Introduction and Timeline

In 1980, Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, also known as "Superfund")[1] in response to the dangers of uncontrolled releases or threatened releases of hazardous substances, and releases or substantial threats of releases into the environment of any pollutant or contaminant that may present an imminent or substantial danger to the public health or welfare. To implement Superfund, EPA promulgated the National Oil and Hazardous Substances Pollution Contingency Plan (NCP, also known as the "National Contingency Plan")[2] which sets forth the guidelines and procedures needed to respond under CERCLA to releases and threatened releases of hazardous substances, pollutants, or contaminants.

Specifically, Section 105(a)(8)(A) of CERCLA requires that the NCP include:

> criteria for determining priorities among releases or threatened releases throughout the United States for the purpose of taking remedial action and, to the extent practicable, take into account the potential urgency of such action, for the purpose of taking removal action.

Per CERCLA (Section 101), a removal action involves cleanup or other actions that are taken in response to emergency conditions or on a short-term or temporary basis, while a remedial action is generally long-term in nature and involves response actions that are consistent with a permanent remedy for a release. To meet CERCLA requirements for federal financing of remedial actions, EPA was required to:

Superfund Goals

1) Protect human health and the environment by cleaning up contaminated sites
2) Make responsible parties pay for cleanup work
3) Involve communities in the Superfund process
4) Return Superfund sites to productive use

1) **Establish criteria for priorities** among releases or threatened releases of hazardous substances, pollutants, or contaminants; and
2) **Develop a list of national priorities** of all releases or threatened releases of hazardous substances, pollutants, or contaminants.

In 1982, EPA created the Hazard Ranking System (HRS)[3] as Appendix A of the NCP to serve as the criteria for determining priority sites. In response to SARA, which requires EPA to revise the HRS to ensure that it accurately assesses the relative degree of risk to human health and the environment, the HRS was revised in 1990 and the soil exposure pathway was added. In 2017, the subsurface intrusion component was added to address threats posed by the intrusion of subsurface contamination into regularly occupied structures. These changes are consistent with, and comply with, the statutory requirements of SARA.

Section 105(a)(8)(B) of CERCLA requires that the statutory criteria provided by the HRS be used to prepare a list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States. The list, which is Appendix B of the NCP, is the National Priorities

[1] Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. Sections 9601 *et seq*.; amended on October 17, 1986, by the Superfund Amendments and Reauthorization Act (SARA), Public Law No. 99-499, stat., 1613 *et seq.*

[2] National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300, published July 16, 1982 (47 FR 31180), pursuant to CERCLA Section 105 and Executive Order 12316 (46 FR 42237, August 20, 1981); revised March 8, 1990 (55 FR 8666) in response to SARA.

[3] Hazard Ranking System (HRS), Appendix A of the NCP (47 FR 31219, July 16, 1982); revised December 14, 1990 (56 FR 51532) in response to SARA; revised January 9, 2017 (82 FR 2760) to add subsurface intrusion component.

List (NPL)[4]. An original NPL of 406 sites was published in 1983. At that time, an HRS score of 28.50 was established as the cutoff for listing because it yielded an initial NPL of at least 400 sites, as suggested by CERCLA. The NPL has routinely been expanded since then, most recently in September 2023.

National Priorities List (NPL)

The primary purpose of the NPL is stated in the legislative history of CERCLA (Report of the Committee on Environment and Public Works, Senate Report No. 96-848, 96th Cong., 2d Sess. 60 [1980]).

> The priority list serves primarily informational purposes, identifying for the States and the public those facilities and sites or other releases which appear to warrant remedial actions. Inclusion of a facility or site on the list does not in itself reflect a judgment of the activities of its owner or operator, it does not require those persons to undertake any action, nor does it assign liability to any person. Subsequent government actions will be necessary in order to do so, and these actions will be attended by all appropriate procedural safeguards.

The NPL, therefore, is primarily an informational and management tool. The identification of a site for the NPL is intended primarily to guide EPA in determining which sites warrant further investigation to assess the nature and extent of the human health and environmental risks associated with the site, and to determine what CERCLA-financed remedial action(s), if any, may be appropriate. The NPL also serves to notify the public of sites EPA believes warrant further investigation. Finally, listing a site may, to the extent potentially responsible parties are identifiable at the time of listing, serve as notice to such parties that the Agency may initiate CERCLA-financed remedial action.

