

Reviewer's safety evaluation

T7

10/16/2010 → 10/27/10

~~XXXXXXXXXX~~
49-29405-01
030-38364
573497

ITEM 1: ACTION TYPE

| | |
|---|--|
| <p><u>ACTION TYPE:</u></p> <p><input checked="" type="checkbox"/> New</p> <p><input type="checkbox"/> Amendment</p> <p><input type="checkbox"/> Renewal</p> | <p><u>ADMINISTRATIVE REVIEW:</u></p> <p><input checked="" type="checkbox"/> Current Guidance Used</p> <p><input checked="" type="checkbox"/> References in Application Based On Current Regulations N-1556 Vol. 18</p> |
|---|--|

ITEM 2: LEGAL IDENTITY

| | |
|-------|--|
| NAME: | Inter-Mountain Laboratories, Inc. (IME) |
|-------|--|

ITEMS 2 AND 3: ADDRESS

↳ as registered with the State of Montana Secretary of State.

| | |
|--|--|
| <p>STORAGE & LOCATION OF USE</p> <p>1633 Terra Avenue Sheridan, WY 82801</p> | <p>MAILING ADDRESS</p> <p>1673 Terra Avenue Sheridan, WY 82801</p> |
| <p>Temporary Job Sites <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p> | |

Verifiable by reviewer
RUC
10-27-10

ITEM 4: PERSON TO BE CONTACTED ABOUT THIS APPLICATION

| | |
|-----------------|-------------------------------|
| CONTACT PERSON: | Sheryl Garling |
| TELEPHONE: | 307-237-4188 FAX 307-672-6053 |

sagarling1@bresnan.net

Application dated August 5, 2010 (ML102280216)
Letter dated October 26, 2010 w/enclosures (ML103000476)
Emails dated October 27, 2010 (ML103000476)

Suggested Format for Providing Information Requested in Items 5 through 11 of NRC Form 313

Appendix C is designed to be used for all types of applicants requesting a service license. Because of the varied types of service applications it is necessary to make this appendix sufficiently broad in scope to handle most applications. Services such as commercial nuclear laundries and waste management applicants may need to provide additional information once the necessary pre-licensing visit(s) are completed. Maintaining close coordination during the early licensing phase with the NRC licensing staff can be beneficial to both the NRC staff and applicant.

Using this appendix successfully requires the applicant to do an initial review of the NUREG and preplan its answers. We suggest that applicants read the entire appendix from beginning to end. The next step is to select the individual elements that apply to the individual types of service(s) requested. Highlight or circle Item Nos, or in some other way identify the areas that require specific information. Provide the information on the specific elements that you identified as requiring input for obtaining authorization for the requested services.

After selecting the applicable items that need to be addressed in Appendix C, refer to the corresponding sections in the NUREG. It is only necessary for applicants to provide the level of detail required for the individual types of service(s) requested in the application. Note that providing information for very limited licenses, e.g., leak test service provider, requires less information than would be required for a commercial nuclear laundry or a waste management license. Applicants for service licenses requiring authorization for types and quantities of material specific for broad scope licenses should refer to NUREG-1556, Vol. 11, "Consolidated Guidance About Material Licenses: Program-Specific Guidance About Licenses of Broad Scope," and NUREG-1556, Vol. 7, "Consolidated Guidance About Material Licenses: Program-Specific Guidance About Academic, Research and Development, and Other Licenses of Limited Scope."

| Item No. | Title and Criteria | Use Table(s) Below | Description Attached |
|----------|--------------------|--------------------|----------------------|
|----------|--------------------|--------------------|----------------------|

| | | | |
|----------|---|--|--|
| 5 | RADIOACTIVE MATERIAL | | |
| | <p>Sealed Sources and Devices</p> <ul style="list-style-type: none"> Identify each radionuclide that will be used in each sealed source/device. Identify the manufacturer or distributor and model number of each sealed source/device. Confirm that each sealed source/device combination is listed and approved in the SSD registry for the purpose intended. Confirm that the activity per source/maximum activity per device specified in the SSD registration certificate will not be exceeded. | <p><i>No sealed sources to be possessed</i></p> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Sealed Sources

| Radioisotope | Manufacturer/ Model No. | Quantity | Yes | No |
|--------------|----------------------------|--|--------------------------|--------------------------|
| | | Not to exceed the maximum activity per source/device as specified in the Sealed Source and Device Registration Sheet | <input type="checkbox"/> | <input type="checkbox"/> |
| | | Not to exceed the maximum activity per source/device as specified in the Sealed Source and Device Registration Sheet | <input type="checkbox"/> | <input type="checkbox"/> |
| | | Not to exceed the maximum activity per source/device as specified in the Sealed Source and Device Registration Sheet | <input type="checkbox"/> | <input type="checkbox"/> |

Source Material

- Depleted Uranium _____ Kilograms
- Uranium-238 _____ Kilograms
- Thorium-232 _____ Kilograms
- Other: Specify _____ Kilograms

Special Nuclear Material

| Radioisotope | Manufacturer/ Model No. | Quantity | Yes | No |
|--------------|----------------------------|----------|-----|----|
| | | | | |

~~No SNM~~

1 5mCi Calibration sealed source

1 µCi plated Pu-239

| | | | | |
|---|--|---|--------------------------|--------------------------|
| <input type="checkbox"/> Uranium-234 <input type="checkbox"/> Uranium-235 <input type="checkbox"/> Plutonium-238 <input type="checkbox"/> Plutonium-239 <input type="checkbox"/> Other: Specify | | Not to exceed the maximum activity per source/device as specified in the Sealed Source and Device Registration Sheet | <input type="checkbox"/> | <input type="checkbox"/> |
|---|--|---|--------------------------|--------------------------|

Unsealed or Uncontained Materials

Identify each individual isotope requested:

| Radioisotope | Chemical or Physical Form | | | | Total Activity Requested |
|--------------|------------------------------|---------------------------------|--------------------------------|---|--------------------------|
| | <input type="checkbox"/> Gas | <input type="checkbox"/> Liquid | <input type="checkbox"/> Solid | <input type="checkbox"/> Other: Specify | |
| | <input type="checkbox"/> Gas | <input type="checkbox"/> Liquid | <input type="checkbox"/> Solid | <input type="checkbox"/> Other: Specify | |
| | <input type="checkbox"/> Gas | <input type="checkbox"/> Liquid | <input type="checkbox"/> Solid | <input type="checkbox"/> Other: Specify | |
| | <input type="checkbox"/> Gas | <input type="checkbox"/> Liquid | <input type="checkbox"/> Solid | <input type="checkbox"/> Other: Specify | |

