Health Assessment for

HOPKINS FARM

CERCLIS NO. NJD980532840

PLUMSTED TOWNSHIP, OCEAN COUNTY, NEW JERSEY

Agency for Toxic Substances and Disease Registry
U.S. Public Health Service

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, risk 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.

HEALTH ASSESSMENT
HOPKINS FARM
OCEAN COUNTY
PLUMSTED TOWNSHIP, NEW JERSEY

Prepared By:
Environmental Health Service
New Jersey Department of Health (NJDOH)

Prepared For:
Agency for Toxic Substances and Disease Registry (ATSDR)

OBJECTIVES

The Remedial Investigation (RI) for the Hopkins Farm site is currently underway. Data generated from that investigation is used in this Health Assessment.[1] Some data that was collected for the RI is currently going through a quality assurance/quality control review. The objectives of this Health Assessment, based upon the current stage of site investigation and remediation, are to:

* Assess the nature and magnitude of health effects associated with the site;

* Identify, if necessary, immediate actions necessary to minimize exposure to hazards and contamination associated with the site;

* Identify, if necessary, deficiencies in information and/or data associated with the site;

* Review remedial activities in the context of their public health implications;

* Document the concerns of the community with regard to the site;

* Assess whether further health studies or investigations are indicated, based upon degree of public health concern.

SUMMARY

The Hopkins Farm site comprises a 4.5 acre area located in Plumsted Township, New Jersey. It is one of seven related hazardous waste sites (known collectively as the "Plumsted Sites") allegedly utilized by the Thiokol Chemical Company during the 1960's.[2] The Remedial Investigation commenced in February of 1987. Contaminants were identified in ground water, surface and subsurface soils. Major pathways of environmental concern and human exposure are those related to groundwater.

The Hopkins Farm Site is considered to be a potential public health concern because humans may have been exposed to hazardous substances at concentrations that may result in adverse health effects. Inasmuch as there is no extant documentation or indication in the information reviewed for this Health Assessment that human exposure to contaminants at levels of public health concern is occurring, this site is not being considered for follow-up health studies at this time.

