Illinois Emergency Management Agency
and Office of Homeland Security

Instructional Set 64.0 Rev. 1, Dec. 2024

Instructions for Preparing Applications
for Radioactive Material Licenses Authorizing the

USE OF SEALED SOURCES IN FIXED GAUGES

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Introduction

The U.S. Nuclear Regulatory Commission's (NRC) NUREG-1556 technical report series (https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1556/index.html) provides a comprehensive source of information about various aspects of materials licensing and materials program implementation. These reports, where applicable, describe a risk-informed, performance-based approach to licensing consistent with the current regulations. The reports are intended, in part, to provide guidance to applicants and licensees in the application, renewal and amendment of a radioactive materials license.

NUREG-1556 Volume 4, Rev. 1. provides applicants and licensees guidance on fixed gauge radioactive materials licenses.

Purpose of these Instructions

These instructions are meant to supplement the applicable NUREG-1556 guidance. The Chapters and Items are presented in identical order to those presented in the NUREG-1556 guidance. Where necessary, this document provides additional instruction on requirements that are specific to Illinois (e.g., mailing address, Illinois forms, and key policy/regulatory differences).

NOTE: Where not otherwise provided in this instructional set, applicants utilizing the NUREG 1556 guidance must make appropriate reference to IEMA-OHS and State of Illinois regulations rather than NRC and federal regulations in 10 CFR.

NUREG 1556, Vol. 4 Chapter 1 – Purpose of Report

Rather than NRC Form 313, applicants shall utilize the "*Application Form for a Fixed Gauge Radioactive Material License*" in accordance with 32 Ill. Adm. Code 330.240(a). The Illinois application numbering and format aligns with Chapter 8, "Contents of an Application" of the NUREG guidance but also solicits commitments and documents required for review by IEMA-OHS. All other information presented in the NUREG guidance remains applicable and may be utilized by applicants.

NUREG 1556, Vol. 4 Chapter 2 – Agreement States

NRC or Agreement State licensees seeking reciprocity within the State of Illinois may review the IEMA-OHS website for "*Reciprocity Frequently Asked Questions*" and should submit requests using the "*Illinois Reciprocity Notification Form*". Both are available on the Agency website: Information for Specific Licensees (illinois.gov) All other information presented in Chapter 2 of the NUREG guidance remains applicable and may be utilized by applicants.

NUREG 1556, Vol. 4 Chapter 3 – Management Responsibility

Refer to NUREG-1556 Vol. 4, Rev. 1.

NUREG 1556, Vol. 4 Chapter 4 – Applicable Regulations

- 32 Ill. Adm. Code 310 "General Provisions for Radiation Protection"
- 32 Ill. Adm. Code 326 "Financial Assurance Requirements"
- 32 Ill. Adm. Code 330 "Licensing of Radioactive Material"
- 32 Ill. Adm. Code 331 "Fees for Radioactive Material Licenses"
- 32 Ill. Adm. Code 337 “Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material”
- 32 Ill. Adm. Code 340" Standards for Protection Against Radiation"
- 32 Ill. Adm. Code 341" Radioactive Materials Transportation"
- 32 Ill. Adm. Code 400" Notices, Instruction and Reports to Workers; Inspections"

NUREG 1556, Vol. 4 Chapter 5 – How to File

Applicants wishing to possess or use licensed radioactive material for fixed gauge use should do the following:

- Use these instructions, the U.S. NRC’s NUREG–1556, Volume 4, Revision 1, ‘Consolidated Guidance About Materials. Licenses: Program-Specific Guidance About Fixed Gauge Licenses.’, and current State of Illinois regulations to prepare the application.
- Complete "Application Form for a Fixed Gauge Radioactive Material License,” in accordance with 32 Ill. Adm. Code 330.240(a).
- Each item on the application should provide sufficient detail for the Agency to determine that equipment, facilities, training, experience, and the radiation protection program are adequate to protect the health, safety, and minimize danger to life and property.
- Each appended sheet submitted with the application should be identified with the item number, page number, applicant’s name, and application date in the lower right corner to which it refers.
- Avoid submitting proprietary information and personally identifiable information (PII). PII examples include personal home address, home telephone number, social security number, date of birth, and radiation dose information and should not be submitted unless specifically requested by the Agency. If submitted, proprietary information and other sensitive information (e.g., personal privacy and security related) should be clearly identified as such by visibly marking, “Public inspections, exemptions, requests for withholding.” Copies of security plans or other documents required under 32 Ill. Adm. Code Part 337 should not be submitted as a component of the application. Public inspection of applications and other documents submitted to the Agency pursuant to 32 Ill. Adm. Code 330.240, shall be handled in accordance with 2 Ill. Adm. Code 1800 and the requirements of the Freedom of Information Act (5 ILCS 140). As such, all license applications may be available for review by the general public.

Where to file:

Paper applications received by IEMA-OHS will be scanned and converted to an electronic format. To ensure a timely transfer to the electronic format, applicants should do the following:

- Ensure print is clear and sharp,
- Ensure each page of the copy is legible, and
- Each application and each request for amendment is signed (physical or verifiable electronic) by the applicant, licensee, or a person duly authorized in writing to act for and on the licensee or applicant's behalf.

Paper copies need not be submitted in duplicate, but the licensee is responsible for maintaining a copy of all applications and correspondence related to the license. The original may be mailed to:

Illinois Emergency Management Agency and Office Homeland Security
Radioactive Materials Licensing
1035 Outer Park Drive
Springfield, Illinois 62704

The Agency will accept applications and requests for amendments electronically. These submittals may be directed to ema.speclic@illinois.gov.

NUREG 1556, Vol. 4 Chapter 6 – Identifying and Protecting Sensitive Information

Refer to NUREG-1556 Vol. 4, Rev. 1.

NUREG 1556, Vol. 4 Chapter 7 – Application and License Fees

Each application for which a fee is specified will be invoiced after initial processing at IEMA-OHS. Please do not submit your fee payment with the application. New applicants will be billed a pro-rated fee for the portion of the billing year remaining from the date the application is received. By regulation, the billing year means the period of time from October 1 of one year to September 30 of the following year. Refer to 32 Ill. Adm. Code 331, Appendix F, "Fee Schedule for Radioactive Materials Licensees" to determine the amount of the fee. Consult 32 Ill. Adm. Code 331.120 on payment of fees, remote site costs, recovery and remediation assessments and details pertaining to full cost recovery. In accordance with this part, the annual and remote site fees listed in Appendix F are nonrefundable and are assessed based on a 12-month period. Consult 32 Ill. Adm. Code 331.110, "Exemptions," for information on exemptions from these fees.

