

Health Consultation

Malarkey Asphalt
Seattle, King County, Washington

May 25, 2001

Prepared by

**The Washington State Department of Health
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry**



Foreword

The Washington State Department of Health (DOH) has prepared this health consultation in cooperation with the Agency for Toxic Substances and Disease Registry (ATSDR). ATSDR is part of the U.S. Department of Health and Human Services and is the principal federal public health agency responsible for health issues related to hazardous waste. This health consultation was prepared in accordance with methodologies and guidelines developed by ATSDR.

The purpose of this health consultation is to identify and prevent harmful human health effects resulting from exposure to hazardous substances in the environment. Health consultations focus on specific health issues so that DOH can respond quickly to requests from concerned residents or agencies for health information on hazardous substances. DOH evaluates sampling data collected from a hazardous waste site, determines whether exposures have occurred or could occur, reports any potential harmful effects, and recommends actions to protect public health.

For additional information or questions regarding DOH, ATSDR or the contents of this health consultation, please call the health advisor who prepared this document:

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Glossary

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| Agency for Toxic Substances and Disease Registry (ATSDR) | The principal federal public health agency involved with hazardous waste issues, responsible for preventing or reducing the harmful effects of exposure to hazardous substances on human health and quality of life. ATSDR is part of the U.S. Department of Health and Human Services. |
| Contaminant | Any chemical that exists in the environment or living organisms that is not normally found there. |
| Dose | A dose is the amount of a substance that gets into the body through ingestion, skin absorption or inhalation. It is calculated per kilogram of body weight per day. |
| Environmental Media Evaluation Guide (EMEG) | A concentration in air, soil, or water below which adverse non-cancer health effects are not expected to occur. The EMEG is a <i>comparison value</i> used to select contaminants of potential health concern and is based on ATSDR's <i>minimal risk level</i> (MRL). |
| Exposure | Contact with a chemical by swallowing, by breathing, or by direct contact (such as through the skin or eyes). Exposure may be short-term (acute) or long-term (chronic). |
| Groundwater | Water found underground that fills pores between materials such as sand, soil, or gravel. In aquifers, groundwater often occurs in quantities where it can be used for drinking water, irrigation, and other purposes. |
| Hazardous substance | Any material that poses a threat to public health and/or the environment. Typical hazardous substances are materials that are toxic, corrosive, ignitable, explosive, or chemically reactive. |
| Ingestion rate | The amount of an environmental medium which could be ingested typically on a daily basis. Units for IR are usually liter/day for water, and mg/day for soil. |
| Media | Soil, water, air, plants, animals, or any other part of the environment that can contain contaminants. |

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| Minimal Risk Level (MRL) | An amount of chemical that gets into the body (i.e., dose) below which health effects are not expected. MRLs are derived by ATSDR for acute, intermediate, and chronic duration exposures by the inhalation and oral routes. |
| No public health hazard | Sites for which data indicate no current or past exposure or no potential for exposure and therefore no health hazard. |
| Parts per billion (ppb)/Parts per million (ppm) | Units commonly used to express low concentrations of contaminants. For example, 1 ounce of trichloroethylene (TCE) in 1 million ounces of water is 1 ppm. 1 ounce of TCE in 1 billion ounces of water is 1 ppb. If one drop of TCE is mixed in a competition size swimming pool, the water will contain about 1 ppb of TCE. |
| Remedial investigation | A study designed to collect the data necessary to determine the nature and extent of contamination at a site. |
| Risk | The probability that something will cause injury, linked with the potential severity of that injury. Risk is usually indicated by how many extra cancers may appear in a group of people who are exposed to a particular substance at a given concentration, in a particular pathway, and for a specified period of time. For example, a 1%, or 1 in 100 risk indicates that for 100 people who may be exposed, 1 person may experience cancer as a result of the exposure. |
| Route of exposure | The way in which a person may contact a chemical substance that includes ingestion, skin contact and breathing. |
| U.S. Environmental Protection Agency (EPA) | Established in 1970 to bring together parts of various government agencies involved with the control of pollution. |
| Volatile organic compound (VOC) | An organic (carbon-containing) compound that evaporates (volatilizes) easily at room temperature. A significant number of the VOCs are commonly used as solvents. |

Background and Statement of Issues

As part of the cooperative agreement with ATSDR, the Washington State Department of Health (DOH) was asked to evaluate the potential impacts on human health posed by eight businesses in the South Park community. The petitioner, the Community Coalition for Environmental Justice (CCEJ), worked with the community to prepare a list of sites of concern. One of the sites listed was the former Malarkey Asphalt Company. Using available data, this health consultation evaluates potential human health effects resulting from contamination at the former Malarkey Asphalt Company site.

