Fugitive Dust and Health

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Fugitive Dust

- Fugitive dust
  - Airborne fine particles that originate from a variety of sources.
  - Some common sources of fugitive dust
    - Road dust.
    - Construction.
    - Mining.
    - Soil erosion.

Fugitive Dust (Dust Bowl during 1930s)

Picture credit: Encyclopedia Britannica

Fugitive Dust (Road Dust) in North Dakota

Picture credit : Raihan Khan

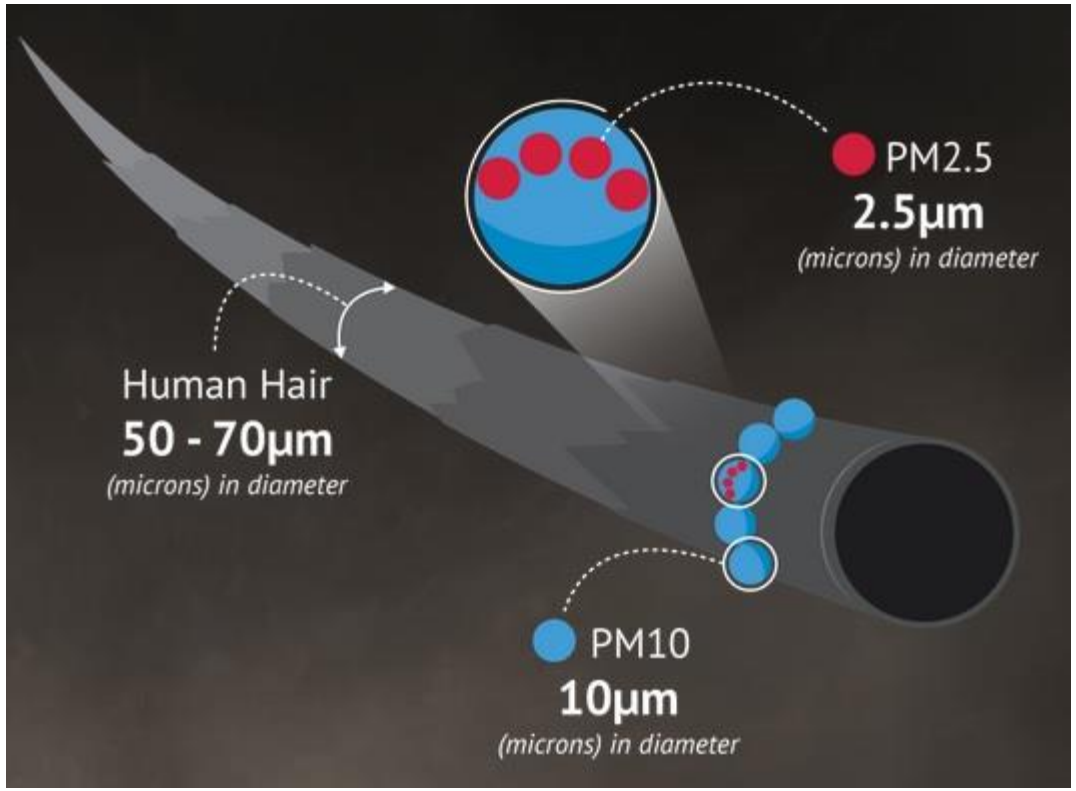
Fugitive Dust (Construction)

Picture credit : Wikimedia commons

Particulate Matter (PM)

- Particulate matter (PM)
  - Mixture of solid and liquid particles in air.
  - $PM_{10} \leq 10$ µm.
  - $PM_{2.5} \leq 2.5$ µm.

Particulate Matter (PM)



Picture credit: Advancom Electronics Technologies.

