To: Stephanie Moreno
Director Community Development Agency Calaveras County

From: Patricia Guttmann
Member Calaveras Planning Coalition

Date: 05/31/07

Subj.: NATURALLY OCCURRING ASBESTOS (NOA) INFORMATION FOR GENERAL PLAN BASELINE REPORT

Dear Ms. Moreno,

Attached is information regarding the existence of asbestos mines and naturally occurring asbestos (NOA) in Calaveras County. I request that this information be included in the baseline report for the Calaveras County general plan under the safety element.

As you know asbestos is a hazardous material and it exists in its natural form in Calaveras County. As a matter of fact the asbestos monofill, one time the nation's largest asbestos mine is located in Calaveras County. It is important that we proactively incorporate provisions in the new general plan to mitigate areas of asbestos in order to address this public safety issue. As stated in the Union Democrat article dated 4/6/07, Calaveras County Planning Director Robert Sellman said of the asbestos issue, "As the General Plan is updated, we'll research what's required. The whole purpose of the General Plan is to look at health, safety and general welfare as development occurs, so it's an issue we recognize as significant and we'll look at it." Past chairwoman of the Board of Supervisors Merita Callaoway stated in the Union Democrat, "The County requires developers to check the soil to see if it's compatible for septic systems before putting in such systems, and that perhaps some such protocol could be developed for naturally occurring asbestos."

El Dorado and Tuolumne County have implemented measures to address naturally occurring asbestos (NOA). According to the Union Democrat, in Tuolumne County serpentine rock areas are mapped and zoned for limited development. When they did their General Plan update in 1996, their comprehensive revision shows where the serpentine belt is. The county has placed land-use designations, such as agricultural, on areas where asbestos exists or is suspected. This prevents dividing the property into small, build able residential lots. When they get a building permit application, they check it against those maps and if it is in an area of known asbestos, then they attach certain conditions to those building permits.

School agencies planning to build on places with naturally occurring asbestos have to have detailed plans for making sure students don't come into contact with the substance. Residential developments have no such requirements. Perhaps we should rethink how we proceed with residential development in areas of NOA. An asbestos hazard in a schoolyard is the same hazard in the student's backyard.

Sincerely,

Patricia Guttmann

cc Mintier and Associates

ATTACHMENTS

Cover: Photo from Union Democrat of Asbestos Monofill near Copperopolis, once the site of the nation's largest Asbestos mine.

A. **California Division of Mines and Geology County Report #2. Location of Asbestos mines in Calaveras County including maps.**
B. **Information from US Environmental Protection Agency regarding naturally occurring asbestos (NOA) and on asbestos and vermiculite.**
C. **Information from California Geological Survey on Asbestos.**
D. **California Department of Conservation general location guide for ultramafic rocks in California. Maps of areas in Calaveras County more likely to contain naturally occurring asbestos (NOA).**
E. **Article from Union Democrat dated 4/5/07; Minerals history runs deep in the Mother Lode.**
F. **Article Union Democrat dated 4/5/07; Asbestos: A hidden hazard int the hills.**
G. **Article Union Democrat dated 4/6/07; Asbestos concerns rattle El Dorado County residents.**
H. **Article Union Democrat dated 4/6/07; Asbestos: Are more rules in the air?**
I. **Article Stockton Record dated 5/11/07; Future school site raises asbestos fears.**

AH. A

Antimony

There has been no recorded production of antimony in Calaveras County. However, stibnite (Sb_2S_3) has been observed with gold at Mokelumne Hill and with cinnabar at the Oro y Plata gold mine near Murphys (Murdoch and Webb, 1948, p. 284). Stibnite also is a minor constituent of some Foothill copper belt ores (Heyl, 1948, p. 20), but none has been reported in Calaveras County. Tetrahedrite ($(Cu,Fe)_{12}Sb_4S_{13}$) is in many of the Foothill copper-zinc ores and also has been found at the Carson Hill, Carson Creek, Live Oak, Ilex, and Blue Wing gold mines (Murdoch and Webb, 1948, p. 295). Jamesonite ($Pb_4FeSb_6S_{14}$) has been found at Mokelumne Hill (Murdoch and Webb, 1948, p. 183).

Asbestos

Chrysotile asbestos has been produced commercially in small quantities in Calaveras County. The two principal properties are the Voorhees or American deposit, 7 miles southeast of Copperopolis and the Turner and Lloyd prospect, 3½ miles due north of Copperopolis. There are several small prospects northwest of San Andreas. In 1961 the Jefferson Lake Asbestos Company began to erect a large mill and began stripping a large area preparatory to a large open-pit operation at the Voorhees deposit.

Serpentine, the host rock of chrysotile asbestos, is abundant in the western portion of Calaveras County (see figs. 15, 16). The asbestos is in cross-fiber seams and veinlets which appear as stockworks in the serpentine. Most of the veinlets are an inch or less in thickness and no more than a few feet in length. They branch, join other veins or pinch out. Ore deposits consist of those portions of the serpentine which contain sufficient asbestos veinlets and seams to be of commercial value.

Jefferson Lake (American, California, Pacific, Voorhees) deposit

Location: secs. 15, 16, 21, and 22, T. 1 N., R. 13 E., M.D.M., 7 miles southeast of Copperopolis and north and west of the Stanislaus River. Ownership: Jefferson Lake Sulphur Company, New Orleans, Louisiana; the operating company is the Jefferson Lake Asbestos Corporation, a wholly owned subsidiary; R. W. Prince, resident manager.

The Jefferson Lake was one of the first chrysotile asbestos deposits to be mined in California. It was originally opened many years ago by the California Asbestos Company. Following this a number of concerns made efforts to exploit the deposit, including the American Asbestos Company, American Asbestos and Manufacturing Company, Pacific Asbestos Corporation, and the Asbestos Producing Company of California (Logan and Franke, 1936, p. 226). In 1927 Harry Leach of Oakland and others leased the property. However, work ceased shortly afterward. During these earlier operations the property was known as the Voorhees deposit. In 1944 it was diamond drilled by the Johns-Manville Asbestos Corporation. In 1952 the deposit was acquired by the American Asbestos Mining Corporation of New York City. Some exploration work was done, and a 30-ton bulk sample was sent to a mill for testing.

The Jefferson Lake Sulphur Company obtained control of the property in 1959 and began an extensive exploration and development program. Exploration work has consisted of 15,000 linear feet of surface trenching and the sinking of 70 diamond drill holes to an average depth of 453 feet at the corners of 150-foot squares. Cores were milled at a pilot mill erected by the company at Copperopolis and at a custom laboratory in Quebec, Canada. Construction of a 2500-ton per day mill began in the Spring of 1961. It includes primary and secondary crushers, screens, conveyor belts, and drying equipment. Also stripping of overburden was continuing preparatory to open-pit mining.

This deposit is in a large mass of serpentinized peridotite, as shown on the geologic map of the Copperopolis quadrangle (Taliaferro and Solari, 1948, plate I). The asbestos forms stockworks of cross-fiber seams and veinlets in massive pale-green serpentine. Most of the fibers range from one-sixteenth to a quarter of an inch in length; a very small percentage of the fiber is half an inch or more in length (Salem J. Rice, personal communication, 1960). Exploration work by the present owner has indicated an estimated 17,000,000 tons of asbestos-bearing rock with the following fiber content (*Mining World*, May 1961, p. 17):

Group fiber	*Percentage yield*	*Percentage proportion*	*Tons of fiber*
4	1.0	16.0	170,000
5	1.5	24.0	255,000
7	3.8	60.0	646,000
Totals	6.3	100.0	1,071,000

The ore body, which is lensoid, is reported to be 2000 feet in length and to average 340 feet in width. It strikes N. 45° W. The highest-grade material is in the center of the deposit. The asbestos is relatively free milling. The company plans to blend the fibers from the few wide veins with the shorter fibers to increase the quantity of medium-length material.

Turner and Lloyd deposit

Location: sec. 15, T. 2 N., R. 12 E., M.D.M., 4 miles due north of Copperopolis. Ownership: Max Henley et al., Copperopolis, California.

This asbestos deposit consists of a number of claims, including the Turner and Lloyd, which were originally prospected years ago (Logan, 1925, p. 164), and the Skipper claim, which was located by Max Henley in 1953. Some work was done on the property, and a small stockpile was made, which remains by the junction of the dirt road leading to the deposit with State Highway 4.

Chrysotile asbestos forms stockworks of small cross-fiber seams and veinlets in a heavily overgrown area at least 100 acres in extent. However, the percentage of

asbestos present in most places in the area is extremely low. The host rock is light green massive serpentine. The fibers usually are less than a quarter of an inch in length. The deposit is developed by numerous small open pits, open cuts, and—in the northwest portion—an open west-crosscut adit.

Barite

Barite is commonly found as a gangue mineral in the Foothill copper-zinc ores in Calaveras County, but there has been no commercial production. At one time, unsuccessful experiments were made on samples from the Napoleon copper mine in an effort to produce barite of sufficient purity for commercial use (Logan, 1925, p. 165). Minor amounts of barite also are present in some of the gold ores of the Mother Lode.

Chromite

Since 1904, Calaveras County has yielded 8,036 tons of chromite valued at $216,836. Most of this output was during World War I, the peak year having been 1918, when 3,830 tons valued at $159,453 were produced (U.S. Bureau of Mines records). Chromite mined prior to World War I was used for furnace linings in copper smelters. The estimated chromite reserves of the county are small, inasmuch as many of the mines are reported to have been exhausted (Cater, 1948, p. 40). Any future chromite production will probably depend upon new discoveries. The most favorable area for prospecting in Calaveras County is believed to be in the French Creek area, 5 miles southeast of Copperopolis (Cater, 1948, p. 40). In 1958 the only active property was the Alta mine. During World War II the chromite deposits in this county were studied by the U.S. Geological Survey. The results of this work were published in California Division of Mines Bulletin 134, Part III, Chapter 2, 1948.

Chromite is present as magmatic segregations in ultrabasic igneous rocks, especially serpentine. Serpentine crops out in three belts in western Calaveras County (see figs. 15, 16). The belts, which trend north-northwest, are not continuous, but consist of a series of irregular lenticular bodies.

Most of the chromite deposits are irregular lenses or pods of massive chromite, or thin, alternating layers of chromite and dunite. Relatively few disseminated chromite deposits have been found. In some of the deposits, small amounts of the secondary chromium minerals uvarovite (calcium-chromium garnet) and kammererite (chromium-mica) are present.

Alta mine

Location: SW¼ sec. 14 and NW¼ sec. 23, T. 2 N., R. 12 E., M.D.M., 3 miles northeast of Copperopolis. Ownership: C. H. Williams, Bert Satterlee, and Otto Howard, 632 11th Street, Modesto, California.

