DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Agency for Toxic Substances
and Disease Registry
Atlanta GA 30333

MEMORANDUM

Date: September 5, 2000

From: Senior Regional Representative
ATSDR Region III

Subject: Health Consultation
Safety Light Site

To: Frank Bertovich
PADOH, Northcentral District

Michael Welch
PADEP, North Central Region

Robert Maiers
PADEP, Harrisburg, PA

James Kottan
NRC, King of Prussia, PA

Enclosed is a copy of the health consultation for the Safety Light Site, Bloomsburg, Columbia County, Pennsylvania, dated August 9, 2000, prepared by the Pennsylvania Department of Health (PADOH) under a Cooperative Agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). This health consultation is in response to the U.S. Environmental Protection Agency Region III's request that PADOH/ATSDR determine if the residents near the site are exposed at levels of health concern to radiological or nonradiological contamination that may be migrating offsite from past disposal practices on site.

We are also enclosing in this mailing, the 7/19/2000 health consultation "Radiological Dose Estimates, Safety Light Corporation", authored by Paul Charp, ATSDR, Federal Facilities. This health consultation is a recent follow up to the 4/20/2000 health consultation on radiologic issues.

NMSS/RGN-002

The primary intent of these health consultations are to inform you of the actions PADOH has recommended in order to prevent or mitigate exposures to the contaminants of concern at the site. Upon your review, please inform us if you plan to take any action to address all or some part of the recommendations made. Also, please inform us if you discover significant errors in the document which could change its conclusions and recommendations. I can be reached at telephone number (215) 814-3139 or for written responses at the address listed below.

Charles J. Walters, Jr.
ATSDR
c/o US EPA Region III
Hazardous Site Cleanup
Division (3HS00)
1650 Arch Street
Philadelphia PA 19103

Enclosures

cc: Max M. Howie, Jr., ATSDR/DHAC/PERIS
Dr. Paul Charp, ATSDR (under separate cover)
Dr. Kandiah Sivarajah, PADOH (under separate cover)
Linda Baxter, EPA Region III (under separate cover)
Bill Belanger, EPA Region III (under separate cover)

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Safety Light Site

To: Linda Baxter
EPA Site Assessment Manager (3HS34)

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The primary intent of this health consultation is to inform you of the actions PADOH has recommended in order to prevent or mitigate exposures to the contaminants of concern at the site. Upon your review, please inform us if you plan to take any action to address all or some part of the recommendations made. Also, please inform us if you discover significant errors in the document which could change its conclusions and recommendations. I can be reached at telephone number (215) 814-3139 or for written responses at the address listed below.

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Michael Welch, PADEP, North Central Region (under separate cover)
Robert Maiers, PADEP, Harrisburg, PA (under separate cover)
James Kottan, NRC, King of Prussia, PA (under separate cover)

Health Consultation

Radiological Dose Estimates Safety Light Corporation

SAFETY LIGHT SITE

BLOOMSBURG, COLUMBIA COUNTY, PENNSYLVANIA

CERCLIS NO. PAD987295276

JULY 19, 2000

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

Radiological Dose Estimates Safety Light Corporation

SAFETY LIGHT SITE

BLOOMSBURG, COLUMBIA COUNTY, PENNSYLVANIA

CERCLIS NO. PAD987295276

Prepared by:

Federal Facilities Assessment Branch
Division of Health Assessment and Consultation
Agency for Toxic Substances And Disease Registry

BACKGROUND AND STATEMENT OF ISSUES

The Agency for Toxic Substances and Disease Registry (ATSDR) is preparing this public health consultation in support of the Pennsylvania Department of Health (PaDoH) activities at the Safety Light Corporation (SLC) in Bloomsburg, Columbia County, Pennsylvania. ATSDR has previously prepared a public health consultation concerned with the radiological contamination present at the site [1].SLC is a 10-acre site where radioactive materials were used, and continue to be used in manufacturing various devices including radioactive sources for civil defense equipment, US Navy products, and lighting products.Lighting products continue to be made using primarily tritium as the energy source.The site is bounded by the Susquehanna River to the south and Old Berwick Road (Route 11) on the north. As stated in the previous health consultation, SLC used radium 226 (Ra 226) and polonium 210 (Po 210) for light sources or other manufacturing processes. In the 1960s, Ra 226 was replaced with Americium 241 (Am 241) in unspecified processes [2].Later, strontium 90 (Sr 90) and cesium 137 (Cs 137) were used for civil defense devices and deck markers for the US Navy, respectively.Currently, the tritium (H-3) is used for emergency lighting devices.SLC holds two licenses for use of radioactive material issued by the Nuclear Regulatory Commission (NRC) or its predecessor, the Atomic Energy Commission.The current licenses are License Number 37-00030-02 (for the cleanup) and License Number 37-00030-08 (tritium use).

