

Health Consultation

Technical Review

(FORMER) HACKENSACK BOLT AND NUT COMPANY
(a/k/a HACKENSACK BOLT & NUT COMPANY)

HACKENSACK, BERGEN COUNTY, NEW JERSEY

EPA FACILITY ID: NJD001397595

DECEMBER 20, 2001

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

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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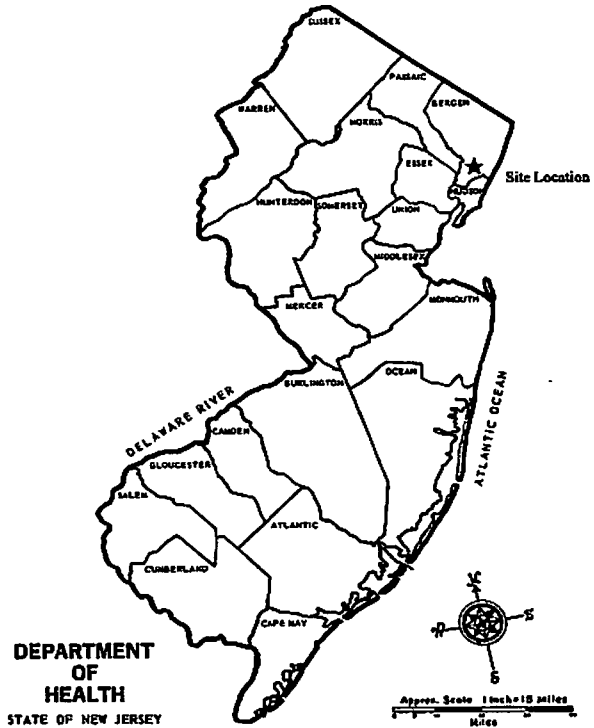
Prepared by:

New Jersey Department of Health and Senior Services
Hazardous Site Health Evaluation Program
Consumer and Environmental Health Services
Division of Epidemiology, Environmental, and Occupational Health
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

Background and Statement of Issues

Background

The former Hackensack Bolt and Nut (HBN) Company is located in Hackensack (Bergen County) New Jersey (40 deg 52 min 21 sec North, 74 deg 2 min 40 sec West) about 6 miles west of the Hudson River and New York City. From about 1915 through 1945, women's clothing was manufactured on the site. During the period 1945 through 1987, HBN manufactured threaded rods, stud bolts, nuts, and other metal fasteners. Other products that were manufactured included heat-treated alloys used in pumps, heat exchangers, valves, and high pressure pipelines. HBN operations ceased in 1987, and, as required by the provisions of the Environmental Compliance Responsibility Act (ECRA), the site was investigated by the New Jersey Department of Environmental Protection (NJDEP). Hazardous materials generated or used at the site included lubricating and hydraulic oils, heavy metals, acids, and solvents. In 1990 the property was sold to Blankley Cabinet Company, Inc. The site investigation by NJDEP is continuing under the provisions of the Industrial Site Recovery Act (ISRA), which replaced ECRA in 1993.



Statement of Issues

At the request of the Health Officer of Hackensack (Bergen County), New Jersey, the New Jersey Department of Health and Senior Services (NJDHSS), under a cooperative agreement with the federal Agency for Toxic Substances and Disease Registry (ATSDR), has evaluated the potential for adverse health effects associated with the former Hackensack Bolt and Nut (HBN) Company property located at 145 Bonhomme Street, Hackensack. Of particular concern is the potential for exposure to heavy metals that may have occurred via ingestion of backyard garden vegetables that were grown in contaminated soils. This review includes an evaluation of the potential public health implications posed by certain metals found in the surface soils on the site property, as well as metals and other contaminants found to be present in the ground water in the vicinity of the former HBN site. The discussion in this Technical Review is based upon data that are contained in the draft "*Remedial Investigation Workplan of the former Hackensack Bolt and Nut Company Facility*", dated January 31, 2001 by Engineering and Land Planning Associates, Inc., and "*Remedial Investigation Report - Hackensack Bolt and Nut, Inc.*", dated July 2000 by Environmental Management Systems, Inc.

Discussion

Remedial History

In 1987, after HBN ceased operations, a 1,000 gallon underground storage tank (UST) containing heating oil, located near the northwest corner of the building, was removed. However, the primary contamination at the HBN site is from lubricating oil that was found on and beneath site property. In 1997, approximately 230 tons of soil contaminated with lubricating oil were excavated from the Rear Yard Area; in addition, approximately 195 tons were removed from the Driveway Area. A free product removal system that was designed to remove lubricating oils from groundwater beneath the site operated sporadically from 1988 through 1997, when its use was terminated by the current owner due to odors from oil vapor in the building.

