

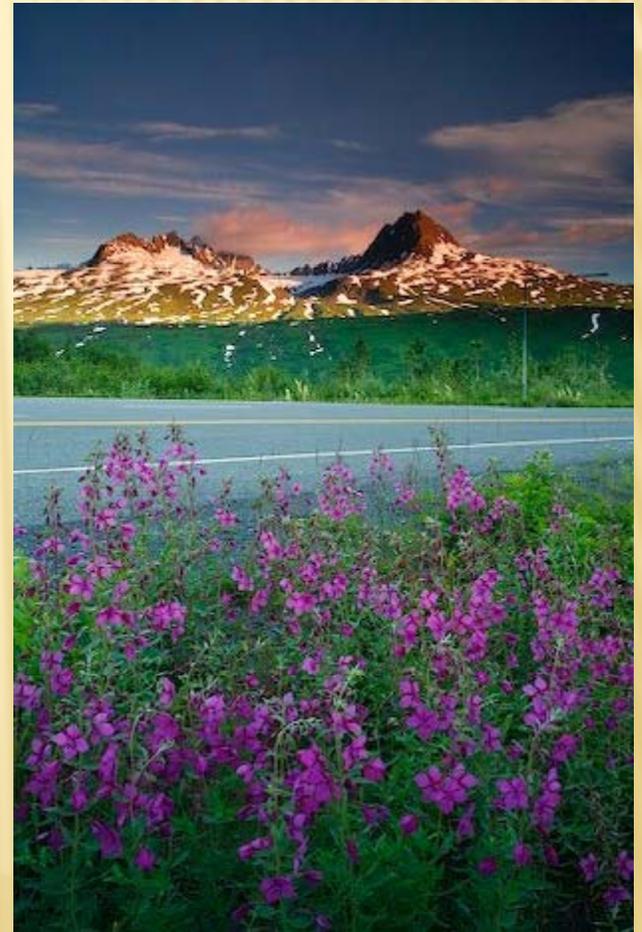


## **FUGITIVE DUST – WHAT IS IT? WHY SHOULD I CARE?**

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Air Quality, February 2011

# FUGITIVE DUST PRESENTATION

- ✘ What is fugitive dust?
- ✘ Background/History of fugitive dust
- ✘ Health/Environmental Effects
- ✘ Potential sources in Alaska
- ✘ Overview of ADEC regulations
- ✘ Potential Future Policies
- ✘ Controls



# BACKGROUND ON FUGITIVE DUST

- ✘ Fugitive dust is not a new problem
- ✘ Can be naturally occurring
- ✘ Can be anthropogenic
- ✘ Small airborne particles
- ✘ Wide variety of sources
- ✘ Both inter-continental & local





## **DUST OVER THE PACIFIC OCEAN**

The picture is of the fugitive dust that is being blown over the Yellow Sea. To the right is Korean Peninsula and China is to the left.

# WHAT IS FUGITIVE DUST?



- ✘ Small airborne Particulate Matter or PM
- ✘ EPA definition: Particulate matter that is generated or emitted from open air operations (emissions that do not pass through a stack or a vent).

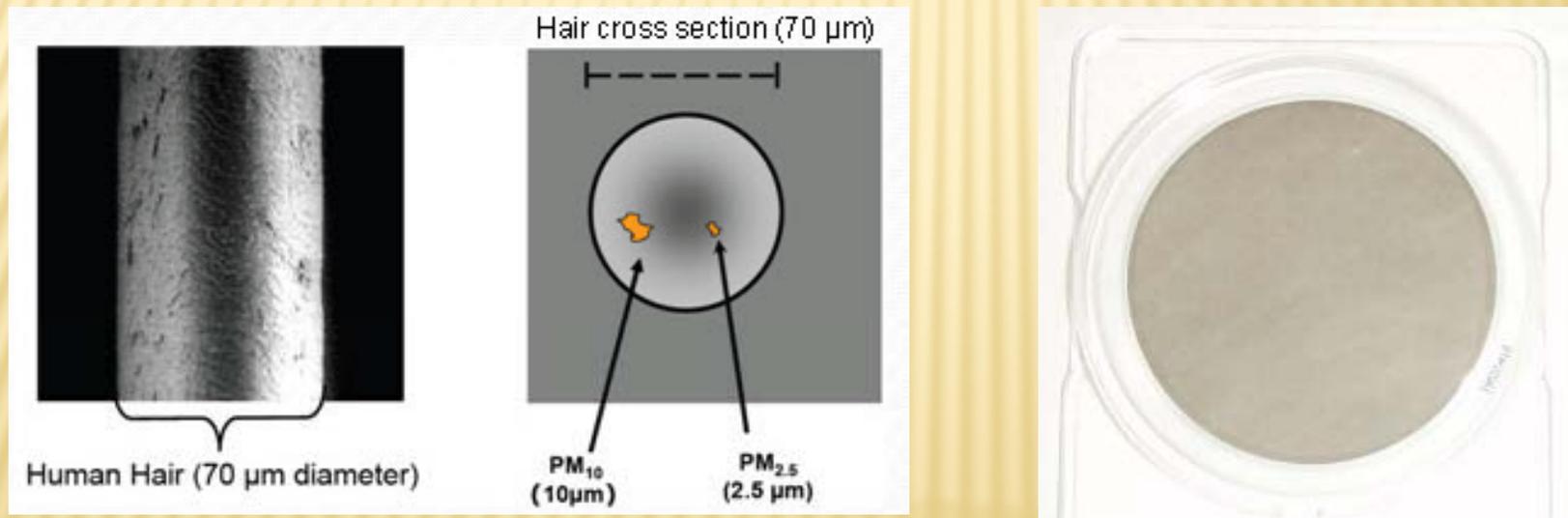
# WHAT IS PARTICULATE MATTER?