NOTE: Application fees will be charged regardless of IEMA-OHS's disposition of an application or the withdrawal of an application.

Direct all questions about IEMA-OHS's fees or completion of the "License Fees" item of the application form to the Manager of Radioactive Materials Licensing, 217-785-9947. The e-mail address is ema.speclic@illinois.gov

NUREG 1556, Vol. 4 Chapter 8 - Contents of an Application

In addition to the information specified NUREG 1556 Vol. 4, Rev. 1, applicants are provided the following instruction to address each item of the application.

Chapter 8.1 (Item 1 of the Application) – License Action Type.

Refer to NUREG 1556 Vol. 4, Rev. 1

Chapter 8.2 (Item 2 of the Application) – Name and Mailing Address of Applicant.

In order to validate the legal entity, the applicant or licensee may provide documentation of current registration with the Illinois Secretary of State to conduct business within Illinois, or a similar registration in another state. An individual may be designated as the applicant only if the individual is acting in the private capacity and the use of the radioactive material is not connected with employment in a corporation or other legal entity. Each applicant must submit their federal tax identification number (FEIN). Applicants that are individuals must provide their social security number.

Chapter 8.3 (Item 3 of the Application) – Address(es) Where Licensed Material Will Be Used or Possessed.

Refer to NUREG 1556 Vol. 4, Rev. 1.

NOTE: Illinois law [420 ILCS 40/10(11)] requires IEMA-OHS to notify a local government of each listed location of storage or use of radioactive material. This allows local officials, fire and police the opportunity to review local ordinances and prepare for emergencies. An IEMA-OHS license does not relieve a licensee from complying with other applicable Federal, State, or local regulations (e.g., local zoning requirements).

For each location to be listed on the license as an authorized use location, applicants must indicate ownership of the facility by checking the appropriate box. If the applicant does not own the facility, the applicant must attach other statements or documents to indicate the owner of the facility is aware of radioactive material use at the facility, as required by 32 Ill. Adm. Code 330.240(a)(9).

Chapter 8.4 (Item 4 of the Application) – Person to Be Contacted About this Application.

The Agency may seek additional information on an individual's background to ensure that radioactive materials will be used as intended. In order to expedite the review process, the applicant or licensee may wish to submit the "Release and Authorization Full Due Diligence Investigation" form with the application. A fillable form is available on the Agency's website.

Chapter 8.5 (Item 5 of the Application) – Radioactive Material.

The IEMA-OHS regulations regarding thresholds for Financial Assurance differ from those detailed in Chapter 8.5.2. Applicants should refer to 32 Ill. Adm. Code Part 326 to determine requirements for financial assurance and make appropriate notations on the application. Should the licensee possess activities requiring financial assurance, the applicant should reference the "Guidance Document on Financial Assurance" which is available on the Agency's website.

Chapter 8.6 (Item 6 of the Application) – Purpose(s) for Which Licensed Material Will be Used.

Refer to NUREG 1556 Vol. 4, Rev. 1.

NOTE: Applicants should review the applicable Sealed Source and Device (SSD) Registry certificate for each device listed. Proposed uses and maintenance activities not specifically authorized by the manufacturer will require Agency review and authorization on a case-by-case basis. SSD Registry certificates can be obtained from the device manufacturer or distributor. Alternatively, if the manufacturer and/or distributor are no longer in service, a copy of the SSD registration certificate may be requested from the U.S. NRC or the issuing Agreement State.

Chapter 8.7 (Items 7.1 and 7.2 of the Application) – Individual(s) Responsible for Radiation Safety Program and Their Training and Experience.

Radiation Safety Officer. In addition to the information requested in Chapter 8.7.1, indicate if the RSO will be a full-time employee of the licensed facility. IEMA-OHS has authorized individuals who are not directly employed by the licensee, such as consultants, to fulfill the role of RSO or to provide support to the facility RSO. However, the Agency generally does not recommend utilizing off-site personnel and consultants in the position of RSO unless there is a significant lack of experience amongst on-site staff that could otherwise assume RSO duties. To fulfill the duties and responsibilities, an on-site RSO is more suitable to address incidents, emergencies, and to accommodate unannounced inspections.

In addition to providing the supporting documentation detailed in Chapter 8.7, applicants should:

1. Include a description of the position/relationship of the RSO, if not a full-time employee; and
2. List the duties and responsibilities of the proposed RSO. A template list of RSO duties is available in Appendix C of these instructions or applicants may submit an alternative list of RSO duties and responsibilities for Agency review.
3. Attach a Delegation of Authority Statement signed by both management and the RSO. A model delegation of authority is available in Appendix C of these instructions.

4. Indicate if RSO duties will be delegated to other responsible individuals by checking the appropriate box. If duties will be delegated, a condition authorizing this will be included in the license document.

Authorized Users (AU). In addition to responses requested in Chapter 8.7.2 applicants should name at least one authorized user and attach evidence of their training and experience. The content of a manufacturer's training course is not typically required for submission with the application. However, if evidence of authorized user training and experience doesn't appear to satisfy the criteria detailed in the section titled, 'Authorized Users' in NUREG–1556, Volume 4, Revision 1, the Agency may seek additional information in order to evaluate the course against Appendix D of the NUREG.

NOTE: Agency is aligning training hours and course content to be compatible with those of the U.S. NRC. Existing licensees may need to request an amendment or revision during renewal to be relieved of previous training commitments.

The IEMA-OHS application also consolidates three additional training requirements including 'non-routine maintenance', U.S. Department of Transportation (DOT) Hazardous Materials, and Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material training. Check all that apply and attach evidence of 'non-routine maintenance' and HAZMAT training, if applicable. These additional training requirements may be applicable to both the RSO and AUs. Similar to authorized user training, the training course for 'non-routine maintenance' may be evaluated against the guidance in this Chapter as well as Appendix J of NUREG 1556, Vol. 4, Rev. 1.

