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BLUE Shipment of Radioactive Samples Violated Pacific Northwest National Laboratory Protocol

Lesson ID: 2015-LL-PNNL-002 (*Source: User Submitted*)**Originating Organization or Contracting Company:** Pacific Northwest National Laboratory**Date:** 3/18/2015**Contact:** Lessons Learned/Operating Experience Program Manager, Patti Ammonet (509)375-2275**Classifier:** **Reviewer:**

Statement: Using the US Postal Service to return the samples did not violate Department of Transportation (DOT) regulations; however, the shipment did not come with a Battelle radioactive material (BRM) number by freight carrier to the Battelle Shipping and Receiving Warehouse (BSRW) on 6th Street where it would have been handled correctly. Pacific Northwest National Laboratory (PNNL) does not send radioactive samples--at any level--through the mail.

Discussion: In 2012, a PNNL staff member sent three concrete samples--one spiked with trace amounts of uranium--to Washington State University for analysis. WSU returned the results and an invoice in the spring of 2013, but not the samples. In October 2014, long after the staff member had left the Lab, WSU unexpectedly mailed the samples to a second individual at PNNL. She opened the box in her office, recognized the radiological marking, and called a Radiation Protection Technologist.

Analysis: The person who originated the sample shipment to WSU no longer works at the Lab and it is not known what expectations were communicated to WSU for disposition of the samples or whether they were accompanied by a "chain of custody" (COC) form. COC forms are used to assign sample responsibility and custody to others and can be used to set expectations for delivering return shipments to PNNL according to our protocol.

When PNNL receives radioactive samples, they must have a BRM number and go by freight carrier--not by mail. PNNL's Radiation Protection staff provides BRM numbers. Because the shipment had trace levels of radioactivity, DOT regulations did not apply, but PNNL follows DOE protocol and has no lower limit that allows shipping radioactive material by mail.

Recommended Actions: Radioactive samples cannot be received at PNNL without a BRM number assigned by Radiological Engineering. The number is an internal Battelle requirement only that alerts the BSRW that an incoming shipment contains radioactive material and must not be opened without a Radiation Protection Technician present or according to other controls, such as an appropriate delivery location. The numbers satisfy PNNL protocol, which applies to all radioactive samples, regardless of the level of radioactivity.

Staff members:

* Establish and maintain the chain of custody for shipping radiological samples off-site for testing. Make it clear who is responsible for the disposition of each sample and what is the final disposal pathway. Designate primary and alternate points of contact to be responsible for obtaining BRM numbers from Radiological Protection for return shipments. The primary contact or an alternate must be designated to follow shipments through their return journey, making sure each arriving shipment will have the required BRM number to alert our receivers.

* Follow up with the receiver. When test results are received at PNNL and samples are to be returned, the primary contact or an alternate is responsible to follow up with the testing lab to make sure a BRM number is assigned by Radiation Protection and the return shipper understands that radioactive material cannot be sent via U.S. mail. Responsibility for maintaining the chain of custody ends only when the primary or alternate contact receives the return shipment according to protocol.

Savings: N/A**Keywords:** radiation, radiation protection, SAMPLES, shipment, TRANSPORTATION, CUSTODIAN**Hazard(s):** Personal Injury / Exposure - Radiation / Contamination**ISM Code(s):** Feedback and Improvement**Work Function(s):** Radiation Protection

References:

Priority Descriptor: Blue / Information

Attachments:

[2015-LL-PNNL-002.pdf](#)

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Last updated May 22, 2012
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Shipment of radioactive samples violated PNNL protocol

Date Published: November 10, 2014 | Contact: HDI POC - Radiation Protection Manager | [Read Comments \(0\)](#)

Final sample disposition was unexpected

Summary

In 2012, a PNNL staff member sent three concrete samples--one spiked with trace amounts of uranium--to Washington State University for analysis. WSU returned the results and an invoice in the spring of 2013, but not the samples. In October 2014, long after the staff member had left the Lab, WSU unexpectedly mailed the samples to a second individual at PNNL. She opened the box in her office, recognized the radiological marking, and called a Radiation Protection Technologist (RPT) and 375-2400. **Lessons Learned:** Using the US Postal Service to return the samples did not violate Department of Transportation regulations; however, the shipment did not come with a Battelle radioactive material (BRM) number by freight carrier to the Battelle Shipping and Receiving Warehouse (BSRW) on 6th Street where it would have been handled correctly. PNNL does not send radioactive samples--at any level--through the mail.



Details

The person who originated the sample shipment to WSU no longer works at the Lab and it is not known what expectations were communicated to WSU for disposition of the samples or whether they were accompanied by a "chain of custody" (COC) form. COC forms are used to assign sample responsibility and custody to others and can be used to set expectations for delivering return shipments to PNNL according to our protocol.

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Lessons Learned

Radioactive samples cannot be received at PNNL without a BRM number assigned by Radiological Engineering. The number is an internal Battelle requirement only that alerts the BSRW that an incoming shipment contains radioactive material and must not be opened without a Radiation Protection Technician present or according to other controls, such

as an appropriate delivery location. The numbers satisfy PNNL protocol, which applies to all radioactive samples, regardless of the level of radioactivity.

Staff members

- **Establish and maintain the chain of custody** for shipping radiological samples off-site for testing. Make it clear who is responsible for the disposition of each sample and what is the final disposal pathway. Designate primary and alternate points of contact to be responsible for obtaining BRM numbers from Radiological Protection for return shipments. The primary contact or an alternate must be designated to follow shipments through their return journey, making sure each arriving shipment will have the required BRM number to alert our receivers.
- **Follow up with the receiver.** When test results are received at PNNL and samples are to be returned, the primary contact or an alternate is responsible to follow up with the testing lab to make sure a BRM number is assigned by Radiation Protection and the return shipper understands that radioactive material cannot be sent via U.S. mail. Responsibility for maintaining the chain of custody ends only when the primary or alternate contact receives the return shipment according to protocol.