

Lead Initiative Summary Report

BEACHWOOD/BERKELEY WELLS

BERKELEY TOWNSHIP, OCEAN COUNTY, NEW JERSEY

CERCLIS NO. NJD980654123

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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

Lead Initiative Summary Report: A Note of Explanation

The purpose of the Lead Initiative Summary Report is to discuss the current status of a hazardous waste site and determine if there is a population potentially at risk from exposure to lead and other hazardous substances from the site. The Lead Initiative Summary Report is generally reserved to update activities for those sites for which public health assessments have been previously prepared and where lead contamination has been documented. It is not intended to be an addendum to a public health assessment. The goal is the prevention of lead toxicity in the population potentially exposed to lead released from NPL sites by initiating appropriate follow-up activities. The Lead Initiative Summary Report, in conjunction with the ATSDR Site Ranking Scheme, will be used to determine relative priorities for future ATSDR public health actions.

LEAD INITIATIVE SUMMARY REPORT

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Prepared by

**Remedial Programs Branch
Division of Health Assessment and Consultation
Agency for Toxic Substances and Disease Registry**

SUMMARY OF BACKGROUND AND HISTORY

The Beachwood/Berkeley Wells site is in Ocean County, New Jersey. The area is bounded by the Toms River to the north, the Cedar Creek to the south, Barnegat Bay to the east, and Manchester Township to the west. Beachwood Borough is extensively populated and approximately 2.7 square miles in area. Berkeley Township is approximately 40 square miles in area and is primarily undeveloped. The study area is located in the New Jersey Pinelands region, generally west of the Garden State Parkway. The New Jersey Pinelands region consists of the Pinelands Protection Area (central Berkeley Township), and the Pinelands Preservation Area (southern Berkeley Township).

According to the 1989 ATSDR health assessment, a portion of the population was exposed to generally low to moderately high levels of lead, copper, and manganese contamination through water ingestion.

Lead

A private citizen registered a complaint concerning possible contaminated drinking water in March 1982 with the New Jersey Department of Environmental Protection (NJDEP). This complaint led to the sampling of an individual well in which the lead level was found to exceed the EPA drinking water Maximum Contaminant Level (MCL) of 0.05 mg/l. Further sampling by the NJDEP and the Ocean County Health Department found other lead-contaminated wells in Beachwood Borough and in Berkeley Township. Approximately 20% of the wells sampled in Beachwood Borough and 4% in Berkeley Township had lead concentrations greater than the MCL.

The well levels ranged from below the detection limits of 0.01 mg/l to 22.6 mg/l. Lead levels were below the detection limit in about 60% of the well water samples from Beachwood and 20% of the Berkeley well water samples. Detected lead concentrations in the samples have generally ranged from 0.02 to 0.2 mg/l.

A NJDEP administrative order, issued in December 1982, required Beachwood Borough to extend its public water supply to all homes within the Borough east of the Garden State Parkway and required all homes within that area to connect to the water supply system.

Water samples from three Beachwood Borough homes and twelve Berkeley Township homes had lead levels greater than the MCL.

Copper

In addition to lead, copper and manganese were also found in the wells. A second study was conducted in 1986 on 45 Beachwood homes on public water and 45 Berkeley homes on well water. That study indicated that 18 of the Berkeley residences had copper levels greater than the 1.0 mg/l Secondary Maximum Contaminant Level (SMCL) in their well water. The SMCL is used as a guideline for the states, and is not federally enforceable. Those values ranged from 1.2 mg/l to 6.4 mg/l. None of the Beachwood homes had elevated copper levels.

Manganese

Water samples from one Beachwood home and seven Berkeley homes indicated manganese levels greater than the SMCL of 0.05 mg/l. Those levels ranged from 0.051 mg/l to 0.617 mg/l and were not considered to be at levels of public health concern. Aquifer characteristics appeared to be the most likely source of contamination.

Recommendations from the ATSDR Health Assessment

At the time the ATSDR health assessment was written, this site was classified as a potential public health concern because of the risk to human health resulting from possible exposure to hazardous substances at concentrations that may result in adverse health effects.

A number of recommendations were made to reduce exposure to contaminants in the Beachwood/Berkeley area. Those recommendations are listed below.

- Measures should be taken to further reduce the corrosiveness of the Beachwood public water supply, thereby further reducing the exposure.
- Testing of all existing residences on private well water for lead levels should be performed for all households. Since the lead levels drop with flushing of the water lines, residences with well water that have not been tested and those with levels above the MCL should be advised to flush the lines prior to ingestion of the water.
- Ordinances should be established to: (A) prohibit the use of lead-tin solder in this region, (B) encourage use of non-metallic pipe and, (C) prohibit use of well construction materials containing significant amounts of lead.

- The results of the April to May 1986 study indicated that certain residences of the sample population showed anomalies in testing for lead, sulfate, chloride, and nitrate levels and that additional sampling was recommended for these homes.
- Two residences were identified as having extremely high levels of nitrates. Those wells should be resampled immediately. If additional sampling confirms the high concentrations, then alternative water supplies should be considered unless the source of the nitrate contamination is identified and controlled.
- Further sampling is recommended to determine the cause of the anomalous lead concentrations in some of the Beachwood Borough/Berkeley private wells.

