

How Polluted Sites Get Cleaned Up

How does a site get considered for pollution cleanup?

A state environmental agency may refer sites to the EPA as possible Superfund sites. If state agencies don't care to refer sites, heavily polluted sites may remain unaddressed for years. When drinking water is at risk (i.e. a drinking water source has tested above federal drinking water standards) EPA regional offices may act without state agency involvement, but this is rare.

Sites can get noticed by state environmental agencies in a number of ways. Groundwater is typically monitored on a regular basis by groundwater conservation districts. If pollutants start showing up they may go look for the source. Sometimes an enforcement action arising from complaints or routine inspections may lead to an investigation for possible cleanup action. A substantial number of sites in the Texas system--20% of the sites looked at between 2007-2017--started out as part of an EPA "mass referral" of pesticide applicators to the state environmental agency back in 1986; it takes many years for sites to work through the system.

The most common way nowadays is likely to be property owners or prospective investors/developers seeking a clean bill of health so they can redevelop former industrial sites. Jim Elliott, a professor at Rice University, has documented how much current urban redevelopment happens on these sites. [You can read about his research here.](#)

First Steps in Assessing Polluted Sites

Before any samples are taken, the agency will use historical information and interviews with folks associated with the facility to determine what kinds of chemicals were used there ("chemicals of concern"), if there were ever any spills there, what the practices were and if there is any reason to believe these could have led to releases, etc. These processes are sometimes called a "Phase 1 Environmental Site Assessment (ESA)," and if the site is being considered for possible inclusion in the Superfund program they call it a "Preliminary Assessment" of the site. Declining to include certain "chemicals of concern," especially custom or proprietary chemicals, or explaining away spills or other practices can justify disregarding the site.

If the site is part of an EPA Preliminary Assessment they use a tool created by the agency called the Hazard Ranking System (HRS) QuickScore to determine the likelihood of serious pollution at the site. The state agency (in Texas, TCEQ) actually does this assessment and scoring. Note that sometimes they actually communicate with the potentially responsible parties (PRPs)--the companies likely liable for the clean up--and have them do the testing for the HRS score themselves. In essence the potentially liable company is allowed to determine its own liability.

For other Phase 1 ESAs it is often the property owner/investor that is paying for the assessment, and they obviously have outcomes that they prefer. The federal Brownfields Program consists primarily of grants requested by local or state governments to pay for ESAs. In a smaller number of cases they can pay for cleanup too. The city or county may do the ESA,

or they may work with the property owner to help them do it--again with certain outcomes strongly preferred.

Next Phase of Assessment

If that initial historical background check has indicated any cause for concern the agency involved should then take actual samples of soil, water, or perhaps vegetation to determine if there are any pollutants in that environment. We know from [our research done on “No Further Action \(NFA\)” sites](#) that this does not always happen. This is known outside the Superfund process as a Phase 2 ESA, and limited sampling may be done as part of the Preliminary Assessment. More extensive sampling can be done as part of a Superfund “Site Inspection.” Such processes can take years--one site in Pennsylvania has waited over 9 years for its Site Inspection to be completed.

Texas state cleanup programs are all grouped under the Texas Risk Reduction Program (TRRP), which includes the Voluntary Cleanup Program, Innocent Owner/Operator Program, Dry Cleaner Remediation Program, Industrial Hazardous Waste Corrective Action Program, State Superfund, and Petroleum Storage Tank programs. They all use a benchmark called the “Protective Concentration Level” (PCL) in assessing the samples. Note that federal Brownfields grants are given to do Phase 1 and 2 ESAs and also use state PCLs.

The basic assessment for both federal and state programs is the same. They determine the risk of a pollution site based on the source of pollution and the pathways from that pollution to possible targets (people, waterways, ecologically sensitive areas, etc.). The more polluted the source, the more direct a pathway, and the more sensitive the target the more likely the site will be included in a cleanup program. In actual practice there are ways to ensure inclusion or exclusion depending on political pressures.

The source (i.e. the soil or groundwater with contamination in it) is where the PCLs or federal equivalents--the Superfund Chemical Data Matrix (SCDM) or Risk-based Screening Levels (RSLs)--count. A source that exceeds the benchmarks is considered polluted, but without a pathway to a sensitive target the site can be left polluted, and often is. Pathways typically include soil, groundwater, surface water, and air. TCEQ inspectors have been shown to ignore certain pathways in order to exclude sites from cleanup programs. We will be working to change this in particular.

What Happens if a Site Scores High Enough?

If the final HRS score is 28.50 or higher the site is eligible for the National Priority List, but if the state declines to nominate it, it will not be listed. There are no automatic triggers for anything in the Superfund process, meaning that every decision to move forward is the subjective decision of the state agency or perhaps EPA. Without strong, informed, and effective public pressure the process will not move forward, and even then other political concerns may overwhelm the environmental process. One site in New Jersey with especially bad mercury pollution has an

HRS score over 3 times the 28.50 threshold but former Gov. Chris Christie has refused to refer it for a variety of political/economic reasons.

