United States
Environmental Protection
Agency

Office of Public Affairs
Region 5
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Chicago, Illinois 60604

Illinois, Indiana,
Michigan, Minnesota,
Ohio, Wisconsin

Proposed Plan
Moss-American Superfund Site

Milwaukee, Wisconsin **March 1998**

This Fact Sheet Explains

- site background
- new information on the Moss-American site
- the proposed amendment to the site's 1990 cleanup plan
- how to learn more about the site

Public Meeting

U.S. EPA will hold a public meeting to explain the proposed changes to the site's 1990 cleanup plan. Oral and written comments will be accepted at the meeting.

Date: March 18, 1998

Time: 7 p.m.

Place: Vincent High School Cafeteria
7501 N. Granville Road
Milwaukee, WI

Public Comment Period

U.S. EPA will accept written comments on the Proposed Plan during a 30-day public comment period from March 9 to April 8, 1998. A pre-addressed comment form is included in this proposed plan.

Introduction

This Proposed Plan[1] summarizes the alternatives that the United States Environmental Protection Agency (U.S. EPA) is considering for cleaning up contaminated soil and sediment at the Moss-American Superfund Site in Milwaukee, Wisconsin (see Figure 1 on page 2). This plan represents a proposed change to U.S. EPA's 1990 remedy for cleaning up creosote-contaminated soil and sediment. The original cleanup plan was described in the fact sheet "Proposed Plan for Remedial Action at the Moss-American Site" and the Record of Decision (ROD), the document outlining U.S. EPA's cleanup decision, issued by U.S. EPA in 1990.

Based on new information regarding the Moss-American site and recent experience at other creosote-contaminated sites, U.S. EPA has determined that the bioslurry, or soil-washing, treatment technique recommended in the 1990 ROD would not effectively clean up contaminated on-site soil and sediment. As an alternative, U.S. EPA recommends treating contaminated soil and sediment by thermal desorption. (Those contaminated sediment areas where sediment is removed by dredging techniques near bridges or are particularly highly contaminated may also undergo thermal desorption treatment). Thermal desorption indirectly heats contaminated soil so contaminants will vaporize, and consequently separate from the soil. U.S. EPA also recommends modifying the "exposure scenario." An exposure scenario examines the type of individual who may be exposed to site contaminants; current and expected future land use; the frequency, duration, and magnitude of exposure; and the relative toxicity of various contaminants.

The 1990 ROD, Remedial Investigation (RI), Feasibility Study (FS), and other post-ROD documents are available at the information repository and administrative record listed on the back page. Public input on the alternatives and the information that supports these alternatives is an important part of the cleanup process. The public is encouraged to review and comment on the alternatives presented in this Proposed Plan (see sidebar).

Site Background

The 88-acre Moss-American site includes the former Moss-American creosote facility and several miles of the Little Menomonee River, which is adjacent to the former facility. The site is located at the southeast corner of the Brown Deer and Granville Roads intersection on Milwaukee's northwest side. Approximately 65 acres of the site are undeveloped Milwaukee County park land. About 23 acres are owned by the Union Pacific Railroad and are currently used for industrial purposes, such as light vehicle transport, loading/unloading, and storage areas.

The Moss-American site is the location of a former wood preserving facility that treated railroad ties with a creosote and fuel oil mixture. The site operated from 1921 to 1976 when it was closed by Kerr-McGee Chemical Corporation, a former owner. U.S. EPA placed the site on its National Priorities List in 1983. An RI began in late 1987 and was completed in Janu-

[1] Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires publication of a notice and a Proposed Plan for the site remediation. The Proposed Plan must also be made available to the public for comment. This Proposed Plan fact sheet is a summary of information for the Moss-American site. Please consult the administrative record for more detailed information.

