

**PRELIMINARY
Health
Assessment
for**

INTERIM

BMI-TEXTRON

LAKE PARK, PALM BEACH COUNTY, FLORIDA

CERCLIS NO. FLD052172954

DECEMBER 23, 1991

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
Agency for Toxic Substances and Disease Registry

THE ATSDR HEALTH ASSESSMENT: A NOTE OF EXPLANATION

Section 104 (i)(6)(F) 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 assessment, risk evaluations, and studies available from the Administrator of EPA."

In accordance with the CERCLA section cited, ATSDR prepared this Interim Health Assessment using available data and information. ATSDR will re-evaluate this site and prepare an updated health assessment as warranted by the availability of additional data and information and as resources permit.

INTERIM PRELIMINARY HEALTH ASSESSMENT

BMI-TEXTRON

LAKE PARK, PALM BEACH COUNTY, FLORIDA

CERCLIS NO. FLD052172954

Prepared by

Florida Department of Health and Rehabilitative Services

Under Cooperative Agreement with the

Agency for Toxic Substances and Disease Registry

SUMMARY

The BMI facility manufactured chrome-backed glass plates used in the production of electronic components from 1969 until 1986. Results of the chemical analyses of ground water and subsurface soil samples collected during March 30 - April 2, 1987, indicated that high concentrations of barium, chromium, cyanide, and acetone were in ground water on site. Off-site ground water was found to contain high concentrations of chromium and cyanide. Results of preliminary site investigations indicate the primary environmental pathways for contaminant migration include the movement of soil contaminants into ground water, movement of on-site ground water contaminants to off-site areas, and the migration of soil contaminants into the air. Potential pathways for human exposure to site contaminants at this site include ingestion of contaminated ground water and soil, and the inhalation of airborne contaminated dusts. Because of incomplete site characterization, this site is classified as an indeterminate public health hazard. Additional characterization of ground water flow patterns, a private well survey, and additional monitoring of ground water and soil is recommended to provide the information necessary to determine the public health impact of this site.

BACKGROUND

A. Site Description and History

Basic Microelectronics, Incorporated, began operating at 1121 Silver Beach Road, Lake Park, Palm Beach County, Florida, in October 1969. The site occupies approximately 3.4 acres in an industrial area (Figures 1 and 2). In December 1980, BMI was sold to Textron, Incorporated, of Providence, Rhode Island, and began operating under the name of BMI-Extron.

The BMI facility manufactured chromium-backed glass plates used in the production of electronic components. The actual process involved cutting, cleaning, and polishing glass plates prior to chromium deposition. Liquid waste from the process was disposed of on site through a combination of percolation ponds and drainfields. BMI discharged cyanide containing wastes into percolation pond #1 (Figure 2) until May 1979 when BMI switched to using a ferric-ammonium-nitrate solution for their glass-etching process. No further waste was deposited into percolation pond #1 and it was abandoned in August 1984. Permit compliance sampling revealed cyanide contamination of the soil and ground water at the site.

BMI-Extron and the Florida Department of Environmental Regulation (DER) entered into a consent agreement in December 1984 to remove contaminated soils at the site. Pursuant to the agreement, approximately 680 cubic yards of cyanide contaminated soil were removed to a hazardous waste facility regulated under subtitle C of the Resource Conservation and Recovery Act. The excavated soil was taken from percolation pond #1, formerly located at the center of the north end of the site.

Analytical data from samples taken by DER in 1986 showed elevated concentrations of cyanide and fluoride in three on-site monitoring wells and in the soil near percolation pond #2 (see Figure 2). On November 18, 1986, BMI-Extron was issued another consent order to develop a ground water remediation plan. Following this order, an "investigation and clean-up proposal" was submitted to DER by BMI-Extron on January 6, 1987.

The area around BMI-Extron is industrial and residential (Figure 1). Houses are located south across Silver Beach Road and industrial warehouses and offices are located in the areas north, east and west of the site. Undeveloped land is located 1/2 mile northwest of the site. Riviera Beach water system well field is located 1/2 mile north of Silver Beach Road.

B. Site Visit

A site visit was conducted by staff from the Florida Department of Health and Rehabilitative Services (HRS) Health Office and the ATSDR Regional Representative in February 1989. A follow-up site visit was conducted by staff from the Palm Beach County Public Health Unit in June 1991. Access to much of the former site is now restricted by chain-link fences topped with barbed wire that were erected by current building owners and tenants on site.

