

Dust Management in Rural Alaska

GTAC Transportation Subcommittee Meeting
June 19, 2018

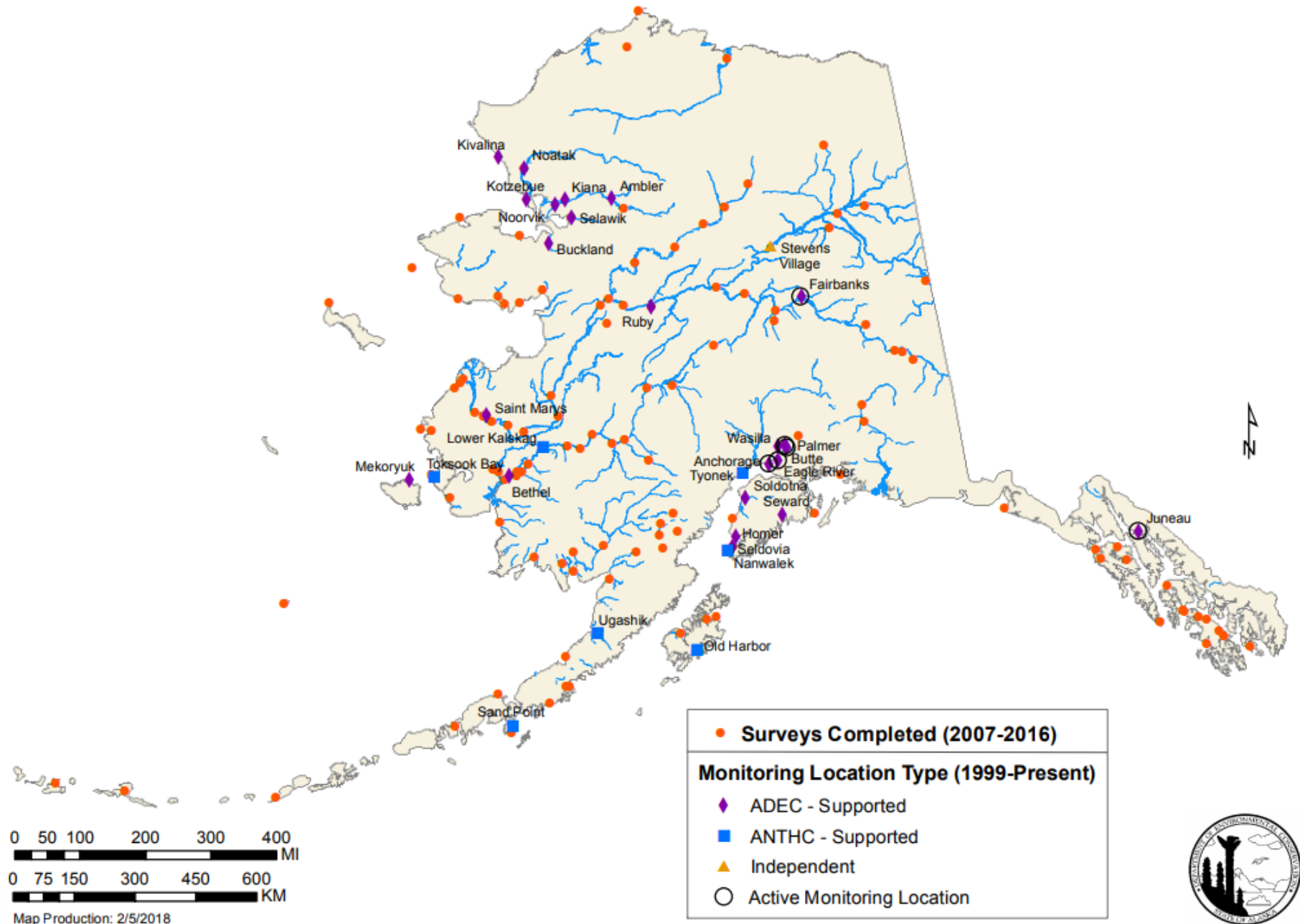
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EPA Region 10



Outline

- Why focus on road dust?
- Sources of road dust
- Dust management approaches
- Overview of EPA and partner efforts
- Funding and assistance available
- Challenges and opportunities

Dust Monitoring and Community Self-Assessment



Dust Impacts...

