

# A Citizen's Guide to Risk Assessments and Public Health Assessments at Contaminated Sites



**ATSDR**  
AGENCY FOR TOXIC SUBSTANCES  
AND DISEASE REGISTRY



**T**his guide was developed through a collaboration between the Agency for Toxic Substances and Disease Registry; the U.S. Environmental Protection Agency, Region 4; interested stakeholders; and the environmental and community involvement staff for Alabama, Florida, Georgia, and South Carolina. It is not intended to replace existing policy or guidelines. Additional resources on community involvement, risk assessment, public health assessments, risk communication, and the Superfund process are cited in the Sources of Information section, Risk Assessment Guidance for Superfund: Volume 1. Human Health Evaluation Manual Supplement to Part A: Community Involvement in Superfund Risk Assessments. Washington, DC: U.S. Environmental Protection Agency; 1999 March.

*This guide provides an overview of two different assessments commonly performed at hazardous waste sites. These are the risk assessment and the public health assessment; both are required for all sites—commonly referred to as “Superfund” sites—listed on the U.S. Environmental Protection Agency’s (EPA’s) National Priorities List (NPL).*



*ATSDR, EPA, and state health organizations work to protect the public from harmful exposure to environmental contaminants.*

## **What are contaminated sites?**

Contaminated sites may include federally identified Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) sites and Resource Conservation and Recovery Act (RCRA) sites managed under state environmental programs, state Superfund sites, NPL sites, emergency response sites, and removal action sites.

The Agency for Toxic Substances and Disease Registry (ATSDR) is a federal public health agency charged with protecting people from hazardous substances in the environment. ATSDR works at both CERCLA and RCRA sites, as well as other sites at which citizens are concerned about contamination. ATSDR is responsible for evaluating the public health impact (i.e., diseases or illnesses) of past, current, or future site contamination. ATSDR and state public health offices use the public health assessment process to evaluate the health impact of sites and to develop appropri-

ate recommendations to ensure that people will not be exposed to harmful levels of chemicals released from contaminated sites. A complete guide to how ATSDR becomes involved in working on contaminated sites and to the public health assessment process can be accessed at ATSDR's Web site, [www.atsdr.cdc.gov](http://www.atsdr.cdc.gov).

## **What does it mean to be a Superfund site?**

The Comprehensive Environmental Response, Compensation, and Liability Act as amended in 1986 (CERCLA or Superfund) established procedures for identifying and correcting uncontrolled releases of hazardous materials from abandoned and other hazardous waste sites. Among other things, the Superfund program was designed to characterize, or help define and understand, the nature and extent of risks posed by hazardous waste sites. The information would enable a thorough evaluation of the hazards, and appropriate cleanup remedies could be conducted at the site.

EPA must, by law, consider a number of factors when considering an appropriate remedy for a site. Under Superfund, EPA is responsible for the protection of human health from the effects of hazardous substances in the environment, as well as the selection of cleanup remedies that best meet current and possible future uses for the contaminated site. EPA uses risk assessment procedures to (a) determine the need for remedial actions and (b) define how the cleanup strategies should occur. A guide to the Superfund risk assessment process is available on EPA's Web site at [www.epa.gov](http://www.epa.gov).

## **What does it mean to be a RCRA site?**

RCRA, enacted in 1976, gives EPA the authority to control and regulate all facets of hazardous waste in the environment. The 1984 amendments to RCRA enabled EPA to address environmental problems that could result from underground storage tanks and other hazardous substances. RCRA focuses only on hazards at active facilities—it does not address abandoned or historic sites. Abandoned sites are managed under CERCLA (Superfund). It is possible for a Superfund site to be located at an active RCRA facility and, in such cases, the site would be managed under RCRA because it is an active facility.

## **What is a risk assessment?**

A risk assessment is an analysis that uses information about toxic substances at a site to estimate a theoretical level of risk for people who might be exposed to these substances. The information comes from scientific studies and environmental data from a site. A risk assessment provides a comprehensive scientific estimate of risk to persons who could be exposed to hazardous materials present at a site.

Risk assessments, prepared by EPA and other agencies, are used to determine if levels of toxic substances at hazardous waste sites pose an unacceptable risk as defined by regulatory standards and requirements. The risk assessment helps regulatory officials determine hazardous site cleanup strategies that will ensure overall protection of human health and the environment.

A risk assessment does not measure the actual health effects that hazardous substances at a site have on people. Risk assessments often are conducted without considering actual or possible exposure. Conservative safety margins are built into a risk assessment analysis to ensure

protection of the public. Therefore, people will not necessarily become sick even if they are exposed to materials at higher dose levels than those estimated by the risk assessment. In other words, during the risk assessment analysis, the most vulnerable people (e.g., children and the elderly) are carefully considered to make sure all members of the public will be protected.

## How should the community use the information about risk?

The risk assessment helps answer these three questions for people who might be exposed to hazards at a site:

- Under what circumstances might I and my family and neighbors be exposed to hazardous substances at this site?
- Is it possible that we might be exposed to hazardous substances at levels higher than those determined to be safe?
- If the levels of hazardous substances are higher than regulatory standards, how low do the levels have to be for the risk to fall within regulatory standards?

Communities can participate in EPA risk assessments by helping to identify areas of environmental concern and by identifying local behavior patterns that might put people at risk. An example might be to identify areas where children often play, or a pond or stream where people swim or fish.

A comprehensive guide and video explaining the Superfund risk assessment process is available from EPA Region 4 at [www.epa.gov/superfund/programs/risk/tooltrad.htm#gp](http://www.epa.gov/superfund/programs/risk/tooltrad.htm#gp).

