramafic rock unit, the material is not subject to the regulation. However, the ATCM does allow the districts to request a geologic evaluation on property outside of a geographic ultramafic rock unit. Clearly, there should be compelling information that an evaluation is needed. The information that may prompt the district to require a geologic evaluation can take many forms, such as more detailed geologic maps; geologic surveys, studies or evaluations; asbestos test results; or the professional opinion of a geologist. Some of the situations in which a district may be aware of information that could warrant a geologic evaluation are discussed in more detail below.

Geologic Maps

The districts may have access to more detailed, larger scale geologic maps that may indicate that a property is located in ultramafic rock (also called ultrabasic rock), serpentinite, or other asbestos-containing rock. Twenty-two of the 24 maps referenced in the amended Asbestos ATCM are at a scale of 1:250,000. The remaining maps are at a scale of 1:100,000. Geologic maps may be produced at many different scales depending on the intended use of the map. The geology of many areas of California has been mapped at scales of 1:62,500 or 1:24,000. Sources of geologic maps include

the DMG, the United States Geologic Survey (USGS), academia, geologic literature, and professional geologic services.

If the district review of a map indicates the likely presence of ultramafic rock, serpentinite, or other material with the potential to contain asbestos, the district can require a geologic evaluation of the property to determine if asbestos or ultramafic rock is actually present. One environment of which the district should be aware is the alluvial fans directly downstream of a known occurrence of asbestos. Although sand and gravel operations located in alluvial deposits are generally exempt from the requirements of the ATCM, they still can be required to perform testing and a geological evaluation.

Past Geologic Investigations

Many parcels of property may have had some sort of geologic investigation performed at some time, especially property intended for quarrying or construction. The results of such an investigation may indicate the possible presence of ultramafic (ultrabasic) rock or other asbestos-bearing material. The district can use information such as this to determine if a geologic evaluation is warranted. These investigations can be as simple as a site inspection to determine the various types of rock present or can be a detailed investigation of the mineral potential of the property. In general, these investigations will not look specifically for asbestos or asbestos-bearing materials, but may provide a description of the rock types and geologic features (such as fault or shear zones) present at the site.

Asbestos Test Results

As discussed above, some type of geologic investigation may have been conducted for the property. Asbestos testing may have been included as part of that investigation. If the results of the testing indicated the presence of asbestos, the district can use this information as a rationale to require a geologic evaluation. The test procedure does not have to be ARB Test Method 435 for the district to consider the results to be compelling.

Professional Opinion of a Geologist

Many professional geologists may have anecdotal information about the presence of ultramafic rock or asbestos on a parcel of property. The geologist may have conducted an investigation of the property or have information on the findings of another geologic investigation. Based on the geologist's professional opinion, the district may require a geologic evaluation of the property before aggregate can be supplied or sold for surfacing.

2. Geologic Evaluations for an Exemption

The request for an exemption based on a geologic evaluation implies the property is in a geographic ultramafic rock unit based on the maps listed in Appendix A of the amended Asbestos ATCM. The first step of the geologic evaluation is to determine if any more detailed geologic maps of the area exist and if those maps show the property is not in an ultramafic rock unit. The availability of an additional map showing a property is not in an ultramafic rock unit is not sufficient information for an exemption from the amended Asbestos ATCM. A geologic evaluation **must** be completed to verify that ultramafic rock, serpentine, or other asbestos containing rocks do not occur on the property.

Site Investigation

The surface geology should be mapped by the geologist at an appropriate scale for the site. The map should show the distribution of the different rock and soil types on the site and the surrounding area. The current and intended extent of the quarry should also be shown. Other geologic features that may impact the occurrence or distribution of ultramafic rock, serpentinite, or other asbestos-containing rocks such as faults or alteration zones should also be indicated. Each geologic unit should be described and any sample locations should be shown on the map. Any existing stockpiles should be examined to confirm that the stockpiled material is similar to material exposed in the quarry workings. The subsurface geologic evaluation should be appropriate to the intended extent and depth of the quarry. The location and orientation of any test pits, trenches, or borings used to obtain subsurface samples should be indicated on a map and any boring or trench logs included with the geologic report.

Geologic Evaluation Report

The geologic evaluation report documents the findings and conclusions of the geologist and should be signed and stamped by the registered geologist responsible for the investigation.

The geologic report should include a description of the property location and the existing and intended extent of the quarry. The report should include a discussion of the regional geologic setting of the site. The geology of the site should be described including the distribution and classification of rock and soils on the site as well as any other geologic features which could impact the occurrence or distribution of ultramafic rock, serpentinite, or other asbestos-containing rocks. The extent, depth and frequency of sampling and the sampling and analytical methods used should be clearly described. The locations and descriptions of all samples collected should be included. If samples are sent out for petrographic or mineralogical characterization, the laboratory reports should be included with the geologic report. The geologic report should include any maps or cross sections necessary to support the conclusions drawn in the report.

All geologic samples should be archived for one year after the exemption is granted.

Geologic Exemption Expiration

The geologic evaluation exemption will expire upon discovery of serpentine, ultramafic rock or asbestos. The proponent must report the discovery of any of these materials to the district within 24 hours. Further, the exemption cannot be valid for material extracted from beyond the depth or surface boundaries for which the evaluation was performed.

