Site Review And Update

DIAMOND ALKALI COMPANY

NEWARK, ESSEX COUNTY, NEW JERSEY

CERCLIS NO. NJD980528996

SEPTEMBER 7, 1993

REVISED

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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

Site Review and Update: A Note of Explanation

The purpose of the Site Review and Update is to discuss the current status of a hazardous waste site and to identify future ATSDR activities planned for the site. The SRU is generally reserved to update activities for those sites for which public health assessments have been previously prepared (it is not intended to be an addendum to a public health assessment). The SRU, in conjunction with the ATSDR Site Ranking Scheme, will be used to determine relative priorities for future ATSDR public health actions.

REVISED SITE REVIEW AND UPDATE

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CERCLIS NO. NJD980528996

Prepared by:

New Jersey Department of Health
Under Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

SUMMARY OF BACKGROUND AND HISTORY

The Diamond Alkali site occupies 5.6 acres located in the "Ironbound" section of Newark, New Jersey, consisting of the 3.4 acre portion at 80 Lister Avenue and 2.2 acres at 120 Lister Avenue. The site is bounded on the north by the Passaic River, and on the east, south, and west by various heavy industries and manufacturing facilities.

Between 1951 to 1969, the Diamond Alkali Company operated a chemical plant at this site and manufactured the herbicides 2,4-dichlorophenoxyacetic acid (2,4-D) and 2,4,5-trichlorophenoxyacetic acid (2,4,5-T). The compound 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), commonly referred to as dioxin, was produced as a by-product of the herbicide production process.

Dioxin contamination was first discovered in the early 1980's. The soils at the site were found to be heavily contaminated with dioxin at a wide range of concentrations (eg., 60 parts per billion at the south gate and 51,000 ppb under a storage tank). The site was designated on the National Priorities List (NPL, a.k.a. Superfund) in September 1984.

As part of the Remedial Investigation of this site, extensive on-site and off-site sampling has been performed to characterize the extent of the contamination. On-site contamination was evaluated by the New Jersey Department of Environmental Protection and Energy (NJDEPE) in May 1983. Off-site samples were taken along transportation routes leading from the site, on streets surrounding the plant, in the "Farmers Market" area, from nearby homes, from air cleaners of nearby industrial buildings, from the Passaic River and the area across the river from the site. A total of 532 samples were analyzed for dioxin and 122 samples were analyzed for priority pollutants. The results of this DEPE off-site sampling revealed dioxin contamination which ranged from not detected (ND) to 15 ppb.

The off-site areas impacted by the Diamond Alkali site were remediated in 1984 after the completion of the Remedial Investigation/Feasibility Study (RI/FS). Final NJDEPE acceptance of the off-site cleanup was not obtained until November 1992. In addition, off-site streets were vacuumed to remove dioxin contaminated dusts and soil. Certain off-site areas (e.g., the dioxin-contaminated Passaic River sediments) have yet to be cleaned up. Contaminated soil and other materials (approximately 79,000 cubic yards) collected during this off-site remediation are stored in bulk shipping containers on the site (120 Lister Avenue). These actions are considered to be an interim remedy.

Following the discovery of dioxin contamination at the Diamond Alkali Site, and in response to community concerns about exposures, the New Jersey Department of Health (NJDOH) conducted a health survey of 368 residents and 595 workers in the vicinity. This study was initiated on June 3, 1983. In the study, the NJDOH noted problems with data analysis including the lack of a control group, but they felt that certain interpretations and conclusions could be drawn from these data. In its final conclusion relating to health concerns at the Diamond Alkali

Site, the NJDOH found that there was no relationship between health complaints and exposure to dioxin. For example, while eight cases of cancer were reported by 305 workers, none were identified as the soft tissue sarcomas associated with dioxin. The study was published on June 28, 1984, and made available to the public.

A Record of Decision (ROD) was signed for this site in 1987 and a Judicial Consent Decree (JCD) was negotiated by the responsible party, the US Environmental Protection Agency (USEPA), and the NJDEPE to implement the ROD.

