Physics Department Incidents Log

Incident No.	2011 - 01	**Date of Report:** 7/13/11
Reportable/Classification:	Not ORPS Reportable SCBNL Management Concern Possible PAAA Violation	**Date of Incident:** 6/2/11
Status	Final Report	
Groups Involved:	Retired Researcher working under the direction of the Department Chair	
Lead Investigator:	M. Zarcone	

Description:

At approximately 11:30 AM on June 2, 2011, the Physics Department's ESH Coordinator walked by a laboratory door, posted as a "Controlled Area, TLD Required," and saw the PI and 3 other people standing in the room near a 20 µCi Cs^{137} unshielded sealed source. The Coordinator recognized one of the people as a Physics Department employee, a theorist, who was not trained for entrance into the area and has no TLD. Upon checking, it was found that the other two were not wearing TLDs. One, a visitor to BNL is an Argonne National Laboratory employee who said he has current Rad Worker Training and a TLD at Argonne but not at BNL. The other person was a new BNL employee who has no radiological training listed in the BTMS although she has had training at Argonne and other institutions. The ESH Coordinator had the people leave the room. The PI told the Coordinator that he had looked for the Rad Control Technician but when he couldn't find him, due to time constraints went back to the laboratory door to show and discuss his experiment.

Immediate Actions Taken:

The ESH Coordinator subsequently reported the incident to the Department Chair, called the Categorizer and sealed the incident scene. The Categorizer declared the incident "non-reportable" based on the ORPS criteria but the Chair requested this be reported as a SCBNL Management Concern.

At the ESH Coordinator's request, the Rad Con Tech was called in to make a survey of the room (attached). The Coordinator proceeded to interview the people involved.

Subsequent Actions Taken:

The Physics Department's ESH Coordinator spoke with the theorist (who has never had any radiation training) to ensure he understood the gravity of this infraction, made sure he understood the rules regarding controlled areas and TLDs, and the consequences to himself, the Department and BNL.

The Physics ESH Coordinator notified the ESH Coordinator of the Energy Science and Technology Department (where the new employee works) that the incident had occurred. The Chair of the ES&T Department with their ESH Coordinator spoke with the Argonne visitor and the new employee to ensure they were cognizant of the rules and how seriously BNL takes these matters.

Interviews:

An interview with the PI resulted in the following narrative (surnames removed):

> "On Thursday morning I went over to the lab for my daily data read-out of our 137Cs experiment. My usual routine is to return to my office to work on the data and e-mail my collaborator (name removed) if necessary. Since I planned to right away go back to the lab for some equipment checks, I left the lab door open. While I was working at my desk John (the theorist) appeared and said "Kim and Elizabeth will be at your lab in a few minutes to look at your experiment." I had completely forgotten that earlier in the week John told me that Kim would be at the lab on Thursday. As John left to be with the guests, I quickly finished plotting a data point and left to go to Joe (the RCD Tech) for help in providing TLD's for the visitors. Joe was not in his office but his light was on, so I knew he was probably near-by. My search was unsuccessful, so I went to the lab where, as I recollect, the visitors were in the lab waiting

for me. Almost at the same moment that I went in to greet them, Mike Zarcone happened by, noticed the violation, ordered everyone out, and apparently informed you about the event. The duration of my involvement in the violation was less than one minute.

If this matter is to go beyond your office for further review, I would ask that you relay my assessment that this was an innocent, accidental, and un-intended violation of very brief duration. There was no willful intent to violate rules. It was a matter of guests not knowing they were in a restricted area while I was running around trying to find Joe to provide TLD's for them."

An interview with the theorist, who has been working with the PI, revealed that he knew the PI came to check on his experiment daily at around 11 AM. He brought the visitors to the PI who was eager to show the experimental setup. The theorist knew this lab was a "Controlled Area, TLD Required" but as the door was opened, got involved with the science and experimental results and walked into the space.

The new BNL employee who has training at Argonne revealed she understands the postings, PAAA, and radiological regulations. She too was involved in the discussion and just went into the lab.