The amended Asbestos ATCM specifically allows the districts to require a geologic evaluation for the presence of ultramafic rock, serpentinite, or other asbestos-containing rock, on any property where aggregate material may be extracted. This provision allows property located outside of the ultramafic rock units shown on referenced geologic maps to be evaluated and if found to have ultramafic rock, serpentinite, or other asbestos-containing rock, to be subject to the ATCM.

B. Information that May Warrant Asbestos Testing

In most situations, areas outside of the ultramafic rock units are not subject to the requirements of the amended ATCM; however, the regulation does allow the district to require testing of aggregate material when there exists credible information that may indicate that asbestos may be present. There are several potential reasons that the district may require aggregate extracted from property that lies outside of a geographic ultramafic rock unit to be tested for its asbestos content prior to sale or use. These reasons include positive results from previous asbestos testing, a geologic evaluation indicating the presence of ultramafic rock, serpentinite, or other asbestos-containing rocks, or property being located in a geographic ultramafic rock unit shown on a geologic map not referenced in the amended Asbestos ATCM.

VIII. TEST METHODS AND PROCEDURES

A. Testing for Ultramafic Rock

The amended Asbestos ATCM specifies the use of standard analysis techniques when identifying and classifying ultramafic rock or serpentinite. The standard techniques could include visual assessment, microscopic examination, petrographic analysis, or chemical analysis techniques, such as X-ray fluorescence spectrometry or inductively coupled plasma analysis.

B. Testing for Asbestos

1. Test Method 435

The 1990 Asbestos ATCM required the use of ARB Test Method 435 for all asbestos testing for compliance purposes. The amended ATCM expands this provision to allow alternative test methods for the determination of the asbestos content of bulk material. The amended ATCM requires that either ARB Test Method 435 or a bulk test method approved by the Executive Officer of the ARB must be used to comply with any test requirements of this regulation. As discussed above, this provision was included to provide flexibility to businesses that may prefer an approved alternative test procedure. A copy of the Test Method 435 can be obtained from the following web address: www.arb.ca.gov/toxics/asbestos.htm.

Applicability

Test Method 435 is applicable for determining asbestos content of soils and aggregates. Originally, Test Method 435 was developed solely for serpentine aggregate. However, since its adoption in 1990, Test Method 435 has been successfully used on a wide variety of soils and aggregates.

Sampling Procedures

The sampling procedures of Test Method 435 can be used to obtain unbiased bulk material samples. A variety of sampling devices, such as a shovel or thief, can be used to collect a bulk sample. A minimum of three random and unbiased grab samples are combined into one composite sample. One composite sample cannot represent more than 1000 tons of material.

The degree by which one composite sample is representative of a 1000-ton pile of aggregate is dependent on the homogeneity of the material. It is the responsibility of the sampler to assess the homogeneity of the aggregate material. The more grab samples taken from locations that are more evenly distributed throughout the volume of material, the more representative the composite sample. However, there is a practical

limit. Typically, a plastic two-gallon paint bucket, with lid, which is roughly half full, is an ideal volume of material for these purposes.

Sample Preparation

The composite sample must be prepared for asbestos analysis. Test Method 435 sample preparation procedure is a three-step process. First, the composite sample must be crushed to smaller than 3/8-inch material. Then a one-pint sub-sample is split from the crushed material. In the final step, the one-pint sub-sample is crushed further to a fine powder that is nominally 200-mesh material. The one-pint sample of the 200-mesh material is then sent to the laboratory.

The sample preparation procedure is driven by several factors. The main factor is that the asbestos analysis requires a very small amount of material. Typically the laboratory uses only eight tweezer pinches of material. The amount of material needed for analysis has been estimated to be less than 0.1 cubic centimeters (cc). Almost all the rocks in the aggregate are larger than the amount analyzed. Crushing the composite sample overcomes this problem and homogenizes the composite sample. A representative 0.1 cc of material can be easily taken from a homogenized composite sample. The cost of crushing the entire composite sample is prohibitively expensive. Test Method 435 utilizes an American Society of Testing Material procedure for splitting a representative sub-sample from a crushed composite sample so only a one-pint split of 3/8-inch or less material is crushed to the nominal 200-mesh material.

Analytical Method

The analytical procedure is based on well-established principles of optical mineralogy. A light microscope equipped with polarizing filters coupled with dispersion staining is used to observe specific physical and optical characteristics of a sample. Test Method 435 contains a table of the physical and optical properties of the six asbestos types.

Uncertainty of the Method

During the subsequent years since Test Method 435 adoption, a round robin testing program was performed to better quantify the methods uncertainty. The uncertainty was even more important since the amended Asbestos ATCM set the action level to 0.25 percent. The round robin study determined the uncertainty of Test Method 435 at the minimum detection limit of 0.25 percent asbestos to be ± 0.14 percent.

Costs

A survey performed in Spring 2000 of ten asbestos testing laboratories determined the cost of Test Method 435 varies from \$60 to \$100 per test. That cost covers sampling, shipping, crushing, and analysis.

2. Alternative Test Methods

Test Method 435 allows the use of alternative sampling and analytical methods approved by the ARB.

Requirements

Alternate sampling methods may be used provided the Executive Officer of the ARB has determined that they are substantially equivalent to the sampling methods discussed in Section 5 and has approved its use. The Executive Officer of the ARB may require the submittal of test data or other information to demonstrate equivalency.