During the production of the various devices made by SLC, radioactive wastes were placed in two underground silos.When the silos were closed in 1960, the wastes were shipped off-site to licensed radioactive waste burial facilities.Liquid wastes produced on the site were routed to a nearby abandoned canal associated with the Susquehanna River or to a holding tank and evaporator system.

Since the 1960 time frame, various clean up efforts have been undertaken including decontamination of buildings, backfilling of on-site lagoons and removal of soils contaminated with Ra 226.Several events occurred that have resulted in the spread of contamination on the site.These include a flood in 1972 that destroyed the holding tank and evaporator as well as impacting the former canal and east lagoon [2].

The site is completely fenced on all sides and the nearest residences are on Old Berwick Road, across from the site.

The Pennsylvania Department of Health requested that ATSDR review the radiological data associated with on-site contamination and off-site residential wells to determine if the radiological contaminants are present at levels of health concern.

DISCUSSION

In June 2000 ATSDR and representatives from the Nuclear Regulatory Commission, the Pennsylvania Department of Health, and the Pennsylvania Department of Environmental Protection, Bureau of Radiation met with representatives of the Safety Light Corporation. A

possibility of a public health hazard might increase if the drums are stored on-site. Currently, data suggests the presence of chemical wastes[1].

Radiation dose measurements collected in the vicinity of the tritium building and the picnic tables were similar to those values associated with background. The dose reading, however, at the southeast corner of the building, was 50 µrem/h, a value twice background but still not considered a radiological health problem.

Measurements were also collected along the outside of the fence and at an abandoned home to the east of the facility. Estimated radiation doses collected during this exercise ranged from about 150 to 200 µrem/h. At the side of the house closest to the fence, the dose rate was approximately 50 µrem/h; whereas, the estimated dose on the side away from the fence was typical of background radiation, about 25 µrem/h.

CONCLUSIONS

ATSDR concludes that the radiation levels detected outside the facility do not pose a significant public health threat to members of the public or to the surrounding area outside the SLC fence line. A preliminary dose assessment suggests that an individual would have to spend 500 hours per year at the area along the fence where the highest dose reading was collected. Although 500 hours is a small portion of a year, ATSDR does not believe there is a high likelihood this would occur.

Similarly, ATSDR does not consider the radiation dose measured around the tritium building a public health concern as the radiation dose estimates were on the order of values associated with background radiation and should not pose a health hazard to the employees in this area.

ATSDR is concerned for the radiation levels immediately around the drum storage areas and the drums being stored in the river's flood plain.

RECOMMENDATIONS

In the previous ATSDR public health consultation [1], the following recommendations were made regarding conditions at the Safety Light Corporation:

1. Ensure the security of the site by routine monitoring of the fence, especially along the river where conditions might exist that would compromise the fence integrity.

[1]Personal communication from Libby Levi, EPA Region III.

Health Consultation

SAFETY LIGHT SITE

BLOOMSBURG, COLUMBIA COUNTY, PENNSYLVANIA

CERCLIS NO. PAD987295276

AUGUST 9, 2000

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

SAFETY LIGHT SITE

BLOOMSBURG, COLUMBIA COUNTY, PENNSYLVANIA

CERCLIS NO. PAD987295276

Prepared by:

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

SUMMARY

The Safety Light Corporation site (the site) is an active manufacturing facility off Old Berwick Road, Bloomsburg, Columbia County, Pennsylvania, next to the Susquehanna River. Employees of the Safety Light Corporation use tritium in the manufacture of self-illuminated signs. Past disposal practices of various radioactive isotopes at the site resulted in radiological contamination of on-site soils and groundwater.

At the request of the U.S. Environmental Protection Agency Region III (USEPA), the Pennsylvania Department of Health (PADOH), working under a Cooperative Agreement with the federal Agency for Toxic Substances and Disease Registry (ATSDR), prepared this Health Consultation (HC). USEPA desires to know if the residents near the site are exposed at levels of concern to radiological or nonradiological contamination that may be migrating offsite from past disposal practices on site. PADOH and ATSDR conclude that the site is not a public health hazard with respect to nonradiological contamination related to the site. However, due to recent remedial activity and on-site staging of drummed radiological waste, PADOH and ATSDR conclude that the site could pose a public health hazard in the future if the Susquehanna River floods and flood waters reach that staging area.

Conclusions and recommendations herein are specific to the site. PADOH provides conclusions and recommendations based on the data and information referenced. Additional data could alter the recommendations being presented. PADOH is committed to reviewing additional data and responding to additional requests upon receipt.

