

HEALTH CONSULTATION

OCEAN COUNTY LANDFILL

MANCHESTER TOWNSHIP, OCEAN COUNTY, NEW JERSEY

CERCLIS #: NJD980771810

September 19, 1995

Prepared by:
The New Jersey Department of Health
Environmental Health Service

Under a Cooperative Agreement with
The Agency for Toxic Substances and Disease Registry

BACKGROUND AND STATEMENT OF ISSUES

This health consultation is being performed at the request of the New Jersey Department of Environmental Protection (NJDEP) to evaluate the public health significance of potential exposure to volatile organic chemicals emanating from the Ocean County Landfill and sampled at the Ridgeway School, located approximately 1/4 mile from the landfill boundary and other locations.

The Ocean County Landfill, located at Routes 70 and 571, is an active sanitary landfill located in Manchester Township, Ocean County, New Jersey (Appendix). The landfill consists of about 750 acres, of which approximately 238 acres are being used for landfilling activities (Appendix 2). The landfill accepts wastes classified as municipal, commercial, and institutional waste, dry sewage sludge, bulky waste, vegetative waste, animal and food processing waste, and dry industrial waste. Numerous residences, two public schools, a trailer park, and a fire station are located adjacent to the landfill.

The citizens of Manchester Township complained to the Mayor and Council of Manchester Township regarding odors which they believed were emitted from the Ocean County Landfill on a periodic basis. In response to the concerns of the citizens, the Manchester Township Council passed a resolution to investigate the ambient air quality around the landfill. The Township of Manchester then contracted AET, Inc. to perform an industrial hygiene evaluation of the ambient air quality in the vicinity of the Ocean County Landfill.

AET performed ambient air quality evaluations on December 10, 15, 20, and 28, 1993. These dates were randomly chosen to detect various levels of emissions emanating from the landfill to reflect various weather conditions. The temperatures ranged from 42 to 56 °F and wind velocity, wind direction, and humidity varied between sampling dates.

Ambient air samples were analyzed for Volatile Organic Compounds (VOC's), metals, and for bacteria, fungi, and spores. Samples were taken at Ridgeway School, a trailer park, a fire station, and at Route 70. All samples were taken within one-quarter mile from the periphery of the Ocean County Landfill.

It was concluded by AET that all of the VOC's detected were below standards set by either the Occupational Safety and Health Agency (OSHA) or the American Conference for Government Industrial Hygienists (ACGIH).⁽²⁾

The main conclusions and recommendations of the AET investigation were: that no emergency situation was found at any of the sampling areas, a protocol for industrial hygiene sampling of the ambient air should be established that encompasses a variety of weather conditions, and that the data generated should be available for review by both the Township of Manchester and by the Ocean County Landfill Authority.⁽¹⁾

A citizen submitted the AET report ⁽¹⁾ to the Citizens Clearinghouse for Hazardous Waste (CCFHW) for an evaluation. The main conclusions of the CCFHW ⁽²⁾ were related to the

sampling methods used, the use of Threshold Limit Values (TLV's) to evaluate health risk, and the fact that it might be possible for adverse health effects to result from exposure to the chemicals identified in the ambient air samples.

AET responded to the CCFHWA letter on March 21, 1994 ⁽⁴⁾. They emphasized that this was a preliminary report and that the methodologies were appropriate for a preliminary report. They concluded that no emergency condition exists. CCFHW had major concerns regarding the potential for adverse health effects. In consideration of these discrepancies, the Mayor of Manchester Township requested that the NJDEP review the documentation to determine the potential for adverse health effects to nearby residents and to students and staff at the nearby elementary school, resulting from exposure to the volatile organic chemicals (VOC'S) emanating from the Ocean County Landfill. The NJDEP forwarded this request to the Agency for Toxic Substances and Disease Registry (ATSDR).

On October 24, 1994, Jim Pasqualo and Howard E. Rubin of the NJDOH, a representative from the Ocean County Landfill Authority, representatives from the Township of Manchester, a representative from AET, and representatives from the Ocean County Health Department conducted a site visit at the Ocean County Landfill.

Several houses, a trailer park, and a fire station were observed to be on the edge of the landfill. An elementary school, a middle school, and many homes were within 100 yards from the edge of the landfill. A contiguous fence surrounds the entire landfill property.

