

Environmental Health Information Sheet

U.S. Steel Duluth Works - Saint Louis River NPL Site **July 1998**

This information sheet provides a general outline of health issues associated with the U.S. Steel Duluth Works - Saint Louis River Superfund Site, for people living near the site and other interested people. It does not provide a comprehensive discussion of all available technical information about the site, or of all health issues possibly related to the site. More detailed material related to public health can be found in several technical reports available from the Minnesota Department of Health (MDH).

Purpose of MDH Activities

MDH acquires and discloses information of relevance to public health about hazardous waste sites. This information is freely available to interested people. It may be used to gain a better understanding of health risks associated with sites, to inform regulatory decisions, or assist people in taking personal actions to reduce or avoid exposures to toxic chemicals.

Site Description and History

The 640-acre U.S. Steel Duluth Works Site (USX Site) is located several miles southwest of downtown Duluth, in the Morgan Park neighborhood of West Duluth. U.S. Steel operated a large steel mill on the site from 1915 to 1979. Activities at the mill included coke and iron production, open hearth steel production, wire rolling, and wire milling. Although the coking,

iron and steel production ceased by 1979, a wire mill was operated (not solely by U.S. Steel) on the site until 1987.

The U.S. Environmental Protection Agency (EPA) placed the USX Site on the federal Superfund list in 1984. USX is listed (together with the nearby Interlake-Duluth Tar Site) as the St. Louis River Superfund Site. During initial and subsequent investigations, contamination has been found in soil, groundwater, and surface water on the USX Site, and in sediments from the adjoining St. Louis River.

A Record of Decision (ROD), specifying remediation plans for highly contaminated areas of the Site, was signed by the Minnesota Pollution Control Agency (MPCA) in 1989. MPCA has continued to work with U.S. Steel to plan and carry out the removal, treatment and containment of contamination on the Site. An active Community Workgroup (CWG) has been meeting with representatives from MPCA and U.S. Steel monthly since 1995.

The Minnesota Department of Health (MDH) has regularly attended workgroup meetings and has produced several documents on the St. Louis River sites. The most recent of these is an August 1998 Public Health Consultation regarding potential public health concerns associated with the USX portion of the Superfund site. This information sheet has been developed to present material from that Health Consultation in summary form.

Since 1989, a number of contaminated areas on the site -- called operable units (OUs) -- have been identified and cleaned-up, or are in the process of being cleaned-up, generally according to

plans set forth in the ROD. Environmental data necessary to determine health risks on much of the remainder of the site has not been obtained or is not available. There are no current, formalized plans for clean-up in areas other than the operable units.

The Health Consultation concludes that further investigation of environmental conditions is needed. Once this is done, we MDH can assess potential health concerns and the adequacy of proposed remedial strategies. Because of the ongoing nature of the site investigation and cleanup, MDH plans to continue to examine developments at this site. Future documents will be written to discuss other data and future remediation at the USX Site.

What contaminants have been found at the site? Are these contaminants a health hazard? Can people be exposed to contaminants from the site?

Tar, 'non-native' soils and 'non-native' sediments are the major waste products identified at the USX Site. Non-native materials are those materials that were not found on the site prior to its development. Some non-native materials on-site are slag, coke fines, flue dust, mill scale, and coke. Often, materials detected on-site have been mixtures of these primary contaminants.

Eighteen OUs were identified in the ROD. These areas appear to have been identified by the visible presence of waste deposits. Clean-up has apparently been restricted to: 1) locations where soft tar deposits were visible on the surface, 2) containerized wastes, and 3) dredged spoils - dredged sediments which are deposited on land. Some areas containing large amounts of non-native materials, as well as some dredged spoil areas, were designated for monitoring.

After review of existing sampling data from various sources, MDH has identified the following chemicals of concern:

Polycyclic aromatic hydrocarbons (PAHs): PAHs -- formed by incomplete burning of organic material -- have been detected throughout the site. PAH contamination appears to be greatest at the coke plant, in the wire mill pond, in Steel Creek and its delta, in sediments, and in dredged deposits from the creek. A large amount of PAH-containing tar and soil has already been removed from the site or stabilized on the site.

