

REGULATORY INVESTIGATION REPORT
DIRECTORATE OF REGULATORY OPERATIONS
REGION I

Subject: Radiation International, Inc.
Nuclear Division
25 Eastmans Road
Parsippany, New Jersey 07054
License No. 29-12649-05

Type "B" Case: Reported film badge exposure of 7,590 millirems,
gamma exposure during the period from March 25
to April 24, 1972.

Period of Investigation: June 7, 1972

Investigator: R. H. Smith
for Eugene Epstein, Radiation Specialist

July 11, 1972
Date

Reviewed by: R. H. Smith
R. H. Smith, Acting Senior, Materials
Radiological Safety Section

July 31, 1972
Date

REASON FOR INVESTIGATION

Based on a telephone call from the subject licensee on May 26, 1972, an investigation was conducted to determine the facts surrounding a film badge exposure of 7,590 millirems whole body gamma for the period March 25 to April 24, 1972.

SUMMARY OF FACTS

A film badge dosimeter worn by [] showed 7,590 millirems for the period from March 25 to April 24, 1972. The film badge report of the dosimetry processor was received by the licensee on May 22, 1972, but was not reviewed by the Radiation Safety Officer (RSO) until May 26, 1972. Following the report of the exposure to Region I on May 26, 1972 the RSO later determined that [] had left his film badge in one of the cells during an irradiation of some samples and that the exposure had not been received by []. The licensee has contacted their employees to emphasize the proper wearing and use of film badges. The licensee is also appointing an alternate Radiation Safety Officer to review the results of film badges when they are received.

One item of noncompliance was noted during the investigation as follows:

10 CFR 20.403(b), "Notifications of incidents", requires, in part, that each licensee shall within 24 hours notify the Director of the appropriate Atomic Energy Commission Regional Regulatory Office by telephone and telegraph of any incident involving licensed material possessed by him which may have caused or threatens to cause exposure of the whole body of any individuals to 5 rems or more of radiation.

Contrary to the above, the Region I office of the Atomic Energy Commission was notified on May 26, 1972, of a film badge result of 7,590 millirems that was known by the licensee on May 22, 1972. (Resulted from the incident) See paragraphs 4 and 5 of DETAILS.

PERSONS CONTACTED OR INTERVIEWED

A. Perrin, Assistant General Manager
G. Dietz, Manager of Irradiation Facility
G. Taylor, Radiation Safety Officer
W. McKimm, Hot Cell Operator

DETAILS

Introduction

1. At 3:00 p.m. on May 26, 1972, E. Epstein received a telephone call from Mr. George Taylor, Radiation Safety Officer (RSO) Consultant for Radiation International, Incorporated, (R.I.) Parsippany, New Jersey, stating that the film badge worn by an employee named [] indicated a whole body gamma exposure of 7,590 mrem during the period from March 25 to April 24, 1972. Mr. Taylor stated that the employee had made several entries into the irradiation cells during this period and that the exposure may have been due to some rush work of irradiating specimens or that the source storage shield plug may not have been sealed properly. He also stated that [] had been restricted from further work with licensed material and an investigation was being conducted to determine the cause of the film badge exposure.
2. At 2:00 p.m. on May 30, 1972, E. Epstein received a telephone call from Mr. Taylor, stating that he had contacted the Landauer Company regarding the film exposed in the badge and the company stated that the film was evenly exposed with no indication of light damage. Mr. Taylor stated that the exposure appeared to be valid and that he would continue his investigation. RO:I scheduled an investigation of the reported exposure incident to determine the cause of the exposure.
3. An inspection of the subject licensee was conducted on May 17, 1972, and noncompliance was observed regarding the failure to submit reports required by 10 CFR 20.407(b)(1); 10 CFR 20.407(b)(2) and failure to leak test sealed sources on a six month frequency.

Interviews

G. W. Taylor, Radiation Safety Officer

4. Taylor was interviewed on June 7, 1972 at the irradiation facility and stated that he visits the facility once each week and performs the required health physics functions. He stated that prior to May 1, 1972, R.I. had a full time assistant R.S.O, however, the assistant was laid off along with eight other employees. Taylor stated and a review by the investigator of the Landauer film badge report which had a date stamp affixed, affirmed that the film badge report for the period from March 25, to April 24, 1972, was received by R.I. on May 22, 1972. Taylor stated that it was not reviewed by anyone until his regular visit on May 26, 1972 and at this time he notified RO:I by telephone and TWX.