Chapter 8.8 (Item 8 of the Application) – Training for Individuals Working in or Frequenting Restricted Areas.

Contrary to 10 CFR 19.12 which limits required annual training to individuals who in the course of employment are likely to receive occupational doses of radiation in excess of 1 millisievert (mSv) [100 millirem (mrem)] in a year, 32 Ill. Adm. Code 400.120, requires radiation safety training for all individuals working in, or the performance of whose duties requires access to, any portion of a restricted area or who frequent areas where radioactive material is used or stored (i.e., 'areas of use'). Therefore, radiation safety training is required for workers in all 'areas of use', regardless of 'restricted' or 'unrestricted' status. The terms "worker" and "restricted area" are defined in 32 Ill. Adm. Code 310.20. This means all individuals working with or around licensed materials, not just authorized gauge users, should receive safety instructions commensurate with their assigned duties and as specified by 32 Ill. Adm. Code 400.120.

For ancillary staff or those with no direct duties involving radioactive material, the duration of this training may be only 1-2 hours in length. Providing minimal instruction to ancillary staff (e.g., general laborers, sanitary professionals, security) may assist in controlling abnormal events, such as loss of radioactive material. In addition, licensees should ensure

that contractor staff receive safety instructions. The radiation safety training must be provided initially before the individuals perform assigned duties and refresher training conducted at intervals not to exceed 12 months.

Recurrent, annual instruction for authorized users should be commensurate with their duties and include the content applicable to the use of radioactive devices as detailed in Item 7 of the application.

No response is required from the applicant as part of the license application. The applicant's training program will be examined during inspections. Records of worker training must be maintained for 5 years as part of the radiation protection program in accordance with 32 Ill. Adm. Code Part 340.1120.

Chapter 8.9 (Item 9 of the Application) – Facilities and Equipment.

In addition to the information requested in Chapter 8.9, applicants must submit facility diagrams which identify the floor and the room or rooms of all areas where licensed radioactive material is received, prepared, used, and stored (e.g., closets, rooms, areas within the facility, etc.). To allow the Agency to determine that the proposed equipment and facilities are adequate in accordance with 32 Ill. Adm. Code 330.250(a)(2), descriptions and drawings should be submitted and specify, where applicable:

- The scale and direction of North.
- Adjacent buildings, facility boundary lines, and security fences.
- Adjacent area(s) (e.g., aside, above, below) radioactive material storage/use rooms or areas.
- Specify the distances of the nearest routinely occupied workstation(s) to each storage/use area. This information will be used to assess public dose as a result of use and storage.
- For storage areas where fixed gauges are not permanently fixed, indicate all lockable doors, cabinets, lockers, and storage containers.
- Area(s) where explosive, flammable, or other hazardous materials may be stored.
- Drawings and diagrams that provide the exact location of materials or depict specific locations of safety or security equipment should be marked as "Security-Related Information." Refer to Chapter 6 of NUREG 1556 Vol. 4, Rev. 1, "Identifying and Protecting Sensitive Information."

Chapter 8.10 – Radiation Safety Program

Chapter 8.10.1 (Item 10.1 of the Application) – Audit Program.

Appendix E of these instructions includes an Illinois-specific audit which may be utilized by the applicant. The applicant may elect to utilize Appendix E or develop their own program audit. Audits need not be submitted with the application and are evaluated during inspection. Otherwise, refer to NUREG 1556 Vol. 4, Rev. 1.

Chapter 8.10.2 (Item 10.2 of the Application) – Radiation Monitoring Instruments.

Refer to NUREG 1556 Vol. 4, Rev. 1

Chapter 8.10.3 (Item 10.3 of the Application) – Material Receipt and Accountability.

Refer to NUREG 1556 Vol. 4, Rev. 1

NOTE: 32 Ill. Adm. Code 340.810(c) requires physical inventories to be performed at intervals not to exceed 6 months and does not have a provision for alternate frequencies.

Chapter 8.10.4 (Item 10.4 of the Application) – Occupational Dose.

If after review of Chapter 8.10.4, the applicant has determined monitoring of occupational exposures is unnecessary; applicants must submit supporting documentation demonstrating that unmonitored individuals are not likely to receive a radiation dose in excess of the limits in 32 Ill. Adm. Code 340.520(a). Applicants may use the methods detailed in Part 1of Appendix G of NUREG 1556 Vol. 4, Rev. 1 or submit alternative calculations, measurements or a combination thereof, to demonstrate that workers are not likely to exceed the limits and thus are not required to have personnel dosimetry.

Chapter 8.10.5 (Item 10.5 of the Application) – Public Dose.

Applicants must submit documentation demonstrating members of the public will not receive more than 1 millisievert (1 mSv) [100 millirem (100 mrem)] in one year, and the dose in any unrestricted area will not exceed 0.02 mSv (2 mrem) in any one hour. Applicants may use the methods detailed in Part 2 of Appendix G of NUREG 1556 Vol. 4, Rev. 1 or submit alternative calculations, measurements or a combination thereof for Agency evaluation.

Chapter 8.10.6 (Item 10.6 of the Application) – Operating, Emergency, and Security Procedures.

Applicants should use the guidance in Chapter 8.10.6 to develop operating, emergency and security procedures. However, applicant procedures must be made to ensure timely notification and written report submittal to IEMA-OHS rather than the NRC. Appendix L of this instructional set provides a list of required notifications and reports relevant to licensed fixed gauge activities to aid in developing suitable notification procedures.

If the fixed gauge(s) meet one or more of the safety conditions specified in the 'Discussion' Section of Chapter 8.10.6 in NUREG–1556, Volume 4, Revision 1 and will not be used at temporary jobsites, submission of these procedures to IEMA-OHS at the time of application is unnecessary. Instead, the applicant should provide the required statement. IEMA-OHS staff will review these procedures during inspection.

However, applicants must submit procedures for Agency evaluation if they:

- Determine the fixed gauges do not comply with the safety conditions specified in the 'Discussion' Section of 8.10.6 in NUREG 1556 Vol. 4, Rev. 1;

- Intend to use fixed gauges at temporary jobsites; or
- Elect to construct procedures that differ from those described in Chapter 8.10.6.

