UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

November 4, 2004

Docket Nos. 03005980
03005982

License Nos. 37-00030-02
37-00030-08

Larry Harmon
Plant Manager
Safety Light Corporation
4150-A Old Berwick Road
Bloomsburg, PA 17815

SUBJECT: INSPECTIONS 03005980/2004001 AND 03005982/2004001
SAFETY LIGHT CORPORATION, BLOOMSBURG, PENNSYLVANIA

Dear Mr. Harmon:

On October 15, 2004, we completed a four-month integrated safety inspection at your Bloomsburg, PA facility of activities authorized by the above listed NRC licenses. The inspection was an examination of your licensed activities as they relate to radiation safety and to compliance with the Commission's regulations and the license conditions. The inspection included five visits to your facility to observe licensed activities and site conditions, to conduct interviews with personnel, and to review selected records. Additional information related to radioactive waste management and dose assessment that you provided from July 19, 2004, through October 19, 2004, was also examined as part of the inspection. The findings of the inspection were discussed with you on August 3, 2004, with additional discussions regarding your corrective actions on October 15, 2004. The enclosed report presents the results of this inspection.

Based on the results of this inspection, one violation was identified for failure to dispose of all radioactive waste from your tritium operations within two years of generation in accordance with Condition 18 of License No. 37-00030-08. However, because this violation was of low safety significance, and because you corrected the violation with the disposal of the tritium waste on October 19, 2004, this violation is being treated as a Non-Cited Violation (NCV), consistent with Section IV.A.8 of the "General Statement of Policy and Procedure for NRC Enforcement Actions" (Enforcement Policy), NUREG 1600.

This violation is described in Section IV of the subject inspection report. If you contest this NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region I; and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

REDACTED VERSION

In accordance with Section 2.390 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations (CFR), a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html. Please note that on October 25, the ADAMS system was temporarily removed from public access for information security purposes. We regret this inconvenience, but expect that public access will be partially restored within several weeks.

Your cooperation with us is appreciated.

Sincerely,

/RA/

George Pangburn, Director
Division of Nuclear Materials Safety

Enclosure:
Inspection Report Nos. 03005980/2004001and 03005982/2004001

cc:
Norman Fritz, Radiation Safety Officer, SLC
David Allard, Director, Bureau of Radiation Protection, PA DEP
Robert Maiers, Chief, Division of Decommissioning Facilities, PA DEP
Rick Shipman, Chief, Division of Hazardous Waste Management, PA DEP
Dennis Matlock, On-Scene Coordinator, U.S. EPA RIII
Linda Dietz, Remedial Project Manager, U.S. EPA RIII

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U.S. NUCLEAR REGULATORY COMMISSION
REGION I

INSPECTION REPORT

Inspection No.	03005980/2004001 and 03005982/2004001
Docket No.	03005980 and 03005982
License No.	37-00030-02 and 37-00030-08
Licensee:	Safety Light Corporation
Location:	4150-A Old Berwick Road Bloomsburg, PA 17815
Inspection Dates:	June 24, 2004; July 9; August 3 and 12; and October 15, 2004
Date Followup Information Received:	July 19, 21, 22, 2004; August 19, 2004 and October 29, 2004

Inspectors:

/RA/ ***11/1/2004***

Robert Prince — date
Health Physicist

/RA/ ***10/29/2004***

Donna M. Janda — date
Health Physicist

/RA/ ***10/29/2004***

Marie Miller — date
Senior Health Physicist

Approved By:

/RA/ ***11/4/04***

John D. Kinneman, Chief — date
Security and Industrial Branch
Division of Nuclear Materials Safety

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EXECUTIVE SUMMARY

Safety Light Corporation (SLC)
NRC Inspection Report Nos. 03005980/2004001 & 03005982/2004001

NRC conducted an announced inspection of contaminated buildings, equipment and land in order to review the licensee's ability to maintain a contaminated site and conduct licensed activities associated with tritium operations. The inspection included five site visits by one or more of the following inspectors: Marie Miller, Senior Health Physicist; Robert Prince, Health Physicist; and Donna Janda, Health Physicist. In addition, the Commonwealth of Pennsylvania Department of Environmental Protection observed the NRC inspections and conducted inspection activities under their regulatory authority for radium and hazardous waste management. U.S. Environmental Protection Agency representatives were also onsite for some of the inspection site tours. Areas reviewed included: site maintenance and security, radioactive material storage, radiation exposure controls and radioactive waste management.