OR

Identify your request for Type B or Type C quantities of material by filling out the table below:

| Radioisotope | Yes | No |
|---|--------------------------|-------------------------------------|
| <ul style="list-style-type: none"> Any radioisotope identified in 10 CFR 33.100, Schedule A, Column I — (Type B License of Broad Scope) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| OR | | |
| <ul style="list-style-type: none"> Any radioisotope identified in 10 CFR 33.100, Schedule A, Column II — (Type C License of Broad Scope) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

AND IF APPLICABLE

Identify *individual isotopes* identified in 10 CFR 33.100 Schedule A, Column I or II, that requested quantities exceeding amounts authorized in Column I or II.

| Radioisotope | Chemical or Physical Form | | | | Total Activity Requested |
|--------------|------------------------------|---------------------------------|--------------------------------|---|--------------------------|
| | <input type="checkbox"/> Gas | <input type="checkbox"/> Liquid | <input type="checkbox"/> Solid | <input type="checkbox"/> Other: Specify | |
| | <input type="checkbox"/> Gas | <input type="checkbox"/> Liquid | <input type="checkbox"/> Solid | <input type="checkbox"/> Other: Specify | |
| | <input type="checkbox"/> Gas | <input type="checkbox"/> Liquid | <input type="checkbox"/> Solid | <input type="checkbox"/> Other: Specify | |
| | <input type="checkbox"/> Gas | <input type="checkbox"/> Liquid | <input type="checkbox"/> Solid | <input type="checkbox"/> Other: Specify | |

AND

APPENDIX C

APPENDIX C

Identify any uncontained source or special nuclear materials that should be included in the license:

| Source Material | | |
|---|-------|-----------|
| <input type="checkbox"/> Depleted Uranium | _____ | Kilograms |
| <input type="checkbox"/> Uranium-238 | _____ | Grams |
| <input type="checkbox"/> Thorium-232 | _____ | Grams |
| <input type="checkbox"/> Other: | _____ | Grams |
| Special Nuclear Material Less than Critical Mass Quantities | | |
| <input type="checkbox"/> Uranium-234 | _____ | Grams |
| <input type="checkbox"/> Uranium-235 | _____ | Grams |
| <input type="checkbox"/> Plutonium-238 | _____ | Grams |
| <input type="checkbox"/> Plutonium-239 | _____ | Grams |

N/A

N/A

For those individuals who will provide commercial services on sealed sources/devices and will be required to *take possession of materials incident to providing services*:

| Sealed Sources/Devices Possessed Incident to Providing Services | | | | |
|---|----------------------------|--|--------------------------|--------------------------|
| Radioisotope | Manufacturer/ Model No. | Quantity | Yes | No |
| | | Not to exceed the maximum activity per source/device as specified in the Sealed Source and Device Registration Sheet | <input type="checkbox"/> | <input type="checkbox"/> |
| | | Not to exceed the maximum activity per source/device as specified in the Sealed Source and Device Registration Sheet | <input type="checkbox"/> | <input type="checkbox"/> |

N/A

| Source Material | | |
|---|-------|-----------|
| <input type="checkbox"/> Uranium-238 | _____ | Kilograms |
| <input type="checkbox"/> Thorium-232 | _____ | Grams |
| <input type="checkbox"/> Other: | _____ | Grams |
| <input type="checkbox"/> Depleted Uranium | _____ | Kilograms |

See ATTACHED TABLE for source and byproduct material

| Special Nuclear Material Less than Critical Mass Quantities | | |
|---|-------|-------|
| <input type="checkbox"/> Uranium-234 | _____ | Grams |
| <input type="checkbox"/> Uranium-235 | _____ | Grams |
| <input type="checkbox"/> Plutonium-238 | _____ | Grams |
| <input type="checkbox"/> Plutonium-239 | _____ | Grams |

(N/A)

For those individuals who will provide commercial services involving unsealed or uncontained material and will be required to take possession of these materials incident to providing services:

Unsealed or Uncontained Materials

Identify each individual isotope requested:

| Radioisotope | Chemical or Physical Form | | | | Total Activity Requested |
|--------------|------------------------------|---------------------------------|--------------------------------|---|--------------------------|
| | <input type="checkbox"/> Gas | <input type="checkbox"/> Liquid | <input type="checkbox"/> Solid | <input type="checkbox"/> Other: Specify | |
| | <input type="checkbox"/> Gas | <input type="checkbox"/> Liquid | <input type="checkbox"/> Solid | <input type="checkbox"/> Other: Specify | |
| | <input type="checkbox"/> Gas | <input type="checkbox"/> Liquid | <input type="checkbox"/> Solid | <input type="checkbox"/> Other: Specify | |
| | <input type="checkbox"/> Gas | <input type="checkbox"/> Liquid | <input type="checkbox"/> Solid | <input type="checkbox"/> Other: Specify | |
| | <input type="checkbox"/> Gas | <input type="checkbox"/> Liquid | <input type="checkbox"/> Solid | <input type="checkbox"/> Other: Specify | |

OR

Identify your request for Type B or Type C quantities of materials by filling out the table below:

| Radioisotope | | |
|---|--------------------------|--------------------------|
| | Yes | No |
| • Any radioisotope identified in 10 CFR 33.100, Schedule A, Column I — (Type B License of Broad Scope) | <input type="checkbox"/> | <input type="checkbox"/> |
| OR | | |
| • Any radioisotope identified in 10 CFR 33.100, Schedule A, Column II — (Type C License of Broad Scope) | <input type="checkbox"/> | <input type="checkbox"/> |

(N/A)

APPENDIX C

AND IF APPLICABLE

Identify *individual isotopes* identified in 10 CFR 33.100 Schedule A, Column I or II, that requested quantities exceeding amounts authorized in Column I or II. ATA

| Radioisotope | Chemical or Physical Form | | | | Total Activity Requested |
|--------------|------------------------------|---------------------------------|--------------------------------|---|--------------------------|
| | <input type="checkbox"/> Gas | <input type="checkbox"/> Liquid | <input type="checkbox"/> Solid | <input type="checkbox"/> Other: Specify | |
| | <input type="checkbox"/> Gas | <input type="checkbox"/> Liquid | <input type="checkbox"/> Solid | <input type="checkbox"/> Other: Specify | |
| | <input type="checkbox"/> Gas | <input type="checkbox"/> Liquid | <input type="checkbox"/> Solid | <input type="checkbox"/> Other: Specify | |
| | <input type="checkbox"/> Gas | <input type="checkbox"/> Liquid | <input type="checkbox"/> Solid | <input type="checkbox"/> Other: Specify | |

