Department of State Health Services

RADIOACTIVE MATERIAL LICENSE

Pursuant to the Texas Radiation Control Act and Texas Department of State Health Services (Agency) regulations on radiation, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess and transfer radioactive material listed below; and to use such radioactive material for the purpose(s) and at the place(s) designated below. This license is subject to all applicable rules, regulations and orders of the Agency now or hereafter in effect and to any conditions specified below.

LICENSEE

1. Name
   THE UNIVERSITY OF TEXAS AT AUSTIN
   ENVIRONMENTAL HEALTH AND SAFETY
   ATTN W SCOTT PENNINGTON CHP
   PO BOX 7729
   AUSTIN TX 78713-7729

2. Address

This license is issued in response to a letter

Dated: July 31, 2013

Signed by: W. Scott Pennington, M.S.

3. License Number
   L00485
   Amendment Number
   89

PREVIOUS AMENDMENTS ARE VOID

RADIOACTIVE MATERIAL AUTHORIZED

4. Expiration Date
   June 30, 2020

5. Radioisotope
   A. Any radioactive material with an Atomic Number less than 84

   B. Any radioactive material with an Atomic Number less than 84

   C. Cs-137

   D. Any radioactive material with an Atomic Number 84 or greater, except special nuclear material

   E. Any radioactive material with an Atomic Number 84 or greater, except special nuclear material

6. Form of Material
   A. Any, except sealed source

   B. Sealed source

   C. Sealed source (3M Models 4F6H)

   D. Any, except sealed source

   E. Sealed source

7. Maximum Activity
   A. 300 millicuries of any single radionuclide
      Total: 3 curies

   B. Any single source not to exceed 15 millicuries
      Total not to exceed 1 curie

   C. 606 millicuries

   D. 25 millicuries of any single radionuclide
      Total: 250 millicuries

   E. Any single source not to exceed 50 millicuries
      Total: 1 curie

8. Authorized Use
   A. Research and education.

   B. Research and education.

   C. Research and education (J. L. Shepherd and Associates 28 Series instrument calibrator).

   D. Research and education.

   E. Research and education.
<table>
<thead>
<tr>
<th></th>
<th>5. Radioisotope (Continued)</th>
<th>6. Form of Material (Continued)</th>
<th>7. Maximum Activity (Continued)</th>
<th>8. Authorized Use (Continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>H-3</td>
<td>F. Any</td>
<td>F. 1000 curies</td>
<td>F. Research and education.</td>
</tr>
<tr>
<td>G</td>
<td>U-235</td>
<td>G. Any solid or liquid</td>
<td>G. 4.322 microcuries (2 grams)</td>
<td>G. Research and education.</td>
</tr>
<tr>
<td>H</td>
<td>Pu-238</td>
<td>H. Sealed source</td>
<td>H. 0.005 grams (85 millicuries)</td>
<td>H. Research and education.</td>
</tr>
<tr>
<td>I</td>
<td>PuBe-239</td>
<td>I. Sealed source</td>
<td>I. 176 grams (11 curies)</td>
<td>I. Research and education</td>
</tr>
<tr>
<td>J</td>
<td>Cs-137</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>Cs-137</td>
<td>K. Sealed source (TN Model 570-57157C)</td>
<td>K. 110 millicuries</td>
<td>K. Research and education.</td>
</tr>
<tr>
<td>L</td>
<td>Cs-137</td>
<td>L. Sealed source (AEA Technology Model 77302)</td>
<td>L. 90 millicuries</td>
<td>L. Research and education (AEA Technology-QSA Inc., Model 773 calibrator)</td>
</tr>
<tr>
<td>M</td>
<td>H-3</td>
<td>M. Sealed source (Metal tritide)</td>
<td>M. No single source to exceed 3.5 curies Total: 10 curies</td>
<td>M. Research and education (Thermo Scientific Model MP 320 neutron generator).</td>
</tr>
<tr>
<td>N</td>
<td>Am-241</td>
<td>N. Sealed source</td>
<td>N. 2 curies</td>
<td>N. Research and education.</td>
</tr>
<tr>
<td>O</td>
<td>AmBe-241</td>
<td>O. Sealed source</td>
<td>O. 1 curie</td>
<td>O. Research and education</td>
</tr>
<tr>
<td>P</td>
<td>U-233</td>
<td>P. Any solid or liquid</td>
<td>P. 0.1 millicuries (10.2 milligrams)</td>
<td>P. Research and education</td>
</tr>
<tr>
<td>Q</td>
<td>Pu-238</td>
<td>Q. Any solid or liquid</td>
<td>Q. 0.01 millicuries (0.58 micrograms)</td>
<td>Q. Research and education</td>
</tr>
<tr>
<td>R</td>
<td>Pu-239</td>
<td>R. Any solid or liquid</td>
<td>R. 0.1 millicuries (1.61 milligrams)</td>
<td>R. Research and education</td>
</tr>
</tbody>
</table>
### RADIOACTIVE MATERIAL LICENSE

