Health Assessment for

HIPPS ROAD LANDFILL

JACKSONVILLE, FLORIDA

CERCLIS NO. FLD980709802

MAY 16, 1986

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
Agency for Toxic Substances and Disease Registry

THE ATSDR HEALTH ASSESSMENT: A NOTE OF EXPLANATION

Section 104 (i) (7) (A) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, states "...the term 'health assessment' shall include preliminary assessments of potential risks to human health posed by individual sites and facilities, based on such factors as the nature and extent of contamination, the existence of potential pathways of human exposure (including ground or surface water contamination, air emissions, and food chain contamination), the size and potential susceptibility of the community within the likely pathways of exposure, the comparison of expected human exposure levels to the short-term and long-term health effects associated with identified hazardous substances and any available recommended exposure or tolerance limits for such hazardous substances, and the comparison of existing morbidity and mortality data on diseases that may be associated with the observed levels of exposure. The Administrator of ATSDR shall use appropriate data, risks assessments, risk evaluations and studies available from the Administrator of EPA."

In accordance with the CERCLA section cited, this Health Assessment has been conducted using available data. Additional Health Assessments may be conducted for this site as more information becomes available.

The conclusions and recommendations presented in this Health Assessment are the result of site specific analyses and are not to be cited or quoted for other evaluations or Health Assessments.

May 16, 1986

Acting Director
Office of Health Assessment

Health Assessment: Hipps Road Landfill SI-86-046
Jacksonville, Florida

Mr. Chuck Pietrosewicz
Public Health Advisor
EPA Region IV

EXECUTIVE SUMMARY

The Hipps Road Landfill Remedial is a former landfill that ceased operation in 1970 and was subsequently covered with local soil of inadequate quality for a proper cap. A January 1985 emergency response action (providing an alternate, permanent water supply) appears to have addressed the only opportunity for the site to present a potential public health threat. The site should be properly closed and proper groundwater monitoring instituted.

STATEMENT OF PROBLEM

The Environmental Protection Agency (EPA) requested the Agency for Toxic Substances and Disease Registry (ATSDR) to review and comment on the health and risk assessment, the Feasibility Study (FS), and the adequacy of the proposed remedial alternatives for the protection of public health.

The Hipps Road Landfill is located at the southeastern corner of the intersection of Hipps and Exline Roads west of downtown Jacksonville, Florida. The landfill occupies approximately 7 acres in what was once a cyprus swamp. It is presently a relatively flat area sparsely covered with grass, brush, and pine trees. Fill material is reported to be buried on the site to a depth of 25 feet.

The facility, operated by Waste Control of Florida, Inc., ceased operations in 1970, at which time the fill was covered with a layer of soil and sold as residential lots. There are two homes located between the landfill and Hipps Road, and one residence located on the west side of the site on Exline Road.

The area surrounding the Hipps Road Site is residential and, until recently, these residences depended exclusively on private wells for water supply. After several wells, reportedly tested in April 1983, were found to be contaminated with volatile organic compounds, those residences were given bottled water and city funds were appropriated to extend the city water system to include this area. City funds were not provided to the individuals to connect to the extended lines, thus, only those who wished and had the funds could connect to the city system. During January 1985, EPA, through an emergency response action based upon ATSDR advice, connected the remaining residences to the city supply.

DOCUMENTS REVIEWED

1. Request for Assistance, Chuck Pietrosewicz, ATSDR, to Chief, Field Services, ATSDR, March 14, 1986.
2. "Remedial Investigation Report for Hipps Road Landfill Site, Jacksonville, Florida," February 10, 1986.
3. "Hipps Road Landfill, Feasibility Study, Draft Report," February 24, 1986.
4. "Site Analysis, Hipps Road Landfill, Duval County, Florida," by Bionetics Corporation, Warrenton, Virginia, June 1985.
5. ATSDR site files.

CONTAMINANTS AND PATHWAYS

Table 1 presents the maximum concentrations for numerious chemical species reportedly found in various sampling locations on and around the

Hipps Road Landfill. Based upon the data provided for chemical concentration in surface soil and groundwater, and the fact that the groundwater is no longer being consumed in the area of the site, there does not appear to be a pathway for significant human exposure related to this site.

DISCUSSION

The already-completed emergency response action of connecting the residences to the public water supply has addressed the only documented pathway for potential significant human exposure for this site. Any remedial action which would excavate the waste or treat the groundwater would provide a new potential pathway for exposure.