Barrier Analysis was conducted for findings that relates to SCBNL Management Concern. (Analyst: C. Gortakowski, QO)

What were the barriers that were in place to prevent this type of problem?	Did it work?	Why did it not work?	Comments	Cause Code
Training	Yes	NA	Training was in place, and training was conducted. The only area of concern for training was the contributing factor of management oversight to reinforce the training and allow the workers to move from Rule Based performance to Skilled based.	
Training	No	The visitor did not have training but was with an employee that had the training.	The Coordinator recognized that one of the personnel was a Physics Department employee, a theorist, who was not trained for entrance into the area and has no TLD. Two additional personnel were also in the area with-out a TLD.	A6B1C02
Adequate Instructions	No	The instructions were noted on the panel next to the door.	The instructions were in place, but was on the sign which was yellow and on a yellow panel next to the door.	A5B2C02
Management Expectations	No	Inadequate oversight on implementation of expectations.	1. The expectations were to ensure no one entered the area. 2. PI left the area and left the door open. 3. Expected all visitors to read and follow the sign which required TLD in the area.	A4B1C01
Closed Door	No	The door was left open.	The door was left open by the PI. Door was left open as the PI indicated he would be right back. The door being left open allowed the individuals to enter the room.	A3B1C02
Escort	No	The correct Escort was not with the visitors.	This allowed the visitors to not understand they were about to enter a controlled area.	A3B1C02
Planning	No	The individual that was informed of the visitors completely forgot about the visitors.	This resulted in a time constraint, so the individual decide to talk about the experiment from the door. During the discussion the review team ended up in the room. This event was due to the individuals focusing on the discussion this caused a distraction and allow an error trap for personnel to enter the room. It was a very short time frame and then they were escorted out of the lab.	A3B1C03 A3B1C02 A3B3C01

Root Cause:

A3B3C01 – Attention was given to wrong issues

Contributing Cause:

A4B1C01 - Management policy guidance / expectations not well-defined, understood or enforced

A6B1C02 - Training requirements not identified

A3B1C02 - Step was omitted due to distraction

A3B1C03 - Incorrect performance due to mental lapse

Corrective Action Plan:

CA 1: Physics Department ESH Coordinator to speak to individuals that were in the Controlled Area to ensure they understand the rules for and consequences for non-compliance. M. Zarcone Due Date: June 10, 2011

Action Completed June 3, 2011 by M. Zarcone with the Physics Department employees

CA 2: Energy Sciences & Technology Department ESH Coordinator to speak to their employee and Argonne guest that were in the Controlled Area to ensure they understand the rules for and consequences for non-compliance. L. Bowerman Due Date: June 10, 2011

Action Completed June 3, 2011 by L. Bowerman and B. Horak (Department Chair) with their employee and the Argonne guest.

CA 3: Physics Department ESH Coordinator with the Rad Con Technician will improve the "Controlled Area" sign either by moving it from the yellow door or providing a background that makes the sign more visible. M. Zarcone Due Date: July 15, 2011

CA 4: Physics Department ESH Coordinator with the Rad Con Technician will review all the "Controlled Area" signs in the building to ensure the signs are not on yellow doors. M. Zarcone Due Date: July 15, 2011

CA 5: The Physics Department will report this incident to its personnel at the next 'All Hands' meeting to inform and promote awareness.

The above incident has been investigated and requires no further action.

T. Ludlam, Department Chair — Date 7/19/11

B. Johnson, ES&H Committee Chair — Date 7/19/11

BNL RADIOLOGICAL SURVEY FORM

Reason for Survey
- ☐ ROUTINE
- X SPECIAL 1-204
- ☐ RWP#
- ☐ WP#

Date: 06-02-11	Time: 1330	Bldg. # 510	Location: 1-204

INSTRUMENTS

MODEL	SERIAL#	Cal Due Date	Source Check (Y/N)
BICRON	A872S	05/25/2012	YES
EBER RO20	3888	11/08/11	YES