Characterization of Environmental Contamination

Surface Soils - Most soil samples were taken in the rear yard and driveway areas adjacent to the HBN building. Analyses for Total Petroleum Hydrocarbons (TPHCs) showed concentrations as high as 71,600 ppm (the allowable concentration of TPHC in surface soils is 100 ppm). Eight additional soil samples taken around the perimeter of the HBN property on May 11, 2000 were analyzed for metals (see Figure 3). The results of the analyses for metals are presented in Table 1. Elevated concentrations, *i.e.*, above health-based Comparison Values, of chromium, lead, and nickel were found at different locations around the perimeter of the building. No data have been obtained on the concentrations of metals in soils in properties adjacent to the site.

Private Well - 152 Bonhomme Street - A hand-dug well located approximately 140 feet southeast, *i.e.*, side gradient, of the former HBN property was sampled on January 19, 2001. The well, which apparently had been sealed, was found to contain several primary pollutant metals (arsenic, cadmium, lead, mercury, and nickel) at concentrations in excess of health-based Comparison Values (CV) and/or Maximum Contaminant Levels (MCL). The results are shown in Table 2

Monitoring Wells - In April 1988, two on-site monitoring wells were installed in the driveway (MW1) and in the rear yard (MW2) of the site. About 9.5 inches of free product (lubricating oil) were found in MW2. Approximately 8300 ppb TPHC were found in MW1. Later in 1988, MW1 was sampled for metals. The results showed that antimony, arsenic, cadmium, lead, and thallium were present at levels in excess of the NJDEP Groundwater Quality Standard. In April 1989, three additional monitoring wells were installed, two (MW3 and MW5) on the property of 142 Holt Street next to site property, and one (MW4) in the rear yard of HBN property. An additional monitoring well (MW6) was installed inside the HBN building in 1998. Sampling conducted in 1989, 1992, and 1996 did not yield usable results since free product was found to be present in several of the wells. Based on measurements done in 1998, 1999, and 2000, it appears that free product continues to be present in at least two (MW2, and MW6) of the monitoring wells. MW1, located at the southeast corner of the property, was sampled on October 26, 1988 for total petroleum hydrocarbons (TPHC), volatile organic compounds (VO+10), base-neutral extractable semivolatile organic compounds (BN+25), acid-extractable semivolatile organic compounds, phenol, primary pollutant metals (PPM), cyanide, pesticides, and polychlorinated biphenyls (PCB). The results (see

Table 3) show concentrations of several metals (antimony, arsenic, cadmium, lead, and thallium) in excess of health-based Comparison Values(CVs) and/or Maximum Contaminant Levels (MCLs).

Potential for Human Exposure

Based upon available information, possible pathways for human exposure to contaminants at the HBN site include: (1) ingestion of contaminated groundwater, (2) direct contact with, or ingestion/inhalation of, metals in surface soils; and (3) ingestion of metals through uptake by garden vegetables from contaminated surface soils.

Groundwater

Sampling of the hand-dug private well across the street from the HBN site shows that it contained concentrations of several metals in excess of MCLs and/or health-based Comparison Values (see Table 2). However, there are no potable wells within 1000 feet of the HBN site; potable water is provided by municipal supply brought in from outside the area.

Soils

Direct contact with, or the ingestion or inhalation of, on-site surface soils appears to be a potential exposure pathway. In addition, surface soils may have been transported to adjacent residences where it could be inhaled or ingested. As stated in the Remedial Investigation Report (EMS, 2000),

“It is important to note that soils at the property line of the site are contaminated with metals above residential cleanup criteria and residential properties border the site. It is likely that metals contamination has impacted off-site soils. Two neighboring properties have vegetable gardens that abut the property line.” In addition, “Neighboring properties should be notified that there is a risk of heavy metals contamination on their properties, off-site access agreements to be obtained to assess soils on the neighboring properties, and sampling of the off-site soils should be performed as soon as possible.”

It is possible that garden vegetables could contain elevated amounts of metals, either through uptake to plant roots, particularly root vegetables, such as beets, carrots, potatoes, and radishes, or to the foliage of leafy vegetables, *i.e.*, lettuce. Surface contamination of the plants by metals could also have occurred. No information is available on the concentrations of contaminants in the soils of adjacent properties, so it is not possible to determine whether this pathway has been completed. Since this information is lacking, it is recommended that root vegetables be peeled before eating, and that vegetables and edible leaves, *i.e.*, tomatoes, lettuce, cucumbers, be washed before eating.

Conclusions

Based on the information that is available, the following conclusions may be drawn regarding the former HBN site:

(1) Groundwater in monitoring wells in the vicinity of the former HBN site is contaminated by a several metals and lubricating oil. However, since there are no potable wells in the vicinity of the site, the ingestion of contaminated groundwater route of exposure is not completed and does not pose a risk of adverse health effects.