This property consists of four unpatented claims that in 1958 were being prospected by a partnership consisting of the above three persons. Underground and surface development work was being done, and a small amount of ore had been stockpiled. Some chromite was mined here many years ago and used as furnace lining at the Copperopolis smelter. The property was prospected in World War I and again in World War II, but the output, if any, is not known.

A number of small discontinuous chromite lenses, pods, and small layers of disseminated chromite are present in a wide northwest-striking belt of serpentine, along with dunite and small amounts of impure tremolite asbestos. The serpentine is highly sheared in places and ranges from dark green to black in color. The ore bodies have a N. 45° W. to N. 55° W. strike and dip steeply to the northeast. Present work is confined to the northwest portion of the property where there is a 45-foot vertical shaft and a 35-foot northwest drift at the bottom of the shaft. There is a lens of chromite 3 feet long and a few inches thick exposed in the drift. There is an open cut 1500 feet to the southeast and another 300 feet to the northeast. Approximately 2,200 feet southeast of the shaft are old workings mined years ago, consisting of open cuts and a caved crosscut adit.

Bowie Estate deposits

In addition to the Holbrook and McGuire group, there are a number of other chromite deposits on the Bowie Estate. These deposits are in secs. 9 and 16, T. 1 N., R. 13 E., M.D.M., 6 miles southeast of Copperopolis.

Cater (1948, p. 44-45) has described in detail the known chromite deposits on the Bowie Estate. He also states that with intensive prospecting, in the serpentine area covered by almost impenetrable brush, possibly more deposits could be found. The total production of the property is probably not less than 400 long tons.

One chromite deposit located on the Bowie Estate in sec. 9, T. 1 N., R. 13 E., M.D.M., was active during 1918 and again in 1942. In 1942 about 15 long tons of chromite were mined and shipped. Although the total production of the mine is not known, the size of the workings indicates that perhaps 100 tons of ore had been mined (Cater, 1948, p. 44). The chromite ore body is irregular, strikes N. 30° W., and dips 25° to 45° NE. Workings consist of a 10-foot shaft, and an inclined open cut 45 feet long and 15 feet deep.

In 1942, about two carloads of chromite were mined from a deposit half way up the slope of the hill about 1200 feet southwest of the workings described above. Workings consist of an open pit 30 feet long and 30 feet deep. The ore consisted of brecciated massive and nearly massive medium-grained chromite containing numerous seams of uvarovite.

Ellingwood mine

Location: NW¼ sec. 21, T. 4 N., R. 11 E., M.D.M., 3 airline miles southwest of Valley Springs. Ownership: City of Stockton (1948).

This property first was worked in 1910 by the Penn Copper Company when chromite was used for furnace linings in their copper smelter at Campo Seco. The mine

ANTIMONY

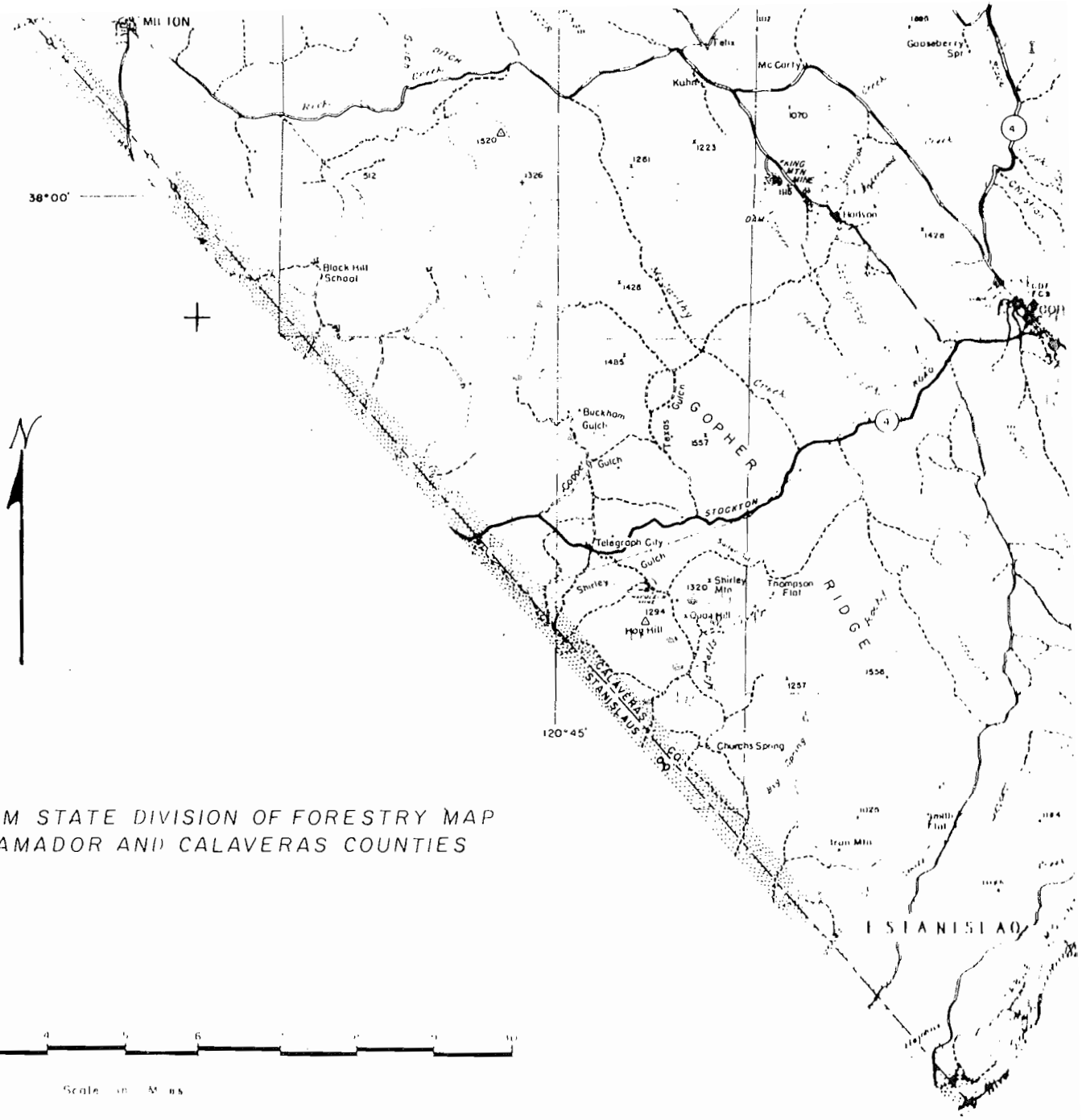
Map No.	Name of claim, mine, or group	Location	Owner (Name, address)	Geology	Remarks and references
B-293	Oro y Plata	NE¼ sec. 6, T. 3 N., R. 14 E., M.D.M.	Mary Bess Norton c/o J. C. Scoles, Murphys (1 mile west of Murphys)	Stibnite containing small amounts of gold and silver occasionally has been found in the veins.	See also Lode Gold.

ASBESTOS

D-1	Jefferson Lake (American, California, Pacific, Voorhees)	Secs. 15, 16, 21, 22, T. 1 N., R. 13 E., M.D.M.	Jefferson Lake Asbestos Company, New Orleans, Louisiana		(Tucker 16:55; Logan 23b:[illegible] 25:163-164; 36:226-22[illegible] 57:53; herein.)
	California				See Jefferson Lake.
	Nuner	T. 4 N., R. 13 E., M.D.M., 1 mi. N of San Andreas	Not determined	Chrysotile asbestos in serpentine.	Undeveloped prospect (Logan 36:227).
	Pacific				See Jefferson Lake.
	Skipper				See Turner and Lloyd.
D-2	Turner and Lloyd (Skipper)	Sec. 15, T. 2 N., R. 12 E., M.D.M.	Max Henley et al., Copperopolis		(Logan 25:164; 36:227; herein.)
	Voorhees				See Jefferson Lake.