Operating, emergency, security, and lock-out (if applicable) procedures will be reviewed against the criteria in Chapter 8.10.6 and the Sealed Source and Device Registry certificate.

The IEMA-OHS application also consolidates procedural requirements for 'non-routine' maintenance from Chapter 8.10.8 of the NUREG. Procedures for 'non-routine maintenance' will be evaluated based on the guidance in this chapter, the Sealed Source and Device Registry certificate and Appendix J of NUREG 1556, Vol. 4, Rev. 1 on a case-by-case basis.

Chapter 8.10.7 (Item 10.7 of the Application) – Leak Tests.

Refer to NUREG 1556 Vol. 4, Rev. 1

Chapter 8.10.8 (Item 10.8 of the Application) – Maintenance.

Refer to NUREG 1556 Vol. 4, Rev. 1

NOTE: Applicants seeking authorization to perform non-routine maintenance, as described in Chapter 8.10.8, must submit the specialized procedures and additional training described in Appendix J of NUREG 1556, Vol. 4, Rev. 1.

Chapter 8.10.9 (Item 10.9 of the Application) – Transportation.

Refer to NUREG 1556 Vol. 4, Rev. 1.

NOTE: Item 7 of the application prompts applicants to incorporate DOT HAZMAT into their training program if they anticipate the RSO or authorized users (AU) performing "HAZMAT functions". Depending on the applicant's operations, the requirement for DOT training may not be limited to the RSO and AU(s). Specifically, in accordance with 49 CFR Part 172.702(b), and except as provided in 49 CFR 172.704(c)(1), an employee may not perform any HAZMAT function unless instructed in the requirements of 49 CFR Subchapter C that apply to that function. 'HAZMAT functions', or more formally, the duties that would require hazardous material training, are detailed in 49 CFR Part 171.1(b).

Item 8.10.10 (Item 10.10 of the Application) – Fixed Gauges at Temporary Job Sites.

Refer to NUREG 1556 Vol. 4, Rev. 1

NOTE: Contrary to the statement in the NUREG, applicants requesting authorization to use fixed gauges at temporary jobsites must submit their operating, emergency, security, and (if applicable) lock-out procedures for the Agency's review. These procedures will be evaluated against the information and criteria in Chapters 8.10.6 and 8.10.10 of NUREG–1556, Volume 4, Revision 1.

Item 8.10.11 (Item 10.11 of the Application) – Security Program for Category 1 and 2 Radioactive Material.

Refer to NUREG 1556 Vol. 4, Rev. 1

Chapter 8.11 (Item 11 of the Application) – Waste Management.

Refer to NUREG 1556 Vol. 4, Rev. 1

Chapter 8.12 (Item 12 of the Application) – License Fees.

Contrary to Chapter 8.12, do not send fee payment with the application. Refer to 32 Ill. Adm. Code 331 and the appropriate fee schedule to review the applicable fees. You will receive a billing statement from the Agency regarding payment of fees. Note that for new applications however, that although a billing statement will be mailed to new applicants allowing a certain time period to remit the payment, the license will not be issued until the fee for the new application has been paid. Therefore, prompt payment upon billing may avoid unnecessary delay in issuing a license. Questions concerning fees should be directed to the Agency's Division of Fiscal Management. The regulations also include a requirement for payment of an annual recovery/remediation fee for use in cases where such costs for decontamination/disposal cannot be recovered from the responsible parties or available financial assurance documents. Indicate if the applicant or licensee is a subdivision of a State, County or Municipality or is an education institution as defined in 32 Ill. Adm. Code 331.110(c).

NOTE: The annual and remote site fees listed in Appendix F to Part 331 are nonrefundable and are assessed on a 12-month period.

Chapter 8.13 (Item 13 of the Application) – Certification.

In addition to the guidance provided in Chapter 8.13, note that an individual may only be designated as the applicant if the individual is acting in the private capacity and the use of the radioactive material is not connected with employment in a corporation or other legal entity. Each applicant must submit their federal tax identification number (FEIN). Applicants that are individuals must provide their social security number.

NUREG 1556, Vol. 4 Chapter 9 – License Amendments and Renewals.

Refer to NUREG 1556 Vol. 4, Rev. 1.

NUREG 1556, Vol. 4 Chapter 10 – Applications for Exemptions.

Refer to NUREG 1556 Vol. 4, Rev. 1

NUREG 1556, Vol. 4 Chapter 11 – Termination of Activities.

IEMA-OHS termination requirements are analogous to those detailed in NUREG 1556 Vol. 4, Rev. 1. Refer to 32 Ill. Adm. Code 330.325 and provide the following supporting documentation:

- In lieu of NRC Form 314, certify the disposition/transfer of licensed materials by submission of IEMA-OHS Form KLM.007, "Certificate – Termination and Disposition of Radioactive Material," (available on the IEMA-OHS website); and
- Conduct necessary decommissioning and perform radiation monitoring or the equivalent in accordance with 32 Ill. Adm. Code 330.325(b)(1)(F). Submit copies of the latest leak test results for each sealed source possessed under the license. For sources designed to emit beta/gamma radiation the leak test results shall be within the previous six months, or at intervals approved in a SSD registry certificate, and for sources designed to emit alpha radiation the leak test results shall be within the previous three months.
- Submit a record documenting that a licensee noted on KLM.007 received each source or radioactive material transferred.
- If applicable, submit for Agency approval a plan for reclaiming the facility, including decontamination and removal of residual contamination. See additional requirements for detectable levels or residual radioactive contamination in 32 Ill. Adm. Code 330.325(b)(3).
- Identify where records will be retained that are required under 32 Ill. Adm. Code 340.1140 or transfer to the Agency as necessary.
- Pay any outstanding fee or civil penalty owed to IEMA-OHS.

APPENDICES

APPENDIX A – "U.S. Nuclear Regulatory Commission Form 313"

In lieu of NRC Form 313, applicants shall use the "*Application Form for a Fixed Gauge Radioactive Material License*," in accordance with 32 Ill. Adm. Code 330.240(a).

