Health Consultation

CMC HEARTLAND PARTNERS: LITE YARD SITE

MINNEAPOLIS, HENNEPIN COUNTY, MINNESOTA

MAY 29, 1998

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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HEALTH CONSULTATION

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MINNEAPOLIS, HENNEPIN COUNTY, MINNESOTA

Prepared by:

Minnesota Department of Health
Under Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

FOREWORD

This document summarizes potential public health concerns at a hazardous waste site in Minnesota. It is based on a formal site evaluation prepared by the Minnesota Department of Health (MDH). A number of steps are necessary to do such an evaluation:

- Evaluating exposure: MDH scientists begin by reviewing available information about environmental conditions at the site. The first task is to find out how much contamination is present, where it's found on the site, and how people might be exposed to it. Usually, MDH does not collect its own environmental sampling data. We rely on information provided by the Minnesota Pollution Control Agency (MPCA), U.S. Environmental Protection Agency (EPA), and other government agencies, businesses, and the general public.

- Evaluating health effects: If there is evidence that people are being exposed—or could be exposed—to hazardous substances, MDH scientists will take steps to determine whether that exposure could be harmful to human health. The report focuses on public health—the health impact on the community as a whole—and is based on existing scientific information.

- Developing recommendations: In the evaluation report, MDH outlines its conclusions regarding any potential health threat posed by a site, and offers recommendations for reducing or eliminating human exposure to contaminants. The role of MDH in dealing with hazardous waste sites is primarily advisory. For that reason, the evaluation report will typically recommend actions to be taken by other agencies—including EPA and MPCA. However, if there is an immediate health threat, MDH will issue a public health advisory warning people of the danger, and will work to resolve the problem.

- Soliciting community input: The evaluation process is interactive. MDH starts by soliciting and evaluating information from various government agencies, the organizations responsible for cleaning up the site, and the community surrounding the site. Any conclusions about the site are shared with the groups and organizations that provided the information. Once an evaluation report has been prepared, MDH seeks feedback from the public. *If you have questions or comments about this report, we encourage you to contact us.*

Please write to: Community Relations Coordinator
Site Assessment and Consultation Unit
Minnesota Department of Health
121 East Seventh Place/Suite 220
Box 64975
St. Paul, MN 55164-0975

OR call us at: (612) 215-0916 *or* 1-800-657-3904
(toll free call—press "4" on your touch tone phone)

Background and Statement of Issues

The Minnesota Department of Agriculture (MDA) requested that the Minnesota Department of Health (MDH), Site Assessment and Consultation Unit (SAC) review documents provided to them on a site in Minneapolis identified as the CMC Heartland Partners Lite Yard (CMC) site. This health consultation is a reformatted version of a memo which MDH sent to MDA on January 16, 1998 (MDH 1998, Attached) and is a result of MDH's review of the Remedial Investigation and the Additional Soil Risk Assessment documents (Peer 1997a; Peer 1997b). Peer Environmental and Engineering Resources, Inc. is the author of these reports and is a consultant for CMC. A proposal discussed in the Additional Soil Risk Assessment document is to use a site-specific risk assessment, developed for another site (Anaconda, Montana) and approved by the Environmental Protection Agency, for determining appropriate cleanup levels at the CMC site. This health consultation, at the request of MDA, details MDH's recommendations on this proposed use of the Anaconda cleanup levels. MDH's review of the documents provided by CMC included a review of data on soil and groundwater contamination on the site. MDH is writing another health consultation which discusses site-specific groundwater and soil conditions, and outlines recommendations for further actions at the CMC site.

The Site

Location

The site is a 7.7 acre triangular piece of land in south Minneapolis, and is situated between 28th Street (South), Hiawatha Avenue (East), the city of Minneapolis Asphalt Plant (North), and railroad tracks and the Mattaini Warehouse (West) (see Figure 1). The site was previously used by a pesticide manufacturing company. There is a small building standing on the site which post-dates the use of the site for pesticide manufacturing or packaging. The site is currently rented and used by Bituminous Roadways, and they have expressed an interest in purchasing the site. The site has partially restricted access with a chain link fence on the southern boundary, a snow fence along Hiawatha Avenue, and a broken snow fence along the railroad track boundary to the west/northwest.