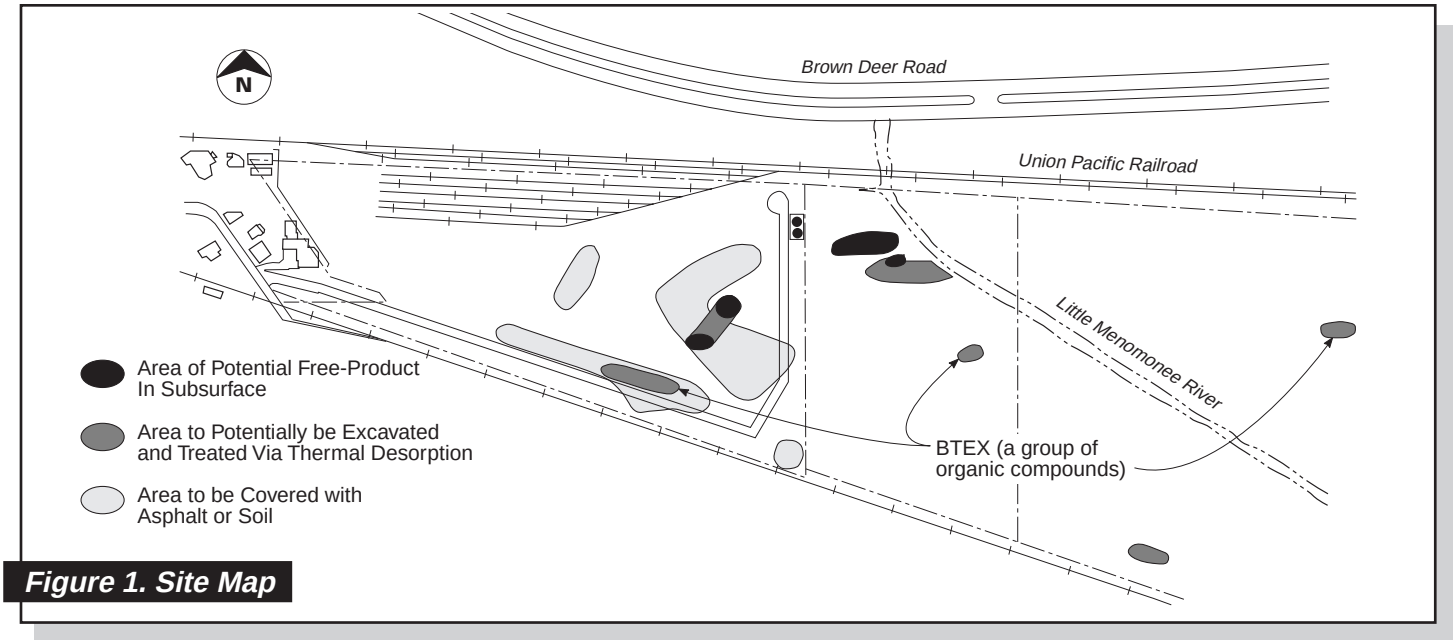


Figure 1. Site Map

ary 1990. The RI concluded that previous site activities contaminated soil and ground water at the site as well as sediment in the Little Menomonee River with polynuclear aromatic hydrocarbons (PAHs) and organic compounds such as benzene, toluene, ethylbenzene, and xylene (BTEX). PAHs are organic compounds normally associated with petroleum products, and some are suspected carcinogens (cancer causing). Napthelene, an example of a PAH, is the most common ingredient in coal tar, and therefore creosote. In May 1990, U.S. EPA completed an FS, which identified and evaluated cleanup alternatives that would minimize or eliminate health risks caused by site-related contaminants.

Based on the extent and concentration of contamination and the risk to human health and the environment, U.S. EPA issued a ROD for the site in September 1990. The ROD called for cleanup measures to address the contamination of on-site soil, sediment, and ground water. The cleanup measures in the ROD included:

- collecting and treating contaminated ground water;
- excavating highly contaminated soil and sediment and treating them using a bioslurry/soil washing technique (bioslurry involves mixing contaminated soil particles with water, and possibly adding nutrients, to break down organic contaminants attached to the soil particles into less harmful by-products);
- placing "washed" soil and sediment on site with other contaminated soil under a 2-foot soil cover; and
- rerouting a segment of the Little Menomonee River and filling the existing channel which contained contaminated sediment.

After issuing the 1990 ROD, U.S. EPA began discussions with Kerr-McGee and others believed to be responsible for site contamination to design and construct U.S. EPA's cleanup plan. U.S. EPA, Wisconsin Department of Natural Resources (WDNR), and Kerr-McGee signed a legal agreement called consent decree in 1991 that described the company's responsibilities. On December 30, 1991, the United States Government lodged the consent decree with the Federal District Court in Milwaukee. Objections to the consent decree were filed with the court during a public comment period associated with the lodging. The consent decree was entered, or signed, by the court in March 1996.

