Indoor Air Quality Monitor

May 2002

North Dakota Department of Health

Eye on Events

NEHA 2002 IAQ Conference

The National Environmental Health Association (NEHA) 2002 Indoor Air Quality Conference will be in Minneapolis, Minn. June 30 to July 2, 2002. The event will be held at the Minneapolis Hilton Hotel. For more information, see the calendar of events at http://www.neha.org/index.html or call NEHA at 303.756.9090.

World Asthma Day May 7, 2002

Governor John Hoeven signed a proclamation recognizing World Asthma Day, May 7, 2002, in North Dakota. The American Lung Association of North Dakota (ALAND) is conducting a fund raiser. Proceeds will help support asthma programs such as Open Airways for Schools and Dakota Superkids Asthma Camp in North Dakota. To participate, call ALAND at 1.800.252.6325.

Anhydrous Ammonia and IAQ in Minot

Typical tank car used to transport anhydrous ammonia by rail.

Anhydrous ammonia has many industrial uses and is a widely used source of nitrogen fertilizer in agriculture. Its fumes are colorless, highly irritating and can have a suffocating effect on people.

Symptoms of exposure include burning eyes, nose and throat. Coughing and choking may occur with exposure to higher doses. After a severe exposure, injury to the eyes, lungs, skin or digestive system may develop for 18 to 24 hours. Exposure to high levels of anhydrous ammonia fumes can cause death from a swollen throat or from chemical burns to the lungs.

Generally, the severity of symptoms depends upon the degree of exposure. Most people recover from a single low exposure without any delayed or long-term effects.

After a Canadian Pacific train derailment on Jan. 18, 2002, released nearly 300,000 gallons of anhydrous ammonia near Minot, N.D. there were environmental concerns regarding soil, water and air.

More than 70,000 cubic yards of contaminated soil has been excavated, contaminated ice from the Souris River was removed, water from the Souris River was tested, monitoring wells have been installed for an ongoing assessment of ground water and air sampling has been ongoing throughout the project.

One concern in Minot is whether or not there will be any lingering indoor air problems from the anhydrous ammonia. The concern involves whether any surface deposition of ammonium compounds from the plume occurred.

Initially health officials did express some concern over possible surface deposition of ammonium compound precipitates appearing in the form of a white powder.

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In order to address indoor air quality concerns, air testing and surface sampling of indoor environments was done in the Minot area.

Indoor air testing results have indicated that the only detectable levels of ammonia fumes indoors occurred in the homes close to the derailment site immediately after the derailment and during the soil excavation. Elevated levels of ammonia have not been detected in these homes since the completion of the excavation.

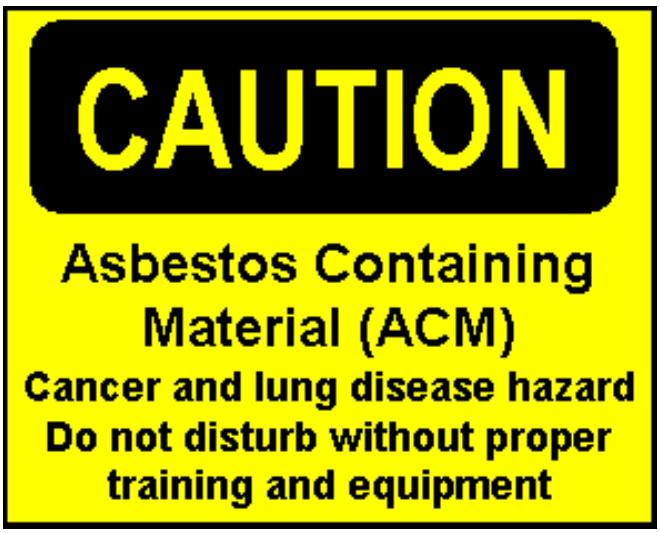
Surface sampling to date has not revealed elevated levels of ammonium compounds in excess of those found outside the plume area. Ammonium precipitates are very water soluble and can be cleaned using hot water.

For more information, contact First District Health Unit in Minot at 701.852.1376 or the North Dakota Department of Health at 701.328.5188.