CHROMITE

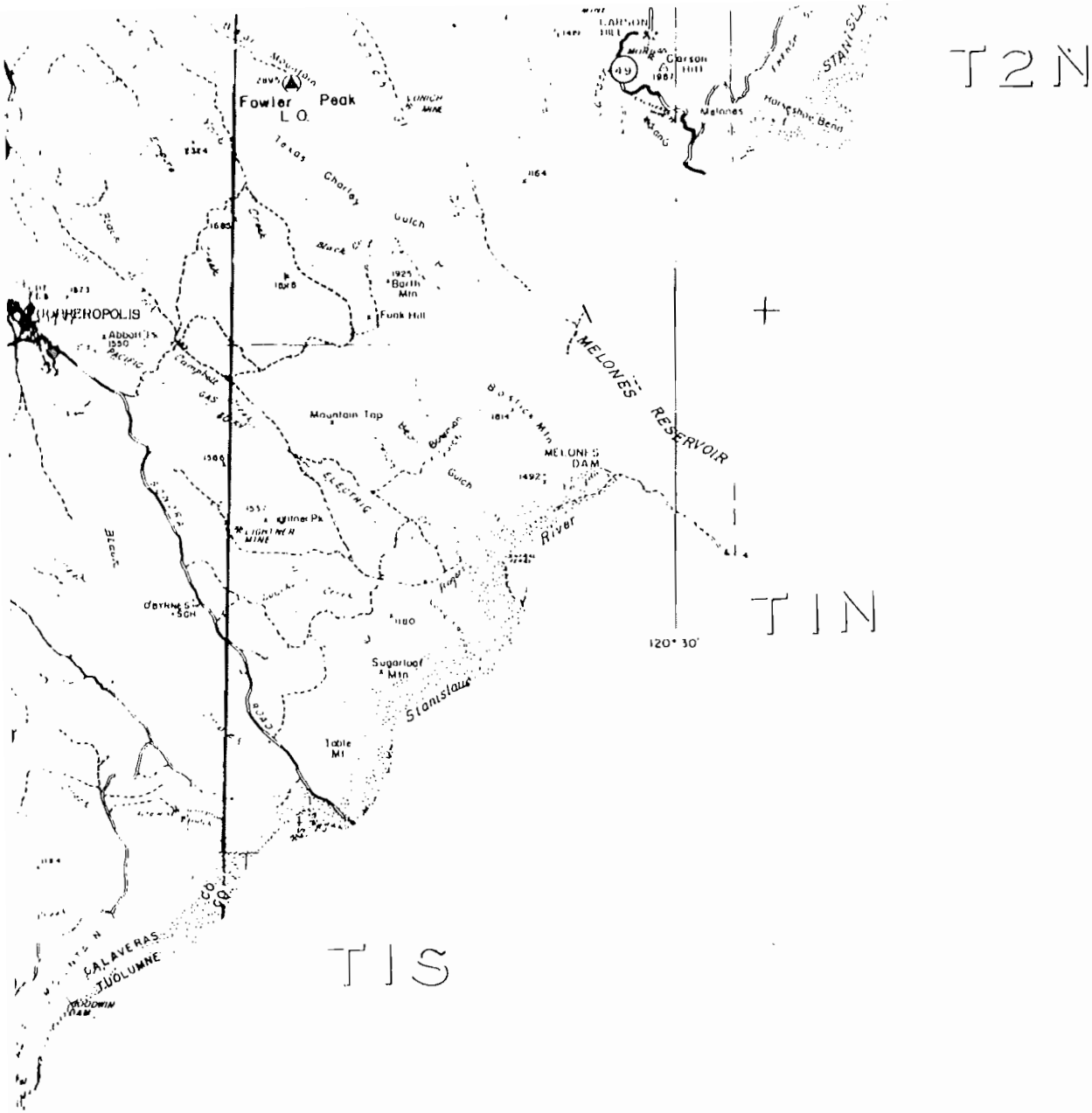
D-3	Alta	SW¼ sec. 14, NE¼ sec. 23, T. 2 N., R. 12 E., M.D.M.	C. H. Williams et al., 632 11th St., Modesto		Herein.
D-1	American Asbestos	NE¼ sec. 16, T. 1 N., R. 13 E., M.D.M., 6 mi. SE of Copperopolis	American Asbestos Mining Corp., 11 W. 42d St., New York, N. Y.	Small pods and disseminated ore in serpentinized dunite and saxonite.	Active many years ago when [illegible] tons of ore were produced. Mined from two 25-ft. shafts (Cater 48:41).
D-4	Bowie Estate	Secs. 9, 16, T. 1 N., R. 13 E., M.D.M.	Bowie Estate, Copperopolis		(Cater 48:44-45; herein.)
D-5	Burnham	Sec. 23, T. 2 N., R. 12 E., M.D.M.	J. H. Bowie, Copperopolis (1936)		Active in 1915, last worked in 1927. Developed by 40-ft. shaft. (Logan 36:244; Cater 48:46-47.)
	Burnham & Wilson				See Mayflower.
D-6	Burns & O'Neill	Sec. 9, T. 5 N., R. 13 E., M.D.M., 4 mi. SW of Railroad Flat	Not determined		Some ore mined during World War I. Developed by open cut (Cater 48:58.)
	Bushy Hill				See Walker.
	Chaparral				See Walker.
D-7	Clary & Langford (Porter & Spring)	Sec. 10, T. 2 N., R. 12 E., M.D.M., 5 mi. N. of Copperopolis	Not determined	Lens of massive chromite in serpentine.	Active prior to World War [illegible] from 1916 to 1918; developed by two 50-ft. shafts and [illegible] cut. (Bradley 18:121; [illegible] 25:165; Cater 48:47.)
	Coffer, Trask and Stone				See Stone.
D-8	Davis	SE¼ sec. 23, T. 2 N., R. 12 E., M.D.M., 3 mi. NE of Copperopolis	Not determined	Lenses and pods of chromite in serpentine.	Last worked in 1918. Output 225 long tons of ore (Bradley 18:121; Logan 25:165; Cater 48:46.)



BASE ADAPTED FROM STATE DIVISION OF FORESTRY MAP
OF WESTERN AMADOR AND CALAVERAS COUNTIES

Scale in Miles

MAP OF CALAVERAS COUNTY SHOWING


T2N
T1N
T1S
Fowler Peak
L.O.
Mountain
Texas
Charley
Gulch
Black
Creek
Funk Hill
Mountain Top
Boston Mtn
MELONES DAM
MELONES RESERVOIR
Stanislaus
River
Sugarloaf Mtn
Table Mt
Clarson Hill
Melones
Horseshoe Bend
Turner
STANISLAUS
CALAVERAS
TUOLUMNE
120° 30'

Att. B

Asbestos and Vermiculite

Search: GO

> Naturally Occurring Asbestos (NOA)

Naturally Occurring Asbestos (NOA)

Naturally occurring asbestos (NOA) includes fibrous minerals found in certain types of rock formations. NOA can take the form of long, thin, separable fibers. Natural weathering or human disturbance can break NOA down to microscopic fibers, easily suspended in air.

There is no health threat if NOA remains undisturbed and does not become airborne. When airborne NOA is inhaled, these thin fibers irritate tissues and resist the body's natural defenses. Asbestos, a known carcinogen, causes cancers of the lung and the lining of internal organs, as well as asbestosis and other diseases that inhibit lung function.

Serpentine rock with veins of asbestos. Covering NOA with clean soil or planting grass reduces exposure.

As a service to the public, EPA has compiled its resources on NOA here.

- [illegible] - A report published by the USGS on July 1, 2005 contains a regional map and an associated database that includes 324 locations where naturally occurring asbestos has been historically identified in the Eastern United States.
  - [illegible] News Release
- [illegible] - In May 2005, the EPA completed a comprehensive investigation to assess the potential for exposure from naturally occurring asbestos in El Dorado County, California. Information about this investigation as well as sampling results and continuing plans are detailed on Region 9's NOA, El Dorado Hills Web pages.

Related Links

- [illegible] Asbestos page
  IRIS is a database of human health effects that may result from exposure to various substances found in the environment. The information in IRIS is intended for those without extensive training in toxicology, but with some knowledge of health sciences.
- [illegible] asbestos section
  The USGS asbestos section offers links to publications and fact sheets about all six fibrous minerals.
- [illegible] Substances and Disease Registry, ATSDR asbestos section
  ATSDR offers detailed information on asbestos and health.
  - ATSDR Asbestos [illegible]
  - ATSDR Asbestos [illegible]
  - ATSDR Asbestos [illegible] Occupational Medicine

U.S. Environmental Protection Agency

Asbestos and Vermiculite

Asbestos | Vermiculite

Asbestos is the name given to a number of naturally occurring, fibrous silicate minerals mined for their useful properties such as thermal insulation, chemical and thermal stability, and high tensile strength. Asbestos is commonly used as an acoustic insulator, thermal insulation, fire proofing and in other building materials. Many products are in use today that contain asbestos.

Asbestos is made up of microscopic bundles of fibers that may become airborne when asbestos-containing materials are damaged or disturbed. When these fibers get into the air they may be inhaled into the lungs, where they can cause significant health problems.

Asbestos Highlights

EPA released its final brochure "Current Best Practices for Preventing Asbestos Exposure Among Brake and Clutch Repair Workers" on April 2, 2007. More Information | Más informacion en español

This page provides access to information about asbestos. On this website, you may access general information about asbestos and its health effects. EPA has also developed a list of commonly usedasbestos acronyms. You may also read about what to do if you suspect asbestos in your home or your school (en español- asbesto en las escuelas).

If you wish to obtain more information on asbestos, EPA maintains a listing of asbestos resources available to the public. If you would like to locate an asbestos contact, EPA maintains a listing of federal and state asbestos contacts. EPA maintains a listing of the laws and regulations applicable to asbestos. A 1989 regulation to ban most asbestos-containing products was later overturned in court.

The National Directory of AHERA (Asbestos Hazard Emergency Response Act) Accredited Courses (NDAAC directory) is intended primarily for use by federal and state agencies. It contains information about training providers and approved courses nationwide and is meant to serve as a comprehensive reference and resource document. It may also be useful for those training providers who offer accredited asbestos courses and to all consumers of these training services.

Vermiculite is a naturally occurring mineral that may contain asbestos. Vermiculite has the unusual property of expanding into worm-like accordion shaped pieces when heated. The expanded vermiculite is a light-weight, fire-resistant, absorbent and odorless material. These properties allow vermiculite to be used to make numerous products, including attic insulation, packing material and garden products.

Asbestos contamination in vermiculite and vermiculite products has become a national concern. A tremendous amount of information has been made available to the public via print, television/radio and the Internet. EPA's vermiculite pages provide users with basic information about Vermiculite and its uses, fact sheets, Question and Answer documents, reports, and links to EPA Regional vermiculite pages.

EPA, in conjunction with Agency for Toxic Substances and Disease Registry (ATSDR) and National Institute for Occupational Safety and Health (NIOSH), has launched a national awareness campaign to arm homeowners with important information on vermiculite attic insulation.

Asbestos | Vermiculite

Att. C

Welcome to California

California Geological Survey

Asbestos

Chrysotile and amphibole asbestos (such as tremolite) occur naturally in certain geologic settings in California, most commonly in association with ultramafic rocks and along associated faults. Asbestos is a known carcinogen and inhalation of asbestos may result in the development of lung cancer or mesothelioma. The asbestos contents of many manufactured products have been regulated in the U.S. for a number of years. For example, the California Air Resources Board (CARB) has regulated the amount of asbestos in crushed serpentinite used in surfacing applications, such as for gravel on unpaved roads, since 1990 In 1998 new concerns were raised about possible health hazards from activities that disturb rocks and soil containing asbestos and may result in the generation of asbestos laden dust. These concerns recently lead to CARB to revise their asbestos limit for crushed serpentinite and ultramafic rock in surfacing applications from 5 percent to less than 0.25 percent, and to adopt a new rule requiring best practices dust control measures for activities that disturb rock and soil containing naturally occurring asbestos.

Asbestos - Tremolite-asbestos, California. Asbestos is a term used for a group of silicate minerals that occur as asbestiform fibers having high tensile strength, flexibility, and heat and chemical resistance. Tremolite is a hydrous calcium magnesium silicate with the chemical formula $Ca_2Mg_5Si_8O_{22}(OH)_2$. Tremolite can occur in a variety of crystal shapes and sometimes occurs as asbestiform fibers. **Click** on image for larger view.

The California Geological Survey (CGS) provides information on the geology of asbestos occurrences in California to a number of state, local and federal agencies, private industry, consultants and the public. CGS's recent projects related to asbestos include the following:

- Development of the informational document Guidelines for Geologic Investigations of Naturally Occurring Asbestos in California, to assist geologists conducting investigations related to naturally occurring asbestos.
- Assisting the U.S. Geological Survey with a research program to evaluate the feasibility of using AVRIS data for identifying areas containing naturally occurring asbestos (currently in progress).
- Development of a generalized map of areas more likely to contain asbestos in California.
- Undertaking a pilot mapping project to produce a map of areas more likely to contain asbestos for El Dorado County.
- Participation on the El Dorado County asbestos committee and contributing to that committee's White Paper and Final Report.