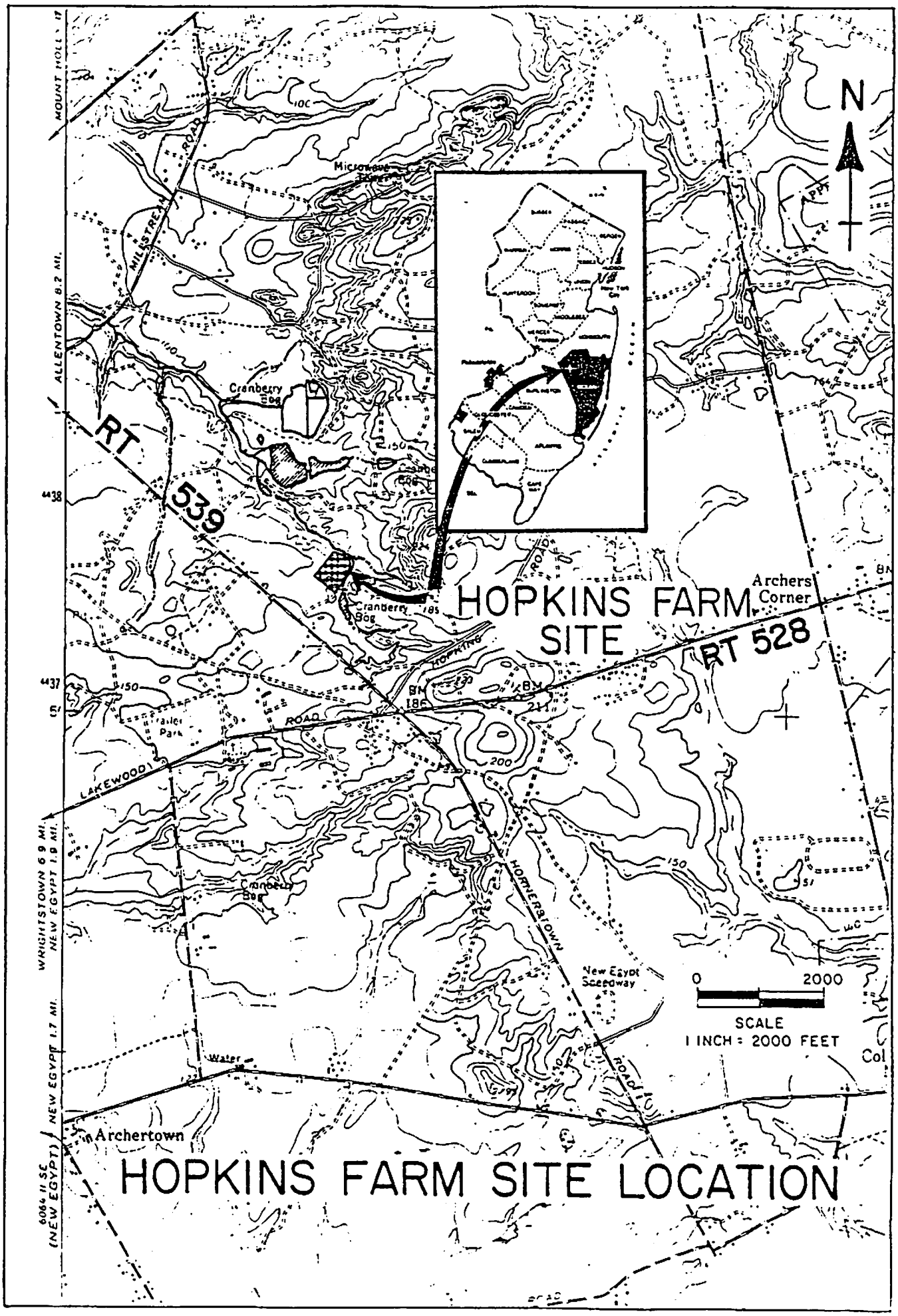
SITE DESCRIPTION

The Hopkins Farm site is one of seven similar hazardous waste sites located within a twenty square mile area in Ocean and Monmouth counties which have been designated by USEPA as the "Plumsted Sites". It is situated one mile north of the intersection of Routes 539 and 528. (See Location Map.) During the period from 1962 - 1965, the Hopkins Farm site was allegedly used by the Thiokol Chemical Company for the disposal of bulk liquid and solid wastes.[3] Reported on-site contaminants (1980) include benzene, lindane, halogenated solvents, and heavy metals.[4] It is ranked 87 of 110 in N.J. and 539 on the National Priority List as of May 1987. The Remedial Investigation/Feasibility Study (RI/FS) was initiated by the New Jersey Department of Environmental Protection (NJDEP) in February of 1987.

The site is in a wooded area immediately to the north of an active farm field; the tree line of the field forms the site's southern boundary. There has been minimal development in the immediate vicinity of the Hopkins Farm site. No physical structures or buildings presently exist on site. The site is not fenced or posted.

SITE VISIT

The Hopkins Farm site was visited by NJDOH personnel in July of 1988. Inspection confirmed the presence of the remains of



HOPKINS FARM SITE LOCATION

metallic five gallon pails, assorted glass containers, and two areas containing the remains of a black sludge-like substance. Areas of solid non-chemical waste were also observed. Flora in the vicinity of the site consisted primarily of various species of pine and oak trees. Soils were generally sandy. The area is utilized for deer hunting, as evidenced by a hunters' tree blind and the presence of deer pellets in the area. The field adjacent to the site was planted with soybeans.

COMMUNITY CONCERNS

The concerns associated with the Hopkins Farm Site are similar to those of the other Plumsted Sites in general. The primary concerns expressed by local citizens are ground water contamination, and to a lesser extent, surface water contamination. Residents in the area rely exclusively upon potable wells for their water supply; thus the possible migration of contaminants off-site is a predominate issue.[5] A public meeting to discuss the initiation of the RI/FS study was conducted by NJDEP on 3/31/87.

The Plumsted Township area is undergoing a period of growth and development. Developers and individual parties have expressed concern over NJDEP's recommendations for well restriction areas in relation to this and other Plumsted Sites.

ENVIRONMENTAL CONTAMINATION AND PHYSICAL HAZARDS

In July of 1980, NJDEP installed six monitoring wells on the site. Chemical analyses were performed on two ground water samples and one soil sample collected during the installation of those wells. Table 1 summarizes the results of those analyses.[6,7]

Additional testing of environmental media was performed by the Acres International Corporation in late 1987 and early 1988. Sampling included ground and surface waters, surface and subsurface soils, off site potable wells, and soil gases.

Accurate quantitative data are not available at this time due to QA/QC difficulties. General trends indicate a decrease in ground water contamination, no off-site potable well contamination, and the presence of antimony, arsenic, chromium, lead, mercury, and zinc in on-site wastes and soils.

