

RESPONSE TO FREEDOM OF  
INFORMATION ACT (FOIA) REQUEST

2017-0027

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RESPONSE  
TYPE☐

INTERIM

☒

FINAL

## REQUESTER:

Julian Tarver

## DATE:

FEB 08 2017

## DESCRIPTION OF REQUESTED RECORDS:

First 100 pages of same search as 2011-0222 FOIA, but for Washington State only, for 2012-present.

## PART I. -- INFORMATION RELEASED

- ☐ Agency records subject to the request are already available in public ADAMS or on microfiche in the NRC Public Document Room.
- ☒ Agency records subject to the request are enclosed.
- ☐ Records subject to the request that contain information originated by or of interest to another Federal agency have been referred to that agency (see comments section) for a disclosure determination and direct response to you.
- ☐ We are continuing to process your request.
- ☒ See Comments.

## PART I.A -- FEES

AMOUNT\*

\$

\*See Comments for details

- ☐ You will be billed by NRC for the amount listed.
- ☒ None. Minimum fee threshold not met.
- ☐ You will receive a refund for the amount listed.
- ☐ Fees waived.

## PART I.B -- INFORMATION NOT LOCATED OR WITHHELD FROM DISCLOSURE

- ☐ We did not locate any agency records responsive to your request. *Note:* Agencies may treat three discrete categories of law enforcement and national security records as not subject to the FOIA ("exclusions"). 5 U.S.C. 552(c). This is a standard notification given to all requesters; it should not be taken to mean that any excluded records do, or do not, exist.
- ☐ We have withheld certain information pursuant to the FOIA exemptions described, and for the reasons stated, in Part II.
- ☐ Because this is an interim response to your request, you may not appeal at this time. We will notify you of your right to appeal any of the responses we have issued in response to your request when we issue our final determination.
- ☐ You may appeal this final determination within 30 calendar days of the date of this response by sending a letter or email to the FOIA Officer, at U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001, or [FOIA.Resource@nrc.gov](mailto:FOIA.Resource@nrc.gov). Please be sure to include on your letter or email that it is a "FOIA Appeal."

## PART I.C COMMENTS ( Use attached Comments continuation page if required)

We are providing you with 129 pages of requested records. It is being released in its entirety.

In conformance with the FOIA Improvement Act of 2016, the NRC is informing you that you have the right to seek assistance from the NRC's FOIA Public Liaison.

SIGNATURE - FREEDOM OF INFORMATION ACT OFFICER

Stephanie Blaney

Agreement State (AGR)

Event # 50602

<b>Rep Org:</b> WA OFFICE OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 11/07/2014 14:02 (EST)	
<b>Licensee:</b> ASSOCIATED EARTH SCIENCES		<b>Event Date / Time:</b> 11/06/2014 19:00 (PST)	
<b>Last Modification:</b> 06/08/2015			
<b>Region:</b> 4	<b>Docket #:</b>		
<b>City:</b> KIRKLAND	<b>Agreement State:</b> Yes		
<b>County:</b>	<b>License #:</b> WN-10298		
<b>State:</b> WA			
<b>NRC Notified by:</b> CRAIG LAWRENCE	<b>Notifications:</b> GEOFFREY MILLER	R4DO	
<b>HQ Ops Officer:</b> DONG HWA PARK	FSME EVENTS RESOURCE	EMAIL	
<b>Emergency Class:</b> NON EMERGENCY	NMSS EVENTS RESOURCE	EMAIL	
<b>10 CFR Section:</b>	CANADA	FAX	
AGREEMENT STATE	ILTAB	EMAIL	

This material event contains a "Less than Cat 3" level of radioactive material as defined in IAEA RS-G-1.9

#### AGREEMENT STATE REPORT - STOLEN TROXLER MOISTURE/DENSITY GAUGE

The following report was received from the State of Washington via email:

"Associated Earth Sciences reported to the State of Washington, Department of Health, Office of Radiation Protection that a Troxler portable gauge, model 3411, serial number 11272, containing 0.1 Ci Cs-137 and .005 Ci Am/Be, was stolen from the back of a pickup while parked overnight at a gauge user's resident apartment complex in Bothell, Washington. The gauge was last seen at 1900 PST the previous night and discovered missing at 0730 PST on November 7.

"The gauge was located in a locked black plastic tool box secured in the bed of the pickup. The tool box containing the portable gauge was stolen from the bed of the truck. Two cables and locks were reported used to secure each side of the tool box to the bed of the truck. It was unclear how the tool box was removed from the truck bed. The licensee reported no cut lock or cable was left behind. It was also unclear if the tool box lid was locked with the same locks and cables used to secure the tool box to the truck. The licensee was asked to provide a photo of their system used to secure the gauge and tool box to the truck. The gauge transport box inside the tool box was reported locked with a single lock. The handle of the gauge was also reported locked.

"The gauge user was asked why the gauge was not returned to the licensed storage location at the end of the day per the condition in the license. The user reported the job site was close to his house and he wanted to avoid the hour and a half drive to the licensed facility to check out a gauge. The theft was reported to the Bothell Police Department and police report #14-25445 was made.

"A follow-up with the licensee will be conducted to investigate possible citations for not returning the gauge for

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overnight storage in the licensed storage location and proper security for transporting the gauge in a vehicle."

State of Washington Incident Number: WA-14-045.

\*\*\* UPDATE AT 1358 EDT ON 6/8/2015 FROM STEPHEN MATTHEWS TO MARK ABRAMOVITZ \*\*\*

The following report was received via e-mail:

"As of June 8, 2015, the gauge has not been located. Associated Earth Sciences sent [Washington Office of Radiation Protection] a letter dated June 5, 2015 documenting their corrective actions, which consisted of re-training their portable gauge operators, specifically for transportation security. Since the theft occurred over six months ago we feel there is no way to avoid closing this incident as of today, June 8, 2015."

Notified the R4DO (Werner), NMSS Events Resource (Email), Canada (Fax), and ILTAB (Email).

THIS MATERIAL EVENT CONTAINS A "LESS THAN CAT 3" LEVEL OF RADIOACTIVE MATERIAL

Sources that are "Less than IAEA Category 3 sources," are either sources that are very unlikely to cause permanent injury to individuals or contain a very small amount of radioactive material that would not cause any permanent injury. Some of these sources, such as moisture density gauges or thickness gauges that are Category 4, the amount of unshielded radioactive material, if not safely managed or securely protected, could possibly - although it is unlikely - temporarily injure someone who handled it or were otherwise in contact with it, or who were close to it for a period of many weeks. For additional information go to [http://www-pub.iaea.org/MTCD/publications/PDF/Pub1227\\_web.pdf](http://www-pub.iaea.org/MTCD/publications/PDF/Pub1227_web.pdf)

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Agreement State (AGR)

Event # 51842

<b>Rep Org:</b> WA OFFICE OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 03/31/2016 20:03 (EDT)	
<b>Licensee:</b> O'NEILL SERVICE GROUP		<b>Event Date / Time:</b> 03/31/2016 (PDT)	
<b>Last Modification:</b> 03/31/2016			
<b>Region:</b> 4	<b>Docket #:</b>		
<b>City:</b> REDMOND	<b>Agreement State:</b> Yes		
<b>County:</b>	<b>License #:</b> WN-I0609-1		
<b>State:</b> WA			
<b>NRC Notified by:</b> ANDREW HALLORAN		<b>Notifications:</b> VINCENT GADDY	R4DO
<b>HQ Ops Officer:</b> VINCE KLCO		NMSS_EVENTS_NOTIFICATI	EMAIL
<b>Emergency Class:</b> NON EMERGENCY		ILTAB	EMAIL
<b>10 CFR Section:</b>		CANADA	EMAIL
AGREEMENT STATE			
<p>This material event contains a "Less than Cat 3" level of radioactive material as defined in IAEA RS-G-1.9</p>			

## AGREEMENT STATE REPORT - STOLEN PORTABLE NUCLEAR GAUGE

The following excerpted information was received from the State of Washington by email:

"Event Narrative: The Washington Department of Health received a call today (3/31/2016) at noon from the RSO of the licensee, to report a stolen gauge from their conex unit at their SeaTac location. The RSO first noticed the missing gauge (the only one stored at this facility) when he went to check it out at 1030 PDT this morning. There was no indication of it being checked out by other users, and the RSO called the other users to make sure. The RSO also noticed the broken lock on the conex door. The licensee's contractor called police for this incident as well as other containers that had been broken into. More information to come.

"Make/Model/Serial Number- Troxler 3440, SN 31182.  
Isotopes/Activity - Cesium 137/0.37 GBq and Americium 241 Beryllium/1.85 GBq"

## THIS MATERIAL EVENT CONTAINS A "LESS THAN CAT 3" LEVEL OF RADIOACTIVE MATERIAL

Sources that are "Less than IAEA Category 3 sources," are either sources that are very unlikely to cause permanent injury to individuals or contain a very small amount of radioactive material that would not cause any permanent injury. Some of these sources, such as moisture density gauges or thickness gauges that are Category 4, the amount of unshielded radioactive material, if not safely managed or securely protected, could possibly - although it is unlikely - temporarily injure someone who handled it or were otherwise in contact with it, or who were close to it for a period of many weeks. For additional information go to [http://www-pub.iaea.org/MTCD/publications/PDF/Pub1227\\_web.pdf](http://www-pub.iaea.org/MTCD/publications/PDF/Pub1227_web.pdf)

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General Information (AGR)		Event #	41884
Rep Org: WA DIVISION OF RADIATION PROTECTION		Notification Date / Time: 07/29/2005 17:05 (EST)	
Licensee: LONGVIEW INSPECTION		Event Date / Time: 06/30/2005 (PDT)	
		Last Modification: 09/02/2005	
Region: 4	Docket #:		
City: EVERETT	Agreement State: Yes		
County:	License #: IR067-1		
State: WA			
NRC Notified by: A. SCROGGS VIA E-MAIL		Notifications: DAVID GRAVES	R4
HQ Ops Officer: BILL HUFFMAN		JOSEPH GIITTER	NMSS
Emergency Class: NON EMERGENCY			
10 CFR Section:			
AGREEMENT STATE			

## AGREEMENT STATE EVENT - HIGH DOSIMETRY BADGE READING

The licensee provided the following information via email:

"On July 28, 2005 the RSO for Longview Inspection, a radiography company located in Everett Washington, notified [the Washington State Radioactive Materials] department of a potential overexposure. In a written report sent that night, events were described as follows: Two Level 2 radiographers were dispatched to Kent Washington to perform radiography work on an above ground pipeline. Each radiographer was properly equipped with survey meters, self-reading pocket dosimeters, rate alarm dosimeters, and OSL [Optically Stimulated Luminescence Dosimetry] badges.

"During the course of the on site work, radiographer #1 crawled under the pipe to search for pipe numbers. At that time, it is believed that his OSL badge was knocked off his shirt pocket where he had it clipped. Both radiographers continued to work taking shots in the area unaware of the missing OSL badge. The alarm rate and pocket dosimeters were worn in a pouch on his hip and not in his shirt pocket with the OSL badge.

"At the conclusion of the work, while both radiographers performed their break downs, equipment checks and daily radiation reports to complete the job, radiographer #1 discovered his OSL badge was missing. The immediate area was searched and the OSL badge was discovered under a sheet of plywood pulled into place to crawl upon while under the pipe.

"They returned to their shop in Everett, Washington and notified the RSO of the mishap. The two radiographers reported that their rate alarms had not sounded constantly and periodic checks of the pocket dosimeter did not indicate any abnormal doses. Both men stated that they were working side by side the whole day. Since it was the end of the month wear period, the RSO sent all the radiographers' OSL badges in for processing. He

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forwarded the dosimetry report to us with his written report of the incident.

"The report on the OSL found under the pipe had millirem readings of 5367 - Deep dose, 5638 Eye dose, and 6237 Shallow dose. The radiographer #2 had readings that were consistent with the doses reported for the wear period with other radiographers in the company.

"The RSO reported that he suspended the radiographer #1 who had lost the OSL badge under the pipe, until the RSO receives approval from the department to resume radiographic operations."

Washington State Report #WA-05-044

\*\*\* UPDATE AT 1815 EDT ON 9/2/05 FROM A. SCROGGS VIA EMAIL \*\*\*

The following information was provided as an update and closeout for WA-05-044:

"On August 17, the department received the RSO's final report. In it the RSO stated it had been determined the recorded exposures had not been received by the radiographer. This conclusion was based on:

- Self-reading dosimeters for both radiographers had not gone off-scale,
- Both radiographer alarming rate-meters had not continuously alarmed,
- The OSL dosimeter for the second radiographer showed normal readings, and association with each individual indicated each could be trusted.

"The RSO calculated an exposure of 32 mRem for the day and had the dosimetry service assign a 300 mRem exposure to the individual for the month. The radiographer was allowed to return to work after the department reviewed the reported findings.

"The RSO stated that all facility radiography staff were reminded to ensure they are properly equipped prior to performing each radiographic activity."

Notified R4DO (Linda Smith) and NMSS (Tom Essig).

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## General Information (AGR)

Event # 41978

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 09/09/2005 04:58 (EST)	
<b>Licensee:</b> MIKRON INDUSTRIES		<b>Event Date / Time:</b> 06/29/2005 10:10 (PDT)	
<b>Last Modification:</b> 09/11/2005			
<b>Region:</b> 4	<b>Docket #:</b>		
<b>City:</b> KENT	<b>Agreement State:</b> Yes		
<b>County:</b>	<b>License #:</b> WN-R0483		
<b>State:</b> WA			
<b>NRC Notified by:</b> ARDEN C. SCROGGS		<b>Notifications:</b> DALE POWERS	R4
<b>HQ Ops Officer:</b> JOHN MacKINNON		LAWRENCE KOKAJKO	NMSS
<b>Emergency Class:</b> NON EMERGENCY		BENJAMIN SANDLER	TAS
<b>10 CFR Section:</b>			
AGREEMENT STATE			

## WASHINGTON STATE AGREEMENT STATE REPORT

"This is an update and close of an event in Washington State as reported to and investigation by the Washington State Department of Health, Office of Radiation Protection (ORP).

"STATUS: closed

"Licensee: Mikron Industries

"City and State: Kent, Washington

"License Number: WN-R0483

"Type of License: General License Registration

"Date and time of Event: 29 June 2005, 10:10 a.m.

"Location of Event: Kent, Washington

"ABSTRACT: (where, when, how, why; cause, contributing factors, corrective actions, consequences, Dept. of Health, office of Radiation Protection (ORP) on-site investigation; media attention):

"ORP was notified, by telephone on 29 June 2005 by a Mikron Industries representative, the company was unable to locate 34 generally licensed Po-210 static eliminators. The devices were received between 15 May 2003 until 21 October 2004. Of the 34 devices, two are NRD Model P-2021 8101 (each originally containing 370 MBq [10 millicuries] Po-210); the remaining thirty-two are NRD Model P-2035 (each originally containing 1480 MBq [40 millicuries] of Po-210). The company seems not to know any more then that the devices are missing. ORP staff will make a site visit 30 June 2005 to help the company with their investigation.

"ORP staff performed site visits on 30 June and 8 July, 2005. Staff determined from November 2003 until about March 2005 the facility had not properly controlled the licensed material. The facility had not satisfactorily tracked

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receipt and disposal of the devices. During the visits, staff were able to locate 28 of the 34 missing devices. They had been set aside in work and storage areas. Recovered devices will remain secured on-site until analysis of leak tests will allow for return to the device manufacturer. ORP will follow up with Mikron to ensure proper disposition of the recovered devices. Mikron has instituted management control to ensure proper disposition of devices from now on.

"Notification Reporting Criteria: WAC 246-221-240 (24 hour notification)

"Isotope and Activity Involved: 34 devices total. 32 devices originally contained 1480 MBq [40 mCi] of Po-210, 2 devices originally contained 370 MBq [10 mCi] of Po-210. Total initial activities were 48.1 GBq [1300 mCi], decayed activity as of 29 June 2005 is 98.8 GBq [267 mCi].

"Overexposures? (number of workers/members of the public; dose estimate; body part receiving dose; consequence): Unknown but likely not.

"Lost, Stolen or Damaged? (mfg., model, serial number):

"34 missing NRD Models (2) P-2021 8101 & (32) P-2035 Static Eliminator Devices.

"Model Serial Number / status

"P-2021 8101 A2EA576 Found

"P-2021 8101 A2EA577 Found

"P-2035 A2EA554 Found

"P-2035 A2EA556 Found

"P-2035 A2EA557 Found

"P-2035 A2EA558 Found

"P-2035 A2EA559 Found

"P-2035 A2EA560 Found

"P-2035 A2EA561 Found

"P-2035 A2EA562 Found

"P-2035 A2EA563 Found

"P-2035 A2EA564 Found

"P-2035 A2EA565 Found

"P-2035 A2EA566 Found

"P-2035 A2EA567 Found

"P-2035 A2EA568 Found

"P-2035 A2EA569 Found

"P-2035 A2EA570 Found

"P-2035 A2EA571 Found

"P-2035 A2EA574 Found

"P-2035 A2EA575 Found

"P-2035 A2DU458 Found

"P-2035 A2DU459 Found

"P-2035 A2DU462 Found

"P-2035 A2DH035 Found

"P-2035 A2DH037 Missing

"P-2035 A2DH039 Found

"P-2035 A2DH040 Found

"P-2035 A2DH041 Missing

"P-2035 A2DA168 Missing

"P-2035 A2DA169 Missing

"P-2035 A2DA170 Missing

"P-2035 A2DA171 Missing

"Disposition/recovery:

"Disposition of the missing devices is unknown.



**"Leak test?"**

"Initial, manufacturers leak tests are likely to have been performed. Succeeding, periodic leak tests are unknown. The 30 June 2005 site visit May determine leak test status. Leak tests taken during site visits have been sent for analysis.

**Event Report "WA-05-039**

"Vehicle: (description; placards; Shipper; package type; Pkg. ID number)

N/A

**"Release of activity?"**

Unknown

"Activity and pharmaceutical compound intended: N/A

"Misadministered activity and/or compound received: N/A

"Device (HDR, etc.) Mfg., Model; computer program: see above

"Exposure (intended/actual); consequences: unknown

"Was patient or responsible relative notified? N/A

"Was written report provided to patient? N/A

"Was referring physician notified? N/A

"Consultant used? No"

Less than the quantity of an IAEA Category 3 source.

Sources that are 'Less than IAEA Category 3 sources,' are either sources that are very unlikely to cause permanent injury to individuals or contain a very small amount of radioactive material that would not cause any permanent injury.

For some of these sources, such as moisture density gauges or thickness gauges that are IAEA Category 4, the amount of unshielded radioactive material, if not safely managed or securely protected, could possibly - although it is unlikely - temporarily injure someone who handled it or were otherwise in contact with it, or who were close to it for a period of many weeks.

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## General Information (AGR)

Event # 42061

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 10/18/2005 14:51 (EST)	
<b>Licensee:</b> LAKESIDE INDUSTRIES		<b>Event Date / Time:</b> 10/10/2005 (PDT)	
<b>Last Modification:</b> 10/18/2005			
<b>Region:</b> 4		<b>Docket #:</b>	
<b>City:</b> ISSAQUAH		<b>Agreement State:</b> Yes	
<b>County:</b>		<b>License #:</b> WN-10233-1	
<b>State:</b> WA			
<b>NRC Notified by:</b> ARDEN C. SCROGGS		<b>Notifications:</b> JACK WHITTEN	
<b>HQ Ops Officer:</b> STEVE SANDIN		GARY JANOSKO	
<b>Emergency Class:</b> NON EMERGENCY		R4	
<b>10 CFR Section:</b>		NMSS	
AGREEMENT STATE			

## AGREEMENT STATE REPORT INVOLVING A DAMAGED TROXLER GAUGE

The following information was received via email:

"This is notification of an event in Washington State as reported to or investigated by the WA Department of Health, Office of Radiation Protection.

"STATUS: new

"Licensee: Lakeside Industries

"City and State: Issaquah, Washington

"License Number: WN-10233-1

"Type of License: Portable Gauge

"Date of Event: October 10, 2004

"Location of Event: Port Angeles, Washington

"ABSTRACT: (where, when, how, why; cause, contributing factors, corrective actions, consequences, Dept. of Health (DOH) on-site investigation; media attention):

"In a written report dated October 14, 2005 the Licensee's RSO reported that a Troxler model 3440 moisture/density gauge had been damaged when a single drum of a roller struck and rolled over a portable gauge before the roller operator could stop.

"The gauge operator had stepped 15 feet away from the gauge prior to the incident. It was then the roller rounded

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a corner and the roller operator's view of the gauge was obstructed by some large concrete blocks. The gauge was in the back scatter mode when struck.

"The gauge housing was left intact with only some deep scratches in the base. The source rod was bent, the index rod broken, with slight damage to the plastic top shell and no apparent damage to the electronics. The Cesium source was in the shielded position and the Americium source intact. (Photographs submitted with the report substantiate this description).

"Based on this information, the RSO, trained in the service and repair of Troxler gauges, instructed the operator to remove the gauge from the site and return it to the licensed storage area. When the RSO arrived, he took readings of the gauge with a Troxler 3105 survey meter and the readings were the same as the replacement gauge he brought with him.

"The damaged gauge is now stored at Lakeside Industries' licensed storage facility in Centralia, Washington awaiting repair or disposal by a license service provider.

"To prevent reoccurrence, gauge operators have been instructed by the RSO to be no more than 5 feet from the gauge when it is in an exposed location.

"Notification Reporting Criteria: WAC 246-221-250 Notification of Incidents.

"Isotope and Activity involved: 8 mCi of Cesium 137, and 40 mCi of Americium 241 Beryllium.

"Overexposures? (number of workers/members of the public; dose estimate; body part receiving dose; consequence): None expected.

"Lost, Stolen or Damaged? (mfg., model, serial number): Troxler, model 3440, serial number 23475.

"Disposition/recovery: Stored at a licensed storage facility awaiting repair or disposal by a licensed service provider.

"Leak test? None reported post incident.

"Vehicle: (description; placards; Shipper; package type; Pkg. ID number) NA

"Release of activity? None reported.

"Activity and pharmaceutical compound intended: NA

"Misadministered activity and/or compound received: NA

"Device (HDR, etc.) Mfg., Model; computer program: NA

"Exposure (intended/actual); consequences: NA

"Was patient or responsible relative notified? NA

"Was written report provided? NA

"Was referring physician notified? NA

"Consultant used? No."

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## General Information (AGR)

Event # 42147

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 11/16/2005 23:33 (EST)	
<b>Licensee:</b> PACIFIC ECOSOLUTIONS LLC(PECOS)		<b>Event Date / Time:</b> 11/10/2005 17:00 (PST)	
<b>Last Modification:</b> 11/16/2005			
<b>Region:</b> 4		<b>Docket #:</b>	
<b>City:</b> RICHLAND		<b>Agreement State:</b> Yes	
<b>County:</b>		<b>License #:</b> WN-I0393-1	
<b>State:</b> WA			
<b>NRC Notified by:</b> MIKE ELSEN		<b>Notifications:</b> JEFFREY CLARK R4	
<b>HQ Ops Officer:</b> JOHN MacKINNON		PATRICIA HOLAHAN NMSS	
<b>Emergency Class:</b> NON EMERGENCY			
<b>10 CFR Section:</b>			
AGREEMENT STATE			

## WASHINGTON AGREEMENT STATE REPORT - LEAKING SHIPMENT CONTAINER

"Licensee: Pacific EcoSolutions LLC (PEcoS) - Richland, Washington

"City and State: Richland, Washington

"PEcoS Radioactive Materials license Number: WN-I0393-1

"Type of License: Industrial- Radioactive Waste Processor

"Date and Time of Event: The licensee (PEcoS) notified the Department of Health on November 10, at approximately 5:00pm.

"Location of Event: The leaking container was found on a shipment that arrived at the PEcoS facility at 2025 Battelle Blvd. Richland, Washington

"Involved Persons: Pacific EcoSolutions LLC (PEcoS) - Richland, Washington, ADCO Services, Inc.-Tinley Park, Illinois

"ABSTRACT: (where, when, how, why; cause, contributing factors, corrective actions, consequences, Dept. of Health (DOH) on-site investigation; media attention):

"On Thursday November 10, 2005 the Department of Health was notified by the licensee that a shipment from ADCO Services, Inc. arrived at their facility. During offloading of the packages one drum on the shipment was found to be leaking liquid. The leak was not contained to the inside of the closed trailer. Evidence of the leak was also seen on the underside of the trailer's wood floor and undercarriage. The I beam of the trailer was visibly stained. There was no evidence that the container had tipped over.

"The shipping papers for this load indicated that the shipping date from ADCO was 29 October 2005 and that the drum contained approximately 21.0 millicuries of tritium. The physical and chemical form is listed as solid NETA Plates. The container was shipped as Radioactive Material - Limited Quantity. The generator of the waste was identified as Agouron Pharmaceuticals located in San Diego, California.

"The shipment arrived in Richland and was parked at a local hotel for approximately 5 days prior to arriving at the PEcoS facility. The department identified the location where the trailer was parked and have obtained samples of parking lot material and performed paper smear surveys. The licensee also obtained samples and performed smear surveys. Initial results showed contamination levels in the parking lot and on the frame of the trailer as 3,000 4,000 dpm/100 cm<sup>2</sup>. The contamination on the trailer floor prior to removal was approximately 118,000 dpm/cm<sup>2</sup>.

"Discussions with ADCO indicated that a container from the same lot of drums was found leaking at the time of shipment preparation. That drum was over-packed (put into a larger drum and filled with sorbent material) and shipped. ADCO had also indicated that the drums from this generator were new and not reconditioned. According to ADCO, the generator of this waste is no longer in business. It was sold to another pharmaceutical company. ADCO also indicated that the containers from this company was picked up in California and trucked to the Illinois facility. The drums were at the Illinois facility for approximately 4-5 months after arrival.

