

10/23/15

10-95-190

October 19, 1995

Scott,
For Info,
Harriet

NOTE TO: Stu Rubin, AEOD

FROM: Pat Baranowsky, AEOD

SUBJECT: MEDICAL EVENTS RELATED TO THE NIH AND MIT EVENTS

The attached are the events obtained from the NMED and NUDOCs relating to deliberate internal or external contamination of radioactive material that occurred at power plants and materials facilities. The events at Mallinckrodt, INC., Brown University, and Washington University are also included although there is not clear indication of deliberate contamination.

cc: C. E. Rossi
E. Jordan

Copied
copy
pls
return

new_ingest

18-Oct-95

ITEMNO: 810438

LICENSEE: MALLINCKRODT, INC.

CITY: MARYLAND HEI

STATE: MO

EVTDATE: 7/29/81

RPTDATE: 8/26/81

ABSTRACT: INDIVIDUAL INVOLVED IN DISINFECTING I-131 DIAGNOSTIC CAPSULE LABORATORY RECEIVED A THYROID UPTAKE OF 12 UCI OF I-131. WHOLE BODY AND THYROID DOSES OF 0.5 AND 75 REMS, RESPECTIVELY. CAUSE UNKNOWN, ALTHOUGH DELIBERATE INGESTION OF DIAGNOSTIC CAPSULE WAS NOT ELIMINATED. REAL 1981 OVEREXPOSURE.

ITEMNO: 820101

LICENSEE: BROWN UNIVERSITY

CITY: PROVIDENCE

STATE: RI

EVTDATE: 2/5/82

RPTDATE: 2/9/82

ABSTRACT: LABORATORY WORKER INGESTED AS MUCH AS 350 UCI OF P-32 LABELED ADENOSINE TRIPHOSPHATE (ADP). AREA MONITOR ALARMED AFTER WORKER INTERRUPTED HER LUNCH TO ENTER THE LAB. THE WORKER'S CLOTHES AND FOOD WERE FOUND TO BE CONTAMINATED. TOTAL BONE DOSE WAS ESTIMATED TO BE 10 REM (PN-82-02A).

ITEMNO: 830168

LICENSEE: WASHINGTON UNIVERSIT

CITY: SAINT LOUIS

STATE: MO

EVTDATE: 3/18/83

RPTDATE: 3/25/83

ABSTRACT: A HEMOLOGY LABORATORY WAS
VANDALIZED. LAB ASSISTANT, WHO
FOUND LAB VANDALIZED, HAD
CONTAMINATION ON LAB COAT; ALSO
FOUND IN URINE. LAB ASSISTANT TOLD
POLICE SHE WAS RESPONSIBLE FOR
VANDALISM. THYROID UPTAKE 360 NCI I-
125, 1/2 QTRLY LIMIT. INDIVIDUAL HAD
INGESTED 8-16X OCC. LIMIT UPTAKE
REDUCED BY TREATMENT (PNO-III-83-
21,21A).

2742

LICENSEE: TENNESSEE VALLEY AUTHORITY
SITE: ^[(s3BBROWNS FERRY 1 2 3

^[(s0B

EN NUMBER:

DOCKET: 05000259 05000260 05000296

EVENT DATE: 11-13-85

22

RX TYPE: BWR BWR BWR				EVENT TIME: 17:28
VENDORS: GE-4 GE-4 GE-4				NOTIFY DATE: 11-13-85
EMERGENCY CLASS: UNU REGION: 2 STATE: AL				TIME: 17:45
OPS OFFICER: DAVID POWELL				
10 CFR SECTION: AMED 50.72(b)(2)(v)				OFFSITE MEDICAL
UNIT	SCRAM	RX	INIT	CURR
	CODE	CRIT	PWR	CURRENT MODE
1		N	0	0
2		N	0	0
3		N	0	0