Approval Process

The alternative method must be submitted to the Executive Officer of the ARB prior to its use. A detailed document demonstrating how the alternative method is substantially equivalent to the results produced by ARB Test Method 435 must be submitted with the request. The Executive Officer of the ARB or designee may require submittal of test data showing equivalency from a study based on U.S. EPA Method 301. The U.S. EPA Method can be found at www.epa.gov/ttn/emc/promgate/m-301.pdf.

C. Alternative Sampling Frequency

The ATCM allows the district to reduce the frequency of sampling and testing of aggregate material if certain conditions can be demonstrated. One condition is that the owner/operator must demonstrate an established history of analytical test results that show no sample to have an asbestos content of 0.25 percent or greater. In addition, a geologic evaluation of the property must be conducted to determine if ultramafic rock or its derivatives is present. Any permits issued under the California Surface Mining and Reclamation Act (SMARA) and any sales receipts retained by the quarry must also be presented to the district for review. The alternative testing frequency can only be granted if ten percent of the expected yield has shown non-detects and there is at least ten years of test data. If asbestos is discovered once a reduced testing frequency is approved, the original frequency specified by ARB Test Method 435 must be resumed, and the discovery must be reported to the district within 48 hours of receiving the test results.

IX. REFERENCES

ARB, 2000. Staff Report, Initial Statement of Reasons for the Proposed Amendments to the Asbestos Airborne Toxic Control Measure for Surfacing Applications, June 2000.

DOC, 1999. California Department of Conservation, Division of Mines and Geology, Special Publication 103, "Mines and Mineral Producers Active in California (1997 - 1998)".

DOC, 2000a. Discussions with and information provided by Department of Conservation, Division of Mines and Geology staff during the months of April and May 2000.

DOC, 2000b. *DMG Open-File Report 2000-19: A General Location Guide for Ultramafic Rocks in California - Areas More Likely to Contain Naturally Occurring Asbestos* can be found on the Department of Conservation (DOC), Division of Mines and Geology's (DMG) website at www.consrv.ca.gov/dmg/minerals/ultramafic/index.htm.

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APPENDIX A

FINAL REGULATION ORDER

**ASBESTOS AIRBORNE TOXIC CONTROL MEASURE
FOR SURFACING APPLICATIONS**

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FINAL REGULATION ORDER

ASBESTOS AIRBORNE TOXIC CONTROL MEASURE FOR SURFACING APPLICATIONS

Section 93106. Asbestos Airborne Toxic Control Measure for Surfacing Applications.

(a) **Effective Date.** No later than November 13, 2001, each air pollution control and air quality management district must:

- (1) Implement and enforce the requirements of this section, or
- (2) Propose their own asbestos airborne toxic control measure as provided in Health and Safety Code section 39666(d).

(b) **Applicability.**

This section shall apply to any person who produces, sells, supplies, offers for sale or supply, uses, applies, or transports any of the following materials:

- (1) Aggregate material extracted from property where any portion of the property is located in a geographic ultramafic rock unit (as defined in subsection (i)(9)); or
- (2) Aggregate material extracted from property that is **NOT** located in a geographic ultramafic rock unit (as defined in subsection (i)(9)) if the material has been:
 - (A) Evaluated at the request of the Air Pollution Control Officer (APCO) and determined to be ultramafic rock or serpentine;
 - (B) Tested at the request of the APCO and determined to have an asbestos content of 0.25 percent or greater, as determined using an approved asbestos bulk test method; or
 - (C) Determined by the owner/operator of a facility to be ultramafic rock, or serpentine, or material that has an asbestos content of 0.25 percent or greater.
- (3) Any mixture of aggregate material that contains ten percent (10%) or more of any of the materials listed above in subsection (b)(1) or (b)(2).

(c) Prohibition On the Use, Sale, and Supply of Restricted Aggregate Material.

Unless one of the exemptions in subsection (f) applies, no person shall use, apply, sell, supply, or offer for sale or supply any restricted material (as defined in subdivision (i)(20)) for surfacing, unless it has been tested using an approved asbestos bulk test method and determined to have an asbestos content that is less than 0.25 percent.

(d) Requirements to Provide Notice with Restricted Material.

- (1) *Requirements for Producers of Restricted Material for Surfacing Applications:* Any producer who sells, supplies, or offers for sale or supply restricted material for surfacing that has been tested using an approved asbestos bulk test method and determined to have an asbestos content that is less than 0.25 percent must provide to the recipient of the restricted material a written receipt that contains the following information:
 - (A) The amount of restricted material that was sold or supplied;
 - (B) The date that the restricted material was sold or supplied;
 - (C) The dates that the restricted material was sampled and tested, or verification that the material is exempt under subsection (f)(7); and
 - (D) A statement that the asbestos content of the restricted material is less than 0.25 percent.
- (2) *Requirements for Persons – Other than Producers – Who Sell or Supply Restricted Material for Surfacing Applications:* Any person, other than a producer, who sells, supplies, or offers for sale or supply restricted material for surfacing must provide to the recipient of the material a written receipt which specifies the following information:
 - (A) The amount of restricted material that was sold or supplied;
 - (B) The date that the restricted material was sold or supplied; and
 - (C) A statement that the asbestos content of the restricted material is less than 0.25 percent.
- (3) *Requirements for the Sale or Supply of Restricted Materials for Non-Surfacing Applications:* Any person who sells, supplies, or offers for sale or supply restricted material for non-surfacing applications must provide with each sale or supply a written receipt containing the following statement:

“WARNING!
This material may contain asbestos.

