



The Great Cover-Up

The Use and Limitations of Engineered Barriers

Engineered barriers have become the most common cleanup strategy used to obtain No Further Remediation letters from the Illinois Environmental Protection Agency's Site Remediation Program (SRP), and no wonder. Such barriers are a more flexible and cheaper alternative to removal or treatment as a means of protecting people from contaminated soil and groundwater. But simply paving over pollution is not enough. There are complications if you want to protect yourself against future liability.¹

How Barriers Work

Under the SRP regulations, if you can eliminate exposure ('risk') to contamination, you don't have to eliminate the source. Contaminated soil or groundwater can only threaten human health if there is a "pathway" by which contaminants can reach people. Block those pathways, and you reduce the health risk posed by those contaminants.

What Constitutes a Barrier?

Engineered barriers take various forms. The simplest is a permanent structure made of materials such as concrete or asphalt. Pavement in the form of roadways or parking lots is an acceptable barrier. So are building foundations.

Pavement and building foundations are the most common engineered barriers, but they are not the only ones. Layers of clean soil can also be acceptable barriers. The thickness of soil barriers depends on the concentration of the contami-

nants. Regulations require that contaminants that pose risk through inhalation must be no closer than ten feet from the soil surface. Risks through ingestion, or direct contact with soils, can be reduced or eliminated by barriers of at least three feet of clean soil.

Other types of barriers may also be used under unusual circumstances. "In some cases we have used a synthetic membrane held in place by clean soil as a suitable barrier," says Carlson's Margaret Karolyi. "There are creative things that can be done in landscaped areas. People just need to be aware of the need for long-term maintenance."

Building engineered barriers is straightforward; building them so they provide permanent protection is not as easy as it looks. The first challenge is design. The second is long-term maintenance to insure the structural integrity of the barrier. A third is a plan to avoid undue risk when a barrier must be breached.

Design it Right

Since barriers are being used so much today, the design of a new development, in terms of building footprints and parking lot layouts, becomes an integral part of the cleanup program. "In the old days," says Karolyi, "we would remediate a site through soil removal or treatment and then construction would proceed independently. We didn't need to have such close coordination with the design process."

But because new construction may serve as barriers under SRP rules, the location of building foundations and parking lots and the design of landscaped areas often become critical elements of the remediation program. Close coordination

¹ Environmental cleanup programs are typically designed to solicit "No Further Remediation" letters from the Illinois EPA. Such letters certify that site conditions will protect human health and the environment. For a discussion of NFR letters and the SRP program see "The No Further Remediation Letter," The Carlson Report, October 2000, available at www.carlsonenv.com.

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scaped areas often become critical elements of the remediation program. Close coordination between the environmental consultants and the design professionals at this early stage is crucial to long-term success. Space must be found at a table already crowded with developers, architects, and engineers for environmental expertise.

Maintain It Right

An engineered barrier will only be approved by the IEPA as part of the final corrective action if the barrier is permanent. But while an engineered barrier may last forever in an IEPA "No Further Remediation" letter, in the real world, they break down or wear out. Therefore, a remediation plan using engineered barriers must also include an institutional control, transferable with the property, that guarantees the barrier will stay sound over time, even if tenants move or ownership of the site is transferred.

Over time, some breaches of engineered barriers are inevitable. Digging to fix or install a sewer pipe in a contaminated area, for example, may expose construction workers to contaminated soils. As a result, Illinois EPA may include a requirement in its NFR letters that there be a plan in place to protect construction workers if barriers are disturbed.

Carlson's *Engineered Barrier Maintenance Protocol*[™] is a tool that owners and/or tenants of SRP facilities can use to protect owners from liability if barriers are breached due to wear, subsurface maintenance work, or other activities. It lays out an orderly system for inspecting the premises so problems can be identified and solved quickly. The protocol also provides a convenient vehicle for modifying lease agreements to insure that tenants don't inadvertently put owners into non-compliance with their NFR letters.

IEPA Enforcement

In 2002 the Illinois EPA began a program of follow-up inspections to determine if the conditions imposed by the first wave of NFR letters issued in 1997 were actually being met. In several cases, an engineered barrier was found to have been breached and not repaired, and, in one case, residential construction was undertaken even though the NFR restricted site use to commercial or industrial. Each summer the Illinois EPA plans to inspect sites which received NFR letters at least five years before.

Because NFR letters are issued as the result of a voluntary program, such failures to comply with their terms do not carry the threat of civil or criminal enforcement proceedings by the government. However, the Agency can void the letter—not a good thing for the owner if development financing and leasing were contingent upon receiving the NFR letter in the first place. Non-compliance may also leave owners vulnerable to third party environmental claims.

Careful Planning is Critical.

Under the SRP, the applicant decides which part of the site and which contaminants will be addressed by the remediation plan. Moreover, the rules allow contaminated soil to be moved from different parts of the site and consolidated under a single barrier or a "soil management zone." Ed Garske, Senior Vice President at Carlson Environmental cautions that "the flexibility inherent in the program can simplify up-front design decisions, but these choices may limit site changes down the road."

Resources:

The Illinois EPA web site is a great resource for issues related to the Site Remediation Program. Check in at www.epa.state.il.us/; go to "Land", then "Cleanup Programs," then "Site Remediation Program."