AND

Identify any uncontained source or special nuclear materials that should be included in the license:

| Source Material | |
|---|-----------------|
| <input type="checkbox"/> Depleted Uranium | _____ Kilograms |
| <input type="checkbox"/> Uranium-238 | _____ Grams |
| <input type="checkbox"/> Thorium-232 | _____ Grams |
| <input type="checkbox"/> Other: | _____ Grams |
| Special Nuclear Material | |
| <input type="checkbox"/> Uranium-234 | _____ Grams |
| <input type="checkbox"/> Uranium-235 | _____ Grams |
| <input type="checkbox"/> Plutonium-238 | _____ Grams |
| <input type="checkbox"/> Plutonium-239 | _____ Grams |

5. RADIOACTIVE MATERIAL (NUREG-1556, Vol. 18, Section 8.5)

| | Radioisotope | Chemical and/or physical form | Maximum amount that licensee may possess at one time | Proposed Use | |
|----------|---------------|-------------------------------|--|---------------------------------------|---------------------------------------|
| A. | Americium-241 | Solid, Plated | 1 microcurie | Calibration of analytical instruments | |
| B. | Cadmium-109 | Solid | 1 microcurie | Calibration of analytical instruments | |
| C. | Carbon-14 | Plated | 1 microcurie | Calibration of analytical instruments | |
| D. | Cerium-139 | Solid | 1 microcurie | Calibration of analytical instruments | |
| + | E. | Cesium-137 | Liquid, Solid | 1 microcurie | Calibration of analytical instruments |
| F. | Cobalt-57 | Solid | 1 microcurie | Calibration of analytical instruments | |
| G. | Cobalt-60 | Solid | 1 microcurie | Calibration of analytical instruments | |
| + | H. | Lead-210 | Liquid, Solid exempt? | 1 microcurie | Analytical method reference standard |
| I. | Mercury-203 | Solid | 1 microcurie | Calibration of analytical instruments | |
| J. | Plutonium-239 | Plated | 1 microcurie | Calibration of analytical instruments | |
| ← SWM | K. | Polonium-208 | Liquid | 1 microcurie | Analytical method reference standard |
| L. | Polonium-209 | Liquid | 1 microcurie | Analytical method reference standard | |

| Radioisotope | | Chemical and/or physical form | Maximum amount that licensee may possess at one time | Proposed Use |
|--------------|-----------------|--------------------------------------|--|---|
| + | M. Polonium-210 | Liquid, Plated <i>exempt?</i> | 0.1 microcurie | Analytical method reference standard |
| | N. Radium-226 | Liquid, <u>Solid</u> ↓ ? | 5 microcurie | Analytical method reference standard, calibration of analytical instruments |
| | O. Radium-228 | Liquid, Solid | 1 microcurie | Analytical method reference standard, calibration of analytical instruments |
| | P. Strontium-89 | Liquid | 1 microcurie | Analytical method reference standard |
| + | Q. Strontium-90 | Liquid, Plated ↓ <i>exempt</i> | 1 microcurie | Analytical method reference standard |
| | R. Thorium-228 | Liquid | 1 microcurie | Analytical method reference standard |
| | S. Thorium-229 | Liquid | 1 microcurie | Analytical method reference standard |
| | T. Thorium-230 | Liquid, Plated | 1 microcurie | Analytical method reference standard, calibration of analytical instruments |
| | U. Tin-113 | Solid | 1 microcurie | Calibration of instruments |
| | V. Uranium-232 | Liquid, Solid, Plated | 1 microcurie | Analytical method reference standard, |

| | Radioisotope | Chemical and/or physical form | Maximum amount that licensee may possess at one time | Proposed Use |
|---|---|---|--|---|
| | | | | calibration of analytical instruments |
| + | W. Uranium-234 | Liquid, Solid, Plated | 1 microcurie | Analytical method reference standard, calibration of analytical instruments |
| + | X. Uranium-238 | Liquid, Solid, Plated | 1 microcurie | Analytical method reference standard, calibration of analytical instruments |
| | Y. Yttrium-88 | Solid | 1 microcurie | Calibration of analytical instruments |
| | Z. Any byproduct material as defined in 10 CFR 40.4 | Uranium mill tailings and wastes: Liquids, Solids | 150 kilograms solids and/or liquids | Analytical method reference standard, calibration of analytical instruments |

Financial Assurance and Record Keeping (NUREG-1556, Vol. 18, Section 8.5.3)

As noted in 10 CFR Part 30.35(a)(1) - *Each applicant for a specific license authorizing the possession and use of unsealed byproduct material of half-life greater than 120 days and in quantities exceeding 10⁵ times the applicable quantities set forth in appendix B to part 30 shall submit a decommissioning funding plan as described in paragraph (e) of this section. IML will not exceed this requirement with their anticipated analytical load. IML will maintain and transfer decommissioning records as specified in 10 CFR 30.35(g)*

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED (NUREG-1556, Vol. 18, Section 8.6)

A. through Y. - Material will be used for performing commercial laboratory analysis of environmental samples (i.e. ground, surface and drinking water samples, and other matrices

