



Department of Environmental Protection

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Fact Sheet: Site Contamination and Health Concerns

Massachusetts law requires that human health be protected from harmful exposures to chemicals at hazardous waste sites. Under that law, the Massachusetts Department of Environmental Protection (MassDEP) enforces clean-up regulations that are designed to protect human health and the environment.

Could contamination from a site pose a risk of harmful health effects?

When people are exposed to chemical contamination from a waste site, the potential for health effects depends on the amount of a chemical taken into the body and the toxicity of the chemical. Chemicals can enter the body through activities such as drinking contaminated water and touching contaminated soil; this is called exposure. Many people who live or work near a waste site may not be exposed to contamination, so they would not be at a risk of harm.

How does MassDEP protect people from contamination?

MassDEP requires clean-up of waste sites to protect human health. To identify protective clean-up levels, MassDEP requires thorough risk assessments to evaluate the potential for health effects from the site. Risk assessments link the chemical toxicity and expected human exposure with the potential for health effects. The conclusions of the risk assessment determine contaminant levels at which an action should be taken to meet MassDEP risk limits and prevent health effects. *The assessments do not predict actual health outcomes; in other words, even if risks exceed MassDEP risk limits, the results do not mean you have been harmed or will experience health effects.*

What do the risk conclusions mean?

The risk assessment conclusions indicate whether site-related health effects can be ruled out or if clean-up is necessary. Risk assessments are designed to guide site cleanup activities that will protect human health. To link risk assessment results to clean-up decisions, MassDEP has established several risk levels of concern:

No Significant Risk means that long term exposure to chemicals from the site is not hazardous to health. The calculated health risks from current and foreseeable exposures must be below MassDEP limits to conclude No Significant Risk. A finding of No Significant Risk means a site is clean enough, and no further action is required to protect human health.

Significant Risk means that actions to reduce or eliminate exposures must be taken in order to protect against health effects from long term exposures.

This information is available in alternate format. Contact Michelle Waters-Ekanem, Director of Diversity/Civil Rights at 617-292-5751.

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Substantial Hazard means that actions to reduce or eliminate continued exposure must be taken to protect human health. If an ongoing exposure were allowed to continue for five more years at the site, it would pose a significant risk of harm to human health. A Substantial Hazard condition must be eliminated.

Imminent Hazard means that immediate action must be taken to reduce or eliminate the exposure at the site because short-term exposure (five years or less) poses a risk of harm to human health. An Imminent Hazard does not mean that health effects will occur. It means that health effects could result from short term exposures, and therefore immediate action to reduce or eliminate exposures is warranted.

How are risks estimated?

When contamination is discovered, environmental professionals evaluate the information about the chemical contamination at the waste site to determine whether it might pose a risk to human health. This is called a risk assessment, and it estimates the likelihood of health effects from exposures to hazardous chemicals. A risk assessment evaluates the potential for both cancer and non-cancer types of health effects and then compares the results to MassDEP risk limits. These risk limits are set to protect people who may be exposed to multiple chemicals at a site.

The risk assessment relies on calculations that include toxicity information from scientific studies and contaminant concentrations in soil, water, and indoor air at the site. It evaluates the potential for health effects to the most sensitive and exposed groups, such as children who frequently play in soil. By assuming exposure to the most sensitive groups or those who would be most exposed, the risk assessment addresses everyone who might come in contact with chemicals from the site. A conclusion of No Significant Risk therefore means that health effects for even the sensitive subgroups can be ruled out for anyone who might be exposed.

As an alternative to site-specific risk assessments, MassDEP has set risk-based standards for soil and groundwater to protect human health and the environment. Those standards are compared to site contamination levels to determine whether there is a health concern that must be addressed. If all soil and groundwater contaminants are below the standards, the site poses No Significant Risk to human health and the environment.

Does the risk assessment represent my own personal risk?

The risks calculated in a risk assessment are estimates based on general models of exposure and do not indicate any one individual's risk. You may want to consider how your exposures compare to the exposures evaluated in the risk assessment. For example, a risk assessment for residential drinking water usually assumes that people drink two liters of tap water each day, while you may drink either more or less tap water on a daily basis.

How do I know if my health has been affected?

Regardless of the risk assessment results, if you have concerns about your health status you should talk with your family doctor. Health effects are usually only linked to a waste site when scientific studies have connected those particular illnesses with the chemicals at the site. Your local Board of Health may also be able to provide you with more specific public health information and resources.