A Health Assessment was prepared for the Agency for Toxic Substances and Disease Registry (ATSDR) on November 5, 1987. The Health Assessment noted that the identifiable human exposure pathways were: direct contact with contaminated soil and dust; ingestion of surface water and contaminated soil in surrounding residential areas; inhalation of contaminated dusts and particulates; ingestion of off-site vegetable and produce from the "Farmers Market" area; ingestion of fish and shellfish from the Passaic River; and secondary contact by families of remedial workers.

The Health Assessment also noted several environmental pathways including transport of contaminants into the Passaic River by runoff water; contamination of groundwater; contaminant emissions from surface soils and contaminated buildings; and bioaccumulation by shellfish and other marine organisms in the Passaic River.

In its final conclusion, ATSDR found the Diamond Alkali Site to be of potential public health concern because human exposure to hazardous substances, at concentrations of concern, may occur for employees working in adjacent industries and for area residents.

The ATSDR report made the following recommendations:

1) Determine well and groundwater usage in the vicinity of the site.

2) Assess levels of human exposure to contaminants in surrounding residential areas.

3) Maintain the ban on fishing and sale of fish from Passaic river.

4) Fish or shell fish sampling needed for ATSDR analysis.

5) Maintain the CDC Health Advisory regarding the banning of recreational activities on the Passaic River.

6) Provide information regarding sediment concentrations of dioxin in the Passaic River;

7) Provide further information concerning the risk of exposure to nearby workers and area residents during site remediation;

8) ATSDR should review the site safety plan; and,

9) All demolition should be preformed in accordance with OSHA regulations.

CURRENT CONDITIONS OF SITE

On May 20, 1993, J. Pasqualo and J. Winegar of the New Jersey Department of Health (NJDOH) visited the Diamond Alkali site, accompanied by an employee of the Maxus Energy Corporation, and a local representative of the City of Newark, Office of Emergency Management.

The actual site visit was conducted in two parts, due to the nature of the site. The main portion of the site is the old location of the actual herbicide production. This property, known as 80 Lister Avenue, is the source of contamination for the site. The adjacent property, 120 Lister Avenue, is currently used to store numerous steel containers resulting from the off-site remediation.

80 Lister Avenue

- The site was completely secure. A chain link fence surrounded the site and access was controlled by a 24 hour-per-day security guard. Site entry requires a strict level B/C personal protection.

- The four remaining major structures were in various stages of disrepair. The old brick process building was in particularly poor condition. The warehouse building was in good condition and appeared to adequately protect the several hundred 55 gallon drums stored inside. These drums are used to store site-related contaminants.

- The site contained numerous process vessels and chemical storage tanks.

- The entire site, except for the buildings, was covered with a black geotextile cover held down with cinder blocks. It appears to be the original cover described in the 1987 ATSDR Health Assessment. The cover was in good condition, but did show some wear. There are several small holes and rips and a few weeds were observed coming through the cover.

- Several large piles of scrap metal and other debris were observed.

- There are several currently operating manufacturing facilities which are located within feet of the site perimeter.

120 Lister Avenue

- The 120 Lister Avenue site is just east of the 80 Lister Avenue site, and was not part of the original herbicide manufacturing. The site is currently used for container storage of dioxin contaminated soil and other debris. Most of this material in the containers came from off-site remediation.

- The container storage area consists of approximately 1,000 large shipping containers stacked 5 or 6 levels high. The tops of the containers were sealed with tar to keep out rain water.

- A very large pile of noncontaminated scrap metal, including two crushed cars, was observed near the container stack.

According to the USEPA Remedial Project Manager (RPM), the only significant site changes since the 1987 ATSDR Health Assessment are the slightly more deteriorated condition of the storage drums and containers. The condition of these containers is, however, checked daily by employees of the Responsible Party (RP) for the site, Maxus Energy Corporation.

Conclusions in the Health Assessment regarding potential exposure from contaminated soil and dust, ingestion of contaminated surface water, off-site vegetable and produce from the "Farmers Market" area; ingestion of fish and shellfish from the Passaic River; and secondary contact by families of remedial workers, are unsupported in light of current site conditions.

There have been no new data collected, since the previous Health Assessment, that would indicate a need for further analysis.

