

# Updates on Asbestos and Lead Issues

for the

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# What's Going On?

- **Asbestos Issues**

- No significant changes in asbestos regulations.
- Discovery and Management of Naturally Occurring Asbestos is becoming a significant issue! (Not just in California!)
  - How will that affect trenching, pole installation, weed suppression?

- **Lead Issues**

- California Division of Occupational Safety and Health (Cal/OSHA) is currently making very significant changes to Lead in Construction and Lead in General Industry regulations!
  - These changes will have a very big impact!
    - Will affect maintenance and recycling!

# Naturally Occurring Asbestos (NOA) is common in California

- “Ultramafic rocks (which typically are associated with asbestos), including serpentine (the California State Rock) have been found in 49 of California’s 58 counties. They are particularly abundant in the Sierra Nevada foothills, the Klamath Mountains, and the Coast Ranges.”
- There is a great deal of naturally-occurring asbestos in California, and throughout the USA!

# Serpentine Rock

*The California State Rock!*



Waste piles of the former KCAC Chrysotile mine, Coalinga district, in west-central California. This was the last operating asbestos mine in the U.S; it closed in 2002



# McIlroy Tremolite asbestos mine in Inyo County, California



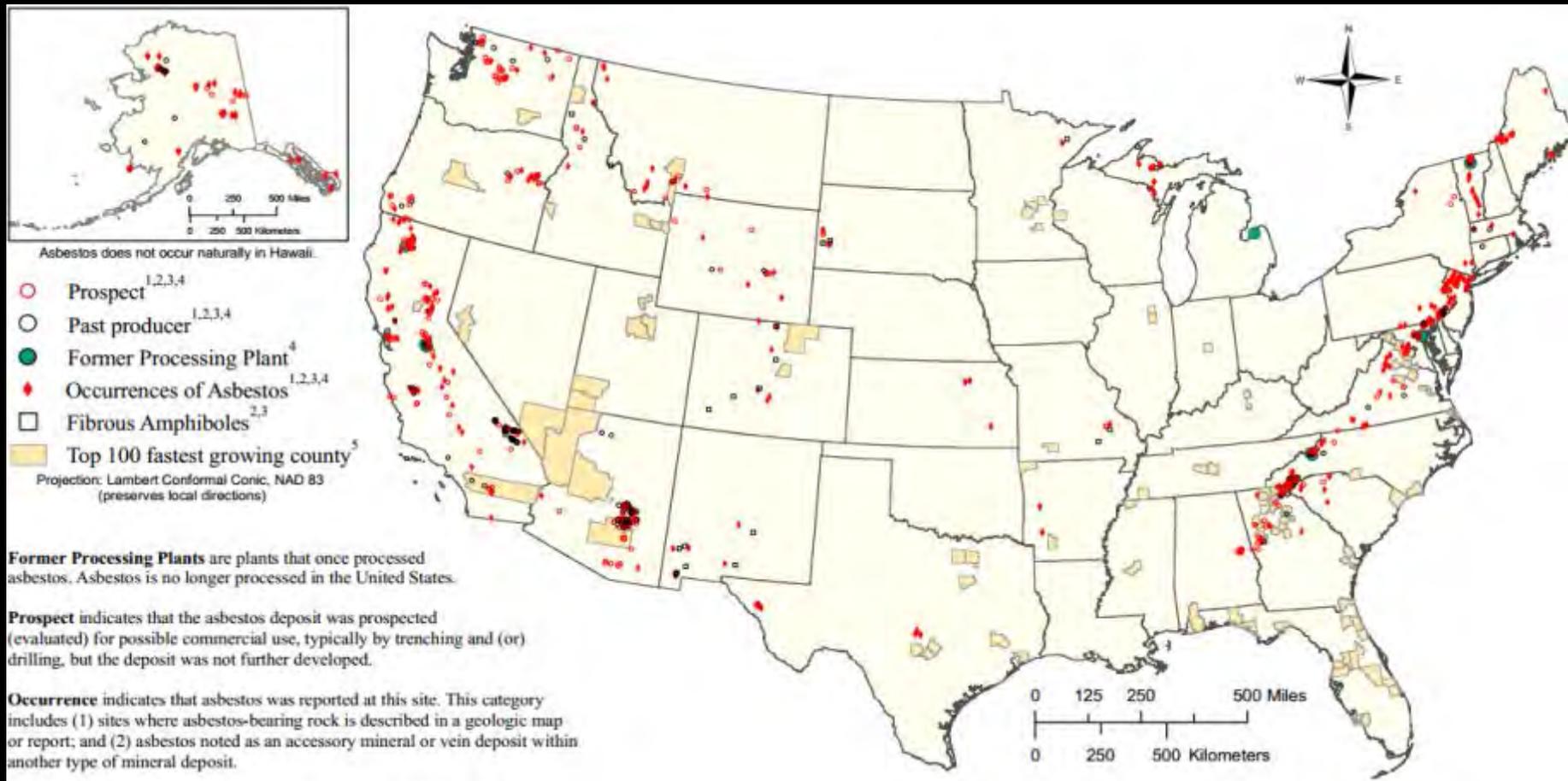
Twelve Tremolite asbestos mines operated in the U.S.



