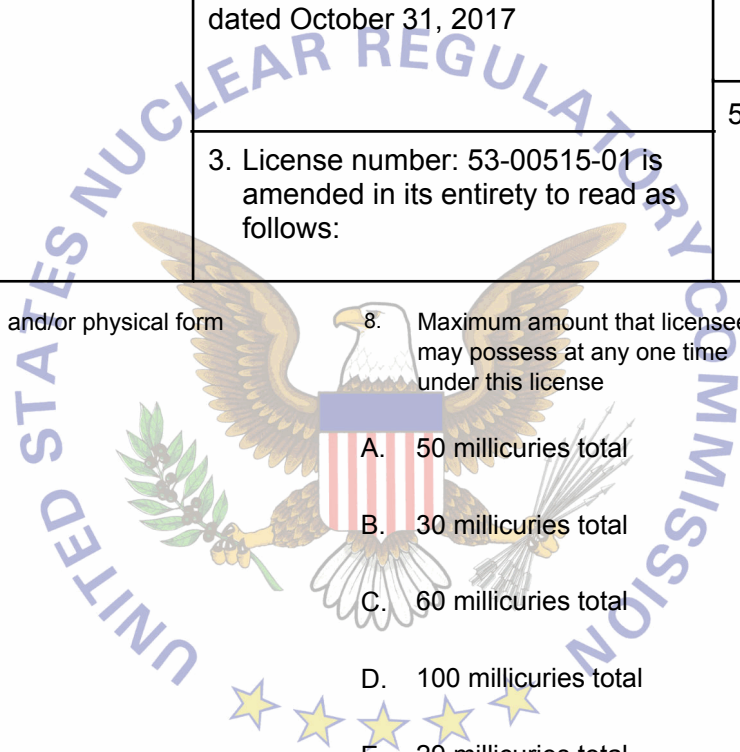


MATERIALS LICENSE

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, 70 and 71, 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.

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| <p>Licensee</p> <p>1. Hawaii Agriculture Research Center</p> | <p>In accordance with letter dated October 31, 2017</p> | <p>4. Expiration Date: October 31, 2017</p> |
| <p>2. P.O. Box 100 Kunia, HI 96759</p> | <p>3. License number: 53-00515-01 is amended in its entirety to read as follows:</p> | <p>5. Docket No.: 030-06839 Reference No.:</p> |



| 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 | 9. Authorized use |
|---|----------------------------------|--|--|
| A. Phosphorus-32 | A. Any | A. 50 millicuries total | A. For possession and storage only with intent to dispose. |
| B. Phosphorus-33 | B. Any | B. 30 millicuries total | B. For possession and storage only with intent to dispose. |
| C. Carbon-14 | C. Any | C. 60 millicuries total | C. For possession and storage only with intent to dispose. |
| D. Hydrogen-3 | D. Any | D. 100 millicuries total | D. For possession and storage only with intent to dispose. |
| E. Sulfur-35 | E. Any | E. 29 millicuries total | E. For possession and storage only with intent to dispose. |
| F. Chromium-51 | F. Any | F. 10 millicuries total | F. For possession and storage only with intent to dispose. |

CONDITIONS

**MATERIALS LICENSE
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Amendment No. 73

10. Licensed material may be used or stored at the licensee's facilities located at:
- A. HARC Kunia Substation, 94-340 Kunia Road, Waipahu, Hawaii (Island of Oahu); or
 - B. Kunia Substation, Kunia Road, West on H-1 Freeway to Kunio off ramp to Kunia Road; travel north approximately 0.3 miles; turn left onto the access road at traffic light; building about 250 yards down road on left, Kunia, Hawaii (Island of Oahu).
11. Licensed material shall only be stored by, or under the supervision of, individuals who have been trained as specified in application dated March 22, 2005, and who have been designated by the Radiation Safety Officer.
12. The Radiation Safety Officer (RSO) for this license is Ronald Frick.
13. A. Sealed sources need not be tested if they contain only hydrogen-3; or they contain only a radioactive gas; or the half-life of the isotope is 30 days or less; or they contain not more than 100 microcuries of beta- and/or gamma-emitting material or not more than 10 microcuries of alpha-emitting material.
- B. 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.
- C. The leak test shall be capable of detecting the presence of 185 becquerels (0.005 microcuries) of radioactive material on the test sample. If the test reveals the presence of 185 becquerels (0.005 microcuries) 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.
- D. Analysis of leak test samples and/or contamination shall be performed by persons specifically licensed by the U.S. Nuclear Regulatory Commission or an Agreement State to perform such services. The licensee is authorized to collect leak test samples but not perform the analysis.

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- E. Records of leak test results shall be kept in units of becquerels (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.
15. 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 ordinary trash, the 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, except for radiation labels on materials that are within containers and that will be managed as biomedical waste after they have been released from the licensee.
- B. A record of each such disposal permitted under this license condition shall be retained for 3 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.
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