Asbestos Reports, Maps, and Guidelines for Geologic Investigations:

- Relative Likelihood for the Presence of Naturally Occurring Asbestos in Eastern Sacramento County, California, Special Report 192
- Relative Likelihood for the Presence of Naturally Occurring Asbestos in Placer County, California, Special Report 190

- Preliminary Report on Using Imaging Spectroscopy to Map Ultramafic Rocks, Serpentinites, and Tremolite-Actinolite-Bearing Rocks in California - Geologic Hazards Investigation 2004-01
- Guidelines for Geologic Investigations of Naturally Occurring Asbestos in California, Special Publication 124.
- A General Location Guide for Ultramafic Rocks in California - Areas More Likely to Contain Naturally Occurring Asbestos, 2000, Map scale 1:1,100,000, Open-File Report 2000-19.
- Areas More Likely to Contain Natural Occurrences of Asbestos in Western El Dorado County California, 2000, Open File Report 2000-02.

For Additional Asbestos Information See These Related Links:

- California Air Resources Board - "Naturally-Occurring Asbestos"
  (http://www.arb.ca.gov/toxics/asbestos/asbestos.htm)
- U.S. Environmental Protection Agency - "EPA's Asbestos Home Page"
  (http://www.epa.gov/opptintr/asbestos/)
- California Office of Environmental Health Hazard Assessment - "Asbestos - Fact Sheet"
  (http://www.oehha.ca.gov/air/toxic_contaminants/Asbestos_F.html)
- U.S. Geological Survey - "Some Facts About Asbestos"
  (http://pubs.usgs.gov/fact-sheet/fs012-97/)
- U.S. Geological Survey - "Asbestos - Statistics and Information"
  (http://minerals.usgs.gov/minerals/pubs/commodity/asbestos/)
- California Department of Toxic Substances Control - Homepage
  (http://www.dtsc.ca.gov/)
- El Dorado County Environmental Management Department - "Asbestos"
  (http://www.co.el-dorado.ca.us/emd/apcd/asbestos.html)

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Last edited on October 30, 2006

Ah. D

OPEN-FILE REPORT 2000-19

A GENERAL LOCATION GUIDE FOR ULTRAMAFIC ROCKS IN CALIFORNIA - AREAS MORE LIKELY TO CONTAIN NATURALLY OCCURRING ASBESTOS

August, 2000

DEPARTMENT OF CONSERVATION
Division of Mines and Geology

STATE OF CALIFORNIA
GRAY DAVIS
GOVERNOR

THE RESOURCES AGENCY
MARY D. NICHOLS
SECRETARY FOR RESOURCES

DEPARTMENT OF CONSERVATION
DARRYL YOUNG
DIRECTOR

EXPLANATION TEXT FOR MAP

A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos

MAP PURPOSE

This map shows the areas more likely to contain natural occurrences of asbestos in California. Its purpose is to inform government agencies, private industry and the public of the areas in the State where natural occurrences of asbestos may be an issue. In these areas, consideration of the implications of the presence or absence of asbestos through examination of more detailed maps and site-specific investigations could be warranted as part of public or private decision making. Natural occurrences of asbestos are more likely to be encountered in, and immediately adjacent to, areas of ultramafic rocks. The general location of these rocks is noted on this map. While geologic conditions are more likely for asbestos formation in or near these areas, its presence is not certain. The only way to establish the presence or absence of asbestos at a specific location is through a detailed site examination by a qualified geologist.

EXPLANATION OF ULTRAMAFIC ROCK UNIT

Ultramafic rocks are dunite, peridotite, pyroxenite, and less common in California, hornblendite (IUGS classification of ultramafic rocks, in Philpotts, 1990*). These igneous rocks contain 90 percent or more of the dark colored iron-magnesium-silicate minerals olivine, augite, hypersthene, or less commonly hornblende. Ultramafic rocks form in high temperature environments well below the surface of the earth. By the time they are exposed at the surface by uplift and erosion, ultramafic rocks may be partially to completely altered to serpentinite, a type of metamorphic rock. Sometimes the metamorphic conditions are right for the formation of chrysotile asbestos or tremolite-actinolite asbestos in bodies of ultramafic rock or along their boundaries. Note--occurrences of non-ultramafic rock types, such as gabbro or diabase, may be included within some of the ultramafic rock areas shown on this map. Asbestos is much less likely to be associated with these non-ultramafic rock types.

INFORMATION SOURCES

The ultramafic rock areas shown on this map are adapted from Jennings, C.W., 1977, Geologic Map of California, California Department of Conservation, Division of Mines and Geology, Geologic Data Map No. 2, scale 1:750,000.

*Philpotts, A.R., 1990, Principles of igneous and metamorphic petrology, Figure 6-3, IUGS (International Union of Geological Sciences) classification of ultramafic rocks: Prentice Hall, Englewood Cliffs, New Jersey, page 96.

This map may be viewed on the California Department of Conservation website at http://www.consrv.ca.gov, which includes links to other sites with asbestos information.

MAP USAGE AND LIMITATIONS

The small scale of this map (1:1,000,000) precludes showing detailed boundaries of ultramafic rock units and small occurrences of ultramafic rocks. It should be used only as a general guide to the presence of ultramafic rocks that may contain asbestos. This map is derived from the Geologic Map of California (1:750,000 scale - one inch equals about 12 miles), Jennings (1977). No ultramafic rocks are shown in Solano and Madera counties on this map. However, ultramafic rocks are shown as present in these counties on available more detailed maps at scales of 1:250,000 (one inch equals about 4 miles) and larger. In addition to association with ultramafic rock and serpentinite, asbestos minerals are also known to occur in association with some faults in particular geologic settings, certain non-ultramafic related metamorphic rock types, and magnesium-rich carbonate rocks such as dolomite. These asbestos occurrences are much less common and their locations less well known than for ultramafic rocks. Consequently, such occurrences are not shown on this map.
This map should not be used to determine whether bedrock or soil on a particular parcel of land in or adjacent to areas identified as ultramafic rocks contains asbestos. A site-specific investigation would be required to make such a determination.

Definitions

Asbestos -- Asbestos is the generic term for the naturally occurring fibrous (asbestiform) varieties of six silicate minerals. These minerals are: chrysotile, tremolite (when fibrous), actinolite (when fibrous), crocidolite (fibrous riebeckite), anthophyllite (when fibrous), and amosite (fibrous cummingonite-grunerite). Chrysotile is the most common asbestos mineral in California and belongs to the serpentine mineral group. The remaining asbestos minerals belong to the amphibole mineral group. Asbestos also refers to an industrial product obtained by mining and processing deposits of the asbestiform minerals listed above.

Serpentine --The serpentine group minerals are hydrous magnesium silicate minerals, of which lizardite, antigorite and chrysotile are the most common. Chrysotile forms crystals that are naturally fibrous. These fibers occur in serpentinite in small veins, where the fibers are oriented perpendicular to the vein walls (cross-fiber veins) or parallel to the vein walls (slip-fiber veins).

Chrysotile fibers are one type of asbestos. The other serpentine minerals usually do not occur as fibrous crystals and are not asbestos minerals. Although the term serpentine is commonly used to refer to the rock serpentinite, it is actually the name of the group of minerals that makes up the rock serpentinite.

Serpentinite -- Serpentinite is a rock consisting almost entirely of one or more serpentine minerals. Serpentinite is not identified as a separate rock unit on this map but is likely to be found within areas of ultramafic rock shown on the map. This rock type has a greasy or waxy appearance and may be dark to light green, brown, yellow or white. In addition to serpentine minerals, small amounts of other minerals such as magnetite, chromite, talc, brucite, and tremolite-actinolite maybe present. Small amounts of chrysotile asbestos are common in serpentinite because chrysotile is one of the serpentine group minerals. Tremolite-actinolite asbestos (amphibole asbestos) may also occur with serpentinite, but such occurrences are less common than chrysotile asbestos.

DIVISION OF MINES AND GEOLOGY
JAMES F. DAVIS, STATE GEOLOGIST

STATE OF CALIFORNIA · GRAY DAVIS, GOVERNOR
THE RESOURCES AGENCY · MARY NICHOLS, SECRETARY FOR RESOURCES
DEPARTMENT OF CONSERVATION · DARRYL YOUNG, DIRECTOR

OPEN-FILE REPORT 2000-19
A GENERAL LOCATION GUIDE FOR ULTRAMAFIC ROCKS IN CALIFORNIA - AREAS MORE LIKELY TO CONTAIN NATURALLY OCCURRING ASBESTOS

A General Location Guide for Ultramafic Rocks in California - Areas More Likely to Contain Naturally Occurring Asbestos

Compiled By
Ronald K. Churchill and Robert L. Hill

August 2000

MAP PURPOSE

This map shows the areas more likely to contain natural occurrences of asbestos in California. Its purpose is to inform government agencies, private industry and the public of the areas in the State where natural occurrences of asbestos may be an issue. In these areas, consideration of the implications of the presence or absence of asbestos through examination of more detailed maps and site-specific investigations could be warranted as part of public or private decision making. Natural occurrences of asbestos are more likely to be encountered in and immediately adjacent to areas of ultramafic rocks. The general location of these rocks is noted on this map. While geologic conditions are more likely for asbestos formation in or near these areas, its presence is not certain. The only way to establish the presence or absence of asbestos at a specific location is through a detailed site examination by a qualified geologist.

EXPLANATION OF ULTRAMAFIC ROCK UNIT

Ultramafic rocks are dunite, peridotite, pyroxenite, and less common in California, hornblendite (IUGS classification of ultramafic rocks, in Philpotts, 1990*). These igneous rocks contain 90 percent or more of the dark colored iron-magnesium-silicate minerals olivine, augite, hypersthene, or less commonly hornblende. Ultramafic rocks form in high temperature environments, well below the surface of the earth. By the time they are exposed at the surface by uplift and erosion, ultramafic rocks may be partially to completely altered to serpentinite, a type of metamorphic rock. Sometimes the metamorphic conditions are right for the formation of chrysotile asbestos or tremolite-actinolite asbestos in bodies of ultramafic rock or along their boundaries. Note—occurrences of non-ultramafic rock types, such as gabbro or diabase, may be included within some of the ultramafic rock areas shown on this map. Asbestos is much less likely to be associated with these non-ultramafic rock types.

INFORMATION SOURCES

The ultramafic rock areas shown on this map are adapted from Jennings, C.W., 1977, Geologic Map of California, California Department of Conservation, Division of Mines and Geology, Geologic Data Map No. 2, scale 1:750,000.

*Philpotts, A.R., 1990, Principles of igneous and metamorphic petrology, Figure 8-3 IUGS (International Union of Geological Sciences) classification of ultramafic rocks, Prentice Hall, Englewood Cliffs, New Jersey, page 95.