C. Demographics, Land Use, and Natural Resource Use

The 3.4-acre site is located at 1121 Silver Road in an industrial park in the town of Lake Park, Palm Beach County, Florida. The site is adjacent to residential houses to the south, and is bounded on the west by a block of industrial warehouses which are bordered to the west by undeveloped land. The industrial complex occupies the block and a half north, and the block east of the site. One block east of the site, the industrial complex is bounded by a four lane highway. The highway is bordered successively to the east by a railroad, warehouses and a large residential area. Based on the number of residences served by two municipal wells in the area, the population of Lake Park and nearby Riviera Beach is approximately 108,000.

D. Health Outcome Data

Based on the evaluations performed as part of this health assessment, there are no indications that humans have been exposed to site-related contaminants. In addition, there were no community concerns identified during this evaluation. Therefore, health outcome data were not evaluated in conducting this health assessment.

COMMUNITY HEALTH CONCERNS

Department of Health and Rehabilitative Services County Public Health Unit representatives are concerned metals, cyanide, and acetone found in ground water on the site have contributed to the degradation of the local aquifer. Shallow ground water in this area represents the upper level of the regional potable water source; however, municipal water is available. The nearest municipal well located hydrogeologically downgradient is approximately 1 mile southeast of the site. The area has not been surveyed for downgradient, private, potable or irrigation wells, or industrial process wells. Therefore, it is not known if human exposure to low levels of metals, cyanide or acetone is occurring via dermal, inhalation or ingestion exposure to ground water.

ENVIRONMENTAL CONTAMINATION AND PHYSICAL HAZARDS

To identify possible facilities that could contribute to the ground water, surface water, air, and soil contamination near the BMI Tektren site, HRS Toxicology and Hazard Assessment Office personnel searched the 1987, 1988, and 1989 Toxic Release Inventory (TRI) databases. TRI databases are developed by the EPA from chemical release information provided by certain industries. TRI databases did not contain information on chemical releases in the Lake Park zip code area which encompasses the area around the BMI Tektren site.

A. On-Site Contamination

According to the analyses of ground water and sediment samples collected in 1987, ground water on site contained elevated concentrations of barium, chromium, cyanide, and acetone.

MEDIA	CONTAMINANT	CONCENTRATION RANGE	UNIT
Biscayne Aquifer	Barium	490 - 2000	µg/L
	Chromium	16 - 1200	µg/L
	Cyanide	J560 - J800	µg/L
	Acetone	690	µg/L

J = Estimated Value

B. Off-Site Contamination

Ground water and soil from four different locations off site were sampled; one was chosen for background (Figure 2, BMI-01). All off-site sampling locations are less than 1/4 mile from the site. Off-site sampling only detected chromium and cyanide at levels that exceed drinking water Maximum Concentration Levels.

MEDIA	CONTAMINANT	CONCENTRATION RANGE	UNIT
Biscayne Aquifer	Chromium	22 - 250	µg/L
	Cyanide	J30 - J120	µg/L

J = Estimated Value

C. Quality Assurance and Quality Control (QA/QC)

The details of QA/QC were not given in the March 1988 Site Investigation report. According to that report, analytic results for cyanide were assigned estimated concentrations. This means that the qualitative analyses were acceptable, but the reported concentrations should not be considered accurate.

In preparing the Preliminary Health Assessment, ATSDR and Florida HRS relies on the information provided in the referenced documents and accepts that adequate QA/QC measures were followed with regard to chain-of-custody, laboratory procedures, and data reporting. The validity of the analysis and conclusions drawn for this PHA are determined by the availability and reliability of the referenced information.

D. Physical and Other Hazards

No physical hazards were seen during site visits to the BMI-Textron site.

PATHWAYS ANALYSES

A. Environmental Pathways (Fate and Transport)

Elevated concentrations of chromium, aluminum, manganese, iron and cyanide were found in ground water both on and off site. Elevated concentrations of barium and acetone were found in on-site ground water samples only.

Based on the information reviewed, movement of ground water in the Biscayne Aquifer is an environmental pathway with barium, chromium, cyanide and acetone as contaminants of concern.