## What is a public health assessment?

A public health assessment is similar in many ways to a risk assessment. The health assessor reviews site-related environmental data and general information about toxic substances at the site. The assessor derives an estimated dose of the substance to which people in the community might be exposed; then this dose is



*During a public health assessment, scientists sometimes gather data used for computer models that suggest past exposure levels.*

compared with regulatory standards. However, unlike a risk assessment, the public health assessment also factors in information from citizens about actual exposures, including any health data that might be available.

A public health assessment functions like a clinical evaluation of a community. The process involves examining the relationship between actual exposures to contaminants and subsequent signs of disease and illness. The assessor then evaluates cases of those diseases and injuries with regard to potential site-specific exposure situations in the community. The conclusions of the assessment, which are based on the professional knowledge and judgment of the health assessment team, address

the likelihood that persons living near a site were exposed, are being exposed, or might be exposed at some future time to harmful levels of hazardous substances from the site. The public health assessment can be prepared by either a state public health department or ATSDR.

ATSDR staff frequently meet and work with local community members to collect information on the past use of the site, community health concerns, and evidence of community health problems. ATSDR community-related activities can include

- collecting and analyzing information on health concerns expressed by community members;
- gathering information on how people in the community actually interact with the site (for example, whether children play there or people picnic or fish nearby);
- conducting (or working with others to conduct) blood, hair, urine, tissue, or environmental sampling;
- and, if available, collecting and evaluating information from county or state health departments about certain types of illnesses in the community.

## What does a public health assessment report tell you?

First, it tells you if people have been or are likely to be exposed to a toxic substance and, usually, how and when they were exposed. Second, it tells you whether the exposures are likely to lead to illness. Third, it recommends ways to protect public health. For example, recommendations might be made for the elimination or reduction of harmful exposures, or that some critical but missing data be obtained to assist the evaluation. It could also recommend a more rigorous health investigation—such as a health study—be conducted.

## What a public health assessment is not.

The public health assessment is neither a medical evaluation of individuals nor a rigorous health study of populations. It is not a statement about establishing or meeting regulatory standards. The assessor does not determine cleanup levels or the best methods for cleanup or treatment. Unlike a risk assessment, a public health assessment does not investigate and evaluate the effects of hazardous waste on the environment itself.

### A public health assessment is not

- a physical examination
- a door-to-door medical survey
- a cancer cluster assessment
- a health study
- medical care

## How does EPA contribute to public health assessments?

EPA often assists ATSDR in filling critical data gaps identified during the public health assessment process. For example, if important health issues are identified during the public health assessment, EPA will often work with ATSDR to help investigate site conditions that ATSDR has identified as possibly posing a health hazard. EPA may also make special efforts to



*Specific environmental information may be derived from soil sampling.*

obtain specific environmental information or modify their original plans for studying site contaminants.

## **How might the community use health assessment information?**

The results of the public health assessment process can tell the community what to expect in terms of their health as a result of site-specific conditions. The community can see what steps others need to take and what steps the community needs to take to ensure that harmful exposures are eliminated. The public health assessment provides important information to government entities responsible for public health protection and to residents, parents, teachers, community leaders, and health care professionals.

## **What do EPA and ATSDR do with the results of their assessments?**

In the risk management process, EPA uses risk assessment information to decide what actions need to be taken to protect human health. Such actions can include deciding how much of a substance a company may discharge into a river; deciding which substances may be stored at a hazardous waste disposal facility; deciding to what extent a hazardous waste site must be cleaned up; setting permissible discharge, storage, and transport levels for hazardous wastes; establishing levels for air emissions; and determining allowable levels of contamination in drinking water.

In the public health assessment report, ATSDR presents conclusions about the actual existence and level of health threat, if any, posed by a site, and recommends ways to stop or reduce exposures. The public health assessment report usually identifies the appropriate actions to be taken by EPA, the state government, or the responsible parties. Recommendations may be made to conduct health education activities, pilot studies of health effects, epidemiologic investigations, disease surveillance studies, or research on specific hazardous substances.



*Information from community members about past or current activities at hazardous waste sites is valuable.*

## How might a community be involved with risk assessments and public health assessments?

Many persons who live and work near Superfund sites want a greater role in helping to make decisions about environmental work being done at the site. In the past, community members have expressed the belief that current public involvement practices are often inadequate and that more meaningful and effective ways to participate are needed. Both risk assessments and public health assessments benefit greatly from early community involvement. ATSDR and EPA are committed to promoting early participation in the decision-making process by people whose lives are affected by Superfund sites located in their neighborhoods.

## Why is community input important?

Persons living and working near a Superfund site deserve to be informed and involved, and they are likely to have unique knowledge and insights about the site's history, uses, and activ-

ities—knowledge that can improve the accuracy of the risk assessment and public health assessment processes. While assessors consult state and local agencies and use population surveys, databases, and appropriate assessment guidance, the community can contribute vital and unique information that cannot be located elsewhere.

The timing and amount of community involvement at Superfund sites will differ, because of scheduling requirements and because many Superfund sites are already being cleaned up. The degree of community input during the assessment process will differ according to the complexity of the issues, available resources, and the level of community interest.

## Community Input Can Help

### Identify overlooked local knowledge

- Community members may have useful information about the site's history; chemical usage; human activities; and past, current, and future land uses. Community input
- can augment and improve estimates of exposure, risks, and health threats.

### Streamline efforts

- Community members may have special issues or concerns that, if factored into the assessment planning, will reduce the likelihood that the risk assessment, public health assessment, and cleanup plans will have to be redone.

### Gain acceptance

- Community members who contribute to planning assessments will have a better understanding of the process and will more likely give their support to the effort.

## Additional Source Information

You can contact any of the people listed below to get more information about this guide, the assessment process, and ways you can become involved.

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