



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
WASHINGTON, D.C. 20555-0001

May 21, 2018

Adnan Khayyat, Chief
Bureau of Radiation Safety
Illinois Emergency Management Agency
1035 Outer Park Dr.
Springfield, IL 62704

Dear Mr. Khayyat:

The U.S. Nuclear Regulatory Commission (NRC) uses the Integrated Materials Performance Evaluation Program (IMPEP) in the evaluation of Agreement State programs. Enclosed for your review is the draft IMPEP report, which documents the results of the Agreement State review held in Illinois on April 16 – 20, 2018. The team's preliminary findings were discussed with you and your staff on the last day of the review. The team's proposed recommendations are that the Illinois Agreement State Program be found adequate to protect public health and safety and compatible with the NRC's program.

The NRC conducts periodic reviews of Agreement State programs to ensure that public health and safety are adequately protected from the potential hazards associated with the use of radioactive materials and that Agreement State programs are compatible with the NRC's program. The process, titled IMPEP, employs a team of NRC and Agreement State staff to assess Agreement States' and NRC Regional Offices' radioactive materials programs. All reviews use common criteria in the assessment and place primary emphasis on performance. The final determination of the adequacy and compatibility of each program, based on the team's report, is made by a Management Review Board (MRB) composed of NRC managers and an Agreement State program manager who serves as a liaison to the MRB.

In accordance with procedures for implementation of IMPEP, we are providing you with a copy of the draft report for your review and comment prior to submitting the report to the MRB. Comments are requested within 4 weeks from your receipt of this letter. This schedule will permit the issuance of the final report in a timely manner that will be responsive to your needs.

The team will review the response, make any necessary changes to the report, and issue it to the MRB as a proposed final report. The MRB meeting is scheduled for July 19, 2018, at 1:00 PM ET. The NRC will provide invitational travel for you or your designee to attend the MRB meeting at the NRC Headquarters in Rockville, Maryland. The NRC has video conferencing capability if it is more convenient for the State to participate through this medium. Please contact me if you desire to establish a video conference for the meeting.

A. Khayyat

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If you have any questions regarding the enclosed report, please contact me at (301) 415-5804.

Thank you for your cooperation.

Sincerely,

/RA/

Paul Michalak, Chief
Agreement State Programs Branch
Division of Materials Safety, Security, State
and Tribal Programs
Office of Nuclear Material Safety
and Safeguards

Enclosure:
2018 Draft IMPEP Report

SUBJECT: ILLINOIS FY2018 DRAFT IMPEP REPORT

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INTEGRATED MATERIALS PERFORMANCE EVALUATION PROGRAM
REVIEW OF THE ILLINOIS AGREEMENT STATE PROGRAM

April 16 – 20, 2018

DRAFT REPORT

Enclosure

EXECUTIVE SUMMARY

This report presents the results of the Integrated Materials Performance Evaluation Program (IMPEP) review of the Illinois Agreement State Program. The review was conducted during the period of April 16 – 20, 2018, by a team comprised of technical staff members from the U.S. Nuclear Regulatory Commission (NRC) and the States of Washington and Wisconsin.

Based on the results of this review, the Illinois Agreement State Program's performance was found satisfactory for eight out of the nine indicators: Status of Materials Inspection Program, Technical Quality of Inspections, Technical Quality of Licensing Actions, Technical Quality of Incident and Allegation Activities, Compatibility Requirements, Sealed Source and Device Evaluation Program, Low-Level Radioactive Waste Disposal Program, and Uranium Recovery Program; and satisfactory, but needs improvement, for the common performance indicator, Technical Staffing and Training.

The team did not make any recommendations and there were no open recommendations from previous reviews for the team to consider.

Accordingly, the team recommends that the Illinois Agreement State Program be found adequate to protect public health and safety and compatible with the NRC's program. The team recommends that the next IMPEP review take place in approximately 4 years with a periodic meeting in approximately 2 years.