# This is NOT JUST A CALIFORNIA PROBLEM!



## Naturally Occurring Asbestos Locations in the Contiguous USA and Alaska and the 100 Fastest Growing U.S. Counties



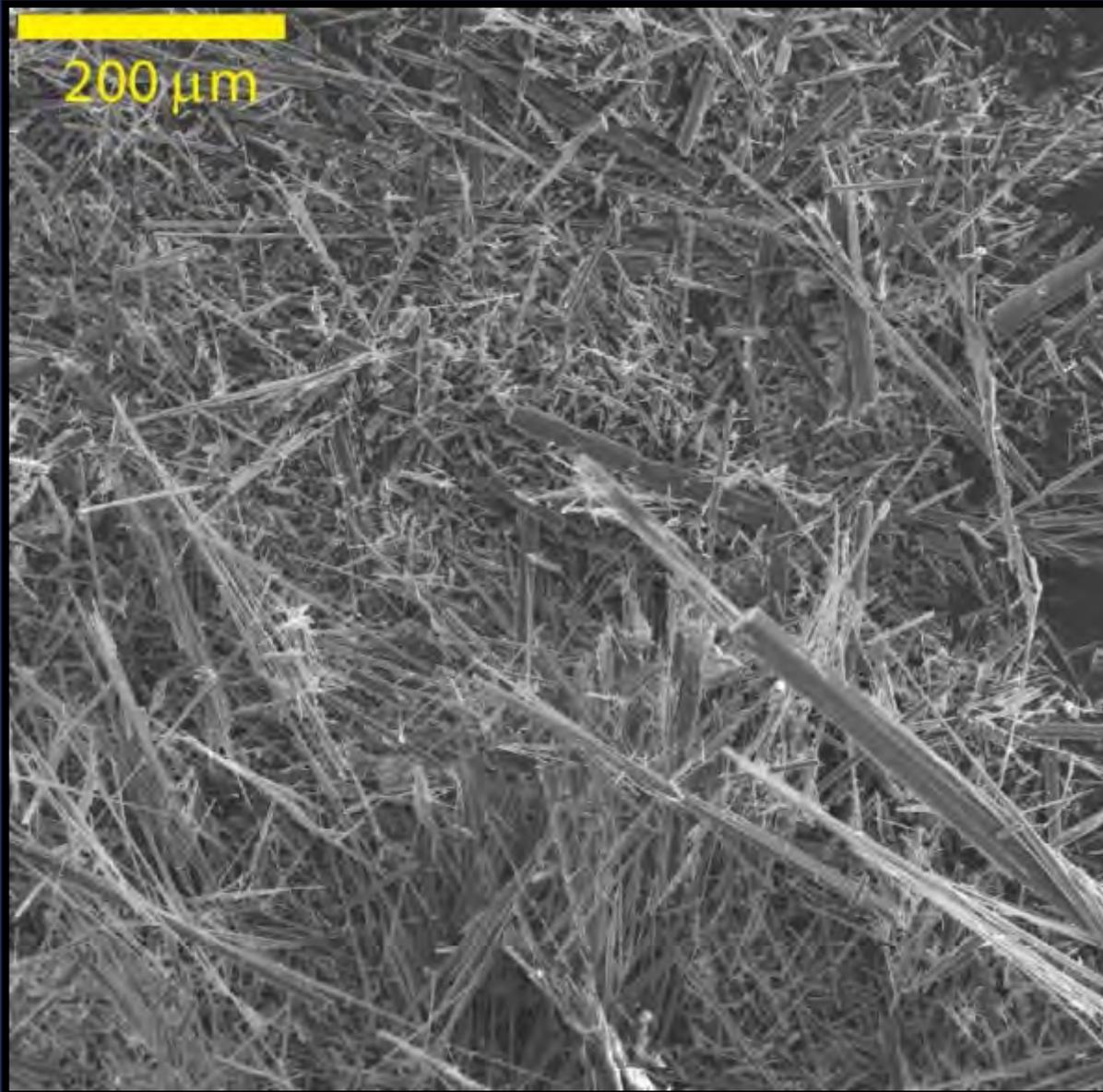
Abandoned haulage trestle of the former Regal Chrysotile mines in the Salt River region of Gila County, Arizona.