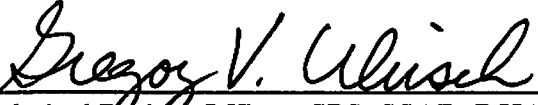
(2) Limited sampling of surface soils has shown that elevated levels of lubricating oil and metals are present adjacent to the structure on the former HBN property. More extensive sampling of soils on and near the HBN property is necessary to determine if potential ingestion/inhalation of soils or dust or uptake of metals by garden vegetables will constitute a current risk of adverse effect to human health.

Recommendations

The data which are available on the former HBN property are very limited. Additional sampling of the HBN and nearby properties is necessary to obtain a more definitive assessment of the potential health effects that may be posed by the metals in the soils on and near the property. Sampling of soils at adjacent residential properties that have backyard gardens will be of particular utility, since ingestion of vegetables grown in backyard gardens may expose individuals to metals that have been taken up from the soil.

CERTIFICATION

The Health Consultation for the (Former) Hackensack Bolt and Nut Company site was prepared by the New Jersey Department of Health and Senior Services 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 initiated.


Technical Project Officer, SPS, SSAB, DHAC

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


Chief, SSAB, DHAC, ATSDR

References

- EMS, 2000. *Remedial Investigation Report - Hackensack Bolt and Nut*, Environmental Management Systems, Inc., July 2000
- ELPA, 2001 *Remedial Investigation Workplan for the former Hackensack Bolt and Nut Co., Inc. Facility*, Engineering and Land Planning Associates, Inc., January 31, 2001
- HHD, 2001 Letter, Re: Former Hackensack Bolt and Nut Co., Health Officer, Hackensack Health Department, to NJ Department of Health and Senior Services, April 25, 2001
- NJDEP, 2001 Letter, NJDEP Bureau of Environmental Evaluation, Cleanup, and Responsibility Assessment, to Craig Canner, April 4, 2001

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Table 1. Metals in Surface Soils at HBN - 2000 (ppm)

Contaminant	Soil CV*	Metals 1	Metals 2	Metals 3	Metals 4	Metals 5	Metals 6	Metals 7	Metals 8
Antimony	14	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	20	22	10.9	10	5.27	5.44	7.43	14.3	9.8
Beryllium	2	ND	0.261	0.248	0.304	0.305	0.415	0.452	0.309
Cadmium	39	3.5	3.07	2.83	1.38	1.47	4.37	2.38	1.68
Chromium	230***, 240	762	178	150	36.6	38.5	138	1030	41.4
Copper	600	510	766	155	51.8	39.1	96.7	1300	95.0
Lead	400**	560	535	302	285	238	464	316	1940
Mercury	14	0.29	0.426	0.43	0.407	0.314	0.722	0.314	1.6
Nickel	250	274	274	169	20.9	17	50	1160	25.7
Selenium	63	ND	ND	ND	ND	ND	ND	ND	ND
Silver	110	ND	ND	ND	ND	ND	ND	ND	0.667
Thallium	2	ND	0.0954	0.11	0.13	ND	0.11	ND	0.104
Zinc	1500	594	1260	505	444	296	1080	547	786

BOLD - Exceeds RDCSCC

* - NJDEP Residential Direct Contact Soil Cleanup Criteria (RDCSCC)

** - Based on USEPA Integrated Exposure Uptake Biokinetic (IEUBK) model to protect children at blood level of 10 µg/dl

*** - USEPA Region 3 Risk Based Concentrations

ND - Not Detected

Table 2. Groundwater in Private Well - 2001 (ppb)

Contaminant	Private Residence	Drinking Water CV	MCL
Antimony	ND	6LTHA	6
Arsenic	10.9	10chronic*	50
Beryllium	1.2	10chronic	4
Cadmium	6.7	7chronic	5
Chromium	38.1	100LTHA	100
Copper	687	NONE	1300AL
Lead	6750	NONE	15AL
Mercury	2.4	NONE	2
Nickel	151	100LTHA	100
Selenium	ND	50LTHA	50
Silver	ND	100LTHA	100
Thallium	ND	0.5LTHA	2
Zinc	4310	2000LTHA	5000
Diethylphthalate	0.7	8000RMEG	NONE
Chlordane	0.2	0.1CREG	0.5NJ
DDT	0.03	0.1CREG	NONE

BOLD - Exceeds CV/MCL

ND - Not Detected

LTHA- Lifetime Health Advisory

RMEG - Reference Dose Media Evaluation Guide

CREG - Cancer Risk Evaluation Guide

NJ - New Jersey A-280 MCL

AL - USEPA Action Level

* - Under Review

Table 3. Groundwater at MW1 at HBN Site - 1988 (ppb)