CURRENT ISSUES

Conditions at the Diamond Alkali Site have remained stable since the 1987 ATSDR Health Assessment and there are no documented on-going human exposures to site-related contaminants. Planned remedial activity for the site is presently in the design phase. The final remediation plan calls for a total encapsulation of the on-site and off-site contaminants on the 80 Lister Avenue site.

The public health concern raised, in the Health Assessment, involving possible future human exposures to dioxin at levels of concern during site remediation, is still valid. When the construction phase begins, the ATSDR and NJDOH anticipate site condition changes that could cause new concerns regarding the public health of off-site workers and residents.

The main concern of local residents involves the removal of dioxin contaminated materials from the site (personal communication, USEPA and James, 1993). Residents and city officials want

the materials removed from the site and not entombed on-site. This fear appears primarily based more on aesthetic concerns of the site than on health concerns from the contamination. It is also felt that entombing the dioxin on-site will interfere with any future development plans for the area.

There are community concerns concerning past exposures to dioxin at the Diamond Alkali Site. As noted in the previous Health Assessment, dioxin had been detected at levels up to 50 ppb in the soil and dust collected in the streets near the site. These concerns were partially addressed by the aforementioned NJDOH health study, but lingering health fears of area residents may warrant further ATSDR analysis.

In 1992, a group of residents living near the Diamond Alkali Site contacted the NJDOH concerning their perception that there was an unusually high number of cancer cases in their neighborhood. An analysis by the NJDOH (Berry, 1992, and personal communication), of data supplied by the New Jersey State Cancer Registry, found that the observed number of total cancers was *not* elevated in comparison to NJ State rates, and the total number of observed cancer cases was substantially lower than the number predicted. The analysis included three census tracts in the area of the Diamond Alkali site.

CONCLUSIONS

The conclusions of the 1987 ATSDR Health Assessment, regarding the site being of potential public health concern are only partially true in light of current site conditions. As long as the site remains secure from trespassers, and no remedial activity takes place, there is no risk of on-site exposure. Site trespassers could be exposed to site contaminants at levels of public health concern, but because of the tight security at the facility, this is very unlikely to occur. Currently, there are no completed exposure pathways associated with the Diamond Alkali Site.

Possible past off-site exposures of area residents to site-related dioxin was not specifically addressed in the conclusions of the 1987 Health Assessment. These potential past human exposures warrant further ATSDR evaluation. The site, therefore, would be considered an indeterminate public health hazard pending evaluation of past exposures.

The conclusion that the Diamond Alkali Site would be a potential public health concern during site remediation is still valid. On-site and off-site workers and area residents could be exposed to dioxin via fugitive dusts, potentially at levels of public health concern, when site remediation takes place. Limiting off-site exposures to dioxin contaminated media will be a key component of the design phase currently in progress.

The past conclusion that groundwater beneath the site is a potential public health concern is not valid in light of current site conditions. Groundwater in the area, while contaminated, is not being used for potable, domestic, or industrial purposes.

The recommendations made in the 1987 Health Assessment have been addressed as follows: 1) The need to determine well and groundwater use in the area has been addressed, there are no wells in the area; 2) The assessment of dioxin exposure in surrounding residential areas has been partially addressed by the NJDOH Health Study, but requires additional evaluation; 3) The recommendation to maintain the ban on fishing and sale of fish from Passaic river has been followed; 4) No fish or shell fish sampling has taken place, most likely because this area of the river is not used for this purpose; and 5) The recommendation to maintain the CDC Health Advisory regarding the banning of recreational activities on the Passaic River has been followed; 6) Sampling for dioxin concentrations in the Passaic River has been performed by NJDEPE in cooperation with the United States Army Corps of Engineers; 7) The risk to nearby workers and area residents from the inhalation and ingestion of dioxin contaminated dust generated during remediation has been partially addressed by the ROD; however, dust suppression will be examined as part of the site's remedial plan; 8) ATSDR review of the site safety plan has not been performed since site safety plans and worker training are the responsibility of the remedial contractor and the lead environmental agency issuing the contract for remediation; and 9) The recommendation that all demolition be performed in accordance with OSHA regulations is a moot issue due to the fact that no site demolition has occurred since the Health Assessment. As with (8) above, this would not be a direct ATSDR responsibility.