It is unlawful to use this material for surfacing or any application in which it would remain exposed and subject to possible disturbances.

Extreme care should be taken when handling this material to minimize the generation of dust.”

(e) Recordkeeping and Reporting Requirements.

- (1) *Recordkeeping Requirements for Persons Who Use Restricted Material for Surfacing:* Any person who uses or applies restricted material for surfacing must retain any written receipt or other record verifying that the material has an asbestos content of less than 0.25 percent for a minimum period of seven years from the date of use or application.
- (2) *Recordkeeping Requirements for Persons Who Transport Restricted Material:* Any person who transports restricted material must maintain a copy of all receipts or records required by subsection (d) with the material at all times during transit and application.
- (3) *Recordkeeping Requirements for Persons Who Sell or Supply Restricted Material:* Any person who sells, supplies, or offers restricted material for sale or supply must retain copies of all receipts or records required by subsection (d) for a minimum period of seven years from the date of sale or supply.
- (4) *Reporting Requirements for Persons Who Use, Sell, or Supply Restricted Material:* Any person who uses restricted material for surfacing, sells, supplies, or offers restricted material for sale or supply must provide receipts and test results to the APCO for review upon request.

(f) Exemptions.

- (1) *Sand and Gravel Operations:* The requirements of subsections (c), (d), and (e) shall not apply to aggregate material extracted from a sand and gravel operation. A "sand and gravel operation" means any aggregate-producing facility operating in alluvial deposits.
- (2) *Roads Located at Quarries or Mines:* The requirements of subsection (c) shall not apply to roads at quarries or mines that are located in a geographic ultramafic rock unit, an ultramafic rock deposit, or a serpentine deposit, provided that the aggregate material was obtained on site from the quarry or mine property.

- (3) *Maintenance Operations on Existing Roads:* The requirements of subsections (c), (d), and (e) shall not apply to maintenance operations on any existing road surface if no additional restricted material is applied to the road surface.
- (4) *Emergency Road Repairs:* The APCO may issue a temporary exemption from the requirements of subsections (c), (d), and (e) to an applicant who demonstrates that a road repair is necessary due to a landslide, flood, or other emergency, and that the use of aggregate material other than restricted material is not feasible for this repair. The APCO shall specify the time during which such exemption shall be effective; however, no exemption shall remain in effect longer than 90 days.
- (5) *Asphalt and Concrete Materials:* The requirements of subsections (c), (d), and (e) shall not apply to restricted material that is an integral part of the production of asphalt concrete, portland cement concrete or other similarly cemented materials; or construction of an asphalt or a portland cement concrete surface as long as all of the restricted material is incorporated into or completely covered by the asphalt or portland cement concrete.
- (6) *Landfill Operations:* The use and application requirements of subsection (c) shall not apply to landfill operations, except for the surfacing of public-access roads used by vehicular traffic.
- (7) *Geologic Evaluation:* The APCO may provide an exemption from subsections (c), (d), and (e) for aggregate material extracted from within a geographic ultramafic rock unit if a registered geologist has conducted a geologic evaluation of the property from which the aggregate material is obtained and determined that serpentine or ultramafic rock is not likely to be found on the property. Before an exemption can be granted, the owner/operator must provide a copy of a report detailing the geologic evaluation to the APCO for his or her consideration.

(A) At a minimum, the geologic evaluation must include:

- 1. A general description of the property and the proposed use;
- 2. A detailed site characterization, which may include:
 - i. A physical site inspection;
 - ii. Offsite geologic evaluation of adjacent property;
 - iii. Evaluation of existing geological maps and studies of the site and surrounding area;
 - iv. Development of geologic maps of the site and vicinity;
 - v. Identification and description of geologic units, rock and soil types, and features that could be related to

- the presence of ultramafic rocks, serpentine, or asbestos mineralization;
 - vi. A subsurface investigation to evaluate the nature and extent of geologic materials in the subsurface where extensive vertical excavation is planned; methods of subsurface investigation may include, but are not limited to borings, test pits, trenching, and geophysical surveys;
 - 3. A classification of rock types found must conform to the nomenclature based on the International Union of Geological Science system;
 - 4. A description of the sampling procedures used;
 - 5. A description of the analytical procedures used, which may include mineralogical analyses, petrographic analyses, chemical analyses, or analyses for asbestos content;
 - 6. An archive of collected rock samples for third party examination; and
 - 7. A geologic evaluation report documenting observations, methods, data, and findings; the format and content of the report should follow the Guidelines for Engineering Geologic Reports issued by the State Board of Registration for Geologists and Geophysicists.
- (B) The APCO shall respond to a request for an exemption within 90 days of the receipt of the application.
- (C) If the request for an exemption is denied, the APCO shall provide written reasons for the denial.
- (D) *Expiration of the Geologic Exemption:* If the owner/operator discovers any ultramafic rock or serpentine on the property after the exemption is granted, then:
- 1. The owner/operator must comply with the requirements of subsections (c), (d), and (e) immediately following the discovery; and
 - 2. The owner/operator must report the discovery of ultramafic rock or serpentine to the APCO within 24 hours; and
 - 3. The exemption under subsection (f)(7) shall expire and cease to be effective.

