

SITE REVIEW AND UPDATE

KIN-BUC LANDFILL

**EDISON TOWNSHIP
MIDDLESEX COUNTY, NEW JERSEY**

CERCLIS NO. NJD049860836

September 1, 1995

Prepared by:

New Jersey Department of Health
Environmental Health Service

Under Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

SUMMARY OF BACKGROUND AND HISTORY

The Kin-Buc Landfill consists of several inactive disposal sites covering approximately 220 acres at the end of Meadow Road, Edison Township, Middlesex County. The site is bordered on the south by the Edison Landfill, on the east by a tidal wetlands and the inactive ILR Landfill, on the west by the Raritan River, and on the north by the Edison Salvage Yard and a chemical manufacturing plant. The Kin-Buc site is located within an industrial and commercial area of Edison Township (Figure 1).

The site includes two major mounds (Kin-Buc I and Kin-Buc II) and one minor mound (Mound B). Historically, three pits of black, oily leachate, designated Pits A, B, and C, are located on the edge of Kin-Buc I. Adjacent to the pits was an impoundment called Pool C. Oil, containing polychlorinated biphenyls (PCB's), accumulated in Pool C and then discharged into the nearby Edmonds Creek. This creek is a tributary of the Raritan River (Figure 2).

The Kin-Buc Landfill began operating as early as 1947, accepting many types of waste materials including: municipal, industrial and hazardous waste. Very little is known about the landfill's operations between 1947 and 1968. Kin-Buc, Inc. operated the landfill from 1968 to 1976. It was a State-approved landfill for solid and liquid industrial and municipal waste between 1971 and 1976. The exact nature and quantity of the materials deposited at the Kin-Buc Landfill is not known, but the U.S. Environmental Protection Agency (USEPA) estimates that at least 70 million gallons of liquid waste and one million tons of solid waste were deposited between 1973 and 1976. In 1976, the New Jersey Department of Environmental Protection (NJDEP) revoked Kin-Buc's permit to operate because of violations of both State and Federal environmental statutes. The USEPA involvement at the site also began in 1976, and by 1979 they had filed initial charges against Kin-Buc Inc. Under a 1980 partial settlement, Kin-Buc Inc. agreed to install a landfill cap and monitor the site, but not to remediate the site or control further contaminant migration from the site. Therefore, in 1980, the USEPA initiated its own cleanup activities that included collecting aqueous and oily leachate from the Pool C area for off-site treatment and disposal.

There are about 3000 residents living within 3 miles of the site. Residents in the area of the landfill have often complained to the local health department about noxious odors emanating from the site. This was particularly true prior to the initial capping activities of Kin-Buc I in 1980.

The Kin-Buc Landfill was listed on the National Priorities List (NPL, a.k.a. Superfund) in October 1981. The USEPA issued Unilateral Administrative Orders (UAOs) to the owners and operators of the landfill which required a removal program and performance of a Remedial Investigation/Feasibility Study (RI/FS).

For remediation purposes, the site has been divided into Operable Unit 1 (Kin-Buc I and Kin-Buc II landfills, Pool C, and portions of the low lying area between Kin-Buc and Edison Landfills) and Operable Unit 2 (including surrounding areas, e.g., Mound B, and adjacent surface water bodies, e.g., Edmonds Creek). Between 1982 and 1988 a RI/FS for OU1 was conducted by the owner-operators for the site. At the conclusion of this RI/FS there was enough information to make a decision with respect to a remedial remedy (Operable Unit 1) and a Record of Decision (ROD) was signed on

September 30, 1988 by USEPA. The ROD for OU1 required the construction of a slurry wall and a groundwater treatment system.

A RI/FS for OU2 was completed in 1991 and a ROD for was signed in September 1992. The ROD for OU2 selected a remedy that requires the excavation of wetlands sediments contaminated with PCB's over 5 parts per million, and the disposal of these sediments within the landfill, as well as the restoration of excavated areas.