APPENDIX B – "Suggested Format for Providing Information Requested in Items 5 Through 11 Of U.S. Nuclear Regulatory Commission Form 313"

Except as otherwise noted in this instructional set, applicants may utilize the guidance and format of information in this appendix to complete the IEMA-OHS "*Application Form for a Fixed Gauge Radioactive Material License.*"

APPENDIX C – "Typical Duties and Responsibilities of the Radiation Safety Officer"

Appendix C of this Instructional Set contains a set of RSO duties that contain appropriate IEMA-OHS regulatory references. Appendix C also provides a model delegation of duties form.

APPENDIX D – "Criteria for Acceptable Training for Authorized Users and Radiation Safety Officers"

Applicants may commit to Appendix D of NUREG-1556 Vol. 4, Rev. 1 or submit alternate training content for Agency evaluation. Refer to Chapter 8.7 for additional training requirements that may apply.

APPENDIX E – "Fixed Guage Audit Checklist"

Appendix E of this Instructional Set contains an audit checklist that has been tailored to IEMA-OHS regulations.

APPENDIX F – "Model Radiation Survey Instrument Calibration Program"

Applicants may commit to Appendix F of NUREG-1556 Vol. 4, Rev. 1 provided the following accompanying statement is present, "In addition to the other provisions of the Appendix, the frequency of calibration of radiation measurement instruments and equipment shall be in accordance with 32 Ill. Adm. Code 340.510(b)." Applicants may also submit alternate procedures for Agency evaluation.

APPENDIX G – "Dosimetry-Related Guidance"

Applicants may utilize the guidance and calculation methods in this appendix to complete the IEMA-OHS "*Application Form for a Fixed Gauge Radioactive Material License*."

APPENDIX H – "Operating, Emergency, and Security Procedures"

Applicants and licensees may utilize the guidance in Appendix H of NUREG-1556 Vol. 4, Rev. 1 to prepare and submit Operating, Emergency and Security Procedures for Agency review. However, the following regulatory and Agency references shall be updated:

- Regarding operating procedures, "Require timely reporting to *IEMA-OHS* pursuant to *32 Ill. Adm. Code 340, Subpart M*."
- Where reference is made to notification to NRC, such notification shall be made to the IEMA-OHS 24-Hour Operations Center at 217-782-7860.
- Regarding security procedures, "Address guidelines to meet the security and control requirements of *32 Ill. Adm. Code 340.810*, and any other applicable security and control requirements."
- Licensees are strongly encouraged to develop operating, emergency and security procedures that are reflective of the actual uses and emergency conditions that may be present at their authorized use location(s).

APPENDIX I – "Model Leak Test Program"

Applicants may commit to Appendix I of NUREG-1556 Vol. 4, Rev. 1 or submit alternate procedures for Agency evaluation.

APPENDIX J – "Information Needed to Support Applicant's Request to Perform Non-routine Operations"

Applicants seeking authorization to perform 'non-routine' maintenance should utilize the guidance in Appendix J to develop and submit procedures for Agency evaluation.

APPENDIX K – "U.S. Department of Transportation Regulations"

U.S. Dept. of Transportation regulations are adopted by reference in 32 Ill. Adm. Code Part 341. Applicants and licensees may utilize the guidance in Appendix K of NUREG-1556 Vol. 4, Rev. 1 without further modification.

APPENDIX L – "Incident Notifications and Reporting"

Appendix L of this Instructional Set provides an Illinois-specific document for IEMA-OHS incident notification and reporting requirements. Applicants should utilize this document as it contains appropriate regulatory references and Agency contact information.

APPENDIX M – "Safety Culture Policy Statement"

Applicants and licensees may utilize Appendix M of NUREG-1556 Vol. 4, Rev. 1 without additional modification.

APPENDIX N – "Checklist for Requests to Withhold Proprietary Information from Public Disclosure (Under 10 CFR 2.390)"

IEMA-OHS regulations do not provide for an equivalent petition to withhold proprietary information. Applicants and licensees should clearly mark all proprietary, security-sensitive and personally-identifiable information to prevent inadvertent public disclosure.

Appendix C

Duties and Responsibilities of the Radiation Safety Officer

Among the specific duties and responsibilities of the RSO are the following:

1. Stop activities involving licensed material that the RSO considers unsafe.
2. Possession, installation, relocation, use, storage, routine maintenance, and non-routine operations of fixed gauges are consistent with the limitations in the license, the Sealed Source and Device Registration certificates(s), and the manufacturer's recommendations and instructions.
3. Assure that only individuals properly trained and authorized by the license use fixed gauges.
4. Radiation exposures are kept as low as is reasonably achievable (ALARA).
5. Assure that radioactive material possessed by the licensee conforms to the material authorized by the license.
6. Instruct personnel in proper radiation protection practices and maintain training records.
7. Documentation is maintained to demonstrate, by measurement or calculation, that the total effective dose equivalent (TEDE) to the individual member of the public likely to receive the highest dose from the licensed operation does not exceed the annual limit in Part 340.310.
8. Assure that personnel monitoring devices are used where indicated, exchanged at required intervals and that records are maintained of the results of such monitoring.
9. Up-to-date operating, emergency and security procedures are developed, implemented, maintained, and distributed.
10. For applicants who perform their own maintenance, repair or analysis of test samples for leakage and/or contamination (leak/wipe tests), conduct radiation monitoring where indicated and keep records of such monitoring, including summaries of corrective measures recommended and/or instituted.
11. Ensure non-routine operations are performed by the manufacturer, distributor, or person specifically authorized by IEMA-OHS, the NRC or an Agreement State.
12. Ensure safety consequences of non-routine operations are analyzed before conducting any such activities that have not been previously analyzed.
13. Assure that fixed gauges are properly secured against unauthorized removal at all times when they are not in use, including storage at temporary job sites.
14. Investigate each known or suspected case of excessive or abnormal exposure to determine the cause and take steps to prevent its recurrence.
15. Assure that the proper authorities (i.e., IEMA-OHS, local police, U.S. Department of Transportation, etc.) are notified promptly in case of accident, damage, theft or loss of a fixed gauge.

16. Unusual occurrences involving the device (e.g., malfunctions, accident, damage, theft, etc.) are investigated, cause(s) and appropriate corrective action are identified, and corrective action is taken.

17. Be immediately available to serve as a point of contact with the Agency and give assistance in case of emergency (e.g., fixed gauge damage, fire, theft, etc.).