BACKGROUND AND STATEMENT OF ISSUES

Introduction

In this document, PADOH evaluates contamination related to industrial activity at the Safety Light Corporation (the site). PADOH requested technical assistance from ATSDR to assess the human health aspects of exposure to site-related radiological contaminants. ATSDR responded with a Health Consultation (HC) that focuses on radiological contamination on and near the site. PADOH has included ATSDR's HC as an attachment to this document. The reader is referred to the Attachment for details.

Site Description and History

The Safety Light Corporation site (the site) is an active manufacturing facility occupying approximately 2 acres of a 10-acre property southeast of Old Berwick Road in South Centre Township, Columbia County. The remaining 8 acres of the property are leased to third parties. There is no evidence that employees of the third parties are being exposed. A residential area lies across Old Berwick Road from the site. Residential areas bound the site to the northeast and southwest. The Susquehanna River abuts the site to the southeast. The site is completely fenced

For nonradiological organic constituents, Weston reported that the residential wells contained traces of tetrachloroethene (PCE) below USEPA's maximum contaminant level (MCL), but the results were qualified as possibly being not accurate or precise. All other reported parameters were either below a level of concern or were found in the laboratory or field blanks (4).

For nonradiological inorganic constituents, Weston reported that one on-site monitoring well, MW-4, contained some metals at levels that would be of marginal concern, such as lead at a level of 41.8 micrograms per liter, if any exposure pathways existed. However, the groundwater contamination was limited to on-site areas (4). Although the 1994 data is the most recent data available, PADOH's hydrogeologist has analyzed the site and believes that the shallow groundwater in the area is moving from the site directly toward the Susquehanna River. On-site groundwater is not used for any purpose other than monitoring (5).

The most recent effort by the company to clean up the site has resulted in the removal of radwaste from the silos and staging of the radwaste in drums and containers on site. By June 20, 2000, the company had staged 176 drums (55-gallon) and 26 B-25 containers (4 ft. x 4 ft. x 6 ft.) that contain varying levels of radwaste. The staging area is near the eastern edge of the property about 200 feet from the Susquehanna River (6). PADOH estimates the closest drums to the river are about 30 feet above mean low water level. Note that ATSDR's HC was published before the radwaste was removed from the buried silos and staged on site in drums and containers.

As of June 20, 2000, the chemical nature of the radwaste is undergoing analysis. Company officials reported orally to PADOH that "hotter" radwaste is in the drums. They also reported that it is possible that the radwaste is mixed with nonradiological hazardous waste. The company took six samples of the contents of the buried silos during the removal process. The results of chemical analyses of those samples are not final, thus presenting a significant data gap (6).

Site Visit

On January 11, 2000, Mark Lavin of PADOH's Division of Environmental Health Assessment (the staff), conducted a site visit and met with representatives of the company, USNRC, and the Pennsylvania Department of Environmental Protection (PADEP). The purpose of the site visit was to verify information collected during site file reviews and interviews with knowledgeable parties, and to gather essential information not found during those two previous steps. During the site visit, the staff toured the site, took photographs, and interviewed company representatives, as well as USNRC and PADEP officials. The company was removing radwaste from the buried silos at that time as part of a major remediation project.

The staff also contacted local government officials on January 11, 2000, to ask if anyone living near the site had expressed health concerns related to releases of contaminants at the site. The

levels that would be associated with adverse health effects. PADOH and ATSDR based this conclusion on several factors after reviewing the available data, including:

a. PADOH and ATSDR identified no off-site completed exposure pathways.

b. PADOH and ATSDR identified no on-site completed exposure pathways because the site is secure and nobody is using the contaminated groundwater.

CONCLUSIONS

PADOH and ATSDR conclude that the site poses no public health hazard with respect to nonradiological contamination because of the nonexistence of completed exposure pathways. A plume of on-site groundwater contaminated with nonradioactive lead is moving toward the Susquehanna River. No residential wells are threatened by the contaminant plume. The Susquehanna River is not threatened by the plume of lead, either.

However, with respect to radiological contamination, PADOH and ATSDR conclude that the site would likely be a public health hazard if Susquehanna River flooded. This is so because the drums containing radiological waste that are staged on site could be affected by a flood with a magnitude rivaling that of 1972's Tropical Storm Agnes, which would put the staging area under water.

RECOMMENDATIONS

PADOH and ATSDR recommend that appropriate government regulators take immediate action to remove the on-site radiological waste in drums and containers to a more secure site. The present storage location is vulnerable to flooding from the Susquehanna River.

