

HEALTH CONSULTATION

Public Comment Release

WEST KL AVENUE LANDFILL – RESPONSE TO RECORD OF DECISION AMENDMENT

KALAMAZOO, KALAMAZOO COUNTY, MICHIGAN

CERCLIS NO. MID980506463

Prepared by

Michigan Department of Community Health
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

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Summary

The West KL Avenue Landfill Superfund Site in Kalamazoo, Michigan has been a National Priorities List site since 1982. The U.S. Environmental Protection Agency (EPA) has amended the site clean-up plan, known as the Record of Decision (ROD). EPA will require that the Potentially Responsible Parties supply municipal water service to homes in the area ahead of the contaminated groundwater plume leaching from the landfill so that a buffer zone is created should the plume move further west. The Michigan Department of Community Health (MDCH) prepared this consult under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). This consult was written at the request of EPA to respond to community health concerns voiced at an October 2002 public meeting regarding the amendment.

The amendment to the ROD is proactive, designed to prevent possible future exposures to contaminated groundwater in the described area. MDCH and ATSDR support this protective action.

The groundwater contamination is likely not responsible for the community health concerns presented at the October 2002 public meeting. MDCH and ATSDR recommend a follow-up meeting with the community during the public comment period for this health consultation to ensure that all concerns have been voiced and addressed.

This health consultation also discusses whether the permeable cap currently in place on the landfill should be replaced with the impermeable cap recommended in the ROD and mandated by state environmental law. MDCH and ATSDR concur that the current cap should be replaced.

Purpose and Health Issues

The purpose of this public health consultation is to comment on EPA's amendment to the Record of Decision (ROD) for West KL Avenue Landfill in Kalamazoo, Kalamazoo County, Michigan (Figure 1), and to respond to community health concerns regarding the landfill. The consultation also discusses the controversy regarding the landfill's cap permeability.

Community questions addressed in the Community Health Concerns section of this consultation include:

1. Is groundwater south of KL Avenue, specifically along 4th Avenue, safe to drink now? Could the plume from the landfill impact it in the future?
2. Could the groundwater contamination cause reproductive problems such as spontaneous abortions or stillbirths?
3. Is the incidence of cancer or other diseases elevated in the area? If so, could this be a result of the groundwater contamination?

The Michigan Department of Community Health (MDCH) conducted this evaluation for the Agency for Toxic Substances and Disease Registry (ATSDR). MDCH works cooperatively with ATSDR in assessing public health implications at sites of environmental contamination.

Background

West KL Avenue Landfill, also known as KL or K & L Avenue Landfill, is a former sanitary landfill located at 8606 West KL Avenue in Oshtemo Township, Kalamazoo County, Michigan, about 7 miles west of the city of Kalamazoo, Michigan. It operated from the 1960s until 1979 and received local garbage, solid and liquid industrial waste, and hospital waste. The amount and identity of the wide array of wastes placed in the landfill were often not recorded. Kalamazoo County closed the landfill in 1979 on order of the Michigan Department of Natural Resources after volatile organic compounds (VOCs) were detected in residential wells located in the area. A soil/bentonite (permeable) cap was placed over part of the landfill in 1980 to reduce infiltration of rainwater into the wastes, thus retarding contaminant migration (ATSDR 1992).

EPA placed the site on the National Priorities List (NPL) in 1982. Following a Remedial Investigation and Feasibility Study, the Agency signed a ROD that selected a final clean-up for the site, addressing both the landfill's contents and the groundwater contamination caused by the waste leaching from the landfill. The ROD stipulated that there be a fence erected around the site, that deed restrictions be placed on the landfill property, and that a multi-layer impermeable cap be placed over the landfill. The first two requirements have been met, but the permeable cap that was placed over the landfill in 1980 has remained in place while the Potentially Responsible Parties (PRPs) have investigated the effectiveness of natural attenuation. The ROD also stipulated that groundwater be monitored, that deed restrictions be placed on use of the groundwater and closed residential wells be abandoned properly, and that the groundwater be extracted and treated to meet state clean-up standards. Monitoring efforts are continuing and have expanded as the plume has moved westward. Deed restrictions are in place, and as municipal water is extended to the area, private wells have been abandoned. Extraction and treatment have not yet begun because of the PRPs' investigations into natural attenuation of the groundwater (EPA 2002a, b).

In 2002, EPA amended the ROD so that municipal water is supplied to homes ahead of the path of the plume. Figure 2 shows the proposed municipal water supply area. Previously, homeowners were allowed to keep using their private wells until testing results indicated that the wells had been impacted by the plume. While Oshemo Township was taking responsibility for installing water mains out to the area, this work did not include the connection of individual homes. EPA believed it appropriate to proactively address the protection of residents in the path of the plume while the studies on natural attenuation continue (EPA 2002a, b). As part of the regulatory process, EPA held a public meeting for the township residents on October 2, 2002. Following that meeting, EPA asked ATSDR to provide comment on the amendment to the ROD and to address community health concerns.