Current community health concerns regarding the Ocean County Landfill pertain to the emission of sporadic odors. The only public health concern identified by the Ocean County Health Officer is the potential for adverse health effects resulting from exposure to the odors.

DISCUSSION

The ambient air quality study performed by AET ⁽⁴⁾ was a preliminary attempt to determine the extent of contamination resulting from the release of noxious odors from the landfill at different times. All samples were taken as outdoor ambient air samples. The main focus of the study was the quality of the ambient air at the Ridgeway School location. There are no data describing the quality of the ambient air inside Ridgeway School. Drager tubes and the Miran 1BX gas analyzer were utilized for portions of the study. These methods are qualitative and semi-quantitative. They were utilized to determine the nature and extent of VOC contamination in the ambient air. However, due to the quantitative limitations of these methods (usually + or - 15%), the data are of limited applicability in determining the effects on human health resulting from low level inhalation exposures.

The Ocean County Health Department has correlated odor complaints with landfilling activities at the Ocean County Landfill by performing perimeter analyses of the ambient air. The ambient air study at the Ridgeway School was not correlated with a perimeter study. Also,

many of the contaminants detected during the study are products of automotive combustion, or components of motor fuel. Their presence could be due to the idling of school buses, use of lawn mowers, or automobiles entering the area. It is also possible that other industries or businesses in the area are responsible for generating the contaminants. Therefore, the source of the ambient air contaminants are in question, and not conclusively attributable to the landfill.

Table 1 lists those chemicals found in ambient air samples, and lists associated ATSDR health comparison values. Comparison values for public health assessments are contaminant concentrations in specific media that are used to select contaminants for further evaluation. These values include Environmental Media Evaluation Guides (EMEGs), Cancer Risk Evaluation Guides (CREGs), air Reference Concentrations (RfC), and other relevant guidelines. CREGs are estimated contaminant concentrations based on a one excess cancer in a million persons exposed over a lifetime. CREGs are calculated from EPA's cancer slope factors. Comparison values are usually more stringent than OSHA or ACGIH standards.

It is probable that any inhalation exposure due to the odors would be of acute duration because the odors do not remain for long periods of time, occur occasionally, and the exposed population would not spend a prolonged time in any one particular area. Thus, chronic exposure probably does not occur. Higher levels of exposure are usually necessary to elicit an acute adverse health effect compared to a chronic adverse health effect.

All of the compounds detected in ambient air samples (Table 1) were below OSHA or ACGIH standards. Cyclopentane, 1,1-dichloroethane, fluoro-trichloromethane, nitromethane, propane, sulfur dioxide, and trichlorofluoromethane did not have comparison values. It is unlikely that these chemicals would be present in concentrations which could result in a dose sufficient to cause adverse health effects due to inhalation exposure of acute duration. This is based on the animal and human exposure studies reported in the respective toxicological profiles.

Benzene, carbon tetrachloride, and 1,1,2-trichloroethane were found outside the Ridgeway School groundskeeper's building at concentrations below OSHA or ACGIH standards but slightly above their comparison values. This is of potential concern because of their carcinogenic potential. However, at their relative concentrations found in ambient air, adverse health effects due to inhalation exposure of acute duration are not expected.

Table 1. Ambient Air-Borne Contaminants Detected at Off-Site Locations.

CHEMICAL	AMOUNT (ppb)	COMPARISON VALUE (ppb)	SOURCE	LOCATION
Benzene	0.2	¹ 0.1	² CREG	School
Bromomethane	0.11	5.0	³ EMEG/MRL	School
Carbon disulfide	0.3	20.0	³ EMEG/MRL	Trailer Park
Carbon tetrachloride	0.04	¹ 0.07	² CREG	School
Chloromethane	0.11	400	³ EMEG/MRL	School
Cyclopentane	1.1	⁴ ---	---	Trailer Park
1,1-Dichloroethane	0.7	---	---	School
Ethyl benzene	1.5	300	³ EMEG/MRL	School
Fluorotrichloromethane	0.7	---	---	School
Hexane	0.1	¹ 200	⁶ RfC	Trailer Park
Nitromethane	50.8	---	---	School
Perchloroethylene	0.1	2	² CREG	Trailer Park
Propane	1.0	---	---	School
Sulfur dioxide	1.1	---	---	Parking Lot
Tert-butylmethyl ether	0.38	700	³ EMEG/MRL	School
Toluene	0.3/0.2	¹ 400	⁶ RfC	Trailer Park/ School
Trichlorofluoromethane	0.16	---	---	School
1,1,1-Trichloroethane	0.07	700	⁵ EMEG/MRL	School
1,1,2-Trichloroethane	0.2	¹ 0.06	² CREG	School
Vinyl acetate	0.1	10	⁷ EMEG/MRL	School
Xylene	0.2	50	⁵ EMEG/MRL	School

¹ $\mu\text{g}/\text{m}^3$

² CREG - Cancer Risk Evaluation Guide for 1×10^{-6} excess cancer risk.

