



Alaska Native Village Air Quality Fact Sheet Series

Road Dust



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United States Environmental Protection Agency Region 10



What is in road dust?

Road dust is earthen material or dirt that becomes airborne, primarily by the friction of tires moving on unpaved dirt roads and dust-covered paved roads. It consists mainly of coarse particles, which in some cases may be contaminated with man-made and naturally-occurring pollutants such as asbestos, mining by-products, animal and human waste, snow and ice control applications (salts) and engine oil.

How does airborne dust affect health?

Road dust is made of coarse particles that can aggravate heart or lung-related conditions such as asthma when inhaled through the nose and mouth. Although coarse particles do not go as deep into the lungs as fine particles, they can still have adverse impacts to susceptible individuals. Sensitive individuals or people with respiratory conditions can reduce their health risks by staying indoors or away from dirt roads when there are dry conditions with significant traffic or wind.

When berries and drying fish that are exposed to airborne dust, people eat it with the subsistence foods. Food exposed to road dust should be rinsed before it is eaten.

Why is road dust a major concern in rural Alaska?

In most Alaska Native Villages, there are many dirt roads and even paved roads are often covered with dust. This dust becomes airborne during dry and windy conditions, particularly when the dust is disturbed by vehicles. Homes in rural villages are often built right next to roads without vegetation (lawn, shrubbery or gardens) to buffer the houses from dust made airborne by traffic.

What is the most common cause of road dust?

All Terrain Vehicles (ATVs) or “four-wheelers” are the most common cause of road dust in. Their knobby tires tear up and disturb dirt roads and increase the amount of dust that becomes airborne to be inhaled or deposited on subsistence foods.

Reducing vehicle speed on dry days will reduce the amount of road dust in the air. Sensitive individuals should remain indoors and limit outdoor activities during periods of airborne dust.

Tips for Reducing Road Dust

- Reduce driving and vehicle speeds, especially four-wheelers.
- Water roads in dry weather.
- Grade and gravel roads.
- Apply chemical dust suppressants, if safe for community and environment.



All terrain vehicles and four-wheelers stir up road dust.

Other ANV Air Fact Sheets

- Diesel Fuel Use
- Indoor Air
- Solid Waste Burning
- Wood Smoke

For these fact sheets and related videos, visit:

www.epa.gov/region10/tribal/air/alaska.html

How can communities reduce road dust?

Reduced vehicle speeds

Villages can enact tribal ordinances to reduce speed limits. Villages can also educate villagers about the health effects of road dust and post signs warning drivers to drive slowly during the dry season. Either or both methods are very low cost remedies and can be quite effective if drivers understand why it helps protect the health of children and elders to limit speeds and obey the ordinances or speed warnings. Communities can take action to discourage the use of ATVs or to reduce their speed during the driest days of the summer season. High winds can also generate dust from dirt roads, airstrips, or other disturbed terrain.

Graded roads with gravel or water

Gravel can effectively reduce dust emissions from dirt roads if applied to a properly prepared road on an annual basis. This option can be moderately expensive because of the costs of road preparation and obtaining and placing the gravel with heavy equipment. It is important to know the content of the gravel applied to prevent contamination with naturally occurring pollutants, such as asbestos.

Road watering can also be effective in reducing road dust as long as the watering is carried out frequently during the dry season. This option is moderately expensive and would include the cost of maintenance and operation of a water applicator. Common applicators are either a truck or a trailer sprayer that can be pulled by a four-wheeler or truck.

Chemical Dust Suppressants

Commercial dust suppressors, such as calcium chloride or magnesium chloride, are substances designed to bind to road dust and reduce the amount of dust that becomes airborne.

These suppressants would have to be applied anywhere from a couple times per year to once every 2-3 years to be effective. This option would likely be the most expensive and would include the cost of the chemical, its transport to the community

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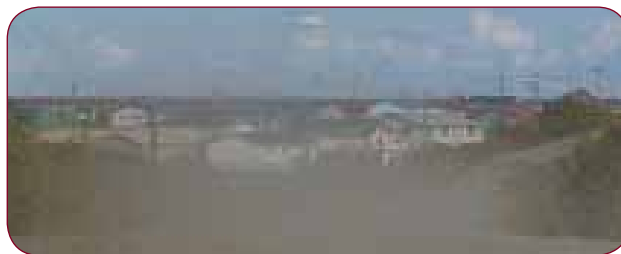
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and the cost of operating the equipment needed to apply the chemicals on the dirt roads.

Some chemical suppressants have corrosive or other undesirable impacts on equipment or the environment. Communities should investigate these impacts prior to purchase and use.



ANVs can take action to reduce road dust.

How can an ANV take action?

- Recruit partners and stakeholders (Tribal council, village elders, schools, regional and village corporations, transportation departments, environmental staff, borough managers, clinics, businesses, etc.) to develop a strategy for controlling road dust. Stakeholders can also help provide education about road dust pollution and mitigation to their constituents.
- Learn from other Alaskan Native Villages, or state/local agencies such as the Alaska Department of Transportation and universities, about what they have done to control road dust. Find out what methods were most successful in addressing the problem. Make recommendation to appropriate community leaders and get necessary approvals to seek financial or technical support, if necessary. Identify possible sources of funding to help implement the road dust control strategies, such as the Bureau of Indian Affairs Indian Reservations Roads (BIA IRR) Program.

Learn more on the web

EPA Road Dust Control:

www.epa.gov/owow/NPS/gravelroads/sec4.pdf

Alaska Department of Environmental Conservation:

www.dec.alaska.gov/air/anpms/pm/dust.htm

BIA Indian Reservations Roads Program:

www.bia.gov/WhoWeAre/BIA/OIS/Transportation/IRR/index.htm