HEALTH

- Breathing dust, and any contaminants that may have mixed with it, aggravates respiratory conditions

SUBSISTENCE

- Dust being blown onto fish racks and subsistence foods

ENVIRONMENT

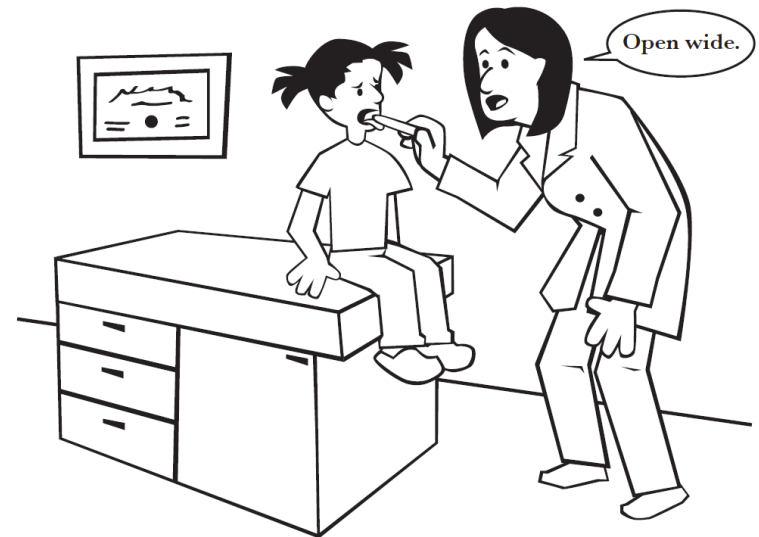
- Dust ends up in streams and covers vegetation

SAFETY

- Visibility and road safety issues from airborne dust

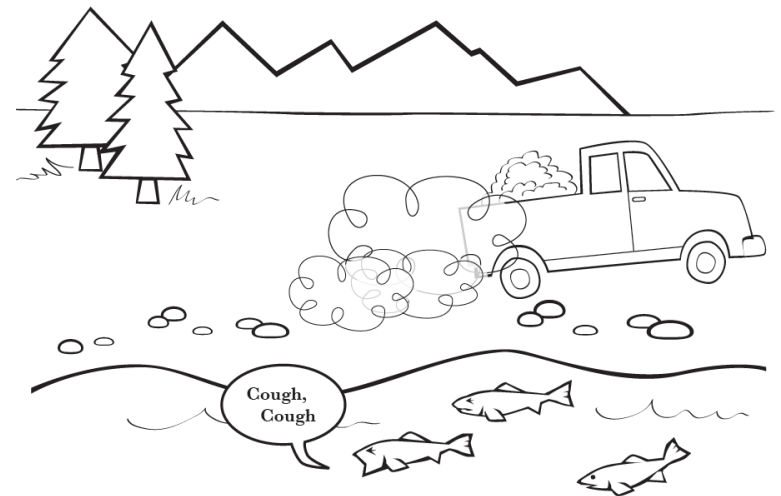
QUALITY OF LIFE

- Dust is a nuisance!



Too much dust can make me sick.

3



Too much dust can make the fish sick.

Sources of Dust

- Vehicles and ATVs on unpaved roads
- Human activities (such as driving) on areas without vegetation
- Wind blowing across unpaved roads, runways, and dry riverbeds
- Gravel pits



Dust Management Approaches

- The appropriate level of dust management will vary by climate and region
- These approaches should build on each other
- Good road design and maintenance, paired with behavior change, are key components of dust management at all levels

Level 1: South and SE Alaska

- Road design and maintenance
- Behavior change, driving slower

Level 2: Western parts of Alaska

- Road design and maintenance
- Behavior change, driving slower
- *Road watering*

