



THE CATHOLIC UNIVERSITY OF AMERICA

Radiation Safety Office
Washington, D.C. 20064
202-635-5206

4 May 1988
DOCKET 030-00638
LICENSE 08-02075-03

USNRC
Document Control Desk
Washington DC 20555

SUBJECT: Report of Possible Loss of Licensed Material

REFERENCE: 10 CFR 20.402

This report documents and supplements a telephonic report of probable loss of licensed material, made 29 APR 88 by the licensee Radiological Safety Officer (Warren E. Keene) to NRC Region I (Mr. Lester Tripp). The enclosure provides a detailed summary of the incident.

1. DESCRIPTION OF LICENSED MATERIAL

a. Kind: Unknown. Package bore conflicting labels: Sm-151 on one label and Am-241 on the other. Vendor reported by telephone that the package was thought to contain Eu-152. Because vendor has been unable to otherwise account for the Sm-151 source ordered, the most likely contents is believed to be Sm-151.

b. Quantity: Unknown. Purchase order was for 100 mCi Sm-151/Eu-151 Mossbauer source. Both package labels stated 500 mCi. Weight of package and lack of any Geiger counter response makes 500 mCi Am-241 unlikely.

c. Chemical and physical form: The Sm-151 Mossbauer source was ordered as samarium fluoride (SmF₃), in Amersham X2161/1 capsule.

2. CIRCUMSTANCES OF LOSS

Package received from vendor (Amersham Corp.), via Federal Express, 2 FEB 88. Labeling discrepancy noted during routine receipt inspection and reported by telephone to vendor. Package not opened. Vendor recommended package not

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be opened, and that it would be picked up for return to vendor and correction. On 3 FEB 88 a driver appeared at the Radiation Safety Office and asked for the Amersham package. The Radiological Safety Officer released the package and failed to obtain a receipt. The carrier represented by the driver is unknown. On 8 MAR 88, Amersham advised that the package had not been received.

3. PROBABLE DISPOSITION: Unknown.

4. RADIATION EXPOSURE TO INDIVIDUALS AND HAZARD TO PERSONS
IN UNRESTRICTED AREAS

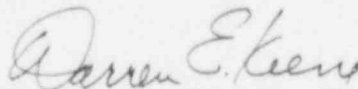
No personnel exposures are known to have occurred. No measurable exposure would occur unless the package were opened. If the package contained the 100 mCi Mossbauer source which was ordered, a high exposure rate to a limited tissue volume would result from contact with the source.

5. ACTION TAKEN TO RECOVER

Vendor reported having placed a tracer, without positive results. Catholic University has instituted no tracer action because the receiving carrier is unknown. (The shipping papers consigning the package to Catholic University were still enclosed in the clear plastic envelope sealed to the package when it was given to the carrier by Catholic University.)

6. PROCEDURE ADOPTED TO PREVENT RECURRENCE

The release of the package to a carrier without obtaining a receipt or demanding carrier identification was a momentary lapse by a professional health physicist with more than ten years experience. The proximate cause of the lapse was the fact that the driver asked for the Amersham package and that this was expected. It is not clear that there is a procedural change which would eliminate the possibility of this type of human failure.


Warren E. Keene, Ph.D.
Radiological Safety Officer

ENCL

cc: Mr. Lester Tripp,
USNRC, Region I

Mr. Bruce Sanza, Dir. Insp. & Enforcement,
Illinois Dept. of Nuclear Safety

Mr. Mark Doruff, RSO,
Amersham Corp.

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Byproduct Material License 08-02075-03
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The chronology contained in this report has been reconstructed from the telephone log maintained by the Radiological Safety Officer (RSO) of The Catholic University of America (CUA), and from his personal recollections.