# Arizona Chrysotile



# Anthophyllite was mined in the Southeast U.S.



Many deposits of anthophyllite asbestos occur in the southern Appalachians.

Beginning in 1894 and continuing intermittently into the mid-1900s, anthophyllite asbestos was mined on a small scale at 44 sites in Georgia and North Carolina.

# Naturally Occurring Asbestos was recently “discovered” in Nevada!

- Many newspaper and television articles about this “new” issue!
- There is a lot of media coverage about the medical research discussed on the next slide!



# Summary of the Current Issue

## NOA in Nevada

- Malignant mesothelioma has been found at higher than expected levels in women and in individuals younger than 55 years old in the southern Nevada counties of Clark (*Las Vegas!*) and Nye.
- Carcinogenic mineral fibers including actinolite asbestos, erionite, winchite, magnesioriebeckite and richterite were discovered in the same region.
- Data published in the *Journal of Thoracic Oncology*, (the official journal of the International Association for the Study of Lung Cancer), suggest that these elevated numbers of malignant mesothelioma cases are linked to environmental exposure of carcinogenic mineral fibers.

# This is now affecting major construction projects in Nevada!

- There is now concern that construction work on the Boulder City Bypass and Interstate 11 between Las Vegas and Phoenix will disturb soils that have elevated concentrations of asbestos.
- This project is temporarily on a hold while they evaluate worker and environmental protections necessary because of the NOA.

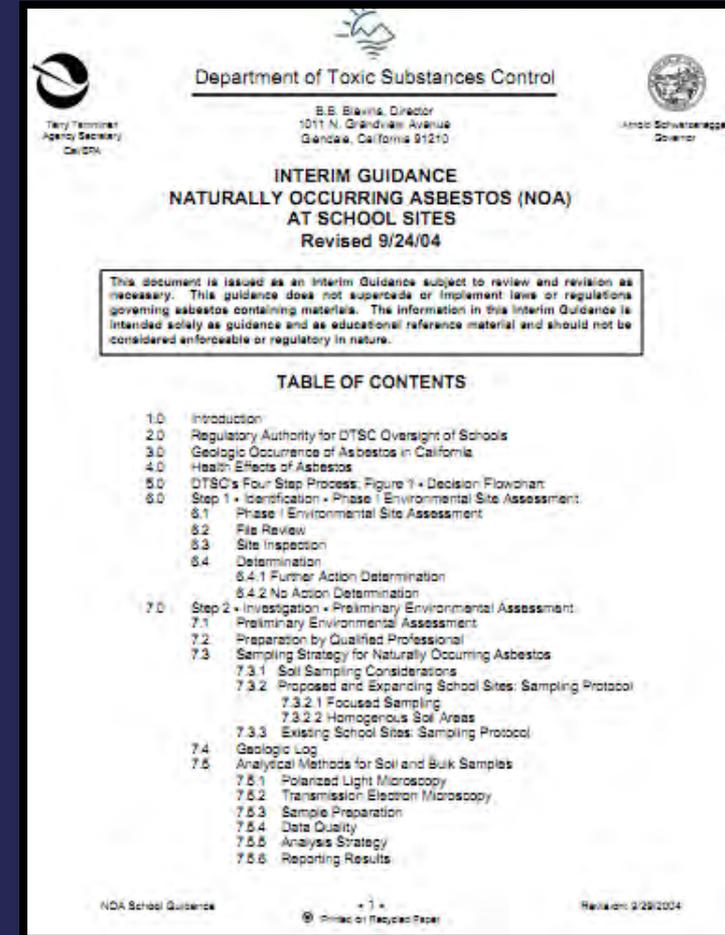
# IMPORTANT!