The licensee maintained adequate control of radioactive contamination from current and past operations. Required postings were in place to control areas and provide adequate warnings. Information postings for areas that were previously airborne contaminated areas were removed.

Posting of radioactive material storage areas and labeling of storage containers were generally adequate. The licensee was addressing concerns to protect radioactive material storage containers from the weather to maintain integrity of containers and to ensure legibility of labels.

The licensee's radiation exposure monitoring program was adequate for the current site operations. Changing conditions were adequately evaluated and addressed by the licensee's occupational exposure control program. Licensee controls to limit exposures to members of the public are adequate to maintain compliance with dose limits for members of the public.

The licensee disposed of all tritium waste generated during the current license period; however, the licensee did not dispose of a small volume of this waste within two years of generation as required by License Condition 18 of Materials License No. 37-00030-08. Because this violation is of low safety significance and has been corrected, this violation is being treated as an Non- Cited Violation.

REPORT DETAILS

I. Site Maintenance and Security

a. Inspection Scope

The inspector evaluated the licensee's access control measures for restricted areas and unrestricted areas and observed how unlocked areas were controlled during business operations.

The inspector walked around the site perimeter fence, noted the condition of the fence, observed the postings on the fence, and performed a radiation survey of the site perimeter using a micro-R meter. The inspector also toured the site and buildings, observed the general condition of the buildings, and noted the presence of postings and warnings.

b. Observations and Findings

The licensee posts the perimeter fence with signs stating "No Trespassing, Radioactive Materials" to designate the licensee's restricted area. On the north perimeter fence, adjacent to the main access gates, there are additional signs directing visitors to proceed to the main office for processing. The inspector noted that those areas where radioactive material was used or stored were posted as Radioactive Materials Areas in accordance with 10 CFR 20.1902(e). Site employees receive training on maintaining site security, and the inspector observed employees' question unknown visitors, if unescorted. The licensee agreed to lock the western gate of the restricted area during business operations to improve surveillance controls. During follow-up inspections, the inspectors observed that the western gate was maintained locked.

The inspector noted several airborne contamination signs posted on the restricted area fence. The inspector questioned the bases for these information postings and the licensee responded that they were based on historical, conservative measures, associated with the handling of materials containing tritium and that the postings were no longer necessary. During a subsequent inspection conducted on July 9, 2004, the inspector noted that the postings that were not required had been removed from the fence.

The inspector obtained radiation measurements along the perimeter fence line nearest to the outdoor radioactive waste storage area. The highest reading obtained was 400 microRoentgen per hour (μR/hour). The licensee's latest annual site perimeter radiation survey results were in agreement with the NRC survey results. The inspector observed that sections of chain link fencing and posts had been replaced by the licensee due to fallen trees. The licensee stated that they routinely inspect the fencing after severe weather storms.

The Silo Waste Processing Pole Building is maintained locked with the highest dose rates encountered behind the building in a wooded area remote from active work locations. There are no dose concerns to members of the public from radioactive material stored in this building due to the large distance between the building and the restricted area fence line. The inspector noted that

the building and surrounding area was properly posted. The open yard silo waste storage area was properly posted as a Radiation Area with adequate access control measures established to preclude monitoring of licensee personnel.

The inspector observed on June 24, 2004, that a portion of a radioactive material barrier, located in a wooded area behind one of the licensee buildings within the restricted area, was down. This area was posted due to the presence of radioactive material in the ground possibly exceeding levels requiring posting as a radioactive materials area. The licensee had not made a formal determination if radioactive material was present in sufficient quantity requiring posting as a Radioactive Material Area, but that posting had been established during previous site characterization activities. During a subsequent inspection conducted on July 9, 2004, the inspector observed that the missing section of the boundary rope and posting had been re-erected. This violation was of minor safety significance and is not subject to formal enforcement action.