- (8) *Limited Access Surfaces:* The APCO may provide an exemption from the requirements of subsection (c) for the use of restricted material on limited access surfaces, if the owner/operator can demonstrate that:

- (A) No alternative aggregate materials are reasonably available; and
- (B) The surface is not located in an area zoned or identified in a land use plan for residential, recreational, or commercial use.
- (C) The APCO shall respond to a request for an exemption within 90 days of the receipt of the application.
- (D) If the request for an exemption is denied, the APCO shall provide written reasons for the denial.

“Limited access surface” means any surface not subject to vehicular travel or pedestrian access that has an incline of twenty (20) percent or greater.

- (9) *Surfacing Applications in Remote Locations:*

- (A) The APCO may provide an exemption from the requirements of subsection (c) if the owner/operator can demonstrate that:
 - 1. The surface is located in a remote location (as defined in subsection (i)(19)); and
 - 2. No alternative aggregate materials are reasonably available; and
 - 3. All aggregate material used for surfacing has been tested according to an approved asbestos bulk test method and determined to have an asbestos content of one (1.0) percent or less; except that the APCO may allow the use of restricted material with an asbestos content up to five (5.0) percent if the owner/operator can demonstrate that restricted material with an asbestos content of one (1.0) percent or less is not reasonably available.
- (B) Before providing this exemption, the APCO shall:
 - 1. Consider the following information: county land use plans, the current use of the surrounding land, and the current and anticipated zoning designations;

2. Provide public notice and solicit comments for a 30-day period;
3. Require that any surface exempted pursuant to this subsection be posted with a permanent sign alerting the public to potential asbestos exposures; and
4. Require that any exemption shall be valid for no longer than three years; but if the owner/operator cannot demonstrate that all the criteria listed in subdivision (f)(9)(A) are met at the time of reapplication, the exemption shall not be renewed.

(C) The APCO may grant an exemption when the distance from the road or other surface to the nearest receptor is less than one mile if **ALL** of the following criteria are met:

1. The criteria listed above in subsections (f)(9)(A)2. and 3., and subsection (f)(9)(B) must be met:
2. Any receptor located within one mile from the road or other surface must **NOT** be any of the following:
 - i. A permanent resident (i.e., a person that resides at the receptor point for six months or more in a year), or
 - ii. A permanent business (i.e., business that operates at the receptor point for six months or more in a year), or
 - iii. A school or daycare center;
3. The road or other surface must be located on private property;
4. The entrance points to the road or other surface from any public thoroughfare must be gated and posted with a sign as required in subsection (f)(9)(B)3.;
5. The applicant for the exemption must provide to the APCO an estimate of the average traffic volume on the road or other surface and the methodology used to make the estimate; and
6. Whenever the traffic volume exceeds or is anticipated to exceed 20 vehicle passes per day, the owner/operator must:
 - i. Treat the road or other surface with a dust control method that is at least 70 percent effective; and
 - ii. Maintain records of the application and type of the dust control method for a minimum period of seven years; and

- iii. Provide the records of the applications of the dust control method to the APCO upon request.
- (D) The APCO shall respond to any application for an exemption within 90 days of the receipt of the application.
- (E) If the request for an exemption is denied, the APCO shall provide written reasons for the denial.
- (10) *Roads Located at Construction Sites:* 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.
- (11) *Riprap:* The requirements of subsection (c) (d), and (e) shall not apply to restricted material used for riprap. "Riprap" means the material used to construct a loose assemblage of stones along a water course or shoreline to prevent erosion or provide stability.

(g) Requirements to Perform a Geologic Evaluation or Asbestos Testing.

Pursuant to the requirements of Health and Safety Code section 41511, the APCO or the Executive Officer of the ARB may require an owner/operator to perform:

- (1) A geologic evaluation for the presence of ultramafic rock or serpentine on any property from which aggregate material is extracted; or
- (2) Testing for the asbestos content of any aggregate material sold, supplied, offered for sale or supply, or used for surfacing.

(h) Applicable Test Methods.

- (1) *Ultramafic Rock:* The ultramafic rock composition of any material shall be determined using a standard analysis technique including, but not limited to, color index assessment, microscopic examination, petrographic analysis or rock thin sections, or chemical analysis techniques, such as X-ray fluorescence spectrometry or inductively coupled plasma analysis.

