



The Superfund Site Assessment Process

In 1980, Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) establishing the Superfund program to respond to releases and threatened releases of hazardous substances. CERCLA Section 105 required the U.S. Environmental Protection Agency (EPA) to establish criteria for determining priorities among releases or threatened releases of hazardous substances for the purpose of taking remedial action. To meet this requirement, EPA developed the Hazard Ranking System (HRS) (47 FR 31180, July 16, 1982) to evaluate sites for eligibility for the National Priorities List (NPL).

The HRS is a numerically based screening tool used to assess the relative threat to human health and the environment posed by an actual or potential release of hazardous substances from a site. The HRS is the primary mechanism EPA uses to place a site on the NPL. The NPL is a list of hazardous waste sites identified throughout the country that warrant further investigation to determine the extent of the threat and whether the site will be cleaned up under the EPA's Superfund Remedial program.

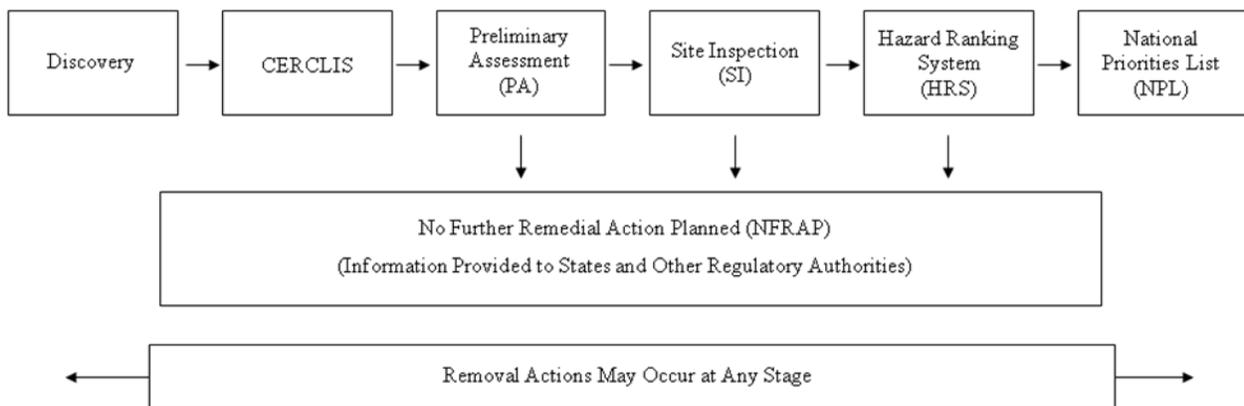
In 1986, the Superfund Amendments and Reauthorization Act (SARA) required EPA to revise the HRS to more accurately "assess the relative degree of risk to human health and the environment posed by sites." SARA also required the HRS to take into account recreational use of surface waters, contamination of the human food chain and drinking water supplies, and potential contamination of ambient air. EPA published the revised HRS on December 14, 1990 (55 FR 51532).

This information sheet provides an overview of the Superfund site assessment process applied to sites identified as releasing, or potentially releasing, hazardous substances into the environment.

The Superfund Site Assessment Process

In response to requirements set forth under CERCLA and its amendments, EPA has created a process to identify possible releases of hazardous substances into the environment. This process, shown below, includes the discovery of a site, an evaluation of the threat it potentially poses to human health or the environment, and if appropriate, its listing on the NPL.

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What Initiates the Site Assessment Process?

The site assessment process is initiated by a site's discovery, or through notification to EPA, of a possible release of hazardous substances into the environment. Once identified, the site is entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS), which is an inventory of potential hazardous waste sites maintained by EPA. After entry into CERCLIS, EPA proceeds to evaluate the degree of risk posed by a site to human health and the environment through its site assessment process. The initial step in this process is for EPA and/or a State to conduct a limited screening investigation, known as a preliminary assessment (PA).

What is the Purpose of the Preliminary Assessment?

The PA distinguishes sites that pose little or no potential threat to human health and the environment from sites that warrant further investigation. The PA is a relatively quick, low-cost compilation of readily available information about the site and its surroundings. Investigators generally do not collect environmental or waste samples during a PA. The PA assembles information on:

- Historical waste generation and disposal practices
- Hazardous substances potentially associated with the site
- Potential sources of hazardous substances
- Important migration pathways and affected media
- A comprehensive survey of targets
- Critical sample locations for any potential site assessment

If the results of a PA determine that a site may pose a threat to human health or the environment, it is recommended to undergo further investigation in the form of a site inspection.

What Does the Site Inspection Process Involve?

EPA conducts a site inspection (SI) to determine whether the potential threat or threats identified in the PA actually exist. Investigators will generally collect environmental and waste related samples to determine if there is an actual release of hazardous substances from the site and identify the targets (receptors) that are, or may be, exposed to such substances. An SI allows an investigator to test hypotheses developed during the PA, enabling a determination to be made whether a site warrants further investigation. If a threat is determined to exist, the next step in the process is to evaluate the site for possible inclusion on the National Priorities List (NPL) through conducting an HRS evaluation.

