

**From:** "John J. Miller" <jjmiller@intisoid.com>  
**To:** "J Bruce Carrico" <JBC@nrc.gov>  
**Date:** 11/20/2007 11:56:39 AM  
**Subject:** Page 6 Typo

Bruce,

I got your voice mail and looked at the section, this is indeed a typo, 100 dpm should be 1000/dpm. I corrected and attached the corrected page.

John J. Miller, CHP

Radiation Safety Officer

International Isotopes Inc

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Cell. (b)(6)

EX [Redacted]

E/1

**Mail Envelope Properties** (474311C4.F21 : 5 : 28449)

**Subject:** Page 6 Typo  
**Creation Date** 11/20/2007 11:49:59 AM  
**From:** "John J. Miller" <[jjmiller@intisoid.com](mailto:jjmiller@intisoid.com)>

**Created By:** [jjmiller@intisoid.com](mailto:jjmiller@intisoid.com)

**Recipients**

nrc.gov  
OWGWPO01.HQGWDO01  
JBC (J Bruce Carrico)

**Post Office**

OWGWPO01.HQGWDO01

**Route**

nrc.gov

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
MESSAGE	311	11/20/2007 11:49:59 AM
TEXT.htm	2988	
Form313_Block5_6_rev1_page 6.pdf		11796
Mime.822	21804	

**Options**

**Expiration Date:** None  
**Priority:** Standard  
**ReplyRequested:** No  
**Return Notification:** None

**Concealed Subject:** No  
**Security:** Standard

**Junk Mail Handling Evaluation Results**

Message is eligible for Junk Mail handling  
This message was not classified as Junk Mail

**Junk Mail settings when this message was delivered**

Junk Mail handling disabled by User  
Junk Mail handling disabled by Administrator  
Junk List is not enabled  
Junk Mail using personal address books is not enabled  
Block List is not enabled

Items 5 & 6 Form 313 and Appendix G of NUREG 1556 Volume 8

specified criteria.

Polishing compounds, oils and other contaminants are removed from the gemstones prior to irradiation by cleaning in an ultrasonic bath using 2.0 N nitric acid followed by two ultrasonic baths in de-mineralized water, this process is detailed in International Isotopes Inc. Operating Procedure, I4-OP-18. Following irradiation, the gemstones are cleaned in an ultra sonic bath in accordance with International Isotopes Inc. Operating Procedure, I4-OP-017, Blue Topaz Processing. After the final decontamination removable contamination levels are determined by running damp swabs through out the gemstones. A criterion of less than 1000 dpm/swab is used to indicate the stones are free of removable contamination. If the stones exceed the removable contamination level of 1000 dpm/swab then a second attempt at decontamination is performed. If after a second attempt removable contamination levels exceed 1000 dpm/swab then the supervisor and Radiation Safety Officer determine the necessary actions to be taken. In some cases the topaz is simply placed into sealed plastic bags and allowed to decay for a period of time and then the decontamination process is repeated at a later date. In other cases, the decontamination method is adjusted by either using a harsher solution such as nitric acid or by extending the time in the ultrasonic bath.

- b. The processing of irradiated gems at the importer's facility and the sequence of these activities (e.g. counting of gems and storage for physical decay; mounting in rings, pendants or other settings)

International Isotopes Inc. prepares gemstones for irradiation, which includes pre-cleaning the stones and loading into irradiation canisters. After irradiation, International Isotopes Inc. removes the irradiated stones from the irradiation canisters, decontaminates the stones to remove surface contamination, sorts the stones to remove higher activity stones, counts the stones utilizing a high purity germanium detector to determine the activity concentration of gamma emitting radionuclides and plastic scintillation counters to determine the P-32 and S-35 activity concentrations. The gemstones are then held for physical decay over a period of time calculated based on the results of the counting analysis. Gemstones are not cut, polished or mounted at the International Isotopes Inc. facility. Refer to International Isotopes Inc. Operations Procedures I4-OP-17, 18, 19 and 20.

- c. The categories of unlicensed organizations to which irradiated gems will be transferred (e.g. wholesaler; manufacturing jeweler; retail jeweler; individual consumer)  
Irradiated gemstones are transferred to wholesalers or jewelry manufactures.
- d. What will be done with gems whose concentrations exceed the criteria specified in response to Item C.2.e below (Alternatives include hold in storage for physical decay, transfer to a person specifically licensed to receive them, or disposal as radioactive waste in accordance with the requirements of 10 CFR Part 20 or equivalent regulations of an Agreement State).

Gemstones exceeding the criteria identified in C.2.e. are either disposed of as