The shallow, unconfined Biscayne Aquifer underlies the entire county and is the main source of potable water. The Biscayne Aquifer is divided by local convention into two aquifers, the eastern Sandy Ridge Aquifer and the western Turnpike Aquifer. The Sandy Ridge Aquifer is named after a local prominent north-south geomorphologic feature, the Coastal Sand Ridge. The Sandy Ridge Aquifer is composed of the loosely cemented sand and shell layers of the Anastasia Formation. The Turnpike Aquifer is named for the Florida Turnpike, a major north-south transportation feature in the area. This western part of the Biscayne Aquifer is composed of a solution-cavity-riddled limestone, the Fort Thompson Formation. The flow of ground water beneath the site and in eastern Palm Beach County is east towards the Atlantic Ocean.

Wells for two municipal drinking water supply systems have been identified within a 3-mile radius of the site. The Seacoast Utilities system, serving approximately 19,000 connections, has wells located 3/4 mile north-northwest of the site. The Riviera Beach water system, serving 9,430 connections has wells located approximately 1 mile southeast of the site.

B. Human Exposure Pathways

The contaminants in ground water from the Biscayne Aquifer constitute potential human exposure pathways through ingestion, and inhalation of barium, chromium and cyanide; and ingestion, inhalation and dermal absorption of acetone, although these contaminants have only been detected in on-site ground water. Ingestion and inhalation of chromium and cyanide constitute potential human exposure pathways in off-site ground water. Inhalation and migration of contaminated dust or soil are also potential pathways for human exposure because soil from the former percolation ponds has not been removed or paved over. There is no surface water or surface drainage in the area. Edible plants, game and livestock are not known to be present in this urban area.

PUBLIC HEALTH IMPLICATIONS

Preliminary ground-water monitoring detected barium, chromium, and cyanide at levels, if humans were exposed, that would be of public health concern. Testing of subsurface soil (more than 0.5 feet deep) at BMI-Textron indicated that contaminants were present below levels of probable health concern. Exposure to contaminated air and surface water are likely to be problems only if the area is excavated for soil remediation.

CONCLUSIONS

Based on the available information, this site is an indeterminate public health hazard. The limited available data do not indicate that humans are being or have been exposed to levels of contamination that would be expected to cause adverse health effects. Data are not available for all environmental media to which humans may be exposed. If this site is not remediated, exposures to metals, cyanide and acetone via ingestion, direct dermal absorption, and inhalation of contaminants in ground water could occur in the future at concentrations that, upon long-term exposure, could cause adverse health effects. Potential receptor populations include area residents who may have private wells.

RECOMMENDATIONS

To assess the potential health impact from this site and to minimize existing exposures, the following recommendations are made:

1. Conduct additional ground-water monitoring to determine the extent of the ground-water contaminant plume.
2. Conduct additional hydrologic site investigations to determine ground water flow conditions.
3. Characterize the lateral and vertical extent of surface soil (sediment) contamination in the old percolation ponds. These former disposal areas are presently covered with grassed areas, asphalt, and in one area, end-to-end shipping pallets.
4. Conduct a private well survey for hydrogeologically downgradient private wells.
5. The EMI Textron site has been evaluated for follow-up health activities. There are no indications humans have been or are being exposed to onsite and/or offsite contaminants. Therefore, this site is not being considered for follow-up activities at this time. However, if data become available suggesting that human exposure to hazardous substances at levels of public health concern is currently occurring or has occurred in the past, ATSDR will reevaluate this site for health follow-up activities.
6. If ATSDR evaluations indicate that a substantive completed exposure pathway exists or that the community has expressed specific health concerns, then health outcome data bases should be evaluated in future assessments for this site.

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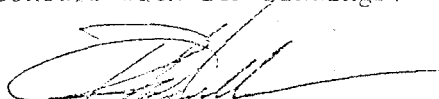
CERTIFICATION

This Preliminary Health Assessment was prepared by the Florida Department of Health and Rehabilitative 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 assessment was initiated.



Technical Project Officer, SPS, RPB, DHAC

The Division of Health Assessment and Consultation, ATSDR, has reviewed this health assessment and concurs with its findings.



Director, DHAC

REFERENCES

1. Documentation Records for Hazard Ranking System of BMI-Textron. EPA-Region IV, J.E. Bentkowski-6/30/87
2. Technical Review and Evaluation of United States Environmental Protection Agency Hazard Ranking System Analysis and Proposed National Priority Listing of the BMI-Textron Site, Lake Park, Florida. Ground Water Technology-1988.

APPENDICES

Figure 1: Site Location of Basic Microelectronics, Inc., Lake Park, Florida.