"This shipment entered the state of Washington through the Spokane Port of Entry, however personnel at the Port who conducted an inspection of the truck, including the undercarriage did not observe any leakage.

"Corrective Actions:

"The shipper (ADCO) has been notified that they are not to ship to the state of Washington until further notice. They must submit a root cause analysis, and a quality assurance program acceptable to the department that assures further shipments into the state of Washington will be in full compliance with all applicable state and federal regulations, as well as the PEcoS license.

"No known media attention yet.

"Notification Reporting Criteria: WAC 246-221-160.

"Isotope and Activity involved: Tritium, 7.9039 E+2 MBq (21.362 millicuries).

"Overexposures? (number of workers/members of the public; dose estimate; body part receiving dose; consequence): None

"Lost, Stolen or Damaged? Not Applicable.

"Disposition/recovery: Unknown

"Leak test? Not Applicable

"Vehicle: Not Applicable.

"Release of activity ? Exact amount unknown

"Activity and pharmaceutical compound intended: Not applicable.

"Misadministered activity and/or compound received: Not applicable.

"Device (HDR, etc.) Mfg., Model; computer program: Not applicable.

"Exposure (intended/actual); consequences: Not applicable.

"Was patient or responsible relative notified? Not applicable.

"Was written report provided to patient? Not applicable

"Was referring physician notified? Not applicable

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"Consultant used? No."

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General Information (AGR)

Event # 42154

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 11/18/2005 19:53 (EST)	
<b>Licensee:</b> USKH, INC.		<b>Event Date / Time:</b> 11/17/2005 17:45 (PST)	
		<b>Last Modification:</b> 11/18/2005	
<b>Region:</b> 4		<b>Docket #:</b>	
<b>City:</b> SPOKANE		<b>Agreement State:</b> Yes	
<b>County:</b>		<b>License #:</b> WN-I0409-1	
<b>State:</b> WA			
<b>NRC Notified by:</b> TERRY FRAZEE		<b>Notifications:</b> REBECCA NEASE	R4
<b>HQ Ops Officer:</b> STEVE SANDIN		PATRICIA HOLAHAN	NMSS
<b>Emergency Class:</b> NON EMERGENCY		CANADA via fax	
<b>10 CFR Section:</b>		AARON DANIS (email)	TAS
AGREEMENT STATE			
This material event contains a "Less than Cat 3" level of radioactive material as defined in IAEA RS-G-1.9			

## AGREEMENT STATE REPORT INVOLVING A STOLEN TROXLER MOISTURE DENSITY GAUGE

The following information was received via email:

"Event Report # WA-05-062

"This is notification of an event in Washington State as reported to or investigated by the WA Department of Health, Office of Radiation Protection.

"STATUS: new

"Licensee: USKH, Inc.

"City and state: Spokane, Washington

"License number: WN-I0409-1

"Type of license: Portable Gauge

"Date of event: 17 November 2005, Called in 5:45 PM.

"Location of Event: Spokane, Washington

"ABSTRACT: The license's Radiation Safety Officer reported that sometime between 2 and 5 PM a Troxler, Model 3411B, moisture density gauge, Serial Number 5541, was stolen out of the operator's transport vehicle parked in a Diamond Parking lot adjacent to the 'Flour Mill' where the company's offices are located at 621 W. Mallon Avenue, Suite 309, Spokane, Washington. A police report was filed on 17 November 2005 but Spokane police declined to investigate the scene.

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"Bolt cutters were used to liberate the gauge/transport box from 2 separate chains with a padlock on each attaching the box to the rear of the operator's pick-up truck. The parking lot (of over 75 vehicles) has an attendant who did not observe the theft.

"The operator appears to have violated at least one DOH requirement that may have contributed to the theft to the device. Department of Health Order, dated 2 December 2002, requires that when the licensee's portable gauge is not physically under the control of the operator that the device must be covered or carried in such a way that the passer-by cannot see the device.

"Another potential contributing factor to the theft, is that the operator was planning on transporting the gauge to his residence to recharge and take it to the work site the next morning because the work site was halfway between the operator's residence and the primary storage location. Preliminary information indicates that the work site is within 50 miles of the primary storage location. This is still under investigation. The licensee will be cited for at least one violation as a result of the event, and corrective actions will be discussed with the licensee.

"The event is currently under investigation. This report will be updated to include any new findings. No media attention noted at present.

"What is the notification or reporting criteria involved? WAC 246-221-240 Reports of stolen, lost or missing radiation sources

"Activity and Isotope(s) involved: 296 megaBq (8 millicuries) Cesium-137 and 1480 megaBq (40 millicuries) Americium 241/Beryllium.

"Overexposures? (number of workers/members of the public; dose estimate; body part receiving dose; consequence) N/A

"Lost, Stolen or Damaged? STOLEN (mfg., model, serial number) noted above

"Disposition/recovery: pending

"Leak test? Unknown

"Vehicle: (description; placards; Shipper; package type; Pkg. ID number) pick-up truck with no cap

"Release of activity? N/A

"Activity and pharmaceutical compound intended: N/A

"Misadministered activity and/or compound received: N/A

"Device (HDR, etc.) Mfg., Model; computer program: N/A

"Exposure (intended/actual); consequences: N/A

"Was patient or responsible relative notified? N/A

"Was written report provided? Pending

"Was referring physician notified? N/A

"Consultant used? N/A"

Sources that are "Less than IAEA Category 3 sources," are either sources that are very unlikely to cause permanent injury to individuals or contain a very small amount of radioactive material that would not cause any permanent injury. Some of these sources, such as moisture density gauges or thickness gauges that are Category 4, the amount of unshielded radioactive material, if not safely managed or securely protected, could possibly - although it is unlikely - temporarily injure someone who handled it or were otherwise in contact with it, or who were close to it for a period of many weeks.

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## General Information (AGR)

Event # 42164

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 11/22/2005 11:45 (EST)	
<b>Licensee:</b> EARTH CONSULTANTS, INC		<b>Event Date / Time:</b> 11/19/2005 (PST)	
<b>Last Modification:</b> 11/22/2005			
<b>Region:</b> 4	<b>Docket #:</b>		
<b>City:</b> BELLEVUE	<b>Agreement State:</b> Yes		
<b>County:</b>	<b>License #:</b> WN-L061-1		
<b>State:</b> WA			
<b>NRC Notified by:</b> ARDEN SCROGGS		<b>Notifications:</b> RUSSELL BYWATER	R4
<b>HQ Ops Officer:</b> JEFF ROTTON		GREG MORELL	NMSS
<b>Emergency Class:</b> NON EMERGENCY			
<b>10 CFR Section:</b> AGREEMENT STATE			

## AGREEMENT STATE REPORT - DAMAGED MOISTURE DENSITY GAUGE

The State provided the following information via email:

"ABSTRACT: (where, when, how, why; cause, contributing factors, corrective actions, consequences, Dept. of Health (DOH) on-site investigation; media attention) The licensee called the Washington State Department of Health, Office of Radiation Protection emergency line Saturday November 19, 2005 to report a damaged portable gauge. The Office of Radiation Protection Emergency Response Duty Officer called the supervisor of the Radioactive Materials Section with the information who drove to the incident site to access the situation and monitor for radiation. Radiation readings were normal for a Troxler gauge.

"The Licensee provided a statement of the event by the operator. In it the operator said when all the contractor personnel left the area for lunch no equipment was running. Thinking everything was OK; the operator walked to her car for lunch and left the gauge in place. The gauge was not in use. When contractor personnel began returning to the site the operator followed. The operator heard equipment start up and was approximately 50 feet away when a moving piece of equipment backed over the gauge.

"The operator called the company RSO and 911 to notify the local fire department. The area was cordoned off to keep personnel away. The operator then removed the shipping and emergency papers and made calls to the State Department of Health who responded to the scene of the incident. The gauge was taken to the licensee's lab in nearby Fife, Washington before being taken to their licensed storage location in Bellevue, Washington.

"To prevent reoccurrence, gauge operators have been instructed by the RSO to be within a few feet of the gauge when it is in an exposed location. The Licensee has suspended for a week without pay the operator in this incident. Notification Reporting Criteria: WAC 246-221-250 Notification of Incidents. Isotope and Activity involved:

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8 mCi of Cesium 137, and 40 mCi of Americium 241 Beryllium.

"Overexposures? (number of workers/members of the public; dose estimate; body part receiving dose; consequence): None expected.

"Lost, Stolen or Damaged? (mfg., model, serial number) : Troxler, model 3430, serial number 26287.

"Disposition/recovery: The gauge was placed back in the manufactures transport case and returned to the licensed storage location in Bellevue, Washington. A licensed technical service provider was contacted and the gauge is being held for pick up and disposal by the service provider.

"Leak test? None reported post incident. Last Leak Test performed on September 8, 2005.

"Vehicle: (description; placards; Shipper; package type; Pkg. ID number) NA Release of activity? None found.

"Activity and pharmaceutical compound intended: NA  
Misadministered activity and/or compound received: NA  
Device (HDR, etc.) Mfg., Model; computer program: NA  
Exposure (intended/actual); consequences: NA  
Was patient or responsible relative notified? NA  
Was written report provided? NA  
Was referring physician notified? NA  
Consultant used? No."

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## General Information (AGR)

Event # 42186

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 12/02/2005 14:18 (EST)	
<b>Licensee:</b> AEROFAB INCORPORATED		<b>Event Date / Time:</b> 03/08/2005 (PST)	
		<b>Last Modification:</b> 11/20/2007	
<b>Region:</b> 4	<b>Docket #:</b>		
<b>City:</b> PACIFIC	<b>Agreement State:</b> Yes		
<b>County:</b>	<b>License #:</b> WN-I0315-1		
<b>State:</b> WA			
<b>NRC Notified by:</b> ARDEN SCROGGS		<b>Notifications:</b> ANTHONY GODY	R4
<b>HQ Ops Officer:</b> MIKE RIPLEY		ROBERT PIERSON	NMSS
<b>Emergency Class:</b> NON EMERGENCY		CANADA CNSC (FAX)	
<b>10 CFR Section:</b>		TAS (EMAIL)	
AGREEMENT STATE			

## AGREEMENT STATE REPORT - MISSING RADIOACTIVE MATERIAL

The State provided the following information via email:

"Date of Event: March 8, 2005 (reported to DOH December 1, 2005)

Location of Event: Pacific, Washington

"In a phone call made Thursday, December 1, by DOH staff to set up a time to meet with a licensee for a routine inspection, we were informed that a part of the licensed material they store had been stolen. The material stolen was 2,719 pounds magnesium metal plate that contained 2 and 3 percent Thorium-232. The plate thickness varied between 1.125 inches to 2.25 inches, with most measuring 1.25 inches. The plate dimensions varied. The longest and most numerous pieces were 72 inches long. The width varied from 3.38 inches to 65 inches with most measuring 8.25 inches. The largest plate weighed 590 pounds with three plates weighing around 250 pounds. Most pieces weighed 50 pounds. This is approximately one third of the licensee's inventory of this material. The size of the material left behind was larger than that taken and could be the reason the entire inventory was not stolen.

"Bolt cutters were used to cut off the locks to the storage building where the plate was stored. The material was loaded onto trucks and driven off the premises.

"The theft was reported to the local police when the theft was discovered by the licensee. The police report number of 05378 was given to this case. An insurance claim has also been filed. The licensee replaced the locks in a manner that will prevent them from being cut through again. Each door has two locks for a total of four locks.

"No media notified.

**"Isotope and Activity involved:**

Thorium-232, activity less than 6 millicuries. Activity was calculated based on the entire weight of 3% thorium alloy.

**"Overexposures? (number of workers/members of the public; dose estimate; body part receiving dose; consequence):** Not known.

**Lost, Stolen or Damaged? (mfg., model, serial number):** Stolen.

**Disposition/recovery:** There has been no recovery to date.

**Leak test?** N/A

**Vehicle: (description; placards; Shipper; package type; Pkg. ID number)** N/A

**Release of activity?** Not known.

**Activity and pharmaceutical compound intended:** N/A

**Misadministered activity and/or compound received:** N/A

**Device (HDR, etc.) Mfg., Model; computer program:** N/A

**Exposure (intended/actual); consequences:** N/A"

Washington Event Report # WA-05-070

This source is not amongst those sources or devices identified by the IAEA Code of Conduct for the Safety & Security of Radioactive Sources to be of concern from a radiological standpoint. Therefore is it being categorized as a less than Category 3 source.

\*\*\* UPDATE AT 11:49 ON 11/20/2007 FROM ARDEN SCROGGS TO MARK ABRAMOVITZ \*\*\*

The State provided the following information via email:

"The licensee has been unable to recover any of the stolen Magnesium Thorium Plate, they have not obtained any additional information regarding this incident of 32 months ago and now regard this as a 'dead issue.'"

Notified R4DO (Clark), FSME (Burgess), Canada (E-mail), and ILTAB (E-mail).

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## General Information (AGR)

Event # 42627

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 06/08/2006 15:58 (EST)	
<b>Licensee:</b> AUBURN REGIONAL MEDICAL CENTER		<b>Event Date / Time:</b> 05/30/2006 (PDT)	
<b>Last Modification:</b> 06/19/2006			
<b>Region:</b> 4	<b>Docket #:</b>		
<b>City:</b> AUBURN	<b>Agreement State:</b> Yes		
<b>County:</b>	<b>License #:</b> WN-M0149-1		
<b>State:</b> WA			
<b>NRC Notified by:</b> ARDEN SCROGGS		<b>Notifications:</b> MIKE RUNYAN	R4
<b>HQ Ops Officer:</b> JOE O'HARA		SCOTT MOORE	NMSS
<b>Emergency Class:</b> NON EMERGENCY			
<b>10 CFR Section:</b>			
AGREEMENT STATE			

## AGREEMENT STATE REPORT - DAMAGED SOURCES

The State provided the information via e-mail:

"This is notification of an event in Washington State as reported to or investigated by the WA Department of Health, Office of Radiation Protection.

"ABSTRACT: (where, when, how, why; cause, contributing factors, corrective actions, consequences, Dept. of Health (DOH) on-site investigation; media attention): A patient received a total of 89 sealed Iodine-125 (half-life of 60 days) seeds implanted on a permanent basis in the prostate, for a total activity of 33.84 millicuries. This was done at Auburn Regional Medical Center (ARMC), Auburn, Washington, on 25 May 2006.

"The patient was seen / rechecked by ARMC personnel on 26 May 2006. Sometime after that visit, on the same day, he was taken by family members to Good Samaritan Hospital (GSH) in Puyallup, Washington, where he subsequently died of a myocardial infarction.

"The body was released to a funeral home in Buckley, Washington where it was cremated on 30 May 2006 (about 31 millicuries). The cremains were then boxed up on 31 May 2006 and buried that same day.

"Although it was reported the patient and the patient's family were given appropriate verbal and written instructions by ARMC; when the patient was treated at GSH it was for the MI only, and had nothing to do with the prior surgical prostate procedure. The family did not, for whatever reason, inform the staff at GSH. The urologists who had treated the patient for the prostate cancer did not work at GSH and had no connection there.

"Therefore, once the patient died, personnel at GSH had no idea they were also dealing with a radioactive source

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problem. Personnel at ARMC had no way of knowing of the treatment or death of the patient since it did not occur at their facility or in their city.

"The RSO for Tacoma Radiation Oncology Center (who provides medical physics support and treatment planning for sealed source therapy to clients such as ARMC and GSH) visited the funeral home on 7 June 2006 and surveyed the crematorium using a meter with a NaI probe. Background was noted at approximately 0.4 mR/hr. Readings of approximately 3.0 mR/hr were noted at the entrance to the retort. A filter in the air exhaust system was noted to be reading approximately 1.0 mR/hr so it was removed for decay and ultimate disposal by GSH.

"It appears that most retorts operate at 1600 degrees Fahrenheit, or more, and the titanium capsule would melt a few hundred degrees lower than that. The manufacturer confirmed that all seeds had most likely been melted and would not be recovered whole. The crematorium is at this time on standby until the crematorium is declared clean for further use. It appears the most reasonable way to safely handle this cleaning chore is to have a commercial cleaning company, properly informed and equipped, clean and vacuum the retort with ARMC physics personnel in constant attendance to protect workers from any potential radiation hazards and to remove any contaminated material for decay and disposal. This is scheduled to happen 8 June 2006.

"Notification Reporting Criteria: WAC 246-221-240

"Isotope and Activity involved: Iodine 125 / 31 millicuries (at time of cremation)

"Overexposures? (number of workers/members of the public; dose estimate; body part receiving dose; consequence): to be determined, likely none.

"Lost, Stolen or Damaged? (mfg., model, serial number): melted I-125 seeds.

"Disposition/recovery: clean and hold material for decay

"Leak test? NA

"Vehicle: NA

"Release of activity? Yes

"Activity and pharmaceutical compound intended: NA

"Misadministered activity and/or compound received: NA

"Device (HDR, etc.) Mfg., Model; computer program: I-125 seeds

"Exposure (intended/actual); consequences: minimal, likely no consequences

"Was patient or responsible relative notified? Yes

"Was written report provided to patient? Yes\

"Was referring physician notified? Yes

"Consultant used? Yes"

Event Report No.: WA-06-042

\*\*\* UPDATE ON 06/19/06 AT 1900 FROM ARDEN SCROGGS TO A. COSTA \*\*\*

This incident was investigated by the WA Department of Health, Office of Radiation Protection and the Crematorium facility was released for use.

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Notified R4DO (Graves) and NMSS EO (Collins).

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## General Information (AGR)

Event # 42876

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 10/04/2006 21:02 (EST)	
<b>Licensee:</b> ISORAY		<b>Event Date / Time:</b> 10/04/2006 06:30 (PDT)	
<b>Last Modification:</b> 10/26/2006			
<b>Region:</b> 4		<b>Docket #:</b>	
<b>City:</b> RICHLAND		<b>Agreement State:</b> Yes	
<b>County:</b>		<b>License #:</b> WN-L0213-1	
<b>State:</b> WA			
<b>NRC Notified by:</b> ARDEN C. SCROGGS		<b>Notifications:</b> GREG PICK	R4
<b>HQ Ops Officer:</b> JOHN MacKINNON		LAWRENCE KOKAJKO	NMSS
<b>Emergency Class:</b> NON EMERGENCY			
<b>10 CFR Section:</b>			
AGREEMENT STATE			

This material event contains a "Less than Cat 3" level of radioactive material as defined in IAEA RS-G-1.9

## WASHINGTON AGREEMENT STATE REPORT - TWO DAMAGED SHIPPING PACKAGES CONTAINING CESIUM-131 CANCER THERAPY SEEDS.

Event sent to NRC Headquarters Operation Center via e-mail.

"ABSTRACT: (where, when, how, why; cause, contributing factors, corrective actions, consequences, Dept. of Health (DOH) on-site investigation; media attention):

"At 6:30 am, 4 October, the Spokane FedEx Terminal Manager discovered a flattened lead cap. A partial label on the cap indicated it came from one of two packages containing IsoRay, Cesium 131, therapy seeds. A second package was found crushed but essentially intact; the seeds in this package were all present and apparently undamaged. Scraps from the first box were found on the runway and other pieces on the floor of a tug (airport vehicle used to move cargo). It is thought the damage was caused when the boxes were caught between moving pieces of the cargo loading equipment. The actual incident appears to have happened 12 hours earlier (about 6 pm, 3 October). Dayshift FedEx staff had apparently placed the damaged packages on the floor on the passenger side of the tug cab.

"Four WA Department of Health, Health Physicists responded to the scene at about 8:00 am, 4 October. IsoRay also dispatched a team of three HP technicians arriving at noon with equipment including a decontamination kit. WA Department of Health staff were able to retrieve three of the sixty-three seeds that were in the one shredded package. Several areas of contamination were also found.

"Measurement on the floor of the tug's passenger side was reading 150 Mr/hour with an Eberline RO2 ion chamber. Radiation measurements on the crushed pig lid were about 25 Mr/hour with an RO2 and a



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contamination measurement of about 400 cpm with a GM instrument. Contamination reading on the crushed box was about 300 cpm with the GM instrument. A spot on the tarmac was found reading about 12 Mr/hour with an RO2.

"The undamaged stainless steel pig reads about 5 Mr/hour with an RO2.

"Night shift personnel were asked to return to the facility. No personnel contamination had been found at the writing of this report.

"WA Dept of Health and IsoRay staff continue to look for the remainder of the packaging and seeds.

"No news media attention yet.

"Notification Reporting Criteria: 10 CFR 30.50(b)(1)

"Isotope and Activity involved: 330 mCi, 12.2 Gigabecquerels of Cesium 131.

"Overexposures? (number of workers/members of the public; dose estimate; body part receiving dose; consequence); Exposures to be determined.

"Lost, Stolen or Damaged? (mfg., model, serial number): 3 of 63 missing seeds recovered, contamination found in tug, packaging and on the runway. The remainder of the activity is still being sought.

"Sealed Source and Device Registry: WA-1220-S-101-S

"Disposition/recovery: WA Dept of Health and the manufacturer staff are still on the scene to assist in recovery of seeds.

"Leak test? The seeds are leak tested prior to packaging and were within limits.

"Vehicle: (description; placards; Shipper; package type; Pkg. ID number) Airport tug, N/N FedEx air bill # 730 235 322 954.

"Release of activity? Three seeds found in the tug. Contamination found in the tug, on packaging and on the runway.

"Activity and pharmaceutical compound intended: N/A

"Misadministered activity and/or compound received: N/A

"Device (HDR, etc.) Mfg., Model; computer program: N/A

"Exposure (intended/actual); consequences: N/A

"Was patient or responsible relative notified? N/A

"Was written report provided? Not yet

"Was referring physician notified? N/A

"Consultant used? No."

Washington Incident Report - WA-06-053

\*\*\* UPDATE FROM A. SCROGGS TO W. GOTT AT 1421 ON 10/26/06 \*\*\*

The State provided the following update in the text of their original report via email:

"This is notification of an event in Washington State as reported to and investigated by the WA Department of Health, Office of Radiation Protection.

"STATUS: update / close

"Licensee: IsoRay,  
City and State: Facility in Richland, Washington  
License Number: WN-L0213-1  
Type of License: Manufacturer and Distributor (of cancer therapy seeds)

"Date of Event: 3 October 2006 (reported 4 October 06).  
Location of Event: Spokane International Airport, FedEx Terminal, Spokane Washington.

"ABSTRACT: (where, when, how, why; cause, contributing factors, corrective actions, consequences, Dept. of Health (DOH) on-site investigation; media attention):

"At 6:30 am, 4 October, the Spokane FedEx Terminal Manager discovered a flattened lead cap in the plane loading area. A partial label on the cap indicated it came from one of two packages containing IsoRay, Cesium 131, cancer therapy seeds. A second package was found crushed but essentially intact; the seeds in this package were all present and found to be undamaged. Scraps from the first box were found on the runway and other pieces on the passenger side floor of a 'tug' (airport vehicle used to move cargo containers). It is thought the damage was caused when the boxes were caught between moving pieces of the cargo loading equipment. The actual incident appears to have happened 12 hours earlier (about 6 pm, 3 October 06). Dayshift FedEx staff had apparently placed the damaged packages on the floor on the passenger side of the 'tug' cab but this was unable to be verified.

"Four WA Department of Health, Health Physicists responded to the scene at about 8:00 am, 4 October. IsoRay also dispatched a team of three HP technicians arriving at noon with equipment including a decontamination kit. WA Department of Health staff returned Thursday, Friday and Monday to continue the investigation. WA DOH was not able to find any additional material except that found October 4. These finds amounted to three seeds and a minor amount of contamination in the tug and on the loading surface. WA DOH spent 16 FTE days looking for the material and interviewing FedEx staff. Night shift personnel were asked to return to the facility. No personnel contamination was found. All parts of the complex within the FedEx secured area (buildings and property) and public areas adjacent to the FedEx secured property were searched.

"IsoRay personnel decontaminated the tug and loading surface. Took control of the three recovered seeds found in the tug and took all of the damaged packaging including the second package (damaged but intact) and its contents.

"Measurement on the floor of the 'tug's' passenger side was reading 150 mR/hour with an Eberline RO2 ion chamber. Radiation measurements on the crushed pig lid were about 25 mR/hour with an RO2 and a contamination measurement of about 400 cpm with a GM instrument. Contamination reading on the crushed box was about 300 cpm with the GM instrument. A spot on the tarmac was found reading about 12 mR/hour with an RO2.

"The outside of the undamaged stainless steel pig measurers about 5 mR/hour with an RO2. Some product is transported in a lead container and some in stainless steel. The missing material was in lead; the material in the damaged second package was in stainless steel.

"WA Dept of Health and IsoRay staff were on site for a total of 4 days. WA DOH spent approximately 16 FTE days looking for the remainder of the packaging and material. Nothing additional was able to be located.

"There was a local television media news story.

"Notification Reporting Criteria: 10 CFR 30.50(b)(1)

"Isotope and Activity involved: 330 mCi, 12.2 Gigabecquerels of Cesium 131. Cesium 131 has about a 9.2 day half-life.

"Overexposures? (number of workers/members of the public; dose estimate; body part receiving dose; consequence): The investigation indicates it unlikely that personnel received any significant radiation exposure.

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However, this could not be substantiated since facility individuals were not forthcoming with information that could be used to make an exposure determination.

"Lost, Stolen or Damaged? (mfg., model, serial number): 3 of 63 missing seeds recovered, contamination found in tug, packaging and on the runway. The remainder of the material was not able to be located.