- Do not think that NOA is only found in rocky, hillside areas, or only a concern when disturbing bedrock!
- NOA is common in surface soil! (At least in California.)
- California Department of Toxic Substances Control recommends investigating for NOA if within 10 miles downslope of ultramafic rock. (Entire SF Bay Area!)
- The Calaveras “Dam” Replacement Project surface soil has over 30% asbestos (all six regulated types.)
  - Dam is in “East Bay” between Concord and San Jose in Northern California.
  - Soil excavation in San Francisco, Berkeley, and other East Bay communities often involve NOA.

# California Department of Toxic Substances Control (DTSC)

- NOA requirements for California school properties!
- This DTSC document is often used for guidance at non-school sites!
- Suspect NOA if your area is within 10 miles down slope of ultramafic rock.**

*•(That is much of the Bay Area and a lot of California!)*



# What asbestos regulations apply to the disturbance of NOA?

- Asbestos Standard for Construction Industry (Cal/OSHA 1529) California standard is based on 1926.1101.  
*Excavation is covered by construction standard in CA!*
  - Disturbance of soil > 1% is “Class II Work.”
  - CA standard uses same language as Federal OSHA, but not aware if OSHA has taken on a position on disturbance being “Class II Work.”
- California Air Resources Board (CARB)
  - Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations (CCR Title Section 17 93105)

# When does Cal/OSHA (OSHA?) regulate NOA?

- Cal/OSHA and OSHA regulate “any” concentration of asbestos that might be disturbed during construction work.
  - Limited work practice precautions are required when disturbing “asbestos” even if  $< 1\%$ .
  - Soil  $>1\%$  asbestos is an Asbestos Containing Material (ACM)
- Cal/OSHA treats disturbance of soil  $>1\%$  as Class II Asbestos Work.
  - Work involving materials that are not “Thermal System Insulation or friable “Surfacing Materials.”
  - *OSHA may instead determine disturbing NOA is an “unclassified” activity.*
  - *1926.1101 does not specifically include excavation work (as Cal/OSHA standard does.)*

# Work Practices for Class II Work

- Training, (*while controversial, usually minimum of 4 hours covering list of required topics*)
- Regulated Area
- Wet methods or other dust suppression
- Prompt cleanup and containerization in leak tight containers. (label if >1%)
  - No dry sweeping or shoveling
  - Only HEPA equipped vacuums
- Personal air monitoring to determine compliance with PEL/Excursion limit.
  - May require PPE!

# What's the current big issue in California regarding NOA?

Cal/OSHA requires respirators:

- Whenever you might exceed PEL or Excursion Limit!
  - Unlikely for short or limited disturbance.
- Don't have Negative Exposure Assessment (NEA)
  - Often are able to establish NEA except for very aggressive or long duration work. (More on next slide.)
- **Whenever you conduct Class II Work and the ACM material is not removed “substantially intact.”**
  - How should this be interpreted?

# What type of work tends to create the highest airborne exposures? (PCM and TEM)

- Weed suppression under utility lines!
  - Weed wacking!
  - Contact San Francisco PUC for more information!
- Post hole digging!
  - Fence pole installation is problematic!
  - How many holes are being dug over what time period?
    - Not aware of data for utility pole installation.
      - Contact SF PUC for advice.

# California Air Resources Board Rule (Applies to grading, excavation, trenching, etc.)

Naturally-Occurring Asbestos Rule Applies if:

- Area is identified as containing possible asbestos-containing rock on geologic maps.\*
- Area is known to contain asbestos.
- Asbestos is found after work begins.

*\*A professional geologist must sample and prove asbestos is not present, or you must assume NOA is present if in area identified on map.*

# CARB Rule Requirements

No visible airborne dust may cross property line!

