Health Consultation

MICHIGAN INDUSTRIAL FINISHES CORPORATION
HAMTRAMCK, WAYNE COUNTY, MICHIGAN

EPA FACILITY ID: MIN000509131

MARCH 21, 2005

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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Prepared by:

Michigan Department of Community Health
Under Cooperative Agreement with the
U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry

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Summary

The Michigan Department of Environmental Quality (DEQ) asked for the assistance of the Michigan Department of Community Health (DCH) to identify the public health hazards present at the Michigan Industrial Finishes Corporation (MIF) facility in Hamtramck, Wayne County, Michigan. MIF manufactures industrial paint finishes.

In October 2004 hazardous wastes stored on the MIF property presented an ***urgent public health hazard***. Approximately 4,000 deteriorating or leaking drums containing paint and solvent wastes were stored on-site without protection from weather or fire. Testing of the contents of these drums indicates that the waste material is ignitable and/or corrosive. In an emergency situation, these materials could ignite and would significantly exacerbate the intensity of fire and explosion, posing an imminent and substantial hazard to the public health.

With the concurrence of the DCH, the DEQ issued a cease-and-desist order to MIF requiring that all paint manufacturing activities stop immediately and that MIF remove and properly dispose of all hazardous waste materials stored on site. In December 2004, the U.S. Environmental Protection Agency (EPA) secured the site and began an emergency removal action. Until all hazardous wastes stored on the site have been removed, the MIF property continues to pose a ***public health hazard***.

Volatile organic air contaminants (VOCs) emanating from the MIF property posed an ***indeterminate public health hazard***. Solvent odors could be detected in the front yards of nearby residences indicating that the MIF site was emitting hazardous chemicals to the ambient air, however no data are available to determine the levels of VOCs to which people were being exposed. Since manufacturing activities have ceased, the inhalation pathway currently poses ***no public health hazard***.

Purpose and Health Issues

The Michigan Department of Environmental Quality (DEQ) requested the assistance of the Department of Community Health (DCH) in issuing an imminent hazard order pursuant to Section 11148(1)(a) of Part 111, Hazardous Waste Management, (Part 111), of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA). Section 11148 of Part 111 provides for the DEQ to consult with the DCH and for the DCH to make a determination of an instance of imminent and substantial hazard to the public health. DEQ had information that the mismanagement of hazardous materials at the Michigan Industrial Finishes Corporation (MIF) property may pose a hazard to near-by residents or to emergency response personnel.

Background

The MIF property is located at 9045 Vincent Street, Hamtramck, Wayne County, Michigan (Figure 1). The property is located in an area of mixed residential and light industrial land uses. It is bounded to the west by railroad tracks, to the north and south by industrial businesses, and to the east by Vincent Street. The area across Vincent Street is residential and is within the boundary of the city of Detroit. The nearest residential home is approximately 150 yards from waste storage areas outside the MIF buildings. There

are two buildings on-site: a manufacturing building and a warehouse that also houses the office area (EPA 2004) (Figure 2).

MIF manufactures industrial paint coatings. Paint wastes, including solvent waste materials, are generated during the process and are being stored on-site. The US Environmental Protection Agency (EPA) estimates that there are currently 4,000 drums of waste material present on the MIF site as well as 20 250-gallon waste totes, several mixing tanks, various vessels and above ground storage tanks and more than 100 small containers including fuel tanks (EPA 2004). Many of the drums are in poor condition and show signs of leaking or corrosion. In some areas, drums are stored three high on deteriorating wooden pallets. Most drums are unlabeled and their contents are unknown. The Hamtramck Fire Marshall has cited MIF for numerous fire code violations in the drum storage areas (EPA 2004).

Since 1997, MIF has been operating under a Consent Judgment that was executed to resolve prior violations of Part 111 of NREPA (DEQ 2004a). DEQ inspections indicate that MIF continues to operate in violation of the Consent Judgment by (1) storing hazardous wastes in poor and/or leaking containers unprotected from weather, fire, or vandalism, (2) failing to properly label waste materials, and (3) failing to make arrangement with local authorities for emergency response (DEQ 2004a; EPA 2004).

Discussion

The EPA, acting under the authority of a Federal Search Warrant, visited the MIF site on April 4, 2004, and again on July 13, 2004. Samples were taken from containers to determine if the materials could be considered characteristic hazardous wastes under definitions provided in the Resource Conservation and Recovery Act, 40 CFR 261 (RCRA).