BACKGROUND

In the Fall of 1987 an agreement was reached that Morgan State University would purchase a radioactive source (known as a Mossbauer source for the use to which it would be put) for use at Catholic University. The contract to produce this source was let by the State of Maryland, Department of General Services Purchasing Bureau, 301 W. Preston St., Baltimore, MD 21201-2368, to Amersham Corp., 2636 South Clearbrook Drive, Arlington Heights, IL 60005-4692. A copy of the purchase order is attached. It describes the required material as "100 MCI (millicuries) EU151 MOSSBAUER RADIOACTIVE SOURCE IN A SAMARIUM FLUORIDE (SMF3) MATRIX SD617" and incorrectly indicates that billing should be to CUA. The invoice (copy attached) indicates that, on 1 FEB 88, Amersham shipped to the CUA RSO, via Federal Express, "100 MCI SM151/EU151 MOSSBAUER FLUORIDE MATRIX IN X216/1 CAPSULE."

CHRONOLOGY (All dates 1988, times indicated using 24 hour clock)

DAY MO TIME

COMMENTS

02 FEB AM

Amersham package received by CUA RSO from Federal Express. Routine receipt inspection (wipe test) indicated the package exterior was free of external contamination. No Geiger counter response in excess of the natural background was detectable at the surface of the package. There were two radioactive material warning labels on the package. One stated the contents to be 500 millicuries (mCi) of Samarium-151 (Sm-151); the other 500 mCi of Americium-241 (Am-241). Because the package was too light to contain lead shielding, and because the Geiger counter would respond strongly to 500 mCi of unshielded Am-241, it was clear that the package did not contain 500 mCi of Am-241.

ENCLOSURE TO RSO MEMO OF 29 APR 88:

POSSIBLE MISSING RADIOACTIVE MATERIAL PACKAGE

The possibility that a lesser quantity of Am-241 might be present in some form could not be ruled out. CUA is licensed to possess and use Am-241 only in sealed-source form, and lacks facilities to handle it in other physical forms. Therefore the package was not opened. Moreover, the possibility existed that, in view of the conflicting labels and the discrepancy between the activity ordered (100 mCi) and the activity stated on both labels (500 mCi), the package could contain some other isotope in a quantity in excess of CUA license limits, or in a physical form for which CUA lacked appropriate facilities for safe handling. In view of the multiple errors made by the shipper it also was considered possible the package contained no radioactive material.

02 FEB 1344

CUA RSO phone call to Amersham was taken by "Kate," Industrial Products Division. She stated her records indicated we were supposed to receive a shipment of Europium-152. Therefore Amersham was not sure what was in the package; CUA should not open it; Amersham would arrange for return, open the package and correct the problem.

03 FEB AM

Young black man, approximately 5' 8", 140 pounds, dressed in black pants and black jacket (typical delivery driver appearance) appeared at the CUA Radiation Safety Office and announced he was to pick up the Amersham package. The RSO gave it to him and failed to obtain a receipt. It is not known to the RSO what firm the driver represented. The RSO does not recall that his jacket bore any logo.

08 MAR 1436

Amersham (Kate) telephoned the CUA RSO to say Amersham had not received the package. CUA RSO informed her of 3 FEB pickup and failure to obtain receipt.

08 MAR 1638

Amersham (Mrs. Leslie Rich, Customer Service Supervisor) telephoned CUA RSO. Advised Amersham was putting a trace on the package, stated she did not know who directed carrier

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to make the pickup, the traffic clerk who should have done it was not in today, and Amersham would keep CUA RSO informed.

CUA RSO advised her there could not have been even 100 mCi of Am-241 in the package because of its light weight and the lack of Geiger counter response at the surface of the package. In response to CUA RSO question she stated she understood there was no need to notify the NRC.

- 12 APR 1400 There having been no report from Amersham about the results of their tracer action, CUA RSO telephoned Amersham and asked for Leslie Rich. Informed she was out for the day. Asked for the identity of her supervisor: Mr. Len Hendrickson, Director of Industrial Products. He was unavailable and would call back.
- 13 APR 1114 Amersham (Len Hendrickson) telephoned CUA RSO. Hendrickson stated he was familiar with the case. He understood the Amersham Health Physicist had recommended that NRC be informed. Hendrickson will call back for a three-way conversation with himself, the Amersham Health Physicist, and the CUA RSO.
- 22 APR 1548 Having not heard from Amersham, nor knowing if Amersham had notified NRC, CUA RSO called Amersham and asked for Hendrickson. Advised he was out till 28 APR.
- 28 APR 1352 CUA RSO telephoned Amersham for Hendrickson. Tied up. Will call.
- 28 APR 1357 Amersham (Hendrickson) called CUA RSO (not three-way with Amersham Health Physicist). CUA RSO stated he was advising CUA Executive Vice President this afternoon, and would then report incident to NRC. Hendrickson concurred and requested receipt of a copy of the CUA written report. Address to: Mark Doruff, RSO, Amersham Corp., 2636 Clearbrook Drive, Arlington Heights, IL 60005.