- All work (regardless of size of area.)
  - Water used to keep dust levels down.
    - During disturbance and while soil is stored
  - Limit vehicles to less than 15 mph on site.
  - Clean vehicles before they leave site (to avoid tracking off soil.)
  - Promptly clean up any visible debris tracked off site by vehicles.
- This applies if soil contains any asbestos!

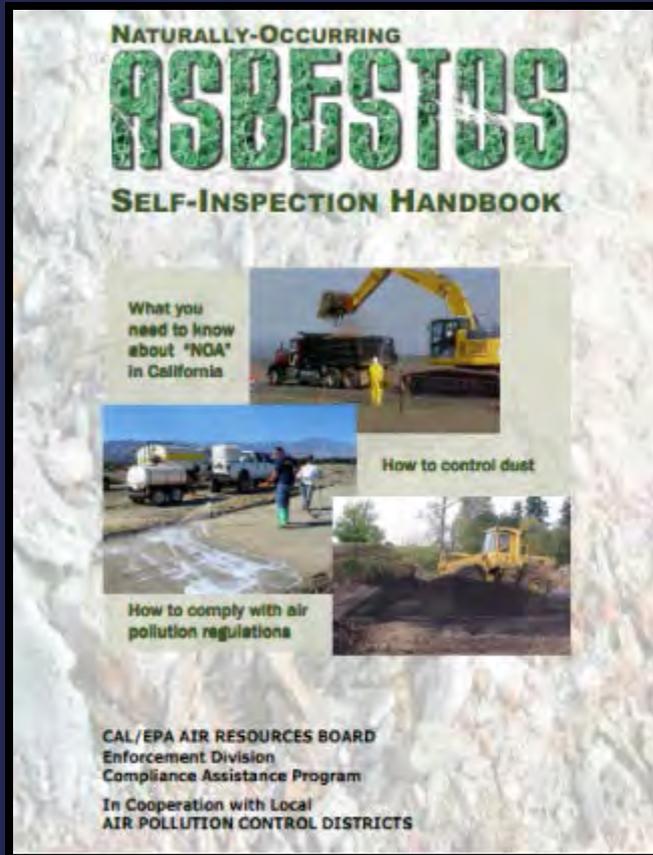
# More than ONE ACRE involved?

- Submit written Dust Mitigation Plan and have approved by local agency before beginning.
  - Specific procedures that will be used on site for wetting, storage, vehicle speeds, cleaning of vehicles, and more!
- Air Sampling by CARB AHERA TEM may be required depending on sensitivity of area.\*
- Bulk Sample Analysis by PLM, CARB 435 if required.

\*CARB AHERA is TEM method counting structures  $>.5$  with 3 to 1 aspect ratio and sufficient “grids” to obtain sensitivity of  $.001$  s/cc

# NOA Compliance Rule Guides

## Very Useful Summary of Requirements!



**Fact Sheet #3  
Ways to Control  
Naturally-Occurring Asbestos Dust**

Shown below are ways to control asbestos dust from construction projects and roadways. These control actions will not eliminate asbestos, but offer options to reduce release of airborne asbestos fibers from various activities.

