EPA U.S. ENVIRONMENTAL PROTECTION AGENCY June 2001

Innovative Treatment Technologies Provide Practical Cleanup Solution for Frontier Hard Chrome Superfund Site:
EPA Seeks Public Comment

The U.S. Environmental Protection Agency (EPA) invites your comments on the Proposed Plan for cleaning up contaminated soils and groundwater at the Frontier Hard Chrome (FHC) Superfund Site in Vancouver, Washington. The Proposed Plan is now available for public review. The plan contains background information, a summary of findings from environmental investigations, and EPA's proposed remedy for the site. This fact sheet tells how you can participate in the decision-making process and provides a summary of the Proposed Plan.

Public Meeting Opportunity: EPA will host a public meeting if sufficient interest is expressed. To request a public meeting, write or e-mail Ken Marcy at the address above by July 5. Or, call Ken Marcy directly at (206) 553-2782 or 1-800-424-4372.

Where can the document be found? To request a copy of the Proposed Plan, call Andrea Lindsay at (206) 553-1896. The plan will be available for review at the Vancouver Public Library, 1007 East Mill Plain Blvd, or at EPA's Record Center, 7th Fl, 1200 Sixth Avenue, Seattle (206/553-4494). The Records Center also maintains an Administrative Record, a collection of documents EPA relies on when making site cleanup decisions, which is available for public viewing during business hours.

For More Information. For information about public involvement opportunities, contact Andrea Lindsay, Community Involvement Coordinator, at (206) 553-1896 or 1-800-424-4372. For technical information, call Ken Marcy, Project Manager, at (206) 553-2782 or 1-800-424-4372.

Frontier Hard Chrome
Proposed Cleanup Plan
Comments Due July 25, 2001

Comments Due July 25, 2001. The public is encouraged to review the Proposed Plan. The comment period runs from June 20 to July 25, 2001. All public comments will be considered by EPA when reaching a final decision for cleanup action. EPA will respond to comments in a document called a Responsiveness Summary. Send written comments to:

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1200 Sixth Avenue
Seattle, WA 98101
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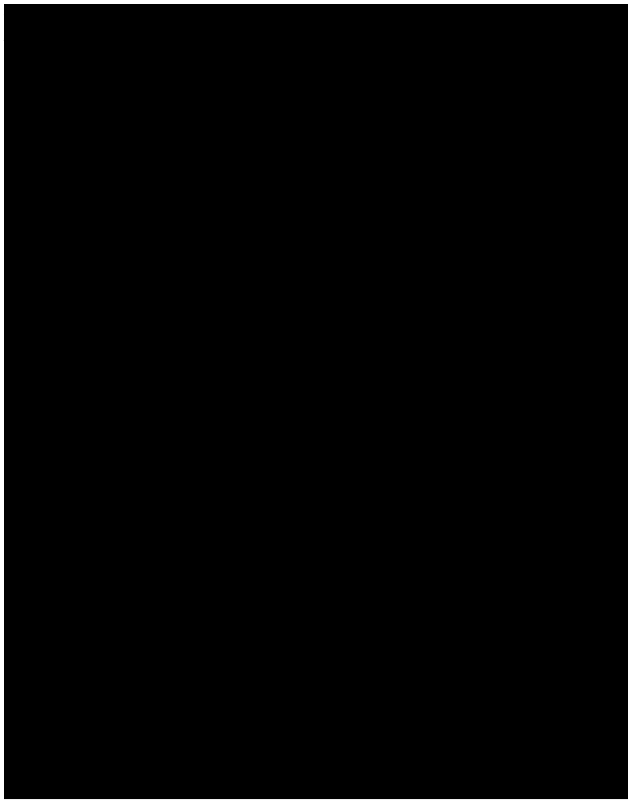
Summary of Proposed Plan

