

Ohio EPA DIVISION OF ENVIRONMENTAL RESPONSE AND REVITALIZATION

TECHNICAL DECISION COMPENDIUM

August 18, 2003

- Title:** Asphalt Covers to Prevent Leaching at Industrial Sites
- Key Words:** Caps, Infiltration, Pavement, Asphalt
- Purpose:** Since contaminated soil can leach hazardous chemicals to the underlying ground water, capping the contaminated soil to prevent rain water infiltration may be selected as a part of the remedy for a site. At some active industrial sites it may be desirable to install a cover system that can mitigate leaching, without disrupting ongoing plant operations or vehicle traffic.
- Background:** DERR's remedial response program generally works with abandoned or non-operational facilities, such as old landfills or waste lagoons. At those sites the remedy often requires covering the wastes to prevent direct contact, or mitigate further chemical releases and leaching to the underlying ground water. The caps specified in the solid waste program are suitable for these sites because they would contain the wastes and provide long-term protection against leaching from contaminated soil. However, such caps may be infeasible to construct at an operating industrial site. Caps meeting the solid waste rules may be several feet thick and can sustain only minimal vehicular traffic. In addition, these caps can be difficult to construct around a complex pattern of buildings and plant equipment. Thus, a cap system that can be readily constructed at an operating industrial facility, can sustain vehicular traffic and can effectively block infiltration by rain water is needed.
- Decision:** A cap system consisting of a layer of pavement underlain by a drainage layer and a barrier layer may be accepted when coupled with an adequate long term operation and maintenance plan. That pavement may be conventional asphalt or the newer low permeability asphalt. The cap system must achieve a reduction in infiltration equivalent to that of a solid waste cap and must meet the risk-based remedial action objectives. This alternative is not a presumptive remedy and must be considered within the overall remedy selection process.

Rationale:

Pavement layers, such as asphalt and concrete, crack under the effects of vehicle loading and free-thaw temperature cycles. The resulting cracking reduces their effectiveness as infiltration barriers. A barrier layer, such as a flexible membrane liner, can effectively capture the water that infiltrates through the cracks in the cap. A drainage layer, such as a course of sand or fine gravel, would be needed to remove the accumulated water. Thus, a combination of a paved surface and an underlying barrier layer could be used to cover areas of contaminated soil while creating a minimal disturbance to industrial plant operations. The pavement layers would have to be adequate to support the anticipated vehicle traffic. The design should demonstrate sufficiency for the intended use. The Ohio Department of Transportation's Pavement Design and Rehabilitation Manual provides guidance for the design of paved surfaces (although other approaches could be acceptable). Such a paved surface will require ongoing maintenance to assure its reliability throughout its intended life. These maintenance requirements should be carefully specified in an approved operation and maintenance plan. An additional concern is that an asphalt cover of any kind could be vulnerable to damage by spills of organic chemicals. Should spills occur, the cover should be immediately inspected for damage and repaired as necessary.

A remedy that includes an asphalt cap must be evaluated using the normal selection criteria. The negotiating team will consider any special needs associated with financial assurance and the long term likelihood that the PRP will be able to consistently perform the necessary maintenance. When considering appropriate financial assurance it will necessary to take into account both long term operation and maintenance costs and the cost to the public should the needed maintenance fail to be implemented. Depending on site-specific circumstances, this approach to capping may require that an exemption to the solid waste rules be granted under ORC 3743.02 (G). The site coordinator and staff attorney should evaluate the need for such an exemption.

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