- The EPA identified drum contents with flashpoints below 140° F, which indicates the materials are ignitable (EPA 2004). Ignitable wastes present fire hazards under routine storage, disposal, or transportation or are capable of severely exacerbating a fire once started (EPA 1990).

- The EPA also identified drum contents with a pH above 12.5 standard units (SU) (EPA 2004), which identifies the materials as corrosive. These hazardous materials will corrode storage containers and will produce irreversible damage to living tissue following even a single exposure to skin or eyes (EPA 1990).

DEQ documents indicate that MIF uses xylenes, toluene, and methyl ethyl ketone (MEK) as well as other chemical compounds in the manufacture of industrial finishes. No environmental samples (e.g., water, air, or soil) have been collected to date. However, manifest documents generated by MIF indicate that the waste materials are hazardous and ignitable (DEQ 2004a). Given the deteriorating condition of many of the waste drums stored outside the MIF buildings and staining of soil in the storage areas, it is likely that releases to the environmental have occurred.

Site Visits

On October 7, 2004, DCH staff visited the MIF property, walking around the exterior of the site fence along Vincent Street on the east and the railroad tracks on the west without entering the property. DCH observed numerous drums stored outside without protection from weather or fire and staining of the soil in the storage area on the east side of the manufacturing building (Figure 3.).

Figure 3. Barrels and Stained Soils Near Northeast Perimeter

The fence gate on the northeast perimeter near the area shown in Figure 3 was secured with a chain, but was bent and would easily have allowed trespasser access to the site (Figure 4.). EPA staff has observed smashed door locks and other evidence of attempts to break into the MIF buildings. There has been a fire on the site that the owner of MIF claims was intentionally set, although the Detroit Fire Department was not able to confirm arson (EPA 2005).

Figure 4. Fence Gate on Northeast Perimeter

Vent Pipe in Window

A vent pipe can also be seen in Figure 4 protruding from a high window in the manufacturing building. According to the EPA Action Memorandum for the MIF site,

several mix tanks occupy this area of the building (EPA 2004) (Figure 2). Figure 5 presents another view of this area. Residential homes are located across Vincent Street approximately 150 yards from the area shown in Figures 4 and 5.

Figure 5. View Through Northeast Gate

DCH staff was granted access to the railroad yard bordering the west side of the MIF site. There are two fences between the railroad tracks and the MIF property, presumably one owned and maintained by the railroad and the other by MIF. Figure 6 shows the condition of these fences. The barbed wire at the top of both has been bent over, possibly to allow a person to climb over without injury. In addition, several railroad ties were stacked against the fence in the foreground, which would allow a person to easily climb this fence (Figure 7.)

Figure 6. West Fences

Figure 7. Railroad Ties Against West Fence

Demographics and Near-by Land Use

The 2000 census data indicate that 22,110 people live within one mile of the MIF site. Sixty percent of these people are low income and 53 percent are minorities.

Figure 8 shows the proximity of the MIF site to the homes to the east across Vincent Street. While the home shown in this picture is unoccupied, the homes immediately to the east and across Marcus Street are occupied with families including small children. During the October 7, 2004, site visit DCH staff could detect solvent odors in the front yards of these homes approximately 150 to 200 yards from the storage area shown in Figures 3 and 4.

Figure 8. Home Nearest the MIF Site

Subsequent Regulatory Action

On October 28, 2004, DCH determined that the MIF site posed an imminent and substantial hazard to the public health (DCH 2004). On November 3, 2004, the DEQ issued a cease-and-desist order to the owners and operators of the MIF facility. The order

requires MIF to cease all operations, remove or dispose of all hazardous wastes accumulated and stored on-site, eliminate all hazards associated with the site, and comply with the provisions of the NREPA (DEQ 2004b).

On November 15, 2004, the DEQ inspected the facility and determined that MIF had ceased operations. MIF has indicated that it does not have the financial ability to remove and dispose of waste materials stored on-site. On December 6, 2004, the EPA began a removal action on the MIF property and also identified an additional non-adjacent empty lot where MIF had been storing drums and waste materials. Staging, sampling, and removal of waste materials will continue and EPA will assess soils on the MIF site as well as the empty lot to determine if environmental releases have occurred.