18. Assure that the Radiation Protection Program is implemented and reviews are performed in accordance with the regulations. When the licensee identifies violation(s) of regulations or license conditions or program weaknesses, corrective action(s) are developed, implemented and documented.

19. Audits are performed at least annually and documented, and corrective actions are taken.

20. Assure that the terms and conditions of the license (e.g., periodic leak/wipe tests, inventories, etc.) are met and that the required records (e.g., personnel exposure, leak/wipe test, accountability, inventory, etc.) are maintained and periodically reviewed for compliance with IEMA-OHS regulations and license conditions.

21. Assure that the fixed gauges are transported in compliance with all applicable IEMA-OHS and U.S. Department of Transportation regulations (e.g., labeling, marking, shipping papers, container blocking and bracing, etc.).

22. An up-to-date license is maintained and amendment and renewal requests are submitted in a timely manner.

23. Ensure all licensed radioactive material is properly transferred and disposed and the appropriate records are maintained.

24. Documents are posted as required by 32 Ill. Adm. Code 400.110: regulations, license and associated documents, operating procedures and notice of violation or order or posting a notice indicating where these documents can be examined. Licensees are also required to post Agency form KLA.001, “Notice to Employees”.

25. If the licensee possesses an aggregated Category 1 or Category 2 quantity of radioactive material, support development and implementation of a security program for radioactive material in accordance with 32 Ill. Adm. Code 337.

Model Delegation of Authority to Radiation Safety Officer

Memo To: Radiation Safety Officer

From: Chief Executive Officer

Subject: Delegation of Authority

You, _____, have been appointed radiation safety officer and are responsible for ensuring the safe use of radiation. You are responsible for managing the Radiation Protection Program; identifying radiation protection problems; initiating, recommending, or providing corrective actions; verifying implementation of corrective actions; stopping unsafe activities; and ensuring compliance with regulations. You are hereby delegated the authority necessary to meet those responsibilities, including prohibiting the use of radioactive material by employees who do not meet the necessary requirements and shutting down operations, when justified, to maintain radiation safety. You are required to notify management if staff does not cooperate and does not address radiation safety issues. In addition, you are free to raise issues with the Illinois Emergency Management Agency and Office of Homeland Security at any time. It is estimated that you will spend _____ hours per week conducting radiation protection activities.

I accept the above responsibilities,

_____ _____

Signature of Radiation Safety Officer Date

RSO Printed Name _____

RSO Email _____

RSO Work Address _____

RSO Phone and/or Mobile Number _____

_____ _____

Signature of Management Representative Date

cc: Affected department heads

Appendix E

Fixed Gauge Audit Checklist

NOTE: All areas indicated in audit notes may not be applicable to every license and may not need to be addressed during each audit. For example, licensees do not need to address areas that do not apply to their activities, and activities that have not occurred since the last audit need not be reviewed during the next audit.

Licensee's Name: _____ License No. _____

Date of This Audit: _____ Date of Last Audit: _____

Auditor Signature _____ Printed Name: _____

RSO Signature: _____ Date: _____

1. AUDIT HISTORY

a. Were previous audits conducted at least annually? [32 Ill. Adm. Code 340.110(c)]

b. Were records of previous audits maintained for five years? [32 Ill. Adm. Code 340.1120(a)(2)]

c. Were any deficiencies identified during the last two audits or 2 years, whichever is longer?

d. Were corrective actions taken? (Look for repeated deficiencies)

2. ORGANIZATION AND SCOPE OF PROGRAM

a. If the mailing address, places of use or designated contacts changed; was the license amended? [32 Ill. Adm. Code 330.340(b)]

b. If ownership changed or bankruptcy was filed, did the licensee obtain prior IEMA-OHS consent obtained or was IEMA-OHS notified? [32 Ill. Adm. Code 330.310(c) and (j)]

c. Is the Radiation Safety Officer (RSO) available and performing required duties?

d. If RSO duties were delegated, are they being properly audited every quarter and appropriate records maintained?

e. If the RSO was changed, was the license amended? [32 Ill. Adm. Code 330.310(h)]

f. Does the license authorize all of the IEMA-OHS regulated radionuclides contained in the devices possessed?

g. Is the current inventory of radioactive material below the authorized possession limits listed on the license?

h. Are the gauges as described in the Sealed Source and Device (SSD) registration certificate?

i. Are copies of (or access to) SSD registration certificates available?

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j. Are the locations of the gauges compatible with the "Conditions of Normal Use" and "Limitations and/or Other Considerations of use" on the SSD registration certificates?

k. Are the actual uses of devices consistent with the authorized uses listed on the license?

l. Is the manufacturer's or distributor's manual for operation and maintenance available for each model?

3. TRAINING AND INSTRUCTIONS TO WORKERS

a. Were workers instructed initially per 32 Ill. Adm. Code 400.120? Was timely refresher training provided?

b. Did each authorized user (AU) receive training and instruction as described in the license application before using gauges?

c. Are training records maintained for each AU?

d. Did individuals who perform 'non-routine maintenance' receive training before performing these operations?

e. Did interviews with AUs reveal that they know the operating, emergency, and security procedures?

f. Did this audit include observation of AUs using the gauges?

g. Did this audit include observation of AUs performing routine cleaning and lubrication of the gauges?

h. Was U.S. Department of Transportation (DOT) hazardous material (HAZMAT) training provided, if required? [49 CFR 172 Subpart H (49 CFR 172.700, 701, 702, 703, & 704)]

4. RADIATION SURVEY INSTRUMENTS

a. If the licensee possesses its own survey instrument, does the instrument meet IEMA-OHS's criteria? [32 Ill. Adm. Code 340.510 and 340.540]

b. If the licensee does not possess a survey instrument, are specific plans made to obtain one in the event of an emergency?

c. If applicable, is the survey instrument calibrated as required? [32 Ill. Adm. Code 340.510(b)]

d. Are calibration records maintained? [32 Ill. Adm. Code 340.1130]

5. GAUGE INVENTORY AND ACCOUNTABILITY

a. Is a record kept showing the receipt of each gauge [32 Ill. Adm. Code 310.40]

b. Are all gauges physically inventoried every six (6) months? [32 Ill. Adm. Code 340.810(c)]