Several of the buildings within the fenced restricted area are dilapidated and have structural integrity concerns. The inspectors noted that these structures did not show evidence of intruders, vandalism or use by the licensee or their tenants, USR Metals. While limited characterization data indicates contaminated areas within these structures, dose rate measurements obtained at the perimeter of these structures were consistent with background. The buildings used for the tritium operations, including sign assembly, counting room, liquid and solid waste storage and loading dock were also in the restricted area and being adequately maintained. There is one building with radioactive contamination in a former sump that is located in the unrestricted area. This building is maintained locked and posted in accordance with 10 CFR 20.1801 to address security of stored materials in unrestricted or controlled areas.

c. Conclusions

The licensee maintained adequate control of radioactive contamination from current and past operations. Required postings were in place to control areas and provide adequate warnings. Information postings for areas that were previously airborne contaminated areas were removed.

II. Radioactive Material Storage

a. Inspection Scope

The inspectors evaluated the licensee's controls associated with the onsite storage of legacy radioactive waste material controlled by License No. 37-00030-02. The inspectors reviewed selected records relating to the characterization of stored radioactive material and associated radiological surveys records. The inspection consisted of observations, interviews with cognizant personnel and the performance of independent radiological surveys.

b. Observations and Findings

The licensee maintains two primary onsite storage areas for the storage of legacy radioactive waste materials that had been excavated from underground silos in 1999. These materials are

packaged and are currently stored in two primary storage areas within the SLC restricted area. One storage area is located outdoors,

The inspector toured the storage locations and obtained survey readings at various locations to confirm that radiation exposure to unmonitored employees and members of the public were within regulatory limits. Storage containers were observed for material condition and the presence of labeling. Radiological barriers were noted to be established with dose rates maintained at less than 5 millirem per hour (mrem/hour) at the posted boundaries. The inspector reviewed surveys performed by the licensee on April 8, 2004, for the two radioactive waste storage areas.

The drums and containers located in the outdoor storage area are covered with tarpaulins to protect the containers from exposure to rain and the elements. The inspector noted that a portion of the tarpaulin cover had fallen down, exposing several containers and 55-gallon drums to rain. Low portions of the tarpaulin had collected small amounts of standing rain water where the covering had sagged. In addition a portion of the tarpaulin had collapsed into an open area, approximately two feet by four feet in size, in between storage containers trapping approximately 100 gallons of rain water. Some of the observed labeling was non-legible as a result of becoming wet after exposure to rain. The container identification numbers were permanently marked and those that could be observed by the inspector appeared to be adequate.

On August 19, 2004, the licensee discussed their plans to dispose of the waste ready for shipment and move the containers from the outside storage area to an inside storage area. An accurate inventory would also be obtained during the re-handling of the containers. On October 15, 2004, the licensee's contractor described the scope of work, the need for additional shielding for the stored waste, and the proposed schedule. This area will be reviewed during a future inspection.

c. Conclusions

Posting of radioactive material storage areas and labeling of storage containers were generally adequate. The licensee was addressing concerns to protect radioactive material storage containers from the weather to maintain integrity of containers and to ensure legibility of labels.

III. Radiation Exposure Controls

1. Occupational Radiation Exposure Controls

a. Inspection Scope

The inspector evaluated the licensee's occupational radiation exposure controls. The inspector reviewed selected records, observed radiological postings and access control measures. The inspection consisted of observations and interviews with cognizant personnel. In addition, the inspector reviewed dose calculations provided by the licensee.

b. Observations and Findings

The licensee is currently engaged in work activities that involve the manufacture and distribution of devices containing tritium. The licensee's occupational radiation monitoring program is primarily based on tritium exposure. Consequently the licensee does not require the use of external personnel dosimetry badges, but does conduct a routine bioassay program for tritium. The inspectors observed access control measures and radiological postings established to maintain employee exposures at levels not requiring the use of monitoring. Interviews with the Radiation Safety Officer (RSO) indicate that employees are instructed during general employee radiological protection training and annual re-training not to enter areas of the facility containing legacy wastes or those areas otherwise contaminated as a result of prior operations involving these materials. The inspector noted that these areas were generally maintained locked, and in some cases physically barricaded to preclude entry, with the RSO maintaining custody of keys. The inspector reviewed the administrative controls established to access areas that contain residual fixed contamination. No safety concerns were identified.

