

Torres, RobertoJ

From: Tom Patten [tpatten@imlinc.com]
Sent: Tuesday, October 26, 2010 11:59 AM
To: Torres, RobertoJ; Gersey, Linda
Cc: 'Sheryl Garling'; 'Jim Yocum'
Subject: Response to Questions
Attachments: Response to Email Questions 10262010.PDF; License Items 5 through 11 06242010 tp revised 10262010tp.doc; InventoryOct2010tp.pdf

Robert J Torres,

Attached is Inter- Mountain Laboratories Inc. response to your questions.
Please advise us if there is any change in our due date, November 7 2010, for issuing a Materials License.
We look forward to receiving our Materials License shortly.

If you have any questions or comments, please contact me.

Sincerely,

Tom Patten
Laboratory Manager
Inter- Mountain Laboratories Inc.
1673 Terra Avenue
Sheridan, WY 82801
Phone: 307-672-8945
Fax: 307-672-6053
Email: tpatten@imlinc.com

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INTER-MOUNTAIN LABS
1673 Terra Avenue, Sheridan, WY 82801

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YOUR ENVIRONMENTAL MONITORING PARTNER

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Roberto J. Torres
Senior Health Physicist
US NRC Region IV
612 East Lamar Boulevard, Suite 400
Arlington, Texas 76011-4125

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October 26, 2010

RE: Mail Control Number 573065 – Inter-Mountain Labs Materials License Application

Dear Mr. Torres:

Per your email request for additional information dated October 16, 2010, below is Inter-Mountain Laboratories, Inc (IML) response to each of your questions attached are supporting documentation and revised list of Isotopes.

QUESTION 1:

ITEM 5. RADIOACTIVE MATERIAL (NUREG-1556, Vol. 18, Section 8.5) Pages 1 through 3 of the application dated August 5, 2010 provides a list of radionuclides (A through Z), its chemical form, maximum amounts that the licensee may possess at any one time, and proposed use. On e-mail dated September 15, 2010 from Jim Yocum to Linda Gersey, Jim provided an inventory list of radionuclides and amounts. There are several discrepancies between the two documents. For example, page 2 of the application requested Po-210 (Item M), liquid and plated, 0.1 microcurie maximum; however, Mr. Yocum's email stated that Po-210 amounts at hand are 0.57 microcurie total (plated source and liquid). Please review all the radionuclides and maximum amounts currently at hand, add any future projections, and resubmit corrected pages 1 through 3 of the application.

RESPONSE:

Upon review of the inventory we noticed discrepancies and double accounting for materials. An attached revised inventory list of standards has been included. In addition, the table containing the radioactive materials, Section 5, of the application has been revised to reflect current and future operations. IML will initiate amendments to the Radioactive Materials List once we ascertain the sample load, throughput and source consumption through analytical methods. Refer to the revised attachment Table of Radioactive Materials.

Lead-210 was revised from 1 μ Ci to 2 μ Ci

Polonium-210 was revised from 0.1 μ Ci to 1 μ Ci

Chromium-51 was added to account for future gamma source acquisition

Strontium-85 was added to account for future gamma source acquisition

Technicium-127m was added to account for future gamma source acquisition →?

X

QUESTION 2:

A review of the inventory list provided by Jim Yocum revealed that the following material is exempted from licensing requirements (i.e., need not be listed in the NRC license) according to 10 CFR 30.71.

Isotope Products, Sr-90 plated source, 0.08967 microcurie,
Isotope Products, Pb-210 plated source, 0.1065 microcurie, and
Isotope Products, Po-210 plated source, 0.09374 microcurie.



Roberto J. Torres
October 26, 2010
Page 2 of 2

The rest of the material identified in the list provided by Mr. Yocum needs to be accounted and authorized in the NRC license.