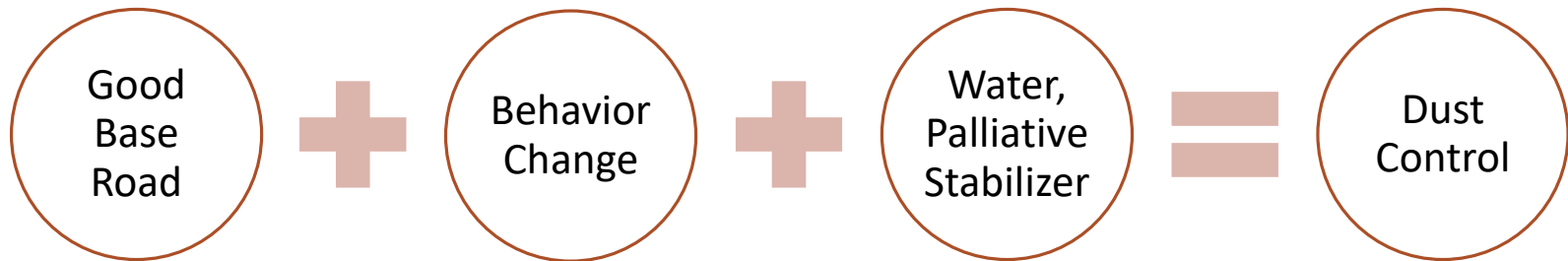
Level 3: Interior Alaska

- Road design and maintenance
- Behavior change, driving slower
- *Chemical dust suppressants*

Level 4: North Slope Alaska

- Paving

Formula for Dust Management



*Tribes can have **immediate impacts** by supporting behavior change and starting with a good base road.*



Work in Progress

Research and Sources of Data

- Ruby Pilot Project
- RARE Project – Palliative Toxicity
- Identifying Funding Sources
- University of AK, Fairbanks
- ANTHC Phase 1 AQ Assessments
- ADEC Rural Dust Survey
- ETEPs

Outreach Materials

Technical Assistance

Tools

- Community Road Dust Self-Assessment
- Mapping Tools
- GAP Workplan Template
- **Road Dust Toolkit**

Dust Videos

TV Dust Commercial (ADEC)

http://dec.alaska.gov/air/anpms/pm/video_dust.htm



Keep the Dust Down (ADEC)

<https://www.youtube.com/watch?v=yLgeaN9YoN8>



Clean Air, Healthy Villages: Road Dust (EPA)

<https://www.youtube.com/watch?v=7Jghut7waR4>



Dust Pamphlets (ADEC)

MY COMMUNITY HAS A DUST PROBLEM.

Is visibility poor due to an increase in dust particulates?

Has there been an increase in complaints surrounding air quality or respiratory issues?

Does ATV traffic raise dust on dry days?

WHAT CAN YOU DO?

- 1. Present concerns to community and tribal councils.** With council approval and a resolution of support, begin dust monitoring.
- 2. Funding opportunities** may be available. Contact your EPA tribal coordinator for more information. If seeking your ISAP grant it an option make it a council priority.
- 3. Training** is available for monitoring air quality and project management from the USEP.
- 4. Monitor the air quality** in your area using EPA reference monitors and following EPA using guidance. Collect a minimum three readings over a 24 hour period - midnight to midnight. Minimum monitoring period May - September.
- 5. Report your findings** to your village council.



Community Dust


DUST CONTROL

CONTROL ACTION	ADVANTAGES	DISADVANTAGES
Water	Water is cheap. Reduces dust.	Can be messy. High water use. Large volume required.
Chemical dust suppressants	Can be applied to roads and parking lots.	Can be expensive. May pollute water. Some are hazardous. Some may not be environmentally friendly.
Water trucks	Can be used on roads and parking lots.	Can be expensive. High water use. Large volume required.
Water trucks with chemical dust suppressants	Can be used on roads and parking lots.	Can be expensive. May pollute water. Some are hazardous. Some may not be environmentally friendly.
Water trucks with chemical dust suppressants and water trucks	Can be used on roads and parking lots.	Can be expensive. High water use. Large volume required.




Dust Control

DUST & POTENTIAL HEALTH RISKS.



Dust can irritate the respiratory system and cause asthma and other lung problems. Dust can also cause eye irritation and other health problems. Dust can also cause skin irritation and other health problems.

The dust that you breathe in can be harmful to your health. Dust can irritate your eyes, nose, and throat. Dust can also cause skin irritation and other health problems.



For more information on dust and health risks, visit the EPA website at www.epa.gov/airquality/dust.