1.0 INTRODUCTION

This report presents the results of the review of the Illinois Agreement State Program radioactive materials safety program. The review was conducted during the period of April 16 – 20, 2018, by a team comprised of technical staff members from the U.S. Nuclear Regulatory Commission (NRC) and the States of Washington and Wisconsin. Team members are identified in Appendix A. The review was conducted in accordance with the “Agreement State Program Policy Statement,” published in the *Federal Register* on October 18, 2017, and NRC Management Directive (MD) 5.6, “Integrated Materials Performance Evaluation Program (IMPEP),” dated February 26, 2004. Preliminary results of the review, which covered the period of April 27, 2013, to April 20, 2018, were discussed with State managers on the last day of the review.

In preparation for the review, a questionnaire addressing the common performance indicators and applicable non-common performance indicators was sent to Illinois on January 24, 2018. Illinois provided its response to the questionnaire on April 4, 2018. A copy of the questionnaire response is available in the NRC’s Agencywide Documents Access and Management System (ADAMS) using the Accession Number ML18106A228.

The Illinois Agreement State Program is administered by the Radioactive Materials Section (the RAM Section) and the Environmental Management Section (the EM Section), which are located within the Bureau of Radiation Safety (the Bureau). The RAM Section performs the licensing, inspection, and sealed-source and device evaluations for the radioactive material program. The EM Section regulates low-level radioactive waste, uranium recovery, and decommissioning. In addition, since 2014, the EM Section has been the lead for responses to triggered alarms for radioactive material at scrap yards and orphan radioactive sources. The Bureau is part of the Illinois Emergency Management Agency (the Agency). Organization charts for Illinois are available in ADAMS (Accession Number ML18106A412).

At the time of the review, the Illinois Agreement State Program regulated 614 specific licenses authorizing possession and use of radioactive materials. The review focused on the radioactive materials program as it is carried out under the Section 274b. (of the Atomic Energy Act of 1954, as amended) Agreement between the NRC and the State of Illinois.

The team evaluated the information gathered against the established criteria for each common and applicable non-common performance indicator and made a preliminary assessment of the Illinois Agreement State Program’s performance.

2.0 PREVIOUS IMPEP REVIEW AND STATUS OF RECOMMENDATIONS

The previous IMPEP review concluded on April 26, 2013. The final report is available in ADAMS (Accession Number ML13198A012). The results of the review are as follows:

Technical Staffing and Training: Satisfactory
Recommendation: None

Status of Materials Inspection Program: Satisfactory
Recommendation: None

Technical Quality of Inspections: Satisfactory
Recommendation: None

Technical Quality of Licensing Actions: Satisfactory
Recommendation: None

Technical Quality of Incident and Allegation Activities: Satisfactory
Recommendation: None

Compatibility Requirements: Satisfactory
Recommendation: None

Sealed Source and Device Evaluation Program: Satisfactory
Recommendation: None

Low-Level Radioactive Waste Disposal Program: Not Reviewed

Uranium Recovery Program: Satisfactory
Recommendation: None

Overall finding: Adequate to protect public health and safety and compatible with the NRC's program.

3.0 COMMON PERFORMANCE INDICATORS

Five common performance indicators are used to review the NRC regional and Agreement State radioactive materials programs. These indicators are: (1) Technical Staffing and Training; (2) Status of Materials Inspection Program; (3) Technical Quality of Inspections; (4) Technical Quality of Licensing Actions; and (5) Technical Quality of Incident and Allegation Activities.

3.1 Technical Staffing and Training

The ability to conduct effective licensing and inspection programs is largely dependent on having a sufficient number of experienced, knowledgeable, and well-trained technical personnel. Under certain conditions, staff turnover could have an adverse effect on the implementation of these programs, and could affect public health and safety. Apparent trends in staffing must be explored. Review of staffing also requires consideration and evaluation of the levels of training and qualification. The evaluation standard measures the overall quality of training available to, and taken by, materials program personnel.

a. Scope

The team used the guidance in State Agreements procedure SA-103, "Reviewing the Common Performance Indicator: Technical Staffing and Training," and evaluated Illinois' performance with respect to the following performance indicator objectives:

- A well-conceived and balanced staffing strategy has been implemented throughout the review period.
- Agreement State training and qualification program is equivalent to NRC Inspection Manual Chapter (IMC) 1248, "Formal Qualifications Program for Federal and State Material and Environmental Management Programs."
- Qualification criteria for new technical staff are established and are followed or qualification criteria will be established if new staff members are hired.
- Any vacancies, especially senior-level positions, are filled in a timely manner.
- There is a balance in staffing of the licensing and inspection programs.
- Management is committed to training and staff qualification.
- Individuals performing materials licensing and inspection activities are adequately qualified and trained to perform their duties.
- License reviewers and inspectors are trained and qualified in a reasonable period of time.

b. Discussion

The Illinois Agreement State Program is comprised of three managers, two section heads, and 17 technical staff members which equals 19.63 full-time equivalents (FTE) for the Agreement State Program when fully staffed. At the time of the review, there were six vacancies in the RAM Section. Additional details about staffing of the Sealed Source and Device, Low-level Radioactive Waste, and Uranium Recovery Program of the Illinois Agreement State Program are discussed in Sections 4.2, 4.3, and 4.4 of this report. During the review period, 13 staff members left the RAM Section and five staff members were hired. The positions were vacant from a few months to 2 years. Two new technical staff positions were added to the RAM Section during the review period in anticipation of future retirements.

The Illinois Agreement State Program resides in two offices: Springfield and West Chicago. In the Springfield office, one inspector transferred to a license reviewer position and another staff member transferred to an inspector position during the review period. One of the recent retirees in the West Chicago office was rehired as a contractor to help train new inspectors in West Chicago. From September 2015 through January 2017, there was a court ordered hiring freeze in the Agency due to an ongoing litigation. This prevented the Agency from replacing staff that left the program. While the hiring freeze was in effect, three inspectors and one license reviewer left the program. When the hiring freeze was lifted in January 2017, the Agency posted two inspector vacancies for the West Chicago office, but was not able to attract suitable candidates to the positions. The salary offered and the vacancies being posted as Health Physics Tech positions appear to be the reasons for not attracting qualified candidates. To attract more qualified candidates, the Agency subsequently reposted three inspector positions

with higher salaries and as Health Physicists. The reposting led to the hiring of three new inspectors in the West Chicago office in November 2017.

The Illinois Agreement State Program has a training and qualification program compatible with the NRC's IMC 1248. At the time of the review, there were five staff members advancing through the inspection qualification process. Each staff member in the qualification process initially becomes proficient and qualified to review and inspect lower risk activities, e.g., fixed gauges, prior to moving on to more risk significant license types, e.g., radiography. The new staff is rapidly progressing through the qualification program due, in part, to the NRC-sponsored training program.

c. Evaluation

The team determined that, except as noted below, during the review period, Illinois met the performance indicator objectives listed in Section 3.1.a.

- A well-conceived and balanced staffing strategy was not implemented throughout the review period.
- Vacancies were not always filled in a timely manner.

During the review period, staff turnover and extended vacancies led to the RAM Section falling behind on inspections and licensing actions. The most significant impacts were felt during the latter part of the IMPEP review period in 2017 and 2018. The number of overdue inspections and the backlog of licensing actions has increased through the review period. The RAM Section has prioritized inspections and licensing actions to compensate for staffing shortages and postponed reciprocity inspections, license renewals, and Priority 5 inspections until new staff can be trained to perform independent inspections. The staffing impacts are further described in Sections 3.2, 3.3, and 3.4 of this report.

Based on the IMPEP evaluation criteria in MD 5.6, the team recommends that Illinois' performance with respect to the indicator, Technical Staffing and Training, be found satisfactory, but needs improvement.

d. MRB Decision

The final report will present the MRB's conclusion regarding this indicator.