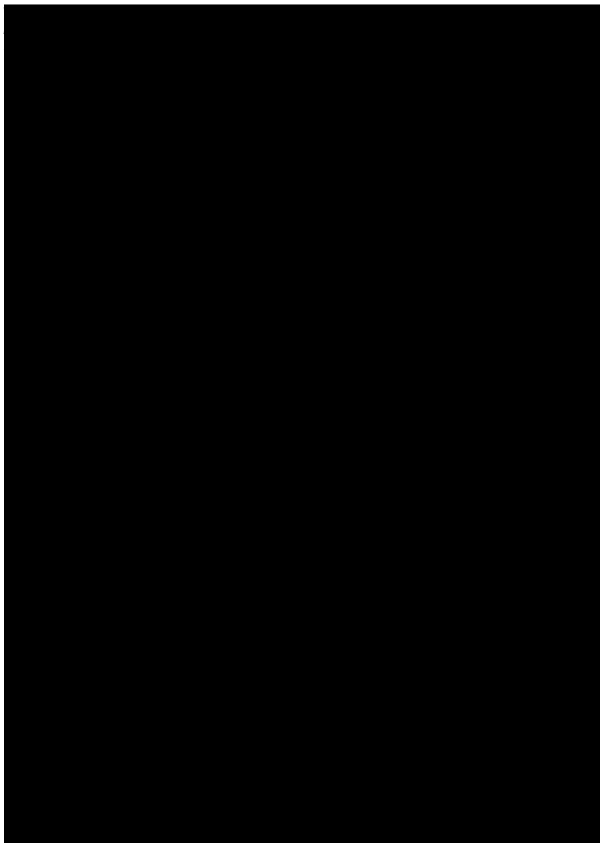
Following is a summary of the Proposed Plan for cleaning up contaminated soils and groundwater at the Frontier Hard Chrome Superfund Site.

Site Background

The Frontier Hard Chrome (FHC) site is located in Vancouver, Washington. (See Figure 1.) The site is about one-half mile north of the Columbia River and covers about one-half acre. Chrome plating operations occurred at the FHC site for about 25 years between 1958 and 1982. FHC, which operated at the site from 1970 to 1982, discharged process wastewaters containing hexavalent chromium directly to an on-site dry well. Based on concerns that contaminated water could reach the Columbia River and/or drinking water wells, EPA added the site to the National Priorities List, a list of the nation's most contaminated hazardous waste sites, in 1983.



At the time contaminated groundwater was first detected, a groundwater plume exceeding state groundwater cleanup standards extended about 1600 feet southwest from the facility. (See Figure 2.) Monitoring has shown that while the area of groundwater contamination (called the "plume") has changed in size and shape over time, the "hot spot" (the smaller, most contaminated area of the plume) under the site has shown consistently high concentrations of chromium.



In 1987, EPA selected a cleanup remedy for soils. However, further evaluation showed this remedy to be ineffective. In 1988, EPA selected a cleanup remedy for groundwater. However, monitoring then showed that the plume was decreasing, and EPA reevaluated the need to pump and treat the groundwater. Some contaminated soil was removed from the site in 1994, and EPA has continued monitoring and evaluating new, innovative cleanup technologies. However, no active steps have been taken to fully address the site's contamination.

Site Contamination and Risk

Chromium is the hazardous substance of concern at this site. Chromium is present in two forms: trivalent and hexavalent. Trivalent is generally non toxic. Hexavalent chromium can cause health problems even at low levels.

Likelihood of exposure to human health and the environment from contaminated soils and groundwater over the next several years is low due to the current size and direction of the plume, and chromium concentrations in surface

soils. Studies show that levels of exposure to workers from direct contact and dust inhalation are well within safe ranges. There does not appear to be any contaminated groundwater seeping into the Columbia River. At present, there are no active wells in the contaminated zone, and controls are in place to prevent placement of such wells.

The site does, however, present a threat to groundwater as resource, and potentially to human health and the environment in the future if left uncontrolled. There are currently no controls to restrict movement of the plume, or to prevent continued impacts to groundwater from highly contaminated soils. This uncontrolled plume presents an existing and future threat to the groundwater. Local controls which are currently in place to prevent public access to contaminated groundwater may not be 100% effective over the long term. Future use of the FHC site may involve demolition of buildings on site, exposing the most heavily contaminated soils. Also, if future use of the site becomes residential, exposure scenarios will change, and current levels of contamination in surface soils may be unsafe.

In short, while the likelihood of exposure to human health and the environment from contaminated soils and groundwater over the next several years is low, the site prevents a very real threat to groundwater, and a threat to human health and the environment in the future if left uncontrolled.

Cleanup Alternatives

The Proposed Plan discusses several alternatives each for cleaning up groundwater and soils. For comparison purposes, one of the alternatives evaluated is called a "no action" alternative, which would reflect future conditions if no cleanup was conducted.

Groundwater Alternatives. For groundwater, cleanup alternatives address the "hot spot" area of contamination, and not the larger plume. Data suggests that the plume, which has lower concentrations of contamination, will dilute and disperse naturally if the "hot spot" is cleaned up. EPA evaluated the following alternatives:

-Monitoring and land use controls: This alternative would involve continued monitoring of the plume in combination with land use controls, and local groundwater use controls, to prevent public access to contaminated groundwater. EPA did not choose this alternative because it does nothing to address the source of contamination and poses future risk to human health and the environment by leaving highly contaminated groundwater in place uncontrolled.