- (2) *Asbestos Testing:* ARB Test Method 435 or an alternative asbestos bulk test method approved in writing by the Executive Officer of the Air Resources Board shall be used to determine compliance with this section. For the purposes of determining compliance with this section, references in ARB Test Method 435 to “serpentine aggregate” shall mean “aggregate material.”
- (3) *Averaging of Test Results:* If ARB Test Method 435 or an alternative approved asbestos bulk test method has been used to perform two or more tests on any one volume of aggregate material, whether by the same or a different person, the arithmetic average of these test results shall be used to determine the asbestos content of the aggregate material.
- (4) *Sampling Frequency:* For the purposes of this section, the sampling frequency required for determining the asbestos content of any aggregate material shall be no less than one composite sample per 1000 tons of aggregate material processed, as specified in ARB Test Method 435, unless the APCO approves an alternative sampling frequency as follows:
- (A) The APCO may approve an alternative sampling frequency after reviewing and verifying the authenticity of the following information, which shall be provided by the owner/operator of the quarry:
1. An established history of analytical test results demonstrating that no aggregate material sampled and tested in accordance with an approved asbestos bulk test method had an asbestos content that was 0.25 percent or greater;
 2. The established history of analytical test results must include:
 - i. Test results from ten percent of the expected total yield over the life of the quarry, as stated in any permit issued pursuant to the California Surface Mining and Reclamation Act, Public Resources Code, Division 2, Chapter 9, Section 2710 et seq.; or
 - ii. Test results that cover at least two years of production of surfacing material; this production amount must be verified with sales receipts and testing results as required in subsection (e)(3);
 3. A geologic evaluation of the quarry that has been conducted in accordance with the provisions in subsection (f)(7);

4. Any permits issued pursuant to the California Surface Mining and Reclamation Act, Public Resources Code, Division 2, Chapter 9, Section 2710 et seq.;
 5. Sales receipts retained by the quarry pursuant to subsections (d) and (e)(3).
- (B) The APCO shall not approve any alternate sampling frequency that requires less than one test per 100,000 tons of aggregate material processed for surfacing.
- (C) If any of the aggregate material tested is determined to have an asbestos content of 0.25 percent or greater using an alternative sampling frequency approved by the APCO, the owner/operator must:
1. Resume the sampling frequency specified in ARB Test Method 435 immediately after receiving the test results; and
 2. Report the detection of asbestos and provide a copy of the analytical test results to the APCO within 48 hours after receiving the test results.

(i) **Definitions.** For the purposes of this section, the following definitions shall apply:

- (1) "Aggregate" means a mixture of mineral fragments, sand, gravel, cobbles, rocks, stones, or similar minerals that may or may not be crushed or screened. "Aggregate" does not include elemental metals, gemstones, petroleum products, organic materials, or mineral ore to be processed offsite of the property from which it was extracted.
- (2) "Alluvial deposit" means any deposit of sediments laid down by running water including, but not limited to, streams and rivers.
- (3) "APCO" means the executive officer, air pollution control officer; or the designee of the executive officer or air pollution control officer of any air pollution control or air quality management district created or continued in existence pursuant to Part 3 (commencing with section 40000), Division 26, Health and Safety Code;
- (4) "Approved asbestos bulk test method" means ARB Test Method 435 or an alternative asbestos bulk test method approved in writing by the Executive Officer of the Air Resources Board.
- (5) "ARB" means the California Air Resources Board.

- (6) "ARB Test Method 435" means the test method specified in title 17, California Code of Regulations, section 94147.
- (7) "Asbestos" means asbestiforms of the following minerals: chrysotile (fibrous serpentine), crocidolite (fibrous riebeckite), amosite (fibrous cummingtonite--grunerite), fibrous tremolite, fibrous actinolite, and fibrous anthophyllite.
- (8) "Decoration/landscaping" means the application or use of aggregate materials for aesthetic purposes.
- (9) "Geographic ultramafic rock unit" means a geographic area that is designated as an ultramafic rock unit or ultrabasic rock unit, including the unit boundary line, on any of the maps referenced in Appendix A.
- (10) "Geologic evaluation" means an evaluation of a property, as specified in subsection (f)(7), to determine the presence of various rock types, including ultramafic rock, serpentinite, or other metamorphic derivatives of ultramafic rock.
- (11) "Limited access surface" means any surface not subject to vehicular travel or pedestrian access that has an incline greater than twenty (20) percent.
- (12) "Non-surfacing applications" means any application of aggregate material that will not remain a part of the uppermost layer, such as fill, base rock, or drain rock.
- (13) "Owner/operator" or "person" includes, but is not limited to:
 - (A) An individual, trust, firm, joint stock company, business concern, partnership, limited liability company, association, or corporation including, but not limited to, a government corporation;
 - (B) Any city, county, district, commission, the state or any department, agency, or political subdivision thereof, any interstate body, and the federal government or any department or agency thereof to the extent permitted by law; or
 - (C) A project proponent and any of its contractors or subcontractors.
- (14) "Producer" means any person that extracts and processes aggregate material from the ground.