"Sealed Source and Device Registry: WA-1220-S-101-S

"Disposition/recovery: WA DOH has indicated to FedEx management that hazardous materials transportation handling procedures should be revised and staff refresher training should be performed.

"Leak test? The seeds are leak tested prior to packaging and were within limits. Seeds from the damaged second package were found to be undamaged.

"Vehicle: (description; placards; Shipper; package type; Pkg. ID number) Airport tug, N/N FedEx air bill # 730 235 322 954.

"Release of activity? Three seeds found in the tug. Contamination found in the tug, on packaging and on the loading runway.

"Activity and pharmaceutical compound intended: N/A  
Misadministered activity and/or compound received: N/A  
Device (HDR, etc.) Mfg., Model; computer program: N/A  
Exposure (intended/actual); consequences: N/A  
Was patient or responsible relative notified? N/A "

THIS MATERIAL EVENT CONTAINS A "LESS THAN CAT 3" LEVEL OF RADIOACTIVE MATERIAL

Sources that are "Less than IAEA Category 3 sources," are either sources that are very unlikely to cause permanent injury to individuals or contain a very small amount of radioactive material that would not cause any permanent injury. Some of these sources, such as moisture density gauges or thickness gauges that are Category 4, the amount of unshielded radioactive material, if not safely managed or securely protected, could possibly - although it is unlikely - temporarily injure someone who handled it or were otherwise in contact with it, or who were close to it for a period of many weeks.

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## General Information (AGR)

Event # 42962

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 11/03/2006 13:05 (EST)	
<b>Licensee:</b> PACIFIC ECOSOLUTIONS (PECOS)		<b>Event Date / Time:</b> 11/01/2006 10:20 (PST)	
<b>Last Modification:</b> 04/24/2007			
<b>Region:</b> 4	<b>Docket #:</b>		
<b>City:</b> RICHLAND	<b>Agreement State:</b> Yes		
<b>County:</b>	<b>License #:</b> WN-I0393-1		
<b>State:</b> WA			
<b>NRC Notified by:</b> MIKEL J. ELSER		<b>Notifications:</b> MICHAEL SHANNON	R4
<b>HQ Ops Officer:</b> JOHN MacKINNON		SANDRA WASTLER	NMSS
<b>Emergency Class:</b> NON EMERGENCY			
<b>10 CFR Section:</b>			
AGREEMENT STATE			

## WASHINGTON STATE AGREEMENT STATE REPORT

This event was received via e-mail

"On November 1, three workers were involved in separating sources, lead pigs (shielded containers) and trash from a barrel. Work was being conducted in a ventilated enclosure within a PEcoS waste processing building. Two workers inside the enclosure were wearing respirators and the supervisor (not wearing a respirator) was immediately outside the enclosure directing the work. At the end of the day, the supervisor noted he was contaminated. The supervisor was scheduled for whole-body counting at the Battelle facility early the next day. An uptake of approximately 11.7 nanocuries of Americium 241 was confirmed. The preliminary dose estimate to the individual's lung was 97.5 Rem CDE. The individual was started on chelation treatment. The other two workers were sent for whole body counting on November 3.

"The operation included opening one lead pig that contained three Am-241 sources. Contamination previously had not been detected outside the pig or in the trash. Sources were surveyed for dose rate and separated from the lead pig without contamination smears being taken. No release to the public or the environment occurred. Operations in this and adjacent areas were stopped once the situation was known. An investigation was initiated by PEcoS. The area was evacuated and is currently being ventilated. DOH has an inspector on-site performing an incident investigation.

"Media is aware of the incident.

"Notification Reporting Criteria: WAC 246-221-250(2) Notification of Incidents (24 hour notification)

"Isotope and Activity Involved: Am-241 total activity from twelve drums was manifested at 6.8 GigaBq (184

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millicuries). Only one drum was open at the time of the incident.

"Overexposures? (number of workers/members of the public; dose estimate; body part receiving dose; consequence): Three workers were involved. One worker has an apparent over exposure of 97.5 Rem CDE to the Lung. No release to public or environment."

\*\*\* UPDATE FROM WASHINGTON STATE (FRAZEE) TO HUFFMAN VIA E-MAIL AT 1746 ON 11/16/06 \*\*\*

"On November 1, three workers were involved in separating sources, lead pigs (shielded containers) and trash from a barrel. Work was being conducted in a ventilated room, (previously reported as an enclosure within the room) within a PEcoS waste processing building. Two workers inside the room were wearing respirators and the supervisor (not wearing a respirator) was immediately outside the room directing the work. A very high contamination level was detected (greater than 2 million dpm/wipe) in the room at about 10:00, and the building was evacuated shortly after that. At about this time, an air sample that was in the area of the workers was counted and determined to have a very high alpha activity (10 E-9  $\mu$ Ci/ml). The supervisor and the workers were taken to a survey area and found to be contaminated on the face. Contamination was detected on the respirators. The workers were successfully decontaminated by the on site health physics department. The supervisor was scheduled for whole-body counting at the Battelle facility early the next day. An uptake of approximately 11.7 nanocuries of Americium 241 was confirmed. The preliminary dose estimate was 97.5 Rem CDE. The individual was started on chelation treatment. The other two workers were sent for whole body counting on November 3. Subsequent counts on the first individual were lower (about 9nCi), and the subsequent 2 workers follow-up counts decreased from about 6.9nCi to 3.2nCi and from 1.5nCi to 0.5nCi. The final dose received will depend on the efficiency of the chelate treatment and other factors. One additional person who was in the building was analyzed for internal Am-241 contamination, and was found to be <0.092nCi, below the detection limit of the instrument.

"The operation included opening one lead pig that contained three Am-241 sources. Contamination previously had not been detected outside the pig or in the trash. Sources were surveyed for dose rate and separated from the lead pig without contamination smears being taken. Operations in this and adjacent areas were stopped once the situation was known. An investigation was initiated by PEcoS. The area was evacuated and is currently being ventilated. DOH has an inspector on-site performing an incident investigation.

Update as of 14 November:

"The three employees are still being treated with a chelating agent. This week should be the last week. At this time, there is no update on the original activity or the activity left in the body, except that the amount of activity in the lung is decreasing. It will be several weeks before the final dose can be calculated by the licensee's consultants, which will be based on the initial lung count, the bioassay results (urine/fecal), and the effectiveness of the chelate at removing the americium from the body. At this point, we assume there are three individuals who may have exceeded their annual dose limit of 50 Rem to the bone. The final dose received by the three individuals will be calculated when sufficient information is accumulated. The three workers have returned to work exhibiting some emotional stress and slight effects from the medical treatments.

#### Plant Status

"The plant is being restarted incrementally after a safety shutdown imposed by the company. After DOH approval, two process lines have been restarted: the super compactor on the mixed waste side of operations and an inspection and sorting process, also on the mixed waste side. The licensee is completing items identified on the mixed waste thermal systems safety evaluation, and expects to restart those processes in the next few days. In addition, they are completing items identified on the low level thermal systems, but a restart date is pending. The low level processes that were affected by this accident are not being restarted, until the contamination in the building is controlled. The building that the material is in is being decontaminated, and continues to be a respirator area. The contaminated room is still inaccessible, however, a plan was completed to re-enter the room to assess the extent of the contamination. This initial entry was conducted on 11-14-06 by senior members of the Health Physics staff. As a result of the surveys conducted during the reentry, the extent of the problem they face is better understood. A plan is being developed to decontaminate the room.

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"The investigation is continuing, and the actual cause of the event does not appear to be a single cause, but rather compounding mistakes, errors in judgment and complacency for the seriousness of this type material. Corrective actions that are being taken by the licensee at this time, are primarily based on self evaluation, using the workers and technical staff. In addition, at this time DOH is requiring the company to retrain the radiological technicians as well as the workers in the different waste processes prior to restart of any process. DOH is working with the company to identify the root causes of this incident.

"No release to public or environment. Air sample analysis results for a particulate sample in the building exhaust stack was  $9.2E-3$   $\mu\text{Ci/ml}$  gross alpha.

"The building is being decontaminated, and additional containment tents are being installed around the contaminated room.

"Media is aware of the incident. Tri-City Herald (Kennewick Washington) article was published November 4, 2006.

"Notification Reporting Criteria: WAC 246-221-250(2) Notification of Incidents (24 hour notification)

"Isotope and Activity involved: Am-241 total activity from twelve drums was manifested at 6.8 GigaBq (184 millicuries). Only one drum was open at the time of the incident.

"Overexposures? (number of workers/members of the public; dose estimate; body part receiving dose; consequence): Three workers were involved. The first worker had an initial internal deposition result of 11.7 nCi. Two additional workers have been confirmed as having an internal deposition: initial results were 6.9 nCi and 1.5 nCi. Subsequent counts of all three involved personnel were lower. All three workers were given chelating treatment. The final dose will be calculated by the Battelle internal dosimetry program, following extensive testing. Other workers who were in the area are being tested. The estimated dose to the endosteal (white bone matter) from 11.7nCi is about 95 rem CDE."

R4DO (Johnson) and NMSS EO (Camper) notified.

Washington State Report # WA-06-063.

\*\*\* UPDATE ON 02/06/07 AT 1600 EST VIA E-MAIL FROM MIKEL ELSEN TO MACKINNON \*\*\*

"Update as of 5 February, 2007

"From the Department of Health's investigation into this incident, it appears that the root cause of the event was failure to adhere to procedures and plans set forth for the project, and inadequate training. Preliminary corrective actions taken by the licensee to prevent recurrence are disciplinary action to the employees involved for procedure and policy violations, a functional Alpha CAM was put in service, training performed for all staff working with radioactive material, with follow-up testing. Additionally, a reorganization of the facility which relieves the RSO of numerous tasks not related to Radiation Safety has taken place, and the facility has made a new position Special Project Lead who is assigned to work with HP and Operations Staff on special projects and compile lessons etc. The final exposure to the individuals has not yet been assigned. When the DTPA treatments have been determined done then exposures will be able to be assigned. Currently it is anticipated that the final dose calculation will be assigned by the end of February 2007. The amount of Am-241 activity in the involved drum was manifested as 71 millicuries Am-241."

R4DO (Nease) & NMSS (Greg Morell) notified.

\*\*\* UPDATE ON 04/24/07 AT 1525 EDT VIA E-MAIL FROM MIKE ELSEN TO MACKINNON \*\*\*

"Update as of April 23, 2007

"The final intake and internal dose evaluation of the PEcoS employees have been completed. The results are presented below, along with the anticipated dose they would have received if the employees did not receive the

DTPA chelating treatments.

Employee 1: Intake was estimated at 17 nCi of Am241. The estimate of the actual 50-year committed internal dose equivalents for the respective organs and tissues

"Organ / Tissue	"Actual 50-year Committed Dose Equivalent (rem)	Anticipated Dose Without Therapy (rem)
"Effective	3.8	7.3
"Bone Surface	78	150
"Liver	4.6	8.9
"Red Bone Marrow	6.2	12
"Gonads	1.1	2.1
"Lungs	1.7	1.7

Employee 2: Intake was estimated at 4 nCi of Am241. The estimate of the actual 50-year committed internal dose equivalents for the respective organs and tissues

"Organ / Tissue	"Actual 50-year Committed Dose Equivalent (rem)	Anticipated Dose Without Therapy (rem)
"Effective	1.0	1.7
"Bone Surface	22	36
"Liver	1.3	2.1
"Red Bone Marrow	1.7	2.8
"Gonads	0.29	0.48
"Lungs	0.39	0.39

Employee 3: Intake was estimated at 48 nCi of Am241. The estimate of the actual 50-year committed internal dose equivalents for the respective organs and tissues

"Organ / Tissue	"Actual 50-year Committed Dose Equivalent (rem)	Anticipated Dose Without Therapy (rem)
"Effective	4.9	21
"Bone Surface	95	430
"Liver	5.5	25
"Red Bone Marrow	7.5	34
"Gonads	1.3	5.8
"Lungs	4.7	4.7

"The licensee has taken the following corrective actions to help prevent reoccurrence:

"A Re-distribution of the RSO's work to other onsite personnel and hiring additional people to ensure adequate coverage.

"Management reorganization, to increase the oversight given to the radiation protection program.

"Increased training on procedures.

"Increased management interaction and surveillance by the RSO and other health physics staff.

"Inclusion of the engineering staff on all facility changes, such as ventilation changes."Changes to the procedures for operation of the ventilation system in buildings 1 and 2.

"Hazard analysis on the ventilation system in buildings 1 and 2, and the changes that were discussed in the hazard analysis.

"Careful analysis of the internal dose received by the affected workers.

"Assurance PECoS personnel will follow all of your procedures.

"Disciplinary action for culpable employees.

"Greater emphases to ensure that orders and instructions to the workers are clear and understood.

"Plant Status

"The plant is being restarted incrementally after a safety shutdown imposed by the company. After DOH approval, two process lines have been restarted: the super compactor on the mixed waste side of operations and an inspection and sorting process, also on the mixed waste side. The licensee is completing items identified on the mixed waste thermal systems safety evaluation, and expects to restart those processes in the next few days. In addition, they are completing items identified on the low level thermal systems, but a restart date is pending. The low level processes that were effected by this accident are not being restarted, until the contamination in the building is controlled. The building that the material is in is being decontaminated, and continues to be a respirator area. The contaminated room is still inaccessible, however, a plan was completed to re-enter the room to assess the extent of the contamination. This initial entry was conducted on 11-14-06 by senior members of the Health Physics staff. As a result of the surveys conducted during the reentry, the extent of the problem they face is better understood. A plan is being developed to decontaminate the room.

"The investigation is continuing, and the actual cause of the event does not appear to be a single cause, but rather compounding mistakes, errors in judgment and complacency for the seriousness of this type material. Corrective actions that are being taken by the licensee at this time, are primarily based on self evaluation, using the workers and technical staff. In addition, at this time DOH is requiring the company to retrain the radiological technicians as well as the workers in the different waste processes prior to restart of any process. DOH is working with the company to identify the root causes of this incident.

"No release to public or environment. Air sample analysis results for a particulate sample in the building exhaust stack was  $9.2E-3 \text{ } \mu\text{Ci/ml}$  gross alpha.

"The building is being decontaminated, and additional containment tents are being installed around the contaminated room.

"Media is aware of the incident. Tri-City Herald (Kennewick Washington) article was published November 4, 2006.

"Notification Reporting Criteria: WAC 246-221-250(2) Notification of Incidents (24 hour notification)

"Isotope and Activity involved: Am-241 total activity from twelve drums was manifested at 6.8 GigaBq (184 millicuries). Only one drum was open at the time of the incident.

"Overexposures? (number of workers/members of the public; dose estimate; body part receiving dose; consequence): Three workers were involved. The first worker had an initial internal deposition result of 11.7 nCi. Two additional workers have been confirmed as having an internal deposition: initial results were 6.9 nCi and 1.5 nCi. Subsequent counts of all three involved personnel were lower. All three workers were given chelating treatment. The final dose will be calculated by the Battelle internal dosimetry program, following extensive testing. Other workers who were in the area are being tested. The estimated dose to the endosteal (white bone matter) from 11.7nCi is about 95 rem CDE.

"Lost, Stolen or Damaged? (mfg., model, serial number): N/A

"Disposition/recovery: N/A

"Leak test? N/A

"Vehicle: (description; placards; Shipper; package type; Pkg. ID number) N/A

"Release of activity? N/A

"Activity and pharmaceutical compound intended: N/A

"Misadministered activity and/or compound received: N/A

"Device (HDR, etc.) Mfg., Model; computer program: N/A



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"Exposure (intended/actual); consequences: N/A

"Was patient or responsible relative notified? N/A

"Was written report provided to patient? N/A

"Was referring physician notified? N/A

"Consultant used? (deleted) at Battelle in vivo counter facility, (deleted) at Advanced Medical, and (deleted) at Pacific Northwest National Laboratory."

FSME (Greg Morell) & R4DO (Linda Smith).

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## General Information (AGR)

Event # 43035

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 12/06/2006 16:16 (EST)	
<b>Licensee:</b> VIRGINIA MASON MEDICAL CENTER		<b>Event Date / Time:</b> 11/29/2006 (PST)	
<b>Last Modification:</b> 01/24/2007			
<b>Region:</b> 4		<b>Docket #:</b>	
<b>City:</b> SEATTLE		<b>Agreement State:</b> Yes	
<b>County:</b>		<b>License #:</b> WN-M048-1	
<b>State:</b> WA			
<b>NRC Notified by:</b> ARDEN C SCROGGS		<b>Notifications:</b> LINDA SMITH R4	
<b>HQ Ops Officer:</b> JASON KOZAL		GARY JANOSKO NMSS	
<b>Emergency Class:</b> NON EMERGENCY			
<b>10 CFR Section:</b> AGREEMENT STATE			

This material event contains a "Less than Cat 3" level of radioactive material as defined in IAEA RS-G-1.9

## AGREEMENT STATE REPORT - LOST CANCER THERAPY SEEDS

The State provided the following information via email:

"Date and time of Event: 29 November 2006 (reported to DOH on 5 December 2006)

"Location of Event: Seattle, Washington (main campus operating room)

"ABSTRACT: A Central Services employee, who was to only clean bodily fluids from the exterior of a cancer therapy seed applicator post-use, apparently also opened the spring-loaded device displacing the remaining seeds. The remaining seven seeds in the applicator (one was later found in garbage, six are still missing) popped out. The six seeds were apparently flushed down the drain by mistake. Surveys cannot locate the seeds at this time. Cause, contributing factors, and corrective actions have not been determined as of this writing. At this time no consequences are expected and there has been no media attention.

"Isotope and Activity involved: Iodine-125, sealed brachytherapy seeds. Six seeds, total of 97.7 MegaBq (2.64 millicuries).

"Overexposures? (number of workers/members of the public; dose estimate; body part receiving dose; consequence): None noted or expected.

"Lost, Stolen or Damaged? (mfg., model, serial number): Lost, mfg/model not yet known.

"Disposition/recovery: To be determined.

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"Leak test? Original, by Manufacturer, within past six months.

"Release of activity? The seeds were apparently released to the waste water drain. No contamination was found.

"Consequences: None so far, none expected."

WA-06-068

\*\*\* UPDATE FROM A. SCROGGS TO W. GOTT AT 1455 ON 01/24/07 \*\*\*

The State provided the following information via email:

"The actual cause was determined to be inadequate training of the CS employee. The licensee has revised the procedure for handling seed implants. Now only a properly trained scrub nurse or tech will handle the applicator and accessories. At this time no consequences are expected and there has been no media attention." The six missing sources were never recovered.

Notified R4DO (M. Hay) and NMSSEO (G. Morell)

THIS MATERIAL EVENT CONTAINS A "LESS THAN CAT 3" LEVEL OF RADIOACTIVE MATERIAL

Sources that are "Less than IAEA Category 3 sources," are either sources that are very unlikely to cause permanent injury to individuals or contain a very small amount of radioactive material that would not cause any permanent injury. Some of these sources, such as moisture density gauges or thickness gauges that are Category 4, the amount of unshielded radioactive material, if not safely managed or securely protected, could possibly - although it is unlikely - temporarily injure someone who handled it or were otherwise in contact with it, or who were close to it for a period of many weeks.

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## General Information (AGR)

Event # 43120

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 01/25/2007 19:27 (EST)	
<b>Licensee:</b> UNKNOWN		<b>Event Date / Time:</b> 01/24/2007 12:00 (PST)	
<b>Last Modification:</b> 04/24/2007			
<b>Region:</b> 4	<b>Docket #:</b>		
<b>City:</b> TACOMA	<b>Agreement State:</b>	Yes	
<b>County:</b>	<b>License #:</b>		
<b>State:</b> WA			
<b>NRC Notified by:</b> ARDEN C. SCROGGS		<b>Notifications:</b> MICHAEL HAY	R4
<b>HQ Ops Officer:</b> JOHN MacKINNON		GARY JANOSKO	NMSS
<b>Emergency Class:</b> NON EMERGENCY			
<b>10 CFR Section:</b>			
AGREEMENT STATE			

**AGREEMENT STATE REPORT FROM WASHINGTON - RADIATION MONITORS AT A RECYCLING FACILITY DETECTED RADIOACTIVITY COMING FROM AN INCOMING LOAD OF SCRAP METAL**

This event was received via e-mail from the Washington State Department of Health, Office of Radiation Protection.

"Licensee: Unknown & under investigation.

"City and State: Tacoma, Washington

"License Number: Unknown & under investigation.

"Type of License: Unknown & under investigation.

"Date and time of Event: Washington DOH responded to event site 24 January 2007, ~ 11:30 am).

"Location of Event: Tacoma, Washington

"ABSTRACT: (where, when, how, why; cause, contributing factors, corrective actions, consequences, Dept. of Health (DOH) on-site investigation; media attention):

"WA DOH was notified on 24 January 2007 that radiation monitors at Schnitzer Steel (a metal recycling facility) detected radioactive sources in a load of scrap. The readings referenced by a Schnitzer's representative seemed unusually high so WA DOH staff were immediately sent to do a site investigation. Numerous meter & wipe surveys by WA DOH & Schnitzer's health physics consultant identified no site or source contamination. Four items of various materials, configurations and sizes were separated from the load. Some pieces had been wrapped in sheet lead. WA DOH staff measured from 0.6 to 80 mR/hr with an open beta window, ion-chamber survey meter. A waste disposal company had also been called to assure control of the materials for disposal. The nuclides, origins of the materials, and other details of the event remain under investigation.

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"Notification Reporting Criteria: Unknown & under investigation; possibly 10 CFR 20.2201 and WAC 246-221-240  
'Reports of stolen, lost or missing radiation sources.'

"Isotope and Activity involved: Unknown & under investigation.

"Overexposures? (number of workers/members of the public; dose estimate; body part receiving dose; consequence): Unknown & under investigation (none known at this time).

"Lost, Stolen or Damaged? (mfg., model, serial number): Unknown & under investigation (none known at this time).

"Disposition/recovery: Unknown & under investigation (none known at this time). Orphan unknown radioactive sources are secured and not a radiation hazard.

"Leak test? Unknown & under investigation (none known at this time).

"Vehicle: (description; placards; Shipper; package type; Pkg. ID number) NA

"Release of activity? Unknown & under investigation (none known at this time). Numerous meter & wipe surveys identified no contamination.

"Activity and pharmaceutical compound intended: NA

"Misadministered activity and/or compound received: NA

"Device (HDR, etc.) Mfg., Model; computer program: NA

"Exposure (intended/actual); consequences: NA

"Was patient or responsible relative notified? NA

"Was written report provided to patient? NA

"Was referring physician notified? NA

"Consultant used? Yes."

Washington State Report Number WA-07-005

\*\*\* UPDATE ON 04/24/07 AT 1500 EDT VIA E-MAIL FROM ARDEN C. SCROGGS TO MACKINNON \*\*\*

Status: Updated and Closed

"Licensee: Unable to determine after extensive investigation. There are many rumors of possible origin, including military. The military asserted that they did not lose control of these items, there is no proof of military origin, and they have established radiation safety programs / procedures / training to prevent these items from being released into the public domain. Even if these items had been used by the military years ago, does not mean that the military last possessed them and released them to the public. Many natural radium items continue to circulate through the public domain through no fault of the military / manufacturers."

License Number: Unable to determine after extensive investigation.

Type of License: Unable to determine after extensive investigation.

"WA DOH was notified on 24 January 2007 that radiation monitors at Schnitzer Steel (a metal recycling facility) detected radioactive sources in a load of scrap. The readings referenced by a Schnitzer's representative seemed unusually high so WA DOH staff was immediately sent on 24 January 2007 to do a site investigation. Numerous meter & wipe surveys by WA DOH & Schnitzer's health physics consultant identified no site or source contamination, and only minor contamination inside the yard box that contained the various items.

"Schnitzer deserves recognition for their detectors & staff that flagged & separated the unknown abandoned

radioactive materials on their way to the shredder feed. It would have been a terrible mess and a serious health hazard if they had reached the shredder. A waste disposal company worked closely with WA DOH to immediately secure the abandoned unknown radioactive materials, to ensure absence of contamination, assess the nuclide and activities, and to promptly arrange for proper disposal.

"Four distinct groups of unknown, abandoned radioactive materials, of various configurations and sizes were separated from the load. The estimated total maximum activity was 81 microcuries natural radium (radium-226). There were four distinct groups: group 1, a black coil, ~ 36 microcuries (~ 40 mR / hr max @ ~ 1 inch, beta window closed); group 2, a hook & cable & 4 guides & cylinder ~ 4 microcuries (~ 400 microrem / hr max @ ~ 1 inch, 4 guides the highest); group 3, a folded steel sheet ~ 1 microcurie (~ 28 microrem / hr max @ ~ 1 inch); & group 4, a large sandwich of asbestos / wood / thick & heavy metal, ~ 40 microcuries (~ 44 microrem / hr max @ ~ 1 inch). All activities were overestimated due to the complicated nature of the materials and inability to directly access the sandwich and the folded sheet interiors. The radium coil was wrapped in sheet lead by Schnitzer Steel staff when separated from the non-radioactive scrap.

"The coil has been recognized as one used by military decades ago; but it is not believed to have come recently from a military site. In 1977 all radium items were removed from military use, & all remaining radium items (mainly museum items) are inventoried & tracked by the military (at levels as low as 1 microcurie). Sad news is that many items still remain in public domain (we routinely receive calls / requests for help with such items). Per military scrap metal recycling contract conditions, all military scrap metal sent to recycling is separated from the other non-metal building scrap / debris, so the sandwich would not have left the military site as a sandwich; all metal would have been separated from the non-metal. All metal shipments leaving the military sites are surveyed by their military rad detectors / radiation safety staff. All military staff interviewed had an awareness of asbestos, would recognize that the asbestos needed proper sampling & handling & disposal, & would stop a shipment containing asbestos & follow their procedures to contact their hazmat asbestos abatement team.