Front-end loaders regularly move asphalt/dirt as well as load trucks with recycled asphalt/dirt from large piles on the site. According to MDA, the site was covered with two feet of clean soil and the bottom one foot of all the piles is to be left on the ground during loading activities. It would be difficult to determine if these restrictions are being followed. Activity appears to be restricted to approximately 200 feet along the western boundary of the site. The southeastern corner of the site is unused and is covered with tall wild grasses, a patch of trees, and a 5-6 foot high earthen berm (constructed by Bituminous Roadways) along the edge of the property. Two large piles of plastic covered dirt are between the berm and the fence, having been placed there during the construction of two storm sewer drains on 28th Street. These piles contain contaminated soil.

Demographics

The site is located within an industrial corridor which includes numerous railroad tracks and switching areas, warehouses, streets with high volumes of traffic, and retail commercial businesses. Two large retail and grocery shopping areas are within one-half mile of the site, to the south and southeast. The residential houses closest to the site are one block west of the site on Longfellow Avenue. This residential area is along the edge of the Phillips neighborhood which includes some high density housing and apartments to the west-northwest, within one fourth mile of the site. Inside of the chain-link fence along the southern boundary of the site, clearly visible from 28th Street. and mixed in among a grouping of trees, is evidence of past use of the site as a temporary shelter for transient or homeless people. There is also evidence of a walking path inside the fence, which, since the coming of the cold weather, appears not to be in use and is covered with leaves. However, the trail does appear to post-date the fence.

Two blocks to the south of the site, the Hiawatha Avenue overpass is being completed. Further road construction to the north of this overpass will impact the site. The Minnesota Department of Transportation (DOT) is negotiating with CMC for an easement to complete a corridor along Hiawatha Avenue. This may include the construction of a mass transit or bus corridor, as well as the roadway currently under construction.

Across from 28th Street, directly to the south of the site, the Green Corporation is planning to build a new headquarters. This project will include moving 21st Avenue South. It is unknown at this time if the construction will impact the CMC site.

Chemicals of Concern

Arsenic is the primary chemical of concern on the site due to its presence in soil and groundwater at very high concentrations (up to 18,000 mg/kg and 320,000 μg/L, respectively). Arsenic at these concentrations can be acutely lethal to humans. There is a large data gap concerning the magnitude and extent of arsenic contaminated media in the materials submitted to MDH. The reviewed documents do not present data on soil arsenic levels off-site. Given the high concentration of arsenic found in the soil and the historical use of the site, MDH believes that it is important to determine the extent of any possible air-transported contaminated soil deposition.

Lead is also present on the site at levels of concern, however, the concentrations of lead found on the site are much less of a health concern than the arsenic found on the site. It is our intent to address lead contamination on the site in a future document if the remediation plans do not adequately address its cleanup.

Arsenic Soil Cleanup Level Discussion

CMC has proposed that the model developed for the cleanup of arsenic at the Anaconda, Montana site be used to determine cleanup of the CMC site. MDH believes that there are three major reasons why this proposal and the supporting documentation provided by Peer are

1. MDH does not approve of a site-specific risk assessment developed at one site for use at another site.

2. The two sites compared in the proposal are extremely different.

3. Significant errors were made in the representation of data provided by Peer and Legend Technical Services, Inc (Legend) which leads us to question the scientific reliability of the submitted reports.

Default cleanup levels developed by the Minnesota Pollution Control Agency (MPCA) are considered protective of public health at hazardous waste sites where detailed site-specific risk assessments have not been developed. Risk assessments are conducted, using site-specific data, at any site to accurately assess the potential risk to human health at that specific site. Therefore, it is entirely inappropriate to use a site-specific risk assessment from one site (Anaconda) at another site (CMC), as has been proposed by Peer.

Not only does MDH object to this practice in principle, but the two sites under comparison in the Additional Soil Risk Assessment are extremely different. The major differences are: contamination source, speciation of toxicant, concentration of toxicant on site, and demographics of the site and the community. Furthermore, risk management decisions were incorporated into the cleanup levels at Anaconda which are not reasonable for the CMC site.

MDH has reviewed the data acquired at the CMC site and the Anaconda data cited in the Additional Soil Risk Assessment and cannot interpret the data as support for the proposal by CMC. The quantification of general arsenical species descriptors "soluble", "slightly soluble", and "insoluble" in a health risk assessment is very suspect. Arsenic compounds which are relatively "insoluble" in distilled water may become "soluble" under conditions of decreasing pH. It is very clear that any representation of the solubility characteristics of the arsenic on the site must include appropriate pH and redox data as well as a careful and extensive characterization of arsenic species on the site. Also, given the data showing groundwater containing up to 320,000 parts per billion (ppb) below the contaminated site, MDH is uncertain how we are to accept the assertion that the arsenic on site is 97.3% "insoluble".