This map may be viewed on the California Department of Conservation website at http://www.consrv.ca.gov, which includes links to other sites with asbestos information.

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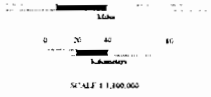
DISCLAIMER

The state of California and the California Department of Conservation, Division of Mines and Geology make no representations or warranties as to the actual presence or absence of natural occurrence of specific asbestos minerals at least the ultramafic rock areas shown on this map. Further, the State and the Department make no representations or warranties regarding the existence of the data shown on the map. Neither the State nor the Department shall be liable under any circumstances for any direct, indirect, special, incidental, or consequential damages with respect to any claim by any user or any third party on account of or arising from the use of this map.



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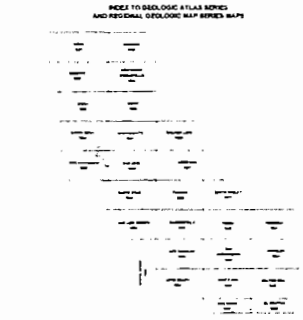
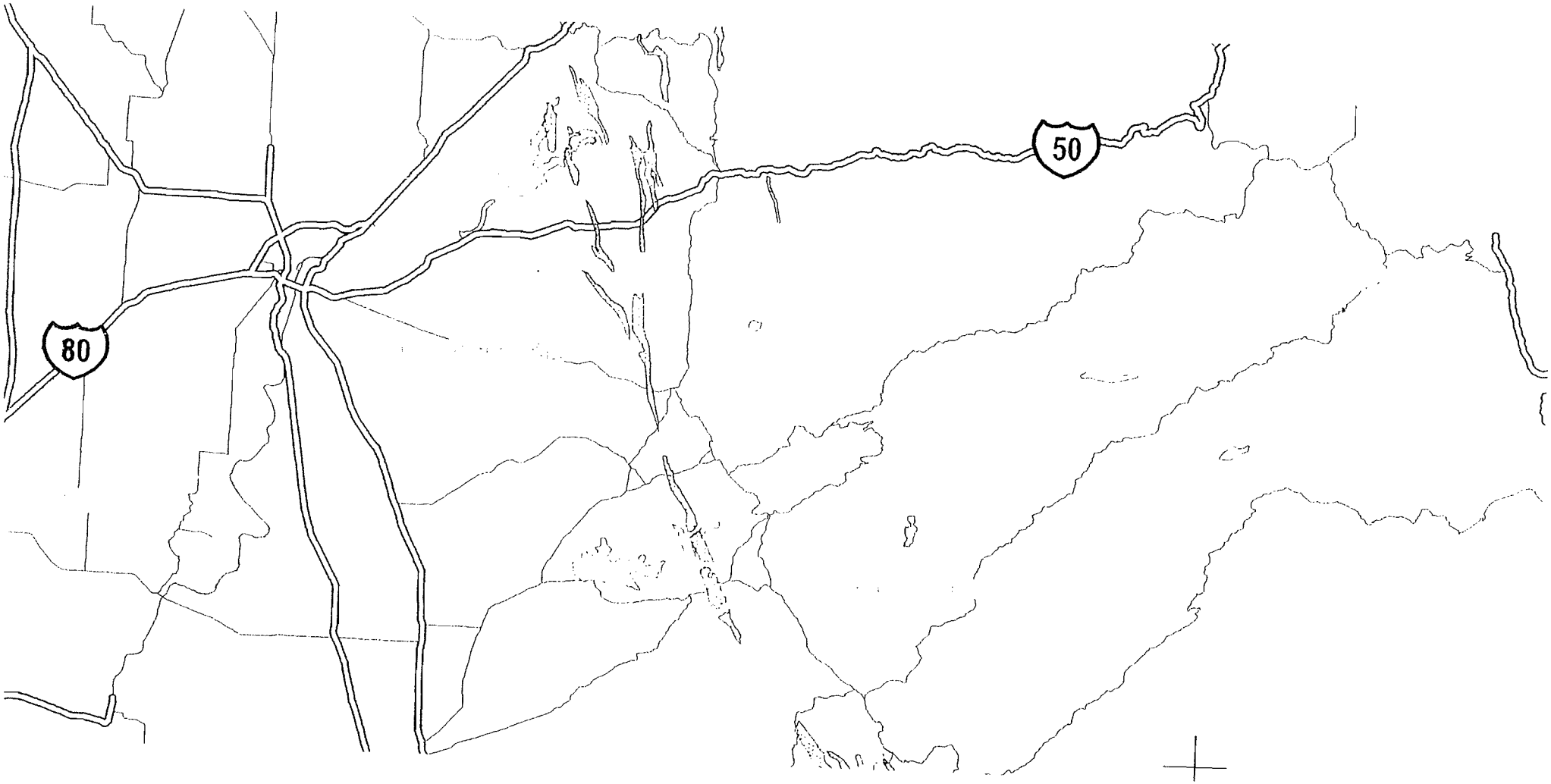


Counties in which green certain ultramafic rock areas shown on the adjacent map. These areas are shown in more detail on the Division of Mines and Geology 1:250,000 scale Geologic Atlas and Regional Geologic Map Series maps. Maps and Series counties in diagonal stripe have ultramafic rock areas shown on the Geologic Atlas and Regional Geologic Map Series maps that are too small to show on the adjacent map. The Angeles County has small ultramafic rock occurrences on Catalina Island and a small occurrence is present in San Diego.

Acknowledgement: Dr. R.G. Coleman, Professor Emeritus Stanford University, reviewed a draft version of this map. Dr. Coleman's suggestions and comments are greatly appreciated.

California Department of Conservation, Division of Mines and Geology, P.O. Box 2980, Sacramento, California 95812-2980, Web Site: http://www.consrv.ca.gov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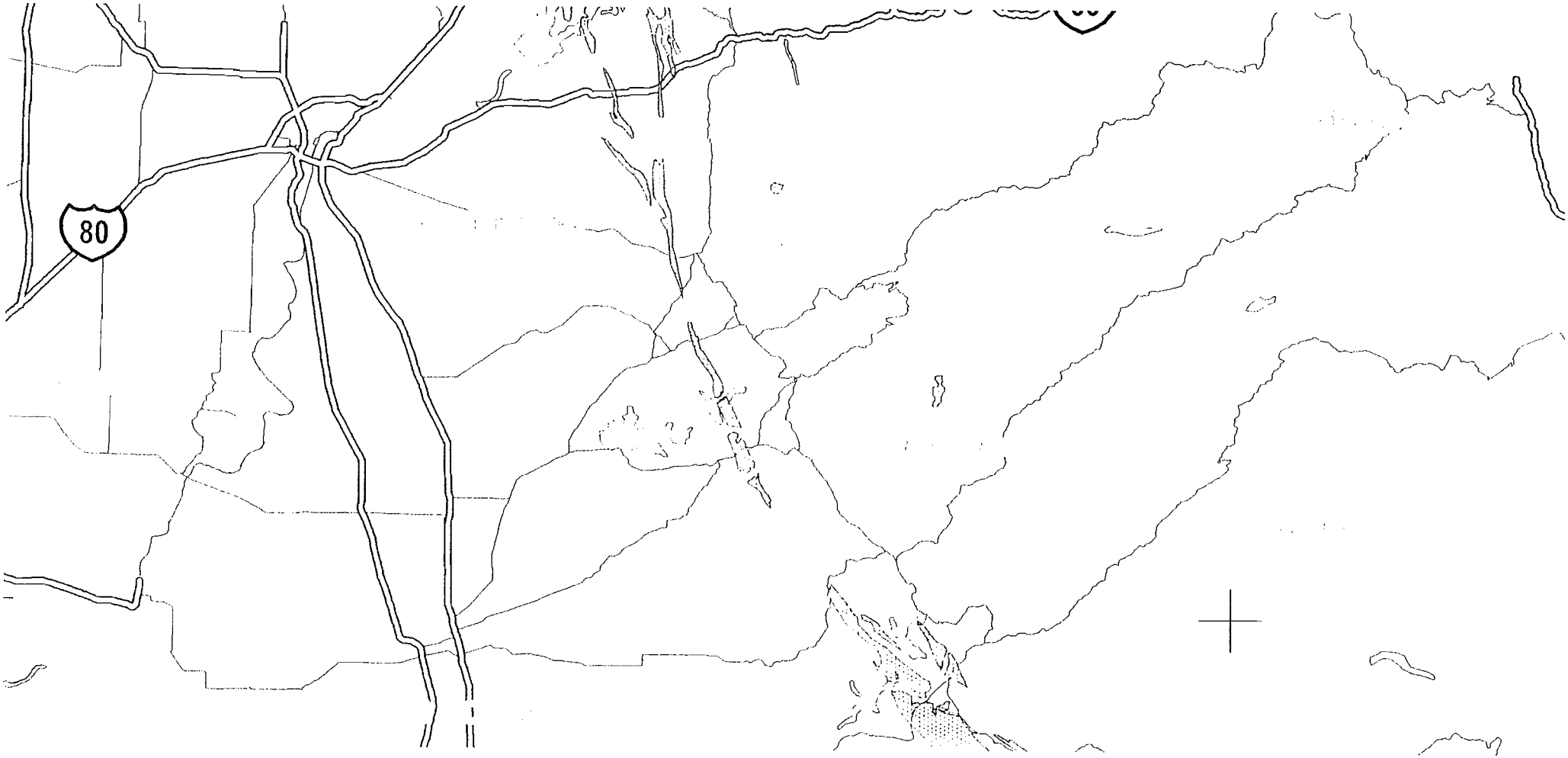
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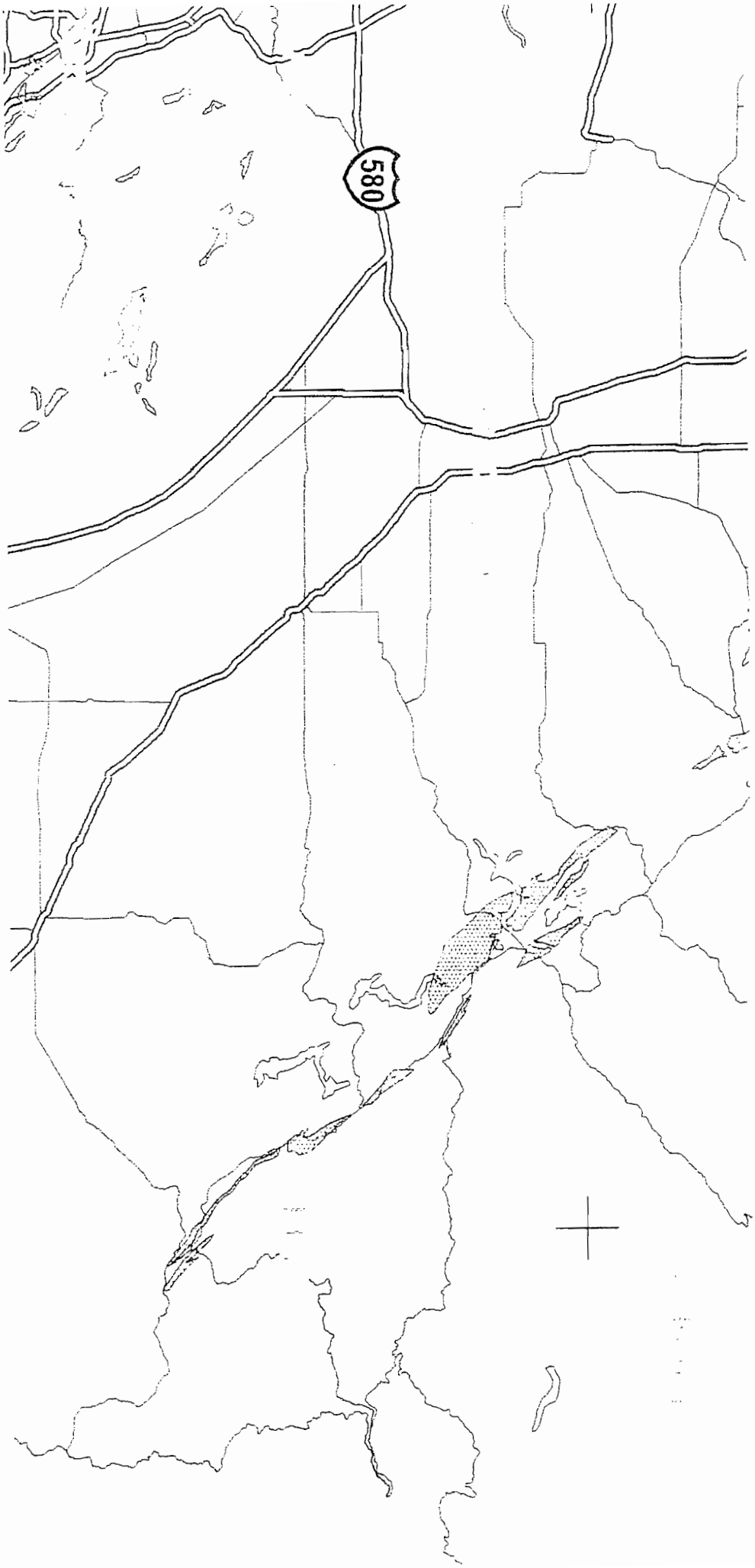
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AH. E