- (15) "Property" means any real property including, but not limited to, any contiguous parcel or parcels of land and anything attached to, or erected on it.
- (16) "Quarry" means a facility or operation that obtains stone from the earth by means of cutting, digging, excavating, or blasting.
- (17) "Receipt" means any written acknowledgement that a specified amount of restricted material was received, delivered, or purchased. Receipts include, but are not limited to, bills of sale, bills of lading, and notices of transfer.
- (18) "Registered geologist" means an individual that is currently licensed as a geologist with the State of California, Department of Consumer Affairs, Board of Geology and Geophysicists.
- (19) "Remote location" means any location that is at least one (1.0) mile from the location of a receptor. "Receptor" includes, but is not limited to, any hospital, school, day care center, work site, business, residence, and permanent campground. The distance to the nearest receptor is to be measured from the outermost limit of the area to be disturbed or road surface, whichever is closer.
- (20) "Restricted material" means any of the following:
 - (A) Aggregate material extracted from property where any portion of the property is located in a geographic ultramafic rock unit (as defined in subsection (i)(9)); and
 - (B) Aggregate material extracted from property that is **NOT** located in a geographic ultramafic rock unit (as defined in subsection (i)(9)) if the material has been:
 - 1. Evaluated at the request of the Air Pollution Control Officer (APCO) and determined to be ultramafic rock or serpentine;
 - 2. Tested at the request of the APCO and determined to have an asbestos content of 0.25 percent or greater; or
 - 3. Determined by the owner/operator of a facility to be ultramafic rock, serpentine, or aggregate material that has an asbestos content of 0.25 percent or greater.
 - (C) Any mixture of aggregate material that contains ten percent (10%) or more of any of the materials listed above in subsections

(i)(20)(A) or (i)(20)(B), or any combination thereof, shall also be considered “restricted material.”

- (21) “Riprap” means material used to construct a loose assemblage of stones along a water course or shoreline to prevent erosion or provide stability.
- (22) “Road surface” means the traveled way of a road and any shoulder which extends up to ten (10) feet from the edge of the traveled way.
- (23) “Sand and gravel operation” means any aggregate-producing facility operating in alluvial deposits.
- (24) “Serpentine” means any form of the following hydrous magnesium silicate minerals: antigorite, lizardite, and chrysotile.
- (25) “Serpentinite” means a rock consisting almost entirely of serpentine, although small amounts of other minerals such as magnetite, chromite, talc, brucite, and tremolite-actinolite may also be present. “Serpentinite” is a metamorphic derivative of the ultramafic rocks, peridotite, pyroxenite, or dunite.
- (26) “Surfacing” means the act of providing or creating a temporary or permanent covering for a surface used for pedestrians, motor vehicles, non-motor vehicles, decoration, landscaping, soil stabilization, or erosion control. Examples of surfaces include, but are not limited to, roads, road shoulders, streets, access roads, alleys, lanes, driveways, parking lots, playgrounds, trails, squares, plazas, and fairgrounds. For the purposes of this section, “surfacing” does not include creating a covering composed of asphalt concrete or portland cement concrete.
- (27) “Ultrabasic rock” means ultramafic rock.
- (28) “Ultramafic rock” means an igneous rock composed of 90 percent or greater of one or a combination of the following iron/magnesium-rich, dark-colored silicate minerals: olivine, pyroxene, or more rarely amphibole. For the purposes of this section, “ultramafic rock” includes the following rock types: dunite, pyroxenite, and peridotite; and their metamorphic derivatives.

NOTE: Authority cited: Sections 39600, 39601, 39650, 39658, 39659, 39666, and 41511, Health and Safety Code. Reference: Sections 39650, 39658, 39659, 39666, and 41511, Health and Safety Code.

APPENDIX A

California Department of Conservation Division of Mines and Geology

AVAILABLE GEOLOGIC MAPS FOR CALIFORNIA

GEOLOGIC ATLASES OF CALIFORNIA Scale 1:250,000

GEOLOGIC ATLAS OF CALIFORNIA: ALTURAS

Compiled by Gay, T.E. and others, 1958

GEOLOGIC ATLAS OF CALIFORNIA: BAKERSFIELD

Compiled by Smith, A.R., 1964 (reprinted 1992)

GEOLOGIC ATLAS OF CALIFORNIA: DEATH VALLEY

Compiled by Streitz, R.L. and Stinson, M.C., 1974 (reprinted 1991)

GEOLOGIC ATLAS OF CALIFORNIA: FRESNO

Compiled by Matthews, R.A. and Burnett, J.L, 1965 (reprinted 1991)

GEOLOGIC ATLAS OF CALIFORNIA: LONG BEACH

Compiled by Jennings, C.W., 1962 (reprinted 1992)

GEOLOGIC ATLAS OF CALIFORNIA: LOS ANGELES

Compiled by Jennings, C.W. and Strand, R.G., 1969 (reprinted 1991)

GEOLOGIC ATLAS OF CALIFORNIA: MARIPOSA

Compiled by Strand, R.G., 1967 (reprinted 1991)

GEOLOGIC ATLAS OF CALIFORNIA: NEEDLES

Compiled by Bishop, C.C., 1963 (reprinted 1992)

GEOLOGIC ATLAS OF CALIFORNIA: REDDING

Compiled by Strand, R.G., 1962

GEOLOGIC ATLAS OF CALIFORNIA: SALTON SEA

Compiled by Jennings, C.W., 1967 (reprinted 1992)

GEOLOGIC ATLAS OF CALIFORNIA: SAN LUIS OBISPO

Compiled by Jennings, C.W., 1958 (reprinted 1992)

GEOLOGIC ATLAS OF CALIFORNIA: SAN DIEGO - EL CENTRO

Compiled by Strand, R.G., 1962 (reprinted 1992)

GEOLOGIC ATLAS OF CALIFORNIA: SANTA ANA
Compiled by Rogers, T.H., (reprinted 1992)

GEOLOGIC ATLAS OF CALIFORNIA: SANTA CRUZ
Compiled by Jennings, C.W. and Strand, R.G., 1958 (reprinted 1992)