PADOH and ATSDR recommend, further, that the domestic well just west of the site be resampled for nonradiological constituents to update the 1994 sampling data.

PUBLIC HEALTH RECOMMENDATIONS AND ACTIONS

1. PADOH will review sampling data and prepare Health Consultations as appropriate.

2. PADOH will be available to conduct additional public health assessment activities.

REFERENCES

1. NUS Corporation Superfund Division. Field Investigation Team Activities at Uncontrolled Hazardous Substances Facilities-Zone I--Safety Light Corporation. Undated.

2. Agency for Toxic Substances and Disease Registry. Health Consultation for Safety Light Corporation, Bloomsburg, Columbia County, Pennsylvania. Atlanta: ATSDR, March 2, 2000.

3. Monserco Limited. Characterization Survey of Safety Light Corporation Site at Bloomsburg, Pennsylvania, U.S.A. September 5, 1996.

4. Roy F. Weston, Inc. Memorandum to Kevin Wood from Donna Janda re: Analytical Results of Groundwater Sampling at the Safety Light Site. July 27, 1994.

5. Oral communications with Larry Harmon, Safety Light Corporation. March 9, 2000.

6. Oral communications with Larry Harmon, Safety Light Corporation. May 18, 2000.

PREPARER OF REPORT

Mark A. Lavin, B.S.
Environmental Health Specialist
Pennsylvania Department of Health

CERTIFICATION

This Safety Light Corporation Health Consultation has been prepared by the Pennsylvania Department of Health under 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.