"The many manufacturers / vendors / service reps / users / radiation professionals contacted were unable to identify these items. The general reply is that radium is not an application used in this country, & has not been for many decades. The orphans look industrial in nature, & the presence of asbestos / acoustical board / heavy metal plates / wood suggests a high-temperature use, possibly steel / metal processing. It is possible that the sandwich radium sources were used with a fill level gauge. However, radium has not been used by most manufacturers in the US, & the last time it was used was decades ago. It is possible that these are not items that originated in the United States; that is consistent with the blatant disregard for proper asbestos handling. There is a small comfort in that current vendors / users are not tossing this mess. It is troubling that there is no definite answer as to origin / generator, & that the owner / generator possibly knowingly shipped these radioactive / asbestos items to a recycling center. It appears that someone knew they were removing the non-radioactive construction sections from around the radioactive sources section. Someone must have known that they were folding the steel plate to cover / surround the source buried inside the fold. Someone also disregarded the proper asbestos disposal procedures. This indicates a willful disregard for the asbestos / radiation safety regulations, or a lack of awareness that they exist.

"Notification Reporting Criteria: Yes, per WAC 246-221-240 Reports of stolen, lost or missing radiation sources. Notification is required immediately for 100 microcuries or more of lost, stolen or missing radium-226. Notification is required within 30 days for 1 microcurie or more of radium-226 that is still lost, stolen or missing. It is unclear whether federal Nuclear Regulatory Commission 10 CFR 20.2201 Reports of theft or loss of licensed material applies, because natural radium is not considered licensed material and is not regulated until very recently.

"Isotope and Activity involved: Natural radium (radium-226), 81 microcuries total maximum estimate. Actual activity probably less due to conservative overestimating.

"Overexposures? (number of workers/members of the public; dose estimate; body part receiving dose; consequence): Extensive investigation identified no overexposures. Prompt identification & action by Schnitzer staff prevented the unknown abandoned radioactive / asbestos materials from entering the shredder feed. It would have been a terrible mess & a serious health hazard if they had reached the shredder.

"Lost, Stolen or Damaged? (mfg., model, serial number): Extensive investigation identified no licensee /owner / generator.

"Disposition/recovery: These abandoned unknown radioactive materials were immediately secured and not a radiation hazard. These abandoned radioactive materials were properly disposed of via a licensed radioactive waste disposal vendor on 28 February 2007.

"Leak test? Wipe tests of the abandoned unknown radioactive materials confirmed absence of contamination in public areas of the site, and identified slightly elevated contamination in the yard box (maximum 98 disintegrations per minute per ~ 1,000 square centimeters composite wipe), and on the abandoned radioactive materials (maximum 784 disintegrations per minute per wipe). Because wipe & meter surveys identified contamination levels below regulatory limits (WAC 246-232-140, Schedule D) and not considered a health risk, the Department of Health did not have the site decontaminated. Per its commitment to ALARA, Schnitzer also arranged for proper disposal of the slightly contaminated yard box.

"Vehicle: (description; placards; Shipper; package type; Pkg. ID number) NA

"Release of activity? Numerous meter & wipe surveys confirmed absence of contamination in public areas of the site, and identified slightly elevated contamination in the yard box, and on the abandoned radioactive materials (please see Leak tests above).

"Activity and pharmaceutical compound intended: NA

"Misadministered activity and/or compound received: NA

"Device (HDR, etc.) Mfg., Model; computer program: NA

"Exposure (intended/actual); consequences: NA

"Was patient or responsible relative notified? NA

"Was written report provided to patient? NA

"Was referring physician notified? NA

"Consultant used? Yes."

FSME (Greg Morell) & R4DO (Linda Smith) notified. E-mailed to ILTAB.

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## General Information (AGR)

Event # 43399

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 06/01/2007 13:25 (EST)	
<b>Licensee:</b> SEATTLE IRON AND METALS		<b>Event Date / Time:</b> 05/17/2007 (PDT)	
<b>Last Modification:</b> 06/01/2007			
<b>Region:</b> 4		<b>Docket #:</b>	
<b>City:</b> SEATTLE		<b>Agreement State:</b> Yes	
<b>County:</b>		<b>License #:</b> WN-R1180	
<b>State:</b> WA			
<b>NRC Notified by:</b> ARDEN SCROGGS		<b>Notifications:</b> CHUCK CAIN R4	
<b>HQ Ops Officer:</b> JASON KOZAL		GREG MORELL FSME	
<b>Emergency Class:</b> NON EMERGENCY			
<b>10 CFR Section:</b>			
AGREEMENT STATE			

## AGREEMENT STATE REPORT - NITON DEVICE SHUTTER MALFUNCTION

"ABSTRACT: (where, when, how, why; cause, contributing factors, corrective actions, consequences, Dept. of Health (DOH) on-site investigation; media attention):

"The licensee's radiation contact individual notified Washington Department of Health (DOH) on 18 May 2007 that their Niton XLP 818 device's [used for metal composition identification] shutter mechanism malfunctioned. It contains a 30-millicurie americium-241 sealed source.

"On the morning of May 17, 2007 when the licensee attempted to start their analyzer, it failed to start properly. They called the manufacturer who was unable to rectify the problem over the phone. They performed a shutter test using a Ludlum Model 19 survey meter; the reading was approximately 90 microR per hour which was greater than expected. As instructed by the manufacturer's service representative, the analyzer was packaged, properly labeled and shipped back to the manufacturer's location in Rhode Island via Federal Express. The manufacturer will repair the malfunction and perform shutter and device leak tests.

"DOH verified with the manufacturer's technical contact that the proper packaging included lead shielding adequate to completely shield the source and shutter, even if the shutter was stuck full open.

"No DOH on-site investigation. No known media attention.

"Notification Reporting Criteria:

"Per WAC 246-233-020 General License - Certain measuring, gauging or controlling devices.



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"Isotope and Activity involved: one 30-millicurie americium-241 sealed source.

"Overexposures? Unknown but most likely not. The unit was functioning properly on 16 May 2007, but first thing in the morning on 17 May 2007 the unit would not start up properly. It was then the malfunction was discovered. No workers were exposed. The RCI (radiation contact individual) and one supervisor were the only people to handle this instrument after it had failed.

"Lost, Stolen or Damaged? (mfg., model, serial number): No loss or stolen. No obvious damage. It did not appear that it was dropped or anything happened to it between shut down on 16 May 2007 and start up on 17 May 2007.

"Leak test? Shutter tests have been performed and documented every six months. Most recent leak test was 13 December 2005 (no contamination, < 0.000002 microcuries)."

WA report number : WA-07-048

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## General Information (AGR)

Event # 43535

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 07/30/2007 14:30 (EST)	
<b>Licensee:</b> SWEDISH MEDICAL CENTER		<b>Event Date / Time:</b> 07/17/2007 10:00 (PDT)	
<b>Last Modification:</b> 07/30/2007			
<b>Region:</b> 4		<b>Docket #:</b>	
<b>City:</b> SEATTLE		<b>Agreement State:</b> Yes	
<b>County:</b>		<b>License #:</b> WN-M008-1	
<b>State:</b> WA			
<b>NRC Notified by:</b> ARDEN SCROGGS		<b>Notifications:</b> JACK WHITTEN R4	
<b>HQ Ops Officer:</b> JOE O'HARA		MICHELE BURGESS FSME	
<b>Emergency Class:</b> NON EMERGENCY			
<b>10 CFR Section:</b>			
AGREEMENT STATE			

This material event contains a "Less than Cat 3" level of radioactive material as defined in IAEA RS-G-1.9

## AGREEMENT STATE REPORT - SIX LOST PALLADIUM - 103 SEEDS

The following information was received via e-mail:

"This is notification of an event in Washington State as reported to the WA Department of Health, Office of Radiation Protection.

"STATUS: Update/Closed

"Licensee: Swedish Medical Center

"City and State: Seattle, Washington

"License Number: WN-M008-1

"Type of License: Broad, Medical

"Date and time of Event: July 17, 2007, about 10 am.

"Location of Event: First Hill Campus, Operating Room, Seattle WA.

"ABSTRACT: (where, when, how, why; cause, contributing factors, corrective actions, consequences, Dept. of Health (DOH) on-site investigation; media attention):

"The licensee reported that beginning at 7:30 am on July 17, 2007; they administered 96 of 102 Palladium-103, prostate cancer therapy seeds. The 6 remaining seeds were counted and placed in a glass storage vial. The vial was labeled and put into a leaded storage container and then placed in the procedure room source storage area.

"At 10 am, it was noted that only a single storage vial was present where two were expected since two cases had been completed by that time. The rooms, waste containers and other items and adjacent areas were searched

and surveyed. A survey of the biohazard storage room was also conducted with no readings above background detected at any of the locations. Others involved with the implants searched and were also unable to find the seeds.

"At 2:30 pm the RSO was notified. Another search and survey with a Ludlum Model 2221 scaler/rate meter using a model 44-3 probe was conducted at that time. An on site search through the trash compactor of approximately 1/3 of the total waste in the compactor was also unsuccessful at finding them. The staff reviewed the implant records and determined that 6 seeds were still missing. At 8:50 pm, the RSO stopped the search and declared the seeds lost. At approximately 9:20 pm, the RSO transmitted an electronic notification to Washington DOH regarding the 6 missing prostate seeds.

"On July 18, 2007, at 8:30 am, the RSO learned the majority of the linens from the previous day's procedure were still on the loading dock. The RSO had the linen carts segregated and conducted a search and survey. The RSO completed this search and did not find the seeds in the linens. The off site laundry facility was contacted. The laundry facility manager indicated that no containers were found and they would be on the lookout for such a container.

"After reviewing the timeline and interviewing staff regarding the events, the RSO has determined the cause of the event was inattention to detail and human error on the part of the staff responsible for seed count and reconciliation.

"An analysis of the seed count and reconciliation process indicates that keeping the unused seeds in the procedure room until all cases for the day have been completed may have contributed to this event. The RSO has immediately required that at the completion of each individual procedure the unused seeds are removed from the procedure room and an independent count of the seeds conducted. This is to be performed before the next case occurs to allow immediate survey of the procedure room in the event the seed count cannot be reconciled. The RSO also has stipulated that trained staff must be present for all procedures while seeds are in use.

"The RSO has scheduled training for July 26, 2007 to review this event with all operating room staff involved with this procedure. The RSO will also review the procedural changes that have occurred as a consequence of this event. Immediately contacting the RSO will also be emphasized to other users of radioactive material at their periodic radiation safety training and to new users during their orientation.

"The department considered the licensee to have made every reasonable effort to locate the seeds. Therefore the department did not conduct an on-site investigation.

"Notification Reporting Criteria: WAC 246-221-240 Reports of Stolen, Lost, or Missing Radiation Sources .

"Isotope and Activity involved: Palladium-103 seeds (six), 1.08 mCi/seed average.

"Overexposures? (number of workers/members of the public; dose estimate; body part receiving dose; consequence): No

"Lost, Stolen or Damaged? (mfg., model, serial number): LOST: Six Palladium-103 therapy seeds (no SN's), TheraSeed model 200, manufactured by TheraGenics, 1.08 mCi/seed average, total of 6.48 mCi.

"Disposition/recovery: Irretrievably lost, no recovery expected.

"Leak test? N/A

"Vehicle: N/A.

"Release of activity? Other than the loss of the 6 seeds, none.

"Activity and pharmaceutical compound intended: N/A

"Misadministered activity and/or compound received: N/A

"Device (HDR, etc.) Mfg., Model; computer program: N/A

"Exposure (intended/actual); consequences: None expected.

"Was patient or responsible relative notified? No.

"Was written report provided to patient? No.

"Was referring physician notified? Yes, on July 18, 2007.

"Consultant used? No.

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THIS MATERIAL EVENT CONTAINS A "LESS THAN CAT 3" LEVEL OF RADIOACTIVE MATERIAL

Sources that are "Less than IAEA Category 3 sources," are either sources that are very unlikely to cause permanent injury to individuals or contain a very small amount of radioactive material that would not cause any permanent injury. Some of these sources, such as moisture density gauges or thickness gauges that are Category 4, the amount of unshielded radioactive material, if not safely managed or securely protected, could possibly - although it is unlikely - temporarily injure someone who handled it or were otherwise in contact with it, or who were close to it for a period of many weeks.

This source is not amongst those sources or devices identified by the IAEA Code of Conduct for the Safety & Security of Radioactive Sources to be of concern from a radiological standpoint. Therefore is it being categorized as a less than Category 3 source

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## General Information (AGR)

Event # 43682

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 10/02/2007 11:55 (EST)	
<b>Licensee:</b> WASHINGTON STATE DEPARTMENT OF TRAN		<b>Event Date / Time:</b> 09/28/2007 (PDT)	
<b>Last Modification:</b> 10/02/2007			
<b>Region:</b> 4	<b>Docket #:</b>		
<b>City:</b> SPOKANE	<b>Agreement State:</b> Yes		
<b>County:</b>	<b>License #:</b> WN-L035-1		
<b>State:</b> WA			
<b>NRC Notified by:</b> ARDEN SCROGGS		<b>Notifications:</b> REBECCA NEASE	R4
<b>HQ Ops Officer:</b> MARK ABRAMOVITZ		MICHELE BURGESS	FSME
<b>Emergency Class:</b> NON EMERGENCY			
<b>10 CFR Section:</b>			
AGREEMENT STATE			

## AGREEMENT STATE REPORT INVOLVING A DAMAGED TROXLER MOISTURE DENSITY GAUGE

The following information was received via email:

"Subject: Event Report Number WA-07-084.

"This is notification of an event in Washington State as reported to or investigated by the WA Department of Health, Office of Radiation Protection.

"STATUS: new

"Licensee: Washington State Department of Transportation Eastern Region

"City and State: Spokane, Washington

"License Number: WN-L035-1

"Type of License: Portable Gauge Licensee

"Date of Event: 28 September 2007

"Location of Event: Spokane, Washington

"ABSTRACT: (where, when, how, why; cause, contributing factors, corrective actions, consequences, Dept. of Health (DOH) on-site investigation; media attention):

"The licensee's radiation safety officer notified Washington Department of Health (DOH) on 01 October 2007 their Troxler portable gauge, model 3430, serial number 36039 (containing maximum of 8 millicuries Cs-137 and 40 millicuries Am-241:Be) was run over on 28 September 2007 by a small roller during road repair. The gauge did

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not have the probe extended when struck. The gauge user immediately notified their radiation safety officer and the RSO's supervisor; radiation surveys detected no elevated radiation levels, so the licensee decided to transport the device to their storage area and inform Washington DOH the following workday, Monday 01 October 2007. It was reported that only superficial damage was done to the plastic case of the gauge. The gauge was put back in the transport case and sent back to its secured storage location. Department staff are investigating.

"Washington (DOH) on-site investigation underway.

"No known media attention.

"Notification Reporting Criteria:

"Per WAC 246-221-250 (2) (d) ~ Twenty-four (24) hour notice required for equipment failure or inability to function as designed.

"Isotope and Activity involved: one Troxler model 3430, serial 36039 portable gauge, containing two radioactive sealed sources, one 8 millicuries Cs-137 maximum, & one 40 millicuries Am-241:Be maximum.

"Overexposures? (number of workers/members of the public; dose estimate; body part receiving dose; consequence): Unknown but most likely not. The unit was functioning properly on 28 September 2007. Dose rate measurements by the licensee after the gauge was rolled over detected no elevated radiation fields.

"Lost, Stolen or Damaged? (mfg., model, serial number): one Troxler model 3430, serial 36039 portable gauge, containing two radioactive sealed sources, one 8 millicuries Cs-137 maximum, & one 40 millicuries Am-241:Be maximum.

"Disposition/recovery: NA

"Leak test? Most recent leak test was collected on 18 January 2007 (no contamination, < 0.000002 microcuries).

"Vehicle: (description; placards; Shipper; package type; Pkg. ID number) NA

"Release of activity? NA

"Activity and pharmaceutical compound intended: NA

"Device (HDR, etc.) Mfg., Model; computer program: NA Exposure (intended/actual); consequences: NA

"Was patient or responsible relative notified? NA

"Was written report provided? NA

"Was referring physician notified? NA

"Consultant used? No."

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## General Information (AGR)

Event # 43797

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 11/20/2007 16:56 (EST)	
<b>Licensee:</b> AMEC EARTH & ENVIRONMENT		<b>Event Date / Time:</b> 06/14/2007 (PST)	
		<b>Last Modification:</b> 11/20/2007	
<b>Region:</b> 4		<b>Docket #:</b>	
<b>City:</b> ISSAQUAH		<b>Agreement State:</b> Yes	
<b>County:</b>		<b>License #:</b> WN-L093-1	
<b>State:</b> WA			
<b>NRC Notified by:</b> ARDEN SCROGGS		<b>Notifications:</b> JEFFREY CLARK	R4
<b>HQ Ops Officer:</b> MARK ABRAMOVITZ		ABY MOHSENI	FSME
<b>Emergency Class:</b> NON EMERGENCY		CANADA (E-MAIL)	
<b>10 CFR Section:</b>			
AGREEMENT STATE			

## AGREEMENT STATE REPORT - DAMAGED MOISTURE DENSITY GAUGE

The State provided the following information via email:

"The Licensee reported this event in June and filed a report in a letter that was misfiled causing a delay in this notification.

"A gauge user in the employ of the licensee was using a Troxler model 3440 moisture density gauge serial number 31185 at a temporary jobsite in Issaquah. The employee placed the gauge in an area staked to exclude construction traffic. The employee left the gauge unattended to retrieve an item from the user's vehicle. While away from the gauge, a pickup backed towards the gauge in the staked area. Workers in the area attempted to get the driver's attention and stop the pickup but failed. The pickup struck the gauge and caught the handle under the hitch of the truck, breaking the stationary rod and bending the source rod. The source appeared to have remained in its shielded position. The gauge was dislodged from the pickup by moving the pickup forward. The gauge user cleared personnel within a 50 foot area around the gauge and contacted the RSO. The RSO went to the jobsite with a survey meter and performed surveys. Survey readings indicated the source had remained in its shielded position. The damaged gauge rods were secured with cloth tape. The gauge was placed in the transport box and returned to its licensed storage location. A leak test was taken at that time and the results returned were normal.

"The gauge user's employment with the licensee was terminated for violating the licensee's Operating and Emergency Procedures by leaving the gauge unattended at the jobsite.

"The licensee currently reports they are still in possession of the damaged gauge and presently storing it in that condition. The licensee is working with a carrier to get it shipped properly to Troxler in North Carolina.

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"Notification Reporting Criteria: WAC 246-221-250 Notification of Incidents.

"Isotope and Activity involved: 8 mCi of Cesium 137, and 40 mCi of Americium 241 Beryllium.

"Overexposures? (number of workers/members of the public; dose estimate; body part receiving dose; consequence): None known.

"Lost, Stolen or Damaged? (mfg., model, serial number): Damaged Troxler, model 3440, Serial Number 31185.

"Disposition/recovery: The damaged gauge was placed in the manufactures transport, stored at the licensed storage location and held for pick up and repair or disposal by the manufacturer.

"Leak test? Results of the leak test taken at time of the incident were normal."

Washington Event #WA-07-059

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## General Information (AGR)

Event # 43955

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 02/01/2008 19:20 (EST)	
<b>Licensee:</b> ISORAY		<b>Event Date / Time:</b> 02/01/2008 (PST)	
		<b>Last Modification:</b> 02/11/2008	
<b>Region:</b> 4		<b>Docket #:</b>	
<b>City:</b> RICHLAND		<b>Agreement State:</b> Yes	
<b>County:</b>		<b>License #:</b> WN-L0213-1	
<b>State:</b> WA			
<b>NRC Notified by:</b> ARDEN SCROGGS		<b>Notifications:</b> MICHAEL HAY R4	
<b>HQ Ops Officer:</b> BILL HUFFMAN		LARRY CAMPER FSME	
<b>Emergency Class:</b> NON EMERGENCY		MATT HAHN (E-MAIL) ILTAB	
<b>10 CFR Section:</b>			
AGREEMENT STATE			
This material event contains a "Less than Cat 3" level of radioactive material as defined in IAEA RS-G-1.9			

## AGREEMENT STATE REPORT - DEPLETED CESIUM-131 SEEDS LOST FROM DAMAGED PACKAGE DURING SHIPMENT

The State provided the following information via email:

"The Licensee reported by phone that at 2:30 PST today a package of returned and depleted implant seeds containing Cs-131 with a 9.7 day half-life was found damaged upon receipt with some of the contents missing. The package was to have contained 15 seeds that were returned from a customer on the east coast. When the package arrived, the licensee upon receipt inspection noted the package had a hole in it that had been repaired with tape. The receipt inspection also detected higher than expected dose rates at slightly less than 1 mr/hr contact with the package. The package was taken to a controlled area suitable for bio-hazard work and opened by the RSO. The package was opened and discovered with loose seeds in the box. 11 seeds were recovered, 4 seeds are missing. An Isoray facility survey was performed between the receiving area and the controlled area where the package was opened. No additional seeds were located. The sender of the package is being contacted as well as the RSO for FedEx. Highest dose rate on contact with a single seed was 1 mr/hr. The seeds were reported to have aged seven half-lives as of this day and at 1/100th of original strength. The Licensee will update our office [the State of Washington] with additional information when it comes available."

The State does not know who originated the shipment or the initial strength of the CS-131 before the seven half-life decay.

Washington State Report Number: WA-08-007

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\*\*\* UPDATE FROM ARDEN SCROOGS TO BILL HUFFMAN ON 2/4/08 AT 1504 EST VIA E-MAIL \*\*\*

The shipment originated from Geisenger Health in Danville, PA, and was shipped by FedEx.

The original strength of the seeds was nominally 4 to 5 millicuries each, or 14 to 20 for the four missing seeds. At seven half-lives, the strength would be approximately 1/100th of the original strength, or 40 to 50 microcuries.

R4DO (Mike Shannon), FSME EO (Larry Camper), ILTAB (Matt Hahn), and R1DO (Christopher Cahill) informed.

\*\*\* UPDATE FROM ARDEN SCROOGS TO KARL DIEDERICH ON 2/11/08 AT 1134 EST VIA E-MAIL \*\*\*

"The receipt inspection detected higher than expected dose rates at ~1.7 mR/hr contact with the package.

"Detailed Carrier Information from with delivery route and timeframe.

Jan 29, 2008:

4:15 PM - Picked up in Montoursville, PA.

7:51 PM - left Montoursville, PA.

11:46PM - Arrived FedEx location in Newark, NJ.

Jan 30, 2008:

8:38 AM - Departed FedEx location in Newark, NJ.

10:41AM - Arrived FedEx location in Memphis, TN.

3:36 PM - Departed FedEx location in Memphis, TN.

6:35 PM - At sort facility in Spokane, WA.

8:49 PM - At local FedEx facility in Spokane, WA.

Jan 31, 2008:

9:52 AM - On FedEx vehicle for delivery Pasco, WA.

11:46AM - Delivered."

R4DO (Dale Powers), FSME EO (Michelle Burgess), ILTAB (Jim Whitney), and R1DO (Glenn Dentel) informed.

THIS MATERIAL EVENT CONTAINS A "LESS THAN CAT 3" LEVEL OF RADIOACTIVE MATERIAL

Sources that are "Less than IAEA Category 3 sources," are either sources that are very unlikely to cause permanent injury to individuals or contain a very small amount of radioactive material that would not cause any permanent injury. Some of these sources, such as moisture density gauges or thickness gauges that are Category 4, the amount of unshielded radioactive material, if not safely managed or securely protected, could possibly - although it is unlikely - temporarily injure someone who handled it or were otherwise in contact with it, or who were close to it for a period of many weeks.

This source is not amongst those sources or devices identified by the IAEA Code of Conduct for the Safety & Security of Radioactive Sources to be of concern from a radiological standpoint. Therefore is it being categorized as a less than Category 3 source

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## General Information (AGR)

Event # 44003

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 02/22/2008 15:32 (EST)	
<b>Licensee:</b> BOEING		<b>Event Date / Time:</b> 02/07/2008 (PST)	
		<b>Last Modification:</b> 02/22/2008	
<b>Region:</b> 4		<b>Docket #:</b>	
<b>City:</b> SEATTLE		<b>Agreement State:</b> Yes	
<b>County:</b>		<b>License #:</b> WN-I005-1	
<b>State:</b> WA			
<b>NRC Notified by:</b> ARDEN SCROGGS		<b>Notifications:</b> MICHAEL HAY	R4
<b>HQ Ops Officer:</b> JOE O'HARA		GREG SUBER	FSME
<b>Emergency Class:</b> NON EMERGENCY		CANADA	
<b>10 CFR Section:</b>			
AGREEMENT STATE			

This material event contains a "Less than Cat 3" level of radioactive material as defined in IAEA RS-G-1.9

## AGREEMENT STATE REPORT - LOST ELECTRON CAPTURE CELL CONTAINING NICKEL - 63 SOURCE

"This is notification of an event in Washington State as reported to or investigated by the WA Department of Health, Office of Radiation Protection.

"The Boeing Company reported February 7th they are unable to find one gas chromatograph electron capture cell that contains 555 MBq (15 millicuries) of nickel-63. The Licensee became aware of the missing source on January 7, 2008, during a routine survey and inventory of their radioactive waste area. Based on their investigation, the licensee thinks the source was disposed of as radioactive waste in a shipment sent to the Low Level Radioactive Waste site in December 2007. The licensee attributes this to staff not following the established procedures for the transfer and disposal of the source. The person assigned waste area duties in December has subsequently left employment with Boeing. Confirming this directly is unlikely to happen. The Boeing RSO has reviewed the procedures and believes that when they are followed they are adequate to prevent loss of a source. However, the RSO will now require two people to be involved in the radioactive waste packaging process with both signing shipment documents before they are complete. The Boeing RSO reviewed the new procedure with the radiation safety staff. We are told, the discussion emphasized the importance of following the procedures. The RSO will have the waste manifest changed to show addition of the source.

