

JUN. 16 1989

Docket Nos: 030-05980
030-05982

License Nos: 37-00030-02
37-00030-08 ✓

Safety Light Corporation
ATTN: Mr. Jack Miller
4150-A Old Berwick Road
Bloomsburg, Pennsylvania 17815

Gentlemen:

Subject: Plan to Characterize Radioactivity at Bloomsburg Site

On March 16, 1989, the NRC issued an Order to Safety Light Corporation, USR Industries, Inc., and other related "Corporations" which requires, in part, the submission, by May 1, 1989, of a joint plan to characterize the radioactivity at the Bloomsburg site. The Corporations subject to the Order subsequently requested, and were granted, a delay in the submission of the plan until June 2, 1989. On June 2, 1989, a Joint Characterization Plan (JCP) was hand-delivered to NRC Region I. On June 6, 1989, the appendices to the JCP were sent to NRC Region I by telecopier.

We have reviewed the June 2, 1989 JCP and the appendices and have determined that this submittal is in apparent violation of the requirements of the March 16, 1989 Order. Enclosure 1 to this letter specifies requirements of the Order which, as of June 16, 1989, apparently have not been met. Enclosure 2 describes further apparent technical deficiencies in the JCP as submitted.

As discussed during a June 14, 1989 telephone conversation between you and Mr. James H. Joyner of this office, in light of the apparent violations of the requirements of the March 16, 1989 Order, we have scheduled an Enforcement Conference to be held at our office in King of Prussia, Pennsylvania at 10:00 a.m. on July 6, 1989. We understand that you will attend this meeting. The purpose of the Conference is to provide you the opportunity to point out any errors in our evaluation of your response to the Order, to describe any aggravating or mitigating circumstances, and to explain what corrective actions (such as submission of a modified JCP) will be taken to achieve full compliance with the Order.

Our primary objective, as described in the Order, is to obtain action to survey, stabilize, and decontaminate the Bloomsburg site. We emphasize that since June 2, 1989, the Corporations have been in apparent violation of the March 16, 1989 Order issued to accomplish this objective. Continued failure to provide the action required by the Order and described in the enclosures to this letter may result in further enforcement action, including, but not limited to the following: civil penalties; suspension of any and all NRC licenses of Safety Light and the other corporations; injunctions pursuant to

OFFICIAL RECORD COPY

SAFETY LIGHT PLAN - 0001.0.0
06/08/89

1E:07
1E:07

JUN 16 1989

Safety Light Corporation

2

Section 232 of the Atomic Energy Act of 1954, as amended (42 U.S.C. Section 2280); and/or, referral to the Department of Justice for possible prosecution for willful violation of the March 16, 1989 Order. The NRC Enforcement Policy is described in Appendix C of 10 CFR Part 2, a copy of which is enclosed for your information. Directions to the NRC Region I office are also enclosed.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosures will be placed in the NRC Public Document Room. No reply to this letter is required. Should you have any questions prior to or in preparation for the enforcement conference, please contact Mr. Joyner (215-337-5370).

Sincerely,

William T. Russell
Regional Administrator

Enclosures:

1. Failures to fulfill requirements of the March 16, 1989 Order
2. Technical deficiencies of the Joint Characterization Plan
3. 10 CFR Part 2
4. Directions to the NRC Region I Office

cc:

Public Document Room (PDR)
Nuclear Safety Information Center (NSIC)
Commonwealth of Pennsylvania

Michael O'Donoghue, Esq.
Wister, Pearlstine, Talone, Craig & Garrity
515 Swede Street
Norristown, PA 19401-4880

JUN. 16 1989

Safety Light Corporation

3

bcc:
 Region I Docket Room (w/concurrences)
 Management Assistant, DRMA
 F. Costello, RI
 J. Kinneman, RI
 L. Bettenhausen, RI
 J. Joyner, RI
 M. Knapp, RI
 J. Gutierrez, RI
 D. Holody, RI
 M. Weber, NMSS
 M. Bell, NMSS
 G. Sjoblom, NMSS
 J. Lieberman, OE
 R. Weisman, OGC

