

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 37, 39, 40, and 70, 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 byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

<p>Licensee</p> <p>1. Mid-America Isotopes, Inc.</p> <p>2. 706 E. Liberty Lane Ashland, MO 65010</p>	<p>In accordance with the letter dated January 29, 2016,</p> <p>3. License number 24-26241-01MD is amended in its entirety to read as follows:</p> <p>4. Expiration date April 30, 2021</p> <p>5. Docket No. 030-31896 Reference No.</p>	
<p>6. Byproduct, source, and/or special nuclear material</p> <p>A. Molybdenum-99</p> <p>B. Technetium-99m</p> <p>C. Iodine-131</p> <p>D. Xenon-133</p> <p>E. Any byproduct material with atomic number 1 through 83, except molybdenum-99, technetium-99m, iodine-131 and xenon-133</p> <p>F. Any byproduct material listed in 10 CFR 31.11</p> <p>G. Any byproduct material authorized by 10 CFR 35.65</p> <p>H. Any byproduct material authorized by 10 CFR 35.400</p> <p>I. Any byproduct material authorized by 10 CFR 35.500</p> <p>J. Depleted Uranium</p>	<p>7. Chemical and/or physical form</p> <p>A. Any</p> <p>B. Any</p> <p>C. Any</p> <p>D. Any</p> <p>E. Any</p> <p>F. Prepackaged <u>in vitro</u> diagnostic test kits</p> <p>G. Sealed sources</p> <p>H. Sealed sources</p> <p>I. Sealed sources</p> <p>J. Metal</p>	<p>8. Maximum amount that licensee may possess at any one time under this license</p> <p>A. 90 curies</p> <p>B. 90 curies</p> <p>C. 1.99 curies</p> <p>D. 2 curies</p> <p>E. 1.5 curies per nuclide, 2 curies total</p> <p>F. 60 millicuries total</p> <p>G. 60 millicuries total</p> <p>H. 500 millicuries</p> <p>I. 5.5 curies total</p> <p>J. 101 kilograms</p>

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SUPPLEMENTARY SHEET**

License Number
24-26241-01MD
Docket or Reference Number
030-31896

Amendment No. 15**9. Authorized use:**

- A. through E. Preparation and distribution of radioactive drugs, including compounding of iodine-131 and redistribution of used and unused molybdenum-99/technetium-99m generators, to authorized recipients in accordance with 10 CFR 32.72. Preparation and distribution of radioactive drugs and radiochemicals, including compounding of iodine-131 and redistribution of used and unused molybdenum-99/technetium-99m generators, to authorized recipients for non-medical use.
- F. Redistribution to specific licensees or general licensees pursuant to 10 CFR 31.11, provided the packaging and labeling remain unchanged.
- G. Calibration and checking of the licensee's own instruments. Redistribution of sealed sources initially distributed by a manufacturer licensed pursuant to 10 CFR 32.74 to authorized recipients and to authorized recipients for non-medical use.
- H. and I. Redistribution of sealed sources initially distributed by a manufacturer licensed pursuant to 10 CFR 32.74. Redistribution of sealed sources that have been registered either with NRC under 10 CFR 32.210 or with an Agreement State and have been distributed in accordance with an NRC or Agreement State specific license authorizing distribution to persons specifically authorized by an NRC or Agreement State license to receive, possess, and use the sources.
- J. Shielding for molybdenum-99/technetium-99m generators.

CONDITIONS

10. Licensed material shall be used only at the licensee's facilities located at 706 E. Liberty Lane, Ashland, Missouri.
11. Licensed material shall be used by, or under the supervision of:
- A. A pharmacist working or designated as an authorized nuclear pharmacist in accordance with 10 CFR 32.72(b)(2)(i) and (4); or,
- B. Authorized Nuclear Pharmacist(s):
- Scott C. Brower, R.Ph., B.C.N.P., William C. McHugh, R.Ph., Ph.D., William Brent McHugh, Pharm.D., R.Ph., Jon W. Woodward, R.Ph., Marc D. Weichelt, R.Ph., Allen C. Jones, R.Ph., Pharm.D., Andrew N. Borrok, Pharm.D., R.Ph., and James J. Watanabe, R.Ph.
12. The Radiation Safety Officer for the activities authorized by this license is Scott C. Brower, R.Ph.