Asbestos and Indoor Air Quality in Residences

Most manufactured building materials made today do not contain asbestos, and the few that do contain asbestos are required to be labeled as such. However, asbestos-containing materials (ACM) manufactured and used in the past still can be found in many residences.

Items made of wood, plastic, glass and metal are not suspected to contain asbestos. The only sure way to determine if other building materials contain asbestos is to have a sample of the material analyzed at a laboratory. Only trained and certified professionals should take samples for asbestos analysis.



Asbestos was used in building materials because of its physical properties, such as its insulating ability, tensile strength, and resistance to abrasion. Some of the most common asbestos-containing building materials found in homes include:

- Pipe insulation – Steam pipes, boilers and furnace ducts may be insulated with ACM.
- Vinyl flooring – The backing and adhesives used with vinyl flooring may be ACM.
- Gaskets – Stoves and furnaces may have gaskets containing ACM.
- Decorative spray – Soundproofing or decorative spray used on walls and ceilings may contain asbestos.
- Roofing and siding materials – Asbestos cement shakes or siding and asphalt shingles may be ACM.
- Cement board – Cement wall board such as what might be found behind electrical breaker boxes may contain ACM.

If asbestos is present in a home, it doesn't necessarily mean that it is a problem. Since asbestos becomes a health hazard only when the fibers become airborne and are inhaled, the best action when dealing with asbestos-containing material that is in good condition is not to disturb it.

If asbestos-containing material found in a home is in bad condition (it is peeling, flaking, delaminating, etc.) or is subject to damage, steps should be taken to repair or remove the material. Repair usually involves encapsulation, sealing or covering the material. Repairing or removing ACM, should be done by a properly trained and certified professional.

Remember not to sand, saw, scrape, grind or drill holes in asbestos-containing material, and don't dust, sweep or vacuum debris that may contain asbestos fibers.

Limiting access to areas where ACM is located can reduce the risk of exposure to asbestos fibers by reducing the risk of disturbing the material.

Questions about asbestos should be directed to the North Dakota Department of Health at 701.328.5188.

IAQ Colleague

Grant Larson, EHP

This issue's IAQ colleague is Grant Larson, an environmental health practitioner at Fargo-Cass Public Health.

Grant received a bachelor's degree in environmental geology and technology from the University of North Dakota.

His duties at the health unit are wide ranging and include enforcing water quality standards, issuing septic system permits, assisting with epidemiological investigations, and resolving various environmental health complaints.

Grant is also a staff sergeant serving in the North Dakota Air National Guard at Hector Field in Fargo, N.D. Recently, he was selected for officer training.

"One of my most memorable experiences was getting to ride in an F-16 in January, 2001. It was blast," Grant said. "We went out over the ocean at more than 900 miles per hour and broke the sound barrier."

Grant is married but does not have any children yet. He enjoys water skiing, hunting and playing golf, hockey and tennis.

Tool Talk: Indoor Air Quality Equipment Review

Colorimetric dosimeter tubes are items that can be pulled from an indoor air quality tool box when needed. Colorimetric dosimeter tubes can be used to detect the level of exposure to a known gas over a measured amount of time.

Colorimetric dosimeter tubes are simple to use: each tube comes sealed at both ends. The tube is simply broken open at the ends and exposed to the air for a measured period of time.

Colorimetric dosimeters operate passively. In other words, they use natural air currents and diffusion; no air is mechanically drawn through the tube.

Each tube contains a chemical reagent that reacts with the known gas to produce a color change. The color change progresses up the tube with increased exposure to the gas. The tubes are marked with incremental lines and corresponding units of measurement, usually in parts per million (ppm), making it easy to determine the level of exposure immediately.

Colorimetric dosimeter tubes

Colorimetric dosimeter tube in a lapel clip

Typically, colorimetric dosimeters are used to determine the exposure of a worker during a work shift. Hence, many are designed for eight-hour exposure times. However, many can be used as long as enough unreacted reagent is left in the tube.

Dosimeter tubes have been also used to determine the exposure levels of a known gas at a stationary location such as a room in a building or a location outdoors.

For more information about passive dosimeter tubes, contact a safety supply company or the North Dakota Department of Health at 701.328.5188.

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