<i>Fm c</i> RI:DRSS Costello 6/15/89	<i>Fm c</i> RI:DRSS Kinneman 6/15/89	<i>MBS</i> RI:DRSS Bettenhausen 6/15/89	<i>Joyner</i> RI:DRSS Joyner 6/15/89	<i>Knapp</i> RI:DRSS Knapp 6/15/89
<i>Gutierrez</i> RI:DR Gutierrez 6/15/89	<i>Martin</i> RI:DRA Martin 6/15/89	<i>Russell</i> RI:RA Russell 6/16/89	<i>Lieberman</i> HQ:OE/ Lieberman 6/ /89	<i>Weisman</i> HQ:OGC Weisman 6/ /89
				<i>Sjoblom</i> HQ:NMSS Sjoblom 6/ /89

OFFICIAL RECORD COPY

SAFETY LIGHT PLAN - 0003.0.0
06/08/89

ENCLOSURE 1

Failures to fulfill requirements of the March 16, 1989 Order

- A. The Order requires that, by June 15, 1989, "Safety Light Corporation ...post the premises as required by 10 CFR Part 20 and ...control access to all contaminated areas at the Bloomsburg facility by a fence or other suitable means so as to create a restricted area...."

Although efforts to enclose the contaminated areas were in progress, as of June 16, 1989, a restricted area had not been created.

- B. The Order requires that "a corporate officer, not lower than the President, from each of the Corporations shall certify, under oath or affirmation, to the accuracy of the information contained in the site characterization plan and to the intent on behalf of the corporation to implement the plan."

Neither the JCP nor the cover letter is signed by a corporate officer of each organization that received the Order. There is no certification as to the accuracy of the information contained in the JCP or to the intent (on behalf of each corporation) to implement the plan.

- C. The Order requires that "the plan shall specify the amount of funds that each of the Corporations is to provide for implementation of the plan."

Neither the JCP nor the cover letter specify funding as required by the Order.

- D. The Order requires that "the plan shall describe in detail how a complete radiological and geohydrological survey of all facilities and of the surrounding surface and subsurface soil and groundwater will be conducted in order to fully determine the radionuclide concentrations and their lateral and depth profiles, as well as their movement in the groundwater and soil."

The JCP describes neither a radiological nor a geohydrological survey sufficient to determine the radionuclide concentrations and their lateral and depth profiles, as well as their movement in the groundwater. Enclosure 2 describes the technical deficiencies in the JCP which make it insufficient to make the required determinations.

- E. The Order requires that "the plan shall include, but not be limited to, provisions to address the issues contained in the 1988 NRC Environmental Evaluation of the Safety Light Corporation Site, Bloomsburg, Pennsylvania".

1. Section 6.1 of the Environmental Evaluation states that "tritium has been detected in off-site groundwater at concentrations in excess of EPA's Maximum Contaminate Level (MCL) for drinking water. However, the source of the tritium contamination in groundwater is presently unknown. Therefore, decontamination of the source of tritium contamination in groundwater should be deferred until the site has been sufficiently characterized to identify the source and determine how best to dispose of it."

The JCP does not include provisions which address the characterization of the source of tritium contamination in groundwater.

2. Section 6.1 of the Environmental Evaluation states that "although the lagoons and draining canals may be releasing contaminants to soil and groundwater, these sources either have been or are being used for discharge of non-contaminated effluents. It is unknown whether their continued use will further exacerbate contamination at the site. The characterization program described ...shall assess the extent to which these sources are actively releasing contaminants to the environment."

The JCP does not include provisions which address the assessment of the extent to which the lagoons and drainage canals are actively releasing contaminants to the environment.

3. Section 6.2 of the Environmental Evaluation states that "source term characterization and contaminant transport assessment should be emphasized prior to selection and design of decontamination activities. The characterization program should place special emphasis on determining the extent and significance of Sr-90 contamination in groundwater."

The JCP does not include provisions which address either source term characterization and contaminant transport assessment or the determination of the extent and significance of Sr-90 contamination in groundwater.

4. Section 3 of the Environmental Evaluation states that "in addition to sources of contamination located on site, sources of radiological contamination may exist off site, i.e., soil contaminated with Cs-137 on the property immediately east of the Safety Light property. Soil contaminated with Cs-137 was detected by the licensee in the backyard of the property east of the site. Much of the contamination was removed from this property and dumped on site. However, recent gamma surveys on the adjacent property still indicate residual Cs-137 contamination of the soil."

The JCP does not include provisions which address the characterization of sources of radiological contamination which may exist off-site, in general, or on the adjacent property, in particular.