³ EMEG/MRL - Environmental Media Evaluation Guide/Minimal Risk Level for chronic exposure.

⁴ --- - No Comparison Value exists for this chemical.

⁵ EMEG/MRL - Environmental Media Evaluation Guide/Minimal Risk Level for intermediate exposure.

⁶ RfC - Reference Concentration

⁷ EMEG/MRL - Environmental Media Evaluation Guide/Minimal Risk Level for acute exposure.

Benzene, carbon tetrachloride, and 1,1,2-trichloroethane were detected only in a single set of samples. Benzene and carbon tetrachloride are not among the contaminants expected to

be found in the Ocean County landfill emission profile. Benzene, a component of gasoline, could be released during the idling of buses or due to the filling of lawn mowers or other power engines. Carbon tetrachloride could be released during cleaning or degreasing activities. Trichloroethane is a common industrial solvent. The presence of these chemicals in ambient air samples could have resulted from the activities of the groundskeepers rather than the landfill.

CONCLUSIONS

1. Based upon a review and analysis of the data and information from the AET investigation, no apparent health hazard is expected via inhalation exposures of an acute duration at the concentration of the VOC's detected in ambient air samples taken at the various locations. Limitations in sampling methodology and resultant data preclude a meaningful determination of health risk (if any) with regard to low level chronic exposures.
2. Benzene, carbon tetrachloride, and 1,1,2-trichloroethane were detected in one ambient air sample from outside the groundskeepers office. They were not detected at other locations as might be expected if originating at the landfill. These compounds may have been stored on-site. Thus, their presence may be the result of their presence in storage, or as a result of automotive emissions, rather than emanating from the landfill.
3. The community living adjacent to the Ocean County Landfill has expressed concern regarding occasional odors emanating from within the landfill. Detection of odors (products of decomposition) is not necessarily indicative of significant (hazardous) exposure. Although aesthetically unacceptable there is no information indicating further public health significance of these odors due to acute exposure.

RECOMMENDATIONS

1. After a review of the documents for the Ocean County Landfill site, the ATSDR and the NJDOH have determined that, based on the concerns of the community adjacent to the landfill a monitoring program may be desirable to insure the outdoor ambient air quality of residents.
2. The ATSDR and the NJDOH shall evaluate any new environmental, toxicological, health outcome data, or changes in conditions, when available, to determine their public health significance.

CERTIFICATION

This Health Consultation was prepared by the New Jersey 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.



Gregory V. Ulirsch, M.S.

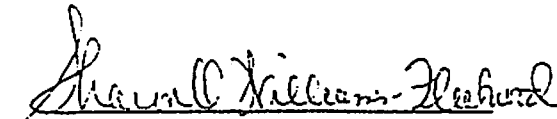
Technical Project Officer

Superfund Site Assessment Branch (SSAB)

Division of Health Assessment and Consultation (DHAC)

ATSDR

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



Sharon Williams-Fleetwood, Ph.D.

Chief, SSAB, DHAC, ATSDR

DOCUMENTS REVIEWED

1. AET, Inc. Industrial Hygiene Evaluation, Outdoor Ambient Air, Specific Site Sampling, Township of Manchester, New Jersey. November 1993.
2. John G. Strain, of AET. Letter to Jane C. Cameron, Mayor of Manchester Township. January 31, 1994.
3. Stephen U. Lester, of Citizens Clearinghouse for Hazardous Waste. Letter to Evalyn Snider. February 23, 1994.
4. John G. Strain, of AET. Letter to Gordon Milnes, Township Engineer of Manchester Township. March 21, 1994.