AN NOUE WAS DECLARED AND TERMINATED AT 1728 EDT BECAUSE OF THE CONTAMINATION OF 5 TVA EMPLOYEES OFFSITE. ONE WAS CONTAMINATED TO 500,000 CPM TO THE HAND AND 30,000 CPM AROUND THE MOUTH. A SECOND EMPLOYEE WAS CONTAMINATED TO 400 CPM ON THE THIGH. THE REMAINING 3 PERSONNEL HAD CONTAMINATION < 2000 CPM. THE REPORTED CAUSE WAS AN STATE OF ALABAMA EMPLOYEE WHO WAS ACTING AS A DRILL CONTROLLER INTENTIONALLY CONTAMINATED AN INDIVIDUAL BY SMEARING TECHNECIUM 99m ON HIS LAB COAT AND AN ARTIFICIAL WOUND. HE ALSO HAD A THORIUM SOURCE BUT IT IS NOT KNOWN IF THAT WAS USED. THE INDIVIDUALS WERE TRANSPORTED TO THE SITE AND DECONTAMINATED. WHOLE BODY COUNTS WERE BEING GIVEN AT THE TIME OF THIS REPORT. DOSE LEVELS ARE NOT YET AVAILABLE. IT IS NOT KNOWN IF ANY CONTAMINATION WAS INGESTED. NOTIFIED FEMA (R. LITTON), E. ROSSI, G. ZECH (EO) *** ** A COMMISSIONERS ASSISTANTS BRIEFING WAS HELD AT 0800EDT CONCERNING THE EVENT.

to LER

POWER REACTOR

EVENT NUMBER: 16091

FACILITY: FITZPATRICK
UNIT: [1] [] []
RX TYPE: [1] GE-4

REGION: 1
STATE: NY

NOTIFICATION DATE: 07/14/89
NOTIFICATION TIME: 21:31 [ET]
EVENT DATE: 07/14/89
EVENT TIME: 20:30 [EDT]
LAST UPDATE DATE: 07/20/89

NRC NOTIFIED BY: SQUIRES
HQ OPS OFFICER: RAY SMITH

NOTIFICATIONS

EMERGENCY CLASS: NOT APPLICABLE
10 CFR SECTION:
NINF

INFORMATION ONLY

BORES	RDO
ZWOLINSKI	EO
JORDAN	AEOD
WEISS	IRB

UNIT	SCRAM CODE	RX CRIT	INIT PWR	INIT RX MODE	CURR PWR	CURR RX MODE
1	N	Y	100	POWER OPERATION	100	POWER OPERATION

no cer

EVENT TEXT

AN INDIVIDUAL AT THE PLANT HAS APPARENTLY INGESTED SOME RADIOACTIVE MATERIAL. THE INDIVIDUAL RECEIVED AN ALARM AT THE PORTAL MONITOR AFTER WORKING ON THE REFUEL FLOOR. AFTER SHOWERING THE PORTAL ALARM WAS STILL RECEIVED. AN INITIAL WHOLE BODY COUNT SHOWED 35% MPC Co(60). THE INDIVIDUAL IS BEING HELD ON-SITE AND A BACKUP WHOLE BODY COUNT IS BEING CONDUCTED. INVESTIGATION INTO THE SOURCE OF THE CONTAMINATION IS CONTINUING. INITIALLY THE INDIVIDUAL WAS WORKING ON THE REFUEL FLOOR. HE THEN LEFT THE AREA FOR A BREAK WITHOUT SETTING OF THE PORTAL ALARM. HE WENT TO THE RAD PROTECTION OFFICE, HAD SOME LEMONADE AND RETURNED TO THE REFUEL FLOOR. ON LEAVING THE AREA AGAIN THE ALARM WAS RECEIVED. THERE WAS SOME CONTAMINATION FOUND IN THE AREA OF THE REFUEL FLOOR WHERE THE INDIVIDUAL HAD BEEN WORKING. HOWEVER, SOME ACTIVITY WAS ALSO FOUND IN A SAMPLE OF THE LEMONADE IN THE REFRIGERATOR IN THE RAD PROTECTION OFFICE. IT IS NOT KNOWN IF THE LEMONADE WAS CONTAMINATED BY THE INDIVIDUAL WHEN HE TOOK HIS BREAK OR IF IT HAD BEEN CONTAMINATED BEFORE THIS TIME AND IS THE ACTUAL SOURCE OF THE INDIVIDUALS CONTAMINATION. THE NRC RESIDENT AND PLANT MANAGEMENT HAVE BEEN NOTIFIED. ***UPDATE AT 0058 ON 07/15- ESTIMATE OF INGESTION IS 1 MICROCURIE (MOSTLY COBALT 60, SOME MANGANESE 54, SMALL AMOUNT OF CESIUM 137) OF MATERIAL WHICH, DUE TO ITS ISOTOPIC MAKEUP, IS THOUGHT TO HAVE ORIGINATED IN THE REFUELING POOL. THE WORKER APPARENTLY INGESTED THE MATERIAL VIA THE LEMONADE AND AN INVESTIGATION IS UNDERWAY TO DETERMINE HOW THE LEMONADE BECAME CONTAMINATED. WORKER HAS BEEN ALLOWED TO GO HOME AND IS SCHEDULED FOR ANOTHER BODY COUNT DURING THE AFTERNOON OF 07/15. *** 1342 07/16/89 UPDATE *** THIS MORNING THE INDIVIDUAL INGESTING THE MATERIAL ADMITTED THAT HE HAD CONTAMINATED THE LEMONADE HIMSELF WITH A SWIPE USED TO MEASURE LOOSE SURFACE CONTAMINATION. THE NRC RESIDENT WILL BE NOTIFIED. COMMISSIONERS ASSISTANTS' BRIEFING HELD 1700 7/19/89 CONCERNING THIS EVENT. SEE HOO LOG FOR ATTENDEES.