New Information

Kerr-McGee has already completed some tasks called for in the consent decree. These include doing a pilot bioslurry treatability test which explored removal efficiency; verifying the presence and extent of free-product (liquid material not dissolved in the ground water) creosote in soil just above the ground-water table; refining estimates of the extent of contaminated sediment in the Little Menomonee River; refining estimates of the extent of contaminated soil on site; and investigating and evaluating ground-water conditions on the site and east of the Little Menomonee River.

To help deal with the free-product creosote, Kerr-McGee installed seven extraction wells in 1995 to pump the creosote from below ground to an on-site storage tank. Over three seasons of operation, about 10,000 gallons of creosote and other wastewater were collected and removed from the site. Kerr-McGee will continue to extract creosote and remove it from the site during 1998.

Kerr-McGee has also developed a new ground-water collection and treatment plan for the site. The new ground-water remedy, known as a "funnel and gate system," appears to have lower operation and maintenance costs then the original cleanup plan. Details of the new ground-water collection and treatment plan were detailed in a May 1997 "Explanation of Significant Differences" document and fact sheet.

Based upon Kerr-McGee's recently completed, site-specific predesign work, literature review, and study of developments at other creosote-contaminated Superfund sites, it appears that the bioslurry/soil washing technique U.S. EPA originally proposed to clean up contaminated site soil and sediment will not work as efficiently as thermal desorption. Therefore, U.S. EPA has determined that new measures to treat and contain contaminated soil and sediment may be necessary. Recent experience at other creosote-contaminated sites around the country indicates that, in some

What is a Presumptive Remedy Approach?

As U.S. EPA has gained more Superfund experience, it has found that certain categories of sites have similar characteristics, contaminants, and effects on the environment. "Presumptive remedies" draw upon experience from other similar sites to help streamline the selection of cleanup actions. U.S. EPA believes the Moss-American site fits the profile for a presumptive remedy approach at a wood-treater site. Under a presumptive remedy approach, the thermal desorption remedy can be selected without an extensive feasibility study as was originally done to evaluate the bioslurry cleanup method. The effectiveness of the presumptive remedy will be monitored in a manner similar to other cleanup techniques.

climates, thermal desorption may be less expensive and more effective than the bioslurry/soil washing technique. This is how thermal desorption works: the contaminants are volatilized, then they are destroyed in an afterburner unit or collected in a condenser or sorption unit (see Figure 2).

Depending on the emission collection technique used to deal with the volitalized PAH material, the use of a flare or afterburner may, in effect, incinerate waste gases. U.S. EPA believes maximum flexibility in application of this technique is an important design consideration. However, if a flare or afterburner is selected as part of cleanup design for emission control, that unit needs to be as efficient as an incinerator (99.99 percent). After thermal desorption treatment, the soil and sediment can be placed back on site. This process would be regulated by Wisconsin state air emission and hazardous waste standards for "miscellaneous treatment units." In 1995, U.S. EPA designated thermal desorption as a "presumptive remedy" for wood-preserving facilities such as Moss-American. An explanation of a presumptive remedy is found in the box above.

In 1996, U.S. EPA received information that the 23 acres of the site owned by Union Pacific Railroad will probably continue to be used for industrial purposes in the long term, and that the land owner is willing to adopt proper deed restrictions. During the RI/FS, U.S. EPA conservatively assumed that the Union Pacific parcel could be developed as residential property. As a result, U.S. EPA developed cleanup standards for that parcel that would protect the health of future residents who could have direct contact with contaminated subsurface soil.

Since the 1990 ROD was issued, new information indicates that the original soil cleanup goal established

What is an Administrative Reform?