**Construction Projects and Roadways**

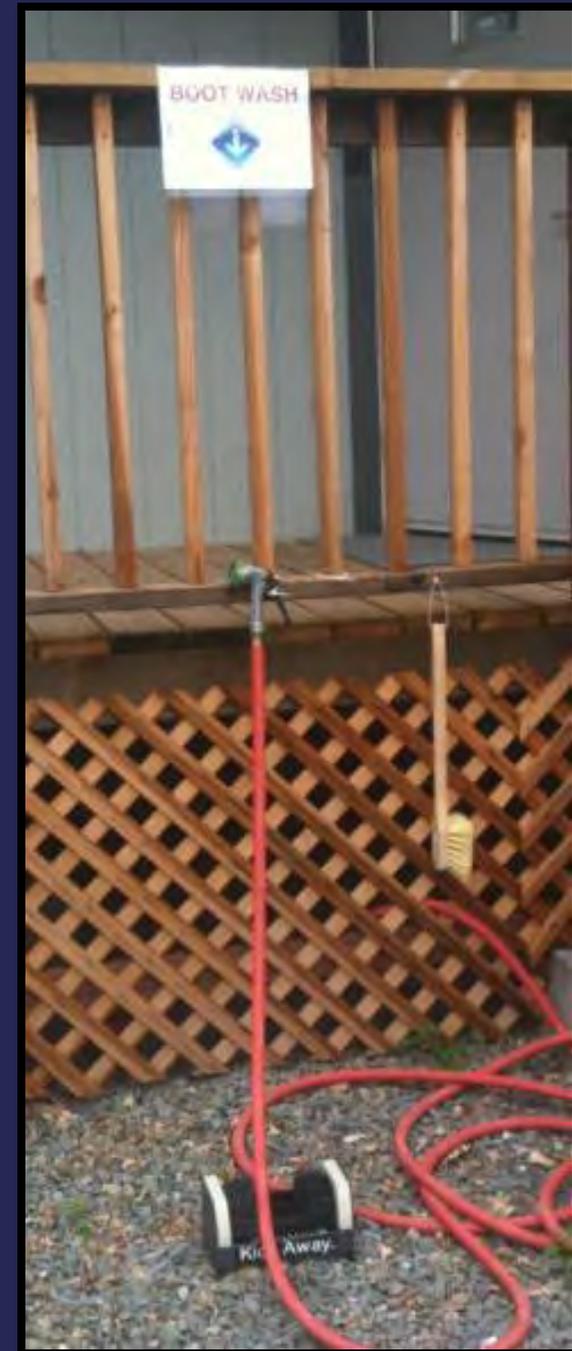
Dust Source	Mitigation Measure	Application Frequency	Relative Effectiveness <sup>1</sup>
Excavation	Water wetting	as needed	2-3
	Excavate during calm periods	when possible	-
Mobile Construction Equipment	Water wetting of roads surfaces	as needed	2-3
	Rinse vehicles / equipment	as needed	3
	Wet loads of excavated material	each load	3
	Cover loads of excavated material	each load	2-3
Exposed Linear or Serpentine Areas	Water wetting	as needed	3-4
	Cover with 6 to 12 inches of non-asbestos material	end of project	4
	Wind breaks / barriers	where needed	1-2
	Chemical sealants / dust suppressants	3 mos. - 1 yr.	3
	Vegetative reclamation	end of project	3
Roads	Asphalt cement paving	as needed	4
	Water wetting	as needed	3-4
	Speed control	always	1-3
	Wind breaks / barriers	where needed	1-2
	Cover with 2 to 4 inches of non-asbestos rock	as needed	3-4
	Chemical sealants / dust suppressants	3 mos. - 1 yr.	2-3
	Single-coat chip/seal	as needed	4
	Triple-coat chip/seal	as needed	4
Petroleum sealants	as needed	4	
Asphalt cement paving	as needed	4	

1. Subjective rating where: 1 = least effective, and 4 = most effective

Download from California Air Resources Board web site. ([ARB.ca.gov](http://ARB.ca.gov))

Decontamination can be  
pretty simple!

Avoid tracking dirt  
inside!



# Equipment “Track Out” Gravel Pit



**This is one of the methods required for jobs > one acre to avoid “track out.”**

# Equipment Track Out Cleaning Requirements



# Regulated Areas, Wet Methods and PPE



Questions about NOA  
or other asbestos issues?



# Cal/OSHA is revising lead standards!

- Revision is based on conclusion that current standards are based on medical information from the 1970s!
  - Same information used in early 1990s for construction standard as used in development of general industry standard developed in 1970s.

# Current OSHA lead standards are based on 1970s medical knowledge about the health effects of lead!

- Average adult blood level during 1970s was around 16  $\mu\text{g}/\text{dl}$ .
  - Population average (children/adults) was 12.8  $\mu\text{g}/\text{dl}$ .
  - This was the result of leaded gasoline (tetraethyl lead)
- Initial OSHA standard (general industry) set Lead Removal at 50  $\mu\text{g}/\text{dl}$  and medical surveillance at 40  $\mu\text{g}/\text{dl}$ .
  - Nothing happens if worker's blood lead is below 40  $\mu\text{g}/\text{dl}$ .
- Mid-1990s construction standard continued these blood lead levels.
- Current (2010) blood lead average is 1.1  $\mu\text{g}/\text{dl}$ !