Received 9/15/2010 from Jim Yocum

| Manufacturer | Name | Date Received | Isotope(s) | Bottle Type | Activity | Comments | Vol On Hand |
|---------------------|---------------------|-------------------------------|--|------------------|----------------|--|-------------|
| Isotope Products | Po-210 | 10 CR 30.70 | Po ²¹⁰ | 5ml Glass | 0.09497 µCi/ml | NOT EXEMPT [] for alpha emitters (Po-210) | 5 ml |
| Isotope Products | CS-137 | NOT EXEMPT [] | Cs ¹³⁷ | 40 ml Glass | 0.1088 µCi/ml | NOT EXEMPT [] for Cs-137 | 5 ml |
| Isotope Products | SR-90 | NOT EXEMPT [] | Sr ⁹⁰ | (2) 2 ml Plastic | 0.07647 µCi/ml | NOT EXEMPT [] for Sr-90 | 3 ml |
| Analytics | RA228 RAD1-84-4 | NOT EXEMPT [] | Ra ²²⁸ | 10 ml Glass | 0.1 µCi/ml | NOT EXEMPT [] for Ra-228 | 5 ml |
| NIST | Lead 210 | t _{1/2} = 22 yrs. | Pb ²¹⁰ | 10 ml Glass | < 1.35 µCi/ml | NOT EXEMPT [] for Pb-210 | |
| NIST | Natural Uranium | t _{1/2} = 24 SK yrs. | U ²³⁴ , U ²³⁵ , U ²³⁸ | (2) 5 ml Plastic | < 0.08 µCi/ml | | |
| NIST | RA226 | no exempt [] for Ra-226 | Ra ²²⁶ | 40 ml Glass | 0.0737 µCi/ml | NOT EXEMPT [] | 8 ml |
| NIST | RA226 | " | Ra ²²⁶ | (2) 5ml Plastic | 0.0072 µCi/ml | NOT EXEMPT [] | 7 ml |
| Isotope Products | Sr-90 | | Sr ⁹⁰ | Plated Source | 0.08967 µCi | Expired | 1 |
| Isotope Products | PB210 | | Pb ²¹⁰ | Plated Source | 0.1065 µCi | Expired | 1 |
| Isotope Products | PO210 | | Po ²¹⁰ | Plated Source | 0.09374 µCi | Expired | 1 |
| | UST-4 | | | | | EXEMPT QUANTITY 10 CFR 30.71 | 5g |
| | DWMET 65-70 | | | | | | 5g |
| ERA | RAD2-55-1 | 10/16/09 | Po ²¹⁰ | 150 ml Plastic | 1.76E-5 µCi/ml | NOT EXEMPT [] | 30 ml |
| ERA | RAD2-51-2 | 9/16/09 | Th ²³⁰ | 100 ml Glass | 2.5E-5 µCi/ml | | 40 ml |
| Canadian Government | UST-4 | | U ²³⁴ , U ²³⁵ , U ²³⁸ | 250 ml Glass | | | 200 g |
| NIST | Rocky Flats Soil #2 | | | 250 ml Plastic | | | 200 g |
| NIST | Rocky Flats Soil #2 | | | 250 ml Plastic | | | 200 g |

EXEMPT

$U_{\text{total}} = .8 \mu\text{Ci}$
 $\# 200 \text{ g}$
 $Po-210 = 0.57 \mu\text{Ci}$
 $Ra-226 = 0.14 \mu\text{Ci}$
 $Cs-137 = 0.54 \mu\text{Ci}$
 $Sr-90 = 0.32 \mu\text{Ci}$
 $Ra-228 = 0.5 \mu\text{Ci}$
 $Pb-210 = 13.16 \mu\text{Ci}$
 $Th-230 = .001 \mu\text{Ci}$

| Item No. | Title and Criteria | Yes | No | N/A | Description Attached |
|----------|---|-------------------------------------|--------------------------|-----|---|
| 5 | <p>RADIOACTIVE MATERIAL</p> <p>Financial Assurance and Recordkeeping For Decommissioning</p> <ul style="list-style-type: none"> Pursuant to 10 CFR 30.35(g), we shall maintain drawings and records important to decommissioning and transfer these records to a new licensee before licensed activities are transferred, or assign the records to the appropriate NRC Regional Office before the license is terminated. <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> If financial assurance is required, submit evidence. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <p>Deficiency, Applicant checked <u>no</u></p> <p style="text-align: right;"><input type="checkbox"/></p> |



 Committed
 in Addendum to
 application

APPENDIX C

| Item No. | Title and Criteria | Yes | No | N/A | Description Attached |
|----------|---|--|--|-------------------------------------|--|
| 6 | PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED | | | | |
| | <ul style="list-style-type: none"> • Leak Test Analysis • Environmental Sample Analysis • Instrument/Dosimeter Calibration • Instruction | <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | | |
| | Possession Incident to Performing the Following Services on Sealed Sources and Devices | | | <input checked="" type="checkbox"/> | |
| | <ul style="list-style-type: none"> • Installation • Radiation Surveys • Removal • Disposal • Relocation • Repair • Source Exchange • Routine Maintenance • Non-routine Maintenance • Source Retrieval • Transportation • Packaging • Leak Test Sample Acquisition • Customer Training • Other Services not identified above, excluding activities involving critical mass quantities of special nuclear material: Specify. | <input type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> | | <input type="checkbox"/> <input type="checkbox"/> |

APPENDIX C

| Item No. | Title and Criteria | Yes | No | N/A | Description Attached |
|----------|---|-----|----|-----|--|
| 7 | <p>INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE</p> <p>Radiation Safety Officer <i>Sheryl Garling</i></p> <ul style="list-style-type: none"> The name of the proposed RSO: <i>40 hrs RSO training Jan. 2009</i> <p style="text-align: center;">AND EITHER <i>ADEQUATE</i></p> <ul style="list-style-type: none"> The specific training and experience of the RSO; <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> Alternative information demonstrating that the proposed RSO is qualified by training and experience, e.g., listed by name as an authorized user or the RSO on an NRC or Agreement State license that requires a radiation safety program of comparable size and scope. | | | | <p><i>RSO for Energy Lab (NRC licensee)</i></p> <p><input checked="" type="checkbox"/></p> <p><input type="checkbox"/></p> |

| Item No. | Title and Criteria | Yes | No | N/A | Description Attached |
|----------|--|---|-------------------------------------|-----|--|
| 9 | <p>FACILITIES AND EQUIPMENT</p> <p>Permanent Facilities Specifically Identified on the License</p> <ul style="list-style-type: none"> • Leak Test and Environmental Sample Analysis Providers: No response required for facilities. (Equipment is discussed in Item 10, Radiation Safety Program.) • Instrument Calibration: If only sealed sources are possessed in registered devices designed to emit a collimated beam for the purpose of instrument calibration, no response required. (Equipment is discussed in Item 10, Radiation Safety Program.) • Services that involve handling of sealed sources in a shielded container: No response required. (Equipment is discussed in Item 10, Radiation Safety Program.) • Services that involve handling of sealed sources outside a shielded container: <ul style="list-style-type: none"> – Submit a drawing or sketch of the proposed permanent facility identifying areas where radioactive materials, including radioactive wastes, will be used or stored. – Show in the drawings the relationship and distance between restricted areas and adjacent unrestricted areas. – Specify in the drawings shielding materials (concrete, lead, etc.) and means for securing radioactive materials from unauthorized removal. – Drawings, sketches, diagrams, etc. should indicate the scale or include dimensions on each drawing or sketch. – Describe engineered safety systems, e.g., area monitors, interlocks, alarms, etc. | | | | |
| | | No Response is Necessary for this Section | | | |
| | | No Response is Necessary for this Section | | | |
| | | No Response is Necessary for this Section | | | |
| | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | <input type="checkbox"/> <input type="checkbox"/> |

