

## MATERIALS LICENSE

Amendment No. 02

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, 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.

Licensee	
1. Radiation Safety Services	In accordance with letter dated September 30, 1985
2. 1564 Ashland Avenue Evanston, IL 60201-4070	3. License number 12-20424-01 is amended in its entirety to read as follows:
	4. Expiration date June 30, 1989
	5. Docket or Reference No. 030-18372
6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form
A. Any byproduct material	A. Leak test, environmental, or bioassay samples
B. Any special nuclear material	B. Leak test, environmental, or bioassay samples
C. See Item 9.C.	C. Sealed source in devices
D. Cesium-137	D. Sealed sources
E. Cesium-137	E. Sealed sources (Tech Ops Model 72602)
F. Cobalt-60	F. Sealed sources
G. Cesium-137	G. Sealed sources
H. Barium-133	H. Sealed sources
	8. Maximum amount that licensee may possess at any one time under this license
	A. See Item 9.A. below
	B. See Item 9.B. below
	C. See Item 9.C. below
	D. 2 sources not to exceed 3 curies each
	E. 2 sources not to exceed 100 millicuries each
	F. No single source to exceed 5 millicuries
	G. No single source to exceed 5 millicuries
	H. No single source to exceed 5 millicuries

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6. Byproduct, source, and/or special nuclear material
- I. Cesium-137
- J. Any byproduct material with Atomic Nos. 1-83, inclusive
- K. Any byproduct material
- L. Cobalt-60
- M. Cesium-137
- N. Iridium-192
7. Chemical and/or physical form
- I. Sealed source (Utilized in a calibrator manufactured by EON Corporation and distributed by Nuclear Associates, Inc.)
- J. Any
- K. Sealed sources (Evaluated and approved by the Commission or an Agreement State for licensing purposes)
- L. Sealed sources (Evaluated and approved by the Commission or an Agreement State for licensing purposes)
- M. Sealed sources (Evaluated and approved by the Commission or an Agreement State for licensing purposes)
- N. Sealed sources (Evaluated and approved by the Commission or an Agreement State for licensing purposes)
8. Maximum amount that licensee may possess at any one time under this license
- I. One source not to exceed 100 millicuries
- J. 10 millicuries of each radionuclide, except as listed below:
- Hydrogen-3 100 millicuries
- Total possession limit is 1 curie
- K. No single source to exceed 100 microcuries for beta and/or gamma emitting material, or 10 microcuries for alpha emitting material. Total possession limit is 10 millicuries
- L. One source not to exceed 100 curies
- M. One source not to exceed 100 curies
- N. One source not to exceed 100 curies

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6. Byproduct, source,  
and/or special nuclear  
material7. Chemical and/or  
physical form8. Maximum amount that  
licensee may possess  
at any one time  
under this license

O. Cobalt-60

O. Sealed sources  
(Evaluated and approved  
by the Commission or an  
Agreement State for  
licensing purposes)O. One source not  
to exceed 1 curie

P. Cesium-137

P. Sealed sources  
(Evaluated and approved  
by the Commission or an  
Agreement State for  
licensing purposes)P. One source not  
to exceed 1 curie

Q. Iridium-192

Q. Sealed sources  
(Evaluated and approved  
by the Commission or an  
Agreement State for  
licensing purposes)Q. One source not  
to exceed 1 curieR. Any byproduct material  
listed in Appendix C  
of 10 CFR Part 20, dated  
December 30, 1982

R. Analytical samples

R. Each radionuclide  
not to exceed the  
applicable quantity  
set forth in  
Appendix C of 10 CFR  
Part 20, dated  
December 30, 1982

## 9. Authorized Use

- A. and B. For possession incident to the performance of tests for leakage and/or contamination on customer sources and devices and the collection, transportation and analysis of the radioactive content in environmental or bioassay samples.
- C. For possession incident to the installation, relocation, shutter testing, testing of safety devices, and radiation surveys of fixed and portable gauges, gas chromatographs, and x-ray fluorescence analyzers that have been evaluated and approved by the Commission or an Agreement State for possession and use by specific or general licensees.
- D. To be used in a J.L. Shepherd, Series 78 calibrator for calibration of instruments for licensee and customers.
- E. To be used in a Technical Operations Model 726 calibrator for calibration of instruments for licensee and customers.
- F. through H. For calibration of instruments for licensee and customers.

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## 9. Authorized Use (cont'd)

- I. To be used in a gamma survey instrument calibrator Model No. 64-764 manufactured by the EON Corporation and distributed by Nuclear Associates, Inc.
- J. and K. Laboratory research to develop and test analytical techniques, including animal studies. Calibration of instruments for the licensee and customers.
- L. through N. For possession in exposure devices that have been evaluated and approved by the Commission or an Agreement State for use in industrial radiography incident to the calibration and testing of instruments as specified in letter dated September 30, 1985.
- O. thorough Q. For possession in gauges or sealed sources that have been evaluated and approved by the Commission or an Agreement State for licensing purposes incident to the calibration and testing of instruments as specified in letter dated September 30, 1985.
- R. For possession incident to the analysis of samples as specified in Item 9 of letter dated September 30, 1985.

