Why Dust Control?

The What, Who, When, Why, and How of Maricopa County Dust Control Regulation
• Certain air pollutants, called “criteria air pollutants,” are common throughout the United States. These pollutants can cause health problems, pollute the environment and cause property damage. These criteria pollutants are so named since the U.S. EPA has regulations on allowable levels of these substances on the basis of health-based criteria.

• Gases include carbon monoxide, ozone, nitrogen dioxide, and sulfur dioxide. Particulate matter (PM) pollution is also an airborne pollutant.
What is the Quality of Our Air?

- Air pollution
  - Gases such as CO, SO2, & VOC’s
  - Particulate matter (PM); a.k.a. dust
- Brown cloud
- No Burn Day
- High Pollution Advisory
- Health effects
  - Headache, nausea, eye irritation
  - Scarring of lung tissue, respiratory problems
  - Bronchitis, emphysema, cancer
  - Valley Fever
Particulate matter is composed of small solid and liquid particles suspended in the ambient air.

Research studies have associated exposure to elevated levels of these particles in the air with damaging health effects.
Whom Does Poor Air Quality Affect?

Everyone! *Especially sensitive populations*
Certain sensitive populations, listed below, are susceptible to more serious symptoms, including cough, phlegm, wheezing, shortness of breath, bronchitis, increased asthma attacks, and aggravation of lung or heart disease. Exposure to fine particles is of particular concern, and can be associated with several serious health effects. Some sensitive people might experience health problems after even short exposures to fine particles, such as several hours or a day.

- Individuals with asthma and other respiratory diseases
- Individuals with cardiovascular disease
- The elderly
- Children

Source: EPA - [http://www.epa.gov/wtc/pm10/pm_fact_sheet.html](http://www.epa.gov/wtc/pm10/pm_fact_sheet.html)
Why Address Dust?

- Health risks
- Increased federal regulation
- Cost of non-attainment
  - Federal funding cut
  - Mandated reduction in permitting
  - Several billion dollars in highways funding
Air is breathed through the mouth or nose, which acts as a filtering system for the body, removing large pollutant particles.

Air then passes through the pharynx, esophagus, and larynx before reaching the top of the trachea.

The trachea divides into two parts – the right and left bronchi.

The bronchi divide into increasingly smaller compartments called bronchioles.

Bronchioles contain millions of air sacs called alveoli, this is the primary location for gas exchange (O$_2$, CO$_2$) with the blood.
Alveoli are the spherical outcroppings of the respiratory bronchioles and are the primary sites of gas exchange with the blood.
Acute effects are usually immediate and are often reversible when exposure to the pollutant ends.

Common acute effects include eye irritation, headaches, and nausea.
Chronic Effects

• Chronic effects sometimes take longer to become apparent, and tend not to be reversible.

• Chronic effects include decreased lung capacity, lung cancer, other respiratory problems, as well as cardiovascular ailments.
Is the Air in Maricopa County Really that Bad?
Since When is Dust Such an Issue?
Timeline of Non-Attainment* for Maricopa County

1990
“Moderate”
Missed deadline for attainment per 1990 requirement. Air monitors continue to exceed standards.

1994
1996
“Serious”

2001

2006 “Serious”

2007
5% plan developed “Serious”

*Non-Attainment is an EPA Designation for failure to meet Federal Air Quality Standards
Classifications of PM-10 Non-Attainment Areas

As of March 12, 2008

SERIOUS
- Clark Co., NV
- Coachella Valley, CA
- Imperial Valley, CA
- Los Angeles South Coast Air Basin, CA
- Oxnard Valley, CA
- Phoenix, AZ
- San Joaquin Valley, CA
- Washoe Co., NV

MODERATE
- Ajo (Pima County), AZ
- Anthony, NM
- Banner Co. (Sandoval), ID
- Butte, MT
- Columbia Falls, MT
- Coos Junction, CA
- Egle River, AK
- El Paso Co., TX
- Eugene-Springfield, OR
- Flathead County, Whitefish and vicinity, MT
Counties Designated Non-Attainment for PM-10