Medical research on lead in adults during the last forty years has found that lead harms the adult body at much lower levels than previously believed!

- Now we know that chronic blood lead levels of between 10-20  $\mu\text{g}/\text{dl}$  have severe negative health effects on adults!
  - Dramatic increased risk of hypertension and cardiovascular disease, cognitive dysfunction later in life, adverse reproductive outcomes, and possible renal system damage.
- California Department of Public Health has lobbied Cal/OSHA to change their standards so blood lead does not exceed 10  $\mu\text{g}/\text{dl}$  in men and 5  $\mu\text{g}/\text{dl}$  for women of reproductive age.

# Current Cal/OSHA DRAFT (for discussion purposes)

## Current Standard

- PEL: 50  $\mu\text{g}/\text{m}^3$  (mandates respirators, suits, etc.)
- Action Level: 30  $\mu\text{g}/\text{m}^3$  (training, air sampling, blood testing)
- Blood Testing: triggered by  $>30 \mu\text{g}/\text{m}^3$  or do trigger task. Stop testing if result  $<40 \mu\text{g}/\text{dl}$ . Continue if  $>30$  days  $>30 \mu\text{g}/\text{m}^3$  or result  $>40 \mu\text{g}/\text{dl}$ . Every two months for first six months, then every six months.
- Medical Removal: Two tests over 50  $\mu\text{g}/\text{dl}$  triggers removal from exposure above Action Limit.

## Draft Proposed Changes

- PEL: change to 10
- Action: change to 2  $\mu\text{g}/\text{m}^3$  (triggers medical surveillance for those exposed  $>10$  days in year)
- Blood Testing: If exposed over 2  $\mu\text{g}/\text{m}^3$   $>10$  days, every two months for first six months, then every six months. Result  $>10 \mu\text{g}/\text{dl}$  triggers monthly testing till  $<10 \mu\text{g}/\text{dl}$ .
- Medical Removal: two at  $>20 \mu\text{g}/\text{dl}$  or one at  $30 \mu\text{g}/\text{dl}$ , or 6 mo. avg  $>20$
- Disturb lead  $> 8$  hours in month? Triggers current action level requirements plus respiratory protection!
- Presumed Lead-Based Paint: All coatings on structural metal, and all coatings  $<1978$ .

# Why are these changes significant?

- Few standard maintenance and construction workers exceed current PEL (50  $\mu\text{g}/\text{m}^3$  8 hour TWA)
- Standard Trigger 1 work (paint prep, manual demolition) now may exceed proposed PEL (if done for more than short periods.)
  - Triggers full PPE (suits/respirators)
- Non “Trigger Task” work involving lead such as pulling , handling, splicing, etc. lead cables may also exceed new PEL!
- Recycling lead cables is likely to exceed new PEL!

# Issues to Consider About Cal/OSHA Changes

## Pros:

- Chronic blood lead levels  $>10$  have serious health consequences.
  - Current standard doesn't address blood lead levels till  $>40 \mu\text{g}/\text{dl}$ .
- Emphasizes more blood testing to evaluate worker exposure.
  - This is better screening tool and picks up hand-to-mouth risk factors rather than emphasizing air sampling.
- More emphasis on reproductive health warnings.

## Cons:

- Changes still emphasize air concentration when hand-to-mouth exposure more likely in standard construction.
- Most standard construction and maintenance workers are very unlikely to have chronic blood levels  $> 10 \mu\text{g}/\text{dl}$ .
  - Painters, and those conducting trigger task 3 may be exceptions!
- Vast majority of workers and employers impacted by new requirements have little risk of chronic blood lead levels!
- Poor compliance in past. Will much stricter standard result in increased compliance?

# When will these or similar changes take place?

- Cal/OSHA staff and advisory committee are actively working on these revisions.
- Given the complexity and controversy surrounding these changes, finalization and implementation will probably not take place till 2017.
- For more information, go to:

[http://www.dir.ca.gov/dosh/DoshReg/advisory\\_committee.html](http://www.dir.ca.gov/dosh/DoshReg/advisory_committee.html)

Look for lead advisory committee information.

Questions about these potential  
changes or other lead issues?