Two individuals, the health physics (HP) technician and the Production Manager, have a work station (counting area) and office, respectively, in the southeast corner of the Tritium Building. This portion of the building is the closest, routinely occupied area to the silo waste storage area. The inspector conducted an independent radiation survey of the routinely occupied areas using a microR meter. The highest exposure rate readings in the HP technician work area were approximately 80 µR/hour at the counting area. Exposure rate readings in the Production Manager's office were approximately 70 µR/hour. The HP technician spends approximately two to three hours per day in the counting area while the Production Manager spends up to six hours per day in his office. Discussions with the individuals revealed that, when not in these locations, both individuals are working in areas of the SLC property which are at or near background exposure rate levels, or are otherwise further away from the silo waste storage area. Based on dose rates and occupancy times, the inspector determined that annual exposures for these two individuals were less than that requiring monitoring per 10 CFR 20.1502. This conclusion is also supported by dose estimate calculations provided by the licensee to NRC on July 19, 2004. The dose calculations accounted for potential dose exposure pathways for these two individuals for typical work hours and locations of work.

While other licensee employees do not work in or frequent the silo waste storage areas, the Radiation Safety Officer does conduct some work in areas with higher dose rates. While the licensee had demonstrated that the RSO's exposure estimate was below the required monitoring limit, additional surveillances in these higher dose rate areas were expected based on the need to perform weekly hazardous waste storage inspections. During a subsequent inspection conducted during this inspection period, the licensee informed the inspector that the RSO has drafted a prospective evaluation of workers' doses and was providing dosimetry to the RSO, HP technician and maintenance worker. The dosimetry results would be reviewed monthly and would become part of the individuals' exposure history. No safety concerns were identified.

c. Conclusions

The licensee's radiation exposure monitoring program was adequate for the current site operations. Changing conditions were adequately evaluated and addressed by the licensee's occupational exposure control program.

2. Radiation Exposure Controls for Individual Members of the Public

a. Inspection Scope

The inspector evaluated the licensee's controls associated with limiting radiation exposure to members of the public. The inspector reviewed selected records, observed radiological postings, and evaluated site access control measures.

b. Observations and Findings

The inspector toured the restricted area site boundary with licensee personnel. The inspector noted that the material condition of the boundary fence was adequate and appropriately posted. The inspector observed two access gates located on the east and west ends of the northern restricted area perimeter fence. Discussions with cognizant personnel indicate that these two gates are normally maintained open during normal business hours. The inspector measured radiation levels along the fence line and at boundary areas accessible to members of the public. In addition licensee survey records of the site boundary line were reviewed. The inspector noted that radiation levels along the vast majority of the site boundary fence line ranged from six µR/hour to 20 µR/hour. The highest reading of 400 µR/hour, measured approximately one meter above ground level, was encountered adjacent to an area where the legacy silo radioactive waste is currently stored as noted in Section I of this report.

The inspector noted that the licensee uses a combination of administrative controls that includes posting at entrances to the restricted area, processing of visitors through the main office building and employee training that emphasizes the need for employees to be observant of visitors or the presence of unauthorized individuals on company property. The inspectors interviewed several employees regarding their training, and this knowledge was demonstrated by the employees, when the inspectors observed their actions with unknown or unauthorized individuals within the restricted area.

Due to the rural location of the SLC facility, the presence of licensee employees during normal business hours and the unlikely event that a member of the general public would linger along the fence line for any significant period, it is unlikely that members of the general public would receive any exposure in excess of regulatory limits. The inspector requested that the licensee evaluate the parameters and assumptions utilized to demonstrate compliance with dose limits to members of the public based on the highest restricted area boundary dose rate level. The licensee provided this information on August 12, 2004. The calculated potential doses were below NRC dose limits of 50 mrem/year from the external exposure pathway. The licensee had not previously documented this evaluation, because of the unlikelihood of a member of the public spending much time by the fence line. The licensee agreed to maintain these records of

potential doses to individual members of the public in accordance with 10 CFR 20.2107. The failure to maintain a record of this evaluation is a violation of minor safety significance and is not subject to formal enforcement action.

c. Conclusions

Licensee controls to limit exposures to members of the public are adequate to maintain compliance with dose limits for members of the public.