Roberta Erlwein
Technical Project Officer, SPS, SSAB, DHAC

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

Richard E. Gillig
Chief, SPS, SSAB, DHAC, ATSDR

Appendix A

FIGURES

Figure 1

Safety Light Corporation Site Location Map

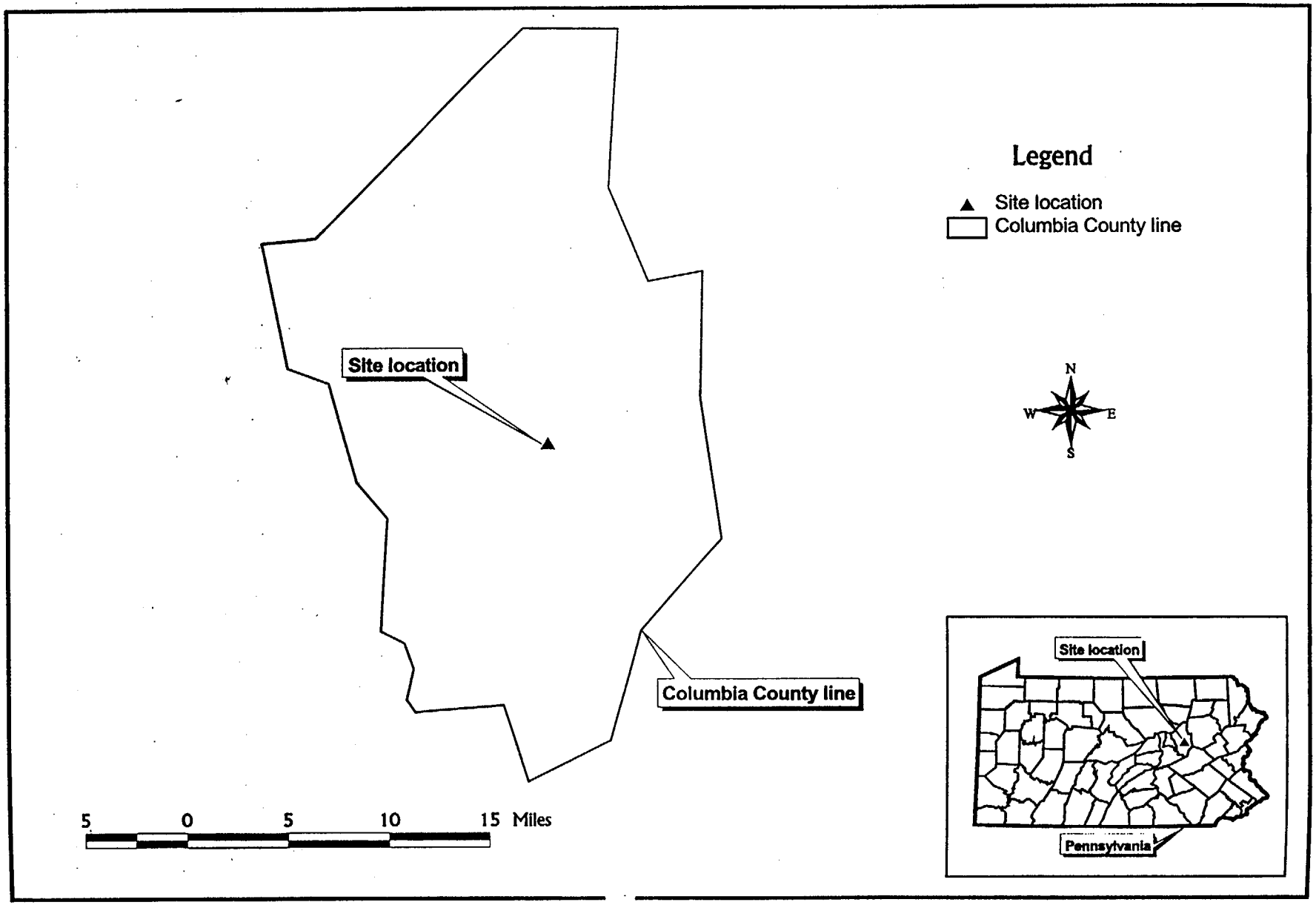


Figure 2

Safety Light Corporation
Site Location Map

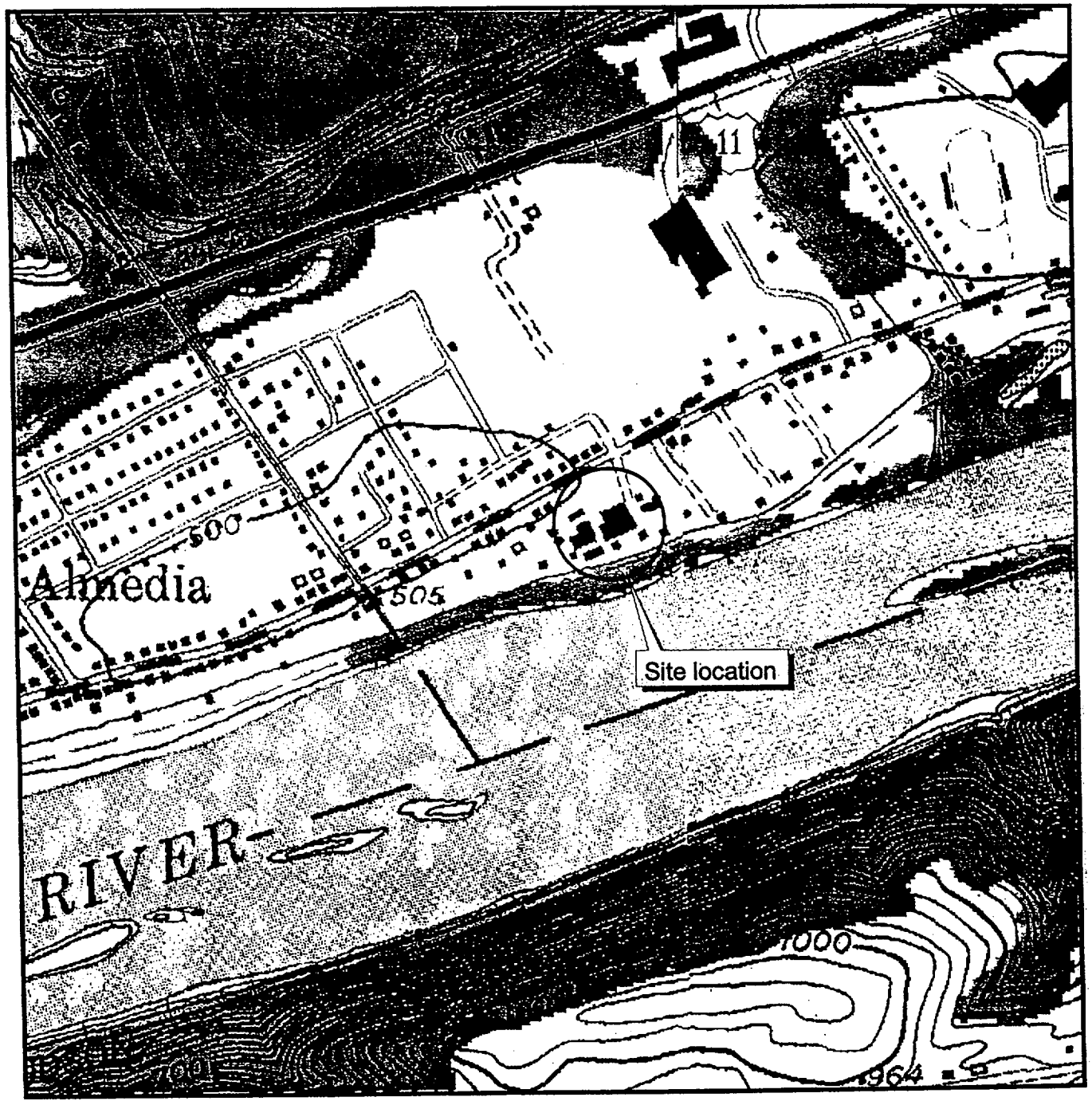
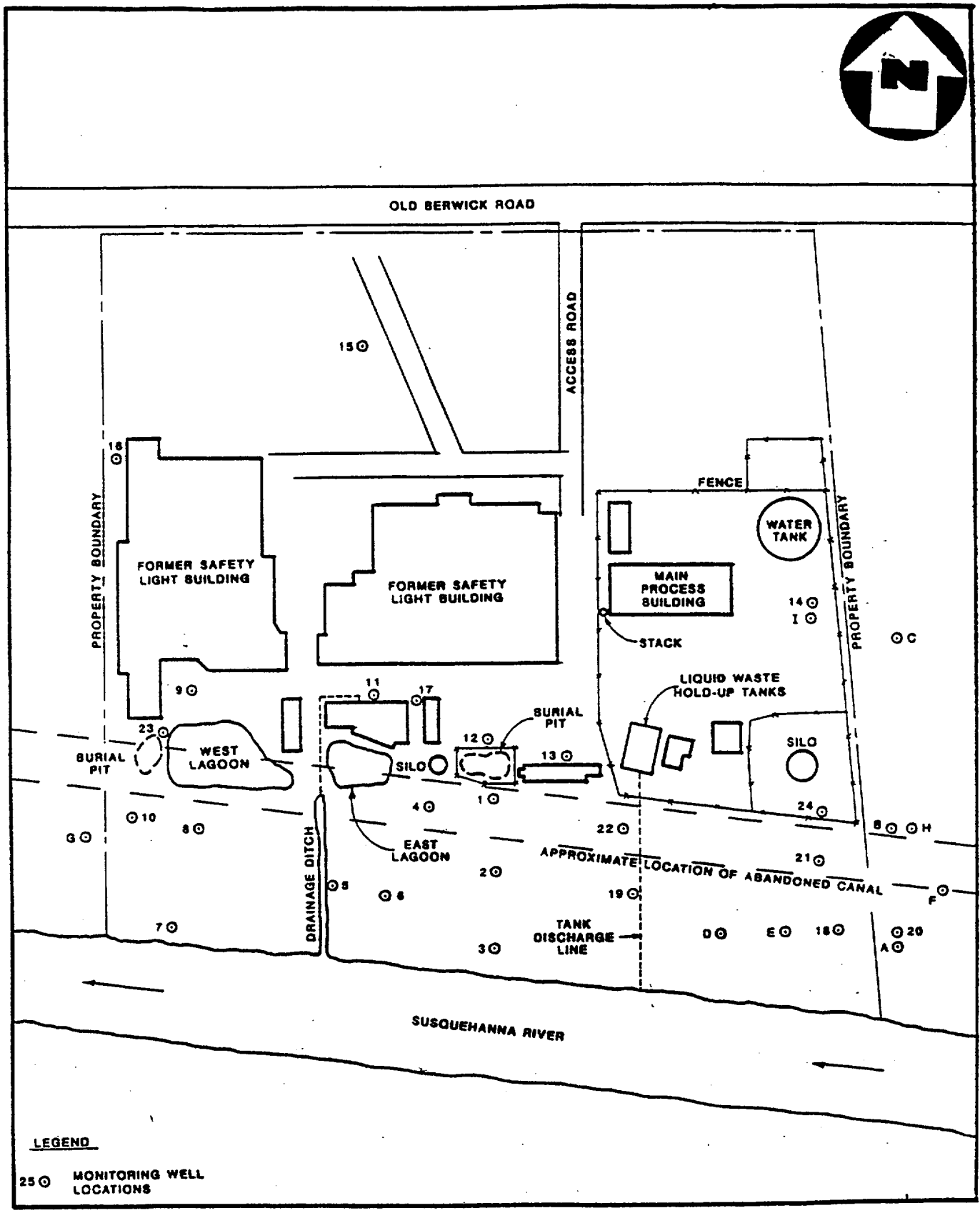


Figure 3



SITE SKETCH

SAFETY LIGHT CORPORATION, BLOOMSBURG, PA

(NO SCALE)

NUS CORPORATION

Appendix B

TABLES

Table 1: Safety Light Analytical Results - Radiological

SAMPLE LOCATION	Ra-226	H-3	Sr-90	Cs-137
RW-2		2015		
RW-3		673	2.6 B	
RW-4		2670	2.2 B	
RW-5		1595	3.2 B	
RW-6		1770		
RW-7		1109	3.7 B	
MW-4	3.26	4208	59.9	
MW-5	60.45	2372	3.5 B	106
MW-5 (dup)	78.28	2424	4.5 B	132
MW-14	2.34	5727		
MW-15		1898	4.4 B	
MW-16	3.03	2052	13.6	
FB			2.0	

All results are reported in units of pCi/L.