GENERAL INFORMATION or OTHER

EVENT NUMBER: 15191

LICENSEE: BUREAU OF RAD PROTECTION

CITY: REGION: 1

COUNTY: STATE: PA

LICENSE#: AGREEMENT: N

DOCKET:

NOTIFICATION DATE: 04/03/89

NOTIFICATION TIME: 06:45 [ET]

EVENT DATE: 04/03/89

EVENT TIME: 04:00 [EST]

LAST UPDATE DATE: 04/03/89

NOTIFICATIONS

CONTE RDO

SJOBLOM EO

INGRAM PAO

SCHWARTZ

NRC NOTIFIED BY: REILLY

HQ OPS OFFICER: CHAUNCEY GOULD

EMERGENCY CLASS: NOT APPLICABLE

10 CFR SECTION:

NINF INFORMATION ONLY

EVENT TEXT

THE BUREAU OF RAD PROTECTION OF PA NOTIFIED THE NRC OF A DELIBERATE INGESTION OF URANIUM ACETATE BY A 23 YR OLD MAN AT HIS HOME IN HAZELTON PA. HE WAS BROUGHT TO THE HOSPITAL IN HAZELTON BUT WAS REFUSED ADMISSION. THEY BELIEVE THAT THE EMERGENCY ROOM OF THAT HOSPITAL MAY HAVE BEEN CONTAMINATED. HE WAS THEN ADMITTED TO GEISINGER HOSPITAL FOR TREATMENT. THE STATE POLICE HAVE SECURED THIS PERSON'S HOME, BECAUSE IT IS BELIEVED THAT MORE URANIUM ACETATE MAY BE THERE. HARRISBURG

ITEMNO	LICNO	LICENSEE	CITY	STATE	EVTDATE	ABSTRACT
941354	24-16617-01MD	SYNCOR INTERNATIONAL CORP.	KANSAS CITY	MO	05/18/1994	<p>A DISGRUNTLED EMPLOYEE TOOK A SYRINGE FULL OF TC-99M PERTECHNETATE AND SQUIRTED IT ON TWO BUTTERFLIES MATING ON A TREE NEAR THE FACILITY. THE EMPLOYEE WAS IMMEDIATELY SUSPENDED BY THE RSO AND TERMINATION PROCESSING IS IN PROGRESS. THE AREA WHERE THE BUTTERFLIES WERE SQUIRTED WAS SECURED AND SURVEYED. CONTAMINATION WAS FOUND ON A TREE AND IN THE DIRT. BECAUSE OF THE DIFFICULTY IN DECONTAMINATING THESE ITEMS, THE LICENSEE HAS POSTED A GUARD AND RESTRICTED ACCESS TO THE AREA. THIS WILL CONTINUED UNTIL CONTAMINATION LEVELS DECAY TO BACKGROUND. THE CONTAMINATED BUTTERFLIES WERE ALSO CAPTURED AND ARE BEING HELD UNTIL THEY REACH BACKGROUND LEVEL. THE TOTAL AMOUNT OF TC-99M INVOLVED IS BELIEVED TO BE LESS THAN 5 MCI.</p>
941720	REACTOR	QUAD CITIES	CORDOVA	IL	08/08/1994	<p>An individual received a dose equivalent to the skin in excess of the 50 rem limit. Sr-90 was in a small calibration source which was apparently placed in the rear pants pocket of a worker's unattended street clothing while the worker was wearing plant issued coveralls. The source was detected when the worker had changed back into their street clothes and set off a radiation monitor upon exiting. Corporate staff are investigating the incident including possible deliberate placement of the source into the worker's pocket. The Licensee issued a press release on this event.</p> <p>Update: The NRC is going to conduct an Enforcement Conference regarding this event.</p> <p>Update: The NRC informed to Commission that a Notice of Violation and Proposed Imposition of Civil Penalty in the amount of \$100,000.00 will be issued on or about 10/18/94. The action is based on a violation involving the apparent deliberate actions on the part of worker(s) that resulted in a significant source of external radiation exposure.</p>