The former Malarkey Asphalt Company site is located at 8700 Dallas Ave South in the South Park neighborhood south of downtown Seattle (Figure 1). It is bordered on the east by the Duwamish River. The site is currently owned by the Port of Seattle, and leased to the Evergreen West Wholesale Lumber Inc. Duwamish Manufacturing Company started asphalt operations at the site in 1937, and continued through 1978 when Malarkey, Chance, and Wyborne (MCW) Inc purchased the property. MCW Inc eventually changed its name to Malarkey Asphalt Company, and produced roofing asphalt on the site until 1993.

Several complaints of smoke and odor emanating from the site were fielded by the Puget Sound Air Pollution Control Authority, currently known as the Puget Sound Clean Air Authority (Clean Air), while the site was active until asphalt production ceased in 1993.¹ In 1985, the Washington State Department of Ecology (Ecology) conducted a site inspection that documented the presence of several buried and partially buried underground storage tanks (USTs) as well as aboveground storage tanks (ASTs).² Soil was described as being stained from apparent oil spills. An inspection in 1989 by the EPA described poor maintenance and housekeeping at the site, as well as storage of unidentified drums and insufficient containment on the site.

In 1991, a site hazard assessment revealed soil and groundwater contamination with Volatile Organic Carbon (VOC), Semi-Volatile Organic Carbon (SVOC), and Polychlorinated Biphenyls (PCBs). The EPA conducted site inspections in 1994 and 1995 which confirmed the presence of these contaminants at levels that presented a threat to human health. Asbestos was also identified as a contaminant of concern.

The VOC and SVOC contamination resulted from storage, leakage, spillage, use, and combustion of fuel oils during the asphalt making process. Asbestos containing materials used as insulation were found to be crumbling around storage tanks, piping, and boilers throughout the site. PCB contamination likely resulted from the storage and combustion of waste oil. During the oil embargo in the 1970s, 1000 gallons per month of waste oil were received from Seattle City Light for use as an alternative fuel.³ This oil was likely contaminated with PCBs.⁴

In 1996, asbestos containing material was removed from the site by a licensed contractor, and all identified tanks from the site were decommissioned and removed.³ Many of the boilers and asphalt making equipment were also removed and shipped to the Malarkey Asphalt plant in

Portland, Oregon. Residual oil in tanks was either recycled, or treated for disposal.

The Port of Seattle acquired the site, and their remedial action work plan was approved by the EPA in 1999. The EPA and the Port of Seattle agreed that the contaminants of most concern were PCBs in soil, and that removal of soil should be based on attaining a level of less than 25 ppm.⁴ Though petroleum products were also found at the site, they were of less concern, and removal of PCB contaminated soil would also remove the bulk of petroleum contaminated soil. Furthermore, an asphalt cap was proposed to be placed on the entire site to prevent exposure of workers at the site to remaining contamination in soil, and to prevent precipitation from infiltrating the soil and leaching the remaining contaminants into the groundwater.

Groundwater beneath the site flows toward the Duwamish River. Contamination of the groundwater was not a major concern, especially since the bulk of the source of contamination was removed, and ongoing sampling indicated a diminishing problem.⁵

Excavation and soil removal began in late 1999 and was completed in 2000. During excavation, another underground storage tank was discovered and removed from the site. The tank was in good condition and did not appear to have leaked, and the fuel was recycled. In all, 2061 tons of soil were removed from the site. The site was then backfilled with clean, washed crushed rock as a base for the asphalt cap. The cap was applied six inches thick over the site (Figure 2).⁶ Three monitoring wells were installed for periodic sampling purposes.

The site is currently fenced, and has limited access to the public. The entrance is gated and locked at the end of each work day.

Discussion

Although no air sampling data is available, anecdotal evidence suggests that residents living near the site during asphalt production were exposed to vapors and fumes that left the site. Vapors and fumes likely consisted of polycyclic aromatic hydrocarbons (PAHs), VOCs, and SVOCs. Furthermore, past combustion of fuel oils contaminated with PCBs likely emitted dioxin to the air as a by-product. Exposure to contaminants in air, however, became less significant when asphalt production ceased.