Human Exposure Pathways

To determine whether persons are, have been, or are likely to be exposed to contaminants, DCH evaluates the environmental and human components that could lead to human exposure. An exposure pathway contains five elements: (1) a source of contamination, (2) contaminant transport through an environmental medium, (3) a point of exposure, (4) a route of human exposure, and (5) a receptor population. An exposure pathway is considered complete if there is evidence that all five of these elements are, have been, or will be present at the property. It is considered either a potential or an incomplete pathway if there is no evidence that at least one of the elements above are, have been, or will be present at the property, or that there is a lower probability of exposure. The exposure pathway elements for this site are shown in the following table:

Table 1. Human Exposure Pathways at the Michigan Industrial Finishes Site

Source	Environ-mental Transport and Media	Chemicals of Concern	Exposure Point	Exposure Route	Exposed Population	Time	Status
Paint Manufacturing Activities at the MIF Plant Site.	Air	Volatile Organic Chemicals	Off-site land uses	Inhalation	Nearby Residents, Workers, Visitors	Past	Potential
						Current	Incomplete
						Future	Incomplete
	Fire or Explosion	Ignitable and Corrosive Substances	Off-site land uses	Inhalation	Nearby Residents, Workers, Emergency Response Personnel	Past	Incomplete
						Current	Incomplete
						Future	Potential
	Hazardous Wastes Storage	Ignitable and Corrosive Substances	On-site	Inhalation, Dermal Contact	Workers, Trespassers	Past	Complete
						Current	Complete
						Future	Complete
	Fire or Explosion	Ignitable and Corrosive Substances	On-site	Inhalation, Dermal Contact	Workers, Trespassers, Emergency Response Personnel	Past	Incomplete
						Current	Incomplete
						Future	Potential

Volatile Organic Compounds (VOCs)

Air sampling has not been conducted on or around the MIF site. However, during the October 7, 2004 site visit, DCH staff detected solvent odors in the front yards of residential property located approximately 150 to 200 yards from stored drums and a vent pipe shown in Figures 4 and 5. The inhalation pathway of exposure was therefore potentially complete in the past. Production has ceased at the MIF site and is not expected to resume in the future; therefore inhalation of VOCs is no longer occurring.

Ignitable and Corrosive Hazardous Wastes

Hazardous wastes stored on the MIF site have been shown to be both ignitable and corrosive and MIF has acknowledged that these wastes contain toxic substances. Many of the drum labels indicate the contents are flammable. These wastes presented direct contact and inhalation hazards to on-site workers and to trespassers who may have accessed the site. These pathways were complete in the past because many of the waste containers are in deteriorating condition and/or are open. In addition, the site was not reliably access restricted. Observed evidence of vandalism and fire as well as the condition of the fence and gates suggests that trespassers were entering the site (EPA 2005). This pathway remains potentially complete for on-site workers until all hazardous wastes are removed from the property. The potential for exposure will be eliminated upon completion of the EPA removal action.

In the event of a fire or explosion, the hazardous wastes stored on the MIF site would be released to the surrounding environment and would present an imminent and substantial hazard to on-site workers, trespassers if present, off-site residents, workers or visitors on nearby properties, and to emergency response personnel who would be called to the scene. These pathways are incomplete currently and in the past since an event of this type has not yet occurred. However, the potential for a fire or explosion clearly exists until completion of the EPA removal action.

Toxicological Evaluation

No specific data are available concerning what chemicals or chemical concentrations are present on the MIF site. Therefore, the discussion below addresses only the general health effects that may result from exposure to VOC vapors or corrosive substances present on the site.

VOCs

VOCs known to be in the wastes generated by MIF include xylenes, toluene, and MEK. These compounds can cause adverse health effects in humans exposed by breathing vapors in air or by direct dermal contact. Exposure to VOCs can cause irritation of the skin, eyes, nose and throat and can affect the nervous system. Inhalation exposure to VOCs may cause headaches, lack of muscle coordination, dizziness, confusion, nausea and loss of appetite. These symptoms usually disappear when exposure is stopped. At high levels of exposure, inhalation of VOCs can cause unconsciousness and even death. Chronic inhalation exposure to low levels of VOCs, particularly MEK, has been shown in

animal studies to result in adverse effects in offspring including reduced birth weight and skeletal deformities (ATSDR 1995, 2000; EPA 2003).

