MPCA Mercury-Free Zone Program

Minnesota Pollution Control Agency

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Based on a study in northeastern Minnesota, Minnesota Pollution Control Agency (MPCA) staff determined that schools may contain large quantities of mercury. A pilot project conducted from autumn 2000 through early 2001 in the Lake Superior Basin found that, on average, schools had more than 4.5 pounds (lb.) of mercury and mercury-containing equipment.

After the pilot project, the MPCA's Lake Superior Initiative began a regional Mercury-Free Zone project in northeastern Minnesota to reduce the risk of occupational mercury exposure and mercury releases to the environment. Schools in seven counties were asked to participate. By September 2001, over 210 lb. of mercury and mercury-bearing equipment had been removed from 38 of the 57 participating schools, effectively preventing about 100 lb. of elemental mercury from ever polluting the environment.

Program went statewide in 2001.

In October 2001, the MPCA expanded its Mercury-Free Zone Program to all of Minnesota.

The program is designed to reduce potential mercury exposure risk to students, faculty and staff in middle schools and high schools and to keep mercury from ever polluting the environment by eliminating it from schools and by educating people about the dangers it poses.

The program also seeks to establish mercury-free zones in colleges and universities. On request, other public and industrial facilities are checked for mercury spills so they can be made mercury free as well.

The MPCA's Mercury-Free Zone Program uses Clancy, a specially trained mercury-detecting dog, and a Lumex mercury vapor analyzer that measures in nanograms of mercury per cubic meter of air. (A nanogram is one billionth of a gram.) Both help schools and other facilities discover spilled and unknown sources of mercury.

The ultimate goal is to keep mercury out of the environment.

Mercury is a nerve toxin that can harm humans and wildlife. It affects the brain, spinal cord, kidneys and liver.

When mercury contaminates lakes and streams, bacteria can convert it into the organic compound methylmercury. Once this very toxic substance enters the food chain, it never breaks down and accumulates in the flesh of fish. When we eat these fish, we run the risk of being poisoned by mercury. That's why it's imperative we do whatever we can to reduce mercury contamination of the environment.

Schools typically have elemental mercury, mercury-bearing thermometers and barometers in their laboratories or storerooms, and mercury-bearing blood pressure cuffs and fever thermometers in their nursing stations. Mercury and mercury-containing chemicals may be on shelves. Mercury may have accumulated in floor drains or sink traps. There may also be unknown mercury spills that need

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to be cleaned up. Mercury pollution in schools comes mostly from broken laboratory and fever thermometers. Broken fluorescent tubes are another source. And, "forgotten" mercury in drawers and cabinets can give off vapor into the air or get into the waste stream.

When managed correctly, mercury is not considered to be a general health threat to children in schools. However, it's not unusual for children to find mercury in a school and then spill or dump it in the school, on buses or at home. Under some circumstances, such a spill can lead to toxic exposure levels.

Except for energy-saving fluorescent lights, there's no reason to have mercury in schools. Effective alternatives exist for all mercury-bearing laboratory and medical equipment.

How the Mercury-Free Zone Program works

1. The MPCA invites schools to participate in the Mercury-Free Zone Program. By signing the Mercury-Free Zone pledge, a school or other facility agrees to:
   - inventory the mercury-containing items in its buildings;
   - turn in mercury and mercury-containing items for recycling;
   - purchase non-mercury alternatives;
   - implement a phase-out plan;
   - commit to an educational program about mercury for students, facility and staff; and
   - facilitate an assessment of its building(s) by the MPCA.

   The MPCA gives pledging schools a curriculum and a video to educate students about mercury and the dangers it poses. If funding allows, the schools also receive non-mercury laboratory and fever thermometers, blood pressure cuffs and barometers.
2. A Mercury-Free Zone Program representative contacts the school and sets up a time to exchange the mercury-containing equipment faculty and staff have found.
3. The MPCA drops off mercury-free replacement equipment. It also gives the participating school a mercury curriculum, an educational video; and a Mercury-Free Zone certificate.
4. MPCA staff works with the school or other facility to make sure the collected mercury and mercury-bearing equipment are recycled properly.
5. MPCA staff goes to the school to assess mercury exposure risk with the Lumex mercury vapor analyzer and/or Clancy.
6. MPCA mercury educator Carol Hubbard is available to make presentations to students, teachers and staff about the dangers of mercury, exposure pathways, and proper handling and recycling.

Program offers other benefits.

Eliminating mercury from schools is cheap insurance. Schools help themselves by avoiding very costly cleanups. In the pilot project, about $89 was spent for each pound of mercury eliminated. Cost to eliminate mercury from a building averaged about $309. (Costs do not include staff time.) Mercury cleanups can cost $5,000 to $250,000 and typically include short-term school closures.

Communities with the highest exposures to mercury are those in which fishing supplies a significant part of family diets. These communities often consist of people with lower incomes and Native Americans living on tribal lands. To the extent that the Mercury-Free Zone Program reduces the amount of mercury in fish, it will benefit those most at risk. By focusing on schools, the program equitably provides education to all segments of society. Publicity also reaches all segments of society. This not only informs people about mercury-removal efforts, but also raises their awareness of the mercury issue in general.

Mercury-Free Zone Program staff continue to expand the network of local solid waste officers and household hazardous waste facilities. Help will be needed during mercury collection, consolidation and recycling. The MPCA is working with the Minnesota Science Teachers Association, the Minnesota Department of Health and the Minnesota Department of Children, Families and Learning, to promote the program and develop educational opportunities.

For more information

For more information about the Mercury-Free Zone Program, call Carol Hubbard, MPCA mercury educator, at 651-282-2604 or e-mail her at carol.hubbard@pca.state.mn.us. More information is available also at www.mpca.state.mn.us/programs/mercury-free/index.htm.