<table>
<thead>
<tr>
<th>Site Number</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>000</td>
<td>Austin – 304 East 24th Street, Austin Campus of the University of Texas</td>
</tr>
<tr>
<td>002</td>
<td>Port Aransas – 750 Channel View Drive, Marine Science Institute.</td>
</tr>
<tr>
<td>003</td>
<td>Austin – 10100 Burnet Road, J.J. Pickle Research Campus, except reactor operations that are authorized by the U.S. Nuclear Regulatory Commission (NRC).</td>
</tr>
<tr>
<td>004</td>
<td>Austin – 1400 Barbara Jordan Boulevard, Dell Pediatric Research Institute (DPRI).</td>
</tr>
<tr>
<td>005</td>
<td>Port Aransas – 1300 Port Street, Fisheries and Mariculture Laboratory (FAML), Marine Science Institute.</td>
</tr>
</tbody>
</table>

B. Radioactive material in the form of carbon-14 or tritium labeled reagents, with activities of no more than 6 millicuries may be used on board the Research Vessel (R/V) Katy while either in port or sailing in waters where the Radiation Safety Licensing Branch, Texas Department of State Health Services maintains jurisdiction.

10. Each site shall maintain documents and records pertinent to the operations at that site. Copies of all documents and records required by this license shall be maintained for Agency review at 304 East 24th Street, SER 221, Austin, except those required by 25 TAC §289.201(d) that are directly related to radioactive materials for human-use and unsealed reference sources for instrument calibration, 25 TAC §289.202(nn), and 25 TAC §289.202(tt).

11. The licensee shall comply with the provisions (as amended) of Title 25, Texas Administrative Code (TAC) §289.201, §289.202, §289.203, §289.204, §289.205, §289.251, §289.252, §289.253, §289.254, §289.255, §289.257, §289.258 and §289.259.
12. The University of Texas (UT) at Austin Radiation Safety Committee (RSC), Gerald Hoffmann, Ph.D., Chair:

A. The UT RSC authorized membership is:

    Neal E. Armstrong, Ph.D., P.E., BCEE
    Kevin N. Dalby, Ph.D.
    Gerald Hoffmann, Ph.D.
    Tracy N. Tipping, MS, CHP

    W. Scott Pennington, M.S., CHP
    Rick Russell, Ph.D.
    John M. Salsman, M.S., CHP
    Juan M. Sanchez, Ph.D.
    Bob G. Sanders, Ph.D.
    Karen M. Vasquez, Ph.D.

    Vice Provost for Institutional Accreditation
    Division of Medicinal Chemistry
    Department of Physics
    Health Physicist and Laboratory Manager, Nuclear
    Engineering Teaching Laboratory
    Radiation Safety Officer
    Department of Molecular Biosciences
    Director, Environmental Health and Safety
    Vice President, Research
    Department of Molecular Biosciences
    Division of Pharmacology and Toxicology

B. Radioactive material may be used only under the direct supervision of, or by individuals designated by the UT RSC.

C. Qualifications of new RSC members shall be submitted to the Agency for review and approval prior their participation as a full-voting member in RSC deliberations. Executive management may make interim appointments for replacement of departing members, pending Agency approval, when the interim appointee has equivalent credentials as did the departing member and represents the same department as did the departing member.

13. The individual designated to perform the functions of Radiation Safety Officer (RSO) for activities covered by this license is W. Scott Pennington, CHP.

14. A current copy of the licensee's radiation safety manual shall be readily available to each person who uses radioactive material authorized by this license.

