



## **International Isotopes Inc.**

April 11, 2014

ATTN: Document Control Desk  
Director, Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
One White Flint North  
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Subject: Reply to NRC Inspection Report 040-09058/13-001 and Notice of Violation

International Isotopes Inc. (INIS) is providing the following responses to the Notice of Violations (NOV) transmitted by Letter dated March 25, 2014.

In regards to NOV A; International Isotopes Inc. acknowledges the Severity Level IV Violation as described below:

- A. License Condition 18 states that the licensee must submit for NRC review an updated cost estimate for decommissioning at intervals not to exceed three years.

Contrary to the above, as of December 19, 2013, International Isotopes, Inc. had not submitted an updated cost estimate for decommissioning for NRC review at an interval not to exceed three years. In particular, the last decommissioning cost estimate dated May 1, 2010, was submitted to the NRC by licensee letter dated June 30, 2010. The updated decommissioning cost estimate was due to be submitted for NRC review by June 30, 2013. As of December 19, 2013, an interval in excess of three years, the licensee still had not submitted an updated cost estimate for decommissioning.

This is a Severity Level IV violation. (Section 6.3)

### **Reason for the Violation:**

The violation was an administrative oversight on our part. In January of 2013 we had made the decision to cease operations, we developed a decommissioning plan and began actively decommissioning Building 1359 in May 2013. On June 25, 2013, following decommissioning, a letter requesting an amendment to NRC license SUB-1587 was submitted to the NRC. In hindsight we should have requested an extension to submitting an updated decommissioning cost estimate in conjunction with the request to amend the license.

The following corrective actions have been taken to support the disposal of depleted uranium waste that has no residual value and to support the revision to the Decommissioning Funding Plan:

*IE07*

- November 4, 2013 – Submitted a projection of 315 cubic feet of waste for disposal to US Ecology Washington, Inc. under Site Use Permit G2151 for 2014 Low Level Waste Disposal Projection.
- Submitted first 2 of 4 quarterly payments to US Ecology for Site Availability charge to support waste disposal of depleted uranium waste associate with SUB-1587.
- Obtained Site Use Permit for the Commercial Low-Level Radioactive Waste Disposal Site for 2014 from State of Washington Department of Health to support depleted uranium waste disposal.
- Began revision of the May 1, 2010 Decommissioning Funding Plan.

The following additional corrective actions will be taken:

- Depleted uranium waste will be disposed of during our 2014 waste disposal run. We have not yet scheduled a date for this activity but anticipate it to be June/July 2014 time frame.
- Revise and submit to NRC updated Decommissioning Funding Plan, taking into account the depleted uranium waste disposed of during the 2014 waste disposal run.
- Modification to the Document Control Database to generate an alert when a scheduled review of a procedure or policy document is due.

Compliance with the license condition will be achieved by September 1, 2014 with the submittal of an updated decommissioning cost estimate taking into account the quantity of depleted uranium waste and contaminated equipment that has been disposed of.

In regards to NOV B; International Isotopes Inc. contests the violation as described below:

- B. Regulation 10 CFR 20.1501(a) requires that each licensee shall make or cause to be made, surveys of areas, including the subsurface, that —
- (1) May be necessary for the licensee to comply with the regulations in this part; and
  - (2) Are reasonable under the circumstances to evaluate—
    - (i) The magnitude and extent of radiation levels; and
    - (ii) Concentrations or quantities of residual radioactivity; and
    - (iii) The potential radiological hazards of the radiation levels and residual radioactivity detected.

*Survey* means an evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of

radioactive material or other sources of radiation. When appropriate, such an evaluation includes a physical survey of the location of radioactive material and measurements or calculations of levels of radiation, or concentrations or quantities of radioactive material present.

Contrary to the above, as of June 25, 2013, the licensee did not make or cause to be made surveys that were necessary to comply with 10 CFR 20.1402, a regulation which limits the radiological criteria for unrestricted use after decommissioning of facilities.

Specifically, the licensee decommissioned and surveyed Building 1359 in May 2013 and subsequently released the building for unrestricted use. However, the licensee did not correctly analyze the survey data, data that was submitted to the NRC by letter dated June 25, 2013. Because the licensee incorrectly surveyed the building, it *could have* released the building for unrestricted use without meeting the radiological criteria for unrestricted use after decommissioning.