Dust Health Risks

<https://dec.alaska.gov/air/anpms/pm/dust.htm>

Other Outreach Materials

Dust Activity Book for Kids (ADEC)

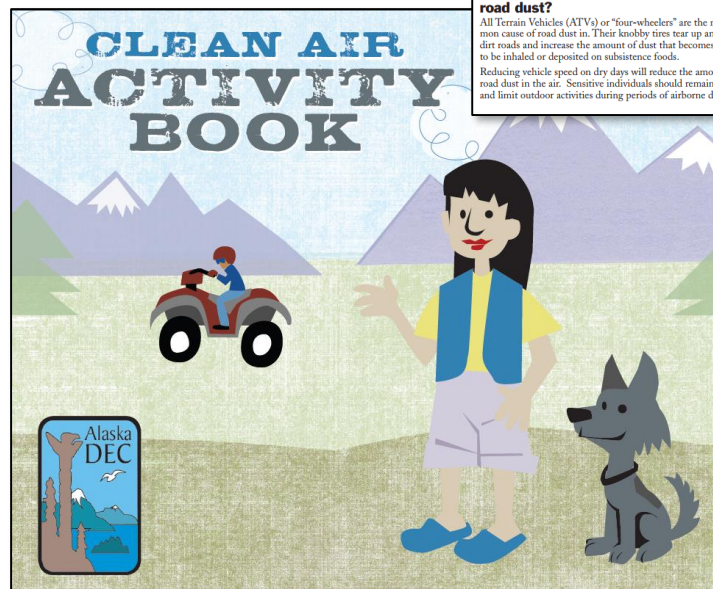
<http://dec.alaska.gov/air/doc/dust-activity-book.pdf>

Dust Radio Commercial (ADEC)

[https://dec.alaska.gov/air/anpms/doc-anpms/Clear the Air.mp3](https://dec.alaska.gov/air/anpms/doc-anpms/Clear%20the%20Air.mp3)

Dust Fact Sheet (EPA)

<https://nepis.epa.gov/Exe/ZyPDF.cgi/P100IDL0.PDF?Dockkey=P100IDLO.PDF>



Alaska Native Village Air Quality Fact Sheet Series
Road Dust

EPA 910-F-10-005 April 2014 United States Environmental Protection Agency Region 10

What is in road dust?
Road dust is carbon 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 (lawns, 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.

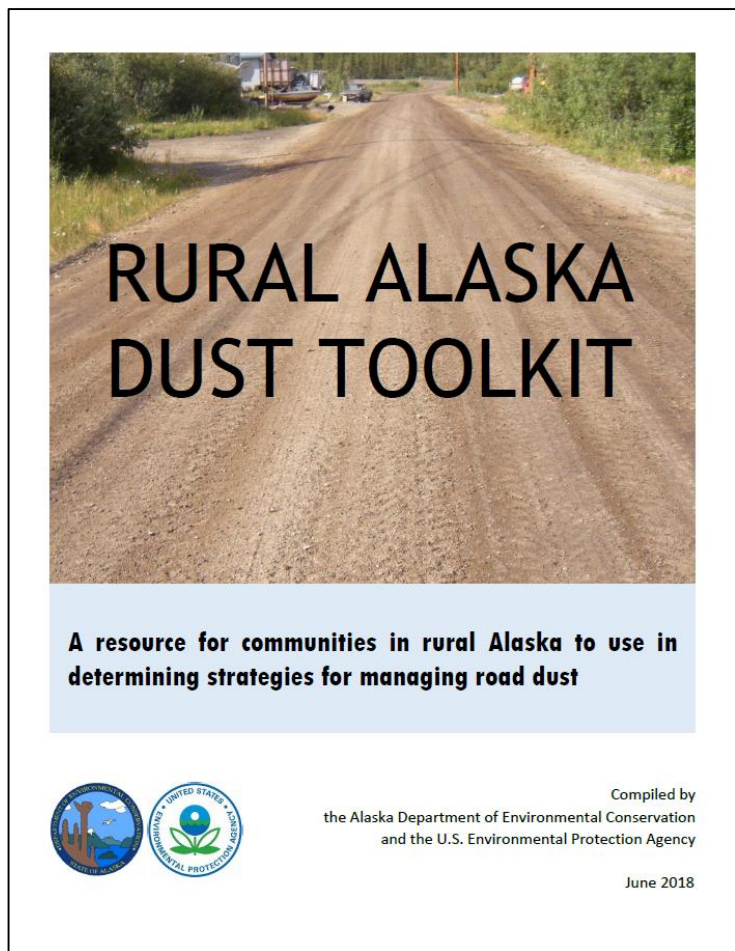
All terrain vehicles and four-wheelers stir up road dust.