B: Not detected substantially above the level reported in laboratory or field blanks.

Table 2: Safety Light Analytical Results - Inorganic

Analyte	RW-2	RW-4	MW-4 (unf)	MW-4 (fil)	Field Blank
Aluminum			12,300	[34.6]	
Arsenic		[7.2] L			
Barium	[36.0]	[25.7]	[185]	[50.4]	
Beryllium			[0.90] B	[0.47] B	
Cadmium	[3.4]		[3.8]	[2.6]	
Calcium	27,800	31,700	29,400	29,000	[87.1]
Chromium			13.8 L		
Cobalt			[11.1]		

Table 3: Safety Light Analytical Results - Organic

Compound	RW-2	RW-4	MW-4	Trip Blank
Methylene chloride	11 B	10 B	11 B	19 J
Tetrachloroethene	2 J		2 J	
bis(2-Ethylhexyl) phthalate		4 B	1 B	
Compound	**MW-5**	**MW-5 (dup)**	**MW-15**	**Field Blank**
Methylene chloride	17 B	14 B	15 B	13 J
Tetrachloroethene	2 J	2 J		
Chloroform				4 J
bis(2-Ethylhexyl) phthalate	2 B	3 B	4 B	14 B

All results are reported in ug/L.

B: Not detected substantially above the level reported in laboratory or field blanks.

J: Analyte present. Reported value may not be accurate or precise.

Attachment

Health Consultation

Radiological Contamination

SAFETY LIGHT SITE

BLOOMSBURG, COLUMBIA COUNTY, PENNSYLVANIA

CERCLIS NO. PAD987295276

APRIL 20, 2000

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

Radiological Contamination

SAFETY LIGHT SITE

BLOOMSBURG, COLUMBIA COUNTY, PENNSYLVANIA

CERCLIS NO. PAD987295276

Prepared by:

Federal Facilities Assessment Branch
Division of Health Assessment and Consultation
Agency for Toxic Substances And Disease Registry

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During the production of the various devices made by SLC, radioactive wastes were placed in two underground silos. When the silos were closed in 1960, the wastes were shipped off-site to licensed radioactive waste burial facilities. Liquid wastes produced on the site were routed to a nearby abandoned canal associated with the Susquehanna River or to a holding tank and evaporator system.

Since the 1960 time frame, various clean up efforts have been undertaken including decontamination of buildings, backfilling of on-site lagoons and removal of soils contaminated with Ra 226. Several events occurred that have resulted in the spread of contamination on the site. These include a flood in 1972 that destroyed the holding tank and evaporator as well as impacting the former canal and east lagoon [1].

The site is completely fenced on all sides and the nearest residences are on Old Berwick Road, across from the site.

The Pennsylvania Department of Health requested that ATSDR review the radiological data associated with on-site contamination and off-site residential wells to determine if the radiological contaminants are present at levels of health concern.

DISCUSSION

Several sampling and characterization studies have taken place. These include: 1) Sampling in 1980 by the Oak Ridge Associated Universities (ORAU) in support of the NRC activities of that era [discussed in reference 1]; 2) Sampling of the river from as early as 1991, the residential Murphy Well (located west of SLC) and the residential Vance/Walton Well to the east [2]; 3) Additional sampling by a technical assistance team (TAT) for the Environmental Protection

Modern day values of H 3 in groundwater have declined to levels between 160 and 320 pCi/L (6 to 12 Bq/L) with the decline attributed to the elimination of atmospheric nuclear weapons testing and radioactive decay. The H 3 concentrations of the Murphy Well ranged from below detection levels to approximately 9600 pCi/L (355 Bq/L) in April 1990. As recently as July 1998, the tritium concentration was measured at 2950 pCi/L (110 Bq/L); albeit since that time, the levels have been less than the minimum detectable activity. In the Vance/Walton Well, the maximum H 3 value was reported in November 1985 at a concentration of 11,300 pCi/L (419 Bq/L). The last positive reporting value was 2177 pCi/L (81 Bq/L) in November 1999 [2].