Potential exposures to PAHs from the USX Site are likely limited to exposures through the skin from soils and sediments, and by inhaling or swallowing soils or sediments. Some exposures could occur from eating PAH contaminated fish. Without information about the future use of PAH contaminated areas, MDH cannot determine whether exposures will reach levels of health concern.

Mercury: Elemental mercury, presumably associated with high current electrical switches, was found on the site during demolition and clean-up. Mercury is also an impurity found in coal and may be found, in concentrated form, in the waste sludge from coal burning. MDH believes that it is important to test all areas of the site that could have been affected by mercury contamination.

Uptake of mercury directly from soil or sediment is typically not a health concern. However, both mercury and PCBs (see below) accumulate in the food chain, especially in fish tissue. Further, both can travel long distances in the environment. Many Minnesota lakes and rivers

have fish contaminated with mercury and/or PCBs. MDH publishes an annual Fish Consumption Advisory to provide guidance to people about how much fish is safe to eat. Because mercury and PCB contamination are widespread and of public health importance, MDH is concerned that sources of these chemicals be found and remediated.

Polychlorinated biphenyls (PCBs) and chlorinated organics: PCBs are typically found in transformers and capacitors made before the mid-1970s. They were also used in some industrial lubricating and cutting oils. PCBs and mercury accumulate in the food chain, most importantly in fish, and affect the development of the human nervous system.

All transformers have been removed from the USX site and any oils from them were contained. However, MDH does not know if any of the oils used for on-site industries contained PCBs. Some sediments near the wire mill pond and Steel Creek delta may contain PCBs at levels of concern.

Metals: High levels of zinc and chromium (as well as elevated levels of lead, cadmium, nickel, and copper) have been found in river sediments near the site. Because human exposure to Saint Louis River sediments is limited, human uptake of these metals is not expected to be above levels of concern for human health. Metallic wastes in other areas of the site need to be examined.

Acids and solvents: Acids and solvents typically make up a large volume of steel mill wastes, and can sometimes contaminate soil and groundwater. Groundwater contamination is not now a direct concern to MDH because groundwater flowing from the site is not currently being

consumed. There is some indirect concern because contaminated groundwater could flow into the river and has formed springs or seeps at the surface in different areas of the site.

Soil contamination is of concern to MDH due to the possibility of human exposure to large deposits of acids or solvents on-site. If acid or solvent disposal activities took place on-site, these areas need to be identified. A groundwater study may help to locate these areas.

Benzene and toluene: Benzene and toluene were produced on the site from 1918 to 1929.

Benzene is also a by-product of coke production and could therefore have been a contaminant from the coke plant. Benzene and toluene degrade rapidly in the environment under most conditions. MDH is unaware of any testing to locate environmental impacts from benzene production or benzene in the coke plant waste stream.

Summary: Public health can be protected at hazardous waste sites by removing the hazardous material or by limiting human contact with the material. Currently, the USX Site can easily be accessed on land or by water. MDH has seen considerable evidence of public use of the site.

Most areas of the site have not undergone enough testing to allow an informed description of possible exposure to contaminants and associated health risks. Large areas of the site are likely free from contaminants at levels of health concern. However, given the amount of prior industrial activity on the site, considerable testing of previously unsampled areas will be necessary before these areas can be considered free of significant contamination.

Furthermore, MDH believes it is important that any locations on the site where contaminants remain must undergo regular and scheduled review and evaluation to assure the appropriateness of the remediation chosen as well, as the effect of weathering on the cleanup.

What Does MDH recommend?

- Review of prior uses of the site in order to guide future environmental investigations and testing
- Environmental investigation and testing of areas not included in the operable units
- Testing for mercury throughout the site
- Testing for PCB and other chlorinated organic contamination in locations indicated by prior use investigations
- Review of existing groundwater data, and investigate the possibility of establishing a groundwater monitoring well network
- Establishment of a formal review period for evaluation of areas where non-native materials are left on-site
- Utilization of the community as an important resource during the investigation and cleanup of this site.

References and Public health reports on the U.S. Steel Site are available from MDH. To request a copy call Deborah Durkin toll free at 1-800-657-3908 and press "4" on your touch-tone phone. Or write her at the Site Assessment and Consultation Unit, Minnesota Department of Health

625 Robert St. N., Box 64975, St. Paul, MN 55164. Information about clean-up issues at the site are available from MPCA at 1-800-657-3864.