The method by which the data was presented in the review documents makes it difficult to fully evaluate the site. There does not appear to be any clear presentation of the data from the private wells on which the initial remedial action was based. In addition, there appears to be some inconsistencies in the Remedial Investigation (RI). For example, in Table 3-4, the concentration of zinc in borehole BH-15 is reported as 1,400 ug/l, while in Table 9-1, it is reported as 33,000 ug/l.

In order to interpret the groundwater condition in the vicinity of the site, it would have been useful to have sampled the same wells on more than one occasion. This would demonstrate that the contamination was actually present in the water and show if the concentration of the contamination was changing with time.

From the data provided, there appears to be one private well, one off-site monitoring well, and several on-site boreholes with substantial organic contamination, and one on-site borehole with high metal concentrations. The private well contamination is with methylene chloride which is ubiquitous in laboratories and notorious as a contaminant in the analytical process. The reported 5,700 ug/l appears to be somewhat higher than might be expected from laboratory contamination. However, it is also more than two orders of magnitude greater than any of the other water samples from the site. Therefore, it would be difficult to consider the site to be the source of this compound if it is, in fact, present in the groundwater of the private well. The reported methylene chloride in this well is also called into question because the monitoring wells in the immediate vicinity report none of this compound. The other private well data reported show low concentrations of toluene below any level for public health concern for consumption of the water.

There appears to be little relationship between the materials reportedly found in the soil and the groundwater from the bore holes on the site. Specifically, polychlorinated biphenyls (PCBs) were reported in the groundwater from the bore holes at concentrations which appear equal to or greater than the water solubility for the compounds, while at the same time, the soil samples from these bore holes show no PCBs even though they were analyzed by priority pollutant procedures. This situation in which the materials were reported either to be present in the soil and not the groundwater, or vice versa, appears to call into question the analytical results.

Another result that calls into question the validity of the analytical results is that of aluminum. In many of the samples from the bore holes, the temporary wells, and both series of monitoring wells, the aluminum concentration is reported to be in the thousands of ug/l, some even tens and hundreds of thousands of ug/l, while the maximum reported value for the private wells is 280 ppb, with most of the reported values being reported as less than the detection limit of 200 ppb. It seems difficult to explain this wide difference in concentration with at least some of the monitoring wells and private wells in close proximity to each other and withdrawing from the same aquifer. While this is not the only difference in results from adjacent wells, it is the most glaring example.

It appears that, at least in the off-site private wells, there is no substantial indication that the landfill is the source of general contamination. While the downgradient wells PW-6, PW-7, PW-8, PW-9, and the on-site well PW-10 show contamination, there is no consistency in the contaminant; PW-6 has 1,2-dichloroethane, PW-7 has methyl ethyl ketone, PW-8 has methylene chloride, PW-9 has lead, and PW-10 has the maximum reported concentration (24 ug/l) of toluene. In the other private wells toluene was less than 10 ug/l.

One of the few consistencies in the data is the reported concentration of vinyl chloride in the three monitoring wells, EMW-6 (32 ug/l 50'), EMW-2 (28 ug/l 55'), and EMW-3 (31 ug/l 60'), which appear to be in the general direction of the predicted groundwater flow, i.e., in a northeasterly direction as well as into the aquifer. This uniformity of concentration would, along with the general lack of precursor chemicals, indicate that the vinyl chloride had been produced by biodegradation essentially on the site and that further rapid increase in concentration is not occurring. In order for this situation to occur, i.e., essentially complete degradation of the precursor chemicals, it would require very slow migration from the source of the contamination to the nearest monitoring well. Since it has been nearly 15 years since the landfill ceased operation, there has been ample time to develop an environment for biodegradation. Thus, the occurrence of substantial biodegradation would not be surprising. In fact, the concentration of the one possible precursor, trans-1,1-dichloroethene, also a biodegradation product, is not constant in these three wells, but is higher in the more distant wells, EMW-2 (27 ug/l 55') and EMW-3 (24 ug/l 60'), than in the nearby well EMW-6 (6 ug/l 50"). Since there are no reported precursor compounds for the dichloroethene in the groundwater samples from these wells, this inverse gradient from the landfill could indicate that the concentration of precursor chemicals in the landfill has diminished significantly since the water at the more distant wells left the point of contamination. If the vinyl chloride can, in fact, be used as a conservative indicator of pollutant migration from the site, then the substantial variation in concentration of other chemical species among these three wells cannot be explained by the assumption that they all came from the same source. However, with only one set of data to evaluate, any conclusions about what may be occurring in the groundwater is pure conjecture.