ITEMNO	LICNO	LICENSEE	CITY	STATE	EVTDAT	ABSTRACT
950002	41-00119-08	V.A. MEDICAL CENTER	MEMPHIS	TN	05/22/1993	<p>The NRC conducted an inspection to review the circumstances surrounding the apparent misuse of a check source containing approximately 150 uCi of CS-137. The NRC cited the licensee for the misuse of the check source.</p> <p>When a technologist attempted to perform the dose calibrator constancy check, the technologist discovered that the check source was not in its container, which was located in the hood inside the Hot Lab. A licensee investigation found the check source had been taped to the underside of the center drawer of a physician's desk. This constitutes a loss of control of licensed material.</p> <p>Update: During the enforcement conference, the Licensee stated that they had taken reasonable measures to ensure the security and proper use of licensed material and did not believe that they should be held responsible for an employee who deliberately disregarded requirements for the control of licensed material. The NRC Enforcement Policy states that a Licensee is generally responsible for the acts of its employees, therefore, violation is categorized as a Severity Level III Violation.</p>
950922	19-00296-10	HEALTH & HUMAN SERVICES, DEPARTMENT OF	BETHESDA	MD	06/28/1995	<p>The RSO informed the NRC's inspector on-site performing a routine inspection that an incident involving internal contamination of a researcher had been reported. The Licensee identified the researcher as a 32 year old female who is in her fourth month of pregnancy. The emergency response and follow-up by the Licensee confirmed the existence of a detectable radioactivity burden, however it does not appear that an annual limit on intake was exceeded. The Licensee identified the ingested isotope to be P-32. There are no adverse health consequences expected for the researcher or the fetus. The estimated ingestion is approximately 300 uCi of P-32. An Augmented Inspection team was dispatched. Also, an NRC medical consultant has been contacted.</p>

From: "/I=T/S=DIAMANTSTEIN/O=AECB.CCEA@mhs-atomcon.attmail.com"
To: WXU@nrc.gov
Date: 11/3/95 2:24pm
Subject: P-32 Investigation (SMTP Id#: 45240)

Report for Initiation of Prosecution of HSC

During the P-32 investigation (commencing November 27, 1992) concerning Messrs. Z. Chen and Q. Zhu, the laboratory of Dr. M. Post of HSC was checked to determine effective control (purchase, receipt, use, disposal and records) of radioactive phosphorus.

During investigations at HSC "Rights to Counsel" cautions were read on November 30, 1992, to Dr. M. Post and Ms. A. Monteath (representing HSC), and again read on December 7, 1992, to Ms. A. Monteath and several senior staff at HSC. To minimize reports I attach copy of my "will say" statement. Of the missing 930 uCi, 430 uCi is explained in items 1 and 2 below, and the 500 uCi is explained in item 3, item 4 was not included in the "will say" statement.

1. On November 26, 1992, Dr. M. Post was aware (and others knew previously) that some 200 uCi (subsequently fine tuned to 180 uCi) of P-32 was missing from his laboratory. This loss or theft was not reported as required by section 20 of AEC Regulations. Also the HSC were not in compliance with S.S. 11.1(a), 24(1)(a), and 24(2)(a).

2. On November 9, 1992, some 250 uCi of P-32 was received at Dr. M. Post's laboratory. On December 7, 1992, confronting Post and Monteath with discrepancies in their records revealed this unit of P-32 was missing. The HSC is again not in compliance with S.S. 11(1)(a), 24(1)(a), and 24(2)(a) regulations.

