

## New Jersey Zinc/Mobil Chemical Site

*You are invited to comment on*

### The Proposed Plan and Other Remedies Considered For The South Ditch Sediments

**Fact Sheet #8  
September 2002**

#### DePue, Illinois

**What is the South Ditch?** The South Ditch is a ditch between the plant property of the New Jersey Zinc/Mobil Chemical Superfund Site and Lake DePue. (For more information on the site, see page 7.)

Historically, the ditch has received runoff from the former plant property. Because of the nature of past plant operations, the runoff contained high levels of metals that contaminated sediments in the ditch. These contaminated sediments are called "unnatural" sediments.

In 1995, the State of Illinois and the potentially responsible parties (PRPs) <sup>1</sup> signed an interim consent order <sup>2</sup>. One of the requirements of that order was for the PRPs to investigate the sediments in the South Ditch and, if necessary, construct a remedy for the sediments. The PRPs completed the investigation in 1996.



#### Alternatives Studied for the South Ditch Sediments

The PRPs studied four main alternatives to remedy the South Ditch sediments. These alternatives are described on the next two pages. The Illinois EPA has designated one alternative (4b) as the Illinois EPA proposed plan. The public is invited to comment on all the studied alternatives as well as the proposed plan.

Costs are given in 1997 dollars, because the study of alternatives was conducted in 1997. All alternatives except Alternative 1 include institutional controls. In the short term, these controls would include "No Trespassing" signs and limited fencing. Long-term institutional controls could include restrictions on the deed of the property limiting certain activities such as excavation, swimming and fishing.

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#### **Alternative 1 No Action/Natural Recovery.**

This alternative is a passive form of action involving natural processes. In this case, the natural process

of siltation caused by regular flooding of the Illinois River would gradually cover the "unnatural" sediment. As long as the Illinois River sediment covered the "unnatural" sediment, humans and other organisms would not come into contact with the elevated levels of metals. As developed by the PRPs, this alternative would also include monitoring.

Estimated cost in 1997 dollars: \$429,000 (\$0 capital cost and \$21,665 estimated annual operation and maintenance [O & M] cost)  
Estimated months to construct: 0  
Estimated time for sediments to become covered: 30 years

### **Alternative 2 Enhanced Natural Recovery with Surface Water Diversion.**

This alternative would be similar to Alternative 1 in that it would rely on the natural process of siltation eventually covering the "unnatural" sediment with a clean layer of silt. The difference is that water currently flowing into the ditch would be directed around the ditch so that the water does not wash the "unnatural" sediment into the lake. Then a series of dams would be constructed across the ditch. The dams across the ditch would be constructed low enough so that when the Illinois River is in flood stage, river water (with sediment) would wash over the dams into the ditch. Low berms would be constructed on both sides of the ditch. As the floodwaters recede, the sediment from the river water would be retained behind the dams and berms. This "clean" river sediment eventually would cover the "unnatural" sediment with a cap.

Estimated cost in 1997 dollars: \$1,176,000 (\$608,000 capital cost and \$28,662 annual O & M cost)  
Estimated months to construct: Less than six months  
Estimated time for sediments to become covered: Five to 15 years

### **Alternative 3 Above-Grade Cap.**

This alternative would involve redirection of the surface water that flows into the ditch so that it would flow into a new drainage ditch. The sediment would be stabilized by adding kiln dust, fly ash or other material. A two to three foot cap of compacted clay soils would be placed on top of a special geofabric that would be laid over the top of the "unnatural" sediments. The cap would be vegetated, and riprap, such as big rocks, would be placed on the sides to prevent the sediment from eroding during rainfall. As long as the cap is intact, it would prevent people or animals from coming in contact with the "unnatural" sediments. Institutional controls would be placed on the property to prevent people from digging into or in other ways damaging the cap.

Estimated cost in 1997 dollars: \$1,387,000 (\$946,000 capital cost and \$22,330 annual O & M cost)  
Estimated months to construct: Less than six months

### **Alternative 4 Removal of "Unnatural" Sediment.**

This alternative is divided into three sub alternatives (4a, 4b and 4c). There are several common elements among the three sub alternatives.