COMMENTS

The feasibility study on page 2-12, states that site-specific data for soil samples show that contaminants such as toluene and methylene chloride are found in levels capable of producing a leachate with concentrations exceeding the cleanup goals. The data cited were not provided for review; however, the data available for review (remedial investigation) did not appear to support this claim.

The use of data for a compound like n-nitrosodiphenylamine as an indicator compound for this site does not appear to be valid. It was reportedly found in two on-site wells; however, because of analytical limitations it could not be distinguished from diphenylamine. If this compound is to be used as an indicator of contamination for this site, then it is necessary for its presence to be documented by additional analytical work so that identification is positive. Without this effort, the potential presence of this compound should not be used in the site evaluation.

CONCLUSIONS AND RECOMMENDATIONS

The already-completed emergency response action of providing an alternate, permanent water supply has addressed what appears to be the only opportunity for the site to present a potential public health threat. From the data available, it appears that there is no evidence that the site is currently presenting a public health threat, or that it likely will in the future. Since there is no demonstrated pathway for human exposure to the chemicals associated with the site, most of the proposed remedial action would be counterproductive for protection of public health because, with the exception of capping the site, they all propose some effort to remove and treat the contaminated water and soil. Even though these media appear to be, in general, only slightly contaminated, this activity could contaminate the air or surface soil at levels greater than currently present, thereby exposing the local population unnecessarily.

Since the site reportedly was not properly closed, proper closure and monitoring of the site should be provided.

Jeffrey A. Lybarger, M.D.

Attachment

cc:
George Buynoski
Henry Longest

ATSDR:OHA:HAB:McClanahan/Cibulas:rm:5/9/86:0043RHippsRd

TABLE 1. SELECTED CHEMICALS REPORTED IN VARIOUS SAMPLES FROM HIPPS ROAD LANDFILL

CHEMICAL	BORE HOLE WATER ug/l	BORE HOLE SOIL mg/kg	OFF-SITE GROUND WATER ug/l	ON-SITE SURFACE SOIL mg/kg	OFF-SITE SURFACE WATER mg/kg
arsenic	220		18		
barium			110		
beryllium	19				
cadmium	60	1.2			
cobalt	42				
chromium	1100	1.2	35		
copper	1200		51		
lead	5300	18	29		
mercury	18	0.10			
nickel	370	14	29		
selenium	27				
vanadium	1100				
zinc	11000	33	200		
acetone			800		PRESENT
C-3 alkylbenzene			10		
C-4 alkylbenzene			20		
C-5 alkylbenzamide			10		
benzene	408	0.005	8		
carbon disulfide	18	0.001	8.9		
chlorobenzene	297	0.11	4.7		
chrysene					PRESENT
1,2-dichlorobenzene	39.3				
1,4-dichlorobenzene	11	0.14			
1,1-dichloroethane			5.3		
trans-1,2-dichloroethene			33		
endrin ketone					PRESENT
ethylbenzene	162	0.011	68		
ethyl ether			7		
ethylhexanoic acid			20		
benzo(a)anthracene					PRESENT
dibenzo(a,h)anthracene					PRESENT
Benzo(ghi)perylene					PRESENT
benzo(a)pyrene					PRESENT
indeno(1,2,3-cd)pyrene					PRESENT
methylene chloride	4.8				
methyl ethyl ketone		0.003	9.7		
methyl isobutyl ketone			22		
methoxychlor					PRESENT
1,2-diphenylhydrazine /azobenzene				1.0	
methylnonanediol			70		
methylpentanediol			20		
naphthalene	96	0.45	20		
N-nitrosodiphenylamine /diphenylamine	7.6		16		
oxybisethoxyethane			100		
PCB-1242	36				
PCB-1260	38				
PCB-1254	1.8				
phenol	34		13		
methylphenol	5.7				
2-methylphenol			46		
4-methylphenol					PRESENT
2,4-dimethylphenol			13		
bis(2-ethylhexyl)phthalate	96				
di-n-butylphthalate				39	PRESENT
propanol			40		
tetrahydrofuran			11		
toluene	49		68		PRESENT
trichloroethene			2		PRESENT
trimethylbicyloheptanone			70		
vinyl chloride			73		
xylenes (total)	220	0.32	93		