RESPONSE:

The listing of NRC licensed materials, exempt quantities, per 10 CFR Part 30.71, on the license provides the ability to purchase the isotopes from vendors located in Agreement States. Historically, suppliers located in Agreement States prefer or may require having the isotopes listed on the license so that their sales staff can easily identify purchaser's regulated and unregulated materials possession limits. . Refer to the revised attachment Radioactive Materials Inventory.

QUESTION 3:

Provide information on any additional sealed sources (manufacturer's name, model number, radionuclide and activity) to determine if they are exempt or not. Provide sealed source and registration certificate or certificate number if known.

RESPONSE:

Inter-Mountain Laboratories, Inc. does not have any sealed sources or equipment containing sealed sources located at the 1673 Terra Avenue campus in Sheridan, WY.

QUESTION 4:

Does your company perform urine bioassay sample analysis for source material (example, uranium)? If the answer is yes, Linda Gersey will be requesting additional information from you at a later date.

RESPONSE:

Yes. Inter-Mountain Laboratories, Inc. will be performing bioassay to include uranium in urine using EPA Method 200.8. EPA Method 200.8 is an SDWA approved drinking water procedure for the determination of uranium in aqueous solutions. Inter-Mountain Laboratories, Inc. will also analyze radiochemical and trace metal constituents in vegetation, biota and other matrices as required by a variety of mining sectors.

We appreciate your time and consideration reviewing IML's Materials License application.

Thank you,

Tom Patten
Lab Manager

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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 ok	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

X

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	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

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.

A. through CC. - Required for analytical method reference standard and instrument calibration.

DD. - Analytical samples requiring chemical determination for material characterization.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE.

The individual that will be responsible for the radiation safety program is:

Sheryl Garling
R and D Enterprises, Inc.
P.O. Box 3321
Casper, WY 82602

1977 - B.S. Civil Engineering, Clarkson College of Technology
1982-1983 – Uranium Resources, Inc – Douglas, WY – Process Engineer and Radiation Safety Technician/Officer for uranium in-situ leach (ISL/ISR) R&D facility;
1983-1998 - Radiation Safety Officer for a variety of standby and operating conventional and in-situ recovery uranium mining operations, rare earth and commercial analytical laboratory facility (UNC Teton, American Nuclear, Inc. State of Wyoming Bison Basin Project, Abandon Mine Lands uranium reclamation projects, etc.)
1999-2008 Radiation Safety Office for a commercial analytical laboratory facility, Energy Laboratories, Inc., Casper, WY;

Training:

Radiation Safety Officer training through Nevada Technical Institute, January 2009 (40-hour class covered: types and units of radiation, radiation protection principles, ionizing radiation, radiation detection instrumentation, biological hazards of exposure to radiation, NRC regulatory requirements and standards)

Certified under the DOT-Transportation Safety Institute for:
Hazardous Materials Transportation – Highway (2009)
Hazardous Materials Transportation – IATA, Air (2010)
Hazardous Materials Transportation – Radioactive Materials (2009)
Hazardous Materials Transportation – Train the Trainer to provide DOT-TSI hazardous material training program (2009)

Authorized Users:

Tom Patten
Inter-Mountain Laboratories, Inc.
1673 Terra Avenue
Sheridan, WY

1991 – BS in Chemistry, University of Utah

2002-Present – Laboratory Manager, IML-Inter-Mountain Labs, Inc.: responsible for business units of inorganic, radiochemical, metals, microbiology and organics for soils, water and biota. 7 years of experience performing radionuclide analysis
Chemical Hygiene Officer from 2004-Present

Technical Conferences, Symposium and training:

2002 - Lead Assessor Training, ISO 9000:2000, DNV, IRCA Certified Course
2009-2010 – Contracts with DOECAP Consultant for radiochemical laboratory method development, training and technical assistance
2010 – laboratory safety training class on radiation basics

Stephanie Haase
Inter-Mountain Laboratories, Inc.
1673 Terra Avenue
Sheridan, WY

1994 – BS in Zoology, University of Wyoming
1997 – BS in Molecular Biology, University of Wyoming
2004 – Radiochemical Department Supervisor
5 years of experience performing radionuclide analysis.