ATSDR Involvement

A Health Assessment (HA) was prepared by the Agency for Toxic Substances and Disease Registry (ATSDR) on June 3, 1987. The Health Assessment was in response to a USEPA request to review the final draft report of the Kin-Buc Landfill Endangerment Assessment. After analyzing all of the information and data available for the Kin-Buc Landfill site Endangerment Assessment, the ATSDR noted that the toxicological issues addressed in the assessment were reasonable, however, they found that many environmental data gaps remained. In particular, the ATSDR reviewed air monitoring data that had been collected on and around the site and found them unsuitable to draw any conclusions concerning human exposure. ATSDR concluded that relatively little data was collected on air levels of contaminants, but that the levels that were detected were quite low. The levels were easily within the levels one might expect to find for most chemicals as background levels in an urban area. They also noted, however, that it was not clear if the method to collect these air samples was adequate to characterize the air quality.

The 1987 HA noted that conclusions regarding groundwater contamination and movement needed further consideration.

In addition, ATSDR concluded that food chain contamination with PCB's, cadmium and possibly other heavy metals should be considered.

On April 30, 1993, the ATSDR performed a health consultation at the Kin-Buc Landfill site. The consultation followed a request by the Health Officer for the Edison Township and the USEPA to comment on the health concerns posed by the existing conditions at the site. In particular, the Edison Township Division of Health requested a Health Consultation on the issue of human consumption of fish (and crabs) from the Raritan River as a possible threat to human health.

ATSDR concluded the following:

1. PCBs have migrated from the Kin-buc Landfill into Edmonds Creek. The discharge of Edmonds Creek into the Raritan River has resulted in the disposition of PCB-contaminated sediment in the Raritan River at the Edmonds Creek outfall. The extent of PCB contamination in the Raritan River has not been determined.

2. Surface water runoff and tidal water flow in the Edmonds Creek and the channel from Pool C may result in the transport of additional PCBs into the Raritan River.
3. PCB concentrations in excess of acceptable health-based levels were detected in edible species of fish (striped bass, white perch) and shellfish (blue crab hepatopancreas) from the Raritan River.

The Health Consultation recommended the following:

1. Prevent further off-site migration of PCBs and other toxic substances from the Kin-Buc Landfill.
2. Restrict consumption of fish and shellfish from the Raritan River downstream of the Kin-Buc Landfill until it can be determined that PCB concentrations in edible fish and shellfish are below levels of health concern.

CURRENT SITE CONDITIONS

On October 20, 1994, J. Pasqualo, B. Wilcomb and J.J. Winegar of the NJDOH visited the Kin-Buc Landfill site accompanied by representatives of the ATSDR (A. Block and S. Jones; Region II), the USEPA, and the Health Officer for the Edison Township Division of Health. The following observations were made during the site visit:

- The site is a very large inactive landfill consisting of two major mounds (Kin-Buc I and Kin-Buc II). The largest mound (Kin-Buc I) has been capped and seeded.
- The landfill was undergoing remedial activity. As part of OU1, a circumferential slurry wall was being installed around the perimeter of the source area of Kin-Buc. The remediation, including the slurry wall and final cap, was about 47% complete at the time of our visit. The slurry wall was being placed as deep as 60 feet in some locations and is being keyed 3 feet into the bedrock layer under the mound.
- The remedial contractors and the USEPA have many support trailers at the site. In addition, there was a large portable cement mixer on site being used to mix the sand and bentonite material used in the slurry wall.
- There were many temporary air vents observed on the cap of Kin-Buc I. On the top of the mound a strong odor of "decaying garbage" was detected emanating from these vents. These odors were not detected at the base of the mound.
- The site was fenced and appeared to be secure. Under current site conditions, trespassing is

unlikely.

Conditions at the Kin-Buc Landfill site, since the 1993 Health Consultation, have changed physically, in that the site has undergone and is now undergoing a significant amount of remedial activity. As of December 6, 1994 (USEPA, personal communication), the slurry wall at the site is complete and entirely surrounds Kin-Buc I, Kin-Buc II and Pool C. The remedial work of OU1 is about 63% completed. Cleanup actions at the site including completion of the slurry wall and efforts to remove leachate and contaminated solids have greatly reduced the potential for human exposure to hazardous substances. As was observed during a site visit for this consultation (3/30/93), there is currently little or no discharge of leachate from Pool C to Edmonds Creek.

The extent of downgradient groundwater contamination from the Kin-Buc Landfill site has been delineated. It is known that the contaminants in the plume include VOC's, base neutral compounds, metals, pesticides, and petroleum hydrocarbons, and it moves from the site south and east toward the Raritan River. According to the USEPA (personal communication), no known potable water sources are near the plume.