Corrosive Hazardous Wastes

Corrosive substances demonstrate a pH above 12.5 standard units. Substances that exhibit a high pH may be irritating or corrosive to skin, eyes, and mucous membranes. Corrosive substances produce irreversible tissue damage following even a single application to the skin or eyes (EPA 1990).

ATSDR Child Health Considerations

Children may be at greater risk than adults from exposure to hazardous substances at sites of environmental contamination. Children engage in activities such as playing outdoors and hand-to-mouth behaviors that could increase their intake of hazardous substances. They are shorter than most adults, and therefore breathe dust, soil, and vapors closer to the ground. Their lower body weight and higher intake rate results in a greater dose of hazardous substance per unit of body weight. The developing body systems of children can sustain permanent damage if toxic exposures are high enough during critical growth stages. Even before birth, children are forming the body organs they need to last a lifetime. Injury during key periods of growth and development could lead to malformation of organs (teratogenesis), disruption of function, and premature death. Exposure of a pregnant woman could lead to exposure of the fetus, via the placenta, or affect the fetus because of injury or illness sustained by the mother (ATSDR 1998). The obvious implication for environmental health is that children can experience substantially greater exposures than adults to toxicants that are present in soil, water, or air.

Children are living in homes immediately across Vincent Street from the MIF property and could have been exposed to VOC vapors emitted from the MIF property. Solvent-like odors were detected in the yards of these homes by DCH staff during the October 7, 2004 site visit. Children may have trespassed on the site, gaining access through the unsecured gates. Children could have made direct contact with hazardous ignitable and corrosive waste materials and their activities on-site could have resulted in a fire or explosion. Should such an event have occurred, the children living in close proximity to the site would have been at risk.

Conclusions

At the time of the DCH site visit in October 2004, hazardous wastes stored on the MIF property presented an ***urgent public health hazard***. Approximately 4,000 deteriorating or leaking drums containing paint and solvent wastes were stored on-site without protection from weather or fire. Testing of the contents of these drums indicated that the waste material is ignitable and/or corrosive. In an emergency situation, these materials could have ignited and would have significantly exacerbated the intensity of fire and explosion, posing an imminent and substantial hazard to the public health.

The MIF site was not adequately access restricted. The condition of both the northeast gate and the west fence suggested that trespassers were entering the site. Trespassers, particularly children, could have vandalized the barrels or caused a fire or explosion.

Additionally, contact with corrosive materials in drums stored outside the building could have resulted in irreversible tissue damage.

The EPA secured the MIF site and began a removal action in December 2004. Until all hazardous wastes are removed, the MIF property poses a ***public health hazard***. The risk of fire and/or explosion remains, although substantially reduced by EPA actions. On-site workers remain at risk during the removal action. Soil and groundwater sampling will be needed after the waste has been removed to determine if environmental impacts have occurred.

At the time of the DCH site visit, VOC air contaminants emanating from the MIF property posed an ***indeterminate public health hazard***. Solvent odors could be detected in the front yards of residences located across Vincent Street indicating that the MIF site was emitting hazardous chemicals to the ambient air, however no data are available to determine the levels of VOCs to which people were being exposed. Since production has ceased at the MIF site, this pathway currently poses ***no public health hazard***.

Recommendations

In October 2004 DCH recommended to the DEQ that:

- The MIF site be immediately secured to prevent trespass, and that
- Waste materials present on the site be characterized and removed for appropriate disposal.

Public Health Action Plan

DCH's determination of the imminent and substantial hazard to the public health posed by hazardous wastes stored on the MIF property allowed the DEQ to issue a cease-and-desist order. With this order in place, the EPA was able to begin an emergency removal action and secure the site from further trespass. EPA continues to characterize the waste materials for removal and disposal. Upon completion of the removal action, sampling will be conducted to determine the nature and extent of impacts to environmental media.

DCH will remain available as needed for future consultation at this site.

If any citizen has additional information or health concerns regarding this health consultation, please contact the Michigan Department of Community Health, Environmental and Occupational Epidemiology Division, at 1-800-648-6942.

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Certification

This Michigan Industrial Finishes Health Consultation was prepared by the Michigan Department of Community 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. Editorial Review was completed by the Cooperative Agreement Partner.

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

Team Leader, CAT, SPAB, DHAC, ATSDR