



Joint Departmental Fact Sheet

Date issued: May 1, 2009

Dust concerns at downtown Juneau transportation center construction site

Background

The City and Borough of Juneau is constructing a parking garage and transit center in downtown Juneau at the base of Telephone Hill. In late 2008, contractors began site work, including demolition of existing structures and excavation of soil and underlying rock. Site work is expected to be completed in May and construction of the garage and transit center will follow.

In January, the Alaska Department of Environmental Conservation (DEC) began receiving complaints related to the site work. They included excessive dust and health issues. Responding to complaints, DEC sent inspectors to conduct seven site inspections, as well as several informal visits. During inspections, staff observed mitigation (control) measures in place to minimize dust. The City of Juneau also contacted the Alaska Department of Health and Social Services (DHSS) regarding residents' health concerns related to the site work. Concerns included silicosis, a lung disease caused by overexposure to dust containing crystalline silica. DHSS reported that short term exposure to dust in the air is not considered a risk factor for the development of silicosis. Rather, silicosis is a concern for people who are exposed through their jobs to very high levels of silica-containing dust, usually over long periods of time. Both agencies are concerned about public health and the potential for dust generated by the site work. DEC will continue to monitor the work through construction.

More information is provided below for those interested in additional detail on inspections, mitigation measures, and regulations covering dust and health issues.

Relevant Regulation Citations:

- 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.
- 18 AAC 50.110: Air pollution prohibited. No person may permit any emission which is injurious to human health or welfare, animal or plant life, or property, or which would unreasonably interfere with the enjoyment of life or property.

Complaints Received:

- DEC staff received 5 complaints; others were relayed by local legislative offices. Issues expressed were:
 - Excessive dust
 - Health concerns (pets and residents)
 - Welfare (dust getting inside residence)
 - Asbestos
 - Silicosis
 - Worker safety
 - Questioned effectiveness of drill rig emission controls

Air Quality Inspections Conducted:

- 1/15/09, 1/29/09, 2/19/09, 3/17/09, 4/10/09, 4/28/09
- Several undocumented walk-bys

Mitigation Efforts:

- The DEC inspector has had discussions with the contractor, contractor's representative and city engineering oversight on dust mitigation and control issues. The following efforts have been enacted:
 - Water application on roadway to prevent tracked dirt from vehicle traffic
 - Truck wash station to prevent dust from departing via vehicle road wheels
 - Water sprinkler application on waste rock pile (single sprinkler has been used, DEC has recommended sprinkling to be increased)
 - Contractor has stated that the site is watered down each evening before departing
 - Visqueen/plastic sheeting application on doors and windows of affected residences at residents' request
 - Drill machinery has dust control technology
 - Drill machinery increased filter maintenance exceeding manufacturer's recommendations or specified periodicity
 - Erosion control matting which helps also prevent wind-entrained dirt from being made into airborne particulate

Monitoring:

- DEC has monitored dust mitigation efforts to ensure that reasonable precautions were in place and being followed to control dust escaping from the construction site. Winter-season site reduction operations often precluded the use of water as a dust control mechanism due to freezing conditions and ice formation for a significant portion of the duration of the site reduction. Seasonal snow cover provided a positive effect as noted by the residents.
- Wilson Engineering has contracted for an analysis of the drill dust in order to determine the geological makeup and composition of three representative samples, to see whether they contain crystalline silica, in order to provide information to affected residents.

Public Outreach:

- Contractor has stated several times that they attend public “neighborhood group” meetings with the affected residents to discuss mitigation efforts and current progress. DEC has not been invited to, nor notified of these meetings.
- DEC has conducted a follow-up informational telephone call with a group of individuals voicing complaints.

Health information**Particulate Matter Health Standards:**

U.S. Environmental Protection Agency (EPA) health research tells us that dust, measured as particulate matter 10 micrometers or less in size (PM10), can cause health problems. People with heart disease, those with existing breathing problems (like asthma); children and the elderly are more susceptible to dust than others. These problems include:

- short term airway irritation;
- aggravation of existing heart disease;
- aggravation of existing lung disease (like asthma); and
- damage to lung tissue

The EPA establishes national ambient air quality standards for Particulate Matter. For PM10, the EPA standard is 150 $\mu\text{g}/\text{m}^3$ for a 24-hour period.

For comparison purposes:

- The diameter of a single human hair is approximately 70 micrometers or seven times larger than the largest PM10 particles.
- Air pollution standards are given as a mass of material in a volume of air: micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). A microgram is one millionth of a gram. A paper clip weighs about a gram. Imagine chopping the paperclip into a million equally sized pieces. One of those pieces would weigh about a microgram. A cubic meter (approximately 39" X 39" X 39") describes a volume of air that is about the size of a washing machine. If you place one of the million pieces of the paper clip in the space occupied by the washing machine, you would have 1 $\mu\text{g}/\text{m}^3$.
- Based on DEC's observations of the site, we have no reason to believe national ambient air quality standards for PM 10 have been exceeded.

The difference between PM 2.5 and PM 10:

Juneau's Mendenhall Valley is a nonattainment area for fine particulate matter under National Air Quality Standards. A "nonattainment area" does not meet air quality standards for a pollutant – fine particulate matter in this instance. Fine particulate matter consists of particles and droplets that are smaller than 2.5 micrometers—about one-thirtieth of the diameter of human hair. It typically comes from power plants, vehicles, wood burning stoves and wildfires. The tiny particles can cause health problems when inhaled. The air quality in the Mendenhall Valley is not affected by construction work at the downtown transportation center. (Smoke from wood burning is responsible for air pollution in the Valley.)

Silicosis:

Citizens have expressed concerns about the potential for silicosis from dust exposure. Short term exposure to ambient dust is not considered a risk factor for the development of silicosis. Rather, silicosis is a concern for people who are exposed occupationally to very high levels of silica-containing dust, usually over long periods of time. Worker tasks associated with the development of silicosis include jackhammer operation and sandblasting.

Silicosis is a disabling and sometimes fatal lung disease caused by overexposure to dust containing crystalline silica. Silicosis cannot be cured, but it can be prevented.

Crystalline silica is found in materials such as sand, concrete, masonry, rock, granite, and many building and landscaping materials.

Contacts for information provided on this fact sheet:

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