Further evaluation of past exposures of area residents to site-related dioxin is needed. Also, possible future exposure of area residents and workers during planned site remediation requires evaluation.

RECOMMENDATIONS

Several of the recommendations made in the previous Health Assessment remain valid. The State ban on fishing in the Passaic River and on the sale of fish and shellfish from the area, as well as the CDC Advisory regarding the ban of recreational activities on the river, should be maintained.

The recommendation concerning the need for additional information about risk to nearby workers and area residents from the inhalation and/or ingestion of dioxin contaminated dust generated during remediation remains valid.

ATSDR and NJDOH should consider preforming two separate Health Consultations or other appropriate mechanisms for providing input to the remedial design at the Diamond Alkali site. Consideration of these include:

1) Analysis of action levels for dioxin contaminated dust that may be generated during the proposed remediation. This consultation should be completed as part of the design phase, before any remedial activities begin, in order to properly address any potential public health concerns; and

2) A Health Consultation is recommended to evaluate past exposures of area residents to dioxin contaminated soil.

New environmental, toxicological, health outcome data, or changes in conditions as a result of implementing the proposed remedial plan, may determine the need for other additional actions at this site.

Recommendations of the Health Activities Recommendations Panel (HARP)

The data and information developed in the Site Review and Update for the site, Diamond Alkali/Lister Avenue Newark, New Jersey, has been evaluated by ATSDR's Health Activities Recommendation Panel (HARP) for appropriate follow-up with respect to health activities. The panel determined that community health education/community involvement and health professions education are needed. HARP will determine if additional public health actions are needed at the site once the recommended health consultations are completed.

PUBLIC HEALTH ACTION PLAN

The purpose of the public health action plan (PHAP) is to ensure that this Site Review and Update not only identifies public health hazards but also provides a plan of action designed to mitigate and prevent adverse human health effects resulting from exposure to hazardous substances in the environment.

Actions Planned by NJDOH:

1. The NJDOH will consult with the remedial agency (USEPA) as to the action levels for dioxin contaminated dust that may be generated during the proposed remediation. This action will involve the preparation of a Health Consultation or other appropriate mechanisms for providing input to the remedial design at the Diamond Alkali site.

2. A Health Consultation will be preformed to evaluate past exposures of area residents to dioxin contaminated soil.

Actions Planned by NJDOH/ATSDR:

1. The ATSDR and NJDOH will determine if additional public health actions are needed at the site once the recommended health consultations are completed.

CERTIFICATION

The Site Review and Update for the Diamond Alkali Company site 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 site review and update was initiated.

Gregory V. Ulirsh

Technical Project Officer, SPS, RPB, DHAC

The Division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this Site Review and Update and concurs with its findings.

C. Harold Emmett

for Division Director, DHAC, ATSDR

DOCUMENTS REVIEWED

1. Record of Decision, Diamond Alkali Site, USEPA, September 30, 1987.

2. Judicial Consent Decree, Diamond Alkali Site, USEPA, July, 1989.

3. Health Assessment for Diamond Alkali Site, Newark, New Jersey, ATSDR, November 5, 1987.

4. Letter to Ms. Carol Browner, Administrator USEPA, from Mayor Sharpe James, Newark, New Jersey, Re: Diamond Alkali Site, April 7, 1993.

5. Letter to Mrs. Anna Santangelo, Somme Street Block Assoc., from Mr. Michael Berry, NJDOH, Re: Cancer concerns of Somme Street residents, November 13, 1992.