Classification colors are shown for whole counties and denote the highest area classification that the county is in.
2005 Census Survey of Maricopa County, Arizona
September 1, 2005 Estimates of Population and Housing for Maricopa County, Places in Maricopa County, and Unincorporated Areas

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<th>Total Resident Population</th>
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<th>Total Resident non-Housing Unit Population</th>
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<td>Maricopa County Total*</td>
<td>3,700,516</td>
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2005 PM$_{10}$ Emissions Inventory

(Revised May 2007 – PM$_{10}$ Nonattainment Area Total = 84,753 tons/yr)

- Stationary point sources
- Industrial processes
- Fuel combustion & fires
- Agriculture
- Construction (residential)
- Construction (commercial)
- Construction (road)
- Other earthmvg (trenching, weed cntrl)
- Travel on unpaved parking lots
- Offroad rec. vehicles fugitive dust
- Leaf blowers fugitive dust
- Windblown fugitive dust
- Nonroad mobile sources
Dust Sources

- Construction (Nonroad Sources): 43.0%
- Windblown Dust (Area Sources): 22.6%
- Paved and Unpaved Roads (Onroad Sources): 32.9%
- Industry (Point Sources): 1.5%
How Do We “Bust” Dust?

• MCAQD
  – Monitoring
  – Reporting
  – Education
  – Regulation: rules, inspection, enforcement

• Citizens
  – Complaints
  – Education

• Business/permit holder
  – Compliance
  – Education
Earthmoving Operation

The use of any equipment for an activity which may generate fugitive dust, such as but not limited to:
Cutting and filling
Grading, leveling
Excavating
Trenching
Loading and unloading of bulk materials
Demolishing
Blasting
Drilling
Adding to or removing bulk materials from open storage piles, back filling, soil mulching, landfill operations
Weed abatement by discing or blading
Rule 310 (Fugitive Dust)

• Sections 300 Standards
  – 20% Opacity
  – Soil Stabilization
  – Control Measures
  – Project Information Sign
  – Work Practices

• Section 400 Administrative Requirements
  – Dust Control Plan

• Section 500 Monitoring and Records
  – Records
Project Signs

- Post in at the main entrance
- Readable by the public
- White background with at least four inch black letters
- Contain project name, permittee’s name, permit number, expiration date, name and contact info of person responsible for dust control measures, text stating “Dust complaints? Call Maricopa County Air Quality Department – 602-506-6010
- All sites >= five acres
Direct Complaint Line to Maricopa Air Quality 602-372-2703

MOUNTAIN VISTA
QUANTUM DEVELOPMENT PERMIT # E087770 10-10-2009
RESPONSIBLE PROJECT INDIVIDUAL: NIKKI PERMIT (480) 777.6010
"DUST COMPLAINTS? CALL MARICOPA COUNTY AIR QUALITY DEPARTMENT COMPLAINT PHONE LINE (602) 506-6010"
Monitoring and Records

• Any person who conducts dust generating operations that require a Dust Control Plan shall keep a daily written log.

• Any person who conducts dust generating operations which do not require a Dust Control Plan shall compile and retain records that provide evidence of control measure application.

• Retain records for six months after the termination of the dust generating operation OR two years from the date such records were initiated, whichever is longer.
Dust Control Records

- Daily logs of self-inspection for crusted or damped soil, trackout conditions and clean-up measures, daily water usage and dust suppressant application.
Dust Control Records

- Method, frequency and intensity of application or implementation of control measures
- Method, frequency and amount of water application
- Street sweeping frequency
- Maintenance of trackout control device
- Types and results of test methods
- If contingency methods are implemented – an explanation why
- List of subcontractors and their registration numbers
- Dust control trained employees
Subcontractors Registration
As Per Rule 200 Section 306

- A subcontractor who is engaged in dust generating operations at a site that is subject to a permit that is issued by Maricopa County and that requires control of PM 10 emissions shall register with Maricopa County and have it readily accessible and visible while on-site conducting any dust generating operations.
Fugitive Dust

- The particulate matter not collected by a capture system, that is entrained in the ambient air, and is caused from human and/or natural activities, such as, but not limited to, movement of soil, vehicles, equipment, blasting, and wind.
- Limited to 20% opacity.
- Control with water; surfactants and dust palliatives; work methods and proper planning.
What Do We Look for?