CONDITIONS

10. A. Licensed material specified in Subitems 6.A. and 6.B., 6.D. through I. and 6.R. may be used at the licensee's facilities at 10 West 35th Street, Chicago, Illinois and at customers' sites as temporary job sites of the licensee anywhere in the United States where the U.S. Nuclear Regulatory Commission maintains jurisdiction for regulating the use of licensed material. Licensed material in Subitem 6.R. may also be used at temporary job sites of the licensee anywhere in the United States where the U.S. Nuclear Regulatory Commission maintains jurisdiction for regulating the use licensed material.
- B. Licensed material specified in Subitems 6.C. and 6.L. through Q. shall be used only at customers' sites as temporary job sites of the licensee anywhere in the United State where the U.S. Nuclear Regulatory Commission maintains jurisdiction for regulating the use of licensed material.
- C. Licensed material in Subitems 6.J. and 6.K. may be used at the licensee's facilities at 10 West 35th Street, Chicago, Illinois. Sealed sources in Subitem 6.K. may be used for instrument calibration at customers' sites as temporary job sites of the licensee anywhere in the United States where the U.S. Nuclear Regulatory Commission maintains jurisdiction for regulating the use of licensed material.
11. The licensee shall comply with the provisions of Title 10, Chapter 1, Code of Federal Regulations, Part 19, "Notices, Instructions and Reports to Workers; Inspections" and Part 20, "Standards for Protection Against Radiation."



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12. A. Licensed material in Subitems 6.A. through 6.K. and 6.O. through 6.Q. shall be used only by Eli A. Port, Cindy W. Bloom, or Terry W. Liaboe.
- B. Notwithstanding Condition 12.A., licensed material in Subitems 6.A., 6.B., and 6.K. may be used incident to the performance of leak tests and analysis of environmental or bioassay samples by, individuals who have completed the licensee's training program as specified in application dated August 22, 1983 and letters dated April 5, 1984 and May 10, 1985 and who have been designated by the licensee's radiation protection officer. The licensee shall maintain records of the individuals who have been designated as authorized users.
- C. Licensed material in Subitems 5.L. through 6.N. shall be used only by Eli A. Port provided he has satisfactorily completed the customer's training program for operating and emergency procedures prior to using the devices.
- D. Licensed material in Subitem 6.R. shall be used by, or under the supervision and in the physical presence of Eli A. Port, Cindy W. Bloom, or Terry W. Liaboe.
- E. The Radiation Protection Officer for the activities authorized by this license is Eli A. Port.
13. A. (1) Each sealed source or detector cell containing licensed material, other than Hydrogen 3, with a half-life greater than thirty days and in any form other than gas shall be tested for leakage and/or contamination at intervals not to exceed six months. In the absence of a certificate from a transferor indicating that a test has been made within six months prior to the transfer, a sealed source received from another person shall not be put into use until tested.
- (2) Notwithstanding the periodic leak test required by this condition, any licensed sealed source is exempt from such leak tests when the source contains 100 microcuries or less of beta and/or gamma emitting material or 10 microcuries or less of alpha emitting material.
- (3) The periodic leak test required by this condition does not apply to sealed sources or detector cells that are stored and not being used. The sources excepted from this test shall be tested for leakage prior to any use or transfer to another person unless they have been leak tested within six months prior to the date of use or transfer.
- B. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. The test sample shall be taken from the sealed source or from the surfaces of the device in which the sealed or foil source is permanently mounted or stored on which one might expect contamination to accumulate. Records of leak test results shall be kept in units of microcuries and maintained for inspection by the Commission.