PCBs, VOCs, SVOCs, and asbestos were found in soil and groundwater at levels of concern. Prior to soil cleanup efforts, workers and trespassers could have been exposed to contaminants in soil through inadvertent soil ingestion, dermal contact with soil, and inhalation of suspended soil particles. Groundwater has not been used as a drinking water source in the area and, therefore, does not represent a competed exposure pathway. In addition, remedial actions removed the USTs and ASTs that were the source of contamination as well as 2061 tons of contaminated soil.

Bare soil was covered with an asphalt cap eliminating the remaining exposure pathways. Furthermore, the public's exposure to these contaminants was additionally limited by restricted

access to the site.

Children's Exposure/ Child Health Initiative

ATSDR recognizes that infants and children may be more vulnerable to exposures than adults when faced with contamination of air, water, soil, or food.⁷ This vulnerability is a result of the following factors:

- C Children are more likely to play outdoors and bring food into contaminated areas.
- C Children are shorter and their breathing zone is closer to the ground, resulting in a greater likelihood to breathe dust, soil, and heavy vapors.
- C Children are smaller and receive higher doses of chemical exposure per body weight.
- C Children's developing body systems are more vulnerable to toxic exposures, especially during critical growth stages in which permanent damage may be incurred.

Children are not exposed to residual contaminants at the Malarkey Asphalt site because access to the site is reserved for employees of Evergreen West Wholesale Lumber Inc. Furthermore, the site is capped with asphalt preventing contact with soil.

Conclusions

No apparent public health hazard exists for children and adults living near the former Malarkey Asphalt Company site. Though PCBs, VOCs, SVOCs and asbestos were found on the site, remediation removed the source and bulk of contamination while an asphalt cap covered up any residual contaminants. Furthermore, access to the site is limited by a fence and a gated drive.

Recommendations/Public Health Action Plan

- Maintain the integrity of the asphalt cap on the site and the fence surrounding the property.
- Future land use change from industrial to residential would require reevaluation of the site.

Action

DOH is available to evaluate future sampling data gathered from this site.

Preparer of Report

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References

1. Puget Sound Air Pollution Control Authority. Inspection, complaint, and violation forms. 1967-1993.
2. EMCON. Draft Removal Action Work Plan Malarkey Asphalt Site Seattle, Washington. May 24, 1996.
3. SECOR International Inc. Final Report: Malarkey Asphalt Site. May 21, 1998.
4. Onsite Enterprises, Inc. Final: Malarkey Asphalt Site Remedial Action Work Plan. September 24, 1999.
5. SECOR International Inc. Focused Feasibility Study: Malarkey Asphalt Site. June 29, 1998.
6. Onsite Enterprises, Inc. PCB Removal/Containment Action South Park Site (Formerly Malarkey Asphalt Company) February 29, 2000.
7. Agency for Toxic Substances and Disease Registry. Interim guidance on including child health issues in Division of Health Assessment and Consultation Documents. Atlanta: US Department of Health and Human Services, Public Health Service, July 1998.

Figure 1 - Site location and demographics

**Demographic Statistics
Within a Half Mile of the Site***

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| Total Population | 1495 |
| White | 994 |
| Black | 146 |
| American Indian, Eskimo, Aleut | 66 |
| Asian or Pacific Islander | 163 |
| Other Race | 127 |
| Hispanic Origin | 236 |
| Children Aged 6 and Younger | 186 |
| Adults Aged 65 and Older | 198 |
| Females Aged 15 - 44 | 336 |
| Total Aged over 18 | 1122 |
| Total Aged under 18 | 373 |
| Total Housing Units | 700 |