- ✘ EPA has six criteria air pollutants
  - + One of these is particulate matter
- ✘ Particulate matter includes the solid particles and liquid droplets suspended in the air.



# PARTICULATE MATTER DEFINED

- ✘ EPA classifies particulate matter in two sizes
  - + PM<sub>10</sub> – particulate matter less than 10 microns
  - + PM<sub>2.5</sub> – particulate matter less than 2.5 microns

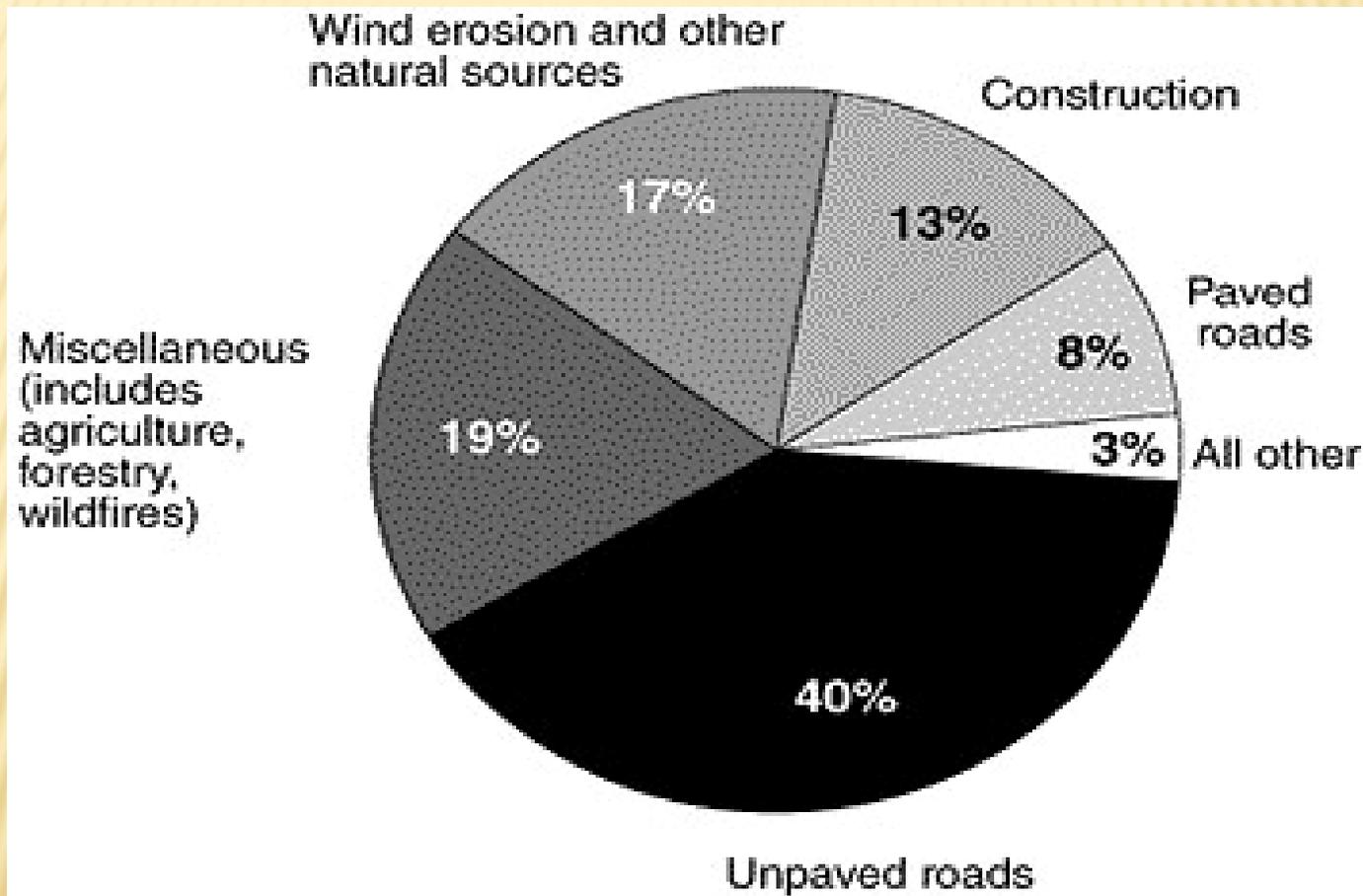


# HUMAN ACTIVITIES - CAUSES OF PM

- ✘ Smoke stacks
- ✘ Vehicle Exhaust
- ✘ Boilers
- ✘ Incinerators
- ✘ Wood stoves
- ✘ Open Burn
- ✘ Roads



# EPA'S BREAKDOWN OF FUGITIVE DUST



# WHY SHOULD I CARE?

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- ✘ EPA estimates 25 millions tons of fugitive dust emissions per year; the majority from unpaved roads and miscellaneous agricultural lands
- ✘ Reduces visibility
- ✘ Reduces plant growth
- ✘ Health concerns
- ✘ Nuisance

# WHAT ARE THE HEALTH EFFECTS?

- ✘ Fugitive Dust and Particulate Matter have been linked to the following health problems:
  - + Asthma
  - + Chronic bronchitis
  - + Emphysema
  - + Heart Disease
  - + Chronic obstructive pulmonary disease



# WHAT ARE THE ENVIRONMENTAL EFFECTS?

- ✘ Visibility Reduction
  - + PM 2.5 major cause of Haze
- ✘ Aesthetic Damage
- ✘ Surface Water Impacts
- ✘ Topsoil Impacts



# INCREASES FUGITIVE DUST?

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- ✘ Natural resource extraction and movement
- ✘ Increase in population
- ✘ More roads
- ✘ Increase in constructions
- ✘ Increase in industrial activity
- ✘ Local Zoning
  - + Residential and industrial areas are in closer proximity to each other

# HOW DOES ALASKA DEAL WITH FUGITIVE DUST?

- ✘ State reserves the right to protect healthy air—
- ✘ Current Regulations
- ✘ Regulations are based in science
- ✘ Monitoring stations
- ✘ Unpermitted activity suspected of violating ambient air standard can be given violations



# PROCESS FOR FUGITIVE DUST REGULATIONS

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- ✘ Measurable and Science base