CURRENT ISSUES

Past public health concerns regarding potential human exposure pathways associated with the human consumption of contaminated fish and shellfish remain valid. The 1993 Health Consultation raised concerns about PCB contamination in edible species of fish (striped bass, white perch) and shellfish (blue crab hepatopancreas) from the Raritan River. This remains a major public health concern at this site.

The USEPA conducted a baseline risk assessment (OU2 RI), at the site to evaluate human health effects that could result from the ingestion of fish caught on or near the site. They calculated the potential carcinogenic risk for the ingestion of fish for a recreational fisher was 1.31×10^{-1} for adults and 1.11×10^{-1} for children. These findings have caused justifiable alarm among many local health officials, in particular, the Health Officer for the Edison Township Division of Health. Fishing and consumption of fish and shellfish from the Raritan River downstream of the Kin-Buc Landfill has been greatly reduced particularly through the efforts of the Edison Township Division of Health. These efforts have included the issuance of fishing advisories, press releases, educational pamphlets, and the posting of signs along the river. The Edison Township Division of Health first issued a fishing advisory to the public in November 1993 (see attached). According to the Health Officer for the Edison Township Division of Health, despite all these efforts some fishing still takes place in the area.

In addition, a newly identified public health concern involving area fish contamination concerns several "new" species of fish (e.g., smelt) that have recently returned to the Raritan River. According to the local Health Officer, it has been reported that several of these species have been caught in the

river near the site.

Further off-site migration of PCB's has essentially been halted by pumping leachate from Pool C and restricting leachate runoff from the pool into the Edmonds Creek. Since remedial work is complete, the issue of PCB migration into the creek should be totally eliminated.

Another newly identified concern at the site involves Mound B. Most of the known source of the site contamination is thought to be mostly from Kin-Buc I. Kin-Buc II and Pool C are considered secondary sources of contamination. Mound B came under investigation during the RI for OU2 and it is known that it contains refuse, however, there is limited information available regarding the nature or origin of this material. The role of Mound B as a source of contamination is unknown and possible future remediation of this area needs to be addressed.

Groundwater contamination at the site is still of potential concern, but is not a likely route of completed human exposure based on current site conditions. Residents near the site are all on municipal water supplies. According to the USEPA, it is highly unlikely that humans will ever directly use groundwater underlying the site, given the historical and current land use in this area of Edison Township. Groundwater modeling performed during the FS showed that the groundwater will naturally attenuate following completion of the remedial work at the site. This should eliminate any future potential exposure pathway associated with groundwater.

In the past, it is likely that residents living near the Kin-Buc Landfill were exposed to contaminated air emanating from chemicals deposited at the site. There are some air data collected, beginning in 1977, however, as with additional air data reviewed by ATSDR in the 1987 Health Assessment, the validity of the data is in question. Quality Assurance and Quality Control (QA/QC) and methodology information was not available from the USEPA or the Edison Township Division of Health to assess the contamination and permit a meaningful estimation of exposure doses.

It is also likely that site trespassers may have been exposed, in the past, to contaminated on-site soil. According to the Health Officer for the Edison Township Division of Health (personal communication) there has been trespassing at the site in the past, including "dirt bike" riding on the mounds and hunters/trappers crossing some parts of the site. A lack of data and information regarding pre-remediation soil contamination makes it impossible to draw conclusions regarding human exposure and potential exposure doses.

Under current site conditions, both of these pathways (air and on-site soils) have been interrupted. The air pathway was interrupted with the capping of the Kin-Buc I mound in 1980. At the time of the October 1994 site visit, the only significant source of air contamination was . on-site in the immediate vicinity of Pool C; and these levels did not exceed occupational standards for on-site workers. The site is fenced and secure, therefore, trespassers do not have access to the site.

CONCLUSIONS

Conclusions made in the April 30, 1993 ATSDR Health Consultation for the Kin-Buc Landfill site that it is of health concern because PCB's have migrated from the landfill into edible species of fish (striped bass, white perch, etc.) and shellfishes (blue crab hepatopancreas) in the Raritan River remain valid. Residents who consume fish or shellfish captured in this area may be exposed to PCB concentrations in excess of acceptable health-based levels. Based on ATSDR's current site public health hazard category classification, the Kin-Buc Landfill site poses a public health hazard in this context.