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c. Are records of physical inventories maintained for five years with all required information? [32 Ill. Adm. Code 340.810]

d. Are licensed gauges (including those in storage, use and transport) secured from unauthorized access or removal? [32 Ill. Adm. Code 340.810(a)]

6. PERSONNEL RADIATION PROTECTION

a. Are considerations for keeping doses as low as reasonably achievable (ALARA) incorporated into the radiation protection program? [32 Ill. Adm. Code 340.110(b)]

b. Is documentation maintained showing that unmonitored individuals receive less that 10 percent of the occupational exposure limits? [32 Ill. Adm. Code 340.520]

c. Did unmonitored users' activities change during the year, which could put them over 10 percent of the limit? If so, was a new evaluation performed?

d. If external dosimetry is required (i.e., when individuals are likely to receive greater than the limits in 32 IAC 340.520), is dosimetry provided to users? If yes, address the following:

1. Is the dosimetry supplier NVLAP-approved? [32 Ill. Adm. Code 340.510(d)]
2. Are the dosimeters exchanged at the appropriate frequency?
3. Are dosimetry reports reviewed by the RSO when they are received?
4. Are the records based on NRC Forms 4 or 5, or equivalent? [32 Ill. Adm. Code 340.1160(c)]

e. If there are any declared pregnant workers, did the licensee comply with 32 Ill. Adm. Code 340.280? Were records kept of doses to an embryo/fetus dose to comply with 32 Ill. Adm. Code 340.1160(d)?

f. Are records of exposures, surveys, monitoring, and evaluations maintained? [32 Ill. Adm. Code 340.1130, 340.1140, 340.1150, 340.1160, and 340.1170]

7. PUBLIC DOSE

a. Is public access to gauges controlled in a manner to keep doses below 1 mSv (100 mrem) in a year? [32 Ill. Adm. Code 340.310(a)(3)]

b. Has a survey or evaluation been performed per 32 Ill. Adm. Code 340.320? Have there been any additions or changes to the storage, security, or use of the surrounding areas that would necessitate a new survey or evaluation?

c. Do unrestricted area radiation levels exceed 0.02 mSv (2 mrem) in any one-hour? [32 Ill. Adm. Code 340.310(a)(1)]

d. Is gauge access controlled in a manner that would prevent unauthorized use or removal? [32 Ill. Adm. Code 340.810]

e. Are records of doses to members of the public maintained? [32 Ill. Adm. Code 340.1170]

8. OPERATING AND EMERGENCY PROCEDURES

NOTE: An ideal way to assess the adequacy and adherence to operating procedures is by observing work in progress.

a. Are operating and emergency procedures current and being maintained? Do the operating and emergency procedures reflect actual use of the gauges and address the types of emergency conditions that could emerge at the licensee's location(s)?

b. Does each authorized user working with the gauges have access to the current operating and emergency procedures (including lock-out procedures and emergency telephone numbers)?

c. Is a lock-out warning sign posted at each entryway to an area where it is possible to be exposed to the beam?

d. Did any emergencies occur?

1. If so, were the handled properly?
2. Were appropriate corrective actions taken?
3. If applicable, was IEMA-OHS notified in a timely manner?

e. Were gauges properly controlled or secured during use or storage? [32 Ill. Adm. Code 340.810]

9. LEAK TESTS

a. Were sealed source leak tests performed every six (6) months or at other intervals specified in the sealed source device registry? [32 Ill. Adm. Code 340.410]

b. Were leak tests performed in accordance with license requirements?

c. Are records of leak test results retained for five years with the appropriate information included? [32 Ill. Adm. Code 340.410 and 340.1135]

d. Were any sources found to be leaking, and if yes, was IEMA-OHS notified? [32 Ill. Adm. Code 340.1260]

10. MAINTENANCE OF GAUGES

a. Are manufacturers' or distributors' procedures followed for routine cleaning and lubrication of gauges?

b. Was each on-off mechanism tested for proper operation every six (6) months or at other approved intervals?

c. Are repair and maintenance of components related to the radiological safety of the gauge performed by the manufacturer, distributor, or person specifically authorized by IEMA-OHS, the NRC or an Agreement State and according to license requirements (e.g., extent of work, training, procedures, dosimetry, survey instrument, compliance with 32 Ill. Adm. Code 340 Subpart C limits)?

d. Are labels, signs and postings identifying gauges containing radioactive material, radiation areas, and lock-out procedures and warnings clean and legible?

11. TRANSPORTATION

NOTE: This section will not apply if you have not transported or packaged gauges during the period covered by this audit.

a. Were DOT-7A or other authorized packages used? [49 CFR 173.415, 49 CFR 173.416(b)]

b. Are Type A package, engineering drawings, and performance test records on file? [49 CFR 171.2 (a, b, e), 49 CFR 173.415(a)]

c. For any special form source, is the International Atomic Energy Agency Certificate of Competent Authority or other safety analysis documentation maintained on file? [49 CFR 173.476(a)]

d. Were packages properly labeled? [(49 CFR 172.400, 49 CFR 172.403, 49 CFR 172.406, 49 CFR 172.407)]

e. Were packages properly marked? [49 CFR 172.301, 49 CFR 172.304, 49 CFR 172.310, 49 CFR 172.324]

f. Were packages closed and sealed during transport? [49 CFR 173.475(f)]

g. Were shipping papers prepared and used? [49 CFR 172.200(a)]

h. Did the shipping papers contain proper entries (i.e., proper shipping name, hazard class, identification number (UN Number), total quantity, package type, nuclide, reportable quantity (RQ) (if applicable), physical and chemical form, activity in SI Units, category of label, transport index (TI), shipper's name, certification and signature, emergency response phone number, cargo aircraft only (if applicable))? [49 CFR 172.200, 49 CFR 72.201, 49 CFR 172.202, 49 CFR 172.203, 49 CFR 172.204, 49 CFR 172.604]

i. Were the shipping papers within the driver's reach and readily accessible during transport? [49 CFR 177.817(e)]

j. Was the package secured against movement? [49 CFR 177. 834]

k. Was the package secured against unauthorized access and removal?