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28 APR 1405 CUA RSO met with Sr. Rosemary Donley, CUA Executive Vice President (EVP), and advised her of the situation and the necessity to make initial telephone report to NRC Region ONE. EVP will advise President Byron, and requested RSO to advise General Counsel (GC), Craig Parker, and Director of Public Affairs (DPA), Anne Smith.

28 APR 1459 CUA RSO called GC, who stated he had already discussed with EVP. RSO will send copy of 10 CFR 20.402, and will prepare incident report for EVP, GC, and DPA.

28 APR 1500 CUA RSO called DPA who indicated she had talked with EVP. RSO will provide copy of report.

28 APR 1700 CUA RSO and GC agreed RSO will telephone NRC tomorrow morning and advise GC of results of conversation.

29 APR 1120 CUA RSO telephoned NRC Region ONE and asked for John Glenn. Informed he was out for the day, asked for his assistant and was transferred to Lester Tripp. Recounted essence of chronology. Tripp will call back with respect to next step.

29 APR 1140 NRC Region ONE (Lester Tripp) called CUA RSO. He will contact Region THREE (in Illinois) and get back to CUA RSO later in the day. For the present the problem is being treated as an Amersham-Region THREE problem. CUA RSO advised Executive Assistant to EVP, GC and Roland Nardone, Chair of the CUA Radiation Safety Committee. DPA is out for the day.

29 APR 1445 NRC Region ONE (Lester Tripp) will contact Amersham, and will keep CUA RSO informed.

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29 APR 1525 Illinois Department of Nuclear Safety (IDNS)
 (Bruce Sanza, Head of Inspection and
 Enforcement), 1035 Outer Park Drive,
 Springfield, IL 62704, called CUA RSO. IDNS
 will contact Amersham, vice NRC Region
 THREE, because Illinois is an agreement
 state. CUA RSO will provide copy of CUA
 report to IDNS and to Amersham RSO early
 next week.

PURCHASE ORDER

STATE OF MARYLAND
DEPARTMENT OF GENERAL SERVICES
PURCHASING BUREAU
301 W. PRESTON ST., BALTIMORE, MD. 21201-2368

01
11-17-87

PURCHASE
ORDER NO

P 22811

U.A. NO

P01232

ALL TERMS AND CONDITIONS
IN REQUEST FOR QUOTATION
DATED AT RIGHT ARE
PART OF THIS ORDER

DATE BID OPENED

01-07-88

BID REQUEST DATE

12-16-87

AGENCY CODE

36.13.00.00

PURCHASE ORDER DATE

kh
12/21/87

ADDRESS ALL INQUIRIES AND CORRESPONDENCE TO

UNIT BUYER

09 D. GAINES

PHONE

301-343

225-4611

SHIP AND INVOICE AS INDICATED

SHIP TO

DR. WARREN KEANE
RADIATION SAFETY OFFICE
818A PANGBORN HALL
CATHOLIC UNIVERSITY
WASHINGTON, D.C. 20064-02

SEND INVOICE IN TRIPLICATE TO (SAME AS SHIP TO UNLESS NOTED BELOW)

SAME
ACCOUNTS PAYABLE

VENDOR

000Q05257
AMERSHAM CORPORATION
2636 SOUTH CLEARBROOK DRIVE
ARLINGTON HEIGHTS, IL 60005-4692

1

COMMODITY
CLASS

175

DELIVERY SCHEDULED WEEK OF

DELIVERED F.O.B. DESTINATION
INCLUSIVE OF ALL CHARGES
I.E. PLATFORM OR DOORWAY OF "SHIP TO" ADDRESS

ITEM	P.O. ITEM	DESCRIPTION	QUANTITY	UNIT	NET UNIT PRICE
		YOUR FEDERAL ID NO. MUST APPEAR ON YOUR INVOICE			
57	01	100 MCI EU151 MOSSBAUER RADIOACTIVE SOURCE IN A SAMARIUM FLUORIDE (SMF ₃) MATRIX SD617 QUOTE #L-511-87 12/21/87 563494	1	lot	1,475.00

RECEIVED

DEC 29 1987

AMERSHAM CORP.
ORDER DEPT.