The recommendations in the Health Consultation have been partially addressed: 1) Further off-site migration of PCB's has essentially been halted by pumping leachate from Pool C and restricting leachate runoff from the pool into the Edmonds Creek. Since remedial work is complete, the issue of PCB migration into the creek should be totally eliminated. 2) Fishing and consumption of fish and shellfish from the Raritan River downstream of the Kin-Buc Landfill has been greatly reduced particularly through the efforts of the Edison Township Division of Health. These efforts have included the issuance of fishing advisories, press releases, educational pamphlets, and the posting of signs along the river. According to the Health Officer for the Edison Township Division of Health, despite all these efforts some fishing still takes place in the area. Therefore, human exposure to PCB concentrations in excess of acceptable health-based levels may still be occurring at the site.

There are species of edible fish, which can be caught near the site, which have not been sampled for contaminant levels.

In the past, it is likely that residents living near the Kin-Buc Landfill were exposed to contaminated air emanating from chemicals deposited at the site. But, current data and information regarding these exposures are inadequate to derive and evaluate the public health significance of an inhalation exposure dose.

In addition, site trespassers may have been exposed, in the past, to contaminated on-site soil. Current data and information regarding these exposures are inadequate to derive and evaluate the public health significance of a dermal contact/ingestion exposure dose.

Under current site conditions, both of these potential human exposure pathways (air and on-site soils) have been interrupted and are not presently a health concern at the site.

The slurry wall at the site is complete and entirely surrounds Kin-Buc I, Kin-Buc II and Pool C. The completion of this phase of the remediation should mitigate the movement of contaminants to the surrounding media, in particular the groundwater.

While Mound B is known to contain materials such as municipal and household refuse and debris,

it has not been fully characterized.

RECOMMENDATIONS

Recommendations made in the in the April 30, 1993 ATSDR Health Consultation at the Kin-Buc Landfill site are still valid. The recommendations were largely satisfied, however, there is a need for additional work before they are totally satisfied.

Recommendations made in the Health Consultation that are still valid include:

1. Continue efforts to prevent further off-site migration of PCBs and other toxic substances from the Kin-Buc Landfill.
2. Restrict consumption of fish and shellfish from the Raritan River downstream of the Kin-Buc Landfill until it can be determined that PCB concentrations in edible fish and shellfish are below levels of health concern.

New recommendations based on current site conditions include:

1. Efforts to restrict consumption of contaminated fish and shellfish from the Raritan River may require reemphasis from the responsible health and environmental agencies to ensure compliance.
2. Testing of suspect biota should be ongoing and include all edible species of fish and shellfish available to residents fishing near the site.
3. The role of Mound B as a source of contamination and the possible future need to remediate this area needs to be addressed.

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 Kin-Buc Landfill site, Edison Township, Middlesex County, New Jersey, have 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 is indicated to advise local citizens of the potential

health effects of consuming fish caught in the Raritan River near the site. Moreover, the panel determined that this education should be conducted after the current local fishing advisory is revisited and should focus on ways to limit exposures to contaminants in fish.

PUBLIC HEALTH ACTION PLAN

The Public Health Action Plan (PHAP) for the Kin-Buc Landfill site contains a description of the actions to be taken at or in the vicinity of the site. The purpose of the PHAP is to ensure that this health assessment not only identifies public health hazards, but provides a plan of action designed to mitigate and prevent adverse human health effects resulting from exposure to hazardous substances in the environment. Included, is a commitment on the part of ATSDR and NJDOH to follow-up on this plan to ensure that it is implemented. ATSDR will provide an annual follow-up to this PHAP, outlining the actions completed and those in progress. This report will be placed in repositories that contain copies of this site review and update, and will be provided to persons who request it. The public health actions taken or to be implemented are as follows:

Actions Undertaken by ATSDR/NJDOH:

1. These data and information developed in the Site Review and Update have been evaluated by ATSDR/NJDOH to determine public health concerns, regarding potential human exposure pathways associated with the Kin-Buc Landfill site.

Actions Planned

1. NJDOH will work with the Edison Township Division of Health to revise the current fishing advisory and, subsequently, to educate the public regarding the risks of consuming fish, crabs, and shellfish caught from the Raritan River. In addition, ATSDR and the NJDOH will coordinate these plans with the appropriate environmental agencies.
2. ATSDR will provide an annual follow up to this PHAP, outlining the actions completed and those in progress. This report will be placed in repositories that contain copies of this site review and update, and will be provided to persons who request it.

