State of California
AIR RESOURCES BOARD

Staff Report: Initial Statement of Reasons for the Proposed Amendments to the Asbestos Airborne Toxic Control Measure for Surfacing Applications

Executive Summary

I. INTRODUCTION

In 1990, the Air Resources Board (ARB or Board) adopted the Asbestos Airborne Toxic Control Measure for Asbestos-Containing Serpentine (Asbestos ATCM) that prohibits the use of serpentine aggregate on unpaved surfaces if the asbestos content is greater than five percent. The ARB staff is now proposing revisions to the Asbestos ATCM to further protect public health from asbestos exposures by minimizing future placement of asbestos-containing materials on surfaces. The proposed revisions to the Asbestos ATCM were developed to reduce the public's exposure to airborne asbestos emissions from surfacing applications, such as unpaved roads, driveways, parking lots, and walkways located in areas with naturally-occurring asbestos.

II. BACKGROUND

1. Why is the staff proposing to revise the current Asbestos ATCM?

Since the adoption of the current Asbestos ATCM, additional information from ambient air monitoring studies and dust emission models has been developed. This information demonstrates a potential for significant exposures and risks for individuals living near unpaved roads surfaced with material containing asbestos. Therefore, staff is proposing to amend the existing regulation to further reduce asbestos emissions from surfacing applications by eliminating the use of aggregate most likely to contain asbestos. This aggregate is produced for surfacing at a limited number of surface mines and quarries in areas of serpentine and ultramafic rock. Also, asbestos-containing soils and rock from private properties under development are occasionally placed on unpaved roads, driveways, and other surfaces. Staff also views this proposal as a pollution prevention measure that will essentially eliminate public exposure to airborne asbestos from new applications of surfacing materials. Alternative aggregate materials are available in most areas of the State at similar costs.

Last fall, the El Dorado County Board of Supervisors considered revisions to their county ordinance proposed by the local air pollution control district to lower the allowable asbestos content of surfacing materials below five percent. That revision was not adopted and in making this decision, the Chair of the El Dorado County Board of Supervisors stated that he believed that this is a statewide issue best dealt with by the ARB. Following this decision, ARB staff decided to expeditiously pursue the development of an updated asbestos measure for surfacing applications and to expand the measure to include construction and surface mining operations.

2. What does the law require to protect public health?

The Toxic Air Contaminant (TAC) Identification and Control Program is established in Health and Safety Code (H&SC) sections 39650 et seq. State law requires the Board to reduce emissions of TACs to the lowest level achievable through the application of best available control technology (BACT). The Board may require the use of a more effective control method if it is determined to be necessary to prevent an endangerment of public health. The staff is proposing revisions to the ATCM consistent with this State law mandate and believes that the proposed amendments to prohibit the use of the aggregates most likely to contain asbestos for surfacing applications to represent BACT.

The law is clear in its intent that emissions of TACs should be controlled to levels that reduce health risks and prevent harm to the public health. The law also states that it may be necessary to take action even when undisputed scientific evidence may not be available to determine the exact nature and extent of risk from a TAC. The law further supports the pollution prevention principle by promoting the use of less hazardous alternative materials. The vast majority of aggregate and other surfacing materials in California does not come from quarries in serpentine or ultramafic rock deposits and, therefore, does not contain asbestos.

3. How is serpentine and ultramafic rock related to asbestos?

Two different forms of asbestos minerals are found naturally in many parts of California. The most common and abundant type is chrysotile. A second type, tremolite, also occurs in much lower quantities. Both of these types of asbestos are found in serpentinite, commonly referred to as serpentine or serpentine rock. Ultramafic rock is the parent igneous rock for serpentinite. Ultramafic rock, other than serpentine, may also contain asbestos. Known areas of serpentine and ultramafic rock can be located on geologic maps under the designation of “ultramafic rock units.” The total land area of the State represented by ultramafic rock units is about 1.4 percent, much of which is located in remote areas of northwestern California (DOC, 2000).

When serpentine or asbestos-containing ultramafic rock is crushed or broken, the asbestos is released to the air and can present a potential health risk. This type of asbestos has become referred to as "naturally-occurring" asbestos.

III. EMISSIONS AND POTENTIAL HEALTH IMPACTS

1. What are the sources of naturally-occurring asbestos?

Some of the major sources of naturally-occurring asbestos emissions are unpaved roads, driveways, and other surfaces covered with asbestos-containing serpentine or ultramafic rock. Construction and grading activities and rock quarries and surface mines in serpentine and ultramafic rock areas are also major sources of naturally-occurring asbestos emissions.