Technical Conferences, Symposium and training:

2008 - Canberra users' group technical and educational meeting participant
2009 - Annual Conference on Bioassay, Analytical, and Environmental Radiochemistry
2009-2010 – Contracts with DOECAP Consultant for radiochemical laboratory method development, training and technical assistance
2010 – laboratory safety training class on radiation basics

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.

The laboratory facility will be analyzing environmental groundwater, surface water, soils and sediment, air particulate, vegetation and biota samples generated from the oil & gas industry, municipal, state and federal contractors, and from rare earth and uranium mining and recovery operations.

The commercial analytical environmental laboratory restricts public access to the internal laboratory operations. Nonemployees are required to be escorted through the internal laboratory areas.

Due to the nature of the samples and industries served, employee occupational exposure will not exceed 10% of the dose limit appropriate for the individual: adult-5 rem, minor-0.5, or declared pregnant women-0.5 rem. All areas of the laboratory facility will be unrestricted to laboratory personnel.

Training is in the form of lecture, demonstrations and video (CD) relating to the licensed material required to perform the analytical methodology and counting instrumentation calibration.

All employees are provided routine and function specific general laboratory safety training that includes chemical identification and handling, MSDS, good laboratory practices, method and standard operating procedures required for analytical tasks, an introduction to IML's Chemical Hygiene Plan, and an introductory radiation safety training (definitions, types of radiation, ionizing radiation, employee hygiene, ALARA training). The Authorized Users and radiochemistry personnel will be provided additional radiation safety/protection instruction to include licensed material identification, handling, disposal, exposure pathways, monitoring, standard operating procedures required for their analytical tasks and familiarity with the Material License conditions, general DOT guidelines, and radiation safety program.

Qualified instructors are individuals within the corporation that have extensive experience in the analytical laboratory operations, chemical handling, licensed materials control, storage and waste disposal, standard operating procedures. A third party vendor may be used for the specific training such as basic fire and electrical hazards, radiation safety topics and instrumentation training.

9. FACILITIES AND EQUIPMENT

Facility

IML-Intermountain Laboratories, Inc. is a full service commercial analytical laboratory facility providing environmental monitoring and testing for over 30 years. Expansion into a limited list of naturally occurring radiochemical isotopes began ~10 years ago. Examples of laboratory certifications currently held by the facility include USEPA Region 8, State of Nevada, Oklahoma and A2LA.

The original property consists of three contiguous lots on Terra Avenue: 1633 (Old Lab), 1653 (Sample storage and soil prep) and 1673 (New lab). All lots have been combined and the address that represents the Inter-Mountain Laboratories, Inc. campus is 1673 terra. The facility location (see attached Facility Plat) consists of three permanent laboratory structures that contain analytical facilities for the processing of environmental samples. All buildings are equipped with HVAC, chemical fume hoods and ventilation that comply with the routine operations of a certified commercial analytical facility. Work areas consist of sufficient linear counter space with under counter associated storage cabinets (lab grade benching). The campus facility is located within the city limits and is served by a publically (municipal) owned water and sewer (POTW) system.

Samples are received at the New Lab building (and for larger Sample Delivery Groups (SDG) at the Sample Storage building) logged into the LIMS system, separated by fractions in preparation to be delivered to the specific analytical departments.

Building 1: Old Lab (1633 Terra Avenue)

The Old Lab building contains specialty soils testing; humidity cell and meteoric water mobility procedure (MWMP); toxicity characteristic leaching procedure (TCLP); environmental sample preparation for radiochemical procedures for Radium 226, Radium 228, Isotopic Thorium and Uranium, Lead 210, Polonium 210, Gross Alpha and Gross Beta analytical methodologies. Preparation consists of isotope separation with resins, precipitation and gravimetric techniques.

This facility is where licensed radioisotope reference and calibration standards will be used and securely stored.