COMMENTS:
Cs 137 Sources in use: RCD # 202305 and 201150

DOSE RATES (HIGHEST)	
CONTACT	93 mR/hr
GENERAL AREA	7urem/hr

AIRBORNE CONTAMITION			
SAMPLE #	VOLUME	uCi/cc	%DAC

LEGEND
- O SMEAR SURVEY LOCATION — XXX Y — XXX = CONTACT READING
- ☐ MASSLINN SURVEY LOCATION — ZZZ — ZZZ = READING @ 30 Cm
- Δ AIR SAMPLE LOCATION — Y = RADIATION TYPE

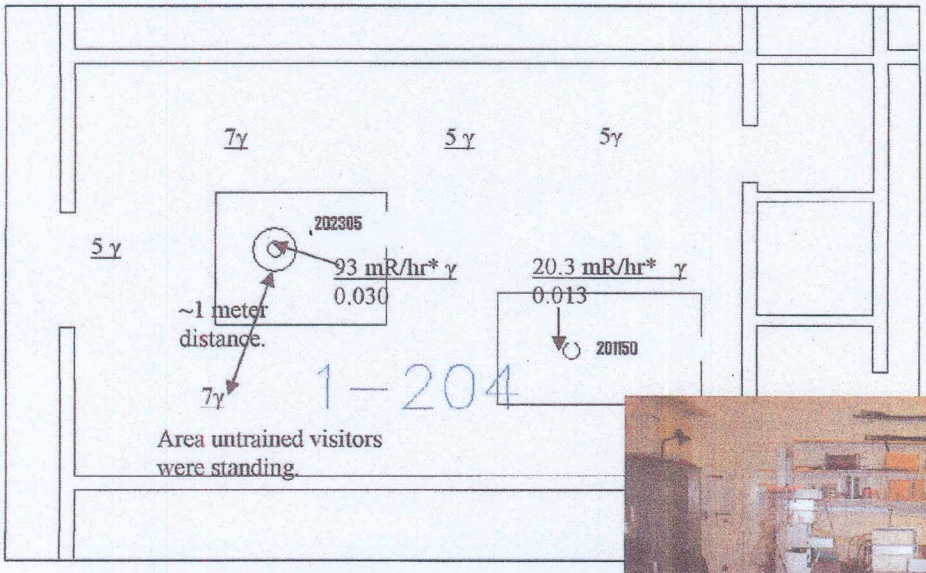
SMEAR SURVEY LOCATIONS (DPM/100 cm²) ³H B-γ α

1.	8.	15.	22.
2.	9.	16.	23.
3.	10.	17.	24.
4.	11.	18.	24.
5.	12.	19.	26.
6.	13.	20.	27.
7.	14.	21.	28.

MASSLINN SURVEY RESULTS (DPM)

1.	
2.	
3.	
4.	
5.	
6.	
7.	

Survey performed after three visitors entered without TLDs or training. The untrained visitors were 1 meter from the source.
All dose rates in urem/hr except where noted.
1" disc Gamma Correction Factor (GCF) used for contact reading.