2. Why is the staff only proposing to control surfacing applications?

The use of asbestos-containing material for surfacing is the initial focus of the staff's asbestos regulatory efforts. Regulations for other potential asbestos sources such as mining, quarrying, and construction and grading activities in areas containing ultramafic rock, including serpentine, will be addressed in a second ATCM to be proposed later this year.

3. How much asbestos is emitted from unpaved roads and surfaces?

Quantitative assessments of the asbestos emissions from unpaved surfaces are difficult to estimate because of the many factors which influence the rate of release of the asbestos fibers, and the high degree of variability of each of these factors. These factors include vehicular traffic and speed, asbestos content of the aggregate material, seasonal variations, and meteorological conditions. Further, we do not have an accurate estimate of the number of miles of unpaved roads surfaced with asbestos-containing material. However, the ARB and others have monitored near selected unpaved roads and obtained measured concentrations of asbestos in the air. In addition, the ARB and United States Environmental Protection Agency (U.S. EPA) have developed models as tools to predict ambient concentrations using a variety of assumptions. Both the monitoring and modeling results identify ambient asbestos concentrations of concern for people living near unpaved roads or other surfaces covered with asbestos-containing aggregate.

Two districts, the Lake County Air Pollution Control District and the North Coast Unified Air Quality Management District, have adopted and implemented regulations that are more stringent than the 1990 Asbestos ATCM. The regulations limit the asbestos content of serpentine aggregate for surfacing to one percent or less. In addition, Mariposa County has an ordinance that prohibits the use of serpentine for unpaved surfaces. In discussions with the California Department of Transportation (Caltrans) staff, they indicated that the State does not build or maintain serpentine unpaved roads. Caltrans also does not use serpentine aggregate as road base material for paved roads.

4. What are the potential health impacts from asbestos exposures related to unpaved surfaces?

Asbestos is classified as a known human and animal carcinogen by State, federal, and international agencies. Inhalation of asbestos fibers has been shown to cause several serious illnesses including lung cancer, mesothelioma, and asbestosis. Asbestos, in all its mineral forms, was identified by the ARB as a TAC in 1986 and is included on the U.S. EPA's list of hazardous air pollutants. There has been some debate by members of the scientific community regarding the different cancer potencies of the various forms of asbestos. Tremolite and other amphibole asbestos forms are considered by some to be more potent than chrysotile in inducing mesothelioma; however, the available data does not currently enable State or federal scientists to make a distinction of cancer potency by fiber type. It should be noted that chrysotile appears to be equally potent as all other forms of asbestos in causing lung cancer.

The asbestos concentrations near unpaved roads, based on air monitoring data and modeled predictions, result in a wide range of estimated potential risks from tens to thousands of chances of cancer per million based on various conditions and assumptions. The wide range of risk occurs due to the high variability of several factors influencing the rate of emissions, including the asbestos content of the road material, vehicle traffic, vehicle speed, and meteorological conditions. The monitored exposures tend to be episodic and there are no scientific studies available to indicate how to accurately estimate the risk from these types of episodic exposures to asbestos. However, data from dust emission models provide average asbestos concentrations that are more representative of long-term exposure. In this report, the ARB assumes the exposure to both measured and modeled concentrations are long-term and constant. Because the monitored concentrations of asbestos are assumed to be long-term and constant, the estimated cancer risks may be overstated if the exposure was episodic and not a true annual average concentration. While exact risk numbers are difficult to estimate, health officials agree that asbestos is a known human carcinogen and exposure to it should be minimized.

IV. SUMMARY OF PROPOSED ATCM

1. What do the proposed revisions require?

The proposed revisions are designed to minimize the public’s exposure to asbestos by prohibiting the use or sale of materials most likely to contain asbestos for surfacing applications. To accomplish this, the staff proposes to prohibit the use of serpentine and asbestos-containing ultramafic rock for surfacing applications. The proposal also includes provisions to allow the Executive Officer of the ARB or local air district to require the testing of any surfacing material. If any material that is tested is determined to contain asbestos, the material could not be sold or used in surfacing applications. This provision was included to provide a mechanism for local air districts to prohibit the use of asbestos-containing material if information was brought to their

attention indicating that materials not directly covered by the rule are suspected of containing asbestos. The proposed revisions incorporate pollution prevention as a key element by prohibiting the use of the materials most likely to contain asbestos.

2. What are the primary differences from the existing ATCM?

The current Asbestos ATCM prohibits the use and sale of serpentine for surfacing if it contains more than five percent asbestos. The proposed revisions make the ATCM more health protective by prohibiting the use and sale of all serpentine material for surfacing applications. The proposed revisions also expand the prohibition to include ultramafic rock that contains more than 0.25 percent asbestos, and surfacing material that has been tested and determined to contain asbestos.