Upon discussion of the site with the Michigan Department of Environmental Quality (MDEQ) Superfund Section, MDCH learned that the PRPs feel that the permeable cap now in place should be allowed to remain. The PRPs contend that natural attenuation (the degradation that occurs without human intervention) has been changing the groundwater contaminants into less harmful chemicals, and an impermeable cap will only diminish this effect. MDEQ maintains that the state's Part 111 Rules regarding hazardous waste management mandate that the cap be impermeable (2002, M. Henry, MDEQ Remediation and Redevelopment Division [RRD] Superfund Section, personal communication).

Discussion

Amendment to ROD

Among the recommendations made by ATSDR and MDCH (then the Michigan Department of Public Health) in the 1992 Interim Health Assessment for West KL Avenue Landfill was continued monitoring of in-use residential wells near the landfill to ensure that the chemicals in the groundwater were not entering the residents' drinking water supply (ATSDR 1992). Subsequent results from private well and monitoring well testing showed that, over time, the plume was moving westward. Figure 3 shows the extent of the groundwater plume above the EPA Maximum Contaminant Level (MCL), if applicable, or the MDEQ Residential Drinking Water Criteria (DWC) of detected chemicals. The lateral extent of detections lower than the MCL is shown as well.

The MCL is a drinking water level of a chemical that is protective of public health and is an enforceable standard for public water systems. MCLs are deemed protective during a lifetime (70 years) of drinking 2 liters of water per day. Similar to the federal MCL, the state DWC is a drinking water level of a chemical that is considered safe for long-term, daily consumption. DWCs assume that a person drinks 2 liters of water per day but that the exposure duration is only 30 years.

Under certain conditions, VOCs can volatilize from groundwater and soil and enter indoor air through the basement foundation of a house. However, the groundwater aquifer under West KL Avenue Landfill area is very deep, greater than 70 feet, and volatilization to indoor air is not likely to occur. Therefore, the only exposure pathway of concern is that of drinking water.

Comparing the proposed municipal water supply area in Figure 2 to the current extent of the plume in Figure 3 shows that the water supply would serve homes where the wells are not yet above the MCL. Based on the historic groundwater data, it is likely that, if hydrogeological conditions remain the same, these homes' wells could exceed the MCL in the future, posing a future health hazard. Therefore, MDCH and ATSDR find this proactive measure to be protection of public health .

Community Health Concerns

Is groundwater south of KL Avenue, specifically along 4th Avenue, safe to drink now? Could the plume from the landfill impact it in the future?

The groundwater monitoring data do not indicate that the groundwater plume has extended south of KL Avenue beyond the lots on that street. MDEQ does not expect the plume to extend southward. Regional groundwater flow is to the northwest. Therefore the plume from the landfill should not affect groundwater south of KL Avenue. As well, if the landfill is capped with an impermeable cap, further leaching should be greatly diminished.

Could the groundwater contamination cause reproductive problems such as spontaneous abortions or stillbirths?

EPA and MDEQ derive the MCL and DWC, respectively, to be very protective over the long-term. It is likely that the concentrations of chemicals in the groundwater would have to be many times greater than those found in private wells around West KL Avenue Landfill to cause the health effects described.

Is the incidence of cancer or other diseases elevated in the area? If so, could this be due to the groundwater contamination?

An extensive cancer incidence data review has not been conducted, however in 1996, MDCH completed a review of breast cancer incidence data that was requested by Kalamazoo County Human Services Department. MDCH looked at diagnoses of individuals living in the 49009 zip code area. This area includes West KL Avenue Landfill. There was no indication of a trend of increasing breast cancer. There was a brief period from 1986 to 1988 in which breast cancer incidence in the area began to express an increasing trend. However, this increase was not interpreted as statistically significant (MDCH 1996).

As mentioned in the answer to the previous question, the MCL and DWC are calculated to be very protective over the long-term. The concentrations of chemicals in the groundwater likely would have to be many times greater than those found in private wells around the area to increase the risk of cancer. If residents believe that there is an unusual number of cases of a specific disease in the area, MDCH can review state records to determine if the trend is real (i.e., statistically significant) or only perceived. If the trend is real, however, environmental contamination may not necessarily have caused it. Numerous causes and risk factors can lead to the development of a disease.