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

Dust Toolkit



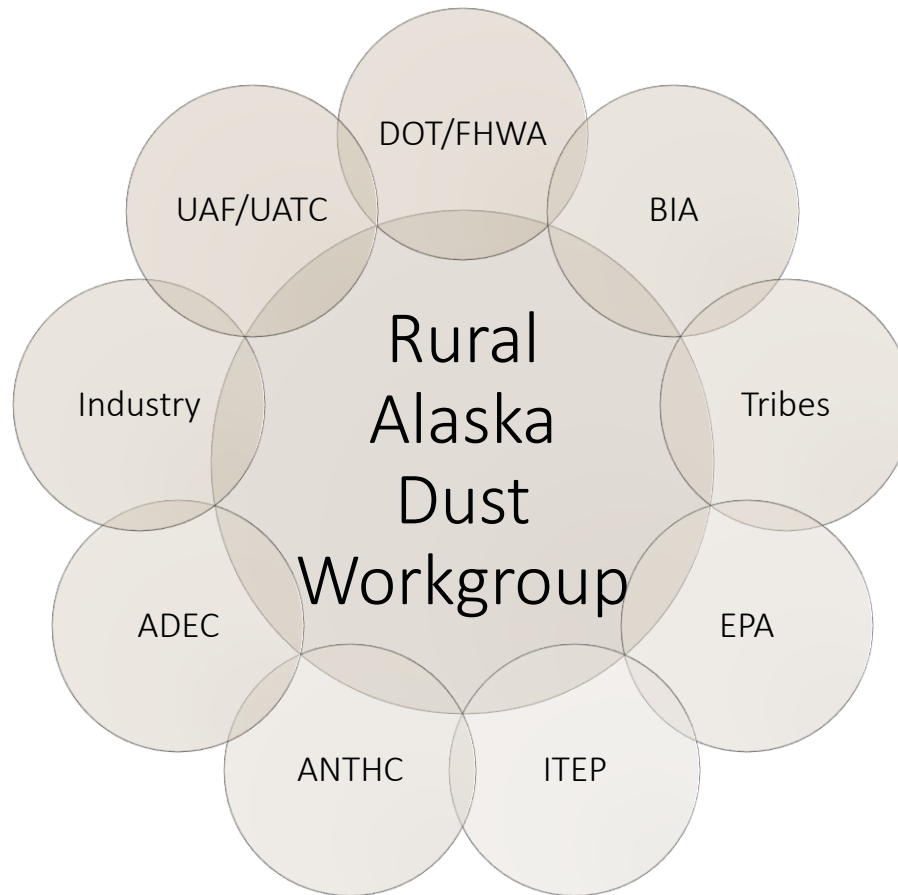
Toolkit Sections

1. Self-Assessment
2. Behavior Change
3. Road Design and Maintenance
4. Dust Suppressants
5. Dust Monitoring
6. Funding Guide
7. Contacts and Resources

<http://dec.alaska.gov/media/6390/final-dust-toolkit-061518.pdf>

Rural Alaska Dust Workgroup

Working together to control dust in Alaska



Funding and Technical Assistance

Alaska Native Tribal Health Consortium (ANTHC)

- On the ground assistance assessing and improving air quality and developing community education strategies; mini-grant program

Environmental Protection Agency (EPA)

- Help connecting to other agencies – e.g. setting up a conversation with funders and other dust experts; funding through GAP program

Alaska Department of Environmental Conservation (ADEC)

- Help determining monitoring needs; educating decision-makers and the community; implementing low-cost, immediate solutions

University of Alaska, Alaska University Transportation Center (AUTC)

- Soil testing to provide recommendations on dust suppressant application rates; research on applying and assessing the performance of dust suppressants

Challenges to this Work

Dust control is a long-term need

- Tribes that are in regions that necessitate the use of dust suppressants will need to reapply them every season

Resources and funding

- Available funds don't lend themselves to dust management
- Dust management can be covered by transportation funds, but with so many things fitting into this category, dust is often a lower priority

Takeaways and Opportunities

- Uncontrolled dust is a health issue
- The environmental sector has a role in dust control: coordination air monitoring, outreach tools, and community behavior change
- Effective dust management requires long-term planning, interdisciplinary support, and sustainable funding
- We will be more effective in supporting tribes on dust control if we can collaborate, leverage resources, and elevate this issue / needs

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