3.2 Status of Materials Inspection Program

Periodic inspections of licensed operations are essential to ensure that activities are being conducted in compliance with regulatory requirements and consistent with good safety practices. The frequency of inspections is specified in IMC 2800, "Materials Inspection Program," and is dependent on the amount and kind of material, the type of operation licensed, and the results of previous inspections. There must be a capability for maintaining and retrieving statistical data on the status of the inspection program.

a. Scope

The team used the guidance in State Agreements procedure SA-101, "Reviewing the Common Performance Indicator: Status of the Materials Inspection Program," and evaluated Illinois' performance with respect to the following performance indicator objectives:

- Initial inspections and inspections of Priority 1, 2, and 3 licensees are performed at the frequency prescribed in IMC 2800.
- Candidate licensees working under reciprocity are inspected in accordance with the criteria prescribed in IMC 1220, "Processing of NRC Form 241, Report of Proposed Activities in Non-Agreement States, Areas of Exclusive Federal Jurisdiction, and Offshore Waters, and Inspection of Agreement State Licensees Operating Under 10 CFR 150.20."
- Deviations from inspection schedules are normally coordinated between technical staff and management.
- There is a plan to perform any overdue inspections and reschedule any missed or deferred inspections; or a basis has been established for not performing any overdue inspections or rescheduling any missed or deferred inspections.
- Inspection findings are communicated to licensees in a timely manner (30 calendar days, or 45 days for a team inspection, as specified in IMC 0610, "Nuclear Material Safety and Safeguards Inspection Reports").

b. Discussion

The RAM Section performed 494 Priority 1, 2, 3, and initial inspections during the review period. The RAM Section conducted 7.7 percent of these inspections overdue (37 of 456 Priority 1, 2, or 3, and 1 out of 38 initial inspections). This is an increase compared to the RAM Section's previous performance of less than one percent overdue inspections during the previous review period. Although the Illinois Agreement State Program is under the 10 percent criteria for a satisfactory rating for overdue inspections, the team identified an increasing trend in overdue inspections that is directly related to staffing, as discussed in Section 3.1. Specifically, 33 of the 38 inspections performed overdue occurred during the latter part of the review period. The team identified that during the first four years of the review period (2013 – 2016), the RAM Section performed all inspections on time. However, in 2017, 16 percent of inspections were conducted overdue. In addition, at the time of the review, 47 percent of the 2018 inspections were conducted overdue. The team also determined that at the time of the review, there were no inspections overdue, but there was a significant number of inspections scheduled to be conducted during the quarter following the onsite review.

The Illinois Agreement State Program's inspection frequencies are the same or more frequent for similar license types in IMC 2800.

The team evaluated a sampling of 27 inspection reports, including three reports where inspection findings were communicated to the licensees beyond the Illinois Agreement State Program's goal of 30 days after the inspection exit. An evaluation of the RAM

Section's database revealed that less than one percent of all communication findings were communicated past the 30-day goal.

The RAM Section performed 31 percent of reciprocity inspections in 2014 and 23 percent in 2015, exceeding the reciprocity inspection criteria of 20 percent in both years. However, The RAM Section performed only five percent of reciprocity inspections in 2016 and 2017 (1 in 20 candidates for both years) and none in 2018.

c. Evaluation

The team determined that, except as noted below, during the review period, Illinois met the performance indicator objectives listed in Section 3.2.a.

- Candidate licensees working under reciprocity were not always inspected in accordance with the criteria prescribed in IMC 1220, "Processing of NRC Form 241, Report of Proposed Activities in Non-Agreement States, Areas of Exclusive Federal Jurisdiction, and Offshore Waters, and Inspection of Agreement State Licensees Operating Under 10 CFR 150.20."

The Illinois Agreement State Program's ability to meet the criteria of the NRC's IMC 1220 with respect to the performance of reciprocity inspections was directly affected by the hiring freeze and resulting staff shortage experienced by the Agency after 2015. Beginning in 2016, the RAM Section made the deliberate decision to suspend reciprocity inspections in order to focus on Priority 1, 2, 3, and initial inspections. The RAM Section continued to approve reciprocity requests and received the same number of candidate licensees for 2016 and 2017 (20 candidates). However, during that period, the RAM Section performed only one reciprocity inspection in 2016 and one in 2017. The RAM Section plans to strengthen the reciprocity inspection program as current inspection staff advance through the training qualification process.

In addition to the reciprocity inspections, the Agency also delayed the inspections of Priority 5 licensees with the exception of self-shielded irradiators which the Agency inspects on a more frequent schedule than the criteria specified in the NRC's IMC 2800.