The proposed revisions also include new definitions and exemptions. The new definitions were added for clarity. The new exemptions address situations where serpentine or ultramafic rock may be used for non-wearing surfaces, remote locations, and where a geologic assessment has shown that asbestos is not likely to be present in ultramafic rock. The recordkeeping provisions were also revised to be consistent with the expanded prohibitions.

V. IMPACTS OF REGULATION – HEALTH, ECONOMIC, ENVIRONMENTAL

1. Will the revisions reduce public health risk?

Yes. The proposed revisions will minimize health risks associated with the use of asbestos-containing material for surfacing. This measure will prevent asbestos from being released into the air from unpaved surfaces. Asbestos emissions from new unpaved roadways will be abated as the regulation is implemented. Further, as new aggregate is added to existing serpentine-covered roadways, the potential for release of asbestos from these roadways will diminish.

2. What will the revisions to the ATCM cost?

There are over 200 mines and quarries in California that sell aggregate for use in surfacing. (USCB, 1999) Of these, the staff has identified three quarry operations located in serpentine or ultramafic rock deposits that may incur significant economic impacts from a prohibition of the use of asbestos-containing materials for surfacing. In addition, quarries in ultramafic rock areas will incur cost for testing of ultramafic rock to determine the asbestos content. Testing costs are approximately $0.06 to $0.10 per ton of material produced for surfacing. The costs to businesses that buy rock for resale should be insignificant since only recordkeeping is required. Costs to homeowners and other end users will be minimal, as alternative materials are available at similar costs. Minor increases in hauling costs may be incurred if alternative material must be purchased from a more distant supplier. However, in the long term, these minor increases in cost will be offset because of the less frequent need to replace rock due to the greater durability of alternative aggregates. The estimated cost to State agencies

would be approximately $250,000 per year for testing of aggregate. The total statewide costs to local air pollution agencies to implement the regulation are estimated to be $150,000 for the first year and $35,000 for each subsequent year.

3. Are there any significant adverse environmental impacts associated with the proposed revisions?

No significant adverse environmental impacts are expected to occur, with the exception that staff has identified a potential for a very small increase of emissions from diesel vehicles in the event that alternative rock would have to be transported from a more distant source in the near term. However, the increase in truck travel is very small, approximately 500 miles per day out of a total of 30 million miles per day now driven by diesel trucks. The level of risk posed by this increase in traffic is estimated to be less than one in a million for any individual. Because alternative aggregate material (i.e. limestone, river rock, decomposed granite, and basalt) is more durable, these diesel emissions will be offset or decrease in the future as the aggregate will not have to be replaced as frequently.

VI. NEXT STEPS

If the proposed revisions to the ATCM are adopted, the local air pollution control or air quality management districts (district) must implement and enforce the amended regulation. However, if the district wishes to adopt an alternative regulation, it has 120 days to propose a regulation that is at least as stringent as the ATCM. The alternative regulation must be adopted within six months of the adoption of the ATCM.

The staff will work with the Department of Conservation, Division of Mines and Geology to develop guidance to assist local air districts and geologists on the appropriate contents of a geologic assessment for facilities or operations in asbestos-containing soils. This guidance can be used in part for the exemption clause in the proposed revisions to this ATCM and in the forthcoming ATCM for construction and grading activities and quarrying operations. While our overall goal is to have guidance that could be used to determine the likelihood that material would have a detectable asbestos content, we believe the most immediate need is to provide guidance for identifying serpentine and ultramafic rock. ARB staff will also be working with the Division of Mines and Geology to provide updated maps on the areas likely to contain naturally-occurring asbestos.

As mentioned, the staff plans to propose a second ATCM later this year to address asbestos emissions from construction and grading activities and surface mining and quarrying operations. This ATCM will include best management practices for reducing the potential for asbestos emissions arising from these activities.

VII. RECOMMENDATION

The ARB staff recommends that the Board adopt the proposed revisions to the Asbestos ATCM. In recognition of the State law requirement for the ATCM to reflect BACT, the staff is proposing revisions that will prohibit the use and sale of serpentine, serpentine material, and asbestos-containing ultramafic rock for surfacing applications. Benefits from the proposed revisions to the Asbestos ATCM are reduced public exposures to asbestos emissions from unpaved surfaces covered with serpentine or other asbestos-containing materials. Exposure to asbestos is known to cause lung cancer and mesothelioma. The proposed actions to minimize the public's exposure to this known carcinogen are consistent with State policy to control TACs to levels that prevent harm to the public health and to promote the use of alternative materials of a less hazardous nature.