"Event Report #WA-08-011."

## THIS MATERIAL EVENT CONTAINS A "LESS THAN CAT 3" LEVEL OF RADIOACTIVE MATERIAL

Sources that are "Less than IAEA Category 3 sources," are either sources that are very unlikely to cause permanent injury to individuals or contain a very small amount of radioactive material that would not cause any

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permanent injury. Some of these sources, such as moisture density gauges or thickness gauges that are Category 4, the amount of unshielded radioactive material, if not safely managed or securely protected, could possibly - although it is unlikely - temporarily injure someone who handled it or were otherwise in contact with it, or who were close to it for a period of many weeks.

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## General Information (AGR)

Event # 44110

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 03/31/2008 18:19 (EST)	
<b>Licensee:</b> PROVIDENCE EVERETT MEDICAL CENTER		<b>Event Date / Time:</b> 03/28/2008 (PDT)	
		<b>Last Modification:</b> 04/18/2008	
<b>Region:</b> 4	<b>Docket #:</b>		
<b>City:</b> EVERETT	<b>Agreement State:</b> Yes		
<b>County:</b>	<b>License #:</b> WN-M0135-1		
<b>State:</b> WA			
<b>NRC Notified by:</b> ARDEN C. SCROGGS		<b>Notifications:</b> RYAN LANTZ	<b>R4</b>
<b>HQ Ops Officer:</b> STEVE SANDIN		KEITH McCONNELL	<b>FSME</b>
<b>Emergency Class:</b> NON EMERGENCY			
<b>10 CFR Section:</b>			
AGREEMENT STATE			

## AGREEMENT STATE REPORT INVOLVING A PARTIAL EQUIPMENT FAILURE OF AN HDR UNIT DURING A SOURCE EXCHANGE

The following information was received from the State of Washington via email (quotations omitted for ease of reading):

STATUS: New

Licensee: Providence Everett Medical Center  
City and State: Everett, WA  
License Number: WN-M0135-1  
Type of License: Medical  
Date and time of Event: 28 March 2008  
Location of Event: Everett, WA

**ABSTRACT:** (where, when, how, why; cause, contributing factors, corrective actions, consequences, Dept. of Health (DOH) on-site investigation; media attention):

A Varian Medical Systems (varian) representative was attempting a routine source exchange at the licensee's facility. There were no patients or Medical Center staff involved in the source exchange process. The varian rep noted some trouble with making the "old" source enter the exchange container. After several attempts the rep realized the transfer was not proceeding as expected. The rep telephoned staff at Varian Corporate headquarters for assistance. The decision was made to cut the source wire near the source and place the source assembly into the emergency shielded source container (emergency pig). After the wire was snipped and the cut piece placed into the emergency pig, the rep performed a survey and noticed that the radiation levels were less than expected.

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At this time the licensee and the Varian rep both notified the Office of Radiation Protection of the event by telephone.

The room was locked and barrier tape placed across the door. A Varian recovery team was called for and arrived at the Medical Center, with the source designer, on Saturday, 29 March 2008.

An Office of Radiation Protection investigator also joined the team on Saturday to direct the onsite investigation and recovery.

The investigation determined that both the dummy wire and the source wire had tried to exit the HDR unit simultaneously. The wires become stuck in the "home switch" part of the HDR. When a wire was cut it had been the dummy wire and not the source assembly wire. The cutoff dummy wire had been placed into the emergency pig which had given lower than the expected dose rate readings.

On Saturday, the recovery team successfully retracted the source into the HDR. Testing is underway to determine why the HDR source exchange process had allowed both wires to be sent out at once. A comprehensive written report is expected from the manufacturer within the next few days.

Notification Reporting Criteria: WAC 246-220-250 Equipment Failure.

Isotope and Activity involved: HDR Sealed Source: Ir-192, approximately 185 GBq (5 Curies).

Overexposures? (number of workers/members of the public; dose estimate; body part receiving dose; consequence): None

Lost, Stolen or Damaged? (mfg., model, serial number): Varian HDR source model VS2000 (not lost, not stolen, possibly damaged).

Disposition/recovery: Source recovered 29 March 2008 by Varian recovery team.

Leak test? No "official" leak test yet but several contamination wipe surveys were performed during the course of the recovery. All of these were negative.

Vehicle: N/A

Release of activity? None

Activity and pharmaceutical compound intended: N/A

Misadministered activity and/or compound received: N/A

Device (HDR, etc.) Mfg., Model; Varian VariSource Ix (Trademark) HDR

Exposure (intended/actual); consequences: None to patients and the public. The highest exposure received by a recovery team member was 87 mRem.

Was patient or responsible relative notified? N/A

Was written report provided to patient? N/A

Was referring physician notified? N/A

Consultant used? No

Event Report # WA-08-020.

\*\*\* UPDATE VIA E-MAIL FROM ARDEN SCROGGS TO JASON KOZAL ON 04/18/08 AT 1836 \*\*\*

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"A written report was received [by the state] from the manufacturer.

"The Varian report concluded the cause of the incident was "the service engineer mistakenly extending the active source wire while the dummy wire was already in the same pathway. This action jammed the dummy and source wires at the home switch and prevented the active wire from properly retracting to the tungsten safe when commanded."

"[The manufacturer] also concluded the likelihood of a licensee / operator recreating this type of event was nil, since the conditions which allowed this to happen are only present when the factory service engineer is working on the unit.

"This was originally reported as an equipment failure but now appears to be an error by the manufacturer's representative."

Notified R4DO (Clark) and FSME (Von Till).

\*\*\*\*\*

## General Information (AGR)

Event # 44464

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 09/04/2008 18:13 (EST)	
<b>Licensee:</b> UNKNOWN		<b>Event Date / Time:</b> 08/08/2008 (PDT)	
		<b>Last Modification:</b> 09/04/2008	
<b>Region:</b> 4	<b>Docket #:</b>		
<b>City:</b> SEATTLE	<b>Agreement State:</b> Yes		
<b>County:</b>	<b>License #:</b>		
<b>State:</b> WA			
<b>NRC Notified by:</b> ARDEN C. SCROGGS		<b>Notifications:</b> WILLIAM JONES	R4
<b>HQ Ops Officer:</b> STEVE SANDIN		RICHARD TURTIL	FSME
<b>Emergency Class:</b> NON EMERGENCY		CANADA (via fax)	
<b>10 CFR Section:</b>		ILTAB (via email)	
AGREEMENT STATE			

This material event contains a "Less than Cat 3" level of radioactive material as defined in IAEA RS-G-1.9

## AGREEMENT STATE REPORT INVOLVING A LOST OR STOLEN TRITIUM EXIT SIGN

The following report was received via email from the State of Washington:

"On August 22, 2008 the department received a report of missing GL radioactive material by a property manager of an apartment building in Seattle, Washington. The device is a Tritium exit sign light module, manufactured by Shield Source Incorporated of Ontario, Canada. Calculations indicate that on August 27, 2008, the source activity was 251 GBq (6.8 curies) of Hydrogen-3. The last known location of the device and radioactive source was in an apartment building located at 1535 Bellevue Ave, Seattle, Washington. The device was discovered missing by the apartment manager's maintenance staff sometime around August 8, 2008. When the maintenance person called an exit sign distributor to order a replacement exit sign, the distributor told the individual to report the missing exit sign to the department.

"Keywords: MATERIAL STOLEN AND NOT RECOVERED

"Form of Radioactive Material: SEALED SOURCE

"Manufacturer: SHIELD SOURCE INC

"Model Number: NR

"Radionuclide or Voltage (kVp/MeV): H-3

"Source Use: SELF LUMINOUS Activity: 6.8 Ci [or] 251.6 GBq

"Device Name: RADIOLUMINESCENT SIGN

"Manufacturer: SHIELD SOURCE INC

"Model Number: EITHER 101 OR 201



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"Reference Number: WA-08-059"

**THIS MATERIAL EVENT CONTAINS A "LESS THAN CAT 3" LEVEL OF RADIOACTIVE MATERIAL**

Sources that are "Less than IAEA Category 3 sources," are either sources that are very unlikely to cause permanent injury to individuals or contain a very small amount of radioactive material that would not cause any permanent injury. Some of these sources, such as moisture density gauges or thickness gauges that are Category 4, the amount of unshielded radioactive material, if not safely managed or securely protected, could possibly - although it is unlikely - temporarily injure someone who handled it or were otherwise in contact with it, or who were close to it for a period of many weeks.

This source is not amongst those sources or devices identified by the IAEA Code of Conduct for the Safety & Security of Radioactive Sources to be of concern from a radiological standpoint. Therefore is it being categorized as a less than Category 3 source

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## General Information (AGR)

Event # 45234

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 07/29/2009 11:40 (EDT)	
<b>Licensee:</b> COLE & ASSOCIATES TRAINING AND CONSUL		<b>Event Date / Time:</b> 07/22/2009 (PDT)	
<b>Last Modification:</b> 07/29/2009			
<b>Region:</b> 4	<b>Docket #:</b>		
<b>City:</b> KENT	<b>Agreement State:</b> Yes		
<b>County:</b>	<b>License #:</b> WN-R0979		
<b>State:</b> WA			
<b>NRC Notified by:</b> BRANDIN KETTER		<b>Notifications:</b> BLAIR SPITZBERG	R4DO
<b>HQ Ops Officer:</b> BILL HUFFMAN		GLENDIA VILLAMAR	FSME D
<b>Emergency Class:</b> NON EMERGENCY		ILTAB VIA EMAIL	
<b>10 CFR Section:</b>		CANADA VIA EMAIL	
AGREEMENT STATE			

This material event contains a "Less than Cat 3" level of radioactive material as defined in IAEA RS-G-1.9

## AGREEMENT STATE - LOST OR STOLEN X-RAY FLUORESCENCE DEVICE

The following report was sent from the State of Washington via email:

"On 22 July, 2009 [the Washington State Office of Radiation Protection] received a report of a missing XRF device. On 20 July, 2009, an employee at Cole & Associates, failed to report to work and has yet to contact employer's office as to their whereabouts. The employee has not been seen nor heard from. The employee was performing inspections at the Veterans Hospital in Tacoma, Washington, the employee's home town. The employee had in their possession a Thermo Fischer Scientific Niton XL 309 X-ray Fluorescence (XRF) device, serial number U2615TRO459, with an 14 millicurie Cadmium-109 source dated 11/15/2008.

"The XRF device is used exclusively for lead analysis in paint. Thermo Fisher Scientific has been notified and will alert the licensee if anyone turns in the unit in to them. A report was also filed with the Kent police."

Washington Report WA-09-049. Cadmium-109 has a half life of 462 days.

## THIS MATERIAL EVENT CONTAINS A "LESS THAN CAT 3" LEVEL OF RADIOACTIVE MATERIAL

Sources that are "Less than IAEA Category 3 sources," are either sources that are very unlikely to cause permanent injury to individuals or contain a very small amount of radioactive material that would not cause any permanent injury. Some of these sources, such as moisture density gauges or thickness gauges that are Category 4, the amount of unshielded radioactive material, if not safely managed or securely protected, could possibly - although it is unlikely - temporarily injure someone who handled it or were otherwise in contact with it, or who were close to it for a period of many weeks.

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## General Information (AGR)

Event # 45272

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 08/18/2009 12:33 (EDT)	
<b>Licensee:</b> TTM TECHNOLOGIES		<b>Event Date / Time:</b> 08/06/2009 (PDT)	
		<b>Last Modification:</b> 08/18/2009	
<b>Region:</b> 4	<b>Docket #:</b>		
<b>City:</b> REDMOND	<b>Agreement State:</b> Yes		
<b>County:</b>	<b>License #:</b> R0012		
<b>State:</b> WA			
<b>NRC Notified by:</b> BRANDIN KETTER		<b>Notifications:</b> WILLIAM JONES	R4DO
<b>HQ Ops Officer:</b> JOHN KNOKE		ANGELA MCINTOSH	FSME D
<b>Emergency Class:</b> NON EMERGENCY		EMAIL ONLY	ILTAB
<b>10 CFR Section:</b>		CANADA VIA FAX	
AGREEMENT STATE			

This material event contains a "Less than Cat 3" level of radioactive material as defined in IAEA RS-G-1.9

## AGREEMENT STATE REPORT - NINE MISSING PO-210 AND PM-147 SEALED SOURCES

"On 19 June 2009, TTM Technologies in Redmond was contacted as part of a routine check of their inventory of generally licensed devices. It was discovered at this time that the facility was closing and that the gauges and static eliminators had been sent to TTM Technologies facilities in other states. TTM Technologies has since tracked down as many of the missing devices as possible. Those facilities that have received sources have been informed of the reporting requirements and regulations surrounding those generally licensed devices. NRD, Inc. was contacted to see if any of the remaining unaccounted for sources had been returned to them. They have not been. The remaining missing sources are being reported as lost.

"This report lists eight devices/sources. A ninth device/source (exactly the same as number 8 except for the serial number) is being included here instead. This device/source is serial number A2CK423. Seven of the nine devices/sources are Po-210 static eliminators and have gone through more than ten half-lives. The other two devices are sources of Pm-147 in beta backscatter gauges and have gone through approximately 8 half-lives. It is therefore concluded that the missing sources are of little threat to human health and safety.

## "Source of Radiation:

Source Number: 1

Form of Radioactive Material: SEALED SOURCE

Radionuclide: PM-147

Source Use: OTHER

Activity: 0.9E-3 Ci 0.0333 GBq

Manufacturer: OXFORD INSTRUMENT

Model Number: GM-1

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Serial Number: 75125P

"Source Number: 2  
Form of Radioactive Material: SEALED SOURCE  
Radionuclide: PM-147  
Source Use: OTHER  
Activity: 0.6E-3 Ci 0.0222 GBq  
Manufacturer: OXFORD INSTRUMENT  
Model Number: GM-1  
Serial Number: 65986P

"Source Number: 3  
Form of Radioactive Material: SEALED SOURCE  
Radionuclide: PO-210  
Source Use: STATIC ELIMINATOR  
Activity: 0.05513 Ci 2.03981 GBq  
Manufacturer: NRD, INC  
Model Number: P-2001  
Serial Number: A2EA910

"Source Number: 4  
Form of Radioactive Material: SEALED SOURCE  
Radionuclide: PO-210  
Source Use: STATIC ELIMINATOR  
Activity: 0.05513 Ci 2.03981 GBq  
Manufacturer: NRD, INC  
Model Number: P-2001  
Serial Number: A2BM653

"Source Number: 5  
Form of Radioactive Material: SEALED SOURCE  
Radionuclide: PO-210  
Source Use: STATIC ELIMINATOR  
Activity: 0.05513 Ci 2.03981 GBq  
Manufacturer: NRD, INC  
Model Number: P-2021  
Serial Number: A2DY847

"Source Number: 6  
Form of Radioactive Material: SEALED SOURCE  
Radionuclide: PO-210  
Source Use: STATIC ELIMINATOR  
Activity: 0.010 Ci 0.37 GBq  
Manufacturer: NRD, INC  
Model Number: P-2021  
Serial Number: A2CE789

"Source Number: 7  
Form of Radioactive Material: SEALED SOURCE  
Radionuclide: PO-210  
Source Use: STATIC ELIMINATOR  
Activity: 0.010 Ci 0.37 GBq  
Manufacturer: NRD, INC  
Model Number: P-2021  
Serial Number: A2BM653

"Source Number: 8

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Form of Radioactive Material: SEALED SOURCE

Radionuclide: PO-210

Source Use: STATIC ELIMINATOR

Activity: 0.010 Ci 0.37 GBq

Manufacturer: NRD, INC

Model Number: P-2021

Serial Number: A2CK423

"Corrective Actions: 1 Personnel received additional training."

Washington state reporting requirement WAC 246-221-240

Washington Report No: WA090061

THIS MATERIAL EVENT CONTAINS A "LESS THAN CAT 3" LEVEL OF RADIOACTIVE MATERIAL

Sources that are "Less than IAEA Category 3 sources," are either sources that are very unlikely to cause permanent injury to individuals or contain a very small amount of radioactive material that would not cause any permanent injury. Some of these sources, such as moisture density gauges or thickness gauges that are Category 4, the amount of unshielded radioactive material, if not safely managed or securely protected, could possibly - although it is unlikely - temporarily injure someone who handled it or were otherwise in contact with it, or who were close to it for a period of many weeks.

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Agreement State (AGR)		Event #	47073
Rep Org: WA DIVISION OF RADIATION PROTECTION		Notification Date / Time: 07/19/2011 13:30 (EDT)	
Licensee: WESTPORT SHIPYARD, INC		Event Date / Time: 07/10/2011 12:00 (PDT)	
		Last Modification: 07/19/2011	
Region: 4	Docket #:		
City: PORT ANGELES	Agreement State: Yes		
County:	License #: R1163		
State: WA			
NRC Notified by: BRANDY KETTER	Notifications: VIVIAN CAMPBELL	R4DO	
HQ Ops Officer: BILL HUFFMAN	RON ZELAC	FSME D	
Emergency Class: NON EMERGENCY	ILTAB VIA E-MAIL		
10 CFR Section:			
AGREEMENT STATE			
This material event contains a "Less than Cat 3" level of radioactive material as defined in IAEA RS-G-1.9			

**AGREEMENT STATE REPORT - LOST STATIC ELIMINATOR CONTAINING A 40 MILLICURIE PO-210 SOURCE**

The following event report was received from the Washington Office of Radiation Protection via e-mail:

"On or about 10 July 2011, upon taking inventory of the static eliminators, a device was found to be missing. The device was leased from NRD, LLC on 10 November 2009. The last time the device was used was 2 June 2011. Upon discovering the device was missing, a thorough search of the facility was conducted to include personal lockers, the boat, the boat parts, the boat house, as well as other facilities around the company. At this time no one knows the location of the device, whether it was stolen, misplaced or thrown away. The company will inform the department if the device is found. Since this incident, Westport Shipyard 50 Meter Facility has changed its protocols for issuing and receiving these types of devices. They will be placed in the safety department in a locked cabinet. They will be logged out by safety on the day of use and logged back in the same day. Only leads and Supervisor will have the ability to sign for these devices and will be held accountable for their safe return at the end of the operation."

The static eliminator was manufactured by NRD, LLC; Model # P-2030-0010 / Serial # A2GY503. The device contains a Po-210, 40 milliCurie sealed source.

Washington State Report: WA110035

THIS MATERIAL EVENT CONTAINS A "LESS THAN CAT 3" LEVEL OF RADIOACTIVE MATERIAL

Sources that are "Less than IAEA Category 3 sources," are either sources that are very unlikely to cause

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permanent injury to individuals or contain a very small amount of radioactive material that would not cause any permanent injury. Some of these sources, such as moisture density gauges or thickness gauges that are Category 4, the amount of unshielded radioactive material, if not safely managed or securely protected, could possibly - although it is unlikely - temporarily injure someone who handled it or were otherwise in contact with it, or who were close to it for a period of many weeks. For additional information go to [http://www-pub.iaea.org/MTCD/publications/PDF/Pub1227\\_web.pdf](http://www-pub.iaea.org/MTCD/publications/PDF/Pub1227_web.pdf)

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Agreement State (AGR)

Event # 48068

<b>Rep Org:</b> WA DIVISION OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 07/03/2012 17:26 (EDT)	
<b>Licensee:</b> BRUKER AXS HANDHELD, INC		<b>Event Date / Time:</b> 06/05/2012 (PDT)	
<b>Last Modification:</b> 07/03/2012			
<b>Region:</b> 4	<b>Docket #:</b>		
<b>City:</b> KENNEWICK	<b>Agreement State:</b> Yes		
<b>County:</b>	<b>License #:</b> WN-10282-1		
<b>State:</b> WA			
<b>NRC Notified by:</b> BRANDIN KETTER		<b>Notifications:</b> DON ALLEN	R4DO
<b>HQ Ops Officer:</b> DONG HWA PARK		FSME EVENTS RESOURCE	EMAIL
<b>Emergency Class:</b> NON EMERGENCY		CANADA	FAX
<b>10 CFR Section:</b>			
AGREEMENT STATE			
This material event contains a "Less than Cat 3" level of radioactive material as defined in IAEA RS-G-1.9			

#### LOST SEALED SOURCES

The following was reported from the state via e-mail:

"During a routine six-month inventory, the licensee was unable to locate four (4) sealed sources, of which one has an activity that exceeds exempt quantities. The last known person using the sources was contacted on June 5, 2012 to determine if they were in his possession. He indicated that the previous x-ray RSO had found them and returned them to the source locker. However, the former x-ray RSO indicated that in-fact he did not locate the sources. Management and the materials RSO was notified and an investigation was initiated.

"All staff members were questioned and asked to check around their work areas. The assistant RSO checked all devices, pigs, the source cabinet and surveyed the entire facility, including shipping and receiving, with a micro-R survey meter. None of the sources were located on any disposal or transfer records.

"The sources were used in a prototype instrument called Plombix, designed to operate with an exempt source in the shape of a washer, and were used only for in house experiments. The missing sources were designed for this prototype instrument and do not fit all other instruments at this facility.

"Washington Department of Health corrective action is pending.

"The Assistant RSO indicated that sufficient controls are not in place to maintain control of sources stored outside the source locker, and that a single company source custodian will be assigned for all sources.

"Source Number: 1;

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Source/Radioactive Material: SEALED SOURCE M & D;  
Radionuclide: CD-109, 0.00000194 Ci, 0.000007178 GBq;  
Manufacturer: ISOTOPE PRODUCTS LAB;  
Model Number: MISC-IND;  
Serial Number: 1112-35.

"Source Number: 2;  
Source/Radioactive Material: SEALED SOURCE M & D;  
Radionuclide: CD-109, 0.000064 Ci, 0.002368 GBq;  
Manufacturer: ISOTOPE PRODUCTS LAB;  
Model Number: MISC-IND;  
Serial Number: D1-472.

"Source Number: 3;  
Source/Radioactive Material: SEALED SOURCE M & D;  
Radionuclide: CO-57, 0.000005 Ci, 0.000185 GBq;  
Manufacturer: ISOTOPE PRODUCTS LAB;  
Model Number: RFQ482-3;  
Serial Number: C9-333.

"Source Number: 4;  
Source/Radioactive Material: SEALED SOURCE M & D;  
Radionuclide: CO-57, 0.000000122 Ci 0.000004514 GBq;  
Manufacturer: ISOTOPE PRODUCTS LAB;  
Model Number: MISC-IND;  
Serial Number: 1096-28.

"Reference Number: WA-12-047"

THIS MATERIAL EVENT CONTAINS A "LESS THAN CAT 3" LEVEL OF RADIOACTIVE MATERIAL

Sources that are "Less than IAEA Category 3 sources," are either sources that are very unlikely to cause permanent injury to individuals or contain a very small amount of radioactive material that would not cause any permanent injury. Some of these sources, such as moisture density gauges or thickness gauges that are Category 4, the amount of unshielded radioactive material, if not safely managed or securely protected, could possibly - although it is unlikely - temporarily injure someone who handled it or were otherwise in contact with it, or who were close to it for a period of many weeks. For additional information go to [http://www-pub.iaea.org/MTCD/publications/PDF/Pub1227\\_web.pdf](http://www-pub.iaea.org/MTCD/publications/PDF/Pub1227_web.pdf)

This source is not amongst those sources or devices identified by the IAEA Code of Conduct for the Safety & Security of Radioactive Sources to be of concern from a radiological standpoint. Therefore is it being categorized as a less than Category 3 source

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Agreement State (AGR)

Event # 51709

<b>Rep Org:</b> WA OFFICE OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 02/04/2016 16:47 (EST)	
<b>Licensee:</b> ISORAY		<b>Event Date / Time:</b> 02/04/2016 (PST)	
<b>Last Modification:</b> 02/17/2016			
<b>Region:</b> 4	<b>Docket #:</b>		
<b>City:</b> RICHLAND	<b>Agreement State:</b> Yes		
<b>County:</b>	<b>License #:</b> WN-L0213-1		
<b>State:</b> WA			
<b>NRC Notified by:</b> ANINE GRUMBLES	<b>Notifications:</b> GREG PICK	R4DO	
<b>HQ Ops Officer:</b> JEFF HERRERA	NMSS_EVENTS_NOTIFICATI	EMAIL	
<b>Emergency Class:</b> NON EMERGENCY	CNSC (CANADA)	FAX	
<b>10 CFR Section:</b>			
AGREEMENT STATE			
This material event contains a "Less than Cat 3" level of radioactive material as defined in IAEA RS-G-1.9			

## AGREEMENT STATE - LOST SHIPMENT OF CS-131 BRACHYTHERAPY SEEDS

The following report was received from the Washington Department of Health, Office of Radiation Protection via email:

"[On] 2/4/16, [a common carrier] has lost track of a RAM [radioactive material] Cs-131 brachytherapy seed shipment sent for a patient near Atlanta, GA. The seeds did not reach their destination in time for the implant in a patient at a clinic approximately 1 to 1.5 hrs from Atlanta, so the customer alerted IsoRay. According to IsoRay's Radiation Safety Officer, [the common carrier] is looking for the package. [The common carrier] thinks there is a possibility that the shipment may have been mistakenly transferred from the [common carriers] plane to the US Postal Service at the air field in Atlanta. IsoRay's Radiation Safety Officer called Washington State at [approximately] 9:40 AM [EST] to report the loss. Additional information is forthcoming."