ATSDR will reevaluate and expand the Public Health Action Plan (PHAP) when needed. New environmental, toxicological, health outcome data, or the results of implementing the above proposed actions may determine the need for additional actions at this site.

CERTIFICATION

The Site Review and Update for the Kin-Buc Landfill 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.

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.

Division Director, DHAC, ATSDR

DOCUMENTS REVIEWED

- 1 . Record of Decision, OU1, Kin-Buc Landfill site, Edison Township, Middlesex County, New Jersey, USEPA Region II, September 30, 1988.
- 2 . Record of Decision, OU2, Kin-Buc Landfill site, Edison Township, Middlesex County, New Jersey, USEPA Region II, September 28, 1991.
3. Agency for Toxic Substances and Disease Registry, Health Assessment for the Kin-Buc Landfill site, Edison Township, Middlesex County, New Jersey, June 3, 1987.
4. Agency for Toxic Substances and Disease Registry, Health Consultation for the Kin-Buc Landfill site, Edison Township, Middlesex County, New Jersey, April 30, 1993.
5. U.S. Environmental Protection Agency (Region II), Superfund Proposed Plan, Kin-Buc Landfill site, Edison Township, Middlesex County, New Jersey, July 1992.
6. U.S. Environmental Protection Agency (Region II), Kin-Buc Landfill site, Edison Township, Middlesex County, New Jersey, October 1994.
7. Geoengineering, Inc., Revised by Wehran Engineering, Draft Remedial Investigation Report for Kin-Buc Landfill site, Edison Township, Middlesex County, New Jersey, April 1988.
8. Wehran Engineering Corporation, Draft Final Feasibility Study for Kin-Buc Landfill site, Edison Township, Middlesex County, New Jersey, May 1988.
9. Wehran Engineering Corporation, Draft Remedial Investigation Report for Kin-Buc Landfill site, Edison Township, Middlesex County, New Jersey, October 1990, Revised May 1991, Revised October 1991.
10. Wehran Engineering Corporation, Draft Supplemental Sediment Sampling Report for Kin-Buc Landfill site, Operable Unit 2, Edison Township, Middlesex County, New Jersey, April 1991.
11. Wehran Engineering Corporation, Final Work Plan for Kin-Buc Landfill site, Operable Unit 1, Remedial Design/Remedial Action, Edison Township, Middlesex County, New Jersey, March 1990.
12. Wehran Engineering Corporation, Final Work Plan for Kin-Buc Landfill site, Operable Unit 2, Remedial Investigation/Feasibility Study, Edison Township, Middlesex County, New Jersey, October 1989.

13. CDM Federal Programs Corporation, Final Risk Assessment, Kin-Buc Landfill site, Edison Township, Middlesex County, New Jersey, February 27, 1992.
14. Memorandum to general public utilizing the Raritan River and bay, Re: Fishing Advisory - Raritan Bay Complex, From John O. Grun, Health Officer, Department of Health and Human Resources, Edison, New Jersey, November 1993.
15. Memorandum to Hon. George A. Spadaro, Mayor, Re: Raritan River Fishing Advisory - Update, From John O. Grun, Health Officer, Department of Health and Human Resources, Edison, New Jersey, March 23, 1994.
16. Internal Memorandum to John O. Grun, Health Officer from Jay P. Elliot, Chief Sanitary Inspector, Re: Raritan River Fishing Advisory Signs, Department of Health and Human Resources, Edison, New Jersey, March 23, 1994.

PREPARERS OF REPORT

Preparer of Report:

Jeffrey J. Winegar
Research Scientist; ATSDR Health Assessment Project
Environmental Health Service
New Jersey Department of Health

ATSDR Regional Representative:

Arthur Block
Senior Regional Representative; Region II
Regional Operations
Office of the Assistant Administrator

ATSDR Technical Project Officer:

Gregory V. Ulirsch
Environmental Health Engineer
Remedial Programs Branch
Division of Health Assessment and Consultation

Any questions concerning this document should be directed to:

ATSDR Project Manager
New Jersey Department of Health
Environmental Health Service
210 South Broad Street
CN 360
Trenton, NJ 08625-0360