The 90-95% of sites not eligible for inclusion on the NPL may be referred to TRRP cleanup programs. The total budget for all hazardous material cleanup programs in Texas besides the storage tank program is about \$22 million a year. The San Jacinto River Waste Pits site alone has a cost of \$115 million, so there is very little available from public funds. They depend on responsible parties willing to do their own clean ups, which means that industry dictates what gets done.

Even if a site DOES make it to the NPL, this is not a guarantee that it'll be cleaned up. The first step after it is listed is a Remedial Investigation/Feasibility Study to explore the extent of the problems at the site, the technologies available to remediate them, the costs and performances of the technologies, etc. This phase is when a formal community outreach element comes into play with a designated Community Involvement Coordinator empowered to create a Community Involvement Plan. Citizens can form a Community Advisory Group (CAG) and can request a Technical Assistance Grant (TAG) to pay experts to help them analyze and understand the data being gathered by EPA as part of their investigations. All such data is put into an Information Depository established near the site in question. After the investigation the EPA proposes a plan for cleaning the site. Citizens can comment on the plan, and EPA issues a "Responsiveness Survey" to respond to comments and suggest any necessary changes to the plan.

This process leads to a Record of Decision which includes information on the site history, its description, characteristics, the contaminants and contaminated media on site, enforcement history, community participation, the remedy proposed, and envisioned uses post remedy. This is also reviewed by the community and the EPA can propose amendments in another Responsiveness Survey. There is substantial opportunity for industry delay and disruption here and may result in a lawsuit from the PRPs to cause further slowdowns and encourage settlements on their terms.

If a decision can be finalized they begin a Remedial Design/Remedial Action process that actually carries out the clean up. A designation of "Construction Completed" indicates that the physical construction on site has been finished, though final cleanup levels may not yet be reached. This puts the site into "Post Construction Completion" which involved long-term clean up techniques and restrictions to prevent any ongoing exposures. Finally when the final cleanup goals have been met the EPA issues a notice to delete the site from the NPL. The public can comment upon this as well, leading to a final Responsiveness Survey and ultimately a Final Deletion Report.

In all only a fraction of the sites put on the NPL (again, a tiny fraction of the total polluted sites around the country) ever get to this point--less than a quarter. Nearly a quarter of these sites come from three states--New York, New Jersey, and Pennsylvania--or sites owned by the federal government (especially old military installations). Only 12 Texas Superfund sites have ever been deleted from the NPL.

What About Sites in State Programs?

In the TRRP, after they have determined that PCLs are exceeded and the site is eligible for one of the programs, they outline the PCL Exceedance zone. The responsible party then gets to develop a remedy for dealing with the exceedance, with two general types of remedy: Remedy Standard A, and Remedy Standard B.

Remedy Standard A options entail the permanent remediation of the site to below critical PCLs through removal of polluted media or some sort of permanent decontamination. They can “self-implement” their remedy, i.e. tell the TCEQ what they plan to do, and unless TCEQ affirmatively objects they can carry it out on their own. They can also submit a “Remedial Action Plan” and get affirmative approval from TCEQ. Following either process they carry out the remedy, do testing to confirm its effectiveness and the site is given a “No Further Action” bill of good health.

Remedy Standard B does NOT clean the site up to better-than-PCL standards. These options simply ensure that any areas still contaminated above PCL levels are not exposed to the public or environment through a combination of physical and institutional controls. Physical controls are barriers, liners, etc. while institutional controls include deed notices, restrictive covenants, and other legal mechanisms meant to limit land uses. Essentially this sort of remedy could mean a cover on a polluted area, a deed notice that the pollution is on site, and a restrictive covenant compelling it only be used for industrial or commercial purposes.

Responsible parties may not “self-implement” Remedy Standard B, but must have approval from TCEQ for their Remediation Action Plan. They must also estimate the costs of any ongoing care for their physical controls and buy a bond or other financial assurance mechanism to cover that full cost. TCEQ can use that money to implement the care if the responsible party fails to do so. After they have implemented their plan they take samples to confirm its effectiveness, they get a conditional letter of “No Further Action” while they do post-response care to the site.

This care is supposed to last for 30 years but can be shortened based on “the nature of the response action, the persistence, migration potential, and toxicity of the COCs, and the physical characteristics and location of the affected property.” This is broad enough to allow care for much shorter periods of time. When that care is no longer needed, they receive a permanent “No Further Action” designation.

Note that it is our experience that post-response testing to confirm its effectiveness is not always done, and “No Further Action” designations get made even when this testing has not been done.