Equipment

Low Background - Canberra Counter LB4100 with 4 drawers
Radium-226, Radium-228, Gross Alpha and Gross Beta, Lead-210 and Polonium-210

Alpha Spectroscopy Octet - Canberra
Isotopic Uranium and Thorium

Germanium Detector for gamma spectroscopy - Ortec
Radium-226 and Potassium-40, Total Gross Gamma

Building 2: Sample Storage and soil preparation building (1653 Terra Avenue)

This building contains storage and low temperature agronomic soils drying and preparation area. This facility is used for large agronomic soil sample receiving.

Building 3: New Lab (1673 Terra Avenue)

The New Lab building contains sample receiving and analytical laboratory facilities for the following: agronomical (inorganic) soil, water chemistry inorganic and trace metals preparation and analytical.

10. RADIATION SAFETY PROGRAM

The laboratory facility will be analyzing environmental groundwater, surface water, soils and sediment, air particulate, vegetation and biota samples generated from the oil & gas industry, municipal, state and federal contractors, and from rare earth and uranium mining and recovery operations.

The radiation safety program consists of introductory comprehensive training of staff to include function specific training, As Low As Reasonably Achievable (ALARA) concept, Inter-Mountain Laboratories, Inc.'s Chemical Hygiene Plan review which includes topics on spills, chemicals, general laboratory emergency response, etc., regulatory guidance and protocol, security, control and storage of licensed material, dosimetry and sample disposal, personal protective equipment, . Appendix J to NUREG-1556, Vol. 7, "Program-Specific Guidance About Academic, Research and Development, and Other Laboratory Licenses of Limited Scope," Dated December 1999, will be used as guidance for training topics.

Indoor Area Monitors for Beta, Gamma and X-rays

Optically Simulated Luminescence (OSL) dosimeters will be placed in areas where environmental samples will be handled and processed. The dosimeters will be changed out quarterly. The use of a hand held, portable, survey instrument may be used to survey suspect incoming analytical samples for gamma radiation levels.

Removable Alpha

Removable alpha monitoring will be performed periodically to ensure that surface contamination meets ALARA guidance.

Fixed Alpha

Fixed alpha monitoring will be performed periodically to ensure that surface contamination meets ALARA guidance. Areas that may be monitored are: bench top work areas, personnel, general laboratory areas, and samples.

Beta/Gamma

Beta/Gamma measurements will be periodically made when personnel suspect elevated sample submittal.

Portable instrumentation available for surveys is a Ludlum ratemeter/scaler 2241-2 (or equivalent) equipped with an alpha/beta probe (43-2-2 or equivalent) and a GM detector for gamma. Stationery laboratory instrumentation such as the low background counter can be used to measure removable alpha. The germanium detector can be used to provide screening for suspect samples. IML will use instruments that meet the radiation monitoring instrument specifications published in Appendix M to NUREG-1556, Vol. 7, "Program-Specific Guidance About Academic, Research and Development, and Other Laboratory Licenses of Limited Scope," Dated December 1999. We reserve the right to upgrade our survey instruments as necessary."

To ensure material accountability: Physical inventories will be conducted at intervals not to exceed 6 months to account for all plated, liquid and solid sources received and held under the license.

IML and its contractors have performed a prospective evaluation and determined that unmonitored individuals are not likely to receive, in one year, a radiation dose in excess of 10% of the allowable limits in 10 CFR Part 20 or we will monitor individuals in accordance with the criteria in the section entitled "Radiation Safety Program – Occupational Dose" in NUREG-1556, Vol. 7, "Program-Specific Guidance About Academic, Research and Development, and Other Laboratory Licenses of Limited Scope," Dated December 1999.

Licensed materials from the time it arrives at the facility until it is used, transferred, and/or disposed will be controlled by the Authorized Users. The licensed materials will be stored and secured from unauthorized access or removal.

No emergency response plan is required at this time, however, a general laboratory emergency response and spill protocol is addressed in the Chemical Hygiene Plan. In addition to the Chemical Hygiene Plan, radiochemical analytical method's standard operating procedures provide a basic outline for safe use of reagents and radiochemical standards to include safe handling and security.