CERCLA Section 105(a)(8)(B) directs EPA to list priority sites among the known releases or threatened release of hazardous substances, pollutants, or contaminants, and Section 105(a)(8)(A) directs EPA to consider certain enumerated and other appropriate factors in doing so. Thus, as a matter of policy, EPA has the discretion not to use CERCLA to respond to certain types of releases. Where other authorities exist, placing sites on the NPL for possible remedial action under CERCLA may not be appropriate. Therefore, EPA has chosen not to place certain types of sites on the NPL even though CERCLA does not exclude such action. If, however, the Agency later determines that sites not listed as a matter of policy are not being properly responded to, the Agency may consider placing them on the NPL.

Hazard Ranking System (HRS)

The HRS is the principal mechanism EPA uses to place uncontrolled waste sites on the NPL. It is a numerically based screening system that uses information from initial, limited investigations -- the preliminary assessment and site inspection -- to assess the relative potential of sites to pose a threat to human health or the environment. HRS scores, however, do not determine the sequence in which EPA funds remedial response actions, because the information collected to develop HRS scores is not sufficient in itself to determine either the extent of contamination or the appropriate response for a particular site. Moreover, the sites with the highest scores do not necessarily come to the Agency's attention first, so that addressing sites strictly on the basis of ranking would in some cases require stopping work at sites where it was already underway. Thus, EPA relies on further, more detailed studies in the remedial investigation/feasibility study that typically follows NPL listing.

The HRS uses a structured value analysis approach to scoring sites. This approach assigns numerical values to factors that relate to or indicate risk, based on conditions at the site. The factors are grouped into three categories. Each category may have a maximum value. The categories are:

[4] National Priorities List (NPL), (48 FR 40658), published September 8, 1983; most recently revised September 9, 2023 (87 FR 55299)

1) Likelihood that a site has released or has the potential to release hazardous substances into the environment;
2) Characteristics of the waste (e.g., toxicity and waste quantity); and
3) Targets (e.g., people or sensitive environments) affected by the release.

Under the HRS, four pathways can be scored for one or more components and threats as identified below:

- Ground Water Migration (S_{gw})
  - population
- Surface Water Migration (S_{sw})
  The following threats are evaluated for two separate migration components, overland/flood migration and ground water to surface water:
  - drinking water
  - human food chain
  - sensitive environments
- Soil Exposure and Subsurface Intrusion (S_{sessi})
  - Soil Exposure Component
    - resident population
    - nearby population
  - Subsurface Intrusion Component
    - population
- Air Migration (S_a)
  - population

After scores are calculated for one or more pathways according to prescribed guidelines, they are combined using the following root-mean-square equation to determine the overall site score (S), which ranges from 0 to 100**:**

$$S = \sqrt{\frac{S_{gw}^2 + S_{sw}^2 + S_{sessi}^2 + S_a^2}{4}}$$

If all pathway scores are low, the HRS score is low. However, the HRS score can be relatively high even if only one pathway score is high. This is an important requirement for HRS scoring because some extremely dangerous sites pose threats through only one pathway.