l. Were placards on the vehicle placarded, if needed? [49 CFR 172.504]

m. Were overpacks, if needed, used properly? [49 CFR 173.25]

n. Were any incidents reported to DOT and IEMA-OHS? [49 CFR 171.15, 16 and 32 Ill. Adm. Code 341.10(b)(5)]

12. AUDITOR'S INDEPENDENT SURVEY MEASUREMENTS (IF MADE)

Describe the type, location, and results of measurements. Do any radiation levels exceed regulatory limits? [32 Ill. Adm. Code 340.510(a)]

13. NOTIFICATIONS AND REPORTS

a. Review the applicable regulations and Appendix L of this Instructional Set. Did any reportable incident occur? Were appropriate notifications made to IEMA-OHS at 217-782-7860? Examples of incidents with notification requirements are as follows:

1. Lost or stolen radioactive material? [32 Ill. Adm. Code 340.1210]
2. Overexposures or high radiation levels? [32 Ill. Adm. Code 340.1230]
3. Were there any leaking or contaminated sources? [32 Ill. Adm. Code 340.1260]
4. Inoperable or "stuck" shutter? [32 Ill. Adm. Code 340.1270]

b. If any events (as described above) did occur, was root cause determined? Were adequate corrective actions implemented?

14. POSTING AND LABELING

a. Is a copy of KLM.001 "Notice to Workers" posted?

b. Are IEMA-OHS regulations and license documents posted or is a notice posted stating where these documents are located? [32 Ill. Adm. Code 400.110(a)]

c. Are any other posting and labeling requirements met, such as storage areas and containers? [32 Ill. Adm. Code 340.920 and 340.940]**.**

15. RECORDKEEPING FOR DECOMMISSIONING AND WASTE DISPOSAL

a. Were any locations of use or separate buildings decommissioned since the last audit? Were appropriate notifications made or license amendments requested? [32 Ill. Adm. Code 330.325(b)]

b. Are records kept of information important to decommissioning? [32 Ill. Adm. Code 330.310(k) and (l)]

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c. If applicable, were records for waste transfer/disposal maintained? [32 Ill. Adm. Code 340.1180]

16. BULLETINS AND INFORMATION NOTICES

a. Were any IEMA-OHS Informational Notices, Notices of Violation or Enforcement Orders received?

b. Was appropriate training and action taken in response to the notices?

17. SPECIAL LICENSE CONDITIONS OR ISSUES

Did the auditor review the radioactive materials license for special conditions or other issues (e.g., non-routine maintenance)?

18. EVALUATION OF OTHER FACTORS

a. Is senior licensee management appropriately involved with the radiation protection program and/or RSO oversight?

b. Does the RSO have sufficient time to perform his/her radiation safety duties?

c. Does the licensee have sufficient staff to support the radiation protection program?

19. DEFICIENCIES IDENTIFIED IN AUDIT; CORRECTIVE ACTIONS

a. Summarize problems and/or deficiencies identified during the audit.

b. If problems and/or deficiencies were identified in this audit, describe the corrective actions planned or taken. Are corrective actions planned or taken at *all* licensed locations (not just the location audited)? Include date(s) when corrective actions are implemented.

c. Provide any other recommendations for improvement.

d. Describe communication with management about deficiencies.

Appendix L

Incident Notifications and Reporting

IEMA-OHS 24-HR Operations Center: (217) 782-7860

NOTE: The following list of notification and reporting requirements is provided to inform licensees about typical notification and reporting requirements that apply to their licensed activities. Licensees should note that the list is incomplete in that not all potentially applicable requirements have been included. Also, notification and reporting requirements change; therefore, licensees should consult the regulations for definitive information about current requirements.

Typical IEMA-OHS Notification and Reporting Requirements for Incidents

Event	Telephone Notification	Written Report	Regulatory Requirement
Credible threat to radioactive material	1 hour	None	32 IAC 340.1205
Lost, stolen or missing material	Immediate	30 days	32 IAC 340.1220(a) and (b)
Whole body dose greater than 0.25 Sv (25 rem)	Immediate	30 days	32 IAC 340.1220(a)(1)(A), 32 IAC 340.1230(a)
Extremity dose greater than 2.5 Gy (250 rad)	Immediate	30 days	32 IAC 340.1220(a)(1)(C), 32 IAC 340.1230(a)
Whole body dose greater than 0.05 Sv (5 rem) in 24 hours	24 hours	30 days	32 IAC 340.1220(b)(1)(A), 32 IAC 340.1230(a)
Extremity dose greater than 0.5 Sv (50 rem) in 24 hours	24 hours	30 days	32 IAC 340.1220(b)(1)(C), 32 IAC 340.1230(a)
Dose to individual member of the public greater than the limits in 32 IAC 340.310	None	30 days	32 IAC 340.1230(a)(2)
Occupational dose greater than the limits in 32 IAC 340 Subpart C	None	30 days	32 IAC 340.1230(a)(2)
Equipment is disabled or fails to function as designed when required to prevent radiation exposure in excess of regulatory limits	24 hours	30 days	32 IAC 340.1220(c)(2)
Unplanned fire or explosion that affects the integrity of any licensed material or device, container, or equipment with licensed material	24 hours	30 days	32 IAC 340.1220(c)(4)
An event that requires unplanned medical treatment at a medical facility of an individual with radioactive contamination on the individual's clothing or body.	24 hours	30 days	32 IAC 340.1220(c)(3)

Appendix L

Typical IEMA-OHS Notification and Reporting Requirements for Incidents *(continued)*			
Event	**Telephone Notification**	**Written Report**	**Regulatory Requirement**
Levels of radiation or concentrations of radioactive material in excess of specified criteria	None	30 days	32 IAC 340.1230(a)(3), 32 IAC 340.1230(a)
Leaking or contaminated sealed source	None	5 days	32 IAC 340.1260 32 IAC 330.220(a)(3)(E)
Package received with removable radioactive surface contamination exceeding the limits in 49 CFR 173.443; or external radiation levels exceeding the limits in 49 CFR 173.443.	Immediate (IEMA-OHS and carrier must be notified)	None	32 IAC 340.960(d)
Reportable incident involving transportation of licensed material (death/injury, public evacuation, highway closure, fire, suspected release)	As soon as practical, but within 12 hours	30 days	32 IAC 341.10(b)(5) as detailed in 49 CFR 171.15 and 171.16;