IML will survey the facility and maintain contamination levels in accordance with the survey frequencies and contamination levels published in Appendix Q to NUREG - 1556, Vol. 7, 'Program-Specific Guidance About Academic, Research and Development, and Other Licenses of Limited Scope,' dated December 1999. We do not anticipate that the plated calibration sources will require a leak test. If we obtain sources that will require leak testing, then leak tests will be performed at the intervals approved by NRC or an Agreement State and specified in the SSD Registration Certificate. 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 sealed source or plated foil manufacturer's (distributor's) and kit supplier's instructions."

The instrument calibration sources and the liquid reference standards will not require leak testing.

11. WASTE MANAGEMENT

IML will use Disposal of all Liquids into Sanitary Sewerage model waste procedures that are published in Appendix T to NUREG-1556, Vol. 7, "Program-Specific Guidance About Academic, Research and Development, and Other Laboratory Licenses of Limited Scope," Dated December 1999.

Regulated solid byproduct material generated from a rare earth or uranium recovery facility will be returned to the client for proper disposal.

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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	²³⁵ U	NIST	2004	SRM4321C	0.0162	3	0.0486	Liquid/Plastic				
3a	²³⁵ U	ERA	Varied	Naturals Mixture	0.00002	70	0.0014	Liquid/Glass	Mixture			
					²³⁵ 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	²²⁸ Ra	Analytics	11/16/2007	SR 576302805	0.02	4.9	0.098	Liquid/Glass				
3c	²²⁸ Ra	ERA	Varied	Naturals Mixture	0.00002	70	0.0014	Liquid/Glass	Mixture			
					²²⁸ 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	²²⁹ Th	NIST	9/2010	SRM 4328C	0.000954	5	0.00477	Liquid/Glass				
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					

Request for additional information

Torres, RobertoJ

Sent: Saturday, October 16, 2010 11:03 PM**To:** sagarling1@bresnan.net**Cc:** Gersey, Linda; jyocum@imlinc.com

Ms. Garling:

I have completed the technical review of Inter-Mountain's application for an NRC license. Please provide the following additional information by reply email (reply ALL) in a signed and dated letter in company letterhead (pdf file).

✓ 1. ITEM 5. RADIOACTIVE MATERIAL (NUREG-1556, Vol. 18, Section 8.5) Pages 1 through 3 of the application dated August 5, 2010 provides a list of radionuclides (A through Z), its chemical form, maximum amounts that the licensee may possess at any one time, and proposed use. On e-mail dated September 15, 2010 from Jim Yocum to Linda Gersey, Jim provided an inventory list of radionuclides and amounts. There are several discrepancies between the two documents. For example, page 2 of the application requested Po-210 (Item M), liquid and plated, 0.1 microcurie maximum; however, Mr. Yocum's email stated that Po-210 amounts at hand are 0.57 microcurie total (plated source and liquid). Please review all the radionuclides and maximum amounts currently at hand, add any future projections, and resubmit corrected pages 1 through 3 of the application.

✓ 2. A review of the inventory list provided by Jim Yocum revealed that the following material is exempted from licensing requirements (i.e., need not be listed in the NRC license) according to 10 CFR 30.71.

Isotope Products, Sr-90 plated source, 0.08967 microcurie,
Isotope Products, Pb-210 plated source, 0.1065 microcurie, and
Isotope Products, Po-210 plated source, 0.09374 microcurie.

The rest of the material identified in the list provided by Mr. Yocum needs to be accounted and authorized in the NRC license.

✓ 3. Provide information on any additional sealed sources (manufacturer's name, model number, radionuclide and activity) to determine if they are exempt or not. Provide sealed source and registration certificate or certificate number if known.

✓ 4. Does your company perform urine bioassay sample analysis for source material (example, uranium)? If the answer is yes, Linda Gersey will be requesting additional information from you at a later date.