3. Between October 26, 1992, and October 30, 1992, some 2 x 250 uCi of P-32 disappeared from Dr. Post's laboratory. Apparently a package supposedly containing 3 x 250 uCi units was not checked on receipt, and subsequently Amersham were blamed for short shipment. Evidence from Amersham very strongly supports the delivery was correct. Again HSC were not in compliance with S.S. 11(1)(a), 24(1)(a), and 24(2)(a) of the regulations.

4. On November 30, Dr. H. O'Brodovich provided copy of memo concerning his use of records. Subsequently checking with records provided by Ms. Monteath showed Dr. O'Brodovich had not accounted for some 250 uCi P-32 received on November 23, 1992. The HSC is again not in compliance with S.S. 11(1)(a), 24(1)(a), and 24(2)(a) of the regulations.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
WASHINGTON, D.C. 20555

March 30, 1989

NRC INFORMATION NOTICE NO. 89-35: LOSS AND THEFT OF UNSECURED LICENSED
MATERIAL

Addressees:

All U.S. Nuclear Regulatory Commission (NRC) byproduct, source and special nuclear material licensees.

Purpose:

This notice is intended to alert recipients to the circumstances leading to loss of licensed materials at several licensed institutions. It is expected that licensees will review this information for applicability to their own procedures for controlling access to licensed materials, distribute the notice to members of the radiation safety staff, and consider actions, if appropriate, to preclude similar situations from occurring at their facilities. However, suggestions contained in this notice do not constitute any new NRC requirements, and no written response is required.

Description of Circumstances:

The following selected cases are used to illustrate losses and thefts of unsecured material.

Case 1: In November 1988, a hospital received a one-curie gadolinium-153 sealed source for installation into a diagnostic device. The device containing the source was temporarily stored in the hospital's nuclear medicine laboratory. When the technician returned on another day to retrieve and install the sealed source, the sealed source and its shipping container were missing. Subsequent investigation revealed that the nuclear medicine laboratory was frequently left unlocked and unsecured during the day. In addition, housekeeping staff who had keys to the nuclear medicine laboratory had not been given specific instructions on recognition of radioactive materials in storage or the precautions to take when entering areas where radioactive materials were stored. The sealed source was never found. The hospital's corrective actions included the installation of automatic door closers and push button locks for daytime control, and separate key-controlled locks for off-hour access, with keys issued to a limited number of nuclear medicine department personnel. Further, housekeeping staff members were trained to recognize radiation postings and shipping labels and instructed in actions to take when containers or packages bearing these labels were encountered.

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Case 2: In August 1988, a nuclear medicine technologist at another hospital discovered that an older set of dose calibrator reference sources had been substituted for the current, higher-activity reference sources. Investigation revealed that the missing reference sources had been stored in a routinely locked nuclear medicine laboratory, and that the substituted reference sources had been stored in a separate locked area. Further investigation revealed a large staff turnover in the preceding year, and no firm policy for key return by the hospital. Corrective actions included immediately changing locks and establishing a policy that an employee's final paycheck would be withheld until all keys were returned or accounted for. The sources in question were never found.

Case 3: In May 1988, there were two cases where radioactive material at an academic research laboratory had been inadvertently placed in normal trash, and subsequently buried in a municipal sanitary landfill. In the first instance, 500 microcuries of phosphorus-32 that had been delivered to a research laboratory was discarded to normal trash. In the second instance, less than one microcurie each of tritium, carbon-14, and iodine-125 were removed from a research laboratory by a custodian and placed in clean trash and also ended up in a sanitary landfill. Because these examples were repetitive violations from a previous inspection, NRC assessed a civil penalty of \$1,125 against the licensee.

Case 4: In July 1988, the radiation safety staff at yet another institution determined that a 0.8-millicurie cesium-137 sealed source was missing during an inventory of sealed sources. The source had last been seen when the manufacturer's service engineers had undertaken maintenance of a Positron Emission Tomography (PET) imaging device. Despite extensive inquiries, searches, and widespread publicity in the local community, and within the hospital, the sealed source was never found. NRC inspections prompted certain corrective actions, such as the adoption of a policy requiring individuals to sign for radioactive sources taken from storage and to assume personal responsibility for their return.