The request to use the Anaconda risk assessment as a model for the CMC cleanup is based on a comparison of the solubility of arsenic found at the two sites. The characterization of the solubility of arsenic at Anaconda included data from a single operable unit (OW/EADA) at the Anaconda site and one sample from another location (Terressa) outside of OW/EADA. Therefore, the samples characterized in the table (Figure #1, Appendix B, page 2, Laboratory Analytical Report, Legend Technical Services, Inc., Peer 1997b) are neither representative of one specific operable unit at the Anaconda site, or the Anaconda site as a whole. The Terressa data are not pertinent to characterization of the OW/EADA operable unit, and there are no data

included in the table from any other operable unit at Anaconda. This use of scientific data is inappropriate.

Furthermore, significant errors were made in the relative solubility classifications of specific arsenic species in the Legend report. One example is the characterization of lead arsenate as "slightly soluble" and calcium arsenate as "insoluble" in water. Generally, the opposite is considered to be a reasonable characterization of their respective solubilities. Both calcium and lead form comparable arsenate compounds and, as an example, while dilead arsenate is about 0.25 percent soluble, dicalcium arsenate is about 60 percent soluble in water (Shepard 1951). Various forms of calcium arsenate make up between 5 and 41 percent of the arsenic in samples from the CMC site (Peer 1997b).

The Additional Soil Risk Assessment does not adequately address arsenic bioavailability. The document implies that solubility is always a surrogate measure of arsenic species bioavailability, yet it fails to show any correlation between the solubility and the bioavailability of arsenic. Furthermore, we would note that the bioavailability of ingested arsenic is not necessarily related to its solubility in neutral pH water. MDH is willing to review bioavailability or toxicity studies based on site-specific compounds and mixtures from the CMC site, but at this point we see no reason to recommend cleanup levels which differ from the default values developed by MPCA.

Conclusions

This health consultation contains brief comments on a specific issue raised by the parties involved at the CMC site. While MDH encourages new, original, or innovative methods for remediation of contaminated sites, we expect that any proposal submitted to us for review has been carefully investigated and can be supported by credible scientific evidence. The Peer submission does not meet these criteria.

This health consultation by no means includes all of our comments on this issue or all of the health concerns MDH has identified at the site. MDH believes that the data available on the CMC site are incomplete without the inclusion of soil arsenic levels from the surrounding community. It is the opinion of MDH that the CMC site could potentially cause a substantial health impact to individuals exposed to soil and groundwater from the site. Further characterization and remediation of this site should receive high priority.

Recommendations

1. MDH does not recommend the use of the cleanup levels at the CMC site as proposed in the Additional Soil Risk Assessment.

2. Conduct a more thorough on- and off-site characterization and initiate measures to prevent current and future exposures to site contaminants.

This consultation was prepared by:

Carl Herbrandson, Ph. D.
Toxicologist
Site Assessment and Consultation Unit
Environmental Surveillance and Consultation Section
Minnesota Department of Health

CERTIFICATION

The CMC Heartland Partners: Lite Yard Site Health Consultation was prepared by the Minnesota Department of Health under a cooperative agreement with the Agency for Toxic Substance and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was initiated.

Technical Project Officer, SPS, SSAB, DHAC

The Division of Health Assessment and Consultation, ATSDR, has reviewed this health consultation and concurs with its findings.

Chief, SPS, SSAB, DHAC/ATSDR

References

Minnesota Department of Health, (1998) Memo Concerning: Health Consultation on the CMC Heartland Partners, Lite Yard Site. From: Carl Herbrandson, MDH, St. Paul, MN. To: Cathy Villas-Horns and Mike Loughran, Department of Agriculture. January 16, 1998.

Peer Environmental and Engineering Resources, Inc. (1997a) Remedial Investigation: CMC Heartland Partners Lite Yard Site. Report. Peer Minneapolis, MN. February 1997.

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Shepard, H. H. (1951) The Chemistry and Action of Insecticides. McGraw Hill, New York.