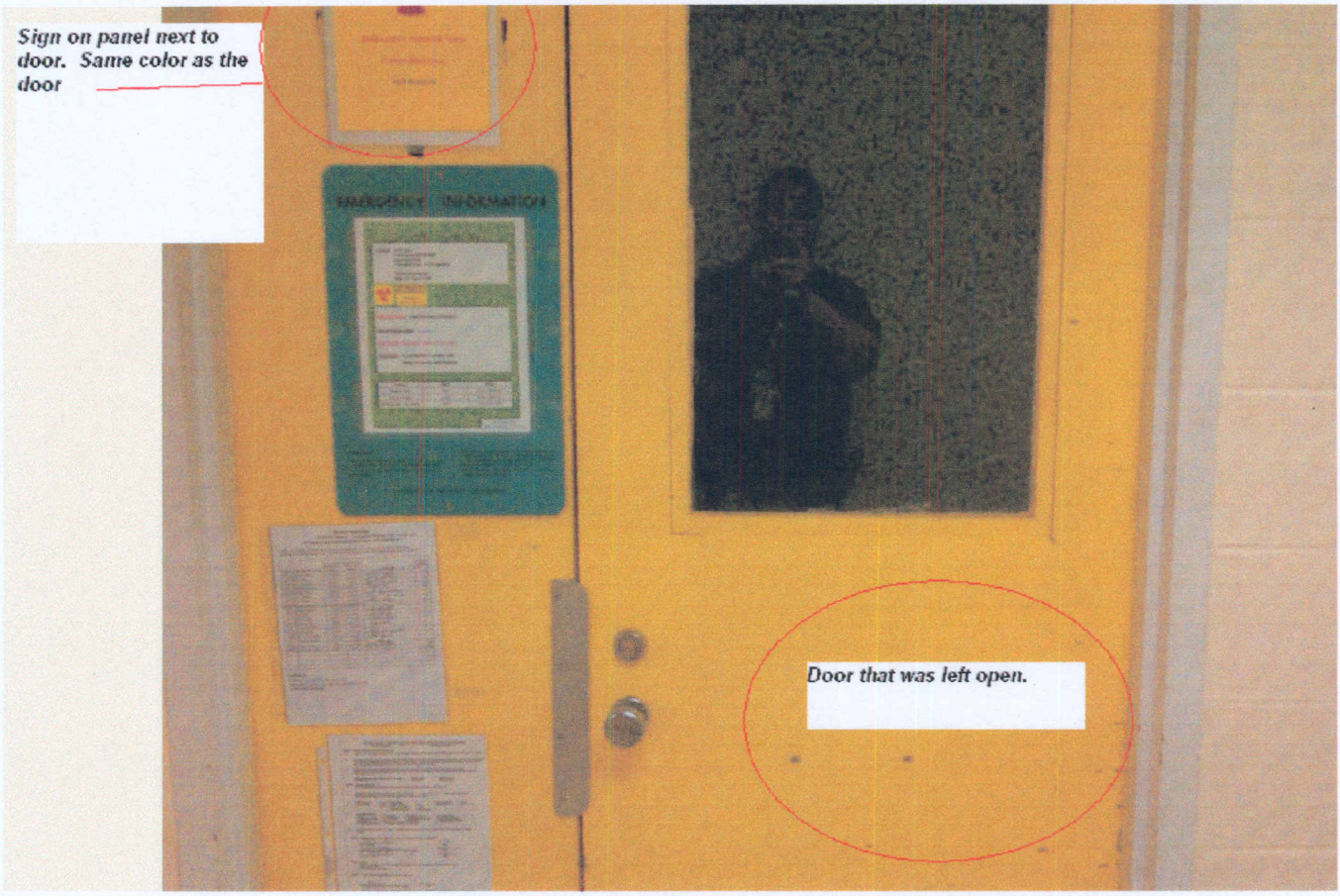


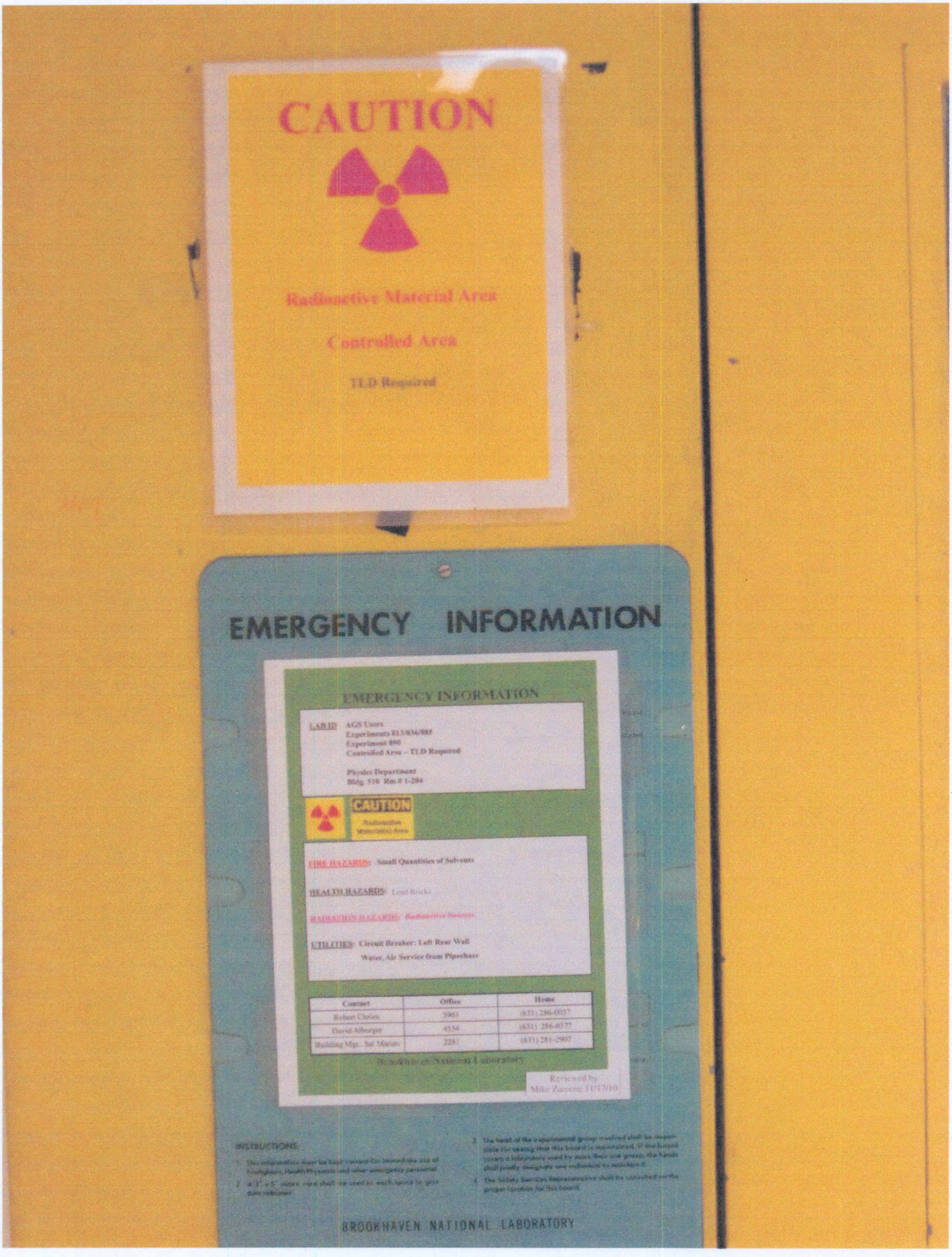
Surveyed By: J. Vignola 06/06/2011
Signature/Date

Reviewed By: Paul Bu 6/6/11
Signature/Date

Form FS-1000.1

File Code: HP50SR.05


Sign on panel next to door. Same color as the door
Door that was left open.


CAUTION
Radioactive Material Area
Controlled Area
TLD Required
EMERGENCY INFORMATION
EMERGENCY INFORMATION
LAB ID: AGS Users
Experiments 813/836/885
Experiment #90
Controlled Area – TLD Required
Physics Department
Bldg. 510 Rm # 1-204
CAUTION
FIRE HAZARDS: Small Quantities of Solvents
HEALTH HAZARDS: Lead Bricks
RADIATION HAZARDS: Radioactive Sources
UTILITIES: Circuit Breaker: Left Rear Wall
Water, Air Service from Pipechase
Contact
Office
Home
Robert Chrien
3903
(631) 286-0037
David Alburger
4554
(631) 286-0377
Building Mgr.: Sal Marano
2281
(631) 281-2907
Brookhaven National Laboratory
Reviewed by
Mike Zarcone 11/17/10
INSTRUCTIONS:
BROOKHAVEN NATIONAL LABORATORY

CAUTION
RADIOACTIVE
MATERIAL