An SI may be performed in two stages: a screening investigation known as a focused SI, and a more in-depth investigation known as an expanded SI. A focused SI gathers information needed by an investigator to evaluate the hypotheses developed during a PA. If a site is determined to warrant further investigation, a focused SI may provide enough information to perform an HRS evaluation. If additional information is needed to support a site's inclusion on the NPL, an expanded SI will be conducted. During an expanded SI, investigators will focus on:

- Investigating assumptions not completely evaluated by the focused SI
- Collecting samples to determine if hazardous substances are attributable to a site
- Collecting samples to identify representative background levels of hazardous substances in the environment
- Gathering any other information needed for performing an HRS evaluation of the site

Depending on the data available and characteristics of a site, a single stage SI may be sufficient to support an HRS evaluation.

How is a Site Evaluated Under the Hazard Ranking System?

The HRS is a screening tool used by EPA to evaluate the potential threat to human health and the environment posed by an actual or potential release of hazardous substances. The HRS produces a score that is used to determine a site's eligibility for listing on the NPL. The HRS scores a site by evaluating four potential pathways (ground water migration, surface water migration, soil exposure, and air migration), by which contaminants can come into contact with humans or sensitive environments.

The scoring system for each pathway is based on a number of individual factors associated with conditions at the site, which are grouped into three categories. These categories are:

- Likelihood of exposure (i.e. likelihood that a site has released or has the potential to release hazardous substances into the environment)
- Waste characteristics (i.e. toxicity, persistence, and quantity of the hazardous substance)
- Targets (i.e. people or sensitive environments actually or potentially exposed).

A site's HRS score can range between 0 and 100 and is derived by combining the pathway scores. Those sites with a score of 28.50 or greater are eligible for placement on the NPL.

What If a Site is Determined Not to Pose a Threat?

After the PA, SI, or HRS evaluation has been conducted, based on the results of the investigation, EPA can recommend that a site move forward in the process or that the site be removed from further consideration under the Superfund program. If the site is removed, its status in CERCLIS is designated as one receiving no further Federal action at this time. Sites receiving this designation may still be subject to action by States or other regulatory bodies and are eligible for re-evaluation in the future if additional information becomes available.

When is a Removal Action Conducted?

At any stage in the site assessment process, EPA may determine that a site poses enough of a threat to human health or the environment, that it merits conducting a removal action to mitigate that threat. This action may occur prior to the completion of the site assessment process, or before the initiation of a remedial cleanup plan (developed after listing on the NPL). A removal action could either involve EPA funding cleanup activities directly, or overseeing and enforcing actions conducted by parties potentially responsible for the contamination.

What Does a Site's Listing on the NPL Mean?

The NPL is a list of hazardous waste sites identified by EPA as warranting further investigation into the extent of the risk they pose and whether cleanup of the site under EPA's Superfund Remedial program is warranted. A site can be placed on the NPL via three methods:

- Achieving a score of 28.50 or greater under the HRS
- A State or Territory may designate one top-priority site regardless of its HRS score
- Or by meeting each of the following criteria:
 - the Agency for Toxic Substances and Disease Registry (ATSDR) of the U.S. Public Health Service has issued a health advisory that recommends removing people from the site
 - EPA determines the site poses a significant threat to public health
 - EPA anticipates it will be more cost-effective to use its remedial authority (available only at NPL sites) than to use its emergency removal authority to respond to the site.

If a site is determined to warrant listing on the NPL, a notice proposing its listing is published in the *Federal Register*. This is followed by a 60 day public comment period. EPA evaluates and responds to all comments and makes a final determination whether to list the site on the NPL.

What Happens After a Site is Listed on the NPL?

After a site has been placed on the NPL, it is eligible for additional investigative activities under the remedial phase of the Superfund program. During the remedial phase, steps are taken to identify and implement cleanup remedies that remove, reduce, or control the risks identified earlier. These include conducting a remedial investigation, involving onsite testing, to assess the nature and extent of the threat to public health and the environment, as well as a feasibility study, to identify and evaluate potential cleanup remedies. A Record of Decision is then issued by the EPA, describing which cleanup alternatives have been chosen for implementation at the site. This is followed by the remedial design and remedial action phase, where the technical details for the chosen cleanup actions are designed and implemented, and an operation and maintenance phase of the selected remedies. Eventually, if a site is determined by the EPA to require no additional response actions to protect public health or the environment, it may be deleted from the NPL.

For More Information

- For more information on the Preliminary Assessment and Site Inspection process, visit <http://www.epa.gov/superfund/sites/npl/hrsres/#HRS%20Rule>.
- For more information on Superfund, visit <http://www.epa.gov/superfund/about.htm>.
- For more information on the HRS, visit http://www.epa.gov/superfund/programs/npl_hrs/hrsint.htm.
- For more information on the National Priorities List, visit <http://www.epa.gov/superfund/sites/npl/>.