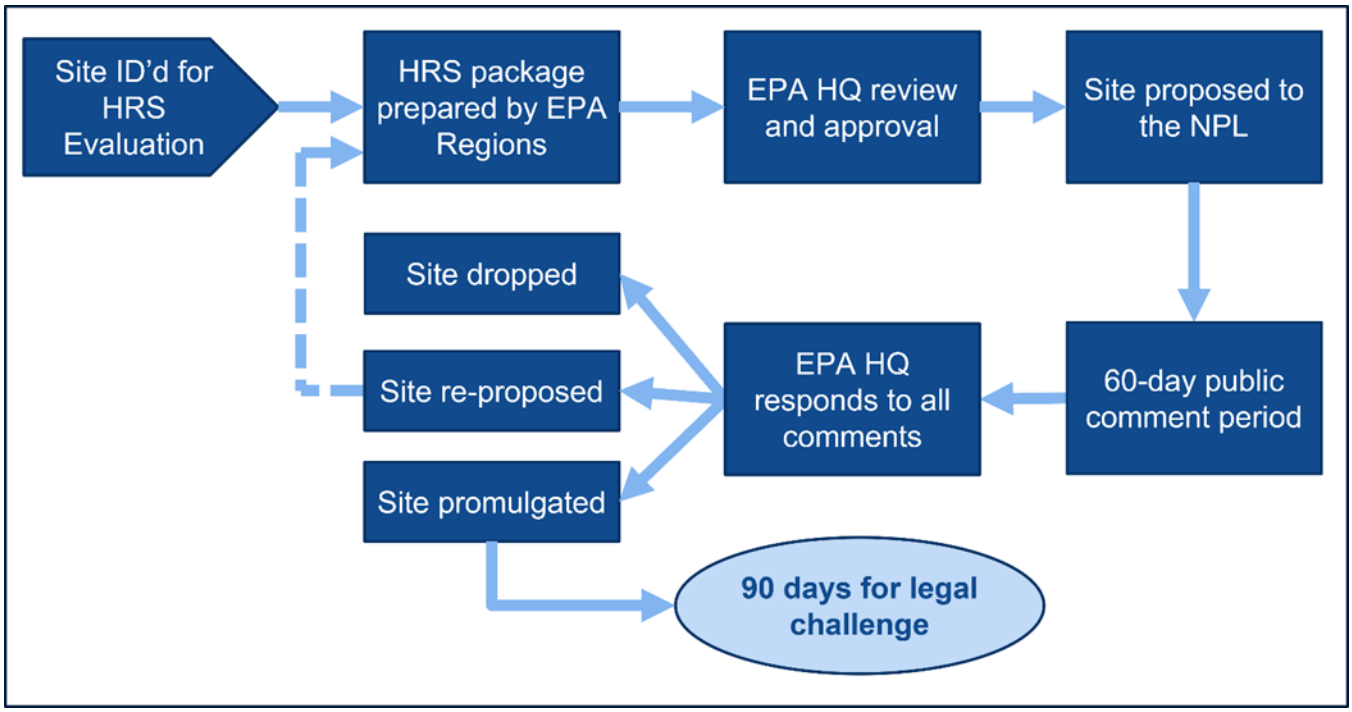
NPL Site Listing Process via HRS

If release of a hazardous substance has occurred or if the potential of a hazardous substance to release exists, a site may be eligible for further remedial evaluation under CERCLA authority. The State or other entity performs a pre-CERCLA or preliminary assessment of the site to confirm contamination, then raises the site of concern to EPA for evaluation. The appropriate EPA Region performs a limited site investigation, then prepares the HRS package which includes all investigation data, preliminary assessment data and supporting documentation, along with the HRS scoring documentation. Documentation of all steps taken and decisions made is included.

The HRS package is then reviewed by EPA headquarters to ensure it meets Superfund requirements. This review is meant to ensure that the package is legally defensible, in case the listing is challenged in court. Once the HRS package is approved by EPA headquarters, the site is proposed to the NPL and undergoes a 60-day public comment period via the Federal Register (FR). EPA headquarters reviews and responds to all comments received, with Regional input as needed. Based on comments received, EPA may clarify documentation, update site scoring, or even conduct additional site sampling to re-evaluate whether to place the site on the NPL.

Once a site is placed on the NPL, there is a 90-day period for legal challenges to the listing.

Site Assessment and NPL Listing Process



Other Mechanisms for Listing

There are two mechanisms other than the HRS by which sites can be placed on the NPL. The first of these mechanisms, authorized by the NCP at 40 CFR 300.425(c)(2), allows each State and Territory to designate one site as its highest priority regardless of score. The other mechanism, authorized by the NCP at 40 CFR 300.425(c)(3), allows listing a site if it meets the following three requirements:

1) Agency for Toxic Substances and Disease Registry (ATSDR) of the U.S. Public Health Service has issued a health advisory that recommends dissociation of individuals from the release;
2) EPA determines the site poses a significant threat to public health; and
3) EPA anticipates it will be more cost-effective to use its remedial authority than to use its emergency removal authority to respond to the site.