* Calculated using the area proportion technique. Source: 1990 U.S. CENSUS

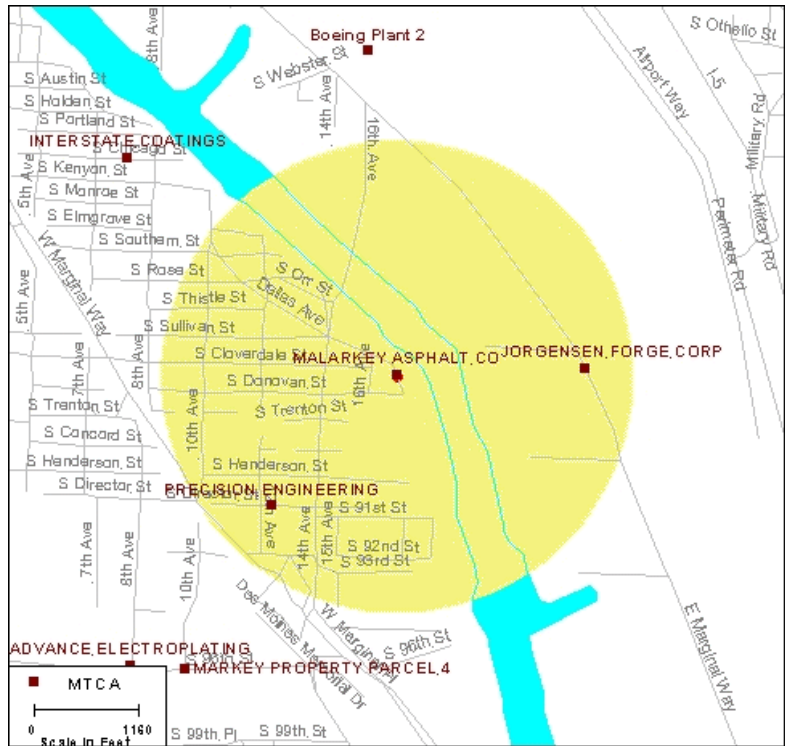
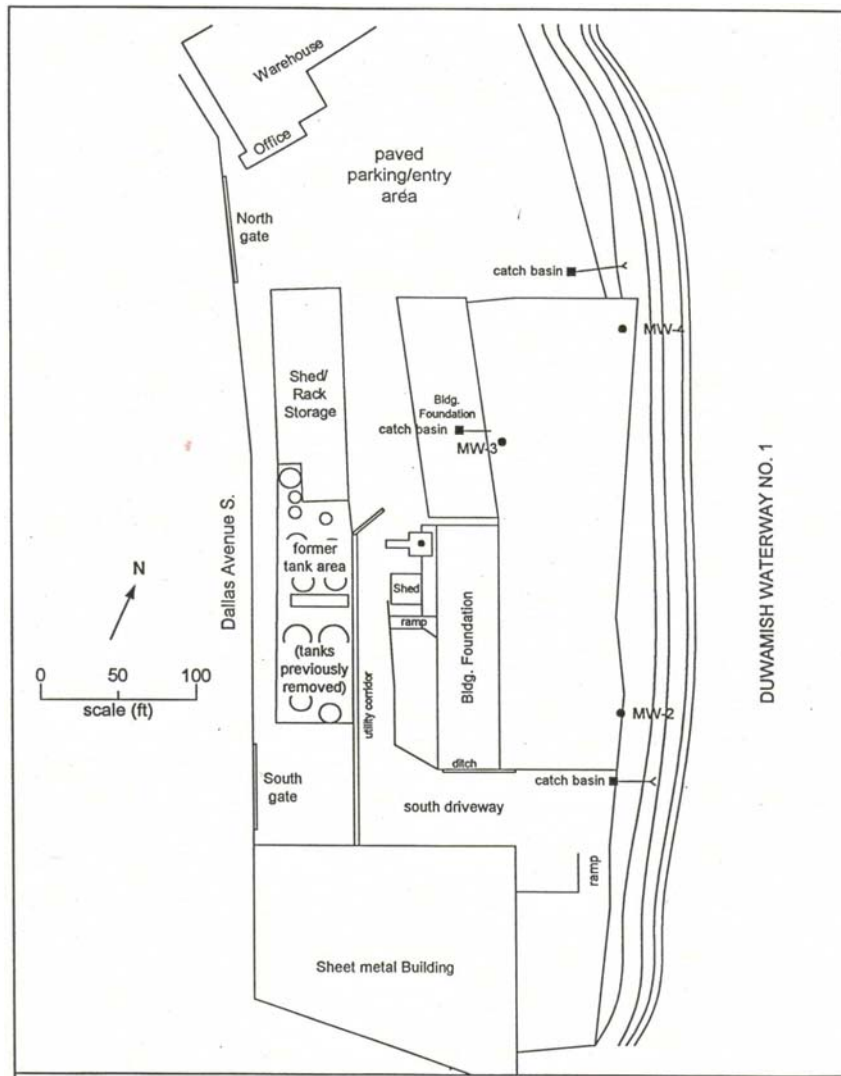


Figure 2 - Site map⁶



Certification

This Health Consultation was prepared by the Washington State Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was begun.

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

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