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LOCAL GEOLOGIC MAPS

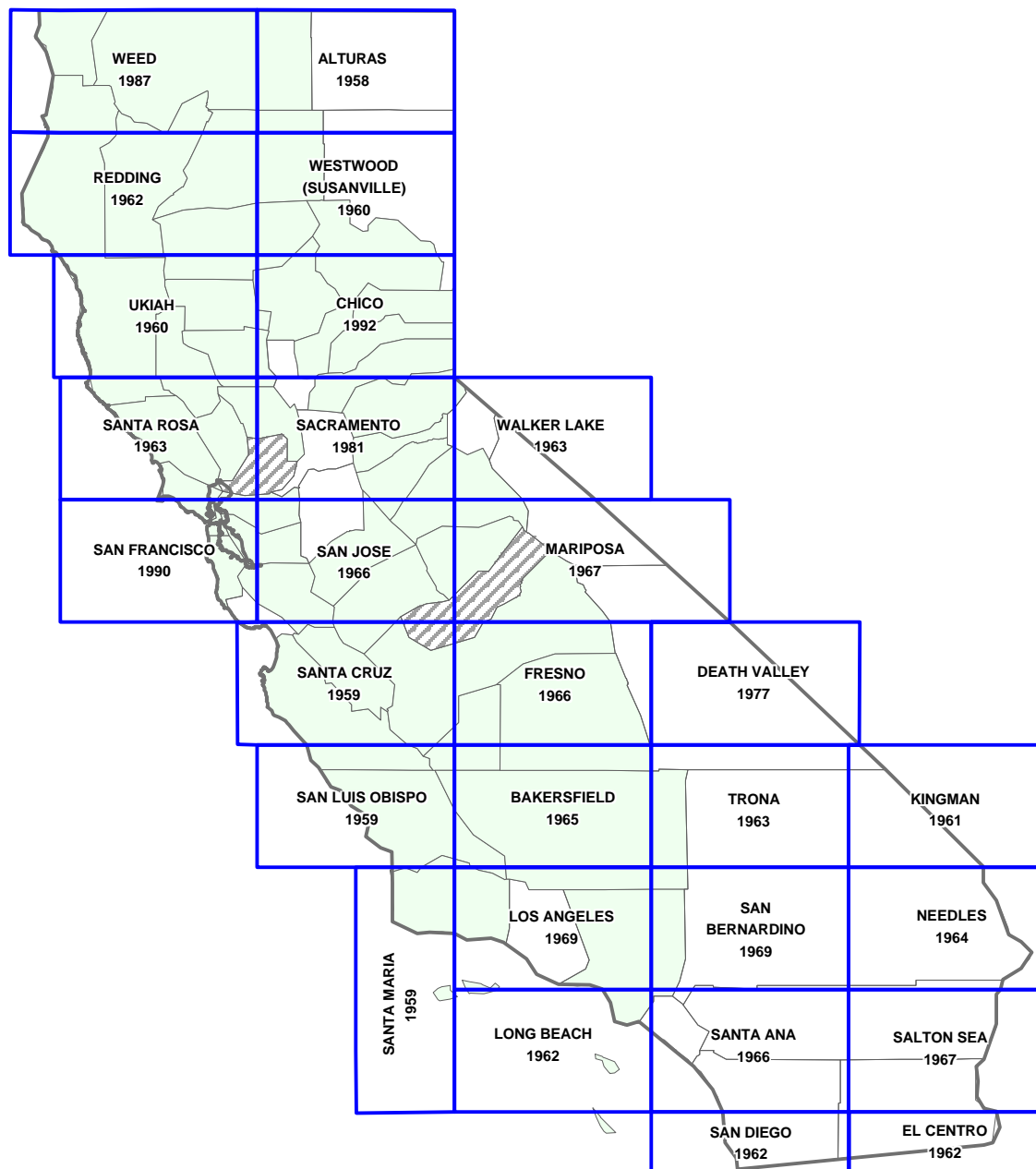
AREAS MORE LIKELY TO CONTAIN NATURALLY-OCCURRING ASBESTOS
IN WESTERN EL DORADO COUNTY, CALIFORNIA
By Ron Churchill, March 2000
Scale 1:100,000

SERPENTINITE SURVEY OF LAKE COUNTY, CALIFORNIA – MAP A,
ULTRAMAFIC, ULTRABASIC, AND SERPENTINE ROCK AND SOILS OF LAKE
COUNTY,

Adopted: March 2, 1992

Scale: 1:100,000

INDEX TO GEOLOGIC ATLAS SERIES AND REGIONAL GEOLOGIC MAP SERIES MAPS



Counties in solid green contain ultramafic rock areas shown on the adjacent map. These areas are shown in more detail on the Division of Mines and Geology 1:250,000 scale Geologic Atlas and Regional Geologic Map Series maps. Madera and Solano counties, in diagonal pattern, have ultramafic rock areas shown on the Geologic Atlas and Regional Geologic Map Series maps that are too small to show on the adjacent map. Los Angeles County has small ultramafic rock occurrences on Catalina Island and a small occurrence is present in Kern County. Source: DMG Open-File Report 2000-19: A General Location Guide for Ultramafic Rocks in California - Areas More Likely to Contain Naturally Occurring Asbestos (DOC 2000b)