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15 January 2015

U.S. Nuclear Regulatory Commission, Region III
2443 Warrenville Road, Suite 210
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ATTN: Kevin Null

LICENSE No: 24-21362-01

SUBJECT: Response to Conv. Record dated 30-Dec-14 regarding SOP-44 "Repair or Replace Hood Exhaust System"

NRC.

In this letter you will find,

- (1) The response to conversation dated 30-Dec-14. Each paragraph has been written in its entirety and is followed by a paragraph titled, **Response:**
- (2) The requested changes to SOP-44 "Repair or Replace Hood Exhaust System" have been tracked using red type for easy following.
- (3) Reference letters sent by ARC dated 3/5/01; 9/17/01; & 3/5/02

If you have any questions or require clarification on any of the attached information, you may contact our RSO directly at (314) 991-4545.

Sincerely

AMERICAN RADIOLABELED CHEMICALS, INC



Surendra K. Gupta, PhD
President
American Radiolabeled Chemicals, Inc.

1. Commit to implementing the current SOP from ARC's Radiation Protection Program (RPP) for conducting bioassays. Do not make the assumption that if ARC workers, who will be directly supervising contractors, have negative bioassay results then the contractors will be negative, especially when the contractors are handling and cutting ductwork and ARC workers are not directly involved in the cutting activity.

Response: Item 3.1.1 has been modified to require entry bioassay samples, weekly if the work extends that long, and a final sample at the end of the final workday.

2. You indicated that removal of filtration was previously approved. Please identify documentation (amendment and letter) by which this was previously approved.

Response: Letters dated 3/5/2001; 9/17/2001 and 3/5/2002 have been included in this response. These were amendment requests to the application dated 10/1/1992. After these letters were sent, amendment No. 32 was approved on 7/21/2004 based on application dated 10/28/2002. This application had SOP-4 "HEPA Filter Replacement" approved as deleted and the description of the exhaust system had been changed to include the various modifications to both buildings performed at the time to increase the hood flow inside the laboratory. Previously connected to several individual blowers, the hoods currently flow to a single blower. At the end of 2014 our dose to the public was measured at 0.357mrem in a year.

3. Please define "direct supervision." In your 11/14/14 response you stated that the training described in SOP-21 is only given to workers if they need to enter a restricted area, e.g., a laboratory. Please develop a modified training program for this unique situation for the contract workers who will be on the roof cutting ductwork under the direct supervision of ARC employees. At a minimum, the training should discuss potential exposure to radioactive materials, precautions that should be taken, purpose and correct use and removal of PPE, and the purpose of a bioassay.

Response: Item 2.1.2.1 has been added regarding the verbal training and justification for verbal training. Item 2.1.4.1 has been added regarding the definition and requirement of direct supervision. Because these contract workers will only be performing work with radioactive material under direct supervision, certain training subjects like shielding and emission types are unnecessary; and all surveys will be performed by radiation safety staff, so there is no need to teach the individual how to perform a body frisk. The RSO and several ARC staff with many years of experience will be working alongside the contract workers, watching for breaks in contamination control, during the dismantling, removal, transportation and eventual disposal of contaminated ductwork.

4. It seems that you are saying that a particular hood where workers are removing and cutting ductwork from will be shut down while the work is being conducted, but the other hoods will be functioning while the workers are on the roof, potentially exposing them to radioactive air effluent. Please expand upon your response to this item, or commit to shutting down the entire air effluent release system while work is being conducted on the roof.

Response: Access to the laboratory beyond the change area will be restricted. The exhaust and make-up air systems will be shut down prior to construction and restarted when construction ends, in accordance with SOP-43.

5. In your response to this item you described PPE when removing contaminated ductwork. Please describe PPE that workers will use while cutting ductwork.

Response: Item 2.1.3 has been modified regarding the PPE required for cutting ductwork. The company under contract performing this work will have safety standards and requirements. We will leave that to their discretion. In addition to their standard PPE, we will also require gloves, eye protection, lab coats and dust masks.

10. Same as item 3 above.

Response: See above.

12. ARC's RPP describes procedures for surveying and releasing equipment for unrestricted use. Please identify the relevant procedures and commit to following them for surveying contaminated ductwork for unrestricted release.

Response: Item 5.1.1 has been modified in regards to the inventory of ductwork.

OBJECTIVE: To ensure that no contaminated, or potentially contaminated, ductwork is removed from the ARC site due to repair and/or replacement of the hood exhaust system.