Thank you.

Roberto J. Torres
Senior Health Physicist
US NRC Region IV
612 East Lamar Boulevard, Suite 400
Arlington, Texas 76011-4125
robertoj.torres@nrc.gov

Torres, RobertoJ

From: Tom Patten [tpatten@imlinc.com]
Sent: Wednesday, October 27, 2010 4:02 PM
To: Torres, RobertoJ
Cc: 'Sheryl Garling'
Subject: RE: Clarification
Attachments: InventoryOct2010tp.pdf

→ Te-123m?
→ Te-127m?
Amount each?

Mr. Torres,

Concerning both your questions:

X
✓

- 1) The Tc 123 and Tc 127 were in error. I request that both Te123 and Te127 be put on the application, to ensure completeness.
- 2) For Cs137 our inventory was inaccurate. One micro-curie should be sufficient see revised inventory attached.

If you have any questions or comments, please contact me.

Thank you,

Tom Patten
Laboratory Manager
Inter- Mountain Laboratories Inc.
1673 Terra Avenue
Sheridan, WY 82801
Phone: 307-672-8945
Fax: 307-672-6053
Email: tpatten@imlinc.com

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From: Torres, RobertoJ [mailto:RobertoJ.Torres@nrc.gov]
Sent: Wednesday, October 27, 2010 2:12 PM
To: Tom Patten
Subject: Clarification

Mr. Patten:

I need further clarification on the two items listed below related to types and amounts of radioactive material.

1. Page 1 of response letter and Item T: Technecium-123m and Technicium-127m, which are referenced in your response, don't exist. Are you requesting Tellurium-123m or Tellurium-127m? Please clarify type and amount being requested for Item T.
2. Item E: The amount you requested to be authorized in the license for Cesium-137 is 1 microcurie however your Cs-137 inventory adds up to 2.000325 microcuries. I can authorize 3 microcuries under Item E. Please confirm that you agree for an authorization of 3 microcuries for Item E.

Please provide written response by reply email. Thank you.

Roberto J. Torres
Senior Health Physicist
U.S. Nuclear Regulatory Commission - Region IV
Division of Nuclear Materials Safety
Nuclear Materials Safety Branch B
612 East Lamar Boulevard, Suite 400
Arlington, Texas 76011-4125
Telephone 817-860-8189
Facsimile 817-860-8263
robertoj.torres@nrc.gov

REVISED

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 µCi/ml	Quantity in mL	Activity µCi	Source Type/Containment	Comments
1	²¹⁰ Pb	NIST		SRM4337	0.27	5	1.35	Liquid/Glass	
2	²³⁸ U	NIST	2004	SRM4321C	0.0162	3	0.0486	Liquid/Plastic	
3a	²³⁵ U	ERA	Varied	Naturals Mixture	0.00002	70	0.0014	Liquid/Glass	Mixture
4	²²⁶ Ra	NIST	2005	SRM4966	0.0058	3	0.0174	Liquid/Glass	
5	²²⁶ Ra	NIST	2003	SRM4967	0.058		0.025056	Liquid/Plastic	
3b	²²⁶ Ra	ERA	Varied	Naturals Mixture	0.00002	70	0.0014	Liquid/Glass	Mixture
6	¹³⁷ Cs	Isotope Products	10/1/2002	947-43	0.108	4	0.432	Liquid/Glass	
7a	¹³⁷ Cs	ERA	Varied	AlphaBeta	0.000005	65	0.000325	Liquid/Glass	Mixture
8	⁹⁰ Strontium	Isotope Products	9/1/2003	N/A	N/A	N/A	0.08967	Plated Source	
9	⁹⁰ Strontium	Isotope Products	11/1/2003	1017-28	0.076	4	0.304	Liquid/Plastic	
10	⁹⁰ Strontium	Canberra	2002	Rad1-4A	N/A	N/A	0.1	Button	Uncertified
11	⁹⁰ Strontium	Canberra	2002	Rad1-4B	N/A	N/A	0.1	Button	Uncertified
12	⁹⁰ Strontium	Canberra	2002	Rad1-4C	N/A	N/A	0.1	Button	Uncertified
13	⁹⁰ Strontium	Canberra	2002	Rad1-4D	N/A	N/A	0.1	Button	Uncertified
14	²²⁸ Ra	Analytics	11/16/2007	SR 576302805	0.02	4.9	0.098	Liquid/Glass	
3c	²²⁸ Ra	ERA	Varied	Naturals Mixture	0.00002	70	0.0014	Liquid/Glass	Mixture
15	²¹⁰ Po	Isotope Products	10/1/2009	1389-46	0.094	5	0.47	Liquid/Plastic	
16	²²⁹ Th	NIST	9/2010	SRM 4328C	0.000954	5	0.00477	Liquid/Glass	
17	²³⁰ Th	ERA	8/2010	8240905A	0.000025	25	0.000625	Liquid/Glass	
7b	²³⁰ Th	ERA	Varied	Gross AlphaBeta	0.000005	65	0.000325	Liquid/Glass	Mixture
						Total	0.00095		