-Pumping and treating contaminated groundwater: This alternative involves the extraction of contaminated groundwater and above ground treatment. The alternative would be effective for controlling the plume hot spot and providing treatment of the groundwater over time. EPA did not choose this alternative because it is expensive and would require 5 years of operation.

-Using an innovative treatment technology to create an underground treatment barrier wall at the hot spot's border that changes hexavalent chromium to trivalent chromium in place. EPA selected this alternative in conjunction with the next alternative. This alternative is described in the "Preferred Alternative" section below.

-Using an innovative treatment technology throughout the hot spot to change hexavalent chromium to trivalent chromium in place. EPA selected this alternative in conjunction with the alternative above. This alternative is described in the "Preferred Alternative" section below.

Soils Alternatives: For soils, cleanup alternatives focus on a 28,000 square foot area extending to about 25 feet deep that exceeds state soil cleanup standards for hexavalent chromium. EPA evaluated the following alternatives:

-Monitoring and land use controls: This alternative would involve continued

monitoring of contaminated soils at the site in combination with land use controls to prevent public exposure to contaminated soils. EPA did not choose this alternative because it does nothing to address continued releases of hexavalent chromium from contaminated soils to groundwater. Leaving the contaminated soils in place also poses future risk to human health and the environment.

-Placing an asphalt cap over contaminated soils: This alternative involves placing an asphalt cap over contaminated soils that exceed state standards for hexavalent chromium. The cap would prevent direct exposure to soils, and would lessen flow of surface water through contaminated soils. EPA did not select this alternative because it does not address continued releases of hexavalent chromium from contaminated soils below the water table. Asphalt caps also require ongoing maintenance to ensure that cracks in the cap are repaired quickly.

-Digging out and disposal of contaminated soils: This alternative would remove all soils contaminated above state standards for disposal in a hazardous waste facility. Excavated contaminated soils would be replaced with clean soil. EPA did not select this alternative because the costs are excessive.

-Digging out the soil, stabilizing the soil with concrete, then replacing it: Like the last alternative, this alternative would involve complete removal of all contaminated soils exceeding state standards. However, rather than disposing of the contaminated soils, the soils would be mixed with concrete on site and then replaced. The purpose of the concrete is to stabilize the contaminated soils and prevent releases of hexavalent chromium to groundwater. This alternative was tested and found to be ineffective at controlling releases of hexavalent chromium.

-Using the innovative treatment technology proposed for groundwater to convert hexavalent chromium to trivalent chromium in place. EPA selected this alternative, which is described below.

EPA's Preferred Alternative: For groundwater, EPA prefers a chemical barrier wall at the hot spot's border, and chemical treatment throughout the hot spot. For soils, EPA prefers chemical treatment of all soils exceeding state standards for hexavalent chromium. Local land use and groundwater access controls would also be used with the preferred remedies for both soil and groundwater. (See Figure 3.)

The chemical barrier wall, or treatment barrier, would be installed by mixing or injecting a chemical with soils and groundwater on the down-gradient side of the plume hot spot. The chemical would reduce naturally occurring iron, and create a treatment zone. When the hexavalent chromium comes into contact with this zone, it would change into trivalent chromium (which is generally non-toxic and does not move). The treatment barrier would be created first to provide containment of the plume hot spot as soon as possible, and to provide a protective barrier during treatment of remaining soils and groundwater.

Treatment of remaining soils exceeding state standards and groundwater in the plume hot spot would occur at the same time in the next phase of the cleanup. Similar to the treatment barrier wall, a chemical would be injected or mixed into contaminated soils and groundwater. The
chemical would change hexavalent chromium to trivalent chromium. Sulfate is a by-product of treatment. Sulfates will be monitored carefully during the cleanup and extracted if necessary. On-site structures may need to be removed prior to cleanup, depending on the method selected to mix or inject the chemical into the ground. Total cost of this alternative would be about $3-3.5 million.

EPA's preferred remedy was evaluated against the criteria used by EPA to assess remedies under the Superfund Program, and these evaluations are described in detail in the Proposed Plan. The preferred remedy would provide excellent overall protection of human health and the environment, and would permanently reduce risks by treating the principal threat at the site, at a lower cost than other protective alternatives. EPA encourages you to comment on all remedies presented.

EPA Invites Your Comments on the Proposed Cleanup Plan for the Frontier Hard Chrome Superfund Site.

The Proposed Plan indicates EPA's preferred remedy for cleaning up contaminated soil and groundwater at the Frontier Hard Chrome Superfund Site in Vancouver, Washington. We encourage you to comment on the proposal. EPA will make a final remedy selection after all public comments are reviewed and considered. Comments are due July 25, 2001.

To request additional services for persons with disabilities, call 1-800-424-4372.

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SUPERFUND FACT SHEET
Frontier Hard Chrome