IV. Radioactive Waste Management

a. Inspection Scope

The inspector reviewed the management of the licensee's radioactive waste program for tritium operations. The inspector reviewed the licensee's records of waste disposal and observed the storage of radioactive waste in the Solid Waste Storage Building.

b. Observations and Findings

On July 9, 2004, the inspector met with the Safety Light Plant Manager to discuss management of the radioactive waste program for tritium operations. Additional information was provided to the inspector on July 21 and July 22, 2004, regarding radioactive waste disposal and this information was evaluated with the licensee on October 15, 2004.

On November 28, 2001, the licensee shipped for disposal approximately 10.6 curies (Ci) of radioactive waste containing tritium in the form of foils and liquid scintillation vials. This shipment was for the total amount of waste generated between January 1, 2000, and September 30, 2001. Between October 1, 2001, and September 30 , 2003, the licensee generated approximately 58 Ci of radioactive waste containing tritium in the form of foils/targets and approximately 213 mCi of tritium in liquid scintillation vials. On November 19, 2003, the licensee shipped the liquid scintillation vials, totaling 122 cubic feet (ft^3) of waste for disposal.

On December 10, 2003, NRC was notified by the licensee that they would not make the waste shipments for 58 Ci of waste in the form of tritium foils or targets. The licensee stated that there were no allotments for land disposal or recycling options available at a reasonable cost in 2003. During subsequent inspections conducted during the period from June 24 through October 19, 2004, the licensee stated that they were working to dispose of this waste. On July 22, 2004, the licensee stated that what they had previously considered waste, was re-classified as radioactive material. They removed from the site 51 Ci as radioactive material for re-use, and 7 Ci of tritium foils/targets remained as waste. On October 19, 2004, the licensee disposed of the remaining 7 Ci of waste, and an additional 24 Ci of low level dry active waste that were generated between October 1, 2003, and July 9, 2004.

Condition 18 of Amendment No.14 of License No. 37-00030-08 states that radioactive waste generated after January 1, 2000, from the operations under this license shall be analyzed at least once each year, and shall be disposed of within two years of generation, providing a waste disposal site is open.

Contrary to the above, from January 1, 2004, through October 19, 2004, the licensee had not disposed of all its radioactive waste that had been generated from January 1, 2002, through December 31, 2003. While 51 of the 58 Ci of tritium foils that remained in storage as of January 1, 2004, were recycled to another licensee for re-use, 7 Ci of tritium foils were not disposed of until October 19, 2004. This violation is considered a Non-Cited Violation (NCV), because it was self-identified, non-repetitive, and corrective actions were taken in accordance with the NRC Enforcement Policy, NUREG-1600.

The licensee also acknowledged that it would not be able to meet License Condition 19 by December 31, 2004, that requires removal of the legacy tritium waste generated before 2000, which is approximately 8,600 Ci (1800 ft^3). This matter will be evaluated as part of the licensee's license renewal request, which is currently under consideration by the staff.

c. Conclusions

The licensee disposed of all tritium waste generated during the current license period; however, the licensee did not dispose of a small volume of this waste within two years of generation as required by License Condition 18 of Materials License No. 37-00030-08. Because this violation is of low safety significance and has been corrected, this violation is being treated as an NCV.

IV. Meetings

The inspector met with the licensee representatives listed below at the end of each site visit. The scope of the inspection, the inspector's observations and conclusions were summarized.

NRC inspectors conducted an exit meeting with Safety Light representatives by telephone on August 3, 2004. The inspectors discussed the preliminary findings of the inspection with the licensee including the apparent violation for failure to dispose of radioactive waste generated after January 1, 2000, within two years of generation. The inspectors also discussed with the licensee that decisions regarding apparent violations are not made until all of the information is reviewed. The licensee stated that they were currently attempting to dispose of the foils/targets containing tritium. On October 15, the licensee discussed its plan to take corrective actions and dispose of all the remaining tritium waste generated during the current licensed period.

V. Partial List of Persons Contacted

Licensee:

*#Larry Harmon, Plant Manager
*#Norman Fritz, Radiation Safety Officer

Others:

Andy Gardosik, PADEP
Bryan Werner, PADEP
Patrick Brennan, PADEP
Jeffrey Whitehead, PADEP
Bob Maiers, PADEP
Dennis Matlock, U.S. EPA Region III
Linda Dietz, U.S. EPA Region III
Peter Schaul, U.S. EPA Region III
Anthony Dappolone, U.S. EPA Region III

* present at entrance meeting
# present at exit meeting