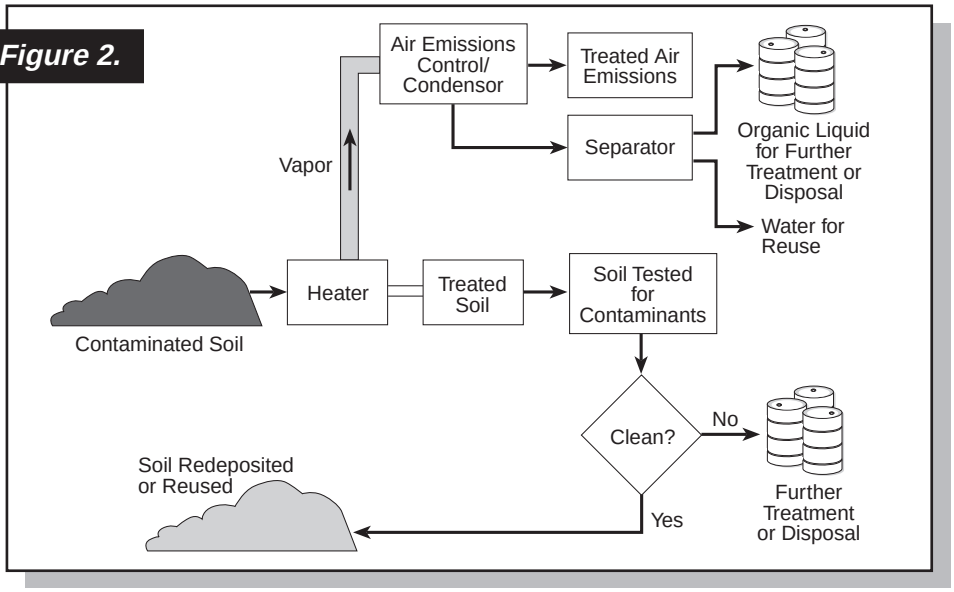
In recent years, U.S. EPA has issued a series of Superfund policy statements dealing with enforcement and cleanup aspects of Superfund cases. Collectively, these are referred to as "administrative reforms," and have a goal of making U.S. EPA's handling of Superfund sites more fair from an enforcement standpoint and more up-to-date technically. U.S. EPA's regional offices have been encouraged to look for sites where application of these reforms may be warranted. For Moss-American, areas of reform to consider may be:

- review of more probable future site land-use patterns; and
- advances in cleanup technology that may offer the opportunity to conduct cleanup more efficiently and at less cost.

(0.061 parts per million [ppm]) may not be attainable/sustainable in an urban setting such as Milwaukee. Also, given that the Union Pacific property is expected to remain industrial, there is far less chance of residents coming in contact with the contaminants and developing health problems.

Because of this, U.S. EPA is considering changing the exposure scenario for the Union Pacific parcel from residential to industrial, provided that appropriate deed restrictions are put in place by the land owner. This change may allow Kerr-McGee to excavate and treat less soil than if the site were to be developed for residential use. These changes are being proposed in the spirit of Superfund "administrative reforms" (see box above). If adopted, new cleanup goals will be developed according to newly adopted Wisconsin state soil cleanup standards. According to Wisconsin state standards, all contaminants of concern must be addressed. Cleanup goals for carcinogenic PAHs (CPAHs) were 0.061 ppm in the 1990

Figure 2.



ROD. If non-residential exposure scenarios are adopted, as discussed in this Proposed Plan, CPAH levels that meet state standards would be 3.1 ppm for industrial use and 49 ppm for recreational use. (The reason for the difference between 3.1 and 49 ppm is that a worker on the site five days per week should have a lower exposure rate than an occasional recreational user.)

U.S. EPA may also consider adoption of an exposure scenario for areas of the site owned by Milwaukee County to protect recreational users, as opposed to residents. U.S. EPA is aware of the county's Park and Open Space Plan recommendation for portions of the Little Menomonee River corridor. However, U.S. EPA will expect county deed restrictions to be placed on this land, limiting it to recreational use before adoption of a recreation use exposure scenario for county-owned land. While the state standard of 49 ppm calculated for recreational land use appears to fully protect human health, U.S. EPA believes it may be prudent to allow recreational uses on the site's county-owned land that feature less soil contact. This includes biking, hiking, and picnicking, as opposed to the creation of ball fields.

While some cleanup standards are intended to provide direct contact and ground-water protection, consideration must be given to those standards aimed at safeguarding surface water through erosion-control measures. For the Moss-American site, post-ROD sediment information on naturally occurring CPAH levels indicate that 15 ppm represents average conditions. Therefore, erosion must be controlled so runoff will not exceed this standard. This may be attained by sampling to ensure that exposed soil areas do not exceed 15 ppm after soil excavation, or by adopting control measures/performance standards (cleanup actions) to control runoff. U.S. EPA invites public comment on this issue as well.

Summary of Alternatives

Based on the new information previously described, U.S. EPA evaluated the following two alternatives to treat and contain on-site soil and sediment contamination.