6. Health Survey of residents and workers in the Vicinity of 80 Lister Avenue, Newark New Jersey, NJDOH, June 28, 1984.

PREPARERS OF REPORT

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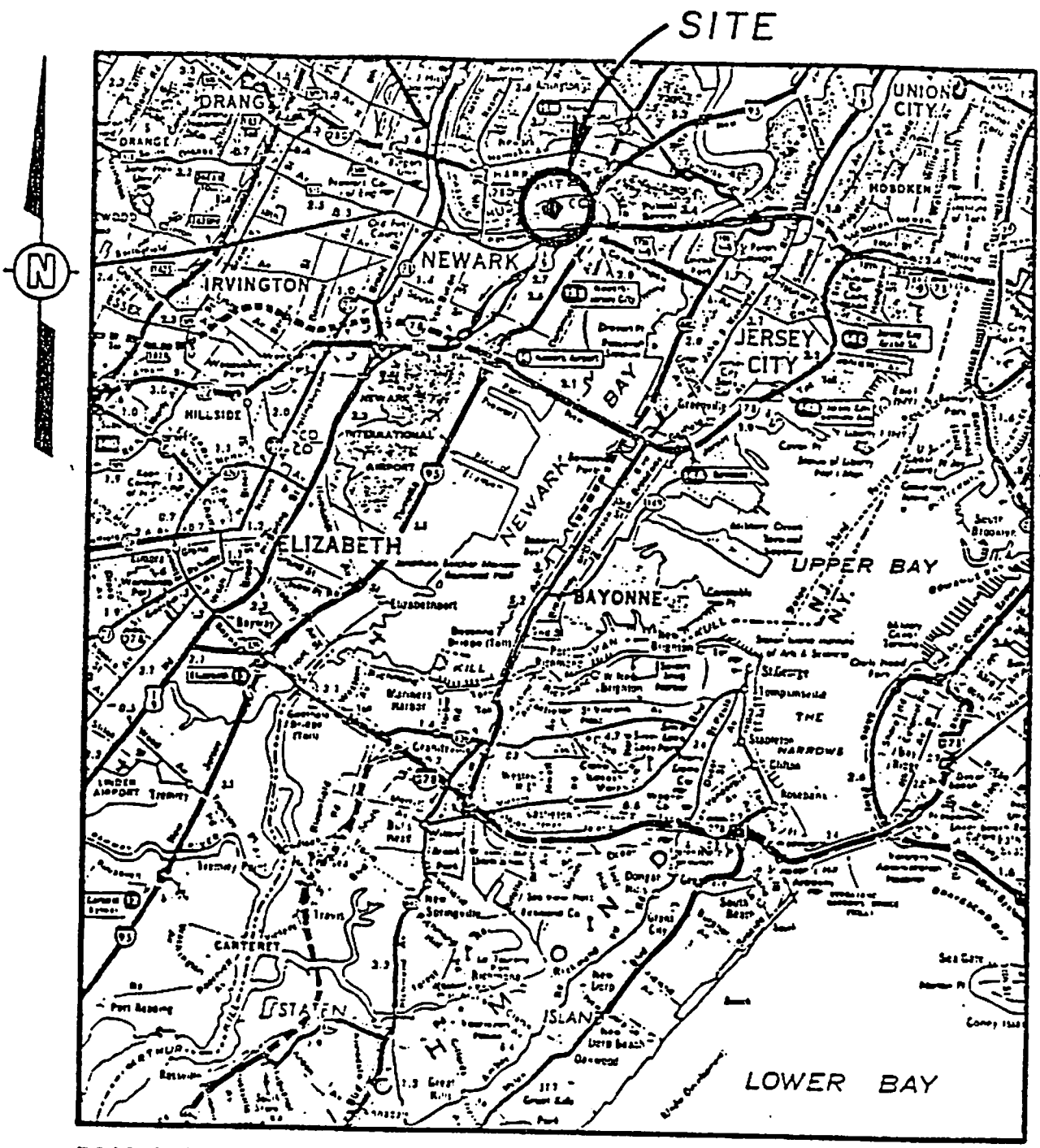

ROAD CLASSIFICATION:

HEAVY DUTY

MEDIUM DUTY

LIGHT DUTY

SCALE

0 2 4 MILES

INTERSTATE

STATE ROUTE

U.S. ROUTE

FIGURE 1.

SITE LOCATION MAP
80 LISTER AVENUE

PREPARED FOR

DIAMOND SHAMROCK
DALLAS, TEXAS

...Creating a Safer Tomorrow