15. Proposed substantive changes in or additions to the licensee's radiation safety manual shall be submitted to the Agency for approval before being incorporated into that document.

16. In accordance with 25 TAC §289.201(g), each sealed source that is not designed to emit alpha particles may be tested at intervals specified by the Registry of Radioactive Sealed Sources and Devices (SSD) safety evaluation.

17. The licensee shall maintain a current copy of the safety evaluation, from "The Registry of Radioactive Sealed Sources and Devices" for each sealed source received under authority of this license, in excess of 100 microcuries of beta/gamma-emitting material or 10 microcuries of alpha-emitting material.
18. Animals administered radioactive materials or products from such animals shall not be used for human consumption.

19. The licensee shall not open sealed sources containing radioactive material.

20. Sealed sources of radioactive material, Ni-63 foil, and/or plated alpha-emitting sources shall be tested for leakage and/or contamination in accordance with the provisions of 25 TAC §289.201(g). Leak tests may also be performed by Ryan D. Green, R. DeWayne Holcomb, Michael G. Krause, W. Scott Pennington, Jonathan E. Sims, Tracy N. Tipping, Chris Walters, or Larry S. Welch.

21. Radiation survey instruments shall be calibrated at intervals not to exceed 12 months by persons licensed by the Agency, another Agreement State, or by the United States Nuclear Regulatory Commission (NRC). Survey instruments used under this license may also be calibrated by Ryan D. Green, R. DeWayne Holcomb, Michael G. Krause, D, W. Scott Pennington, Jonathan E. Sims, Tracy N. Tipping, Chris Walters, or Larry S. Welch.

22. The license shall conduct a physical inventory every six months to account for all sealed sources received and possessed under the license. The records of the inventories shall be maintained for inspection by the Agency for three years from the date of the inventory and shall include the quantities and the kinds of radioactive material, location of sealed sources, the name of the individual taking the inventory, and the date of the inventory.

23. The licensee may dispose of certain radioactive materials whose half-lives do not exceed 300 days in accordance with the provisions of 25 TAC §289.202(fff)(4).

24. The licensee shall dispose of radioactive waste, authorized for decay in storage, only upon decay in storage for a minimum of ten half lives and with measurement of the radioactivity after the minimal ten half-life period.

25. The licensee shall comply with the requirements described in U. S. Nuclear Regulatory Commission's (NRC) Order EA-07-305 (the Order), with attachments. The requirements listed in the Order shall be implemented as part of the trustworthiness and reliability program of the Increased Controls requirements.

A. By May 28, 2008, the licensee shall provide under oath or affirmation, a certification that the Trustworthiness and Reliability Official (TRO) is deemed trustworthy and reliable by the licensee as required in paragraph B.2. of the Order.

B. All fingerprints obtained by the licensee pursuant to this requirement must be submitted to the NRC for transmission to the U.S. Federal Bureau of Investigation (FBI). Additionally, the licensee’s submission of fingerprints shall also be accompanied by a certification, under oath and affirmation, of the trustworthiness and reliability of the TRO as required by paragraph B.2. of the Order.
25. (Continued)

C. The licensee shall complete implementation of the fingerprinting requirements by August 27, 2008. The licensee shall notify DSHS - Radioactive Material Licensing Group, Manager when they have achieved full compliance with the requirements described in the Order. The notification shall be made within thirty (30) days after full compliance has been achieved.

D. The licensee shall notify Manager, Radioactive Material Licensing Group, DSHS at (512) 834-6688, ext. 2206 within 24 hours if the results from a criminal history records check indicate that an individual is identified on the FBI's Terrorist Screening Data Base.

26. Except as specifically provided otherwise by this license, the licensee shall possess and use the radioactive material authorized by this license in accordance with statements, representations, and procedures contained in the following:

application dated May 29, 2009,
July 31, 2013, December 19, 2013 and
Business Information Form dated May 29, 2009.

Title 25 TAC §289 shall prevail over statements contained in the above documents unless such statements are more restrictive than the regulations.

VJD:vjd FOR THE DEPARTMENT OF STATE HEALTH SERVICES

Date January 10, 2014

J. Scott Kee, Program Coordinator
Medical and Academic Licensing Program