The Union Democrat

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LEADING NEWSPAPER OF THE MOTHER LODE SINCE 1854

Mineral's history runs deep in the Mother Lode

Published: April 5, 2007

When most people think of mining in the Mother Lode, gold comes to mind — not asbestos.

But since early in the 20th century, large asbestos deposits southeast of Copperopolis, near the Stanislaus River, have been prospected.

In fact, in the 1960s and '70s, the Calaveras Asbestos Company was the largest asbestos producer in the United States, and the second-largest industrial employer in the county, according to geologist and mining engineer Willard P. Fuller Jr., author of "Calaveras Gold: The Impact of Mining on a Mother Lode County."

During its heyday, the mine, located about five miles southeast of Copperopolis off O'Byrnes Ferry Road, sat atop millions of tons of commercial-grade chrysotile asbestos ore. It also manufactured and supplied asbestos products for use in the asbestos-cement products industry from 1976 until 1987, when the mine was closed.

Ore depletion coupled with health concerns about asbestos — and subsequent state and federal restrictions on asbestos — all led to the mine's closure.

Today, the huge mine pit — 500-feet deep and about a quarter mile wide — is used as an asbestos waste and used-tire dump, and is known as California Asbestos Monofill.

Michael Dell'Orto, former Calaveras County Supervisor, worked at the mine for 20 years, starting in 1968.

Because of financial difficulties, the place closed down for about 18 months in the mid-1970s.

"When it opened again on Jan. 1, 1976, we were in full three-shift production with 210 employees," Dell'Orto said. "We mined chrysotile asbestos in serpentine rock, about 25,000 tons a day. That's the equivalent of over 1,000 highway trucks a day. I believe we processed about 7,000 tons in a war preparation plant, sent 3,000

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tons of rock to the mill of which we recovered about 15 to 20 tons of refined asbestos a day."

Dell'Orto said most of that refined asbestos went to the cement asbestos industries in the western U.S. and throughout the Pacific Rim.

In 1987, the Calaveras County Board of Supervisors approved a reclamation plan for the mining and milling site.

Three years later, the county issued a conditional use permit and the facility began asbestos-containing waste landfill operations.

Since then, the permit has been amended to allow the storage of waste tires — up to 46,300 a year — as well as asbestos-containing waste.

The mine is 2.7 miles from Tulloch Reservoir and about 3/4 of a mile from the New Melones dam and reservoir.

The Stanislaus River borders the site to the south and east. At its closest point, the river is about 1,500 feet from the disposal pit area.

Ath. F

Asbestos: A hidden hazard in the hills

Published: April 5, 2007

Part I

By SUNNY LOCKWOOD

The Union Democrat

Click this picture to view a larger image.

The Calaveras Asbestos Monofill near Copperopolis, once the site of the nation's largest asbestos mine, is now used to store asbestos-containing waste and old tires.
Amy Alonzo/Union Democrat

Since 1998, El Dorado County has been at the eye of an environmental firestorm that could easily spread south to Calaveras and Tuolumne counties.

Wedged between Placer and Amador counties in the rolling Sierra Nevada foothills, El Dorado has been investigated by the U.S. Environmental Protection Agency, school districts have spent millions in environmental cleanup costs and the county real estate industry now must include a disclosure with each transfer of land or buildings.

All because of naturally occurring asbestos, a fibrous mineral that can cause cancer, emphysema and other lethal conditions when inhaled.

Hundreds of miles of asbestos-containing rock snakes beneath Mother Lode hills in veins of green and white stretching from Plumas County in the north through Jamestown in Tuolumne County and beyond.

If the mineral remains undisturbed, it poses no danger.

However, as urban refugees surge into the foothills looking for second or retirement homes, and developers rush to meet the demand — breaking ground for subdivisions, schools and shopping centers — the asbestos veins are often slashed open, releasing fibers into the air where they can float on prevailing winds for days or even

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weeks.

Two years ago, geologists found asbestos-laced soil on the sites of a future high school and middle school in Copperopolis.

More recently, asbestos has been found on 13 acres on Pool Station Road outside San Andreas, where the Calaveras County Office of Education plans to build new school buildings and classrooms for Mountain Ranch Community School and Mountain Oaks Charter School.

In all three cases, school officials plan to pave over the asbestos-tainted areas or contain the dangerous fibers in other ways.

Because of the danger posed by naturally occurring asbestos, California schools being built within 10 miles of areas known to contain asbestos are required to sample soil before construction begins.

Alex Dewitt, a senior geologist for Sonora-based Condor Earth Technologies, helps school districts get through the approval process so they can receive state construction funding.

Condor takes surface soil samples up to 6 inches deep, and sub-surface samples up to 2 feet deep. If as little as .001 percent of asbestos by weight is found in the soil samples, the districts must remedy the situation before they can start construction.

"The problem lies in having this stuff in the soil," Dewitt said. "If it's in (undisturbed, unbroken) rock, it's not likely to be released into the air. But if it's in the soil, people can be exposed to it."

"In a lot of foothill communities, schools don't have much choice on where to build, because the bulk of these communities are within the 10-mile limit," Dewitt said.

While naturally occurring asbestos has been tightly regulated for school building projects, that has not been the case with residential and commercial development. It's uncertain if it ever will be.

Bottom line: enforcement depends largely on the will of developers to police themselves, and even they may not be aware of the risk because no pre-construction testing is mandated.

"Until the state Office of Health Services comes out with definitive health studies that say, 'If you have this much asbestos in the soil, it's hazardous to your health,' there's not going to be any clear-cut enforcement type of thing for developers," said Dewitt.

Residential subdivision developers are not required to test the soil where they will lay out roads, trench for water pipes and electrical conduits, and put up houses or commercial buildings.

Howard Day, a professor in the Department of Geology at the University of California, Davis, believes they should.

It's particularly important in areas where serpentine rock is found. The jade colored rock, found throughout the state, but particularly in the Central Sierra foothills and along the Coast Range, often contains white veins of asbestos. Serpentine is also associated with tremolite asbestos, which poses the greatest health risks, he said.

"Sporadically within those serpentine rocks, one finds places where tremolite asbestos occurs," he said. "Until it's been shown that areas of serpentine rock are safe, it's prudent public policy to examine those areas carefully before developing them."

Asbestos police

Lakhmir Grewal's office is tucked in the back of the Environmental Management Agency at the Calaveras County Government Center in San Andreas.

One wall of his office holds a large map showing where asbestos is likely to exist in the Mother Lode.

Across the deep green of Northern and Central California, a red swath flows from Plumas County through Sierra, Nevada, Placer, El Dorado, Amador, Calaveras, Tuolumne and Mariposa counties like a huge north-to-south river.

The mineral exists in 44 of California's 58 counties, and is especially prevalent in the mountain counties.

Grewal, Calaveras County's air pollution control officer, forms the front line against the dangers of naturally occurring asbestos in the county.

In Tuolumne County, there are one part-time and two full-time employees on the Air Pollution Control District staff.

No Air Pollution Control District staff members in either county actually track asbestos. Rather, they respond to complaints of dust from residents, said Bill Sandman, Tuolumne County deputy air pollution control officer.

Grewal, who has worked in Calaveras County air pollution control since 1994, points out that most asbestos-bearing rock in the county is around Copperopolis and Tulloch Reservoir, a rapidly growing area where developers are designing and building residential subdivisions and a shopping center.

In Tuolumne County government offices, state geological maps show the same serpentine belt snaking through Jamestown to Chinese Camp and the Don Pedro area.

Asbestos control for the districts is largely a matter of dust control.

Sandman said his and other air pollution control districts around the state have two Air Toxic Control Measures for asbestos that they enforce. One is for construction grading and one is for surfacing.

Enforcement consists of ensuring that dust is kept down during construction work in areas where asbestos is suspected.

"As long as they're complying with state law, there should be no health impact," he said, adding his office has had no compliance issues with developers.

"In those instances where we don't get compliance, we take action."