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- C. If the test reveals the presence of 0.005 microcurie or more of removable contamination, the licensee shall immediately withdraw the sealed source from use and shall cause it to be decontaminated and repaired or to be disposed of in accordance with Commission regulations. A report shall be filed within five (5) days of the test with the U. S. Nuclear Regulatory Commission, Region III, 799 Roosevelt Road, Glen Ellyn, Illinois 60137, describing the equipment involved, the test results, and the corrective action taken.
- D. Tests for leakage and/or contamination shall be performed by the licensee or by other persons specifically authorized by the Commission or an Agreement State to perform such services.
14. Sealed sources or detector cells containing licensed material shall not be opened or sealed sources removed from their respective source holders by the licensee.
15. A. Detector cells containing titanium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents foil temperatures from exceeding 225 degrees Centigrade.
- B. Detector cells containing scandium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents foil temperatures from exceeding 325 degrees Centigrade.
16. In lieu of using the conventional radiation caution colors (magenta or purple on yellow background) as provided in Section 20.203(a)(1), Title 10, Code of Federal Regulations, Part 20, the licensee is hereby authorized to label detector cells and cell baths, containing licensed material and used in gas chromatography devices, with conspicuously etched or stamped radiation caution symbols without a color requirement.
17. The licensee shall not use licensed material in or on human beings or in field applications or in products distributed to the public where activity is released except as provided otherwise by specific condition of this license.
18. Experimental animals administered licensed materials or their products shall not be used for human consumption.
19. Pursuant to Title 10, Chapter 1, Code of Federal Regulations, Part 40, "Domestic Licensing of Source Material," the licensee is authorized to possess, use, transfer, and import up to 999 kilograms of uranium contained as shielding material in the radiography exposure devices and source changers authorized by this license.
20. Installation, relocation, removal from service, and initial radiation survey of devices containing licensed material shall be performed only by the licensee in accordance with application dated August 22, 1983 and letter dated April 5, 1984, by the device manufacturer, or by other persons specifically authorized by the Commission or an Agreement State to perform such services. Maintenance and repair of devices, and installation, replacement, and disposal of sealed sources containing licensed material used in devices shall be performed only by the device manufacturer or by other persons specifically authorized by the Commission or an Agreement State to perform such services.

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21. The licensee shall conduct a physical inventory every six (6) months to account for all devices and/or sealed sources received and possessed under the license. The records of the inventories shall be maintained for two (2) years from the date of the inventory for inspection by the Commission, and shall include the quantities and kinds of byproduct material, manufacturer's name and model numbers, location of devices and/or sealed sources and the date of the inventory.
22. The licensee may transport licensed material or deliver licensed material to a carrier for transport in accordance with the provisions of Title 10, Code of Federal Regulations, Part 71, "Packaging of Radioactive Material for Transport and Transportation of Radioactive Material Under Certain Conditions."
23. No generally licensed device shall be installed by the licensee in such a manner or in such a location that any person could receive more than 0.5 rem in a calendar year under ordinary circumstances of use.
24. After installation by the licensee of each device distributed to persons generally licensed pursuant to Section 31.5 of 10 CFR, Part 31, the licensee shall conduct a radiation survey and shall assure that the levels of radiation do not exceed those specified in the license authorizing the manufacture or distribution of the installed gauge. The licensee shall furnish the general licensee a copy of the radiation survey report.
25. A. The licensee shall notify NRC prior to if practicable, and in any case immediately after, taking any emergency action to relocate, possess, or receive any quantity of licensed material for purposes of safeguarding the material and/or the health and safety of the public. The licensee shall:
  1. Report by telephone to the Director of the appropriate NRC Regional Office listed in Appendix D of 10 CFR Part 20 immediately after it becomes known to the licensee that due to the presence of licensed material in such quantities and circumstances that a substantial hazard may exist to persons in unrestricted areas;
  2. Describe the proposed actions to be taken to take possession of the licensed material and to alleviate the substantial hazard;
  3. Provide the names of licensee personnel involved in the actions and their telephone numbers where they may be contacted; and
  4. Take only those actions which are concurred in by the Regional Director. The licensee shall comply with any instructions received from NRC, including a request to refrain from taking possession of radioactive material, or a request to surrender material to NRC.



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- B. Each report made pursuant to A above shall within thirty (30) days after the licensee has determined that a substantial public hazard existed be reported in writing to the appropriate NRC Regional Office, with a copy to the Director of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, setting forth the following information:
1. A description of the licensed material involved including the kind, quantities, chemical and physical form;
  2. A description of the circumstances under which the substantial public hazard occurred;
  3. A statement of the disposition or probable disposition of the licensed material; and
  4. A summary of the radiation exposures to individuals, the circumstances under which they occurred and the extent of the substantial hazard to persons in unrestricted areas.
26. Prior to use of licensed material in Subitem 6.R. at temporary job sites, the licensee shall:
- a. Perform, or verify the performance of, an analysis to ensure that the quantities of radioactive material in each analytical sample do not exceed those specified in Subitem 6.R. Records of this analysis shall be maintained for review by the Commission.
  - b. Obtain written permission from the owner of the temporary job site facility where the analysis will be performed. The licensee shall maintain copies of the written permission for review by the Commission.
27. The licensee shall maintain records of all use of licensed material at temporary job sites for review by the Commission at 10 West 35th Street, Chicago, Illinois.
28. Except as specifically provided otherwise by this license, the licensee shall possess and use licensed material described in Items 6, 7, and 8 of this license in accordance with statements, representations, and procedures contained in application dated August 22, 1983; and letters dated April 5, 1984, May 10, 1985, June 10, 1985 and September 30, 1985. The Nuclear Regulatory Commission's regulations shall govern the licensee's statements in applications or letters, unless the statements are more restrictive than the regulations.

For the U.S. Nuclear Regulatory Commission

Original Signed  
By Bruce S. Mallett  
Materials Licensing Section, Region III

Date \_\_\_\_\_

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