Based on the IMPEP evaluation criteria in MD 5.6, the team recommends that Illinois' performance with respect to the indicator, Status of Materials Inspection Program, be found satisfactory.

d. MRB Decision

The final report will present the MRB's conclusion regarding this indicator.

3.3 Technical Quality of Inspections

Inspections, both routine and reactive, provide assurance that licensee activities are carried out in a safe and secure manner. Accompaniments of inspectors performing inspections, and the critical evaluation of inspection records, are used to assess the technical quality of an Agreement State's inspection program.

a. Scope

The team used the guidance in State Agreements procedure SA-102, "Reviewing the Common Performance Indicator: Technical Quality of Inspections," and evaluated Illinois' performance with respect to the following performance indicator objectives:

- Inspections of licensed activities focus on health, safety, and security.
- Inspection findings are well-founded and properly documented in reports.
- Management promptly reviews inspection results.
- Procedures are in place and used to help identify root causes and poor licensee performance.
- Inspections address previously identified open items and violations.
- Inspection findings lead to appropriate and prompt regulatory action.
- Supervisors, or senior staff as appropriate, conduct annual accompaniments of each inspector to assess performance and assure consistent application of inspection policies.
- For programs with separate licensing and inspection staffs, procedures are established and followed to provide feedback information to license reviewers.
- For Agreement States, inspection guides are consistent with NRC guidance.
- An adequate supply of calibrated survey instruments is available to support the inspection program.

b. Discussion

The team evaluated the inspection reports, enforcement documentation, and field notes for 28 radioactive materials inspections conducted during the review period. The casework reviewed included routine and initial inspections conducted by four former and six current RAM Section inspectors and covered medical, industrial, commercial, academic, research, and service licenses.

The team determined that RAM Section inspection staff performed thorough reviews, covering all aspects of the licensees' radiation protection programs, including security reviews of risk-significant radioactive material, when appropriate. The team found that inspection reports were thorough, complete, consistent, and of high quality, with sufficient documentation to ensure that licensee performance with respect to health, safety, and security was acceptable. Inspection report documentation supported violations, recommendations made to the licensee, and unresolved safety issues.

The team noted inconsistencies with documenting corrective actions and closing previous violations. When issuing health and safety violations that are not being considered for escalated enforcement, the RAM Section routinely communicates inspection findings to licensees via a form equivalent to an NRC Form 591 Part 1, "Safety Inspection Report and Compliance Inspection." The form does not provide a written record of any corrective actions taken or planned. In addition, corrective actions are not recorded in the inspection report. In several cases, subsequent inspection reports did not acknowledge that there were previous violations, and the reports did not describe the inspector's efforts to review corrective actions. The RAM Section's

inspection finding form does not include a checkbox for closing previous violations and RAM Section inspectors did not provide information on closure of previous violations to the licensee in writing.

The team interviewed four inspectors concerning corrective actions and closure of previous violations. The RAM Section inspection staff stated that previous inspection reports and open violations are reviewed while planning inspections. This information is documented on an inspection planning worksheet. The RAM Section inspection staff also stated that previous violations are discussed with the licensee at both the entrance and exit meetings, and corrective actions for new violations are discussed at exit meetings. The RAM Section inspection staff indicated that they will update their form to include a checkbox for closing previous violations so that closure of violations is clearly documented.

A team member accompanied three RAM Section inspectors the weeks of December 4, 2017, and March 26, 2018. No performance issues were noted during the inspector accompaniments. The inspectors were well-prepared and thorough, and assessed the impact of licensed activities on health, safety, and security. Inspectors performed a combination of compliance and performance based inspections. The team noted that the RAM Section inspectors use thorough inspection checklists for different modalities, including a security checklist that covers the focus elements in the corresponding NRC inspection manual chapters. The inspector accompaniments are identified in Appendix B.

The team assessed the RAM Section's performance of annual supervisory accompaniments for each materials inspector. The team found that during the review period, 29 annual accompaniments had been performed, but 19 annual accompaniments (involving 10 different inspectors) had not been performed. Due to the inspector staff shortage, as discussed in Section 3.1, other qualified staff were mobilized to perform inspections, and these individuals did not receive supervisory accompaniments in years when they performed inspections. The RAM Section management stated that, in the future, supervisory accompaniments will be performed for supervisors who inspect, and for infrequent inspectors, at appropriate intervals.