Washington Incident Number: WA-16-004

\*\*\* UPDATE FROM ANINE GRUMBLES TO DANIEL MILLS AT 1750 EST ON 2/08/2016 \*\*\*

The following was received from Washington via email:

"Quantity of seeds in order: 48

"Air kerma strength in micrograys per sq. meter/hr (U) - 2.02 - 2.08 = total 98 U

"Total apparent activity= 154 mCi (range from 3.17 - 3.26 mCi/seed)

"T1/2 = 9.69 days [half-life]"

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Notified R4DO (O'Keefe), NMSS\_EVENTS\_NOTIFICATION (email), and CNSC Canada (email).

\*\*\* UPDATE FROM ANINE GRUMBLES TO DANIEL MILLS AT 1640 EST ON 2/17/2016 \*\*\*

The following was received from Washington via email:

"According to the Radiation Safety Officer at the seed manufacturer/distributor, IsoRay, the US Postal Service delivered the lost package to the intended user at the end of last week. The source had decayed to the point of being useless. The customer is going to send shipment back to IsoRay."

Notified R4DO (Vasquez), NMSS\_EVENTS\_NOTIFICATION (email), and CNSC Canada (email).

THIS MATERIAL EVENT CONTAINS A "LESS THAN CAT 3" LEVEL OF RADIOACTIVE MATERIAL

Sources that are "Less than IAEA Category 3 sources," are either sources that are very unlikely to cause permanent injury to individuals or contain a very small amount of radioactive material that would not cause any permanent injury. Some of these sources, such as moisture density gauges or thickness gauges that are Category 4, the amount of unshielded radioactive material, if not safely managed or securely protected, could possibly - although it is unlikely - temporarily injure someone who handled it or were otherwise in contact with it, or who were close to it for a period of many weeks. For additional information go to [http://www-pub.iaea.org/MTCD/publications/PDF/Pub1227\\_web.pdf](http://www-pub.iaea.org/MTCD/publications/PDF/Pub1227_web.pdf)

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Agreement State (AGR)

Event # 51879

<b>Rep Org:</b> WA OFFICE OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 04/22/2016 20:00 (EDT)	
<b>Licensee:</b> UNIVERSITY OF WASHINGTON		<b>Event Date / Time:</b> 04/20/2016 (PDT)	
<b>Last Modification:</b> 05/18/2016			
<b>Region:</b> 4	<b>Docket #:</b>		
<b>City:</b> SEATTLE	<b>Agreement State:</b> Yes		
<b>County:</b>	<b>License #:</b> WN-C001-1		
<b>State:</b> WA			
<b>NRC Notified by:</b> JAMES KILLINGBECK		<b>Notifications:</b> HEATHER GEFFORD R4DO	
<b>HQ Ops Officer:</b> DONG HWA PARK		NMSS_EVENTS_NOTIFICATION EMAIL	
<b>Emergency Class:</b> NON EMERGENCY			
<b>10 CFR Section:</b>			
AGREEMENT STATE			
This material event contains a "Less than Cat 3" level of radioactive material as defined in IAEA RS-G-1.9			

## AGREEMENT STATE REPORT - MISSING STATIC IONIZATION SOURCE

The following report was received from the State of Washington via email:

"On 4/21/2016, the Radiation Safety Officer at University of Washington reported by phone and by email that a Po-210 static ionization source was missing from a lab at the Southlake Union [SLU] Campus. The static ionization source had been placed in a cardboard box in preparation for shipment back to NRD [manufacturer]. Someone in the lab thought the box was empty and placed it in the recycling. This was discovered on Monday, and the lab had been searching for it for a couple of days before notifying the Radiation Safety Officer.

"The immediate report value for Po-210 is 100 microCi and the 30 day report value is 1 microCi.  
 Source information: Isotope: Po-210, Manufacturer: NRD, Model: P-2001, Initial Activity: 5 mCi (May 2015),  
 Current Activity: approximately 1 mCi  
 Device information: NucleSpot - Static Eliminator, Manufacturer: NRD, Model: P-2042-1000, Serial Number: Not reported.

"The facilities personnel are currently trying to find out from [the recycling company] where the recycling is taken for processing. [The recycling company] picks up recycling from the SLU campus twice a week on Friday and Tuesday. University of Washington Principal Investigator lab informed NRD of the loss. Once their investigation is complete, UW will provide us [WA Office of Radiation Protection] with a written report as required by WAC 246-221-240(2).

"Incident Number: WA-16-018"

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\*\*\* UPDATE AT 1541 EDT ON 05/18/16 FROM ANINE GRUMBLES TO S. SANDIN \*\*\*

The following information was received from the State of Washington via email:

"WA-16-018 Po-210 static ionization source missing from University of Washington

"Update and Closure

"University of Washington submitted their final report on the lost Po-210 static eliminator. University of Washington is a Broad Scope A Licensee.

"Their [University of Washington] Radiation Safety staff performed a thorough investigation and search for the source.

"There are a total of six possible routes the source may have taken; all of which end up overseas. Initially, three potential avenues were explored at Recology CleanScapes:

1. If source stayed inside the box with the paper - processed as corrugated cardboard and sent overseas for recycling processing
2. If paper came out of the box and source stayed with paper - processed as mixed paper and sent overseas for recycling process
3. If paper came out of box and source came out of the paper - source would have filtered out into glass recycling stream (includes metal), which is sent to Strategic Materials. The RSO contacted Strategic Materials and identified an additional three possible outcomes for the source, if it made it to the Strategic Materials facility.
4. All incoming material is first passed by a large magnet, if the source housing was ferrous enough the source would have been transferred to a metal recycler. The source model is believed to have an aluminum housing.
5. If the source was not pulled out by the magnet, it was either manually removed by a picker and thrown in the trash, or
6. The source was pulled out by an Eddy Current device and would be in one of the device collection bins. This also would have been thrown in the trash. Staff at both facilities were shown photos of the source and interviewed, and no one had seen or moved the source.

"Ultimately, it is believed that the source, thoroughly wrapped in in paper, in a corrugated box was processed and sent overseas in a bulk cardboard or mixed paper recycle bundle.

"The Registry of Radioactive Sealed Sources and Devices - Safety Evaluation of Device (Number: NY 502 D 108 G) for the P-2042 model indicates an maximum external exposure rate of 0.05 mR/hr on contact with the source. This is equivalent to background radiation levels. It should be noted that the principle emission of Po-210 is an alpha particle, so the exposure falls off rapidly with increasing distance from the source. Therefore, the exposure to any individual handling the source would be negligible. Since Po-210 is an alpha emitter, the highest risk would be to a person who ate the radioactive foil. However, this scenario is extremely unlikely due to the fact that the individual would have to first remove the foil from the housing, and then have a desire to eat the foil.

"Some new additions to the information:

Manufacturer: NRD Inc.  
Device Type: NucleSpot - Static Eliminator  
Device Model: P-2042-1000  
Sealed Source Model Designation: P-2001  
Serial Number: A2KG893  
NRD Lease Number: 059345  
Shipped to UW: 5/21/2015  
Original Activity: 5 millicuries  
Activity when lost: 1 millicurie

"This source is considered lost and unrecoverable. The assessed health and safety risk is very low. This incident is considered CLOSED."

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Notified R4DO (Miller) and NMSS Events Notification via email.

THIS MATERIAL EVENT CONTAINS A "LESS THAN CAT 3" LEVEL OF RADIOACTIVE MATERIAL

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Agreement State (AGR)

Event # 52009

<b>Rep Org:</b> WA OFFICE OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 06/15/2016 18:44 (EDT)	
<b>Licensee:</b> ISORAY		<b>Event Date / Time:</b> 06/14/2016 (PDT)	
<b>Last Modification:</b> 06/15/2016			
<b>Region:</b> 4		<b>Docket #:</b>	
<b>City:</b> RICHLAND		<b>Agreement State:</b> Yes	
<b>County:</b>		<b>License #:</b> WN-L0213-1	
<b>State:</b> WA			
<b>NRC Notified by:</b> ANINE GRUMBLES		<b>Notifications:</b> NICK TAYLOR R4DO	
<b>HQ Ops Officer:</b> DONG HWA PARK		<b>NMSS_EVENTS_NOTIFICATION:</b> EMAIL	
<b>Emergency Class:</b> NON EMERGENCY			
<b>10 CFR Section:</b>			
AGREEMENT STATE			

#### AGREEMENT STATE REPORT - LOST AND FOUND BRACHYTHERAPY SEEDS

The following was received from the State of Washington via email:

"[A common carrier] lost 252 IsoRay Cesium-131 brachytherapy seeds intended for four patient implants. On Friday, 6/9/2016, radioactive materials licensee, IsoRay (WN-L0213-1) sent four orders of cesium-131 brachytherapy seeds. The four orders contained a total of 252 seeds at a total air kerma activity level of 522.8 U. The total apparent activity is approximately 1 Ci (the actual activity is between 1 - 2 Ci). The absorbed dose from the 252 seeds would be approximately 52,280 rad (522.8 Gray). Early Tuesday morning, 6/14/2016, the Memphis hub of [the common carrier] informed IsoRay that they were unable to locate these packages, and they would not be delivered on time as contracted. They were scanned in and out at both the Pasco and Spokane airports. The Spokane flight to Memphis arrived, but [the common carrier] could not locate them. IsoRay notified the state of the loss of radioactive material that same day.

"On 6/15/2016, IsoRay notified the state that [the common carrier had] found the missing shipments and are returning them to IsoRay. They were not delivered to the intended physicians. There are no details yet on how they became misplaced. IsoRay has scheduled a senior management meeting with [the common carrier's] Priority Alert team to trouble shoot the missing shipments.

"This incident is one of several incidents in which [the common carrier] played a role within the last 4 months."

Incident Number: WA-16-027

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Power Reactor

Event # 43344

<b>Site:</b> COLUMBIA GENERATING STATION		<b>Notification Date / Time:</b> 05/04/2007 14:21 (EST)	
<b>Unit:</b> 2	<b>Region:</b> 4	<b>State :</b> WA	<b>Event Date / Time:</b> 04/04/2007 16:47 (PDT)
<b>Reactor Type:</b> [2] GE-5		<b>Last Modification:</b> 05/04/2007	
<b>Containment Type:</b> MARK II			
<b>NRC Notified by:</b> MATT HUMMER		<b>Notifications:</b> NEIL O'KEEFE	R4
<b>HQ Ops Officer:</b> JOHN MacKINNON		MJ ROSS-LEE	NRR
<b>Emergency Class:</b> NON EMERGENCY			
<b>10 CFR Section:</b>			
20.2201(a)(1)(ii) LOST/STOLEN LNM>10X			

Unit	Scram Code	RX Crit	Init Power	Initial RX Mode	Curr Power	Current RX Mode
2	N	Yes	97	Power Operation	97	Power Operation

This material event contains a "Less than Cat 3" level of radioactive material as defined in IAEA RS-G-1.9

### 30-DAY REPORT INVOLVING A LOSS OF ACCOUNTABILITY OF LESS THAN 1 GRAM SNM

"This is a non-emergency Event Notification made in accordance with 10 CFR 20.2201(a)(1)(ii) to inform the NRC of a loss of accountability of a very small amount (e.g., particle size) of special nuclear material (SNM). As part of preparations for an NRC inspection of Columbia's SNM Control and Accounting Program (April 16-19, 2007), documentation concerning the recovery of two pieces of a broken fuel rod was obtained. The documentation revealed existence of potential fuel particles estimated to be less than 1 gram in aggregate located in the spent fuel pool. The location of these particles cannot be positively identified at this time and is therefore being reported as missing SNM under 10 CFR 20.2201(a)(1)(ii).

"The particles were created during a 1990 refueling outage while inspecting a leaking fuel bundle. To identify the leaking rod, the bundle was disassembled and rod-by-rod electronic sorting performed. Ultrasonic examination identified the leaking rod; however, during the inspection the rod bent and snapped while being guided through a fuel inspection funnel. A procedure was approved and successfully executed to recover the broken rod sections. Following the recovery, an inspection was performed with an underwater camera to determine if any fuel pellets had been released as part of the evolution. No fuel pellets were identified; however, a small dark particle of material surrounded by smaller black particles was observed in a stainless steel bucket which had been positioned under the broken fuel rod pieces. It is believed that the bucket containing the particles was suspended off the west wall of the spent fuel pool, north of the work table. The location of the particles within the bucket cannot be positively identified at this time.

"The contents of the bucket have been described by the individuals involved in the broken rod recovery as a small particle of material roughly the size of a fingernail clipping surrounded by a few black particles the size of ground pepper. An underwater survey indicated a radiation level of greater than 400 R on contact for the material. The

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total amount is believed to be considerably less than 10 percent of a single pellet's worth of material, or less than 1 gram.

"Energy Northwest is continuing to investigate this event. Based on the information gathered to date, the nature of the particles, and the existence of radiation monitoring, a high degree of confidence exist that the particles are located in the bottom of the spent fuel pool or in an otherwise radiologically controlled location such that the health and safety of the public would not be adversely affected. In addition, there is no evidence of theft or diversion.

"This notification satisfies the 30-day notification requirement of 10 CFR 20.2201(a)(1)(ii). A subsequent written report will be made in accordance with 10 CFR 20.2201(b).

"The NRC Resident and SNM Control and Accounting Inspectors have been informed of this issue."

THIS MATERIAL EVENT CONTAINS A "LESS THAN CAT 3" LEVEL OF RADIOACTIVE MATERIAL

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This source is not amongst those sources or devices identified by the IAEA Code of Conduct for the Safety & Security of Radioactive Sources to be of concern from a radiological standpoint. Therefore is it being categorized as a less than Category 3 source

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Non-Agreement State

Event # 46768

<b>Rep Org:</b> NAVAL UNDERSEA WARFARE CENTER		<b>Notification Date / Time:</b> 04/19/2011 14:21 (EDT)	
<b>Licensee:</b> NAVAL UNDERSEA WARFARE CENTER		<b>Event Date / Time:</b> 04/18/2011 (PDT)	
<b>Last Modification:</b> 04/19/2011			
<b>Region:</b> 4	<b>Docket #:</b>		
<b>City:</b> KEYPORT	<b>Agreement State:</b> Yes		
<b>County:</b>	<b>License #:</b>		
<b>State:</b> WA			
<b>NRC Notified by:</b> MICHAEL WALSH		<b>Notifications:</b> LINDA HOWELL	R4DO
<b>HQ Ops Officer:</b> JOE O'HARA		MICHELE BURGESS	FSME
<b>Emergency Class:</b> NON EMERGENCY		PAUL KROHN	R1DO
<b>10 CFR Section:</b>			
20.2201(a)(1)(i) LOST/STOLEN LNM>1000X			
This material event contains a "Less than Cat 3" level of radioactive material as defined in IAEA RS-G-1.9			

## UNACCOUNTED FOR IONIZING AIR GUNS CONTAINING 10 MILLICURIES OF Po-210

Naval Undersea Warfare Command (NUSW) located in Keyport, Washington has identified fifty seven (57) ionizing air guns that are unaccounted for. The devices were manufactured by NRD, LLC of New York, NY and contained 10 milliCuries of Po-210. NUSW is missing five (5) Model P-2021 devices and fifty-two (52) P-2051 devices. These are general license devices.

The unaccounted devices were found during a command inspection after questions arose surrounding the number of devices in the command. The inspection revealed the majority of the devices seem to have gone unaccounted for during the 1994 - 1995 timeframe.

Contamination surveys have confirmed there are no contamination issues or workforce exposure issues associated with this event.

A command investigation is ongoing.

The following serial numbers were identified as unaccounted for: For Model P-2021: A2GQ217, A2GQ241, A2BY498, A2AW678, and A2AQ471. For Model P-2051: 95609, 83722, 79841, 79225, 76422, 76423, 76424, 76425, 76427, 76428, 76429, 76430, 76431, 76432, 76433, 72859, 72860, 72861, 70708, 70709, 70710, 70711, 70712, 70713, 70714, 67850, 67851, 67853, 67854, 67855, 67856, 67857, 67860, 67861, 67862, 67863, 67881, 67882, 67883, 67884, 67888, 56477, 56303, 55244, 46840, 46844, 46914, 46952, 46954, 46963, 38242, AND 38348.

THIS MATERIAL EVENT CONTAINS A "LESS THAN CAT 3" LEVEL OF RADIOACTIVE MATERIAL

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Sources that are "Less than IAEA Category 3 sources," are either sources that are very unlikely to cause permanent injury to individuals or contain a very small amount of radioactive material that would not cause any permanent injury. Some of these sources, such as moisture density gauges or thickness gauges that are Category 4, the amount of unshielded radioactive material, if not safely managed or securely protected, could possibly - although it is unlikely - temporarily injure someone who handled it or were otherwise in contact with it, or who were close to it for a period of many weeks. For additional information go to [http://www-pub.iaea.org/MTCD/publications/PDF/Pub1227\\_web.pdf](http://www-pub.iaea.org/MTCD/publications/PDF/Pub1227_web.pdf)

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Agreement State (AGR)

Event # 50602

<b>Rep Org:</b> WA OFFICE OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 11/07/2014 14:02 (EST)	
<b>Licensee:</b> ASSOCIATED EARTH SCIENCES		<b>Event Date / Time:</b> 11/06/2014 19:00 (PST)	
<b>Last Modification:</b> 06/08/2015			
<b>Region:</b> 4	<b>Docket #:</b>		
<b>City:</b> KIRKLAND	<b>Agreement State:</b> Yes		
<b>County:</b>	<b>License #:</b> WN-I0298		
<b>State:</b> WA			
<b>NRC Notified by:</b> CRAIG LAWRENCE	<b>Notifications:</b> GEOFFREY MILLER	R4DO	
<b>HQ Ops Officer:</b> DONG HWA PARK	FSME EVENTS RESOURCE	EMAIL	
<b>Emergency Class:</b> NON EMERGENCY	NMSS EVENTS RESOURCE	EMAIL	
<b>10 CFR Section:</b>	CANADA	FAX	
AGREEMENT STATE	ILTAB	EMAIL	

This material event contains a "Less than Cat 3" level of radioactive material as defined in IAEA RS-G-1.9

#### AGREEMENT STATE REPORT - STOLEN TROXLER MOISTURE/DENSITY GAUGE

The following report was received from the State of Washington via email:

"Associated Earth Sciences reported to the State of Washington, Department of Health, Office of Radiation Protection that a Troxler portable gauge, model 3411, serial number 11272, containing 0.1 Ci Cs-137 and .005 Ci Am/Be, was stolen from the back of a pickup while parked overnight at a gauge user's resident apartment complex in Bothell, Washington. The gauge was last seen at 1900 PST the previous night and discovered missing at 0730 PST on November 7.

"The gauge was located in a locked black plastic tool box secured in the bed of the pickup. The tool box containing the portable gauge was stolen from the bed of the truck. Two cables and locks were reported used to secure each side of the tool box to the bed of the truck. It was unclear how the tool box was removed from the truck bed. The licensee reported no cut lock or cable was left behind. It was also unclear if the tool box lid was locked with the same locks and cables used to secure the tool box to the truck. The licensee was asked to provide a photo of their system used to secure the gauge and tool box to the truck. The gauge transport box inside the tool box was reported locked with a single lock. The handle of the gauge was also reported locked.

"The gauge user was asked why the gauge was not returned to the licensed storage location at the end of the day per the condition in the license. The user reported the job site was close to his house and he wanted to avoid the hour and a half drive to the licensed facility to check out a gauge. The theft was reported to the Bothell Police Department and police report #14-25445 was made.

"A follow-up with the licensee will be conducted to investigate possible citations for not returning the gauge for

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overnight storage in the licensed storage location and proper security for transporting the gauge in a vehicle."

State of Washington Incident Number: WA-14-045.

\*\*\* UPDATE AT 1358 EDT ON 6/8/2015 FROM STEPHEN MATTHEWS TO MARK ABRAMOVITZ \*\*\*

The following report was received via e-mail:

"As of June 8, 2015, the gauge has not been located. Associated Earth Sciences sent [Washington Office of Radiation Protection] a letter dated June 5, 2015 documenting their corrective actions, which consisted of re-training their portable gauge operators, specifically for transportation security. Since the theft occurred over six months ago we feel there is no way to avoid closing this incident as of today, June 8, 2015."

Notified the R4DO (Werner), NMSS Events Resource (Email), Canada (Fax), and ILTAB (Email).

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Agreement State (AGR)

Event # 51842

<b>Rep Org:</b> WA OFFICE OF RADIATION PROTECTION		<b>Notification Date / Time:</b> 03/31/2016 20:03 (EDT)	
<b>Licensee:</b> O'NEILL SERVICE GROUP		<b>Event Date / Time:</b> 03/31/2016 (PDT)	
		<b>Last Modification:</b> 03/31/2016	
<b>Region:</b> 4		<b>Docket #:</b>	
<b>City:</b> REDMOND		<b>Agreement State:</b> Yes	
<b>County:</b>		<b>License #:</b> WN-I0609-1	
<b>State:</b> WA			
<b>NRC Notified by:</b> ANDREW HALLORAN		<b>Notifications:</b> VINCENT GADDY	R4DO
<b>HQ Ops Officer:</b> VINCE KLCO		NMSS_EVENTS_NOTIFICATI	EMAIL
<b>Emergency Class:</b> NON EMERGENCY		ILTAB	EMAIL
<b>10 CFR Section:</b>		CANADA	EMAIL
AGREEMENT STATE			
This material event contains a "Less than Cat 3" level of radioactive material as defined in IAEA RS-G-1.9			

## AGREEMENT STATE REPORT - STOLEN PORTABLE NUCLEAR GAUGE

The following excerpted information was received from the State of Washington by email:

"Event Narrative: The Washington Department of Health received a call today (3/31/2016) at noon from the RSO of the licensee, to report a stolen gauge from their conex unit at their SeaTac location. The RSO first noticed the missing gauge (the only one stored at this facility) when he went to check it out at 1030 PDT this morning. There was no indication of it being checked out by other users, and the RSO called the other users to make sure. The RSO also noticed the broken lock on the conex door. The licensee's contractor called police for this incident as well as other containers that had been broken into. More information to come.

"Make/Model/Serial Number- Troxler 3440, SN 31182.

Isotopes/Activity - Cesium 137/0.37 GBq and Americium 241 Beryllium/1.85 GBq"

## THIS MATERIAL EVENT CONTAINS A "LESS THAN CAT 3" LEVEL OF RADIOACTIVE MATERIAL

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04/22/2016

~~!!! This is a draft document, do not release to the public !!!~~

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This Event is not for public disclosure until 06/02/2016.

Agreement State (AGR)

Event # 51880

Rep Org: WA OFFICE OF RADIATION PROTECTION		Notification Date / Time: 04/22/2016 20:00 (EDT)	
Licensee: UNIVERSITY OF WASHINGTON		Event Date / Time: 04/20/2016 (PDT)	
Last Modification: 04/22/2016			
Region: 4		Docket #:	
City: SEATTLE		Agreement State: Yes	
County:		License #: WN-C001-1	
State: WA			
NRC Notified by: JAMES KILLINGBECK		Notifications: HEATHER GEPPORD R4DO	
HQ Ops Officer: DONG HWA PARK		NMSS_EVENTS_NOTIFICATION EMAIL	
Emergency Class: NON EMERGENCY			
10 CFR Section:			
AGREEMENT STATE			
This material event contains a "Less than Cat 3" level of radioactive material as defined in IAEA RS-G-1.9			

~~!!! This is a draft document, do not release to the public !!!~~

AGREEMENT STATE REPORT - MISSING STATIC IONIZATION SOURCE

The following report was received from the State of Washington via email:

"On 4/21/2016, the Radiation Safety Officer at University of Washington reported by phone and by email that a Po-210 static ionization source was missing from a lab at the Southlake Union (SLU) Campus. The static ionization source had been placed in a cardboard box in preparation for shipment back to NRD [manufacturer]. Someone in the lab thought the box was empty and placed it in the recycling. This was discovered on Monday, and the lab had been searching for it for a couple of days before notifying the Radiation Safety Officer.

"The immediate report value for Po-210 is 100 microCi and the 30 day report value is 1 microCi.  
Source information: Isotope: Po-210, Manufacturer: NRD, Model: P-2001, Initial Activity: 5 mCi (May 2015),  
Current Activity: approximately 1 mCi  
Device information: NucleSpot - Static Eliminator, Manufacturer: NRD, Model: P-2042-1000, Serial Number: Not reported.

"The facilities personnel are currently trying to find out from [the recycling company] where the recycling is taken for processing. [The recycling company] picks up recycling from the SLU campus twice a week on Friday and Tuesday. University of Washington Principal Investigator lab informed NRD of the loss. Once their investigation is complete, UW will provide us with a written report as required by WAC 246-221-240(2).



04/22/2016

**!!! This is a draft document, do not release to the public !!!**

**U.S. Nuclear Regulatory Commission Operations Center Event Report**

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**This Event is not for public disclosure until 05/02/2016.**

Agreement State (AGR)

Event # 51880

"Incident Number: WA-16-018"

**THIS MATERIAL EVENT CONTAINS A "LESS THAN CAT 3" LEVEL OF RADIOACTIVE MATERIAL**

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***U.S. Nuclear Regulatory Commission Operations Center***

***\*\*\* Event Summary \*\*\****

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***!!! This is a draft document, do not release to the public !!!***

**51880 WA OFFICE OF RADIATION PROTECTION**

*This Event is not for public disclosure per Agreement State request until 05/02/2016.*  
**AGREEMENT STATE**

**Erickson, Randy**

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**From:** Gepford, Heather  
**Sent:** Friday, April 22, 2016 7:48 PM  
**To:** Tharakan, Binesh; Erickson, Randy  
**Subject:** Fwd: Event Notice: 04/22/2016  
**Attachments:** Summary.pdf, Events.pdf

Another lost (not yet found) source from UWash.