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Torres, RobertoJ

From: Tom Patten [tpatten@imlinc.com]
Sent: Wednesday, October 27, 2010 4:31 PM
To: Torres, RobertoJ
Subject: RE: Clarification

Mr. Torres,

- 1) I just looked this up in the catalog. IML only needs 1 microcurie of Te 123m. This should have a half life of 120 days and a gamma at 159 Kev. Sorry for my confusion.

If you have any questions or comments, please contact me.

Sincerely,

Tom Patten
Laboratory Manager
Inter- Mountain Laboratories Inc.
1673 Terra Avenue
Sheridan, WY 82801
Phone: 307-672-8945
Fax: 307-672-6053
Email: tpatten@imlinc.com

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OCT 27 2010

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From: Torres, RobertoJ [mailto:RobertoJ.Torres@nrc.gov]
Sent: Wednesday, October 27, 2010 3:05 PM
To: Tom Patten
Subject: RE: Clarification

1 microcurie each for Te-123m and Te-127m?

From: Tom Patten [mailto:tpatten@imlinc.com]
Sent: Wednesday, October 27, 2010 4:02 PM
To: Torres, RobertoJ
Cc: 'Sheryl Garling'
Subject: RE: Clarification

Mr. Torres,

Concerning both your questions:

- 1) The Tc 123 and Tc 127 were in error. I request that both Te123 and Te127 be put on the application, to ensure completeness.
- 2) For Cs137 our inventory was inaccurate. One micro-curie should be sufficient see revised inventory attached.

If you have any questions or comments, please contact me.

Thank you,

Tom Patten
Laboratory Manager
Inter- Mountain Laboratories Inc.
1673 Terra Avenue
Sheridan, WY 82801
Phone: 307-672-8945
Fax: 307-672-6053
Email: tpatten@imlinc.com

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From: Torres, RobertoJ [<mailto:RobertoJ.Torres@nrc.gov>]
Sent: Wednesday, October 27, 2010 2:12 PM
To: Tom Patten
Subject: Clarification

Mr. Patten:

I need further clarification on the two items listed below related to types and amounts of radioactive material.

1. Page 1 of response letter and Item T: Technecium-123m and Technicium-127m, which are referenced in your response, don't exist. Are you requesting Tellurium-123m or Tellurium-127m? Please clarify type and amount being requested for Item T.
2. Item E: The amount you requested to be authorized in the license for Cesium-137 is 1 microcurie however your Cs-137 inventory adds up to 2.000325 microcuries. I can authorize 3 microcuries under Item E. Please confirm that you agree for an authorization of 3 microcuries for Item E.

Please provide written response by reply email. Thank you.

Roberto J. Torres
Senior Health Physicist
U.S. Nuclear Regulatory Commission - Region IV
Division of Nuclear Materials Safety
Nuclear Materials Safety Branch B
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