| Item No. | Title and Criteria | Yes | No | N/A | Description Attached | |
|----------|---|--|--------------------------|-------------------------------------|-------------------------------------|--|
| 10 | <p>RADIATION SAFETY PROGRAM</p> <p>The applicant is required to establish and submit its radiation protection program. Each item listed below should be addressed in the corresponding sections of this guide.</p> <ul style="list-style-type: none"> • Development and implementation of an ALARA program. • Description of equipment and facilities adequate to protect personnel, the public and the environment. • Confirmation that licensed activities are conducted only by individuals qualified by training and experience. • Development and maintenance of written operating and emergency procedures. • Implementation of an audit program to ensure that, at least annually, the radiation safety program is reviewed. • Description of organization structure and individuals responsible for ensuring day-to-day oversight of the radiation safety program. • Establishment and management of a radiation safety and decommissioning records system. • Methods or procedures for preventing the release of contaminated material and equipment. • Methods or procedures for preventing personnel contamination. Radiation safety procedures and the authorized users responsibilities unique to each type of service operation requested in the application. • Radiation safety procedures. • Equipment, techniques, and corresponding radiation safety procedures associated with providing services involving either sealed sources or unsealed materials. | | | | | |
| | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
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| | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
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| | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| | | Need Not Be Submitted With Application | | | | |

For review

| Item No. | Title and Criteria | Yes | No | N/A | Description Attached |
|----------|---|-------------------------------------|--------------------------|-----|--|
| 10 | <p>RADIATION SAFETY PROGRAM (Cont'd.)</p> <p>Radiation Monitoring Instruments (Cont'd.)</p> <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • A description of alternative equipment and/or procedures for ensuring that appropriate radiation monitoring equipment will be used during licensed activities and that proper calibration and calibration frequency of survey equipment will be performed. The statement, "We reserve the right to upgrade our survey instruments as necessary," should be added to the response. <p>Material Receipt and Accountability</p> <ul style="list-style-type: none"> • "Ordering licensed material and package receipt and opening will follow the model procedures in Appendix K of NUREG-1556, Vol. 18, 'Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Service Provider Licenses,' dated November 2000." <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Submit a description of procedure(s) for ordering licensed material and package receipt and opening. <p style="text-align: center;">AND</p> <ul style="list-style-type: none"> • For unsealed licensed material, submit a description of procedure(s) for ensuring material accountability. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | <p style="text-align: center;"><input type="checkbox"/></p> <p style="text-align: center;"><input type="checkbox"/></p> <p style="text-align: center;"><input checked="" type="checkbox"/></p> |

| Item No. | Title and Criteria | Yes | No | N/A | Description Attached | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------------|--|-------------------------------------|-------------------------------------|-----|--|--------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|
| 10 | <p>RADIATION SAFETY PROGRAM (Cont'd.)</p> <p>Occupational Dosimetry (Cont'd.)</p> <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Contract with an outside group for bioassay services. Provide a commitment that each vendor is licensed or otherwise authorized by NRC or Agreement State to provide required bioassay services. <p>Public Dose</p> <p>The applicant is not required to, and should not, submit a response to the public dose section during the licensing phase. This matter will be addressed during an inspection.</p> <p>Operating and Emergency Procedures</p> <ul style="list-style-type: none"> • Procedure for obtaining an agreement with customers outlining the responsibilities of both the customer and service provider, when performing service operations at a customer's facility • Instructions for handling and using licensed materials. • Instructions for maintaining security during storage and transportation. • Instructions to keep licensed material under control and immediate surveillance during use. • Steps to take to keep radiation exposures ALARA. • Steps to maintain accountability during use. • Steps to control access to work sites. • Steps to take and whom to contact when an emergency occurs. • Instructions for using remote handling tools when handling sealed sources, except low-activity calibration sources. • Methods and occasions for conducting radiation surveys, including surveys for detecting contamination. | | | | <p style="text-align: center;"><input type="checkbox"/></p> <hr/> <p style="text-align: center;">Need Not Be Submitted With Application</p> <hr/> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;"><input type="checkbox"/></td> <td style="width: 25%;"><input type="checkbox"/></td> <td style="width: 25%;"><input checked="" type="checkbox"/></td> <td style="width: 25%;"><input type="checkbox"/></td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </table> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

APPENDIX C

| Item No. | Title and Criteria | Yes | No | N/A | Description Attached |
|----------|--|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|
| 10 | RADIATION SAFETY PROGRAM (Cont'd.) | | | | |
| | Operating and Emergency Procedures (Cont'd.) | | | | |
| | <ul style="list-style-type: none"> • Procedures to minimize personnel exposure during routine use and in the event of an incident, including exposures from inhalation and ingestion of licensed unsealed materials. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | <ul style="list-style-type: none"> • Methods and occasions for locking and securing stored licensed materials. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | <ul style="list-style-type: none"> • Procedures for the implementation and adherence to good health physics practices while performing service operations: | | | | |
| | <ul style="list-style-type: none"> – Minimization of distance to areas, to the extent practicable, where licensed materials are used and stored | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | <ul style="list-style-type: none"> – Maximization of survey frequency, within reason, to enhance detection of contamination | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | <ul style="list-style-type: none"> – Segregation of radioactive material in waste storage areas | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | <ul style="list-style-type: none"> – Segregation of sealed sources and tracer materials to prevent cross-contamination | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | <ul style="list-style-type: none"> – Separation of radioactive material from explosives | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | <ul style="list-style-type: none"> – Separation of potentially contaminated areas from clean areas by barriers or other controls. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | <ul style="list-style-type: none"> • Personnel monitoring, including bioassays, and the use of personnel monitoring equipment. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | <ul style="list-style-type: none"> • Transportation of licensed materials to temporary job sites, packaging of licensed materials for transport in vehicles, placarding of vehicles when needed, and physically securing licensed materials in transport vehicles during transportation to prevent accidental loss, tampering, or unauthorized removal. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | <ul style="list-style-type: none"> • Procedures for picking up, receiving, and opening packages containing licensed materials, in accordance with 10 CFR 20.1906. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | <ul style="list-style-type: none"> • Instructions for maintaining records in accordance with the regulations and the license conditions. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