Cap Permeability Issue

The PRPs are proposing that the permeable cap now covering the landfill remain in place. The PRPs have conducted several studies evaluating the natural attenuation of the West KL Avenue Landfill contents (EPA 2002b). Some chemicals, such as benzene, detected during earlier (1980s) sampling events are still present in the plume. However, other chemicals, such as acetone, detected in earlier analyses of the groundwater are no longer present. Along with the evidence of the natural attenuation, the PRPs have also argued that the activities of clearing the current cap, hauling in fill to achieve an appropriate contour, and recapping the site would cause unacceptable physical hazards. These

hazards include the danger inherent in large-scale excavation and construction operations as well as increased traffic in the area, especially by heavy trucks. Not only would site workers be at risk, but area residents would also experience at least the traffic hazards. Also, cap replacement activity would likely generate dusts, at best a nuisance to nearby residents and at worst a trigger to those with asthma or other breathing difficulties. If the contents of the landfill are exposed, VOCs may be released into the air, exposing workers and downwind residents to chemicals, potentially at levels of concern.

MDEQ maintains that the Part 111 Rules regarding hazardous waste management mandate that landfills such as West KL Avenue be covered with an impermeable cap. Without water entering the landfill, the chemical contents of the landfill should not leach into the groundwater. Therefore, the plume would recede, eventually “collapsing” in on itself. While drinking water supplies are being protected by the piping of municipal water to the area, surface waters could be impacted despite the depth of the aquifer. Specifically, porewater (groundwater) sampling below Dustin Lake revealed the presence of several VOCs and tetrahydrofuran (2002, M. Henry, MDEQ-RRD, personal communication; MDEQ 2002). The maximum depth of Dustin Lake is about 10 feet. Because these samples were taken just below the groundwater-surface water interface, MDEQ cannot determine as yet whether the chemicals are expected to enter the lake water. Consequently, MDEQ is investigating Dustin Lake further. Given these preliminary data, it is possible that chemicals leaching from West KL Avenue Landfill could eventually enter and negatively impact Dustin Lake and other surface waters over the plume, leading to ecological concerns.

Allowing the permeable cap to remain in place on West KL Avenue Landfill will allow the contaminated groundwater plume to continue spreading westward. Even if the municipal water supply were to be further extended in the future, the stigma potentially caused to the area could affect development and land value. The uncertainties of allowing the landfill to continue to leach to the groundwater (not knowing what other chemicals might emerge, how many more wells might be impacted in the future, or if the ecosystem is or will be affected) are counterbalanced by the stronger certainty that capping the landfill properly will contain, or at least significantly reduce the flux of, these chemicals. While ATSDR and MDCH concede that the physical hazards caused by cap replacement activities are undesirable, allowing further environmental degradation and potentially exposing more people to these chemicals is more so. Therefore, replacing the cap is protective and will prevent future exposures.

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 the mother 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.

Extending the municipal water supply as proposed in the amendment will be protective of children living near West KL Avenue Landfill.

If the permeable cap remains in place, children living in homes ahead of the plume outside the water supply area may be exposed to chemicals in the groundwater if their private wells are impacted by the plume. As well, if surface waters, such as Dustin Lake, become impacted, children swimming or wading in those waters may be exposed.

If the cap is replaced, children playing in or near KL Avenue may be at risk of injury as a result of the increased traffic; however, their parents or caretakers should be aware of the activity at the landfill and will likely take additional steps to ensure their children's safety. Dust generated during any landfill activity may exacerbate breathing difficulties of asthmatic children; however, they and their parents would be capable of taking steps to alleviate any respiratory problems (e.g., remaining indoors or leaving the area on dusty days, using a bronchodilator when needed). Replacing the cap will prevent future exposures and be protective in the long term, whereas dust suppression and traffic concerns are more short-term issues. Upon completion of an impermeable cap, the physical hazards would be removed as well as the potential for exposure to contaminated groundwater.

Conclusions

The amendment to the ROD is proactive and protective. MDCH and ATSDR support this action.

The groundwater contamination is likely not responsible for the community health concerns presented at the October 2002 public meeting. MDCH and ATSDR recommend a follow-up meeting with the community during the public comment period for this health consultation to ensure that all concerns have been voiced and addressed.

This health consultation also discusses whether the permeable cap currently in place on the landfill should be replaced with the impermeable cap recommended in the ROD and mandated by state environmental law. MDCH and ATSDR concur that the current cap should be replaced.

Recommendations

ATSDR and MDCH recommend the following:

1. Proceed with implementation of the ROD amendment. (The amendment was signed in late February 2003.)
2. Address any additional health concerns regarding the landfill and the groundwater.
3. Replace the current cap on West KL Avenue Landfill with an impermeable cap.

Public Health Action Plan

? EPA, MDEQ, Kalamazoo County, and Oshtemo Township will coordinate efforts to provide municipal water to the area outlined in the ROD amendment.

? MDCH will host a community meeting during the public comment period of this health consultation to receive comments and respond to community health concerns.

? The PRPs, with EPA and MDEQ oversight, will make the necessary arrangements to replace the permeable cap currently over West KL Avenue Landfill with an impermeable one.

New environmental data, amendments to the ROD, or information concerning the future use of this property may require future health consultations.

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

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(insert figures)

Certification

This “West KL Avenue Landfill – Response to Record of Decision Amendment” 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.

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