To provide the contract workers with radiation safety training commensurate with the hazard involved.

To ensure the radiological and occupational safety of all personnel, contract employee and permanent alike, during construction.

RESPONSIBILITY: Radiation Safety Officer

REFERENCE: Radiation Protection Program (RPP)
SOP-2 “In-Vitro Bioassay”
SOP-16 “Contamination Control Program”
SOP-21 “Training and Dose Estimates for Non-Lab Personnel”
SOP-29 “Storage of SCO”
SOP-30 “Equipment Release”
SOP-41 “Inventory of SCO”

PROCEDURE:

1.0 Scoping Survey

- 1.1 A direct scan survey using a calibrated survey meter with a G-M pancake probe will be performed covering an area of ductwork.
- 1.2 The results of the area surveyed should be indicative of the overall contamination of that segment of ductwork. All results will be documented
- 1.3 The ductwork must be less than the action level in order to be released as non-radioactive. The action level can be found in item 2.2 of SOP-16 “Contamination Control Program”; item 3.0 of SOP-30 “Equipment Release”; as well as item 4.2.2.6 (b) of the Radiation Protection Program. The action level is also listed in item 5.1 of this SOP.

2.0 Radiation Safety Training

- 2.1 Requirement
 - 2.1.1 Training is required for individuals who perform work functions such as (but not limited to) the removal of contaminated (or potentially contaminated) roofing material.
 - 2.1.2 Contract employees who only cut the ductwork and do not handle the contaminated ductwork will only need direct supervision by a member of the radiation safety staff. Provided the work takes place in a non-contaminated area. The direct supervision will replace formal training in

accordance with item 2.4 of SOP-21 “Training and Dose Estimates for Non-Laboratory Personnel”.

2.1.2.1 Verbal training is given in replacement of the formal Type II Radiation worker training given to all permanent ARC employees, as well as contract employees who work without direct supervision. Verbal training includes but is not limited to, donning and doffing PPE, cross-contamination/contamination control, potential exposure and the importance of the bioassay.

2.1.3 When handling contaminated ductwork gloves, safety glasses, and a lab coat are required. In addition while cutting the ductwork, required PPE includes a dust mask.

2.1.4 All work done will be performed under the supervision of ARC staff.

2.1.4.1 Supervision means that the individual will be physically present watching the work being performed. The RSO will be looking for breaks in contamination control and providing guidance regarding the dismantling, removal, transportation, inventory and eventual disposal of contaminated ductwork.

2.2 Training subjects.

2.2.1 Nature of radioactive material

2.2.2 Difference between radiation and contamination

2.2.3 Beta emitters vs other emissions

2.2.4 Effect of beta energy

2.2.5 Beta shielding from clothing, etc

2.2.6 Dose, internal vs external, internal only

2.2.7 Protective clothing and equipment (PCE)

2.2.8 Donning and wear of PCE

2.2.9 Removal of protective clothing when exiting a contaminated area.

2.2.10 Surveys and survey meters.

3.0 Certification of Training and Dose

3.1 A record of each contract worker trained will be kept on file along with all bioassay records. Contract workers under direct supervision receive verbal training. See item 2.4 of SOP-21 “Training and Dose Estimates of Non-Laboratory Personnel”

3.1.1 Bioassay requirements; SOP-2 will be enforced in its entirety.

4.0 Location and Description of Repair Site

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- 4.1 The majority of the ductwork is on the roof of building 300, a non-contaminated area. The ductwork goes down into the attic, also a non-contaminated area. All work should take place in a non-contaminated area.
 - 4.1.1 All cutting tools will be operated by contract workers trained to do so. ARC employees will handle the dismantling, removal and transportation to the waste processing area in Building 200.
 - 4.2 If any work need be done in a contaminated area, an experienced ARC employee should be used if possible.

5.0 Disposal

- 5.1 Any ductwork that exceeds the release levels will be disposed of as radioactive waste. The release levels are,
 - Total – 5000 dpm/100 cm² average, not to exceed 15,000 for a single point
 - Removable – 1000 dpm/100 cm²
 - 5.1.1 The ductwork will be surveyed and inventoried in accordance with the procedure outlined in SOP-41 “Inventory of SCO”.

6.0 End of Day

- 6.1 All workers handling radioactive material will be surveyed with a calibrated GM as they leave the roof and again at the end of the workday before leaving site.