- ✘ Identify National and Alaska Ambient Air Standards
- ✘ Identify Alaska Air Regulations applicable to fugitive dust
- ✘ Identify fugitive dust sources
  - + Research other states-WRAP Fugitive Dust
  - + Complaint logs
- ✘ Identify Categories ( measurable terms) in Alaska that may need regulations for fugitive dust
- ✘ Identify regulation or measurable terms that apply to non-permitted sources suspected of emitting fugitive dust in violation of Alaska Ambient Air Quality Standards

# NATIONAL AND ALASKA AMBIENT AIR STANDARDS

- ✘ National (EPA) Ambient Air Standards
- ✘ 18 AAC 50.010
  - + PM10 Alaska Air Standards
    - ✘ 24 hour standard 150ug/m<sup>3</sup>
    - ✘ Annual standard 50ug/m<sup>3</sup>
  - + Ambient Air Standards for PM2.5
    - ✘ 24 hour standard 35 ug/m<sup>3</sup>
    - ✘ Annual Standard 10 ug/m<sup>3</sup>



# ALASKA'S REGULATIONS

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- ✘ 18 AAC 50.010 Ambient Air Quality Standards
- ✘ 18 AAC 50.020 (1) for PM10 and sulfur dioxide, the baseline concentration is the ambient concentration for a PSD major stationary source
- ✘ 18 AAC 50.045 (d) A person who causes or permits bulk materials to be handled, transported or stored or who engages in an industrial activity or construction project shall take reasonable precautions to prevent particulate matter from being emitted into the ambient air

# CURRENT PERMITS

- ✘ Control EPA's 6 criteria pollutants – PM<sub>10</sub>
  - + Title V Operating Permits
  - + Title I Construction/Minor Permits
- ✘ 15 AAC 50.502 (b) - minor permits for air quality protection
  - + Asphalt plant
  - + Thermal soil remediation unit
  - + Rock crusher
  - + Incinerators
  - + Coal Preparation Plant
  - + Port of Anchorage



# **SPECIAL PROCEDURE UNDER ALASKA STATUTE**

- ✘ State regulation mirror federal standards
- ✘ AS 46.14.010 – Special procedure for more stringent regulations.
  - + Studies need to be conducted
  - + Peer reviewed
  - + Additional research or investigations may be needed if considered appropriate by the commissioner

