

# Dust Control in the South Coast Air Basin: Working Together for Healthful Air

## Dust Control in the South Coast Air Basin

SCAQMD  
SCAQMD



Working  
together  
for Clean  
Air

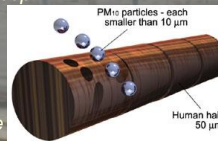


## Key Terms

- **Fugitive Dust**
  - Any solid particulate matter that becomes airborne, other than that emitted from an exhaust stack, directly or indirectly as a result of the activities of any person
- **PM<sub>10</sub>**
  - Particulate matter with an aerodynamic diameter smaller than or equal to 10 microns as measured by applicable State and Federal reference test methods.
- **Opacity**
  - A way to describe the density of a plume or smoke
  - Degree to which light transmission through the diameter of a plume is reduced
  - Degree to which visibility of a background viewed through the plume is obscured

## What Is PM<sub>10</sub> & It's Effects?

- Fine particulate matter less than 10 microns in diameter
  - 1/8 the diameter of a human hair
- Associated with increased rates of illness and death
  - Small particles can by-pass the body's protective measures and lodge deep in the lungs
- High-risk groups
  - Children
  - Elderly
  - People with a respiratory disease



## PM<sub>10</sub> Effects

Substantial evidence of significant health effects:

Premature death  
Cancer  
Cardio-respiratory disease

Vulnerable groups

Children  
Elderly  
Those with heart or lung disease



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## Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	Federal Standards
		Concentration	
Particulate Matter PM <sub>10</sub>	Annual	20 µg/m <sup>3</sup>	Revoked <sup>(1)</sup>
	24 hr	50 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>
Particulate Matter PM <sub>2.5</sub>	Annual	12 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>
	24 hr	-----	35 µg/m <sup>3</sup>

<sup>(1)</sup> Due to lack of evidence linking health problems to long-term exposure to coarse pollution, the agency revoked the annual PM10 standard in 2006 (effective December 17, 2006).

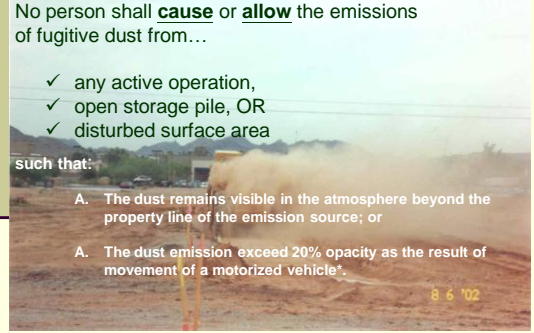
## Rule 403(d)(1)

No person shall **cause** or **allow** the emissions of fugitive dust from...

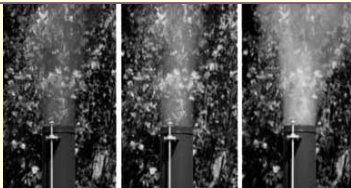
- ✓ any active operation,
- ✓ open storage pile, OR
- ✓ disturbed surface area

such that:

- A. The dust remains visible in the atmosphere beyond the property line of the emission source; or
- A. The dust emission exceed 20% opacity as the result of movement of a motorized vehicle<sup>\*</sup>.



## Rule 401



20%

40%

60%



## Rule 403(d)(2)

No person shall conduct "**active operations**" without utilizing the applicable Best Available Control Measures to minimize fugitive dust emissions from each fugitive dust source type within the active operation. (All Sites)



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## Activities of Man

### Active operations...

Any source capable of generating fugitive dust:

1. Earth-Moving Activities
2. Construction/Demolition Activities
3. Heavy & Light duty Vehicular Movement
4. Disturbed Surface Area



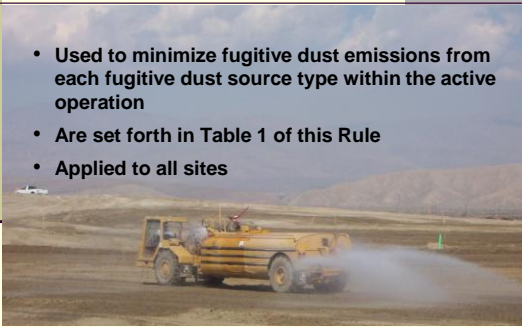
## Heavy & Light duty Vehicular Movement