5. Taylor stated that on May 26, 1972, he believed the exposure to be valid. He also stated that at the time he telephoned RO:I on May 30, 1972, to report the film observations made by Landauer that he believed the exposure to be valid. Taylor stated that after May 30, 1972, he learned that [] had left his film badge in Cell No. 1 on April 20, 1972, under irradiation conditions resulting in the 7,590 mrems appearing on the film badge.

Irradiation Facility

6. [] stated he recalled that during the latter part of April, [] returned his film badge to him. [] according to [] did not tell him that he found the film badge inside of Cell No. 1. [] stated he never entered the hot cell alone and always entered with [] to assist him in moving packages and arranging a particular array of samples for a prospective customer. [] stated he never entered the hot cell while sources were exposed and that at each entry [] had a Jordan (Rad-Gun) survey meter with him and used the meter to monitor radiation levels when entering.
7. [] stated he always wore his film badge clipped to his pants belt on the right side and a self reading dosimeter pencil in the right breast pocket of his shirt. He stated the dosimeter pencil never showed more than 10 millirem exposure during any entry and he made no more than 10 entries along with [] during the time period involved.

8. [] stated he fixed the date he found [] film badge in Cell No. 1 as April 20, 1972 because, according to his written log, it was the first day he did a particular job for one customer. He described the experiment as follows:
- Electronic components were brought into Cell No. 1 on a rolling cart which was level with the height of the passport between Cell No. 1 and Cell No. 2. He stated Dietz assisted him in this operation.
 - Sources in Cell No. 2 consisting of 145,000 Ci Co-60 were raised and the passport window, a lead shield in Cell No. 1 side was raised. This shield is lead 5 3/8" thick, 12" x 18". A similar shield exists on Cell No. 2 side of the passport. He stated that on that day he only made alignment measurements and did not raise the passport window on the Cell No. 1 side.

9. [] stated that [] helped him for 10 or 15 minutes with the set up and the dose rate at that time in Cell No. 1 was 5 mrem/hr. He stated that after the set up the shield on the Cell No. 1 passport side was raised and exposed for 4 hours. [] stated that after lowering the sources in Cell No. 2, he entered Cell No. 1 and found [] film badge lying on the rolling table on which the electronic components lay. He returned the film badge to [] the next day, but neglected to tell him that the badge was found inside of Cell No. 1. [] log book verified his statement and an entry in the log book recorded the dose rate at that time to the electronic components as 1.5 rem/hour.

Re-enactment of Exposure

10. [] made a re-enactment of the exposure which was observed by the investigator. The same rolling cart was placed in Cell No. 1. Two Jordan "Rad-Gun" survey meters were placed on the cart at the location where [] stated he found the film badge. The sources in Cell No. 2 were raised. Radiation levels in Cell No. 1 did not exceed 5 mr/hr with both passport door shields closed.

Cell No. 1 was locked and [] at the front of Cell No. 1 raised the lead passport shield on the Cell No. 1 side of the passport by pressing a button. The scale of the survey meters was immediately visible to the investigator through the view glass of Cell No. 1 and were noted to read 1.5 rem/hr. which in 4 hours would give approximately 6 rems dose to the Jordan survey meters. Taylor displayed his calculations which showed a dose rate of 2.0 rem/hr which would result in a dose of 8 rems at the point the film badge was located.

Management Summation

11. The item of noncompliance was discussed at a conference held at the licensee's facility immediately following the investigation. Mr. Austin Perrin, Assistant General Manager stated he was acting for the General Manager, Mr. John Masefield. It was pointed out to Perrin and Taylor by the investigator that some person should be responsible for health and safety at all times rather than only a once a week review such as that performed by Taylor from May 1, 1972 to May 26, 1972.

Perrin stated that he would delegate someone to act as a radiation safety officer during the absence of Taylor and that immediate action would be taken.