| Item No. | Title and Criteria | Yes | No | N/A | Description Attached |
|----------|--|---|--|---|---|
| 10 | <p>RADIATION SAFETY PROGRAM (Cont'd.)</p> <p>Operating and Emergency Procedures (Cont'd.)</p> <ul style="list-style-type: none"> • Procedures for identifying and reporting to NRC defects and noncompliance as required by 10 CFR 21.21(a) of this chapter. • Procedures and actions to be taken if a sealed source is ruptured, including actions to prevent the spread of contamination and minimize inhalation and ingestion of licensed materials and actions to obtain suitable radiation survey instruments. • Instructions for the proper storage and disposal of radioactive waste. • Procedures to be followed in the event of uncontrolled release of radioactive unsealed licensed material to the environment, including notification of the RSO, NRC, and other Federal and state agencies. • Procedures for identifying and reporting to NRC defects and noncompliance. See Table 8.4, which describes the typical incident notifications required by NRC regulations. | <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> | <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

APPENDIX C

| Item No. | Title and Criteria | Yes | No | N/A | Description Attached |
|----------|---|-------------------------------------|--------------------------|--------------------------|--|
| 10 | <p>RADIATION SAFETY PROGRAM (Cont'd.)</p> <p>Surveys</p> <ul style="list-style-type: none"> • “We will survey our facility and maintain contamination levels in accordance with the survey frequencies and contamination levels published in NUREG-1556, Vol. 18, ‘Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Service Provider Licenses,’ dated November 2000.” <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Submit description of alternative method for demonstrating how to evaluate a radiological hazard. <p>Leak Tests</p> <ul style="list-style-type: none"> • “Leak tests, when required by the license, will be performed at intervals approved by NRC or an Agreement State and specified in the Sealed Source and Device Registration Sheet. Leak tests will be performed by an organization authorized by NRC or an Agreement State to provide leak testing services to other licensees or using a leak test kit supplied by an organization authorized by NRC or an Agreement State to provide leak test kits to other licensees and according to the kit supplier’s instructions.” <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • “Leak testing will follow the model procedures in Appendix O of NUREG-1556, Vol. 18, ‘Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Service Provider Licenses,’ dated November 2000.” | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <p>Survey frequency as per Vol. 18 & Vol. 7 (both are almost the same). Vol. 7 includes bioassay. Unlikely to reach ALI's.</p> <p><input type="checkbox"/></p> <p>Analytical Sample lab. Add L.C. for S/S. However applicant stated that they will not have Sealed sources. Committed in Addendum to do leak test if they receive or have sources that</p> |

require leak testing.

| Manufacturer | Name | Date Received | Isotope(s) | Bottle Type | Activity | Comments | Vol On Hand |
|---------------------|---------------------|---------------|--|------------------|----------------|----------|-------------|
| Isotope Products | Po-210 | | Po ²¹⁰ | 5ml Glass | 0.09497 µCi/ml | | 5 ml |
| Isotope Products | CS-137 | | Cs ¹³⁷ | 40 ml Glass | 0.1088 µCi/ml | | 5 ml |
| Isotope Products | SR-90 | | Sr ⁹⁰ | (2) 2 ml Plastic | 0.07647 µCi/ml | | 3 ml |
| Analytics | RA2228 RAD1-84-4 | | Ra ²²⁸ | 10 ml Glass | 0.1 µCi/ml | | 5 ml |
| NIST | Lead 210 | | Pb ²¹⁰ | 10 ml Glass | < 1.35 µCi/ml | | |
| NIST | Natural Uranium | | U ²³⁴ , U ²³⁵ , U ²³⁸ | (2) 5 ml Plastic | < 0.08 µCi/ml | | |
| NIST | RA2226 | | Ra ²²⁶ | 40 ml Glass | 0.0737 µCi/ml | | 8 ml |
| NIST | RA2226 | | Ra ²²⁶ | (2) 5ml Plastic | 0.0072 µCi/ml | | 7 ml |
| Isotope Products | Si-90 | | Si ⁹⁰ | Plated Source | 0.08967 µCi | Expired | 1 |
| Isotope Products | PB210 | | Pb ²¹⁰ | Plated Source | 0.1065 µCi | Expired | 1 |
| Isotope Products | PO210 | | Po ²¹⁰ | Plated Source | 0.09374 µCi | Expired | 1 |
| | UST-4 | | | | | | 5g |
| | DWMET 65-70 | | | | | | 5g |
| ERA | RAD2-55-1 | 10/16/09 | Po ²¹⁰ | 150 ml Plastic | 1.76E-5 µCi/ml | | 30 ml |
| ERA | RAD2-51-2 | 9/16/09 | Th ²³⁰ | 100 ml Glass | 2.5E-5 µCi/ml | | 40 ml |
| Canadian Government | UST-4 | | U ²³⁴ , U ²³⁵ , U ²³⁸ | 250 ml Glass | | | 200 g |
| NIST | Rocky Flats Soil #2 | | | 250 ml Plastic | | | 200 g |
| NIST | Rocky Flats Soil #2 | | | 250 ml Plastic | | | 200 g |

$U_{nat} = 0.8 \mu Ci$
 $\# 200 g$
 $Po-210 = 0.57 \mu Ci$
 $Ra-226 = 0.14 \mu Ci$
 $Cs-137 = 0.54 \mu Ci$
 $Th-230 = 0.01 \mu Ci$
 $Sr-90 = 0.32 \mu Ci$
 $Ra-228 = 0.5 \mu Ci$
 $Pb-210 = 13.1 \mu Ci$

Gersey, Linda

From: Jim Yocum [jyocum@imlinc.com]
Sent: Wednesday, September 15, 2010 5:09 PM
To: Gersey, Linda
Subject: Radiochemistry Standard Inventory
Attachments: Radchem Standards Inventory 8310.doc

Linda –

Attached please find an inventory of the current radioactive standards on hand at the laboratory. I have updated this list to include some of the plated sources we have, although they are considered expired. IML has been acquiring these items under a "general license" since 2002 primarily for the analysis of drinking water radiochemistry. As I am sure you know in great detail, until the last couple of years naturally occurring isotopes were available for purchase without a specific NRC license.