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## Best Available Control Measures (BACM)

- Used to minimize fugitive dust emissions from each fugitive dust source type within the active operation
- Are set forth in Table 1 of this Rule
- Applied to all sites



## Dust Control Sample Table 1

Source Category		Control Measure	Guidance
Earth-moving activities	08-1	✓Pre-apply water to depth of proposed cuts; <b>and</b>	✓Grade each project phase separately, timed to coincide with construction phase
	08-2	✓Re-apply water as necessary to maintain soils in a damp condition; <b>and</b>	✓Upwind fencing can prevent material movement on site
	08-3	✓Stabilize soils once earth-moving activities are complete.	✓Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes

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## Dust Control Sample Table 1

Source Category		Control Measure	Guidance
Importing/exporting of bulk materials	09-1	✓Stabilize material while loading to prevent fugitive dust emissions; <b>and</b>	✓Use tarps or other suitable enclosures on haul trucks
	09-2	✓Maintain at least six inches of freeboard on haul vehicles; <b>and</b>	✓Check belly-dump truck seals regularly and remove any trapped rocks to prevent spillage
	09-3	✓Stabilize material while transporting to prevent fugitive dust emissions; <b>and</b>	✓Comply with track-out prevention/mitigation requirements
	09-4	✓Stabilize material while unloading to prevent fugitive dust emissions; <b>and</b>	✓Provide water while loading and unloading to prevent visible dust plumes
	09-5	✓Comply with Vehicle Code Section 23114.	

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## BACM



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## Rule 403(d)(3)

- No person shall cause or allow PM<sub>10</sub> levels to exceed 50 micrograms per cubic meter when measured over a 5 hour period



Levels are determined weighing by the difference between upwind & downwind samples trapped in the high volume particulate filters over a 5 hour period

## Rule 403(d)(4)

- No person shall **allow** track-out to extend 25 ft. or more in cumulative length from the point or origin from an active operation (No grace period)
- All track-out shall be removed at the conclusion of each workday or evening shift



## Street Sweeping

Rule 401 or 403 visible emissions > 20 opacity



Rule 1186.1 LESS-POLLUTING SWEEPERS



## Rule 403(d)(5)

- An active operation with a disturbed surface area of > 5 acres, or daily imports or exports of >100 cubic yards of bulk material:

Must utilize at least one of the measures listed in subparagraphs (d)(5)(A) through (d)(5)(E) at each vehicle egress:

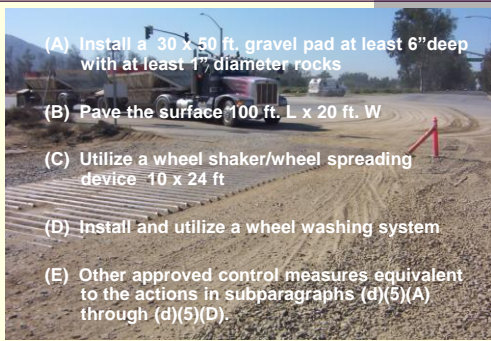


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## Rule 403(d)(5)

(Continued)

- (A) Install a 30 x 50 ft. gravel pad at least 6" deep with at least 1" diameter rocks
- (B) Pave the surface 100 ft. L x 20 ft. W
- (C) Utilize a wheel shaker/wheel spreading device 10 x 24 ft
- (D) Install and utilize a wheel washing system
- (E) Other approved control measures equivalent to the actions in subparagraphs (d)(5)(A) through (d)(5)(D).



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## Rule 403 (e) (1)

BACM for Large Operations

Additional Requirements for conducting or authorizing a **Large Operation\***

- Implement Table 2 applicable actions at all times and those in Table 3 when the performance standards can not be met through use of Table 2; and

\* Any active operation or property ≥ 50 acres of disturbed surface area; or any earth-moving operation with daily earth-moving or throughput volume 5K cubic yards or more three times during the most recent 365-day period.

