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Researchers trying to find best way to hold down road dust

ROADS: Experiments test new equipment as well as a new product for clean air.

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KNIK -- Residents on Hazel Avenue near Knik might have noticed a few peculiar things happening on their road last week: steel gadgets on tripods mounted beside the road, scientists with clipboards gathering data and a four-wheeler with a strange contraption attached to it running up and down the road for several hours.



enlarge
 MARC LESTER / Anchorage Daily News
 Ron Harvey, left, of Freedom Industries in Palmer, looks at an ATV-mounted instrument for measuring dust kicked up on an unpaved road near Knik Goose Bay Road about 12 miles southwest of Wasilla on July 1, 2010. Dave Barnes, center, and Travis Eckhoff of UAF took measurements to gather information about a Freedom Industries dust control application being tested there.

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It was all in the name of science -- road science.

A crew from the University of Alaska Fairbanks transportation research center was there, conducting tests on a four-wheeler mounted dust monitoring system that UAF civil engineering grad student Travis Eckhoff is trying to perfect.

Also there, state Department of Environmental Conservation employees were testing the effectiveness of different dust-

control methods.

DUST SUCKER

It might look like Eckhoff is just out to see how his four-wheeler runs. But there's a lot more going on with his repeated trips up and down the road. Using

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a long, clear tube attached to a plastic device mounted behind the rear tire of a four-wheeler, a small machine sucks air past a laser, recording the opacity, or how murky the air is, as it goes by.

Eckhoff was testing the machine on Hazel Avenue because the Mat-Su Borough had just applied a new dust-settling agent on one-third mile of the road there and wanted to see how effective the treatment was compared to calcium chloride, which the borough usually uses for dust control. They were also testing a "control" strip, a one-third mile stretch of untreated gravel.

The new chemical mix, paid for by the borough and made by Palmer motorcycle shop owner Ron Harvey, is derived from tree resin. Harvey said it's less corrosive to metal than calcium chloride, and he thinks it will be more effective in keeping dust down: once sprayed, it binds dust and gravel together and doesn't absorb water. He's also supplying the binder solution for tests on the road to Red Dog zinc and lead mine near Kotzebue and elsewhere in Alaska.

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But is it more effective than calcium chloride, the dust-control method local road crews have been using for years?

University of Alaska Fairbanks professor David Barnes said no one really knows. No one has really tested one dust-control method versus another in different soil conditions and over time. That's where the machine he and Eckhoff are developing comes in.

A MULTIMILLION-DOLLAR INDUSTRY

This is Eckhoff's second summer working with the portable dust-measuring device.

Last summer he logged about 400 miles on the back of a four-wheeler, measuring dust at

14 gravel landing strips at remote Alaska villages with Barnes.

Barnes said there's no other portable measuring device on the market like the one Eckhoff is working with. Most are bulky devices that must be mounted on a flatbed truck, Eckhoff said. That's not practical if the goal is to test at remote villages, where hauling equipment by plane is a necessity.

Because keeping dust down on gravel roads and at industrial sites is a multimillion-dollar industry, companies like 3M and Midwest Industrial Supply are interested in buying and manufacturing the machine, Barnes said.

That is, if the two men can work out the fine points, such as just how far from the tire the air intake should be mounted, and what kind of collection chamber should be used to make sure the dust is just passing through, not collecting in the chamber and giving readings that are falsely high.

PRESCRIBING DUST SOLUTIONS

While Eckhoff and Barnes worked on the portable testing unit, Barbara Trost was just up the road with a crew measuring how much road dust was in the air. Trost is air-quality-monitoring program manager for the state DEC.

It was a mild day filled with sunny breaks and only an occasional breeze. It wasn't very dusty, even when a motor home sped by.

Trost said the readings were well below the point where the state gets concerned about air quality.

But air quality wasn't the main focus of Trost and her crew; they were interested in how the readings beside the untreated section of road would differ from readings on the treated part.

Trost said the state has pledged to spend \$660,000 this year testing various dust-settling applications to develop a matrix outlining which work better in different areas. Barnes and Eckhoff are helping with the project.

Usually the state (and the Mat-Su Borough) sprays calcium chloride on gravel roads in the spring or summer to keep dust down. But that chemical mix can be corrosive to metal, and some communities are seeking alternatives.

Trost's crew is also looking into whether some treatment is better than nothing at all.

"Most of them don't have anything on their dirt roads," she said of some villages, where paved roads are few.

No treatment could spell problems for people with asthma or respiratory problems, Trost said. Continued exposure to dust can also cause cardiovascular problems, she said.

Trost said her office and the Department of Transportation, which is also participating in the study, are constantly asked which dust-control measures would work best for this village or that one.

There isn't a definitive answer yet, she said.

SAFE FOR KIDS?

The project is looking at eight communities with too-high dust levels. There, using a spreader that can be pulled with a pickup or a four-wheeler, several kinds of dust-control measures will be tested, from water to calcium chloride to the tree-resin-based solution sprayed on Hazel Avenue last week.

Can it be shipped easily to a village? Can it be stored outside or will freezing destroy it?

There are a lot of questions to be answered, Trost said, and the underlying question every village wants to know is, is it safe for kids to play on?

Trost said the state hopes to learn which chemicals work best on which soil, as well as which last longest and logistically would work best in different communities.

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treewatchin wrote on 07/12/2010 08:44:53 AM:

the stuff on my road seems to work ok....it appears to be like a paraffin wax like stuff no smell and it isn't like stcking to anything but the ground i like it and the dust is kept to a minimum

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BornFree wrote on 07/09/2010 11:35:52 PM:

Pave it, dang it! Don't make anyone breathe the stuff that's most likely just as toxic as the dust.

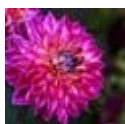
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akcanuc wrote on 07/09/2010 02:15:10 PM:

What about chip seal?

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alaska72 wrote on 07/09/2010 11:04:38 AM:

Why is it that I have to call the borough to plead for them to come and plow my road during the winter months and this summer they came and did the calcium chloride all

on their own? I am assuming who ever did the application didn't really know what the heck they were doing since there are trees dying along our road now :(Same thing in the neighborhoods around here where I walk my dog. Too bad no one will be held responsible, as usual.

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Lurch2 wrote on 07/09/2010 09:10:15 AM:

And the state wonders why the people think the budget is too high.

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phyllum69 wrote on 07/09/2010 08:34:49 AM:

Within the Matsu Borough? Pavement seems to work pretty well...

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