----- Original Message -----

**From:** HOO Hoc <HOO.Hoc@nrc.gov>  
**Date:** Fri, April 22, 2016 7:42 PM -0500  
**To:** HOO Hoc <HOO.Hoc@nrc.gov>  
**Subject:** Event Notice: 04/22/2016

Event # 51880 is a radioactive material event of interest level: "Less than Cat 3".

Headquarters Operations Officer  
U.S. Nuclear Regulatory Commission  
Phone: 301-816-5100  
Fax: 301-816-5151  
email: hoo.hoc@nrc.gov  
secure e-mail: (b)(6)

**Erickson, Randy**

---

**From:** Grumbles, Anine (DOH) <Anine.Grumbles@DOH.WA.GOV>  
**Sent:** Wednesday, June 15, 2016 5:44 PM  
**To:** Patrick.lease@dot.gov; Dante C Huntsman (Dante.Huntsman@inl.gov); Demaris, Curt (DOH); Elsen, Mike (DOH); Fordham, Earl W (DOH); Grumbles, Anine (DOH); Henry, Mark (DOH); HOO Hoc; Jansen, David B (DOH); Lawrence, Craig (DOH); Maier, Bill; Martell, P John (DOH); Matthews, Steve (DOH); Priddy, Mike (DOH); Erickson, Randy; Robert.Sant@inl.gov; Tharakan, Binesh; Van Gent, Daniel (DOH); Williams, Chris (DOH)  
**Subject:** [External\_Sender] FedEx lost four packages containing 252 IsoRay Cesium 131 brachytherapy seeds intended for four patients; Sources found next day  
**Attachments:** WA-16-027 Fedex loses 4 pkg IsoRay brachy seeds .docx

Another Incident report. Lost and then found by the common carrier - too late for patients.

*Anine*

*Anine Grumbles  
Laboratory Radioactive Materials Licensing and Compliance Program Manager  
Phone: (360)236-3222  
anine.grumbles@doh.wa.gov*

*Department of Health, Office of Radiation Protection  
P.O. Box 47827  
Olympia, Washington 98504-7827*

*Our physical address is 111 Israel Rd SE., Tumwater, Washington 98501*

*"Public Health - Always Working for a Safer and Healthier Washington"  
Our mission is to improve people's health by reducing exposures to environmental hazards*

*Please visit our web site: <http://www.doh.wa.gov/CommunityandEnvironment/Radiation.aspx>*

# NMED Data Entry Form

**Incident Number:** WA-16-027

**Event Type:** ☐ Equipment ☐ Leaking Source ☒ Lost/Abandoned/Stolen ☐ Medical Event  
☐ Other ☐ Overexposure ☐ Radioactive Material Release ☒ Transportation

**Cause:**

☐ Equipment Failure  
(Select One)  
☒ Human Error  
Management Deficiency  
☐ Other  
(Select One)

☐ Procedure Problem  
(Select One)  
☒ External  
(Select One)  
☐ Not Reported

Event Date: 6/14/2016 Report Date: 6/15/2016  
Name: IsoRay License Number: WN-L0213-1  
Contact Person: Dale Boyce Phone: (509) 375-1202

City: Richland State: WA Zip: 99354-

Reportable Event Per 10 CFR: Yes Reciprocity: No

Reporting Requirement: 1) 20.2201(a)(1)(i) See Reference Document

Atomic Energy Act Material: No  
Investigation: No  
Consultant Hired?: No

Abnormal Occurrence: No  
Send Report to NRC: Yes  
Event Closed by State: Yes

Event Narrative: FedEx lost 252 IsoRay Cesium 131 brachytherapy seeds intended for four patient implants. On Friday, 6/9/2016, radioactive materials licensee, IsoRay (WN-L0213-1) sent four orders of cesium 131 brachytherapy seeds. The four orders contained a total of 252 seeds at a total air kerma activity level of 522.8 U. the total apparent activity is approximately 1 Ci ( the actual activity is between 1 - 2 Ci). The absorbed dose from the 252 seeds would be approximately 52,280 rad (522.8 Gray). Early Tuesday morning, 6/14/2016, the Memphis hub of FedEx informed IsoRay that they were unable to locate these packages and they would not be delivered on time as contracted. They were scanned in and out at both the Pasco and Spokane airports. The Spokane flight to Memphis arrived, but FedEx could not locate them. IsoRay notified the state of the loss of radioactive material that same day.

On 6/15/2016, IsoRay notified the state that FedEx found the missing shipments, and are returning them to IsoRay. They were not delivered to the intended physicians. There are no details yet on how they became misplaced. IsoRay has scheduled a senior management meeting with FedEx's Priority Alert team to trouble shoot the missing shipments.

This incident is one of several incidents in which FedEx played a role within the last 4 months.

**Corrective Actions:** NA  
NA

**Keywords (Pick One or More):**

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> Failure to Block and Brace Equipment   | <input type="checkbox"/> Improperly Packaged Material                 | <input type="checkbox"/> Material Found   |
| <input checked="" type="checkbox"/> Material Lost and Found     | <input type="checkbox"/> Material Lost and Not Found                  | <input type="checkbox"/> Material Stolen and Not Recovered                        |
| <input type="checkbox"/> Material Stolen and Recovered          | <input type="checkbox"/> Orphan Source                                | <input type="checkbox"/> Radioactive Material at Incinerator                      |
| <input type="checkbox"/> Radioactive Material at Landfill       | <input type="checkbox"/> Radioactive Material at Scrap Metal Facility | <input type="checkbox"/> Surface Contamination Levels Exceeded Limits for Package |
| <input type="checkbox"/> Transport Vehicle Involved in Accident |   |   |

**SOURCES**

<p>Source Number: 1</p> <p>Form of Radioactive Material: Sealed Source</p> <p>Source Use: Brachytherapy</p> <p>Radionuclide: Cs-131</p> <p>Activity: 1-2 CI      GBq</p> <p>Manufacturer: IsoRay</p> <p>Model Number: seeds</p> <p>Serial Number:</p> <p>Problem With Source: None</p>	<p>Source Number: 2</p> <p>Form of Radioactive Material: (Select One)</p> <p>Source Use: (Select One)</p> <p>Radionuclide:</p> <p>Activity:      CI      GBq</p> <p>Manufacturer:</p> <p>Model Number:</p> <p>Serial Number:</p> <p>Problem With Source: ---</p>
<p>Source Number: 3</p> <p>Form of Radioactive Material: (Select One)</p> <p>Source Use: (Select One)</p> <p>Radionuclide:</p>	<p>Source Number: 4</p> <p>Form of Radioactive Material: (Select One)</p> <p>Source Use: (Select One)</p> <p>Radionuclide:</p>

Activity:            CI            GBq

Manufacturer:

Model Number:

Serial Number:

Problem with Source: ---

Activity:            CI            GBq

Manufacturer:

Model Number:

Serial Number:

Problem with Source: ---

**Devices:**

Device Number: 1

**Device Name:**

☐ Container  
(Select One)

☐ Medical  
(Select One)

☐ Radiography  
(Select One)

☐ Self Luminous  
(Select One)

☐ Well Logging  
(Select One)

☐ Irradiator  
(Select One)

☐ Other  
(Select One)

☐ Scrap/Waste  
(Select One)

☐ Test / Measuring  
(Select One)

Manufacturer:

Model Number:

Serial Number:

Problem With Equipment: ---

Device Number: 2

**Device Name:**

☐ Container  
(Select One)

☐ Irradiator  
(Select One)

☐ Medical  
(Select One)

☐ Radiography  
(Select One)

☐ Self Luminous  
(Select One)

☐ Well Logging  
(Select One)

☐ Other  
(Select One)

☐ Scrap/Waste  
(Select One)

☐ Test / Measuring  
(Select One)

Manufacturer:

Model Number:

Serial Number:

Problem With Equipment: ---

Device Number: 3

Device Name:

☐ Container  
(Select One)

☐ Medical  
(Select One)

☐ Radiography  
(Select One)

☐ Self Luminous  
(Select One)

☐ Well Logging  
(Select One)

☐ Irradiator  
(Select One)

☐ Other  
(Select One)

☐ Scrap/Waste  
(Select One)

☐ Test / Measuring  
(Select One)

Manufacturer:

Model Number:

Serial Number:

Problem With Equipment: ---

**Reference Documents:**

Document Reference Number:  
Coder Initials:  
References:(Select One)

Document Reference Number:  
Coder Initials:  
References:(Select One)

Document Reference Number:  
Coder Initials:  
References:(Select One)

Document Reference Number:  
Coder Initials:  
References:(Select One)

Document Reference Number:  
Coder Initials:

Document Reference Number:  
Coder Initials:



References:(Select One)	References:(Select One)
Document Reference Number: Coder Initials: References:(Select One)	Document Reference Number: Coder Initials: References:(Select One)

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Extra Forms if Needed  
-----

**(Extra Source Entry Pages)**

<p>Source Number: 5</p> <p>Form of Radioactive Material: (Select One)</p> <p>Source Use: (Select One)</p> <p>Radionuclide:</p> <p>Activity:            CI            GBq</p> <p>Manufacturer:</p> <p>Model Number:</p> <p>Serial Number:</p> <p>Problem With Source: ---</p>	<p>Source Number: 6</p> <p>Form of Radioactive Material: (Select One)</p> <p>Source Use: (Select One)</p> <p>Radionuclide:</p> <p>Activity:            CI            GBq</p> <p>Manufacturer:</p> <p>Model Number:</p> <p>Serial Number:</p> <p>Problem With Source: ---</p>
<p>Source Number: 7</p> <p>Form of Radioactive Material: (Select One)</p> <p>Source Use: (Select One)</p> <p>Radionuclide:</p> <p>Activity:            CI            GBq</p> <p>Manufacturer:</p> <p>Model Number:</p> <p>Serial Number:</p> <p>Problem With Source: ---</p>	<p>Source Number: 8</p> <p>Form of Radioactive Material: (Select One)</p> <p>Source Use: (Select One)</p> <p>Radionuclide:</p> <p>Activity:            CI            GBq</p> <p>Manufacturer:</p> <p>Model Number:</p> <p>Serial Number:</p> <p>Problem With Source: ---</p>

## Reference Document

### 10 CFR reporting requirements

- 1) 20.2201(a)(1)(i) The immediate telephone report of any lost, stolen, or missing licensed material in a quantity greater than or equal to 1,000 times the appendix quantities that could cause an explosion to persons in unrestricted areas.
- 2) 20.2201(a)(1)(ii) The 30day telephone report of any lost, stolen, or missing licensed materials in a quantity greater than 10 times the appendix C quantities.
- 3) 20.2201(b)(1) The 30 day written report following a 20.2201(a) telephone report.
- 4) 30.50(b)(2)(ii) The 24 hour report of an event where required equipment is disabled or failed to function as designed when the equipment is required to be available and operable when it is disabled or fails to function.
- 5) 31.5(c)(5) The 30 day report of the description and remedial action of actual or indicated failure to shielding, the on-off mechanism or indicator, or upon the detection of 0.005 uCi or more of removable rad. Material.
- 6) 34.101(a)(2) The 30day written report involving radiographic equipment and the inability to retract the source assembly to its fully shielded position and secure it in this position.
- 7) 35.3045(a)(1)(i) Total dose delivered that differs from the prescribed dose by 20% or more; and differs from the prescribed dose by more than 0.05 Sv (5 rem) EDE, 0.5 Sv (50 rem) to an organ or tissue, or 0.5 Sv (50 rem) SDE.
- 8) 35.3045(a)(1)(iii) A fractionated dose delivered that differs from the prescribed dose, for a single fraction by 50% or more; and differs from the prescribed dose 0.05 Sv (5 rem) EDE, 0.5 Sv (50 rem) to an organ or tissue, or 0.5 Sv (50 rem) SDE.
- 9) 35.3045(a)(2)(iii) An administration of a dose or dosage to the wrong individual or human research subject.
- 10) 35.3045(a)(3) A dose to the skin, organ, or tissue, other than the treatment site, that exceeds the prescribed dose by 0.5 Sv (50 rem) and 50% or more (excluding permanently implanted seeds that migrated from the treatment sight).

If none of these apply go to <http://www.nrc.gov/reading-rm/doc-collections/cfr/>

## **Erickson, Randy**

---

**From:** Grumbles, Anine (DOH) <Anine.Grumbles@DOH.WA.GOV>  
**Sent:** Wednesday, May 18, 2016 2:41 PM  
**To:** Dante.Huntsman@inl.gov; Demaris, Curt (DOH); Elsen, Mike (DOH); Fordham, Earl W (DOH); Grumbles, Anine (DOH); Henry, Mark (DOH); HOO Hoc; Jansen, David B (DOH); Lawrence, Craig (DOH); Maier, Bill; Martell, P John (DOH); Matthews, Steve (DOH); Priddy, Mike (DOH); Erickson, Randy; Robert.Sant@inl.gov; Tharakan, Binesh; Van Gent, Daniel (DOH); Williams, Chris (DOH)  
**Subject:** [External\_Sender] WA-16-018 UPDATE & CLOSURE NMED REPORT-Po-210 static ionization source missing.docx  
**Attachments:** WA-16-018 UPDATE & CLOSURE NMED REPORT-Po-210 static ionization source missing.docx; NRD P-2042 Static Eliminator.docx

Here is an update & closure report to Washington Incident WA-16-018 - NMED REPORT-Po-210 static ionization source missing. There is also a photo of this model source for information.

*Anine*

*Anine Grumbles  
Laboratory Radioactive Materials Licensing and Compliance Program Manager  
Phone: (360)236-3222  
anine.grumbles@doh.wa.gov*

*Department of Health, Office of Radiation Protection  
P.O. Box 47827  
Olympia, Washington 98504-7827*

*Our physical address is 111 Israel Rd SE., Tumwater, Washington 98601*

*"Public Health - Always Working for a Safer and Healthier Washington"  
Our mission is to improve people's health by reducing exposures to environmental hazards*

*Please visit our web site: <http://www.doh.wa.gov/CommunityandEnvironment/Radiation.aspx>*

# NMED Data Entry Form

**Incident Number:** WA-16-018

**Event Type:** ☐ Equipment ☐ Leaking Source ☒ Lost/Abandoned/Stolen ☐ Medical Event  
☐ Other ☐ Overexposure ☐ Radioactive Material Release ☐ Transportation

**Cause:**

☐ Equipment Failure  
(Select One)  
☒ Human Error  
(Select One)  
☐ Other  
(Select One)

☐ Procedure Problem  
(Select One)  
☐ External  
(Select One)  
☐ Not Reported

Event Date: 4/20/2016 Report Date: 5/18/2016 Up-date and Closure  
Name: University of Washington License Number: WN-C001-1  
Contact Person: Philip Campbell, RSO Phone: (206) 543-4929

City: Seattle State: WA Zip: 98195-4400

Reportable Event Per 10 CFR: Yes Reciprocity: No

Reporting Requirement: 2) 20.2201(a)(1)(ii) See Reference Document

Atomic Energy Act Material: ---

Abnormal Occurrence: ---

Investigation: Yes

Send Report to NRC: Yes

Consultant Hired?: ---

Event Closed by State: Yes

Event Narrative: WA-16-018 Po-210 static ionization source missing from University of Washington  
Update and Closure

University of Washington submitted their final report on the lost Po-210 static eliminator. University of Washington is a Broad Scope A Licensee. Their Radiation Safety staff performed a thorough investigation and search for the source.

There are a total of six possible routes the source may have taken; all of which end up overseas. Initially, three potential avenues were explored: At Recology CleanScapes:

1. If source stayed inside the box with the paper - processed as corrugated cardboard and sent overseas for recycling processing
2. If paper came out of the box and source stayed with paper - processed as mixed paper and sent overseas for recycling process
3. If paper came out of box and source came out of the paper - source would have filtered out into glass recycling stream (includes metal), which is sent to Strategic Materials.

The RSO contacted Strategic Materials and identified an additional three possible outcomes for the source, if it made it to the Strategic Materials facility.

4. All incoming material is first passed by a large magnet, if the source housing was ferrous enough the source would have been transferred to a metal recycler. The source model is believed to have an aluminum housing.

5. If the source was not pulled out by the magnet, it was either manually removed by a picker and thrown in the trash, or

6. The source was pulled out by an Eddy Current device and would be in one of the device collection bins. This also would have been thrown in the trash.

Staff at both facilities were shown photos of the source and interviewed, and no one had seen or moved the source.

Ultimately, it is believed that the source, thoroughly wrapped in paper, in a corrugated box was processed and sent overseas in a bulk cardboard or mixed paper recycle bundle.

The Registry of Radioactive Sealed Sources and Devices – Safety Evaluation of Device (Number: NY 502 D 108 G) for the P-2042 model indicates an maximum external exposure rate of 0.05 mR/hr on contact with the source. This is equivalent to background radiation levels. It should be noted that the principle emission of Po-210 is an alpha particle, so the exposure falls off rapidly with increasing distance from the source. Therefore, the exposure to any individual handling the source would be negligible. Since Po-210 is an alpha emitter, the highest risk would be to a person who ate the radioactive foil. However, this scenario is extremely unlikely due to the fact that the individual would have to first remove the foil from the housing, and then have a desire to eat the foil.

Some new additions to the information:

Manufacturer: NRD Inc.

Device Type: Nuclespot – Static Eliminator

Device Model: P-2042-1000

Sealed Source Model Designation: P-2001

Serial Number: A2KG893

NRD Lease Number: 059345

Shipped to UW: 5/21/2015

Original Activity: 5 millicuries

Activity when lost: 1 millicurie

This source is considered lost and unrecoverable. The assessed health and safety risk is very low. This incident is considered CLOSED.

**Original Report:**

On 4/21/2016, Philip Campbell, Radiation Safety Officer at University of Washington (C001) reported by phone and by email that a Po-210 static ionization source missing from a lab at the Southlake Union Campus. The static ionization source had been placed in a cardboard box in preparation for shipment back to NRD. Someone in the lab thought the box was empty and placed it in the recycling. This was discovered on Monday, and the lab had been searching for it for a couple of days before notifying the Radiation Safety Officer.

The immediate report value for Po-210 is 100 uCi and the 30 day report value 1 uCi.

Source information

Isotope: Po-210

Manufacturer: NRD

Model: P-2042-1000

Initial Activity: 5 mCi (May 2015)

Current Activity: ~1 mCi

The facilities personnel are currently trying to find out from Cleanscapes where the recycling is taken for processing. I will let you know once I have that information. Cleanscapes picks up recycling from the SLU campus twice a week on Friday and Tuesday.

University of Washington Principal Investigator lab informed NRD of the loss. NRD provided them with the attached letter. Once their investigation is complete, UW will provide us with a written report as required by WAC 246-221-240(2).

**Corrective Actions:** Improve Radioactive material Labelling or Handling  
NA

**Keywords (Pick One or More):**

☐ Failure to Block and Brace  
Equipment

☐ Material Lost and Found

☐ Material Stolen and  
Recovered

☐ Radioactive Material at  
Landfill

☐ Transport Vehicle Involved in Accident

☐ Improperly Packaged  
Material

☒ Material Lost and Not  
Found

☐ Orphan Source

☐ Radioactive Material at  
Scrap Metal Facility

☐ Material Found

☐ Material Stolen and Not  
Recovered

☐ Radioactive Material at  
Incinerator

☐ Surface Contamination  
Levels Exceeded Limits for  
Package

## SOURCES

<p>Source Number: 1</p> <p>Form of Radioactive Material: Sealed Source</p> <p>Source Use: Static Eliminator</p> <p>Radionuclide: Po-210</p> <p>Activity: 0.1 CI 3.7 GBq</p> <p>Manufacturer: NRD, Inc</p> <p>Model Number: Device:P-2042-1000/ Source: P2001</p> <p>Serial Number: A2KG893</p> <p>Problem With Source: None</p>	<p>Source Number: 2</p> <p>Form of Radioactive Material: (Select One)</p> <p>Source Use: (Select One)</p> <p>Radionuclide:</p> <p>Activity: CI GBq</p> <p>Manufacturer:</p> <p>Model Number:</p> <p>Serial Number:</p> <p>Problem With Source: None</p>
<p>Source Number: 3</p> <p>Form of Radioactive Material: (Select One)</p> <p>Source Use: (Select One)</p> <p>Radionuclide:</p> <p>Activity: CI GBq</p> <p>Manufacturer:</p> <p>Model Number:</p> <p>Serial Number:</p> <p>Problem with Source: None</p>	<p>Source Number: 4</p> <p>Form of Radioactive Material: (Select One)</p> <p>Source Use: (Select One)</p> <p>Radionuclide:</p> <p>Activity: CI GBq</p> <p>Manufacturer:</p> <p>Model Number:</p> <p>Serial Number:</p> <p>Problem with Source: ---</p>



**Devices:**

Device Number: 1

**Device Name:**

☐ Container  
(Select One)

☐ Medical  
(Select One)

☐ Radiography  
(Select One)

☐ Self Luminous  
(Select One)

☐ Well Logging  
(Select One)

☐ Irradiator  
(Select One)

☐ Other  
(Select One)

☐ Scrap/Waste  
(Select One)

☐ Test / Measuring  
(Select One)

Manufacturer:

Model Number:

Serial Number:

Problem With Equipment: ---

Device Number: 2

**Device Name:**

☐ Container  
(Select One)

☐ Medical  
(Select One)

☐ Radiography  
(Select One)

☐ Self Luminous  
(Select One)

☐ Well Logging  
(Select One)

☐ Irradiator  
(Select One)

☐ Other  
(Select One)

☐ Scrap/Waste  
(Select One)

☐ Test / Measuring  
(Select One)

Manufacturer:

Model Number:

Serial Number:

Problem With Equipment: ---

Device Number: 3

**Device Name:**

☐ Container  
(Select One)

☐ Medical  
(Select One)

☐ Radiography  
(Select One)

☐ Self Luminous  
(Select One)

☐ Well Logging  
(Select One)

☐ Irradiator  
(Select One)

☐ Other  
(Select One)

☐ Scrap/Waste  
(Select One)

☐ Test / Measuring  
(Select One)

Manufacturer:

Model Number:

Serial Number:

Problem With Equipment: ---

**Reference Documents:**

Document Reference Number: Coder Initials: References:(Select One)	Document Reference Number: Coder Initials: References:(Select One)
Document Reference Number: Coder Initials: References:(Select One)	Document Reference Number: Coder Initials: References:(Select One)
Document Reference Number: Coder Initials: References:(Select One)	Document Reference Number: Coder Initials: References:(Select One)
Document Reference Number: Coder Initials: References:(Select One)	Document Reference Number: Coder Initials: References:(Select One)

Extra Forms if Needed

(Extra Source Entry Pages)

<b>Source Number: 5</b>  <b>Form of Radioactive Material:</b> (Select One)  <b>Source Use:</b> (Select One)  <b>Radionuclide:</b>  <b>Activity:</b> CI      GBq  <b>Manufacturer:</b>  <b>Model Number:</b>  <b>Serial Number:</b>  <b>Problem With Source: ---</b>	<b>Source Number: 6</b>  <b>Form of Radioactive Material:</b> (Select One)  <b>Source Use:</b> (Select One)  <b>Radionuclide:</b>  <b>Activity:</b> CI      GBq  <b>Manufacturer:</b>  <b>Model Number:</b>  <b>Serial Number:</b>  <b>Problem With Source: ---</b>
<b>Source Number: 7</b>  <b>Form of Radioactive Material:</b> (Select One)  <b>Source Use:</b> (Select One)  <b>Radionuclide:</b>  <b>Activity:</b> CI      GBq  <b>Manufacturer:</b>  <b>Model Number:</b>  <b>Serial Number:</b>  <b>Problem With Source: ---</b>	<b>Source Number: 8</b>  <b>Form of Radioactive Material:</b> (Select One)  <b>Source Use:</b> (Select One)  <b>Radionuclide:</b>  <b>Activity:</b> CI      GBq  <b>Manufacturer:</b>  <b>Model Number:</b>  <b>Serial Number:</b>  <b>Problem With Source: ---</b>

## Reference Document

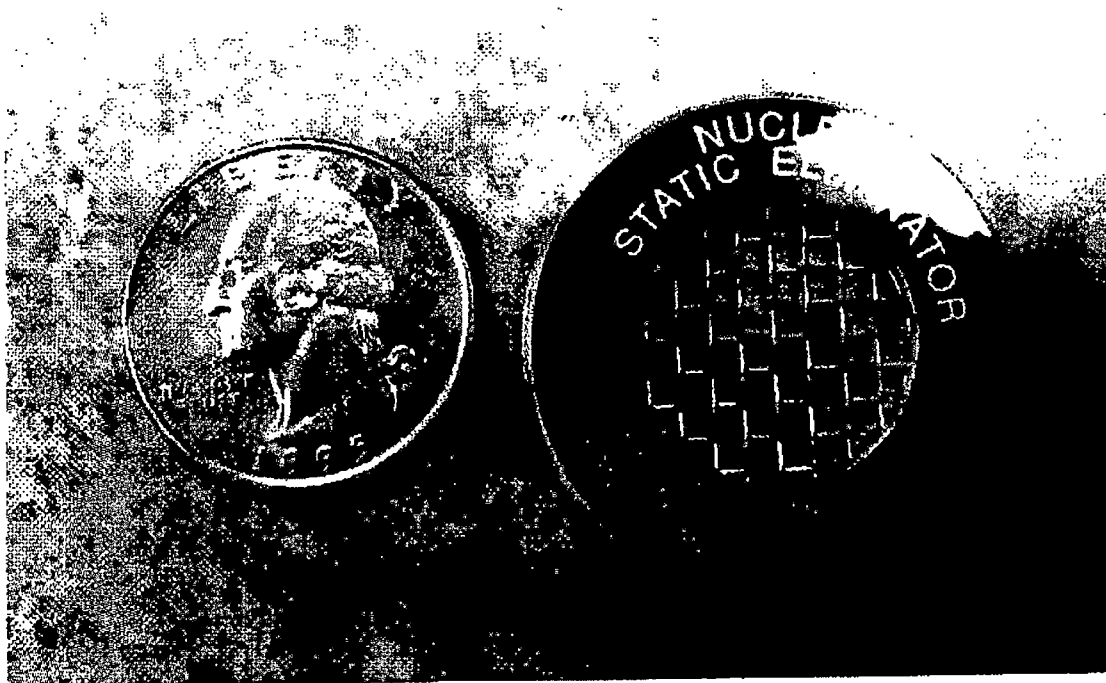
### 10 CFR reporting requirements

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- 2) 20.2201(a)(1)(ii) The 30 day telephone report of any lost, stolen, or missing licensed materials in a quantity greater than 10 times the appendix C quantities.
- 3) 20.2201(b)(1) The 30 day written report following a 20.2201(a) telephone report.
- 4) 30.50(b)(2)(ii) The 24 hour report of an event where required equipment is disabled or failed to function as designed when the equipment is required to be available and operable when it is disabled or fails to function.
- 5) 31.5(c)(5) The 30 day report of the description and remedial action of actual or indicated failure to shielding, the on-off mechanism or indicator, or upon the detection of 0.005 uCi or more of removable rad. Material.
- 6) 34.101(a)(2) The 30 day written report involving radiographic equipment and the inability to retract the source assembly to its fully shielded position and secure it in this position.
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- 8) 35.3045(a)(1)(iii) A fractionated dose delivered that differs from the prescribed dose, for a single fraction by 50% or more; and differs from the prescribed dose 0.05 Sv (5 rem) EDE, 0.5 Sv (50 rem) to an organ or tissue, or 0.5 Sv (50 rem) SDE.
- 9) 35.3045(a)(2)(iii) An administration of a dose or dosage to the wrong individual or human research subject.
- 10) 35.3045(a)(3) A dose to the skin, organ, or tissue, other than the treatment site, that exceeds the prescribed dose by 0.5 Sv (50 rem) and 50% or more (excluding permanently implanted seeds that migrated from the treatment sight).