In 1994, the EPA TAT sampled additional residential wells for Ra 226, Sr 90, Cs 137, and H 3 and 5 on-site monitoring wells. The results show that the residential wells contained H 3 with concentrations ranging from 673 to 2670 pCi/L (25 to 99 Bq/L). On-site monitor wells also showed elevated concentrations of H 3. All values detected were below the MCL. Groundwater from the monitoring well located in the drainage ditch connecting the river to the abandoned canal measured about 70 pCi/L (2.6 Bq/L) Ra 226 and about 120 pCi/L (4.4 Bq/L) for Cs 137. The MCL for Ra 226 is 5 pCi/L (0.19 Bq/L) and for Cs 137, the MCL is 200 pCi/L (74 Bq/L) [3].

In the 1996 characterization study performed by Monserco, samples were collected on site from monitoring wells, soils, and a survey of the grid system with hand-held instruments. Five monitoring wells, between the river and the main buildings tested positive for H 3, Sr 90, and Cs 137. The concentrations detected in these wells were in excess of existing MCL values. Based on the well locations, the contamination appears to be originating from the vicinity of the former silos where H 3, Sr 90 and Cs 137 disposal occurred. The tritium contamination appears only in one additional well associated with the liquid waste building; however, H 3 in the well downgradient of that building did not have elevated levels of H 3. Other monitoring wells downgradient do show H 3 present at levels 20% to 50% of the levels in the liquid waste building well.

A spatial analysis of the contamination in the monitoring wells suggests that Cs 137 may be moving toward the river. Sr 90 also might be migrating toward the river but perhaps not as rapidly as contamination was only found in wells closer to the silo areas. Furthermore, since the initial ORAU study, the concentrations of H 3, Sr 90, Cs-137 reported in the Monserco 1996 characterization report exceed the maximum amounts reported in the 1980 ORAU study.

Analysis of the soils collected from the bore holes produced during construction of the monitoring wells showed that Cs 137 contamination generally follows the same patterns as that seen in the well water samples and that the contamination is present at the soil surface and at a shallow depth (0 to 1.22 meters). Only in 2 wells was contamination deeper (1.83 to 4.27 meters). Overall, contamination generally decreased with depth in all but well M12, approximately 100 meters from the silo area.

To analyze the soil contamination, ATSDR used the screening values developed by the National Council on Radiation Protection and Measurements (NCRP) Report 129 for use at industrial and

CONCLUSIONS

Radioactive materials, specifically, tritium, strontium 90, cesium 137, radium 226, and americium 241, have been used and disposed of in silos, lagoons, and holding tanks associated with the Safety Light Corporation. From these disposal practices, radioactive material has contaminated the on-site areas of the SLC and perhaps nearby off-site residential wells (tritium only). The contaminants in the residential wells are not at levels of public health concern. The amount of land contaminated has been exacerbated by a flood of the Susquehanna River in 1972.

ATSDR has reviewed the environmental sampling data collected during three characterization events from 1980, 1994, and 1995 to 1996. These results show that surface soils are contaminated with cesium 137 and Ra 226 and that the contamination has apparently seeped from the soils to the groundwater. Soil contamination is mostly to the south and southeast of the main buildings as showed by the grid sampling system. Although the contamination has not yet reached the river, data strongly suggest the contamination is migrating in that direction. Additional contamination associated with the site is predominately between the main site buildings and the river but external exposure to ionizing radiation is localized along the outside of the buildings.

Because this site is fenced and is a limited access facility, ATSDR believes the current levels of radioactive contamination or external radiation do not pose a public health threat to members of the public or to the surrounding area outside the SLC fence line. The reasoning behind this finding is based on fact that the highest contamination levels are toward the inside of the facility away from the site boundaries and that no external radiation above an estimated site background of 10 microrem per hour exists at the property fence line. At those grids where the dose rate is greater than 60 microrem per hour, an inadvertent trespasser would have to spend, on average, an estimated 600 hours per year in the contaminated areas or 330 hours per year in the grid with the highest dose rate to reach the federal limit for external dose of 100 millirem per year to members of the public. However, those grids in which the surface soil contamination exceed the recommended screening levels of the NCRP warrant additional evaluation.

In the case of worker exposure, the employees of SLC are considered radiation workers thus their federal exposure limit is 5 times higher than the public dose limit, 500 millirem per year, and they are monitored for radiation exposure and radiation dose. Their exposures and doses, therefore, are the purview of the Nuclear Regulatory Commission or the appropriate Pennsylvania state agency. Nonetheless, if their dose reaches the federal limit or an administrative control limit set by SLC, the circumstances around this elevated dose should be investigated. ATSDR will not consider worker exposure under these circumstances.

In those instances where workers might be exposed to dusts from construction areas, potential concerns exist for inhalation of radiologically contaminated dusts. However, at this time, ATSDR is unaware of any remediation plans in these areas or existing air data to evaluate this potential scenario.