

**CALIFORNIA AIR RESOURCES BOARD
FINAL REGULATION ORDER**

**§ 93106 ASBESTOS AIRBORNE TOXIC CONTROL MEASURE FOR
SURFACING APPLICATIONS.**

AMENDMENTS APPROVED BY THE OFFICE OF ADMINISTRATIVE LAW ON 7/16/01
OPERATIVE DATE 7/16/01

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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)

GEOLOGIC ATLAS OF CALIFORNIA: SANTA MARIA
Compiled by Jennings, C.W., 1959 (reprinted 1992)

GEOLOGIC ATLAS OF CALIFORNIA: UKIAH
Compiled by Jennings, C.W. and Strand, R.G., 1960 (reprinted 1992)

GEOLOGIC ATLAS OF CALIFORNIA: WALKER LAKE
Compiled by Koenig, J.B., 1963 (reprinted 1992)

REGIONAL GEOLOGIC MAP SERIES Scale 1:250,000

GEOLOGIC MAP OF THE SACRAMENTO QUADRANGLE
(set of four sheets)
Compiled by Wagner, D.L. and others, 1981

GEOLOGIC MAP OF THE SANTA ROSA QUADRANGLE
(set of five sheets)
Compiled by Wagner and D.L., Bortugno, E.J. (reprinted 1999)

GEOLOGIC MAP OF THE SAN BERNARDINO QUADRANGLE
(set of five sheets)
Compiled by Bortugno, E.J., and Spittler, T.E. (reprinted 1998)

GEOLOGIC MAP OF THE WEED QUADRANGLE
(set of four sheets)
By Wagner, D.L. and Saucedo, G.J., 1987

GEOLOGIC MAP OF THE SAN FRANCISCO-SAN JOSE QUADRANGLE
(set of five sheets)
By Wagner, D.L., Bortugno, E.J. and McJunkin, R.D., 1990
Color-coded faults

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