

## **Magchloride's effects on health scrutinized**

**Some mountain residents claim chemical de-icer makes them sick**

By Jane Stebbins

Special to The Aspen Times

Editor's note: This is the third in a series of five articles on the history and use of magnesium chloride, the liquid de-icer used by the Colorado Department of Transportation to clear state highways of snow.

When it snows, Judy Pearce gets sick. Really sick.

The Aspen woman is plagued by intense headaches, a complete lack of energy, odd growths under her toenails and fingernails and sporadic problems with her vision. She can no longer ski, is too tired to work out - even returning phone calls is difficult. And each winter, it gets worse.

Pearce blames her deteriorating health on magnesium chloride, the de-icer used by the Colorado Department of Transportation to keep roads free of snow and ice.

"At first I thought I might be allergic to something," Pearce wrote in a letter to Gov. Bill Owens. "So I ripped out all the carpeting in my house, locked my windows for a year and a half, began drinking filtered water, quit drinking red wine and changed my diet. Nothing worked."

In January 2000, when the snow stopped, Pearce felt great. But when it started up again, the headaches resumed. It occurred to her that her maladies could be brought on by the magnesium chloride, which CDOT applies before snowstorms.

Magnesium chloride is mixed with water and chemicals meant to inhibit rust. Those chemicals can include arsenic, cadmium, barium, chromium, zinc and manganese - and possibly others, depending on the mixture. Magnesium chloride mixtures melt snow, and because they have a lower freezing temperature than water, prevent the melted snow from freezing.

Following her hunch that the chemical mixture could be contributing to her maladies, Pearce paid for a urinalysis - which laboratory analysis indicated held an "alarmingly high level" of arsenic, she said. She then acquired a sample of mag chloride and sent it to Hazen Research in Golden for analysis. That lab test revealed high levels of arsenic and other toxic, heavy metals.

"I discovered that many of the symptoms I was suffering are the same symptoms as arsenic poisoning," she wrote in her letter to Owens.

Although doctors have yet to give her a definitive diagnosis, Pearce is convinced the

chemicals in the de-icer - notably the heavy metals - are the source of her medical problems.

"I know it's making me sick," Pearce said. "Once I figured out what was wrong, I did everything I could to stay away from it. Someone did my errands, they got my mail for me; I don't touch my car. They're telling me I'm nuts, but I know I'm not."

An Avon family moved out of the high country when family members started coming down with respiratory illnesses they attributed to mag chloride. Their doctors' diagnoses were inconclusive, as well. The family, which now lives in North Carolina, declined to comment.

Other than a few other anecdotal stories about people getting asthma and other serious upper-respiratory problems, however, there is nothing to indicate the de-icer is harmful to human health. And even those cases cannot be directly tied to exposure to magnesium chloride.

Pearce said she believes doctors don't want to point fingers.

Partly based on those anecdotal stories, many mountain communities, including Aspen, Basalt, Snowmass Village and Breckenridge, have banned the de-icer for wintertime use.

A study of air samples in Aspen showed "higher than acceptable" levels of arsenic, cadmium, chromium, barium and manganese in the air when mag chloride was applied, said Lee Cassin, director of the Aspen-Pitkin County Environmental Health Department.

Air quality experts were summoned to Breckenridge years ago when an air analyzer atop the Summit County Justice Center indicated there was a high degree of pollution in the air. Analysts eventually determined it was probably caused by a gust of wind that blew sand into the air.

Numerous studies commissioned by CDOT, which uses the de-icer, along with a salt-and-sand mixture, on Interstate 70 and some of its state highways, say the chemical is harmless to humans.

Some citizens, however, doubt the credibility of studies conducted on behalf of CDOT - or researchers hired by the department. Town councils have squirmed when debating the short-term benefits of the de-icer and the potential, unknown, long-term impacts on health and the environment. And newspaper editorials have questioned the studies, primarily based on stories like Pearce's.

Some wonder how much of the heavy metals are present, instead, as part of Colorado's mining legacy. Many wonder about the cumulative effects of heavy metals in waterways, air - and peoples' lungs.

Doctors wonder if the medical conditions people report are the result of sensitivity to

various elements - and perhaps the extra stress altitude places on some people, much like otherwise healthy people who get altitude sickness.

According to a study conducted by the Colorado Department of Public Health and Environment, health problems caused by mag chloride are no different from those caused by salt and sand applications.

"The department cannot confidently make statements as to the overall safety of magnesium chloride de-icers, though it appears that these de-icers pose no worse human health impacts than do street sand-and-salt mixtures," said Michael Silverstein, a planner with the Air Pollution Control Division.

"It has been our experience that magnesium chloride de-icers reduce particulate matter emissions from paved roadways, which is beneficial to human health," he continued.

The study results show no evidence mag chloride is carcinogenic, although quantitative toxicity data does not exist. The study did show people could suffer eye and lung irritation if the chemical is used in high concentrations.

Another study, conducted by the SeaCrest Group of Louisville - which was hired by CDOT - involved surveying heavy-equipment operators, bus drivers, mechanics and others involved in roadway operations.

Most of the respondents said they suffered eye, skin and respiratory problems - the majority of them in the Roaring Fork Transit District, on Highway 82 between Aspen and Glenwood Springs. Eighty-nine percent of maintenance workers reported symptoms, compared to 67 percent of bus washers and 20 percent of bus drivers.

Highway maintenance crews in District 2, which comprises Vail, Glenwood Springs, Aspen, Grand Junction and Montrose, reported the next highest number of complaints. Twenty-five percent of maintenance workers and 24 percent of equipment operators said they suffered skin, eye and respiratory problems. No one in District 5, along I-70 from Vail to the Eisenhower Tunnel, said they had any complaints.

The nature of complaints are in line with information from the Rocky Mountain Poison Center.

"There hasn't been anything significant reported," said Dr. Vik Bedarta, a poison center medical toxicologist. "There are people who report sensitive eyes and mucous membranes, but those are all reversible and mild."

Locally, general practitioners and ear, nose and throats physicians say they haven't seen any patients with symptoms that pointed to mag chloride.

"I'm worried about all the kids," Pearce said. "What are they going to say 20 years down the line - 'Oh, I guess we made a mistake?'"

Pearce, who stays indoors to protect her health, recently opened an antique business next to her house so she wouldn't have to drive up and down Highway 82. Last year she moved to Europe for four months during the winter - and returned feeling the best she had in years.

"I fought so hard," she said of her battle against the government. "There's only so much I could do. I couldn't fight with them anymore."

She doesn't want to move, either.

"It doesn't solve the problem for anybody else," she said. "I love it here."

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