



Hazardous Chemicals in the Environment: Weighing the Risks

This page provides information about how the Minnesota Department of Health (MDH) evaluates public health risks at sites or facilities where chemicals have been released into the environment. This includes hazardous waste sites, landfills, dumps, industrial and agricultural facilities, leaking underground storage tanks, and other places with contaminant releases.

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How does MDH evaluate a site?

The evaluation process has four parts:

- Evaluating exposure
- Evaluating toxicity
- Characterizing health concerns and developing recommendations
- Obtaining input from interested parties

(1) Evaluating Exposure

The mere presence of a toxic chemical does not necessarily mean that people are being exposed to a potential health hazard. People have to come in contact with the chemical-in sufficient amounts-before any health effects can occur.

Before a chemical can affect human health, there must be a complete "exposure pathway." This means that there must be a route by which a hazardous chemical can get into people's bodies at levels that can cause harm. A complete exposure pathway includes all of the following:

- a source of contamination, such as a leak, spill, or other discharge to the environment;
- an environmental "medium" (air, water, or soil) that can carry the contamination; and
- a person or people who come in contact with the contaminated medium.

People may come in contact with contaminants in a number of ways. The most common routes of exposure are skin contact, inhalation, and ingestion. In addition, a fetus can be exposed to toxic chemicals that have entered its mother's body and have passed through the placenta.

To evaluate exposure, MDH scientists review information about environmental conditions at the site. MDH determines from available information how much contamination is present, where it's found, and how people might be exposed to it.

(2) Evaluating Toxicity

If there is evidence that people are being exposed to contaminants -or that they could be

exposed- MDH scientists will seek to determine if there might be any potential health effects on the community. The evaluation is based on the best available scientific information.

When investigating public health concerns, MDH scientists look at both toxicity and exposure. "Toxic" means "poisonous." Some chemicals can be very toxic. This means that they are harmful even at very low levels of exposure. Others may be much less dangerous, even at relatively high levels of exposure. The toxic effects of a chemical can also vary from one person to another, based on factors such as age, body weight, nutritional status, the exposure route, and a person's genetic makeup.

The amount of chemical and length of time of exposure are also important in determining whether a public health threat is present. Brief exposure to a small amount of a highly toxic material can sometimes be as dangerous as exposure to a large amount of a low toxicity material for a long period.

The toxicity of the material, the amount and the length of time of exposure, must be considered when evaluating potential health effects.

(3) Characterizing Health Concerns and Developing Recommendations

MDH issues reports outlining our conclusions about any potential public health concerns posed by a hazardous chemical site. We also make recommendations for preventing or reducing human exposure to contaminants.

The role of MDH in sites where there are contaminant releases is primarily advisory, not regulatory. For that reason, our evaluations typically recommend actions to be taken by other agencies that do have regulatory authority--including the U.S. Environmental Protection Agency (EPA), the Minnesota Department of Agriculture (MDA), and the Minnesota Pollution Control Agency (MPCA).

However, if there is an immediate health threat, MDH will issue a public health advisory, warning people of the danger. At the same time we work in cooperation with others to resolve the problem.

(4) Obtaining Input from Interested Parties

The evaluation process is interactive. MDH starts by soliciting and evaluating information from government agencies, the community surrounding the site and the organizations or companies responsible for cleaning up the site or operating the facility.

MDH has a "cooperative agreement" with the federal Agency for Toxic Substances and Disease Registry (ATSDR) for the investigation of hazardous chemical sites. ATSDR, an agency of the U.S. Public Health Service, provides technical and financial support to MDH.

MDH also works regularly with the MPCA, MDA, local health departments and communities across the state, as well as with the U.S. EPA.

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How does MDH determine which sites to evaluate?

Each year MDH develops a work plan that includes a list of priority sites identified by ATSDR,

MPCA, MDA, and EPA. We also respond to requests from local health departments and other health agencies, and from Minnesotans who are concerned about sites. Any site where there may be a health hazard will be considered for evaluation.

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What happens when an investigation is completed?

When an investigation is finished, MDH issues a report on the site. The report describes the site's hazards and recommends actions designed to protect the health of the public.

Our reports on hazardous sites are distributed to government agencies involved in the investigation as well as citizens who request them. MDH mails letters or information sheets summarizing the site report to everyone who has expressed interest in the site. We also use a variety of other media-including community meetings-to explain our findings.

MDH works closely with all parties involved to see that our recommendations are carried out.

If you have questions or comments about MDH activities associated with chemical release sites, we encourage you to contact us. All of our site reports are public and available upon request.

Call Tannie Eshenaur 651-201-4897, or call toll free at 1-800/657-3908 and press "4" on your touch-tone phone. Or, email Tannie Eshenaur at health.hazard@state.mn.us

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This information was prepared in cooperation with The U.S. Agency for Toxic Substances and Disease Registry.

For more information about this page, please contact us at health.hazard@state.mn.us call 651-201-4897, or toll-free 1-800-657-3908 and press "4" to leave a message.

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