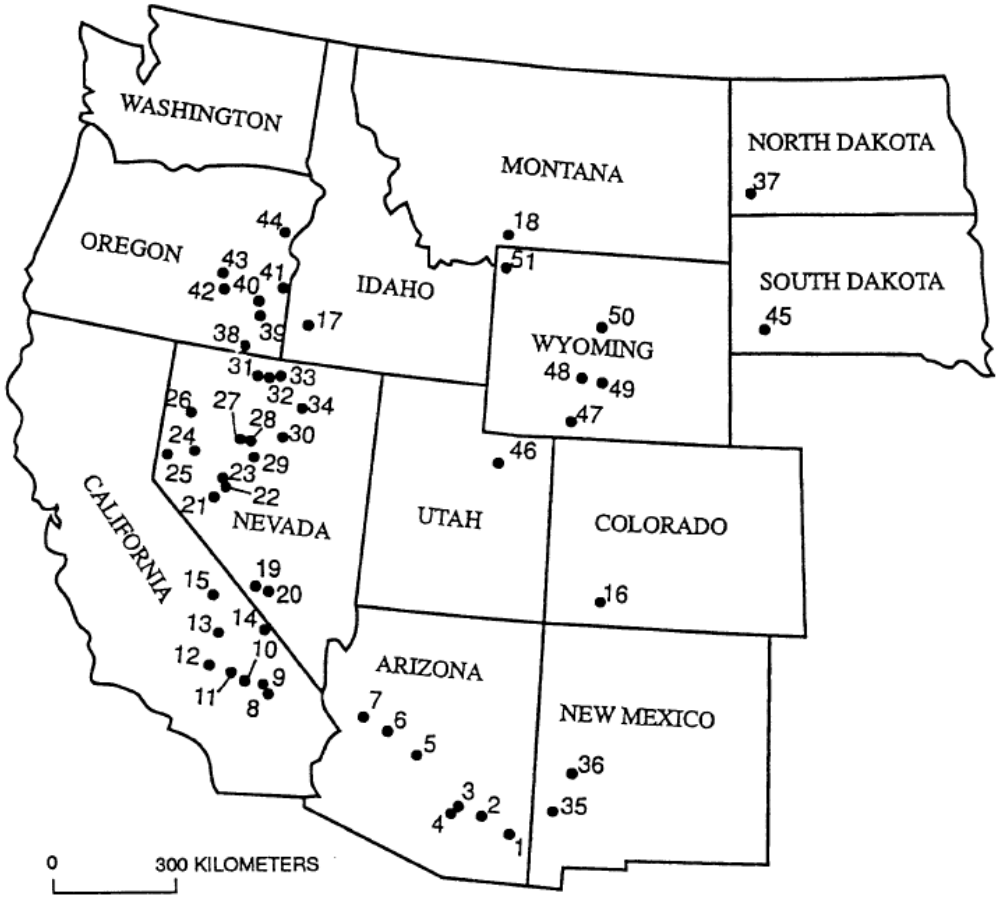
Chemicals in Fugitive Dust

- Composition of fugitive dust depends on the type and source.
- Some common chemicals in fugitive dust
  - Elements
    - Lead.
    - Aluminum.
    - Zinc.
    - Vanadium.
    - Iron.
    - Silicon.
    - Calcium.
    - Arsenic.
  - Minerals
    - Zeolites
      - Erionite.
      - Offertite.

Chemicals in Fugitive Dust

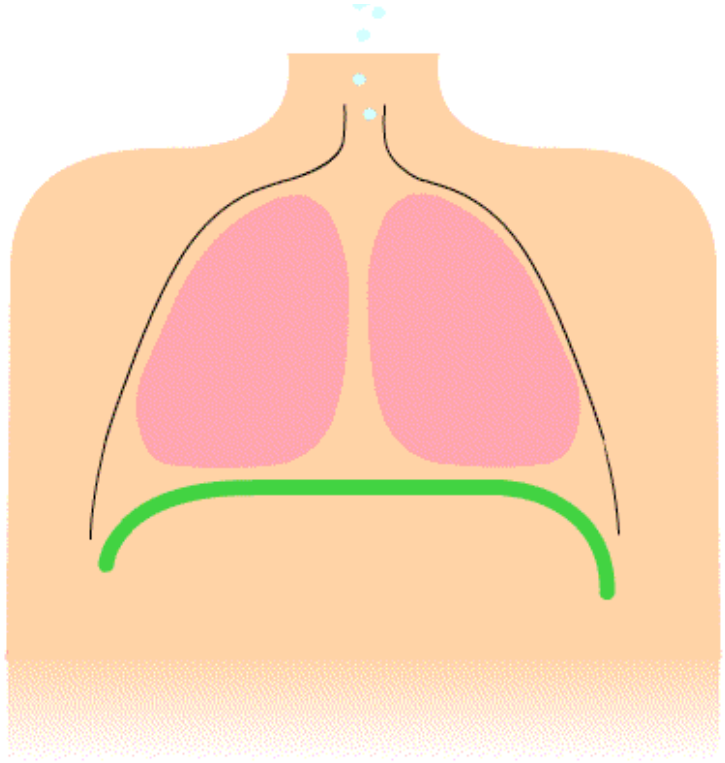
- Some common chemicals in fugitive dust (Cont.)
  - Compounds
    - Platinum group derivatives.
      - Platinum (Pt), Palladium (Pd), Rhodium (Rh).
    - Polycyclic aromatic hydrocarbon.

Location of Erionite Occurrence in USA



Map source: Center for Disease Control and Prevention

Health Effects of Fugitive Dust



Picture credit : Wikimedia commons

Health Effects of Fugitive Dust

- Respiratory system
  - Respiratory distress.
  - Asthma.
  - Chronic obstructive pulmonary disease (COPD).
  - Pneumoconiosis.
  - Fungal infection.
  - Cancer.
    - Mesothelioma.
- Cardiovascular system
  - Increased mortality due to cardiovascular disease.

Health Effects of Fugitive Dust

- Other health issues
  - Low birth weight in newborn babies.
  - Premature death.
  - Cancer.

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