5. Section 4 of the Environmental Evaluation states that "the elevated concentrations detected in the Vance/Walton well appear to be caused by transport of contaminated groundwater off-site. Additional information is necessary to assess the extent and rate of the off-site transport."

The JCP does not include provisions which address the assessment of the extent and rate of the off-site transport of contaminated groundwater.

6. Section 5.3 of the Environmental Evaluation states that "because of variations in the direction of the hydraulic gradient and limitations of previous sampling programs, it is unknown whether Sr-90 and other radionuclides besides tritium have also been transported off-site in groundwater."

The JCP does not include what actions will be taken to determine whether or not Sr-90 and other radionuclides besides tritium have also been transported off-site in groundwater.

Technical Deficiencies of the Joint Characterization Plan (identified by page number of JCP)

1. Page 3

The Joint Characterization Plan (JCP) asserts that operations at the site since the later 1960's have not contributed to radioactive contamination of the site. The JCP, however, does not support the technical basis for this assertion. Specifically, it is unclear how this statement can be reconciled with how inaction in site cleanup since the 1960's has contributed to the spread of radioactive contamination both on and off the site. In addition, the assertion may be inconsistent with conclusions based on available groundwater monitoring data from the site that indicate large temporal and spatial variability in tritium concentrations. The Corporations should either provide a technical basis for this assertion or revise the JCP by removing the assertion until after sufficient site characterization information has been collected and assessed.

2. Page 4

The JCP proposes a six-part evaluation of the stability of radioactive materials onsite and of potential impacts on nearby residents. This evaluation, however, is incomplete because it does not specifically include characterization and assessment of radionuclide transport in groundwater beneath the site. Such characterization and assessment should include the types of hydrogeologic information discussed in the 1988 NRC Environmental Evaluation of the Safety Light Corporation site. The Corporations should reevaluate activities necessary to complete the evaluation of contamination and impacts and specifically include provisions for collecting and assessing hydrogeologic information to determine the extent, rate, and direction of radionuclide transport in groundwater under existing conditions and in the future.

3. Pages 9 and 11

The JCP focuses, in part, on validating analytical data previously developed by an NRC contractor, Oak Ridge Associated Universities (ORAU). Although such validation may be useful to the Corporations and is important for continuity with previous assessments, planned activities should be sufficient to characterize the existing three-dimensional extent and type of radiological contamination independent of the ORAU study. In particular, the JCP cannot rely completely on NRC-sponsored studies to conclude that Category I areas are representative of background and, therefore, require no additional characterization. The Corporations should revise the JCP to ensure that planned activities are independently sufficient to characterize the extent of contamination. Such revisions

should include a plan to conduct a radiological survey of Category 1 areas and collection and analysis of unbiased soil samples on an appropriate grid scale.

The JCP states that "selected portions" of Category 2 and 3 areas may require more comprehensive characterization. This statement, however, is ambiguous because it does not provide criteria for selecting those portions that require more detailed characterization. The Corporations should revise the JCP to describe clearly the extent and detail of proposed site characterization activities, including gamma surveys, soil sampling, and groundwater sampling.

4. Page 11

The resolution of the surveys proposed by the licensee is not sufficient to characterize the extent of radiological contamination of soils. Page 74 of NUREG/CR-2082 (enclosed) provides generic guidance on grid sizes ranging from 1 to 3m in highly contaminated areas to 10 to 20m in areas that are expected to be representative of background conditions. The smaller grid sizes appear more appropriate for the Safety Light site because the site itself is relatively small (about 200x200m), maximum dimensions of contaminant sources are generally less than 10m, and previous soil and groundwater sampling by ORAU indicates large spatial variability on scales of meters. In accordance with guidance provided in NUREG/CR-2082, the Corporations should consider surveying Category 2 and 3 areas on a much finer grid or provide a justification for a grid which differs from that recommended by the NUREG.