Case 5: In July 1988, a researcher at the same institution as in Case 4 above left a package containing 10 millicuries of sulfur-35 in an unsecured storage area generally accessible to any person in the research building. The radioactive material disappeared and was never found. Corrective actions included retraining and notifying principal investigators of their responsibilities for radioactive material in their possession, and developing an extensive training program for housekeeping staff members on how to recognize radiation postings and shipping labels, and what to do if containers or packages bearing these labels were encountered.

Case 6: In May 1988, an industrial licensee lost a moisture-density gauge containing 40 millicuries of americium-241 and 8.3 millicuries of cesium-137. The gauge had been loaded into a pickup truck. It is believed that the loss occurred when the truck tailgate fell open, and the bottom of the transport

case and gauge came apart from the top of the case. A part of the transport case was found at the intersection of two roads. The licensee's radiation safety officer notified NRC, the County Sheriff's Department, and the State Department of Emergency Services and Transportation. Sixty to one-hundred people were searching the area by nightfall. The licensee also notified the local TV and radio stations and local newspaper. The County Sheriff's Department found the gauge the following day about five miles from where it was believed to be lost.

NRC considered escalated enforcement action and a civil penalty for this case, but determined that it was not warranted because the licensee took immediate and exemplary action in reporting the event, attempting to determine the whereabouts of the lost gauge, and in implementing corrective actions to prevent recurrence.

Case 7: While processing a request for termination of activities in November 1988, NRC learned that the licensee had improperly conveyed ownership of two nuclear weigh scales, containing about 200 millicuries of cesium-137 each, to a non-licensee, in February 1988. Afterwards, the licensee relinquished responsibility for, and control of, the material. The non-licensee acknowledged that the nuclear devices were part of a purchase agreement, but denied ever taking physical possession of the devices. Though both parties denied any knowledge of what actually happened to the devices, it is apparent that the nuclear weigh scales were dispositioned in some unknown manner during this period and are currently missing. NRC and the licensee have performed extensive radiological surveys, searches, and inquiries regarding the possible disposition of these devices. To date, all efforts to locate the devices or the installed radioactive sources have been unsuccessful.

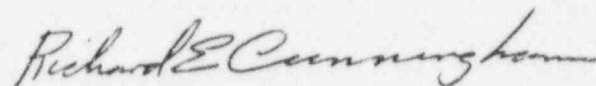
Discussion:

All licensees are reminded of the importance of assuring that access to licensed radioactive material is controlled. The theft or loss of licensed radioactive material has the potential for causing unnecessary exposures of employees and members of the public. For example, sealed sources in Mexico and Brazil which were not properly stored and accounted for caused life-threatening exposures of individuals, and widespread contamination of property. In other cases, lost sources have been hidden under beds, carried in pockets, etc., resulting in the unnecessary exposure of these individuals.

Title 10, Code of Federal Regulations, Part 19, Section 19.12, "Instructions to workers requires that all individuals working in or frequenting any portion of a restricted area shall be kept informed of the storage, transfer, or use of radioactive materials....". Section 20.207 of 10 CFR Part 20, "Storage and Control of Licensed Material in Unrestricted Areas", requires that such material be secured from unauthorized removal, and that materials not in storage in an unrestricted area be under the constant surveillance and immediate control of the licensee.

Control of access to restricted areas must be sufficient to prevent inadvertent entry by unauthorized or unescorted individuals. Training of ancillary personnel authorized for controlled access to restricted areas should be reviewed to assure that the training is sufficient to permit personnel to identify radioactive materials and to take appropriate precautions. If activities require that licensed materials be used or stored in unrestricted areas, licensees are required to maintain immediate control and constant surveillance of the materials or to secure the materials against unauthorized removal. In addition, licensees should review systems for key control, locking of rooms, and internal transfers of licensed material, to assure they are also effective enough to prevent unauthorized removal of the material.

No written response is required by this information notice. If you have any questions about this matter, please contact the appropriate regional office or this office.



Richard E. Cunningham, Director
Division of Industrial and
Medical Nuclear Safety
Office of Nuclear Material Safety
and Safeguards

Technical Contact: Jack Metzger, NMSS
(301) 492-3424

Attachments:

1. List of Recently Issued NMSS Information Notices
2. List of Recently Issued NRC Information Notices