#### **Common Elements of 4a, 4b and 4c**

- **The sediment would be removed.** The "unnatural" sediment would be removed by a combination of mechanical and hydraulic dredging. The sediment would be excavated as a semi-solid and/or dredged as a slurry (suspended in water). The sediments would be transferred to a settling basin probably located on the south side of the railroad tracks where the old dump was formerly located. Here the sediment would be allowed to settle out. Most of the water would be returned to the ditch. Three ways of disposing of the sediment were considered and are described on page 3.
- **The water now flowing into the ditch, including the spring water in the ditch, would be temporarily rerouted around the ditch.** In order for the sediments to be removed, the water

now flowing through the ditch would be rerouted around the ditch and discharged into Lake DePue at another location for the period of dredging. The water could be temporarily diverted by a combination of interception trenches, shallow groundwater wells and piping in or near the springs.

Differences in methods of sediment disposal in sub alternatives 4a, 4b and 4c

- **Sub alternative 4a.** In this sub alternative, the PRPs proposed to transport the dewatered sediment to a nearby fertilizer plant. The zinc and copper in the sediment are valued micronutrients and would be added to the fertilizer being manufactured. The fertilizer plant withdrew their interest in the South Ditch sediments so this option was abandoned. The fertilizer plant subsequently closed.
- **Sub alternative 4b.** In this sub alternative, an interim containment unit would be constructed on the former plant property site for the sediment after the sediment has been dewatered in the settling basins and stabilized with fly ash, kiln dust or other additives. A permanent remedy for the sediment would be selected later, when the remedy for the entire site is chosen.

The interim unit would be constructed over an area of contaminated soil and groundwater on the former plant property. The sediment would be placed on top of a liner, such as recompacted clay and high-density polyethylene (HDPE), to prevent the metals in the sediment from being washed down into the soil below. An aggregate drainage layer such as gravel would be placed on top of the liner before the sediment is placed in the containment unit. Water draining through the sediment would be collected periodically from this drainage layer and sent to the water treatment plant already constructed and being operated by the PRPs. The water treatment plant was required by the interim consent decree and has been constructed by the PRPs to treat water coming off the plant property so the water meets state and federal regulations before it is discharged into the Illinois River.

To prevent rain from entering the containment unit, the unit would be covered with HPDE and a clay layer graded to shed water. The clay layer would be vegetated. The current thinking is that this containment unit will be located north of the zinc slag pile toward the west end. The actual location will be determined during the design phase of the project.

Estimated cost: \$1,895,000 (\$1,677,000 capital cost and \$11,000 annual O & M cost)  
Months to construct: Less than six months.

- **Sub alternative 4c.** In this sub alternative, the sediment would be removed from the settling basins after it is dewatered, stabilized with a material like fly ash or kiln dust and shipped off site for disposal at a permitted, compliant, non-hazardous waste landfill.

Estimated cost: \$2,402,000  
Months to construct: Less than six months.

## Human and Ecological Risk Assessments of the Ditch Sediments

**What is the concern with the sediments?** There are two concerns. One concern is for human health. The second is an ecological concern; that is, a concern about plants and animals that may be affected by the ditch sediments. The following evaluation of the risk that the sediments might pose to human health and the environment is based on the 1996 investigation results.

- **Human Health Risk.** The South Ditch is in the annual floodplain of the Illinois River and unsuitable for residences; therefore, risk was not considered for residential use. Risk was considered for two other scenarios. The first scenario is that of a child trespasser; that is, for a child playing in the South Ditch for four hours per day, 50 days per year for six years. The second scenario is that of a construction worker who is digging in the ditch sediment for short periods of time.

There are no standards for metals in sediments. Since there are no standards, the U.S. EPA and the Illinois EPA have calculated screening values to serve as guidelines in evaluating whether

certain concentrations of chemicals in sediment pose a threat to humans. The Illinois EPA and U.S. EPA consider exposure to a chemical at concentrations above the screening value to pose either a potential cancer or potential non-cancer risk<sup>3</sup>. An example of a non-cancer risk is a concentration of lead that would damage the developing nervous system of a child. Exposure can be from eating, drinking, breathing or touching a chemical or, in this case, sediment that contains the chemical.

*Conclusion.* The maximum levels of arsenic, copper and lead in South Ditch sediment exceed screening levels for a child trespasser. The metal concentrations in the South Ditch sediment also exceed the Illinois EPA arsenic, cadmium, copper, lead and zinc screening levels for construction workers.

- **Ecological Risk.** Ecological risk was measured by placing two benthic organisms (midge larvae and scud) in samples of sediment collected in eight locations along the length of the ditch. Benthic organisms are small organisms that would normally live on the bottom of streams. These organisms are important, because they are food for larger organisms such as fish and waterfowl.

*Conclusion.* One hundred percent of the midge larvae died within four days in sediment from seven of the eight sample locations. In the eighth sediment sample, 85% of the midge larvae died within four days. One hundred percent of the scud in all eight samples died within four days.