5. Page 12

The soil sampling program proposed in the JCP is inadequate to characterize the extent and type of radiological contamination. Specifically, the JCP does not adequately describe or justify the scope, location, and procedures to be used for soil sampling. For example, the JCP does not justify the selection of a 3-foot sampling depth for surface samples. This method could inappropriately dilute contamination levels if only the surface of the soil was contaminated. Depth-discrete samples are required to assess the vertical extent of radiological contamination. Such sampling can be integrated with gamma-logging calibrated for the site to reduce the overall cost of sample collection and analysis. Further, the sampling program needs to assess the depth of radiological contamination, which may be considerably below the 3-foot depth proposed in the JCP. Observations of the site by Meiser and Earl indicated potential contamination at least seven feet deep in the canal area. The JCP needs to characterize the type and vertical and lateral extent of contaminated material associated with such diverse sources as the disposal silos, old injection well, backfilled canal, waste water lagoons, and disposal pits. Such information could be collected by continuous or depth-discrete

sampling (e.g., coring or split spoon sampling) and gamma logging. The Corporations need to revise the JCP to describe and justify, in detail, an adequate soil sampling and analysis program to assess the extent and type of radiological contamination, including contaminated materials associated with known disposal activities.

6. Page 12

The list of radionuclides to be analyzed in soil and water samples is inadequate because it omits significant radiological and non-radiological constituents that are known or suspected to occur at the site. Specifically, the Corporations' sampling program needs to analyze for the following radionuclides in addition to Ra-226, Cs-137, and Sr-90: H-3, C-14, Co-60, Ni-63, Np-237, U-238, and Am-241. These radionuclides are appropriate for inclusion in the sampling program because they were used on site and their half-lives are sufficiently long to expect that they may still be present at significant activities in soil or water. In addition, the JCP program should include consideration of non-radiological constituents and parameters in water samples (e.g., pH, total dissolved solids, specific conductance, temperature, major and minor cations and anions, trace metals, total organic carbon, and total organic halogens). Concentrations of non-radiological constituents and parameter values are necessary to assess the potential for radionuclide transport and the reliability of the groundwater sample analyses. Analysis for nonradiological constituents may also indicate the presence of hazardous wastes that may have been disposed along with the radiological wastes on the site. The Corporation should consider revising the JCP to justify the selection of a comprehensive list of radiological and non-radiological constituents and parameters for analysis of soil and water samples.

7. Page 12

The JCP's use of a threshold of twice-background radiation to determine the need for soil sampling may be inappropriate. The surface survey may not be adequate to detect significant alpha- or beta-emitting radionuclides that lie below the land surface. The Corporations should revise the soil sampling program to provide for the collection and analysis of samples to characterize the extent and type of radiological contamination and specify a minimum detectable activity for these surveys.

8. Page 13

See comment on page 4. The Corporations need to revise the JCP to ensure that the hydrogeologic characterization program is adequate to estimate existing and future directions of radionuclide transport in groundwater.

9. Page 13

The JCP provides for collection of groundwater samples once a month for a period of three months at a limited number of wells. The JCP does not justify the frequency and location of samples based on analysis of existing site information, such as highly variable tritium concentrations in groundwater. Analysis of the information in ORAU's environmental survey and NRC's Environmental Evaluation indicates that the proposed frequency of sampling and the locations of wells will not be adequate to characterize the extent and rate of migration of existing groundwater contamination beneath the site. In addition, the JCP does not describe or reference appropriate procedures for the collection, preservation, transportation, analysis, and evaluation of groundwater samples. The Corporations need to revise the JCP to describe and justify a groundwater sampling program that is adequate to characterize the spatial and temporal variation of concentrations of radiological and nonradiological constituents in groundwater beneath the site.

10. Page 15

The JCP should specify the personnel from IT Corporation who will be involved with this project, and describe their training and specific experience in similar projects.

11. Page 18

The JCP states that the Corporations will evaluate the analytical data and draw conclusions "about the present and anticipated radiological conditions at the Bloomsburg site." The JCP does not, however, describe the scope and procedures for the Corporations' assessment of the data and how the Corporations will reach conclusions. For example, do the Corporations intend merely to compile the data and discard outliers, or to assimilate the information by using such techniques as geochemical and groundwater transport modeling? The Corporations should revise the JCP to describe in detail how the site characterization data will be evaluated to determine the extent of radiological contamination, existing and future rates and directions of radionuclide transport, and any other objectives of the characterization program.

12. Page 18 and 19

The JCP states that characterization data will be compared with limits in 10 CFR Part 20 and 40 CFR Part 192 (probably 192.12(b)(2)). Such a comparison does not appear appropriate and is not justified in the JCP by the Corporations. For example, the use of radionuclide concentration limits in Appendix B of 10 CFR Part 20 would allow human exposures to radionuclides in drinking water considerably in excess of EPA's drinking water limits in 40 CFR Part 141. The Corporations should revise the JCP