RECENT SITE VISIT

On March 24, 1993 representatives from ATSDR and NJDEPE conducted a site visit at Beachwood/Berkeley. The site actually consisted of contaminated private wells found in the Beachwood and Berkeley residential areas.

PUBLIC HEALTH ISSUES

The Ocean County Health Department representative indicated that the public has not expressed any health concerns about the site for several years. Past public health concerns at the Beachwood/Berkeley site were related to exposure to lead. According to the Ocean County Health Department, those concerns were addressed upon completion of the blood lead testing program. The results of the blood lead tests will be obtained by ATSDR Lead Initiative personnel for review.

The only exposure route related to the site appears to be past, present, and future exposure to lead contaminated drinking water. The source of the lead is naturally occurring acidic groundwater that facilitates the leaching of lead from private indoor plumbing systems. For this reason, the U.S. EPA has deleted this site from the NPL and has assigned the site to the NJDEPE.

According to the Ocean County Health Department representative, lead contaminated private wells in the Beachwood and Berkeley residential areas were found to contain high levels of lead. Because of the lead exposure, the county initiated a lead screening program. About 600-800 persons were screened for lead exposure using the erythropoietin (EP) test. The EP test measures erythrocyte protoporphyrin (EP). EP is a part of red blood cells known

to increase when the amount of lead in the blood is high. In the past, this method was commonly used to screen children for potential lead poisoning. Currently, the Center for Disease Control and Prevention (CDC) recommended that a "blood test" be used in place of the EP test, which is not sensitive enough to detect children with blood lead levels below 25 $\mu\text{g}/\text{dl}$ (missing approximately 3/4 of children with blood lead levels above 10 $\mu\text{g}/\text{dl}$). For those persons whose EP concentrations were above levels of concern, a follow-up blood lead test was performed. According to the county, only 10-15 persons had EP test results at levels of concern. Subsequent blood lead testing and interviewing determined that these persons were anemic or were on medication. A lead education program was also performed at the time of the blood testing.

Currently, all residents of Beachwood Borough are on public water. The residents of Berkeley Township are still using private wells as their source of drinking water. The persons who still use private wells were advised to flush their water before drinking and/or use pH control methods. The lead and copper levels in the water samples of the majority of Berkeley residents dropped significantly after flushing for 60 seconds. Exposure to lead is probably still occurring. However, all water from new wells, resales, or leases in the county are required to be tested. The Beachwood/Berkeley areas remain mostly residential with some commercial and industrial zones.

CURRENT DOCUMENTS

Documents available for review include the ATSDR health assessment dated April 17, 1989; the Record of Decision (ROD) dated June 30, 1988; and the Site Investigation Report dated September 1987.

CONCLUSIONS/RECOMMENDATIONS FOR LEAD AND OTHER CONTAMINANTS

According to the ATSDR health assessment, the Beachwood/Berkeley site constitutes a potential public health hazard because of possible exposure to hazardous substances. The lead detected in the drinking water may have resulted from the acidic groundwater in the area interacting with lead-containing components in the household plumbing system. Lead-tin solder was commonly used to join household water pipes. The lead can leach out from the soldered joints by corrosive or acidic waters. The copper may also be attributed to corrosive leaching of the copper from plumbing. Manganese in the drinking water may be related to characteristics of the aquifer. The manganese contamination that was found in the Beachwood/Berkeley area did not appear to be at levels of public health concern.

The primary concern is for those households that are currently using private well water. Extensive lead exposure, through the use of contaminated private well water, has occurred in the past and may be presently occurring.

- The blood EP and lead testing data, in light of new toxicological and health information on lead, needs to be reviewed to determine the public health significance of past exposures.
- Additional sampling of existing private well water in the Berkeley Township should be performed to determine current levels of lead.
- Individuals using contaminated water from private wells should be placed on an alternative water supply to prevent possible adverse health effects from exposure to contaminants of concern.

HARP Determinations

The data and information contained in the above document has been evaluated by the ATSDR Health Activities Recommendation Panel (HARP) for appropriate public health actions. HARP has determined that the following actions are indicated. The County Health Director should be contacted to assure that the public water system is regularly monitored to prevent lead contamination, and to assure that the community receives continuing education on the potential for lead release in the drinking water. In addition, current monitoring data and tap water data should be reviewed to determine whether potential public health threats exists. If information becomes available in the future which indicates that human exposure to lead or other contaminants is occurring at levels of public health concern, ATSDR will reevaluate this site for any additional indicated follow-up.

Public Health Action Plan

To respond to any community concerns, and based on the HARP determinations, ATSDR has developed the following Public Health Action Plan:

- 1) ATSDR will contact the County Health Director to assure that the public water system is regularly monitored to prevent lead contamination, and to assure that the community receives continuing education on the potential for lead release in the drinking water.

- 2) ATSDR will review current monitoring data and tap water data to ensure that no potential public health threat exists.

Lead Initiative personnel will monitor the effectiveness of the HARP determinations through continued involvement with site activities. Contact will be made on a quarterly basis with ATSDR regional personnel, DHAC staff, and cooperative agreement state personnel until the recommended public health actions have been implemented. Lead Initiative personnel will also monitor the recent activities at this site.

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