

November 18, 2010

Katherine Streit
U.S. Nuclear Regulatory Commission, Region III
Division of Nuclear Materials Safety
2443 Warrenville Road, Suite 210
Leslie, IL 60532-4352

Re: Dose Estimates for Chase Environmental Personnel

Dear Ms. Streit,

This letter refers to the dose estimates requested during the pre-exit meeting on October 29, 2010 for reciprocity #000629 regarding the "RDS-112 Cyclotron Removal Project". The work was performed at William Beaumont Hospital, 400 3601 West 13 Mile Road, Royal Oak MI under our State of Kentucky Radioactive Materials License Number 201-605-90.

Chase Environmental Group, Inc. (Chase) evaluated the occupational doses for the personnel involved in the assessment and transfer of Havar foils with elevated dose rates. These elevated dose rate foils were discovered during project activities. On-site direct radiological measurements indicated a dose rate of 30 R/hr at approximately 3 inches from the unshielded foils. Whole body thermoluminescent dosimeters (TLD) worn by Chase personnel revealed that the doses accumulated during the wear period of October 1st – November 6th were 40 mrem for worker #1, not detectable for worker #2, and 20 mrem for worker #3. These three workers were the only personnel involved in the evaluation and transfer of the Havar foils. TLD data clearly demonstrates no significant whole body exposures took place and exposures were maintained well below ALARA limits.

The extremity exposures for the transfer of the foils were estimated based on a distance of 6 inches between the unshielded foils and the maximally exposed extremity during the 10 seconds the transfer operation took to complete (3.33 seconds per individual). In the same manner, extremity exposures for worker #1 during assessment activities were estimated based on a distance of 6 inches during a 10 second total exposure from the unshielded foils. The distance from the maximally exposed extremities was estimated based on personal interviews with the employees who took part in the transfer operation.

Based on direct readings and an estimate of the distances (from the Havar foils to the maximally exposed extremity) and the time the assessment and transfer operations took place, our estimate for extremity exposure is 28 mrem for worker #1, 7 mrem for worker #2 and 7 mrem for worker #3. Extremity dose estimates clearly demonstrate no overexposure as exposures were maintained well below ALARA limits.

We recognize that the distances and the total exposure times for the assessment and transfer operations are approximations. Therefore, an upper limit of extremity exposures was estimated based on 30 R/hr at 4 inches (vs. the 3 inches estimated by worker #1) from the unshielded foils; and we are assuming transfer operations took 15 seconds (vs. 10) resulting in an exposure time of 5 seconds per individual. We continue to assume a 10 second exposure time for worker #1 during assessment activities. Based on these conservative parameters, the extremity exposures were calculated to be 56 mrem for worker #1, 19 mrem for worker #2, and 19 mrem for worker #3. Conservative dose estimates indicated that no overexposure occurred and doses were well below ALARA values.

I trust this adequately addresses your concerns, but should you require additional information, please do not hesitate to contact me via phone at (865) 481-8801 or email at mdiaz@chaseenv.com.

Sincerely,
Chase Environmental Group, Inc.



Manuel Díaz
Radiation Safety Officer

Technical Review:



Patrick J. McDermott
Certified Health Physicist

cc: Richard Sauer, President
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