- Project signs (projects > five acres)
- Dust permit/records (opacity and stabilization records)
- Fugitive dust
- Water sources, application
- Trackout control device (is it sufficient)
- Trackout, carryout, spillage, erosion
- Bulk material handling (tarping, cleaning, mounding)
- Storage piles
- Unpaved haul roads/access points
- Weed abatement activities
Control measures before, during and after a dust generating operation
Keys to Compliance

The Big 3

• Opacity - *DO NOT EXCEED 20%*

• Work Practices/Control Measures:
  – Are you following your Dust Control Plan?
  – Using water?

• Stabilization:
  – What does the site look like at the end of the day?
  – End of the project?
Opacity - How Can You Tell?
Opacity Training

ASU SMOKE SCHOOL
Al Brown (480) 727-1322
al.brown@asu.edu

ARIZONA SMOKE SCHOOL
Arizona Smoke School
10408 S. 43rd Place
Phoenix, AZ 85044
Contact – Fred Ellis (480) 226-0945
fred@arizonasmokeschool.com

CARL KOONTZ
Carl Koontz Associates
P.O. Box 8216
Hermitage, TN 37076
Phone: (615) 889-9494
Fax Phone: (615) 889-1846
ckoontz8@comcast.net
Opacity and Work Practices
Back-Filling Trenches Without Water
The owner and/or operator of a dust generating operation shall not cause or allow visible dust emissions to remain visible in the atmosphere beyond the property line.

- EPA method 22
Property Line

• The boundaries of an area in which either a person causing the emissions or a person allowing the emission has the legal use or possession of the property.

• Do not mistake a fenced area with a property line.
Trackout Control Device

- Gravel pad, grizzly, wheel wash system, pavement of least 100x20 ft, or combination of the above.
- Located at all exits egressing onto paved areas accessible to the public (*roads, parking lots, etc*).
- Required on projects greater than two acres.
- Required when importing or exporting 100 cubic yards of bulk material in a single day.
Trackout Control Device
• Any and all bulk materials that adhere to and agglomerate on the surfaces of motor vehicles, haul trucks, and/or equipment (including tires) and that have fallen or been deposited onto a paved area accessible to the public (includes rocks and stones).

Less than 25 feet: must be cleaned at the end of the work day (work shift).

Greater than 25 feet: must be cleaned immediately.
Trackout
Trackout Can be a Public Safety Issue as Well
Trackout
Offsite Haul Untarped, Overloaded and Mounded
Stabilization
Stabilization
Stabilization
Basic Training

• At least once every three years
• On all sites with one to five acres disturbed surface area
• Site’s superintendent or other designated representative
• Water truck and water pull drivers
• No later than December 31, 2008
Comprehensive Training

- At least once every three years
- On all sites greater than five acres
- Person with the authority to ensure that dust control measures are implemented on site - Dust Control Coordinator
- Certification must be readily accessible on-site
- Must be VE certified
- No later than June 30, 2008
Considerations

- Administrative requirements
- Recordkeeping requirements
- Dust control coordinator
- Control measure effectiveness
- Stability in all unpaved areas
- Developing issues on site
- Work practices
- Community
- Role of the inspector
Questions?

Dust Supervisor
602-506-6734

Training Questions
602-372-1467
Clean Air Make More

Together we can make more clean air.

Clean Air FACTS

One gas mower spews 87 lbs. of the greenhouse gas CO2, and 54 lbs. of other pollutants into the air every year.

MAKE THE CLEAN AIR COMMITMENT

The Problem | The Effects | The Offenders | The Solution | Education | Partners | Media | En espanol | Contact | Privacy Policy

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References

• Maricopa County Air Quality Department - www.maricopa.gov/aq

• Arizona Department of Environmental Quality - http://www.azdeq.gov/environ/air/index.html


• MCAQD Campaign - www.cleanairmakemore.com

• The Dust Devil Academy developed by ASU in 2000 - http://www.maricopa.gov/aq/divisions/compliance/dust/dust_sources/GUIDES.ASPX