Should you have any questions regarding the inventory, please feel free to call me, but I suggest you maintain contact with Tom as my availability is somewhat sporadic as I am usually tied up in program development projects.

Jim Yocum
Radionuclide Program Development Manager
Inter-Mountain Labs
phone: 307.672.8945
fax: 307.672.6053
email: jyocum@imlinc.com

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* on 9/24/2010 I asked Jim to get the SS&D numbers for all of the sources they have on site currently. He stated he will e-mail the #s to me.

REVIEWER'S FINAL EVALUATION

Spoke with Patten,
 Solid means gels,
 filter so authorization
 needs to be "any"
 for all materials. 10/27/10

5. RADIOACTIVE MATERIAL

| Radioisotope | Chemical and/or physical form | Maximum amount that licensee may possess at one time | Proposed Use |
|------------------|-------------------------------|--|--------------------------------------|
| A. Americium-241 | Solid, Plated | 1 microcurie | Calibration of instruments |
| B. Cadmium-109 | Solid, Plated | 1 microcurie | Calibration of instruments |
| C. Carbon-14 | Plated | 1 microcurie | Calibration of instruments |
| D. Cerium-139 | Solid, Plated | 1 microcurie | Calibration of instruments |
| E. Cesium-137 | Liquid, Solid, Plated | 1 microcurie | Calibration of instruments |
| F. Chromium-51 | Liquid, Solid, Plated | 1 microcurie | Calibration of instruments |
| G. Cobalt-57 | Liquid, Solid, Plated | 1 microcurie | Calibration of instruments |
| H. Cobalt-60 | Liquid, Solid, Plated | 1 microcurie | Calibration of instruments |
| I. Lead-210 | Liquid, Solid | 2 microcurie | Analytical method reference standard |
| J. Mercury-203 | Solid | 1 microcurie | Calibration of instruments |
| K. Plutonium-239 | Plated | 1 microcurie | Calibration of instruments |
| L. Polonium-208 | Liquid | 1 microcurie | Analytical method reference standard |
| M. Polonium-209 | Liquid | 1 microcurie | Analytical method reference standard |
| N. Polonium-210 | Liquid, Solid, Plated | 1 microcurie | Analytical method reference standard |

Any? No

Any? No

| Radioisotope | | Chemical and/or physical form | Maximum amount that licensee may possess at one time | Proposed Use |
|---------------|--|-------------------------------|--|--|
| O. | Radium-226 | Liquid, Solid | 5 microcurie | Analytical method reference standard, calibration of instruments |
| P. | Radium-228 | Liquid, Solid | 1 microcurie | Analytical method reference standard, calibration of instruments |
| Q. | Strontium-85 | Liquid, Solid | 1 microcurie | Calibration of instruments |
| R. | Strontium-89 | Liquid, Solid | 1 microcurie | Analytical method reference standard |
| S. | Strontium-90 | Liquid, Plated | 1 microcurie | Analytical method reference standard |
| T. | Technicium-123m ^{does not exist} → ? | Liquid, Solid | 1 microcurie | Calibration of instruments |
| U. | Thorium-228 | Liquid, Solid, Plated | 1 microcurie | Analytical method reference standard |
| V. | Thorium-229 | Liquid, Solid, Plated | 1 microcurie | Analytical method reference standard |
| W. | Thorium-230 | Liquid, Solid, Plated | 1 microcurie | Analytical method reference standard, calibration of instruments |

X

OK ← Tellurium - 123m Liquid, solid 1 microcurie Calibration of instruments
 Tellurium - 127m Liquid, solid " " " "

Any? No

| Radioisotope | | Chemical and/or physical form | Maximum amount that licensee may possess at one time | Proposed Use |
|--------------|--|---|--|---|
| X. | Tin-113 | Solid | 1 microcurie | Calibration of instruments |
| Y. | Uranium-232 | Liquid, Solid, Plated | 1 microcurie | Analytical method reference standard, calibration of instruments |
| Z. | Uranium-234 | Liquid, Solid, Plated | 1 microcurie | Analytical method reference standard, calibration of instruments |
| AA. | Uranium-235 | Liquid, Solid, Plated | 1 microcurie | Analytical method reference standard, calibration of instruments |
| BB. | Uranium-238 | Liquid, Solid, Plated | 1 microcurie | Analytical method reference standard, calibration of instruments |
| CC. | Yttrium-88 | Solid | 1 microcurie | Calibration of instruments |
| DD. | Any byproduct material as defined in 10 CFR 40.4 | Uranium mill tailings and wastes: Liquids, Solids | 1000 kilograms solids or liquids | Analytical samples requiring chemical determination for material characterization |