### Dust Control Sample Table 2 vs. Table 3

Page 2-20 compared to Page 2-23

Source Category	Table 2 Control Measure		Table 3 Control Measure	
Earth-moving (except construction cutting and filling areas, and mining operations)	(1a)	✓Maintain soil moisture content at a minimum of 12 percent,  OR	(1A)	✓Cease all active operations  OR
	(1a-1)	✓For any earth-moving which is more than 100 feet from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 100 feet in length in any direction.	(2A)	✓Apply water to soil not more than 15 minutes prior to moving such soil.

# Dust Control in the South Coast Air Basin: Working Together for Healthful Air

## Dust Control Sample Table 2 vs. Table 3

Page 2-21 compared to Page 2-23

Source Category	Table 2 Control Measure		Table 3 Control Measure	
Disturbed Surface areas (except completed grading areas)	(2a/b)	✓ Apply dust suppression in sufficient quantity and frequency to maintain a stabilized surface. Any areas which cannot be stabilized, as evidenced by wind driven fugitive dust must have an application of water at least twice per day to at least 80 percent of the unstabilized area.	(0B)	✓ On last day of active operations prior to a weekend or other $\leq 4$ days: apply water with a mixture of chemical stabilizer diluted to not less than 1/20 of concentration required to maintain a stabilized surface for a period of six months: OR
			(1B)	✓ Apply chemical stabilizers prior to wind event: OR
			(2B)	✓ Apply water to all unstabilized disturbed areas 3 times per day, 4 if still dust blowing.

## CHEMICAL STABILIZERS



Non-toxic chemical dust suppressant used must be approved by:

- Regional Water Quality Control Boards
- California Air Resources Board
- U.S. Environmental Protection Agency

The chemical stabilizers shall meet any specifications, criteria, or tests required by any federal, state, or local water agency.



## STABILIZED SURFACE TEST METHOD



One steel ball. Diameter - 5/8 inches. Mass - 16-17 grams  
A ruler or measuring tape  
A frame with a 1 ft. by 1 ft. opening (optional)



Drop the ball (1) foot off the ground directly above your survey area.



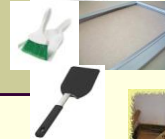
If the ball causes a slight indentation on the surface but you do not see loose grains, the surface has passed the test.



## THRESHOLD FRICTION VELOCITY



A set of sieves :  
4 millimeters (mm)  
2mm, 1 mm,  
0.5 mm and  
0.25 mm.



Sieve Size Opening (mm)	Sieve No.	TFV (cm/sec)
4	5	> 100
2	10	100
1	18	76
0.5	35	58
0.25	60	43
Collector Pan	N/A	30



If the TFV you've calculated is greater than or equal to 100 cm/sec, the surface is stable.



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## Rule 403 (e) (1)

Administrative Requirements

- (A) Submit a Large Operation Notification (Form 403 N) within 7 days of qualifying as a large operation;
- (B) Include contact information of the person(s) responsible including a site map
- (C) Maintain daily records for no less than three years;
- (D) Install and maintain project signage prior to initiating any earthmoving activities;



## Construction Signage

### Purpose

Allow the public to contact the responsible party



## Rule 403 (e) (1)

(Continued)

- (E) identify a dust control supervisor that:
  - (i) is employed by or contracted with the property owner or developer;
  - (ii) is on the site or available on-site within 30 minutes during working hours;
  - (iii) has the full authority to expeditiously employ mitigation measures;
  - (iv) has been issued a valid Certificate of Completion for the AQMD class; and



## EXEMPTIONS



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## Rule 403 (g) – Exemptions

(Continued)

- (F) Emergency life-threatening or declared disaster or state of emergency
- (G) Service utilities or service outages and emergency disruptions
- (H) Any contractor subsequent to the time the contract ends, that implemented required control measures

## Rule 403 (g) – Exemptions

(Continued)

- (2) The provisions of paragraphs (d)(1) and (d)(3) shall not apply:



- (A) When wind gusts exceed 25 miles per hour, provided that:
  - (i) Table 3 contingency measures are implemented for each fugitive dust type, and;
  - (ii) records are maintained(and a wind monitor on site verifies wind speed)

## AQMD Rule 402 – Public Nuisance

California Health & Safety Code Sec 41700

- Considerable number of people (persons/public minimum of 6 complaints/one complaint per household)
- Causing injury, detriment, nuisance, annoyance
- Endangering comfort, repose, health or safety
- Natural tendency to cause injury/damage to business/property

