

EVENT RATING FORM (ERF)

THE INTERNATIONAL NUCLEAR EVENT SCALE (INES)														
EVENT TITLE Potential Overexposure During Co-60 Source Exchange											EVENT DATE 21 July 2008			
RATING	RATING	OUT OF	DEVIATION	INCIDENT			ACCIDENT				FACILITY TYPE			
PROVISIONAL <input checked="" type="checkbox"/>	DATE	SCALE	0	1	2	3	4	5	6	7	Power Reactor <input type="checkbox"/>	Research Reactor <input type="checkbox"/>		
FINAL <input type="checkbox"/>	2008/07/31		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Radwaste Facility <input type="checkbox"/>	Radiation Source <input checked="" type="checkbox"/>		
COUNTRY Brazil				FACILITY NAME							Irradiation <input type="checkbox"/>	Transportation <input type="checkbox"/>		
LOCATION Hospital, São Paulo, Brazil,											Fuel Fabrication <input type="checkbox"/>	Fuel Reprocessing <input type="checkbox"/>		
											Research Facility <input type="checkbox"/>	Mining/Milling <input type="checkbox"/>		
											Enrichment Facility <input type="checkbox"/>	Other <input type="checkbox"/>		
OFF-SITE IMPACT											YES	NO		
RELEASE BEYOND AUTHORIZED LIMITS											<input type="checkbox"/>	<input type="checkbox"/>		
OVEREXPOSURE OF MEMBERS OF PUBLIC											<input type="checkbox"/>	<input type="checkbox"/>		
ON-SITE IMPACT											<input type="checkbox"/>	<input type="checkbox"/>		
CONTAMINATION SPREAD											<input type="checkbox"/>	<input type="checkbox"/>		
WORKER OVEREXPOSURE											<input checked="" type="checkbox"/>	<input type="checkbox"/>		
DAMAGE TO RADIOLOGICAL BARRIERS											<input type="checkbox"/>	<input type="checkbox"/>		
DEGRADATION OF DEFENSE IN-DEPTH											<input type="checkbox"/>	<input type="checkbox"/>		
PERSON INJURED PHYSICALLY OR CASUALTY											<input type="checkbox"/>	<input type="checkbox"/>		
IS THERE A CONTINUING PROBLEM											<input type="checkbox"/>	<input type="checkbox"/>		
PRESS RELEASE ISSUED (IF YES, PLEASE ATTACH)											<input type="checkbox"/>	<input type="checkbox"/>		
EVENT DESCRIPTION														
<p>On July 21, 2008, two radiation workers, A and B, one American and one Brazilian, respectively, had received a potential overexposure. While in a hospital in the State of São Paulo, Brazil, they were in the process of exchanging an expended cobalt-60 source with a new cobalt-60 source. After engaging the source holder with the removal tool, worker A transferred the source holder from the unit head into the transfer cask. Once the source holder was in the transfer cask, worker A continued making preparations to complete the removal sequence. He had completed all the steps of the removal sequence and was in the process of removing the removal tool from the transfer cask, when it was determined by audible alarms and before the tool was completely out of the cask, that the cobalt-60 source was still connected to the end of the removal tool. At that point, worker A reinserted the removal tool in the cask and repeated the steps to</p>														

make sure that the source was disengaged from the removal tool. Once he was sure that the source was no longer attached to the removal tool, it was removed from the cask, and all the covers installed. After that, the transfer cask contained both the expended and the new source.

Immediately after the container was secured, both workers read their SRD's and reported their dose as follows:

- Worker A: Whole Body dose: 52 mSv (5.2 rem), Left Wrist: 3 mSv (300 mrem), and Right Wrist: Off Scale (10R dosimeter);
- Worker B: Whole Body dose: 5.3 mSv (533 mrem), Left Wrist: Off scale (10R dosimeter), and Right Wrist: 41 mSv (4.1rem)

The TLD's were sent via FED-EX to Global Dosimetry Solutions in Irvine, CA, for emergency reading and the results are as follows:

- Worker A: Monthly Whole Body (WB) Deep Dose Equivalent (DDE)- 135 mSv (13.5 rem), Quarterly WB DDE: 111 mSv (11.1 rem), Left Wrist Shallow Dose Equivalent (SDE): 733.4 mSv (73.4 rem), Right Wrist SDE: 7.5 mSv (0.75 rem).
- Worker B: Monthly WB DDE: 7.02 mSv (0.7 rem), Quarterly WB DDE: 15.6 mSv (1.56 rem), Left Wrist SDE: 30.3 mSv (3.03 rem) Right Wrist SDE: 85.4 mSv (8.5 rem)

Two inspectors from the National Regulatory Body were also onsite, but were following the operation remotely and therefore, did not receive relevant doses.

RATING JUSTIFICATION AND DIFFICULTIES ENCOUNTERED

The provisional rating for this event is Level 2.

A Level 2 is warranted for the potential exposure of workers in excess of statutory annual limits. See Section 2.3.2, "Criteria for the consideration of the number of individuals exposed," INES Scale User's Manual dated June 14, 2008.

This provisional rating and ERF has been coordinated with the INES U.S. National Officer, Dr. Cynthia Jones, U.S. Nuclear Regulatory Commission, Tel: 301-415-0298, cynthia.jones@nrc.gov

CONTACT PERSON FOR FURTHER INFORMATION					
NAME		AFFILIATION	INES National Officer		
ADDRESS	Brazilian Address of Regulatory Agency				
PHONE		FAX		E-MAIL	