INSTRUCTIONS TO VENDOR

EACH SHIPPING CONTAINER OR PACKAGE SHALL HAVE CLEARLY MARKED A COMPLETE DESCRIPTION AS TO CONTENTS AND QUANTITY CONTAINED THEREIN. THE PURCHASE ORDER NUMBER AND THE STOCK NUMBER, IF LISTED IN DESCRIPTION ABOVE. EACH SHIPMENT SHALL HAVE ATTACHED TO THE CONTAINER OR PACKAGE A PACKAGING SLIP AND SAID CONTAINER OR PACKAGE MUST BE READILY MARKED FOR IDENTIFICATION.

EACH INVOICE MUST REFLECT THE FOLLOWING INFORMATION: (1) DATE AND METHOD OF SHIPMENT, (2) PURCHASE ORDER NUMBER, (3) DESCRIPTION AS IT APPEARS ON PURCHASE ORDER, (4) QUANTITY SHIPPED, (5) UNIT PRICE AND EXTENSIONS, (6) DATE OF INVOICE, (7) VENDOR'S FEDERAL TAX IDENTIFICATION OR SOCIAL SECURITY NUMBER. NOTE: INVOICE INFORMATION MUST BE IN ACCORDANCE WITH THAT CONTAINED ON PURCHASE ORDER. FAILURE TO COMPLY WITH THE FOREGOING WILL RESULT IN THE INVOICE BEING REJECTED FOR PAYMENT.

ARTICLES HEREON ARE EXEMPT FROM MARYLAND SALES AND USE TAXES BY EXEMPTION CERTIFICATE NO. 256 AND FROM FEDERAL EXCISE TAXES BY EXEMPTION NUMBER 52-73-0358K. IT IS THE VENDOR'S RESPONSIBILITY TO ADVISE COMMON CARRIERS THAT AGENCIES OF THE STATE OF MARYLAND ARE EXEMPT FROM TRANSPORTATION TAX.

CHIEF OF PURCHASING BUREAU

BY

Dorothy H. Hane
AUTHORIZED SIGNATURE

VENDOR

Amersham

2636 S. Clearbrook Drive
Arlington Heights, Ill. 60005
Telephone: (312) 593-6300

505 Iroquois Shore Road
Oakville, Ontario, L6H 2R3
Telephone: (416) 842-2720

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CATHOLIC UNIV OF AMERICA
PURCHASING
REF# 22811
WASHINGTON
DC 20064
ATTN

PACKING LIST NO.		DATE	ACCOUNT NO.	INVOICE NO. 0490373
563494	001	2/01/88	20064 01	
SHIP DATE	F O B		CARRIER	PRO OR WAY BILL NO.
2/01/88	DESTINATION		18 FEDERAL	

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CATHOLIC UNIV OF AMERICA
RADIATION SAFETY B18A
PANGBORN HALL OR IF NOT
OPEN TO CAMPUS SECURITY-
109 ADMIN BLDG.
WASHINGTON
DC 20064
ATTN: WARREN KEANE

YOUR PURCHASE ORDER

22811

ITEM	CATALOG NO.	UNIT SIZE	BATCH NO.	PRODUCT DESCRIPTION	QUANTITY ORDERED	QUANTITY SHIPPED	UNIT PRICE	EXTENDED PRICE
01	GSD617	0100HCL	ZE9263	5M151/ED151 ROSSBAUER FLUORIDE MATRIX IN X216/1 CAPSULE	1	1	1475.000	1,475.00

In U.S.A.:
Remit To:
AMERSHAM CORP.
P.O. Box 92708
Chicago, IL 60675

In CANADA:
Remit To:
AMERSHAM CANADA LTD.

PAST-DUE TAX (.000 x)

FRT/HNDLNG

PAST-DUE AMOUNT

1,475.00