For groundwater, the primary contaminants of concern based upon toxicity, detected concentrations, and environmental fate are: antimony, arsenic, benzene, chromium, ethyl benzene, and

di-n-butyl phthalate. For soils, the primary contaminants of concern based upon toxicity, detected concentrations, and environmental fate are: benzene and ethylbenzene.

On-site debris and drums generated by the Phase I remediation process investigation constituted the only potential physical hazard(s) associated with the site.

Table 1 - *Groundwater and Soil Contamination; Hopkins Farm.*

Parameter	Well # 5 (ppb)	Well # 1 (ppb)	Soil (ppb)
Adipic Acid	28.1	-	-
Antimony	1,600.0	-	-
Arsenic	148.0	-	-
Benzene	-	500.0	10,000
Beryllium	<20.0	-	-
Chromium	1,800.0	-	-
Ethyl Benzene	-	1,000.0	20,000
Methelyne Chloride	2.29	-	-
Toluene	0.25	500.0	-
Zinc	920.0	-	-
Di-N-Butyl Phthalate	418.0	-	-
Aldrin	0.04	-	-
Endrin	0.01	-	-
BHC (Lindane)	0.03	-	-
Lead	15.0	-	-

ppb = parts per billion

QUALITY ASSURANCE/QUALITY CONTROL

The data from the Phase I RI investigations (January 1988) are currently under evaluation by the NJDEP Bureau of Environmental Measurements and Quality Assurances. Volatile and semi-volatile compounds (acetone, bis-2 ethylhexyl phthalate) were found in field and trip blanks of the ground/surface water and soil/sediment samples. Off-site potable well samples exhibited similar problems. It is currently unclear how valid the results of these tests are pending QA/QC review and consideration; the results are not currently considered sufficiently accurate for use in this health assessment. QA/QC information concerning the 1980 sampling event was not available for review and evaluation. Additional sampling may be indicated to establish the extent of ground water contamination and the possible migration of a contaminant plume off-site.

DEMOGRAPHICS

The town nearest the site is New Egypt, approximately 2 miles to the southwest. The Fort Dix military reservation is approximately 3 miles to the south. The area surrounding the site is agricultural and rural/residential. There are 3 houses within 1000 feet of the site, and an estimated 200 homes within a one mile radius yielding an estimated population of approximately 760 (3.8 persons/household).

NJDEP (1982) estimated a population of 1,062 within a 3 mile radius of the site. This area has undergone considerable development since 1982; the current population is estimated to be at least 1,200 persons.

No sensitive populations were identified during the Remedial Investigation with respect to the Hopkins Farm site.[8]

ENVIRONMENTAL DATA GAPS

The Acres Corporation conducted site surveys and sampling of environmental media in late 1987 and early 1988 as part of the initial Phase I RI/FS. These investigations included:

* Geophysical surveys;
* Soil gas analysis;
* Subsurface soil sampling;
* Ground water analysis;
* Surface water and sediment analysis;
* Off-site potable wells sampling;
* Surface wastes analysis.

All necessary environmental media have been tested. However, due to the questions concerning the validity of the data, retesting of soils and groundwater (including off-site potable wells) may be indicated to accurately establish the nature and extent of environmental contamination.

Additionally, electromagnetic and magnetometer surveys were inconclusive in establishing the location of suspected buried drums. According to NJDEP, sampling holes for soil gas investigation encountered metallic waste, possibly drum material, at two points. Further investigation may be indicated to establish or repudiate the possibility that drums are buried on site.

ENVIRONMENTAL PATHWAYS

Based upon available information, primary pathways for environmental contamination appear to be exposed surface

wastes, groundwater and surface water.[9] Air-borne particles, dusts, and vapors are of negligible concern with respect to this site; VOC's were not detected during sporadic air sampling events.

Dermal contact with surface and soil wastes is a pathway of concern. As the area is used for hunting, both sportsmen and game may be exposed to on-site surface wastes. Ground dwelling fauna in the area of the site may be exposed to surface and soil wastes. Additionally, since the general area of the site is sometimes utilized for the disposal of domestic refuse, persons or children wandering on-site may be subject to dermal exposure. Based on the observed concentrations of contaminants, (with the possible exception of the areas containing surface sludge and waste), adverse health effects due to short-term or infrequent dermal exposure are not likely.