Alternative 1—Clean Up Site Under Original ROD: Treat highly contaminated soil and sediment in a slurry bioreactor and retain the residential use scenario throughout the site. Under Alternative 1, the 1990 ROD would not be modified in terms of soil or sediment treatment technology. As described in the 1990 proposed plan, highly contaminated river sediment and on-site soil would be removed and treated on site using a slurry bioreactor. Treated material from the slurry bioreactor would be placed on the contaminated soil area and contained under 2 feet of soil. However, since this treatment technology is not expected to meet U.S. EPA's soil cleanup goals, more extensive containment measures may need to be used.

This technology is a two-part process involving soil washing and slurry bioreactors. Soil washing removes contaminants from coarse-grained soil in a scrubber. A scrubber removes impurities from a gas by putting the gas in contact with a liquid. Fine-grained soil and sediment would be mixed with water, and the resulting slurry would be pumped to the bioreactor for treatment. After treatment, residual material would be dewatered and placed back on site.

Alternative 2—Amended ROD: Treat contaminated soil (and some sediment) with a low-temperature thermal desorption unit and adopt the industrial use exposure scenario for the Union Pacific Railroad parcel. (Also consider adoption of a recreational use exposure scenario for land owned by Milwaukee County.) The cost of the treatment is estimated to be approximately half the cost of the bioslurry alternative for each cubic yard of contaminated soil treated. If treatment is successful, a less-extensive containment system would be needed for soil residuals and less-contaminated soil areas.[2]

This alternative involves treating on-site contaminated soil/sediment through thermal desorption. Using a mobile thermal desorption unit, organic contaminants would be removed from excavated soil.

Recommended Alternative

U.S. EPA sees potential benefit in adopting thermal desorption (Alternative 2) as a treatment approach for highly contaminated soil/sediment at the Moss-American site, instead of the bioslurry approach originally selected, (Alternative 1) for these reasons:

- The thermal desorption approach should provide superior results in terms of reduction of toxicity, mobility, or volume of hazardous substances.
- Site-specific cost estimates for the application of the thermal desorption technique are $75-100 per cubic yard of material treated. In comparison, recent site-specific bioslurry costs were estimated at $150-200 per cubic yard of material treated.
- A 15-day treatment period was anticipated for a batch of soil/sediment with the bioslurry approach. In comparison, the time needed to treat a batch of soil/sediment using the thermal desorption approach is anticipated to be a matter of hours.
- The bioslurry treatment unit would be a custom-designed, permanently constructed, site feature. In contrast, vendor-developed temporary equipment would likely be used for thermal desorption. Therefore, it may be easier to design the thermal desorption approach and achieve a quicker cleanup than the bioslurry alternative. Since the ability to proceed with ground-water cleanup hinges on eliminating those soil areas that would serve as new sources of ground-water contamination, or could interfere with ground-water treatment, this is an important consideration.

Summary of Site Risks

Since a portion of the site is owned by an industrial entity, and since U.S. EPA believes industrial use is likely to continue, it appears appropriate to adopt "risk assessment assumptions" based on industrial use exposure rather than a residential use exposure for that portion of the site now owned by the Union Pacific Railroad.

In summary, **Alternative 2** is believed to provide the best balance of tradeoffs

[2] U.S. EPA is proposing to issue an "equivalent standard of performance waiver" of certain landfill cover requirements, including the State-approved liner and leachate collection system. With the discovery of more extensive areas of free product, ground-water flushing may no longer shorten the cleanup time. The "greater risk waiver" included in the 1990 ROD may no longer be appropriate. Instead, an equivalent standard of performance waiver appears applicable since the proposed treatment and cap for the soil will attain a standard of performance equivalent to that required under State Resource Conservation and Recovery Act (RCRA) regulations.

Evaluating the Alternatives

U.S. EPA used the following nine criteria, which are required by law, to evaluate both alternatives. The Evaluation Table (Figure 3) compares the alternatives to these criteria:

1. Overall protection of human health and the environment determines whether the alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering measures, or treatment.

2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) evaluates whether the alternative meets Federal and State environmental statutes, regulations, and other requirements that pertain to the site or whether a waiver is justified.[3]

3. Long-term Effectiveness and Permanence considers the ability of the alternative to protect human health and the environment over time and the reliability of such protection.

4. Reduction of Contaminant Toxicity, Mobility, or Volume through Treatment evaluates the alternative's effectiveness in the reduction of the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.