Contaminant	Concentration	Drinking Water CV	MCL
Antimony	433	6LTHA	6
Arsenic	52.2	10chronic*	50
Cadmium	10	7chronic	5
Chromium	27.9	100LTHA	100
Copper	83.9	NONE	1300AL
Lead	116	NONE	15AL
Nickel	83.3	100LTHA	100
Thallium	57.6	0.5LTHA	2
Zinc	230	2000LTHA	5000
Methylene Chloride	0.017	5CREG	2NJ
1,1,1-Trichloroethane	0.0039	200LTHA	26NJ
Xylenes	0.0061	10000LTHA	44NJ
Di-n-butyl phthalate	0.195	4000RMEG	NONE
Bis(2-ethylhexyl)phthalate	0.043	3CREG	6

BOLD - Exceeds CV/MCL

ND - Not Detected

LTHA- Lifetime Health Advisory

RMEG - Reference Dose Media Evaluation Guide

CREG - Cancer Risk Evaluation Guide

NJ - New Jersey A-280 MCL

AL - USEPA Action Level

* - Under Review

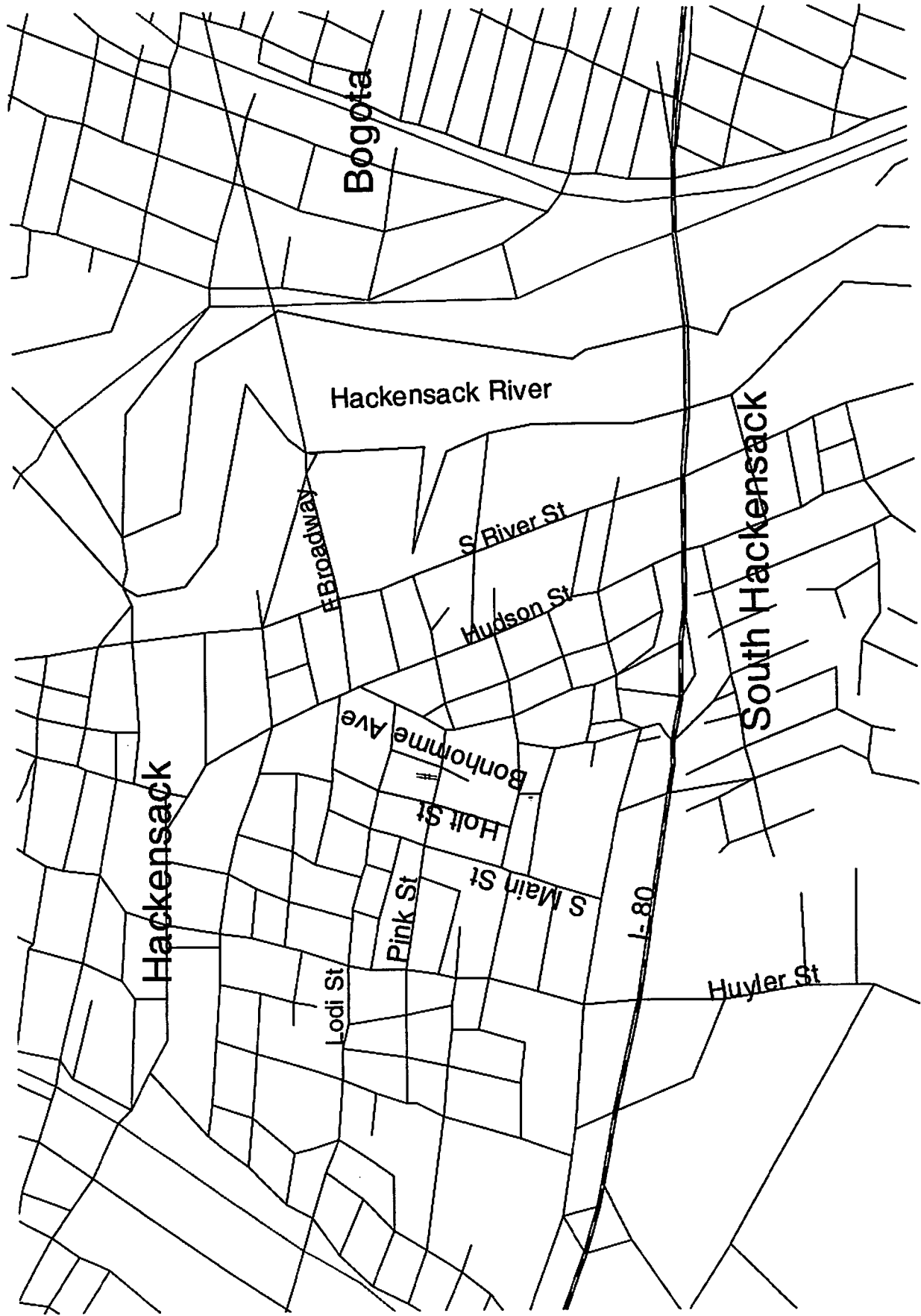


Figure 2. Hackensack Bolt and Nut