Sandman also said compliance issues are rarely reported.

"We might have one or two problems a year and it's usually improper use of material, like an individual using asbestos-containing gravel to cover the surface of his road," he said.

Grewal says he keeps a close eye on developers throughout the county and believes they are careful not to spread asbestos contamination.

"The state has adopted the Air Toxic Control Measures for asbestos and I enforce it," he said. "The rule says if you find asbestos-containing materials: Thou shalt abate the problem."

Grewal said abatement could mean hauling away the contaminated soil or sealing it off so that asbestos cannot become airborne.

"Any time there's a new development, I'm interested in how they are going to keep asbestos from becoming airborne," he said.

Despite those efforts, enforcing the rules seems to rely greatly on the developers they are supposed to regulate.

Voluntary enforcement?

Grewal admits that developers — whose earth movers scrape, trench and move tons of dirt — are asked to voluntarily obey the Air Toxic Control Measures, and Calaveras County's own Dust Mitigation Plan.

He said developers are told to get in touch with him or the county's Public Works Department if they see something suspicious in the soil where they're working.

"It's in their best interest," he said. "Who wants to be exposed? And if some developer decides to bypass involving us and they are caught spreading contaminated soil, they are fined, put under an enforcement action and their development can be stopped for years."

Grewal said he knows of no developer who has tried to sneak by the asbestos regulations. He recalled one developer — working along Feather Drive in the Copper Cove Village area — who called him when he thought he saw asbestos in the soil.

"I went out and told them how to keep down the dust and they followed the directions," Grewal said.

"Starting with the first blade, the guy doing the grading, the guy doing the ditching, all the way to

the guy starting to bring in the first load of lumber, anyone who becomes suspicious of material in the soil can call us and we're right out there to see what they've got," Grewal said.

The goal is to keep dust down by wetting soil, washing off vehicles before they leave the development area, and keeping dirt that's being hauled off damp so that it does not become airborne dust.

Grewal said he believes residents of Calaveras County are safe, even though they live with naturally occurring asbestos.

However, because there is so much asbestos in the mountain counties, Grewal says, there is a "background level" — some fibers in the air throughout the foothills.

Information limited

Calaveras County Planning Director Robert Sellman said the county has never required developers to test soil for asbestos before commencing development, and he says he knows of no ongoing asbestos studies being done in the county.

Calaveras County's codes treat asbestos as a valuable mineral and, because of that, the county only has mining maps showing asbestos concentrations, Sellman said.

Sellman said he does not suggest to people that their homes or subdivisions are in an asbestos area, when he is not certain if that's true.

"Information has to be based on actual knowledge," he said.

In Tuolumne County, planner Mike Laird said serpentine rock areas are mapped and zoned for limited development.

"When we did our General Plan update in 1996, our comprehensive revision shows where the serpentine belt is," he said.

Laird said the county has placed land-use designations, such as agricultural, on areas where asbestos exists or is suspected. This prevents dividing the property into small, buildable residential lots.

"We also have GIS maps showing where serpentine rock is. When we get a building permit application, we check it against those maps and if it is in an area of known asbestos, then we attach certain conditions to those building permits," he said.

Laird said when maps are checked, planners also check soil studies that have been done in the county. If there's underlying serpentine rock, then the builder must contain the asbestos by paving over it or containing it in some other way.

"Typically, they revise their project," he said. "We actually have very few developments in the serpentine belts. Usually, it's a homeowner who is building something.

"We've been doing this for at least the last three years. But we're building new homes at about half the rate of Calaveras."

Preventative steps

At least one big Calaveras County developer says it tests its building sites for asbestos.

Castle & Cooke Inc. is building Copper Town Square, a 27-acre commercial and retail center south of the intersection of Highway 4 and Little John Road in Copperopolis.

Dave Haley, vice president and development manager, said Castle & Cooke hired a consultant to test the property for asbestos before grading began.

Although he wouldn't give specific details on the test results, he said "nothing above and beyond the normal realm" of asbestos was reported.

Grewal, Calaveras County's air pollution control officer, says he did not receive a copy of the report but he had serpentine rocks in the development tested, and the analysis came back negative for asbestos.

Haley said Castle & Cooke made sure dust was controlled during grading for the project.

"The foothills have some issues with asbestos, but there are ways of dealing with it," he said. "In Copper Square, for example, most of the area is paved or has buildings covering the land, so it's not a sensitive issue."

Castle & Cooke also developed Saddle Creek, a sprawling golf community in Copperopolis.

"Saddle Creek was completed 15 years ago," Haley said. "That was long before anybody was concerned about (asbestos)."

Tuolumne County's Laird said some developments are being planned on serpentine-containing soil — such as the proposed 557-acre Yosemite National Golf and Wetland Preserve near the intersection of highways 108 and 120.

That property is currently zoned agricultural, which allows only two homes for every 37 acres.

The developer, Troy Claveran, and owner Robert Houret, want a rezoning allowing commercial development, a golf course and 50 two-acre lots.

The project developer is currently working on an environmental impact report for the project, which will include the results of a completed soil study, said Paula Daneluk, of Project Management & Development, which represents the developer.

The soil study, said Daneluk, found no asbestos in the test pits drilled.

"The EIR would look at those issues and, if there were any impacts, it would provide mitigation for that," she said, adding that if asbestos is found at part of the project site that area could be avoided altogether.

"We have embraced the environment of the area and we will preserve two-thirds of the project site for open space."

If asbestos is found, she said, "we would avoid the area altogether or take mitigation."

Laird said the EIR, which must be OK'd by the county, "will definitely" address potential environmental impacts associated with development on asbestos-bearing rock.

"We have to identify potential significant impacts, and if you're grading in areas of (asbestos), there will be potential health impacts."

AH. G

The Union Democrat
Union Democrat.com
LEADING NEWSPAPER OF THE MOTHERLODE SINCE 1854

Asbestos concerns rattle El Dorado County residents

Published: April 6, 2007

By SUNNY LOCKWOOD

The Union Democrat

It was asbestos that chased Terry Trent and Carol Adams from their El Dorado County home in 1998 and brought U.S. Environmental Protection Agency investigators into the fast-growing community of El Dorado Hills.

After living in their 4,400-square-foot home for nine years, Trent and Adams abandoned it, leaving behind anything that was likely contaminated with asbestos – bedding, couches, chairs, rugs, draperies and clothing.

Still, Trent suffers breathing problems today that he says are the result of inhaling dangerous, needle-like fibers of naturally occurring asbestos. He has undergone chest X-rays he thinks will show he suffers from asbestos-related lung damage.

A retired construction-cost engineer, Trent said he discovered asbestos in his yard in 1989 when he was putting in the water lines for his home in Latrobe, just south of El Dorado Hills.

"I popped a vein about 20-feet long and about a foot in diameter with the backhoe," he said.

He hired an industrial hygienist to analyze it and learned it was tremolite. Tremolite is a highly dangerous form of asbestos commonly associated with serpentine rock — the jade colored California state rock.

"This is the really bad stuff, very toxic," he said.

Trent covered the fibrous mineral with fill dirt and planted grass on it, thinking he could contain the asbestos. But gophers dug up the cover, exposing the dangerous fibers to the air.

And then a neighbor began to put in a driveway and build a home.

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Trent tried to stop the construction with a lawsuit, but failed.

He called a Sacramento newspaper about the asbestos and the newspaper hired geologists and an industrial hygienist to observe and test Trent's neighborhood for the presence of asbestos.

Resulting news articles reporting dangerous levels of asbestos in the area — including at a nearby high school — kick-started an investigation by the EPA.

In May 2005, EPA officials released the results of more than 400 air samples and about 180 soil samples taken at El Dorado Hills schools, parks and trails.

Dangerous amphibole asbestos was present in almost every air sample, which the EPA said it considers a particular concern for children exposed regularly during sports or recreational activities.

In a follow-up report in December 2006, the U.S. Geological Survey confirmed the EPA's findings of dangerous asbestos on playgrounds in El Dorado Hills.

Today, Trent and Adams live in Auburn.

For El Dorado Hills residents, life has become more complicated since the EPA report.

County Administrator Laura Gill said the asbestos issue has added to the county workload and budget.

She said the county has, among other things, created a new geologist position and another air quality enforcement specialist position, bought two dust meters for Air Quality Management District staff, has presented a series of workshops for developers and builders focusing on dust control, and has hired a GIS mapping firm to update all maps of the county to show where known asbestos deposits exist.

"I want to believe that we're making a difference and making it safer," she said.

County schools have also changed the way they do things.

Vicki Barber, El Dorado County superintendent of schools, said some of the changes include no longer using leaf blowers, wetting down track and ball fields to reduce kicked up dust and installing landscaping to keep dust down.

"If we have a terribly windy, dusty day, we sometimes keep the kids inside so they aren't exposed to the dust," she said.

El Dorado's County Office of Education also maintains a detailed Web page on naturally-occurring asbestos dangers: www.edcoe.k12.ca.us/asbestos/noa.html

Kimberly Beal, the government affairs director for the El Dorado County Association of Realtors, said her group wants some agency to take a second look at what the EPA found.

She said she believes the original reports "are biased, not scientific."

"We've had the state EPA come up with different results than the federal EPA," she said.

Despite the U.S. EPA's finding of dangerous levels of asbestos in El Dorado Hills' air, Beal said, people continue to buy homes in the area.

Yet, some say living with asbestos is a challenge.

"This community is torn," Gill said. "Some people are frightened. Others say they're glad we've got asbestos because maybe it will keep out all the folks who are moving up here."

Gill, who has three small children and lives in El Dorado Hills, said she has now put the risk in perspective and uses a common-sense approach to keep her family safe.

"I don't take my kids to the playground on hot, dusty, dry, windy days. I clean up the dust in our house on a regular basis," she said.

Gill's message to other counties, like Tuolumne and Calaveras, with naturally occurring asbestos is simple.

"Reduce exposure. By reducing exposure, we reduce risk. Be vigilant to make sure whoever is disturbing the soil keeps the dust down."

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The Union Democrat
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LEADING NEWSPAPER OF THE MOTHER LODE

Asbestos: Are more rules in the air?

Published: April 6, 2007

By SUNNY LOCKWOOD

The Union Democrat

Marcella McTaggart, El Dorado County air pollution control official, looks over a map of the county's asbestos hot spots.
Benjamin Hicks/The Union Democrat, copyright 2007

Once airborne, naturally occurring asbestos fibers can float on air currents for days or weeks.

When the tiny, needle-like fibers are inhaled, they pierce the lungs and surrounding tissue.