This is a Severity Level IV violation. (Section 6.7)

We disagree with the statements “*the licensee did not make or cause to be made surveys that were necessary to comply with 10 CFR 20.1402*” and “*Because the licensee incorrectly surveyed the building, it could have released the building for unrestricted use without meeting the radiological criteria for unrestricted use after decommissioning*”.

The NRC’s basis for citing the violation is that the initial evaluation and analysis of the direct survey measurements obtained during the final status surveys utilized an efficiency of 20% to convert the results in counts per minute (cpm) to disintegrations per minute (dpm). The 20% efficiency was derived by rounding down the lowest  $2\pi$  instrument efficiency of 22%. The gross dpm results were then compared to a conservative derived concentration guideline level averaged over a wide area (DCGL<sub>w</sub>) calculated using the NRC’s DandD Computer Code. This initial evaluation indicated that the final status survey measurement results (without subtracting reference area background) did not exceed the DCGL<sub>w</sub> and that it was concluded that the residual radioactive material was below the DCGL<sub>w</sub> and that the building could be released for unrestricted use. The NRC disagreed with the methodology utilized to convert gross count rate into gross activity based on the recommendation that measurements for surface contamination should be performed such that direct instrument response can be accurately converted to  $4\pi$  (total) emission rate from the source<sup>1</sup>.

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<sup>1</sup> NUREG 1575 Rev. 1 (MARSSIM Section 6.5.4)

We believe that the comparison of the direct survey measurement results against the DCGL<sub>w</sub> is just one aspect in determining compliance with §20.1402 *Radiological criteria for unrestricted use*.

The requirement of §20.1402 is that a site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a TEDE to an average member of the critical group that does not exceed 25 mrem (0.25 mSv) per year. The methods used to demonstrate compliance with the unrestricted use dose criteria is very much site specific. The licensee is required by §20.1501(a) to make or cause to be made surveys of areas that may be necessary to comply with the regulations (§20.1402) and that these surveys are reasonable under the circumstances to evaluate, in this case, the radiological conditions and potential hazards incident to the release of Building 1359. The NRC makes note of the definition of Survey in the violation, which is expanded further in NUREG-1736: *In Part 20, the meaning of "survey" differs somewhat from that commonly used in the nuclear industry to mean the measurement of dose rates using a survey instrument. In Part 20, the meaning of survey is broader and includes any activity using available relevant information, including data obtained from field measurements, to assess the radiation hazards. Note that performing surveys in the field with a survey instrument without assessing the resulting data to evaluate hazards would not be considered as having satisfied the requirement to perform an adequate survey.*

We firmly believe that the initial final status surveys conducted to demonstrate compliance with the §20.1402 were reasonable under the circumstances to evaluate the radiological conditions and potential hazards incident to the release of Building 1359 for unrestricted use. This conclusion is not based solely on the direct survey measurements obtained during the final status survey but on all of the relevant information that was available and collected during the final status survey process and included the following:

- Operational history that limited the amount of total uranium in the facility to 25 kg ( $\approx$  10 mCi) at any one time.
- Radiological surveys that had been conducted throughout the facility during operations did not detect radioactive contamination outside of radiological containments or the presence of airborne radioactive material.
- The maximum annual external dose to an employee recorded during operations was 14 mrem.
- Internal monitoring of employees via urinalysis during operations did not detect intakes of uranium.
- Removable contamination surveys were conducted at the highest scan locations during final status survey, the highest result of 10 dpm/swipe above background.

We disagree with the NRC's conclusion that because the licensee incorrectly surveyed the building, it could have released the building for unrestricted use without meeting the radiological criteria for unrestricted use after decommissioning. The NRC's conclusion is based solely on the results of the direct survey measurements obtained during the final status survey utilizing a 20% efficiency in lieu of the total efficiency ( $2\pi$  Instrument Efficiency x 0.25 Source Efficiency) and does not take into consideration other relevant information. Specifically that the results of routine contamination and airborne radioactivity surveys never identified radioactive materials outside of a containment and that the results of external but more importantly internal personnel monitoring show that an employee never received an annual dose in excess of 25 mrem during operations. It is not reasonable to conclude that after ceasing operations and removing the limited amount of the radioactive material and contaminated or potentially contaminated equipment from the building that the building could have been released for unrestricted use without meeting the radiological criteria for unrestricted use after decommissioning when the 25 mrem/year release criteria had been demonstrated during operations.

Please contact me at 208.524.5300 or via email at [jjmiller@intisoid.com](mailto:jjmiller@intisoid.com) if you have any questions or comments regarding this request.

Sincerely,



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