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

| Radioactive Materials Inventory | | | | | | | | | | | |
|---|-------------------|------------------|------------------------------------|------------------|----------------------------|----------------|-------------------------|--------------------------|--------------------------|--|--|
| Standards Inventory: Radiochem Department | | | Inventory Performed By: Tom Patten | | | | | | Inventory Date: 10/21/10 | | |
| Item No. | Name | Manufacturer | Date Received | ID | Activity $\mu\text{Ci/mL}$ | Quantity in mL | Activity μCi | Source Type/ Containment | Comments | | |
| 1 | ^{210}Pb | NIST | | SRM4337 | 0.27 | 5 | 1.35 | Liquid/Glass | | | |
| | | | | | ^{210}Pb | Total | 1.35 | | | | |
| 2 | ^{238}U | NIST | 2004 | SRM4321C | 0.0162 | 3 | 0.0486 | Liquid/Plastic | | | |
| 3a | ^{238}U | ERA | Varied | Naturals Mixture | 0.00002 | 70 | 0.0014 | Liquid/Glass | Mixture | | |
| | | | | | ^{238}U | Total | 0.05 | | | | |
| 4 | ^{226}Ra | NIST | 2005 | SRM4966 | 0.0058 | 3 | 0.0174 | Liquid/Glass | | | |
| 5 | ^{226}Ra | NIST | 2003 | SRM4967 | 0.058 | | 0.116 | Liquid/Plastic | | | |
| 3b | ^{226}Ra | ERA | Varied | Naturals Mixture | 0.00002 | 70 | 0.0014 | Liquid/Glass | Mixture | | |
| | | | | | ^{226}Ra | Total | 0.1348 | | | | |
| 6 | ^{137}Cs | Isotope Products | 10/1/2002 | 947-43 | 0.108 | 4 | 2 | Liquid/Glass | | | |
| 7a | ^{137}Cs | ERA | Varied | Gross Alpha/Beta | 0.000005 | 65 | 0.000325 | Liquid/Glass | Mixture | | |
| | | | | | ^{137}Cs | Total | 2.000325 | | | | |
| 8 | ^{90}Sr | Isotope Products | 9/1/2003 | N/A | N/A | N/A | 0.08967 | Plated Source | | | |
| 9 | ^{90}Sr | Isotope Products | 11/1/2003 | 1017-28 | 0.076 | 4 | 0.304 | Liquid/Plastic | | | |
| 10 | ^{90}Sr | Canberra | 2002 | Rad1-4A | N/A | N/A | 0.1 | Button | Uncertified | | |
| 11 | ^{90}Sr | Canberra | 2002 | Rad1-4B | N/A | N/A | 0.1 | Button | Uncertified | | |
| 12 | ^{90}Sr | Canberra | 2002 | Rad1-4C | N/A | N/A | 0.1 | Button | Uncertified | | |
| 13 | ^{90}Sr | Canberra | 2002 | Rad1-4D | N/A | N/A | 0.1 | Button | Uncertified | | |
| | | | | | ^{90}Sr | Total | 0.79367 | | | | |
| 14 | ^{226}Ra | Analytics | 11/16/2007 | SR 576302805 | 0.02 | 4.9 | 0.098 | Liquid/Glass | | | |
| 3c | ^{226}Ra | ERA | Varied | Naturals Mixture | 0.00002 | 70 | 0.0014 | Liquid/Glass | Mixture | | |
| | | | | | ^{226}Ra | Total | 0.0994 | | | | |
| 15 | ^{210}Po | Isotope Products | 10/1/2009 | 1389-46 | 0.094 | 5 | 0.47 | Liquid/Plastic | | | |
| | | | | | ^{210}Po | Total | 0.47 | | | | |
| 16 | ^{232}Th | NIST | 9/2010 | SRM 4328C | 0.000954 | 5 | 0.00477 | Liquid/Glass | | | |
| | | | | | ^{232}Th | Total | 0.00477 | | | | |
| 17 | ^{230}Th | ERA | 8/2010 | 8240905A | 0.000025 | 25 | 0.000625 | Liquid/Glass | | | |
| 7b | ^{230}Th | ERA | Varied | Gross Alpha/Beta | 0.000005 | 65 | 0.000325 | Liquid/Glass | Mixture | | |
| | | | | | ^{230}Th | Total | 0.00095 | | | | |

natural uranium 4-238

RECEIVED

OCT 27 2010

DNMS

ADD THESE AUTHORIZATIONS TO LICENSE

From: Gersey, Linda
Sent: Wednesday, July 28, 2010 2:42 PM
To: Torres, RobertoJ
Cc: Cook, Jackie
Subject: RE: Draft email to Energy Laboratories for your comment

Roberto,

Please indicate the **MAX kg** under the program code for source material. I don't remember what it is. Everything else looks good. They never asked for source material under Part 40, only byproduct material.

Linda

From: Torres, RobertoJ
Sent: Wednesday, July 28, 2010 1:35 PM
To: Gersey, Linda
Cc: Cook, Jackie
Subject: Draft email to Energy Laboratories for your comment

Linda: Please comment on this draft email to Energy Laboratories. The fees information stated on this email came from Brenda Brown/HQ. Thank you.

Dee:

This is the language that you need to use when requesting to amend NRC license 49-26846-01 (Energy Laboratories).

Please amend license 49-26846-01 to add source material.

Change license conditions 6.U., 7.U., 8.U., and 9.U. to read as follows:

- | | | |
|--|------------------------------------|--|
| 6. Byproduct, source, and/or special nuclear material | 7.D. Chemical and/or physical form | 8. Maximum amount that licensee may possess at any one time under this license |
| U. Any byproduct material as defined in 10 CFR 40.4 | U. Uranium mill tailings and waste | U. 1,000 kilograms (revisit this amount and increase or decrease it as needed) |
| 9. Authorized Use: | | |
| U. Radiochemical, inorganic and organic analysis to determine material characterization. | | |



Add license conditions 6.V., 7.V., 8.V., and 9.V. to read as follows:

6. Byproduct, source, and/or special nuclear material

7. Chemical and/or physical form

8. Maximum amount that licensee may possess at any one time under this license

V. Any source material as defined in 10 CFR 40.4

V. Any, except sealed sources

V. XXXX kilograms (state amount in kilograms)

9. Authorized Use:

V. Bioassay sample analysis and radiochemical, inorganic and organic analysis to determine material characterization.



From: Cook, Jackie
Sent: Wednesday, July 28, 2010 9:14 AM
To: Torres, RobertoJ; Whitten, Jack; Gersey, Linda
Subject: RE: Energy Laboratory License condition 6.U.

Roberto:

I think Linda wants us to do a search for all Commercial Service licensees (Program Code 03225) and if they have "Any byproduct material as defined in 10 CFR 40.4", she wants us to also add, "Any source material as defined in 10 CFR 40.4. These are 2 separate definitions that allows the licensee to be authorized for **wastes produced** (byproduct material) and any other source material other than wastes (source material).

We can discuss further at our NMSB-B Weekly Meeting tomorrow, if needed.

Thanks, Jackie

From: Torres, RobertoJ
Sent: Wednesday, July 28, 2010 7:26 AM
To: Whitten, Jack; Cook, Jackie; Gersey, Linda
Subject: Energy Laboratory License condition 6.U.

Jack:

You asked me to request Energy Laboratory to add the term "source material" to condition 6.U.

Condition 6.U. currently reads: "Any byproduct material as defined in 10 CFR 40.4". If you read the definition of "byproduct material" in 40.4 it includes source material. See below.

Byproduct Material means the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes. Underground ore bodies depleted by such solution extraction operations do not constitute "byproduct material" within this definition.

I don't believe I need to ask the licensee to request that the term "source material" be included in 6.U. since it is already included in the Part 40 definition of byproduct material. Am I missing something?

Roberto