The fibers can scar the lungs, making it hard to breathe — a condition called asbestosis. Fibers embedded in lung airways can also cause lung cancer. Asbestos fibers that slice through the lungs and into the chest cavity lining injure mesothelial cells and cause cancerous tumors. Mesothelioma is a fairly rare cancer that can take 25 to 40 years to develop, yet it kills nearly all its victims within a year of diagnosis.

Because asbestos-caused illnesses take so long to develop — up to 40 years for the rare and deadly mesothelioma — it is difficult to track the health consequences of exposure.

And efforts to more-strongly regulate naturally occurring asbestos have met mixed results.

The long-range public health consequences of naturally occurring asbestos are a mystery as deep as the Asbestos Monofill off O'Byrnes Ferry Road in Copperopolis, a massive pit near Tulloch Reservoir that was once considered the largest asbestos-producing mine in the United States.

COMMUNITY

- Calaveras polling places
- Tuolumne County polling places
- Tuolumne County Information
- County of Tuolumne
- TC Chamber of Commerce
- City of Sonora
- Twain Harte Area Chamber of Commerce
- TC Economic Development
- TC Visitor's Bureau
- Cal Chamber of Commerce
- Highway 120 Chamber of Commerce
- Columbia Chamber of Commerce
- Historic Sonora Chamber of Commerce
- Cal Economic Development
- Cal Visitor's Bureau
- ATCAA

INFORMATION

- Accurate Time Clock
- FindLaw Legal Resources

Since public health departments are concerned with acute, communicable disease such as flu or E. coli, they do not receive reports concerning asbestos.

The state's Cancer Surveillance Program keeps statistics on mesothelioma in mountain counties.

Monica Brown, regional cancer epidemiologist with the program, said, because mesothelioma is so rare and mountain counties have such small populations, the case numbers are kept in five-year-increments.

"Typically we see this cancer in older men who have worked either directly with asbestos or in industries using asbestos-related products (such as pipe fitters)," she said.

"We have no way of assessing environmental exposure. Our numbers are based on cases as they are diagnosed or by death certificates."

Brown said statistics for Alpine, Amador and Calaveras counties are combined because of the counties' small populations.

Between 1999 and 2003, nine cases were reported, and most recently, between 2000 and 2004, seven cases were reported, she said.

"The cases are dwindling and this is to be expected because employers have gotten better at protecting people from occupational exposure," she said.

She said the numbers for Alpine, Amador and Calaveras counties are too small to draw any conclusions or make any comparisons with more populous areas.

Unlike smoking and lung cancer, Brown said, there is no straight correlation between exposure to asbestos and development of mesothelioma.

"We can't tell you for sure what your risk is for developing cancer from exposure to asbestos," she said. "EPA measures risks of exposure but we can't translate that into expected cases of mesothelioma."

At a 2005 state Senate hearing on naturally occurring asbestos hazards, Dr. Michael Lipsett, physician-epidemiologist with the Environmental Health Investigations Branch of the Department of Health Services, said that a number of studies link naturally occurring asbestos with elevated rates of mesothelioma.

"So in the context of these observations, residential development in areas where there are large surface deposits of asbestos raises important issues of public health," he said.

Lessons learned at school

Alex DeWitt, a senior geologist for Sonora-based Condor Earth Technologies, which does soil testing for schools and other clients, says schools are leading the way in taking precautions against asbestos contamination because they are required to test before construction begins, while other developers are only required to keep dust down after the grading and trenching has already started.

"Once the regulator agencies have actually come up with specific numbers for health effects, they can develop regulations and then they'll be put into effect for developers," Dewitt said.

He estimates that such regulations will be developed within the next five years.

In 2005, the state Senate Health Committee and Senate Environmental Quality Committee conducted an informational hearing: "Naturally Occurring Asbestos: Who is Responsible for Protecting the Public Health?"

Toxicologists and physicians, including Lipsett, testified that naturally occurring asbestos, once airborne, can cause cancer.

As a result of the hearing, then-state Sen. Deborah Ortiz, D-Sacramento, introduced Senate Bill 655 which would have, among other things, required local governments when amending their General Plans to incorporate provisions for mitigating areas of asbestos.

The bill passed in the Senate 27-11 but was rejected by the Assembly 35-42 in September 2005.

Sen. Dave Cox, who represents Calaveras County, voted against the bill, as did Dave Cogdill, who was assemblyman for both Calaveras and Tuolumne counties and now represents Tuolumne County as a state senator.

Ortiz has left state government because of terms limits.

Rachel Machi, consultant with the California Senate Health Committee, said there is no indication of interest among other senators in picking up the bill.

"Nothing is going on with the legislation," she said. "There is no new bill being written that I know of."

Among the groups opposing the bill were California Building Industry Association, the California Business Properties Association, the California Chamber of Commerce, California Major Builders Council and the California Business Roundtable.

Two main reasons stated for SB 655's defeat were that the bill lacked funding for its required state-level asbestos task force and for its mandated mapping of the state's asbestos-bearing rocks.

Despite the failure of SB 655, Dewitt believes strongly that "regulations are coming."

Calaveras County Planning Director Robert Sellman agrees.

"We're looking at all these things that have been lightly treated in the past. If we have school

districts facing it, we know it is an issue," he said.

"As the General Plan is updated, we'll research what's required," he said. "The whole purpose of the General Plan is to look at health, safety and general welfare as development occurs, so it's an issue we recognize as significant and we'll look at it."

Past chairwoman of the Calaveras County Board of Supervisors Merita Callaway said the county requires developers to check the soil to see if it's compatible for septic systems before putting in such systems, and that perhaps some such protocol could be developed for naturally occurring asbestos.

"I'm hopeful that the county will take some kind of action," she said. "Whether it's in the General Plan or in our building codes is not as important to me as the fact that we do something."

Tuolumne County Board of Supervisors Chairman Mark Thornton said in his 10 years on the board, the topic had never been discussed at length.

"I think that's because we've addressed it," he said. "The county has mapped the areas where asbestos may exist. We have measures in place – dust abatement measures and others – that ensure the health of the public."

What's being done elsewhere

El Dorado County officials have adopted strict rules prohibiting dust plumes higher than 25 feet and requiring developers to document exactly where excavated soil goes. If it goes off-site, it must be tested for asbestos.

All development sites within a quarter-mile of areas expected or found to have asbestos must post warning signs at project entrance points.

And the county has held a series of workshops for contractors and developers to inform them about the latest dust-containment requirements and the best practices to use to meet them.

All of this regulation results from EPA studies that found dangerous levels of naturally occurring asbestos in the air of several county neighborhoods, including school sites.

Sellman thinks Calaveras and other affected counties may have to borrow from some lessons learned in El Dorado County.

"I think we're going to have to look at the issue. Absolutely. What that means I can't tell you yet," he said. "Presumably we're going to

try and learn from neighboring counties who have grappled with the problem and see what has worked and what hasn't."

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News

FUTURE SCHOOL SITE RAISES ASBESTOS FEARS

CAMPUS LATEST CHAPTER IN ONGOING STRUGGLE TO CONTROL EXPOSURE TO POTENTIALLY HARMFUL MINERAL

By ***Dana M. Nichols***
May 11, 2007
Record Staff Writer

SAN ANDREAS - As soon as next week, construction crews will be stripping a half-foot or so of asbestos-laden topsoil from a future school site here.

Before the new joint campus of Mountain Oaks Charter School and Mountain Ranch Community School rises next to Pool Station Road, the native soil will be covered by a tough fabric and that fabric covered with 10,000 cubic yards of clean, imported soil.

It is the just the latest chapter in the struggle of local, state and federal agencies to control the risks posed by naturally occurring asbestos as new homes and schools rise in Sierra foothill sites with asbestos-containing soils.

The most famous example so far is El Dorado Hills, which was built starting in the 1990s before the naturally occurring asbestos problem was well-known. Other sites where natural asbestos has been considered a problem include Garden Valley Ranch Estates in El Dorado County, Jackson, Oakdale and the Diamond XX subdivision near Copperopolis.

When the news about El Dorado Hills erupted in the late '90s, a few families there moved, not wanting to wait 30 years or more to see if their children developed mesothelioma, a form of lung cancer linked to asbestos, or other diseases.

Other El Dorado Hills property owners, in contrast, criticized the federal Environmental Protection Agency as alarmist and said the agency's pronouncements that natural asbestos is a risk threatened property values.

But the EPA has stuck by its story.

In 2004, the EPA sent employees in moon suits and respirators to El Dorado Hills to slide into home plate and conduct other activities similar those of children on playgrounds. It concluded that such play caused asbestos fiber exposure that was "significantly elevated over levels observed in the nearby asbestos air samples taken outside the area of activity."

The EPA says it worries more about exposure of children to asbestos because they will live long enough to feel the effects, since asbestos-related diseases often take 30 years or more to develop.

In the case of the San Andreas school site, the problem is serpentine, the state rock. Veins of the greenish rock are present in a number of places in Calaveras County, including a Highway 49 cut north of San Andreas. Serpentine often contains asbestos. Asbestos is a term that refers to several different kinds of mineral fibers that are flexible and can break apart to become microscopic dust.

When inhaled, asbestos can cause scarring deep in the lungs and eventually cancer or other diseases. The American Lung Association and federal authorities say there is no safe level of exposure for inhaled asbestos.

The tests in El Dorado Hills and other experience with asbestos dust from gravel roads and playgrounds have helped state regulators to come up with strategies for controlling the risk it poses, said Carol Northrup, chief of public affairs for the California Department of Toxic Substances Control.

"You can't clean up the Sierras, but you can keep people from being exposed to the dust from this stuff," Northrup said.

The department requires school agencies planning to build on places with naturally occurring asbestos to have detailed plans for making sure students don't come into contact with the substance.

In the case of the $10.5 million campus being built here by the Calaveras County Office of Education, the plan includes spraying water during construction to keep down dust, monitoring air and dust at the site, and even cleaning the tires of trucks as they leave so they won't track asbestos dust onto area highways.

The plan estimates that it will take 20 truckloads per day over five weeks to deliver enough clean soil to cover the school's ball fields and playgrounds.

Claudia Davis, assistant superintendent for business services for the Calaveras County Office of Education, said naturally occurring asbestos is a fact of life in many parts of Calaveras County. She said her office first detected the asbestos during a visit to the site about a year ago.

Davis said she doesn't know how much of the $10.5 million total construction cost can be attributed to the asbestos removal and control measures because it was included in the larger construction bid.

Both schools now operate in other locations. Mountain Oaks Charter School serves about 400 home-schooled children in kindergarten through high school. Mountain Ranch Community School serves 110 middle school and high school students.

Contact reporter Dana M. Nichols at (209) 754-9534 or dnichols@recordnet.com.

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