If none of these apply go to <http://www.nrc.gov/reading-rm/doc-collections/cfr/>

NRD P-2042-1000 Static Eliminator  
w/ P-2001 Foil





04/22/2016

~~!!! This is a draft document, do not release to the public !!!~~

U.S. Nuclear Regulatory Commission Operations Center Event Report

Page 1

This Event is not for public disclosure until 06/02/2016.

Agreement State (AGR)

Event # 51879

Rep Org: WA OFFICE OF RADIATION PROTECTION		Notification Date / Time: 04/22/2016 18:40 (EDT)	
Licensee: UNIVERSITY OF WASHINGTON		Event Date / Time: 04/06/2016 (PDT)	
		Last Modification: 04/22/2016	
Region: 4		Docket #:	
City: SEATTLE		Agreement State: Yes	
County:		License #: WA-WN-C001-1	
State: WA			
NRC Notified by: JAMES KILLINGBECK		Notifications: HEATHER GEPFORD R4DO	
HQ Ops Officer: JOHN SHOEMAKER		NMSS_EVENTS_NOTIFICATION EMAIL	
Emergency Class: NON EMERGENCY			
10 CFR Section:			
AGREEMENT STATE			

This material event contains a "Less than Cat 3" level of radioactive material as defined in IAEA RS-G-1.9

~~!!! This is a draft document, do not release to the public !!!~~

**AGREEMENT STATE REPORT - PACKAGE CONTAINING ELECTRON CAPTURE DEVICES WAS LOST AND FOUND**

The following report was received from the State of Washington via email:

"On 4/6/2016, the University of Washington (UW) reported the loss of a package containing four electron capture detectors (ECDs). Each ECD contained a 370 MBq (10 mCi) Ni-63 source. The package was being sent from UW to the Marine National Facility, Commonwealth Scientific and Industrial Research Organization (CSIRO) Marine Laboratories. The shipment was initiated on 3/23/2016. The package was delivered to the Sydney, Australia, airport on 3/24/2016 and was checked in by the airline (Qantas) on 3/24/2016 and 3/26/2016.

"The airline booked the package on a flight on 3/28/2016. The package became missing on the flight from Sydney to Tasmania, Australia, on 3/31/2016. The airline put a trace on the package. The ECDs were to be used in gas chromatographs (GCs) onboard a marine vessel by a UW researcher. The GCs had been shipped separately and are not missing.

"The package containing the four electron capture detectors was found on 20 April 2016, and will be shipped to its intended destination.

"Apparently, the package was misplaced in Sydney, Australia or while in transit in Melbourne, Australia, and it ended up at a freight forwarding company at the Melbourne, Australia airport. The package is being retrieved from the freight forwarding company, will be cleared by customs, and will be shipped to its intended destination in

**This Event is not for public disclosure until 05/02/2016.**

Agreement State (AGR) Hobart, Australia." Event # 51679

Washington NMED Item Number 160160.

**THIS MATERIAL EVENT CONTAINS A "LESS THAN CAT 3" LEVEL OF RADIOACTIVE MATERIAL**

Sources that are "Less than IAEA Category 3 sources," are either sources that are very unlikely to cause permanent injury to individuals or contain a very small amount of radioactive material that would not cause any permanent injury. Some of these sources, such as moisture density gauges or thickness gauges that are Category 4, the amount of unshielded radioactive material, if not safely managed or securely protected, could possibly - although it is unlikely - temporarily injure someone who handled it or were otherwise in contact with it, or who were close to it for a period of many weeks. For additional information go to [http://www-pub.iaea.org/MTCD/publications/PDF/Pub1227\\_web.pdf](http://www-pub.iaea.org/MTCD/publications/PDF/Pub1227_web.pdf)

\*\*\*\*\*



***U.S. Nuclear Regulatory Commission Operations Center***

***\*\*\* Event Summary \*\*\****

~~!!! This is a draft document, do not release to the public !!!~~

**51879 WA OFFICE OF RADIATION PROTECTION**

*This Event is not for public disclosure per Agreement State request until 05/02/2016.*  
AGREEMENT STATE

**Erickson, Randy**

---

**From:** Gepford, Heather  
**Sent:** Friday, April 22, 2016 6:22 PM  
**To:** Tharakan, Binesh; Erickson, Randy  
**Subject:** Fwd: Event Notice: 04/22/2016 - Washington State Agreement State Report  
**Attachments:** Summary.pdf; Events.pdf

This one is interesting... lost & found Ni-63 gas chromatograph sources shipped from University of Washington to their research vessel in Australia. Misplaced by airline in Australia.

—— Original Message ——

**From:** HOO Hoc <HOO.Hoc@nrc.gov>  
**Date:** Fri, April 22, 2016 6:14 PM -0500  
**To:** HOO Hoc <HOO.Hoc@nrc.gov>  
**Subject:** Event Notice: 04/22/2016 - Washington State Agreement State Report

See attached.

Event # 51879 is a radioactive material event of interest level: "Less than Cat 3".

Headquarters Operations Officer  
U.S. Nuclear Regulatory Commission  
Phone: 301-816-5100  
Fax: 301-816-5151  
email: hoo.hoc@nrc.gov  
secure e-mail: (b)(6)

## Uranium, blasting caps found at Spokane Valley home

Matt Vergara, KREM 12:25 PM PDT April 21, 2016



(Photo: KREM)

SPOKANE VALLEY, Wash. – The Spokane Valley Fire Department removed blasting caps and uranium found at a home in Spokane Valley on Thursday.

Fire officials surrounded a home on 15th and Walnut shortly after 9:30 a.m. A woman called fire officials wondering how to dispose of uranium and blasting caps. The material had been in her possession for 35 years, officials said.

Crews waited instruction from the federal government on how to safely remove the uranium. The hazardous radius for the uranium is about five feet, they said. Radiation meters determined it was Uranium. It was in a glass jar in a paper bag.

The woman said her family has been in the mining industry and the material was left there.

Neighbors are not in danger, but fire crews initially did not let them leave their homes until the uranium was removed.

Crews removed the blast caps around 11:30 a.m. and left the scene shortly before 12:30 p.m.

(© 2016 KREM)

### JOIN THE CONVERSATION

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[LEAVE A COMMENT \(\)](#)

**Erickson, Randy**

---

**From:** Grumbles, Anine (DOH) <Anine.Grumbles@DOH.WA.GOV>  
**Sent:** Wednesday, June 22, 2016 2:10 PM  
**To:** Erickson, Randy  
**Cc:** Fordham, Earl W (DOH); Lawrence, Craig (DOH)  
**Subject:** [External\_Sender] RE: Letter concerning common carrier RAM safety and security

Thank you for your help and support on this issue, Randy.

*Anine*

*Anine Grumbles*  
*Phone: (360)236-3222*  
*anine.grumbles@doh.wa.gov*

*"Public Health - Always Working for a Safer and Healthier Washington"*

**From:** Erickson, Randy [mailto:Randy.Erickson@nrc.gov]  
**Sent:** Wednesday, June 22, 2016 12:09 PM  
**To:** Lawrence, Craig (DOH)  
**Cc:** Fordham, Earl W (DOH); Grumbles, Anine (DOH)  
**Subject:** RE: Letter concerning common carrier RAM safety and security

Thanks Craig. I'll pass this through channels to see that it gets the proper attention. It may take a while before you get a response. Hang tight.

Randy

**From:** Lawrence, Craig (DOH) [mailto:Craig.Lawrence@DOH.WA.GOV]  
**Sent:** Wednesday, June 22, 2016 2:04 PM  
**To:** Erickson, Randy <Randy.Erickson@nrc.gov>  
**Cc:** Fordham, Earl W (DOH) <Earl.Fordham@DOH.WA.GOV>; Grumbles, Anine (DOH) <Anine.Grumbles@DOH.WA.GOV>  
**Subject:** [External\_Sender] Letter concerning common carrier RAM safety and security

Randy,

Please see the attached letter regarding recent problems with common carriers, particularly with FedEx and the loss of control of radioactive materials conveyed to them by Washington Licensees. We are encouraging the NRC to take another look at activities allowed under a common carrier's general license when they are in possession to transport specifically license radioactive materials. We encourage rulemaking if necessary, to regulate these activities under specific license to avert this trending problem with the loss of control of radioactive materials while in the possession of common carriers.

Best regards,

Craig

*Craig Lawrence, Manager &  
Radioactive Materials Section  
Office of Radiation Protection  
Washington State Department of Health*

PH 360.236.3221  
FX 360.236.2255  
Craig.Lawrence@doh.wa.gov

Mailing Address - PO Box 47827, Olympia, WA 98504-7827  
Physical address - 111 Israel Rd SE, Tumwater 98501

Also, visit our Home Page at  
<http://www.doh.wa.gov/CommunityandEnvironment/Radiation/RadioactiveMaterials.aspx>

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DEPARTMENT OF HEALTH

OFFICE OF RADIATION PROTECTION

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June 22, 2016

Randy Erickson  
Nuclear Regulatory Commission  
611 Ryan Plaza Drive, Suite 400  
Arlington, Texas 76011-4005

Dear Randy Erickson,

We see a potential major problem with the common carrier general license and a disturbing trend in the loss of control of radioactive materials while the carrier is in possession of these materials. Neither the Nuclear Regulatory Commission (NRC) nor the states regulate them; they fall under US Department of Transportation regulations.

FedEx has been identified in a number of incidents involving lost, misplaced or diverted radioactive materials when hired to convey these radioactive materials for Washington Licensees. This material was entrusted to FedEx to temporarily possess and transport these materials for them with the expectation they would have the same level of security and accountability the licensee is required to maintain. We have had three of these lost material incidences in the last few months, two involving FedEx indicating a poor record of safety or security.

In addition to routinely transporting time critical medical radioactive materials, FedEx is also the primary carrier used by licensees to transport risk significant amounts of radioactive materials some of which fall under the enhanced security requirements of 10 CFR Part 37, including various radiography sources and irradiators. These materials are transported by the common carrier under general license; materials that we and the NRC specifically license to users requiring enhanced security under this rule. While any package is in possession of a common carrier neither the owner nor recipient have any control over this package; only the common carrier has control while the package is in their possession.

The US Department of Transportation is also investigating FedEx, but appears to be struggling with resources to regulate common carrier vendors as this trend of FedEx losing packages seems to be proving. The fact that the material was lost and unaccounted for, for any period of time, is a breakdown in the required control for all licensed material. Licensees in possession of radioactive materials must maintain control of those materials or they are cited for loss of control of this material and tasked with proving they have means to prevent recurrence.

Mr. Randy Erickson

June 22, 2016

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In incidents like these we at-minimum typically require the licensee to take responsibility to assure personnel are properly trained. Unless the common carriers similarly take steps to assure their people are trained and accountable, there is no accountability and no assurance that steps have been taken to prevent recurrence while in possession of radioactive/hazardous materials.

A general license is not enough to protect workers, public health and safety, or security when risk significant quantities are being transported and smaller quantities are routinely being lost, misplaced, or diverted. If even one package is diverted to the wrong recipient and these materials are used for terrorist means, it would be an unacceptable disaster.

We would like to see a change in the regulations to afford more active accountability and regulatory oversight, as well as increased requirements for safety and security for these common carriers. We recommend that the NRC eliminate the common carrier general license. While they are in possession of radioactive materials, they should be licensed and regulated as a radioactive materials licensee. Because they are a national/international entity, perhaps they could be licensed by the Nuclear Regulatory Commission under a Master Materials License.

Thank you for addressing our concerns.

Sincerely,



Craig Lawrence

Manager, Radioactive Materials Section

**Erickson, Randy**

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**From:** Grumbles, Anine (DOH) <Anine.Grumbles@DOH.WA.GOV>  
**Sent:** Wednesday, June 15, 2016 5:44 PM  
**To:** Patrick.lease@dot.gov; Dante C Huntsman (Dante.Huntsman@inl.gov); Demaris, Curt (DOH); Elsen, Mike (DOH); Fordham, Earl W (DOH); Grumbles, Anine (DOH); Henry, Mark (DOH); HOO Hoc; Jansen, David B (DOH); Lawrence, Craig (DOH); Maier, Bill; Martell, P John (DOH); Matthews, Steve (DOH); Priddy, Mike (DOH); Erickson, Randy; Robert.Sant@inl.gov; Tharakan, Binesh; Van Gent, Daniel (DOH); Williams, Chris (DOH)  
**Subject:** [External\_Sender] FedEx lost four packages containing 252 IsoRay Cesium 131 brachytherapy seeds intended for four patients; Sources found next day  
**Attachments:** WA-16-027 Fedex loses 4 pkg IsoRay brachy seeds .docx

Another Incident report. Lost and then found by the common carrier - too late for patients.

**Anine**

*Anine Grumbles  
Laboratory Radioactive Materials Licensing and Compliance Program Manager  
Phone: (360)236-3222  
anine.grumbles@doh.wa.gov*

*Department of Health, Office of Radiation Protection  
P.O. Box 47827  
Olympia, Washington 98504-7827*

*Our physical address is 111 Israel Rd SE., Tumwater, Washington 98501*

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# NMED Data Entry Form

**Incident Number:** WA-16-027

**Event Type:** ☐ Equipment ☐ Leaking Source ☒ Lost/Abandoned/Stolen ☐ Medical Event  
☐ Other ☐ Overexposure ☐ Radioactive Material Release ☒ Transportation

**Cause:**

☐ Equipment Failure  
(Select One)  
☒ Human Error  
Management Deficiency  
☐ Other  
(Select One)

☐ Procedure Problem  
(Select One)  
☒ External  
(Select One)  
☐ Not Reported

Event Date: 6/14/2016 Report Date: 6/15/2016  
Name: IsoRay License Number: WN-L0213-1  
Contact Person: Dale Boyce Phone: (509) 375-1202

City: Richland State: WA Zip: 99354-

Reportable Event Per 10 CFR: Yes Reciprocity: No

Reporting Requirement: 1) 20.2201(a)(1)(i) See Reference Document

Atomic Energy Act Material: No Abnormal Occurrence: No  
Investigation: No Send Report to NRC: Yes  
Consultant Hired?: No Event Closed by State: Yes

Event Narrative: FedEx lost 252 IsoRay Cesium 131 brachytherapy seeds intended for four patient implants. On Friday, 6/9/2016, radioactive materials licensee, IsoRay (WN-L0213-1) sent four orders of cesium 131 brachytherapy seeds. The four orders contained a total of 252 seeds at a total air kerma activity level of 522.8 U. the total apparent activity is approximately 1 Ci ( the actual activity is between 1 - 2 Ci). The absorbed dose from the 252 seeds would be approximately 52,280 rad (522.8 Gray). Early Tuesday morning, 6/14/2016, the Memphis hub of FedEx informed IsoRay that they were unable to locate these packages and they would not be delivered on time as contracted. They were scanned in and out at both the Pasco and Spokane airports. The Spokane flight to Memphis arrived, but FedEx could not locate them. IsoRay notified the state of the loss of radioactive material that same day.

On 6/15/2016, IsoRay notified the state that FedEx found the missing shipments, and are returning them to IsoRay. They were not delivered to the intended physicians. There are no details yet on how they became misplaced. IsoRay has scheduled a senior management meeting with FedEx's Priority Alert team to trouble shoot the missing shipments.

This incident is one of several incidents in which FedEx played a role within the last 4 months.

**Corrective Actions:** NA  
NA

**Keywords (Pick One or More):**

☐ Failure to Block and Brace  
Equipment

☒ Material Lost and Found

☐ Material Stolen and  
Recovered

☐ Radioactive Material at  
Landfill

☐ Improperly Packaged  
Material

☐ Material Lost and Not  
Found

☐ Orphan Source

☐ Radioactive Material at  
Scrap Metal Facility

☐ Material Found

☐ Material Stolen and Not  
Recovered

☐ Radioactive Material at  
Incinerator

☐ Surface Contamination  
Levels Exceeded Limits for  
Package

☐ Transport Vehicle Involved in Accident

**SOURCES**

<p>Source Number: 1</p> <p>Form of Radioactive Material: Sealed Source</p> <p>Source Use: Brachytherapy</p> <p>Radionuclide: Cs-131</p> <p>Activity: 1-2 CI      GBq</p> <p>Manufacturer: IsoRay</p> <p>Model Number: seeds</p> <p>Serial Number:</p> <p>Problem With Source: None</p>	<p>Source Number: 2</p> <p>Form of Radioactive Material: (Select One)</p> <p>Source Use: (Select One)</p> <p>Radionuclide:</p> <p>Activity:      CI      GBq</p> <p>Manufacturer:</p> <p>Model Number:</p> <p>Serial Number:</p> <p>Problem With Source: ---</p>
<p>Source Number: 3</p> <p>Form of Radioactive Material: (Select One)</p> <p>Source Use: (Select One)</p> <p>Radionuclide:</p>	<p>Source Number: 4</p> <p>Form of Radioactive Material: (Select One)</p> <p>Source Use: (Select One)</p> <p>Radionuclide:</p>

Activity:            CI            GBq	Activity:            CI            GBq
Manufacturer:	Manufacturer:
Model Number:	Model Number:
Serial Number:	Serial Number:
Problem with Source: ---	Problem with Source: ---

**Devices:**

Device Number: 1

**Device Name:**

<input type="checkbox"/> Container (Select One)	<input type="checkbox"/> Irradiator (Select One)
<input type="checkbox"/> Medical (Select One)	<input type="checkbox"/> Other (Select One)
<input type="checkbox"/> Radiography (Select One)	<input type="checkbox"/> Scrap/Waste (Select One)
<input type="checkbox"/> Self Luminous (Select One)	<input type="checkbox"/> Test / Measuring (Select One)
<input type="checkbox"/> Well Logging (Select One)	

Manufacturer:                      Model Number:                      Serial Number:

Problem With Equipment: ---

Device Number: 2

**Device Name:**

<input type="checkbox"/> Container (Select One)	<input type="checkbox"/> Irradiator (Select One)
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☐ Medical  
(Select One)

☐ Radiography  
(Select One)

☐ Self Luminous  
(Select One)

☐ Well Logging  
(Select One)

☐ Other  
(Select One)

☐ Scrap/Waste  
(Select One)

☐ Test / Measuring  
(Select One)

Manufacturer:

Model Number:

Serial Number:

Problem With Equipment: ---

Device Number: 3

**Device Name:**

☐ Container  
(Select One)

☐ Medical  
(Select One)

☐ Radiography  
(Select One)

☐ Self Luminous  
(Select One)

☐ Well Logging  
(Select One)

☐ Irradiator  
(Select One)

☐ Other  
(Select One)

☐ Scrap/Waste  
(Select One)

☐ Test / Measuring  
(Select One)

Manufacturer:

Model Number:

Serial Number:

Problem With Equipment: ---

**Reference Documents:**

Document Reference Number: Coder Initials: References:(Select One)	Document Reference Number: Coder Initials: References:(Select One)
Document Reference Number: Coder Initials: References:(Select One)	Document Reference Number: Coder Initials: References:(Select One)
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References:(Select One)

References:(Select One)

Document Reference Number:

Coder Initials:

References:(Select One)

Document Reference Number:

Coder Initials:

References:(Select One)

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Extra Forms if Needed  
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**(Extra Source Entry Pages)**

<p><b>Source Number: 5</b></p> <p><b>Form of Radioactive Material:</b> (Select One)</p> <p><b>Source Use:</b> (Select One)</p> <p><b>Radionuclide:</b></p> <p><b>Activity:</b>            CI            GBq</p> <p><b>Manufacturer:</b></p> <p><b>Model Number:</b></p> <p><b>Serial Number:</b></p> <p><b>Problem With Source: ---</b></p>	<p><b>Source Number: 6</b></p> <p><b>Form of Radioactive Material:</b> (Select One)</p> <p><b>Source Use:</b> (Select One)</p> <p><b>Radionuclide:</b></p> <p><b>Activity:</b>            CI            GBq</p> <p><b>Manufacturer:</b></p> <p><b>Model Number:</b></p> <p><b>Serial Number:</b></p> <p><b>Problem With Source: ---</b></p>
<p><b>Source Number: 7</b></p> <p><b>Form of Radioactive Material:</b> (Select One)</p> <p><b>Source Use:</b> (Select One)</p> <p><b>Radionuclide:</b></p> <p><b>Activity:</b>            CI            GBq</p> <p><b>Manufacturer:</b></p> <p><b>Model Number:</b></p> <p><b>Serial Number:</b></p> <p><b>Problem With Source: ---</b></p>	<p><b>Source Number: 8</b></p> <p><b>Form of Radioactive Material:</b> (Select One)</p> <p><b>Source Use:</b> (Select One)</p> <p><b>Radionuclide:</b></p> <p><b>Activity:</b>            CI            GBq</p> <p><b>Manufacturer:</b></p> <p><b>Model Number:</b></p> <p><b>Serial Number:</b></p> <p><b>Problem With Source: ---</b></p>

## Reference Document

### 10 CFR reporting requirements

- 1) 20.2201(a)(1)(i) The immediate telephone report of any lost, stolen, or missing licensed material in a quantity greater than or equal to 1,000 times the appendix quantities that could cause an explosion to persons in unrestricted areas.
- 2) 20.2201(a)(1)(ii) The 30day telephone report of any lost, stolen, or missing licensed materials in a quantity greater than 10 times the appendix C quantities.
- 3) 20.2201(b)(1) The 30 day written report following a 20.2201(a) telephone report.
- 4) 30.50(b)(2)(ii) The 24 hour report of an event where required equipment is disabled or failed to function as designed when the equipment is required to be available and operable when it is disabled or fails to function.
- 5) 31.5(c)(5) The 30 day report of the description and remedial action of actual or indicated failure to shielding, the on-off mechanism or indicator, or upon the detection of 0.005 uCi or more of removable rad. Material.
- 6) 34.101(a)(2) The 30day written report involving radiographic equipment and the inability to retract the source assembly to its fully shielded position and secure it in this position.
- 7) 35.3045(a)(1)(i) Total dose delivered that differs from the prescribed dose by 20% or more; and differs from the prescribed dose by more than 0.05 Sv (5 rem) EDE, 0.5 Sv (50 rem) to an organ or tissue, or 0.5 Sv (50 rem) SDE.
- 8) 35.3045(a)(1)(iii) A fractionated dose delivered that differs from the prescribed dose, for a single fraction by 50% or more; and differs from the prescribed dose 0.05 Sv (5 rem) EDE, 0.5 Sv (50 rem) to an organ or tissue, or 0.5 Sv (50 rem) SDE.
- 9) 35.3045(a)(2)(iii) An administration of a dose or dosage to the wrong individual or human research subject.
- 10) 35.3045(a)(3) A dose to the skin, organ, or tissue, other than the treatment site, that exceeds the prescribed dose by 0.5 Sv (50 rem) and 50% or more (excluding permanently implanted seeds that migrated from the treatment sight).

If none of these apply go to <http://www.nrc.gov/reading-rm/doc-collections/cfr/>

Dear FOIA Requester:

The FOIA Improvement Act of 2016, which was enacted on June 30, 2016, made several changes to the Freedom of Information Act (FOIA). Federal agencies must revise their FOIA regulations to reflect those changes by December 27, 2016. In addition to revising our regulations, we intend to update the Form 464, which we use to respond to FOIA requests.

In the interim, please see the comment box in Part I.C of the attached Form 464. The comment box includes information related to the recent changes to FOIA that is applicable to your FOIA request, including an updated time period for filing an administrative appeal with the NRC.

Sincerely yours,

*Stephanie Blaney /S/*

Stephanie Blaney  
FOIA Officer