Utilization of contaminated ground and surface water by humans, animals, and on-site flora is a matter of concern. Contamination of the immediately local food chain is possible, although difficult to quantify based upon available data. There is negligible existing surface water associated with the site under normal conditions.

PUBLIC HEALTH IMPLICATIONS

Public health implications with regard to the Hopkins Farm site may be summarized as follows:

* *Current and future development.* New construction will be dependent upon ground water for potable water supply. It will be necessary to ascertain the feasibility of private wells in the area, with respect to NJDEP's established well restrictions. Any remaining soil and surface wastes will also impact plans for development in the area.

* *Open access to the site.* Entrance to the site is currently unrestricted. Persons engaged in hunting, dumping of wastes, and other activities may be subject to exposure to hazardous substances.

* *Possible contamination of adjacent agricultural areas.* The uptake by crops of contaminants from soils, ground water, or through irrigation could possibly pose a public health hazard and merits investigation.

CONCLUSIONS AND RECOMMENDATIONS

On the basis of the information reviewed, ATSDR and NJDOH have concluded that the Hopkins Farm is of potential public

health concern because humans may have been exposed to hazardous substances at concentrations that may result in adverse health effects. As noted in the Environmental Contamination and Physical Hazards section, human exposure may be occurring, and may have occurred in the past through domestic use of contaminated groundwater and physical contact with on-site solid wastes.

It is difficult to establish confidence in data generated during one sampling event conducted in 1980, or in recent data of questionable validity. Pending the results of QA/QC review, resampling may be indicated to accurately describe the nature and extent of the contamination problem at the Hopkins Farm site.

Currently the site is not posted, nor is access restricted in any way. It is recommended that warning signs be posted to limit public activities in the area.

On site materials and drums generated by the phase I remediation process investigation need to be removed.

Based upon reported data, private potable wells have not been contaminated by the site.[10] The plume needs to be better delineated to determine if contamination may occur in the future.

Further investigation as to the presence and number of buried drummed wastes is indicated.

The possible contamination of adjacent agricultural areas needs to be investigated.

In accordance with CERCLA as amended, the Hopkins Farm site has been evaluated for appropriate follow-up with respect to health effects studies. Inasmuch as there is no extant documentation or indication in the information reviewed for this Health Assessment that human exposure to contaminants at levels of public health concern is occurring, this site is not being considered for follow-up health studies at this time. However, if data become available suggesting that human exposure to significant levels of hazardous substances is currently occurring or has occurred in the past, ATSDR and NJDOH will reevaluate this site for any indicated follow-up.

This Health Assessment was prepared by the State of New Jersey, Department of Health, Environmental Health Service, under a Cooperative Agreement with the Agency for Toxic Substances and Disease Registry. The Division of Health Assessment and Consultation and the Division of Health Studies of ATSDR have reviewed this Health Assessment and concur with its findings.

ENDNOTES

1) New Jersey Department of Environmental Protection, Phase I Remedial Investigation Report: Hopkins Farm, (Acres Corporation), Vols. I, II, III; June 1987.

2) New Jersey Department of Environmental Protection, Background Investigation Report: Hopkins Farm, (Acres Corporation), June 1987.

3) New Jersey Department of Environmental Protection, Hopkins Farm Community Relations Plan, Bureau of Community Relations, October, 1986.

4) NJDEP, Phase I Remedial Investigation Report.

5) NJDEP, Hopkins Farm Community Relations Plan.

6) NJDEP, Phase I Remedial Investigation Report.

7) NJDEP, Background Investigation Report: Hopkins Farm.

8) Agency for Toxic Substances and Disease Registry, Site Summary: Hopkins Farm, April 1988.

9) NJDEP, Phase I Remedial Investigation Report.

10) NJDEP, Phase I Remedial Investigation Report.

REFERENCES

Superfund Documents:

Acres Corporation, Background Investigation Report: Hopkins Farm; June, 1987.

Acres Corporation, Phase I Remedial Investigation Report: Hopkins Farm, Vols. I,II,III; June 1987.

ATSDR Site Summary: Hopkins Farm; April 1988.

New Jersey Department of Environmental Protection (NJDEP), Hopkins Farm Community Relations Plan; October 1986.

NJDEP, Public Meeting Fact Sheet: Hopkins Farm; March 1987.

Interviews:

NJDEP Community Relations Co-ordinator.
NJDEP Site Manager
NJDEP Technical Coordinator
Ocean County Health Department Environmental Coordinator