5. Short-term Effectiveness considers the length of time needed to implement the alternative and the risks the alternative poses to workers, residents, and the environment during implementation.

6. Implementability considers the technical and administrative feasibility of implementing the alternative, such as the availability of goods and services.

7. Cost considers estimated capital, operation, and maintenance costs evaluated in the form of present worth costs. Present worth is the total cost of the alternative over time expressed in terms of today's dollars.

8. State Acceptance considers whether the State agrees with U.S. EPA's analyses and recommendations of the Proposed Plan.

9. Community Acceptance will be addressed in the potential ROD Amendment. Acceptance of the recommended alternative will be evaluated after the public comment period and before a ROD amendment is issued. Public comments and U.S. EPA responses to those comments will be presented in a Responsiveness Summary, which would be attached to a ROD amendment.

Recommended Alternative

The recommended alternative is **Alternative 2, ROD amendment** (thermal desorption and industrial use exposure scenario for the Union Pacific property). The evaluation table shows that **Alternative 2** fully satisfies the evaluation criteria for the Moss-American site.

Figure 3. Evaluation Table

Evaluation Criteria	Alternative 1	Alternative 2
1. Overall Protection of Human Health & Environment	■	■
2. Compliance with ARARs	◘	■
3. Long-term Effectiveness and Permanence	■	■
4. Reduction of Toxicity, Mobility, or Volume Through Treatment	◘	■
5. Short-term Effectiveness	■	■
6. Implementability	◘	■
7. Cost (Per Cubic Yard)	$150 - $200	$75 - $100
8. Support Agency Acceptance	The Wisconsin Department of Natural Resources has reviewed the components of the recommended alternative and acceptance is withheld until after the public comment period.	
9. Community Acceptance	Community acceptance of the recommended alternative will be evaluated after the public comment period.	

■ Fully meets criteria ◘ Partially meets criteria □ Does not meet criteria

between the alternatives with respect to the nine criteria used to evaluate cleanup remedies. Based on information available to date, U.S. EPA believes that **Alternative 2** would protect human health and the environment, would comply with ARARs, would be cost effective, and would utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. **Alternative 2** will satisfy the preference for treatment as a principal element.

Next Step

U.S. EPA will consider public comments received during the public comment period before choosing a final cleanup plan for the site. If a ROD amendment is signed, current design plans for cleanup may be modified to reflect ROD amendment features as outlined in the consent decree. U.S. EPA will ask those believed responsible for site contamination to do this cleanup.

Another important feature of site cleanup is management of contaminated sediment. Discussions are ongoing involving Federal and State natural resource trustees, such as WDNR, U.S. Department of Interior and National Oceanic and Atmospheric Administration, seeking ways to integrate a sediment management plan to enhance natural resource restoration. Since the original ROD was issued, U.S. EPA has also been examining developments in dredging techniques and the results of studies done on the site's ecosystem. Should discussions result in recommendations to alter current sediment management features of the cleanup, U.S. EPA will develop another Proposed Plan.

[3] An amended cleanup remedy would need to consider and attain these major new ARARs which have been developed since 1990:

- Thermal desorption—Regulation as a "miscellaneous treatment unit" as discussed in the federal RCRA and the Wisconsin Administrative Code governing hazardous waste management must be addressed. If a flare or afterburner is selected to manage contaminants driven off the soil, then they must meet a very high removal efficiency level (99.99 percent) for a RCRA incinerator as stipulated in the Wisconsin Administrative Code governing hazardous waste incinerators.
- Soil cleanup—Use of an industrial or recreational exposure scenario would require attainment of a soil residual cleanup limit described in the Wisconsin Administrative Code governing soil cleanup standards. The cleanup standards must offer direct contact and ground-water movement protection.
- Erosion/surface runoff protection—Should more than 5 acres of the Moss-American site be subject to construction activity, then soil erosion and surface runoff protection measures, as discussed in the Wisconsin Administrative Code governing construction site stormwater discharges, become effective.

For Additional Information

For further information about this Proposed Plan or the Moss-American site, contact:

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Anyone interested in learning more about the proposed revision for the Moss-American site cleanup plan is encouraged to review the information repository located at the **Mill Road Library, 6431 N. 76th Street, Milwaukee.** An Administrative Record, which contains detailed information upon which the selection of the cleanup plan will be based, is also located at the Mill Road Library and at the U.S. EPA Region 5 office in Chicago.

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