For comparison, two sediment samples were collected from nearby Turner Lake. Within four days, 22 percent of midge larvae died in one sample and 35 percent died in the other sample. For scud, 22 percent died in one sample within four days and 23 percent died in the other sample.

## Evaluation of Remedy Alternatives

**What is the objective of the South Ditch sediment remedy?** There are three main objectives for the South Ditch remedy: (1) to reduce the potential for flood water or water moving through the ditch to move the "unnatural" sediment into Lake DePue; (2) to reduce the risk to humans or sensitive plants or animals coming into contact with the "unnatural" sediment, and (3) to be compatible with future site-wide remedies.

**How are the alternative remedies evaluated?** The federal Superfund Law specifies the following nine criteria for evaluation of remedies. They are (1) overall protection of human health and the environment, (2) compliance with applicable or relevant and appropriate requirements (ARARs) under federal or state laws, (3) long-term effectiveness and permanence, (4) reduction of toxicity, mobility or volume of contaminants through treatment, (5) short-term effectiveness, (6) implementability, (7) cost, (8) support agency acceptance and (9) community acceptance.

Criteria one and two are called threshold criteria, because all remedies must meet these two criteria. Criteria three through seven are called balancing criteria, because they are weighed against one another. Criteria eight and nine are considered modifying criteria.

Summary of Evaluation of Each Alternative Against the Nine Criteria					
Criteria	Alternative 1 Natural Recovery / No Action	Alternative 2 Enhanced Natural Recovery with Surface Water Diversion	Alternative 3 Above Grade Cap	Alternative 4B Removal with On-Site Consolidation	Alternative 4C Removal with Off-Site Disposal
1 Overall protection of human health and the environment	■	■	■	■	■
2 Compliance with ARARs	□	□	□	■	■
3 Long-term effectiveness and	□	□	□	■	■

permanence					
4 Reduction in toxicity, mobility, or volume through treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5 Short-term effectiveness	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6 Implementability	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7 Cost	\$429,000	\$1,176,000	\$1,387,000	\$1,895,000	\$2,402,000
8 Support agency acceptance	The USEPA has reviewed the components of Alternative 4-B and supports its acceptance as the recommended alternative pending review of public comments.				
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

<sup>1</sup> The Superfund law specifies that potentially responsible parties are past and present owners and operators of the site. In this case, the potentially responsible parties are Viacom International Inc., ExxonMobil Corporation and Horsehead Industries, Inc. These three companies call themselves the "DePue Group." Since DePue citizens have expressed confusion about the name "DePue Group," thinking it belongs to a group of local citizens, this fact sheet will refer to these three companies as the potentially responsible parties (PRPs). The Illinois EPA oversees the work of the PRPs to ensure that samples are collected and other work is conducted as described in the Illinois EPA approved work plans.

<sup>2</sup> A consent order is a legally binding court order agreed upon by the parties entering into the order. The order lists the benefits and obligations of all the parties who signed the order. In this case, the consent order was filed in the 13th Judicial Circuit Court in Bureau County, Illinois. This order is "interim" because it covers only investigations, design of the remedy and certain actions such as the remedy for the South Ditch. A second order will be negotiated for the implementation of the overall site remedy.

<sup>3</sup> For more information on how risk is calculated, see the Proposed Plan and the study of South Ditch remedies. These documents are in the project repository at the Selby Township Library in DePue.

## Illinois EPA Proposed Plan

**What is the Illinois EPA Proposed Plan?** The Illinois EPA Proposed Plan is Alternative 4b, which is removal of "unnatural" sediment and consolidation of the sediment in an on-site interim containment unit. The public is invited to comment on this proposal as well as all alternatives studied.

**Why does the Illinois EPA prefer Alternative 4b?** Alternatives 4b and 4c are the only alternatives that meet both of the first two criteria. (See the above table.) In the Agency's opinion, 4b provides the best balance of criteria three through seven. Criteria 9 will be evaluated after the end of the public comment period.

## Other Questions

**How much sediment would be removed?** Approximately 8,000 cubic yards of sediment would be removed. The "unnatural" sediment has characteristics distinct from the sediment in the surrounding area. For example, the "unnatural" sediment is much looser and of a different color.

Determination of which sediment will be removed will be based on the physical characteristics. In later phases, a comprehensive investigation of the area surrounding the South Ditch will be conducted.

**When is construction planned to begin?** If the Proposed Plan is accepted, treatability studies and

design work should be completed in the summer of 2003. The entire South Ditch remedy is expected to be completed by the fall of 2004.