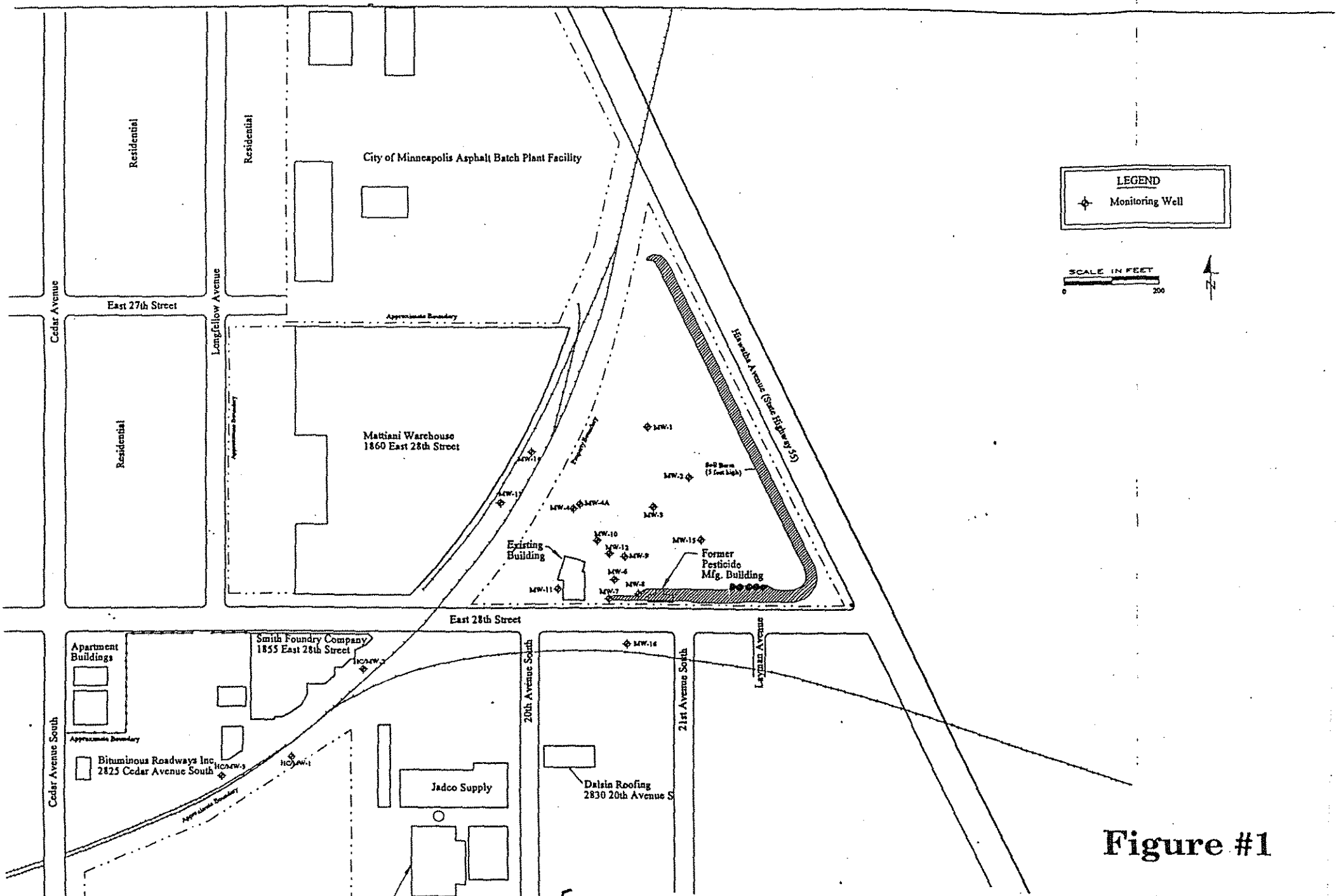

Figure #1

From:
Peer Environmental &
Engineering Resources, Inc.
Minneapolis, Minnesota

Site Diagram
CMC Heartland Partners Property
East 28th Street and Highway 55
Minneapolis, Minnesota

DEPARTMENT: Health

STATE OF MINNESOTA

DATE: January 16, 1998

Office Memorandum

TO: Cathy Villas-Horns, Department of Agriculture
Mike Loughran, Department of Agriculture

FROM: Carl Herbrandson, Environmental Research Scientist
Site Assessment and Consultation Unit

PHONE: 215-0925

SUBJECT: Health Consultation on the CMC Heartland Partners, Lite Yard Site

Introduction

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