# POTENTIAL SOURCES IN ALASKA

- × Mines
- × Sandblasting facilities
- × Material handling and storage sites
- × Construction sites
- × Large Machine Yards
- × Unpaved Roads
- × Uncovered Loads
- × Agricultural Lands
- × Natural Occurrence



# PERMITTED SOURCES

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- ✘ Facilities require ambient analysis with PM10 –
  - + To avoid exceeding PM10 standards
  - + Other sources that create PM10
  - + Ambient analysis has assumptions for methods to control fugitive dust
  - + Fugitive dust emission is not part of PTE for determining permitting triggers
- ✘ Example facilities permitted for fugitive dust
  - + Red Dog Mine Haul Road–developed and implemented a fugitive dust management plan
  - + Nixon Fork Mine has a dust suppression system in place to control their fugitive dust.

# UN-PERMITTED SOURCES

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- ✘ Only one pollutant- particulate matter via fugitive dust
- ✘ No ambient analysis required
- ✘ How many unpermitted facilities are out there?
- ✘ How do we determine that they have a fugitive dust problem?



# HOW TO TAKE CARE OF UNPERMITTED RESOURCES

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- ✘ Use current regulations
  - + 18 AAC 50.045 (d) an industrial activity or construction project shall take **reasonable precautions** to prevent particulate matter from being emitted into the ambient air
  - + 18 AAC 50.110
- ✘ New Regulations
  - + AS 46.14.010 – Special procedure for more stringent regulations.

## STATE RESERVES THE RIGHT TO PROTECT HEALTHY AIR

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- ✘ 18 AAC 50.010 Ambient Air Quality Standards
- ✘ Demonstrate violation of Ambient Air Standards
  - + Draft new regulations based on modeling and monitoring
- ✘ Regulations are based in science/measurable
- ✘ Minor Permits/General Permits for Fugitive Dust
  - + Violates ambient standards
    - ✘ via monitoring
    - ✘ modeling to establish thresholds

# WHAT WE HAVE DONE TO DATE

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- ✘ Review complaint logs
- ✘ Research other states' fugitive dust management
- ✘ Identify potential unpermitted sources/categories
- ✘ Potential to violate ambient standards



# WHAT WE HAVE DONE TO DATE (CON'T)

- ✘ Determine modeling technique
  - + EPA approved models
  - + Meteorological data - statewide applicability
  - + Terrain type - statewide applicability
  - + Source characterizations
- ✘ Conduct modeling
- ✘ Determine thresholds



## WHAT ARE OTHER STATES/AGENCIES DOING

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- ✘ Western Regional Air Partnership- various government agencies that developed the technical and policy tools to comply with the U.S. EPA's regional haze regulations
- ✘ Maricopa County in AZ has fugitive dust permits for anyone who disturbs more than 0.1 acre.
- ✘ The State of Wyoming regulates fugitive dust by taking instantaneous opacity reading.
- ✘ Nevada requires a dust control plan.

# DETERMINING THRESHOLDS

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- ✘ Establishes measurable limits above which emissions
- ✘ Above threshold violate ambient air standards
- ✘ Measurable Correlation between the source and violation



# DETERMINING MODELING TECHNIQUES

- ✘ ADEC would need to prepare a dispersion modeling study to determine if emissions from certain industrial activities are violating ambient air quality standards
  - + Models are EPA approved
- ✘ Type of landscape
- ✘ Gather meteorological conditions that represents the whole state.
- ✘ Develop generic parameters to reflect various sources for a particular industrial activity that would be performed across the state.

# WHAT CONTROLS ARE AVAILABLE?

- ✘ Dust Control Plan
- ✘ Wetting of the problem area(s)
- ✘ Halting operations during high wind events
- ✘ Spray bars
- ✘ Bag houses
- ✘ Enclosures
- ✘ Screens



## EXAMPLES OF POSSIBLE REGULATORY ACTION

- ✘ Establish permitting process for material handling sources
  - + Material handling refers to the handling, transfer, and storage of materials in aggregate form.
- ✘ Establish permitting process for abrasive blasting facilities
  - + Refers to the cleaning, polishing, conditioning, removing, or preparing of a surface by propelling a stream of abrasive (sand, slag, steel, shot, garnet, walnut shells, or carbon dioxide pellets)

# NEXT STEPS

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- ✘ Watch complaint logs
- ✘ Additional categories for modeling/thresholds
- ✘ Monitors for ambient conditions
- ✘ Conduct workshops
  - + Seward
  - + Fairbanks
- ✘ Communicate with stakeholders
- ✘ Potential Minor/General permit for fugitive dust





## QUESTIONS AND ANSWERS

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