Figure 2: Site Map of Basic Microelectronics, Inc.,
Lake Park, Florida.

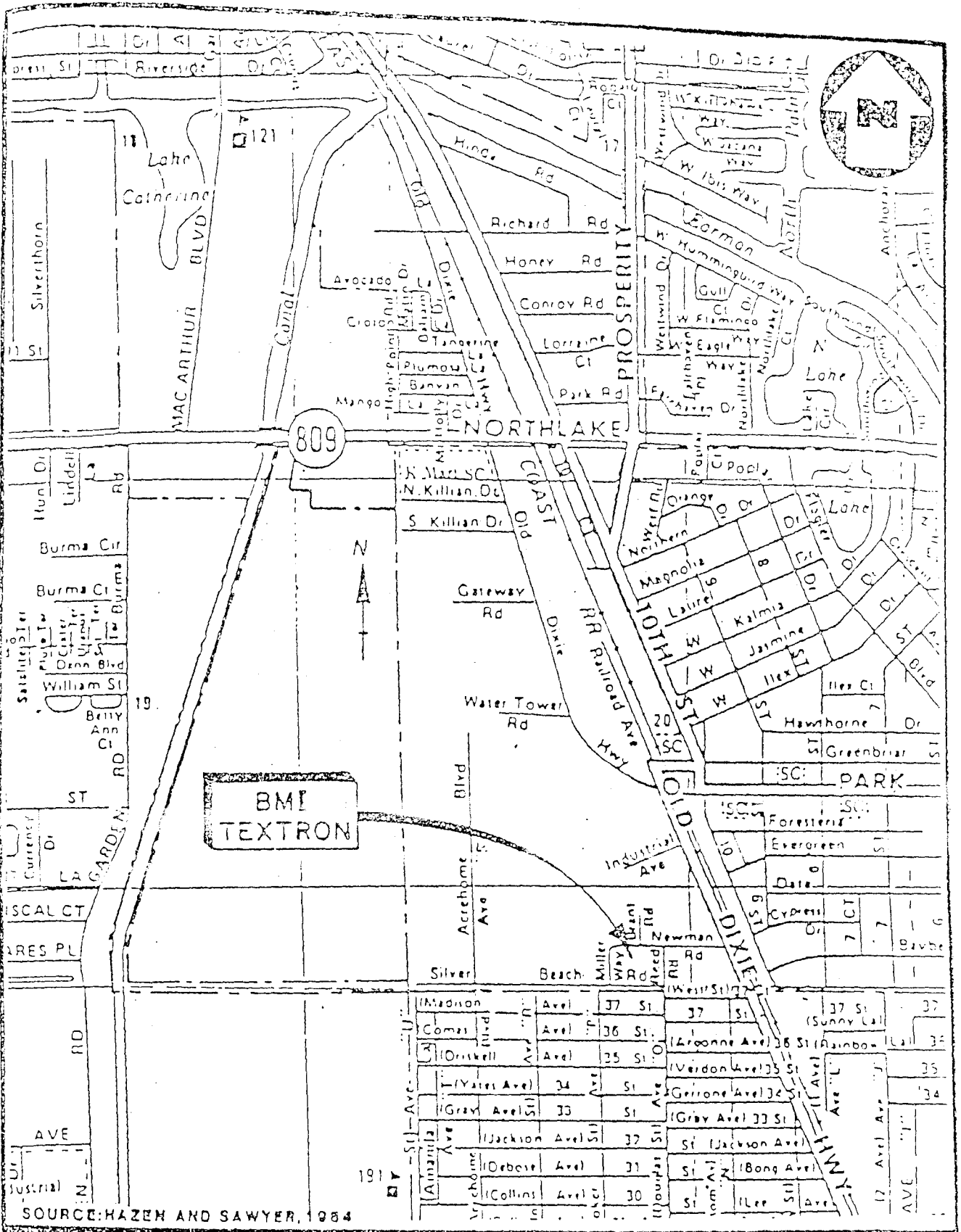


FIGURE 1

SITE LOCATION OF
 BASIC MICROELECTRONICS, INC.
 LAKE PARK, FLORIDA

SCALE: 1 INCH EQUALS APPROX. 1/4 MILE

FIGURE 1



A Halliburton Company

FIGURE 2. SITE MAP AND SAMPLING LOCATIONS AT BASIC MICROELECTRONICS, INC. LAKE PARK, FLORIDA