**The mouth of the South Ditch has moved over time.** The Illinois EPA is aware that the mouth of the South Ditch may have moved over time and that contamination probably is located in other places in the area around the ditch. The whole Southeast Area will be investigated in later stages of the project. If additional remedies are necessary, the Illinois EPA will submit a Proposed Plan(s) to the public for comment before selecting an additional remedy(s) for the area.

**Who will conduct the South Ditch remedy?** The PRPs will construct the remedy for the South Ditch with Illinois EPA oversight.

**Is the remedy implementable?** The Illinois EPA's position is that the Proposed Plan can be implemented. It may be difficult to implement, but it is possible. The PRPs, at a citizens' advisory group meeting, raised questions about their ability to meet water quality standards during dredging. The Illinois EPA's position is that it is highly important to keep additional contaminated sediment from entering the lake and that every effort must be made to meet water quality standards. The Agency takes into account naturally occurring disturbances of the sediment, such as wind and wave conditions, when considering compliance. But, releases of contaminants caused by dredging can and should be avoided to the greatest extent practicable.

The Illinois EPA Proposed Plan, however, does allow the PRPs to conduct treatability studies. If the PRPs demonstrate through treatability studies that they cannot meet the standards, then the Illinois EPA will reconsider its position.

## Next Steps

**How will the final decision about the South Ditch sediments be made?** The Illinois EPA and U.S. EPA will carefully consider all the public comments made during the public comment period including the oral comments at the hearing and the written comments submitted to the Illinois EPA hearing officer. See the enclosed flyer for more information on submitting comments.

After considering these comments, the Illinois EPA will make a final decision about the remedy in consultation with the U.S. EPA. The Illinois EPA will write a Record of Decision, which will include a summary of comments received during the comment period and the Agencies' response to these comments. A notification of the Record of Decision will be advertised in the local newspaper. The complete document will be placed in the Selby Township Library in DePue.

**What is the New Jersey Zinc/Mobil Chemical Superfund Site?** A primary zinc smelter and other industrial processes were located at the New Jersey Zinc/Mobil Chemical site in DePue from the early 1900s until the late 1980s. See map on page 1 for the location of the site. The main concern at former zinc smelters is possible contamination with metals such as zinc, cadmium, copper, lead and arsenic. The purpose of the Superfund project is to evaluate whether past plant operations have affected the properties on or around the site and to remedy harmful effects, if necessary. The site was placed on the federal Superfund list in 1999. Superfund is the common name given to a list of the nation's most hazardous sites that are eligible for investigation and, if necessary, a remedy under the Comprehensive Environmental Response, Compensation and Liability Act.

## For More information

**Contacts:** You may contact Kurt Neibergall, Illinois EPA Community Relations Coordinator (217) 785-3819, or Rich Lange, Illinois EPA Project Manager (815) 447-2125, at 1021 North Grand Ave. East; P.O. Box 19276, Springfield, IL 62794-9276.

The PRPs have asked that a contact for their group be listed. The PRP contact is Jim Frank, Frank and Cowles, 7226 N. State Route 29, Springfield, IL 62707, telephone number 217-487-7686.

**Repositories:** The Illinois EPA has placed project documents and fact sheets in the Selby Township Library in DePue for public review (815-447-2660). Please call for hours.

#### TECHNICAL ASSISTANCE GRANTS

Citizen groups desiring technical assistance in interpreting data from the New Jersey Zinc/Mobil Chemical investigations may be eligible for a Technical Assistance Grant (TAG). The TAG is a U.S.EPA program that provides up to \$50,000 per site to community groups wishing to hire consultants to interpret data generated during a Superfund investigation. Twenty percent of the total funding amount must be provided by the group. These funds may be paid in cash and/or by using in-kind services. TAGs cannot be used to duplicate field or laboratory work. Their purpose is to give the public a better understanding of existing documents and site activities.

Municipalities, other governmental agencies, political subdivisions, potentially responsible parties, academic institutions and headquarters of public interest groups are not eligible to receive TAGs. However, members of these groups may belong to a community organization requesting a TAG.

Additional information about TAGs is available by contacting Susan Pastor, TAG Coordinator, U.S.EPA, P-19J, Office of Public Affairs, 77 West Jackson, Chicago, IL 60604. She can be reached at 1-800-621-8431 or 312-353-1325. TAG information is also available on the U.S. EPA web page at [www.epa.gov/superfund/tools/tag](http://www.epa.gov/superfund/tools/tag)