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13. A. Sealed sources shall be tested for leakage and/or contamination at intervals not to exceed the intervals specified in the certificate of registration issued by NRC under 10 CFR 32.210 or by an Agreement State.
- B. In the absence of a certificate from a transferor indicating that a leak test has been made within the intervals specified in the certificate of registration issued by NRC under 10 CFR 32.210 or by an Agreement State prior to the transfer, a sealed source or detector cell received from another person shall not be put into use until tested.
- C. Sealed sources need not be tested if they are in storage and are not being used. However, when they are removed from storage for use or transferred to another person, and have not been tested within the required leak test interval, they shall be tested before use or transfer. No sealed source shall be stored for a period of more than 10 years without being tested for leakage and/or contamination.
- D. The leak test shall be capable of detecting the presence of 0.005 microcurie (185 becquerels) of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie (185 becquerels) or more of removable contamination, a report shall be filed with the U.S. Nuclear Regulatory Commission in accordance with 10 CFR 30.50(c)(2), and the source shall be removed immediately from service and decontaminated, repaired, or disposed of in accordance with Commission regulations.
- E. Tests for leakage and/or contamination shall be performed by the licensee or other persons specifically licensed by the Commission or an Agreement State to perform such services.
- F. Records of leak test results shall be kept in units of microcuries and shall be maintained for 3 years.
14. Sealed sources containing licensed material shall not be opened or sources removed from source holders by the licensee, except as specifically authorized
15. The licensee shall conduct a physical inventory every six months, or at other intervals approved by the NRC or Agreement State, to account for all sealed sources and/or devices received and possessed under the license. Records of inventories shall be maintained for 5 years from the date of each inventory, and shall include the quantities and kinds of byproduct material, manufacturer's name and model numbers, location of the sources and/or devices, and the date of the inventory.
16. The licensee may transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."
17. The licensee is authorized to hold radioactive material with a physical half-life of less than or equal to 120 days for decay-in-storage before disposal in ordinary trash provided:
- A. Before disposal as normal waste, radioactive waste shall be surveyed at the container surface with the appropriate survey instrument set on its most sensitive scale and with no interposed shielding to determine that its radioactivity cannot be distinguished from background. All radiation labels shall be removed or obliterated.

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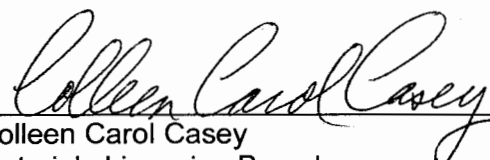
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- B. A record of each such disposal permitted under this License Condition shall be retained for three years. The record must include the date of disposal, the date on which the byproduct material was placed in storage, the radionuclides disposed, the survey instrument used, the background dose rate, the dose rate measured at the surface of each waste container, and the name of the individual who performed the disposal.
18. Except for maintaining labeling as required by 10 CFR Part 20 or 71, the licensee shall obtain authorization from NRC before making any changes in the sealed source, device, or source-device combination that would alter the description or specifications as indicated in the respective Registration Certificates issued either by the Commission pursuant to 10 CFR 32.210 or by an Agreement State.
19. The licensee is authorized to retrieve, receive and dispose of radioactive waste from its customers, limited to radiopharmacy - supplied syringes and vials and their contents.
20. This license does not authorize distribution to persons exempt from licensing.
21. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents including any enclosures, listed below. The Nuclear Regulatory Commission's regulations shall govern unless the statements, representations and procedures in the licensee's application and correspondence are more restrictive than the regulations.
- A. Letter dated October 6, 2010 (ML102850185);
 - B. Letter dated April 26, 2011 (ML111160586);
 - C. Letter dated March 7, 2014 (ML14066A492);
 - D. Letter dated March 25, 2014 (ML14084A573);
 - E. Letter dated June 2, 2014 (ML14153A211);
 - F. Letter dated January 29, 2016 (ML16034A535);
 - G. Letter dated February 10, 2016 (ML16042A253);
 - H. Letter dated April 6, 2016 (ML16098A179); and,
 - I. Letter dated April 7, 2016 (ML16099A077).

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date APR 20 2016

By


Colleen Carol Casey
Materials Licensing Branch
Region III