LICENSEE EVENT REPORT EVALUATION FORM

EVENT CLASS: LAS - LOST, ABANDONED, STOLEN MATERIAL

LICENSEE / REPORTING PARTY INFORMATION:

Licensee/Reporting party name:	Bozeman Deaconess Hospital Larry Slate, RSO/Medical Physicist		
License number :	25-10994-04		
Docket number :	030-33305		
Licensee's City of record :	Bozeman		
Licensees State of record :	Montana		
NRC regulated?	Yes	If so, what Region?	R-IV
Working under reciprocity?	No		

EVENT INFORMATION:

In what City and State did the event occur?	Bozeman, Montana
Event date :	Unknown
Discovery date :	03/10/2010
Report date :	03/11/2010
Agreement State reportable?	N/A
NRC reportable?	Yes
Reporting regulation :	20.2201(a)(1)(i)
NMED Item Number :	45758

ADDITIONAL PARTIES INVOLVED:

Name :	None
License number :	N/A
City :	N/A
State :	N/A

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CONSULTANT INFORMATION (if any):

Consultant name :	N/A
Company :	N/A
Who hired consultant?	N/A

DEVICE INFORMATION:

Manufacturer :	Unsealed radioactive material
Model number :	N/A
Serial number :	N/A

RADIATION SOURCE INFORMATION:

Isotope :	Samarium-153	
Activity :	30 mCi vial	
Manufacturer :	unknown	
Model number :	N/A	
Serial number :	N/A	

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NARRATIVE EVENT DESCRIPTION:

On March 10th 2010 an initial inventory of long term storage waste at Bozeman Deaconess Hospital was completed and the inventory revealed that a vial of Samarium-153 (lot #S04811D) was missing. The vial was received in the Nuclear Medicine Department on February 19, 2004. The receiving paperwork indicates that the vial contained 150 mCi (February 18, 2004) of Samarium-153 in liquid form. The Samarium-153 (65 mCi) was injected into the patient on February 19, 2004. From receipt (February 18, 2004) of the material and injection (February 19, 2005) 52 mCi had decayed, thus 33 mCi remained in the vial after injection.

Background of the purchase of the Samarium-153: The hospital/staff was under the impression that Sm-153 had a half life of 1.9 days and that the waste could be disposed of within a small time frame. The drug manufacturer declined to inform the hospital/ staff that Sm-153 is not the only radioactive isotope present. What happens is that when SM-153 is being produced (from Sm-152) in the reactor a small fraction of the Sm-153 decays to Eu-153 and then is bombarded by neutrons which has a very favorable cross section and Eu-154 is produced. Eu-154 has a half life of nine years.

The Sm-153 waste (vial, gloves, syringe, dressings, etc) was stored in the hot lab along with other Indium-111 waste in separate bags. The In-111 has a half-life of 2.8 days. After conversations with the staff it is assumed that the Sm-153 waste containing the vial (lot #S04811D) was inadvertently disposed of along with the In-111 waste and the waste was not removed or stolen from the hot lab.

CORRECTIVE ACTIONS:

The RSO determined that it was unknown if anyone was exposed to the Sm-153 contaminated waste. The RSO called the city landfill to inquire if it uses radiation detectors; it does not. It appeared there was not method to recover the waste or determine of the waste ever made the landfill. The waste was assumed to be lost. The hospital has implemented new policies and procedures to ensure stricter and safer radiation practices. A new policy following NUREG 1556 Rev. 1 Section 8.39 describes that all long term waste will be inventoried every six months. The new procedure also describes material receipt and accountability. In addition, a policy and procedure has been developed that describes that all waste to be disposed will have an observer/witness before disposal. The second individual will verify screening/characterization, surveys, and inventory verification. Finally, the hospital in-services are also being addressed to ensure that adequate training is being performed to address new policies and procedures. The hospital is looking to remove all long term storage RAM. In the future, isotopes with relatively long half life's will be not be purchased unless an agreement with the manufacturer is established so that any residual waste can be shipped back to the manufacturer. This is currently the policy with the Iodine-125 seeds.

RECOMMENDED FOLLOWUP:

Was a reactive inspection conducted?	No	If so, inspection report number :	N/A
Is LER recommended for closure?	Yes		
Is this NMED Item Number recommended to reflect "complete"?	Yes		

LER Evaluator:	Branch Chief or Designee Review:
Name: Rick Muñoz Date: 6/16/2010	Name: [signature] Date: 6/16/2010