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APPENDIX



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SITE INFORMATION

Route 70 & Route 571
 Manchester, NJ
 Ocean County
 Job Number: 35649
 Map Plotted: Dec 13, 1993

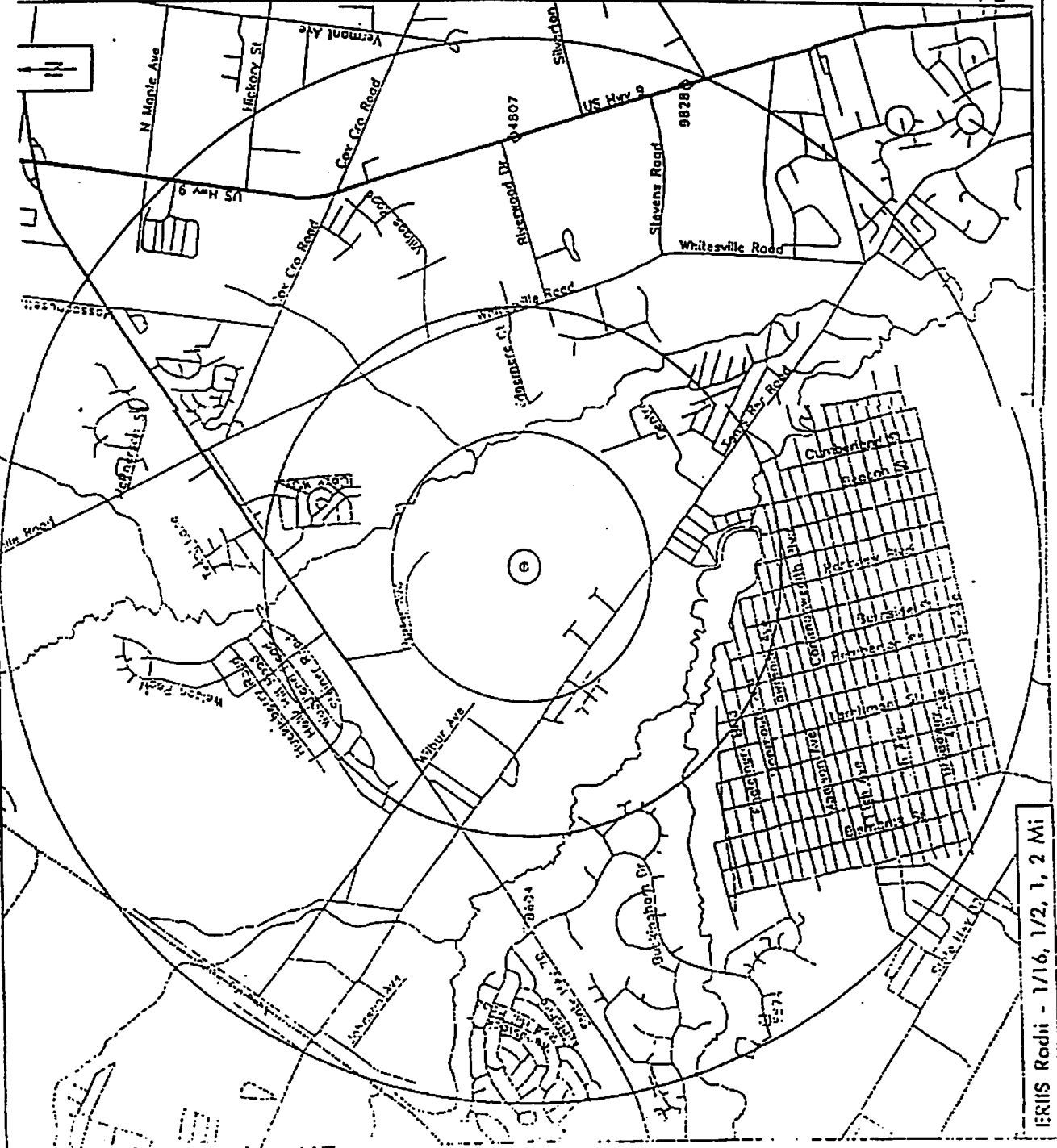
MAP LEGEND

- Hydrography
- Railroads
- Roads
- Highways
- CERCLIS 0 Site(s)
- CSITES 0 Site(s)
- LUST 0 Site(s)
- NPDES 0 Site(s)
- NPL 0 Site(s)
- RCRIS_LG 2 Site(s)
- RCRIS_SG 0 Site(s)
- RCRIS_TS 0 Site(s)
- SWL 0 Site(s)
- TRI 0 Site(s)
- UST -2 Site(s)

Miles



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