The RAM Section possesses an adequate supply of appropriate survey instruments and utilizes a database for assigning survey instrumentation and ensuring that the instruments are properly calibrated. The RAM Section uses an in-house instrument calibration lab to perform calibrations.

c. Evaluation

The team determined that, except as noted below, during the review period the Illinois program met the performance indicator objectives listed in Section 3.3.a.

- Inspections do not always address previously identified open items and violations.
- Supervisors, or senior staff as appropriate, do not always conduct annual accompaniments of each inspector to assess performance and assure consistent application of inspection policies.

Although interviews with inspection staff indicated that previous violations and corrective actions are discussed with licensees during inspections, the team noted inconsistencies with documenting corrective actions and closing previous violations. The RAM Section staff indicated that they will update their equivalent Form 591 to include a checkbox for closing previous violations so that closure of violations is clearly documented. Additionally, the team found that during the review period, 29 annual accompaniments were performed, but 19 annual accompaniments (involving 10 different inspectors) had not been performed.

Based on the IMPEP evaluation criteria in MD 5.6, the team recommends that Illinois' performance with respect to the indicator, Technical Quality of Inspections, be found satisfactory.

d. MRB Decision

The final report will present the MRB's conclusion regarding this indicator.

3.4 Technical Quality of Licensing Actions

The quality, thoroughness, and timeliness of licensing actions can have a direct bearing on public health and safety, as well as security. An assessment of licensing procedures, actual implementation of those procedures, and documentation of communications and associated actions between the Illinois licensing staff and regulated community is a significant indicator of the overall quality of the licensing program.

a. Scope

The team used the guidance in State Agreements procedure SA-104, "Reviewing the Common Performance Indicator: Technical Quality of Licensing Actions," and evaluated Illinois' performance with respect to the following performance indicator objectives:

- Licensing action reviews are thorough, complete, consistent, and of acceptable technical quality with health, safety, and security issues properly addressed.
- Essential elements of license applications have been submitted and elements are consistent with current regulatory guidance (e.g., financial assurance, increased controls, pre-licensing guidance).
- License reviewers, if applicable, have the proper signature authority for the cases they review independently.
- License conditions are stated clearly and can be inspected.
- Deficiency letters clearly state regulatory positions and are used at the proper time.
- Reviews of renewal applications demonstrate a thorough analysis of a licensee's inspection and enforcement history.
- Applicable guidance documents are available to reviewers and are followed (e.g., NUREG-1556 series, pre-licensing guidance, regulatory guides, etc.).
- Licensing practices for risk-significant radioactive materials are appropriately implemented including increased controls and fingerprinting orders (Part 37 equivalent).

- Documents containing sensitive security information are properly marked, handled, controlled, and secured.

b. Discussion

Licensing actions for radioactive materials by the Illinois Agreement State Program are performed by the RAM Section. During the review period, Illinois performed 3,380 radioactive materials licensing actions. The team evaluated 30 of those actions. The licensing actions selected for review included five new applications, 14 amendments, eight renewals, and three terminations. The team evaluated casework which included the following license types and actions: academic broad scope, medical diagnostic and therapy, accelerator, commercial manufacturing and distribution, industrial radiography, research and development, academic, nuclear pharmacy, gauges, panoramic and self-shielded irradiators, well-logging, service providers, waste brokers, decommissioning actions, financial assurance, and notifications. The casework sample represented work from eight license reviewers, four of which left the program during the review period.

Despite the limited staff, as discussed in Section 3.1, license reviewers performed comprehensive technical reviews on each action. The team found that licensing actions were thorough, complete, consistent, and of acceptable quality with health, safety, and security issues properly addressed. The Licensing Supervisor performed a complete peer review on each action to ensure the accuracy of the technical basis. Staff performed and documented independent calculations to verify the licensee's assessment of ventilation and air flow rates when handling volatile radionuclides.

The RAM Section established a policy to extend license terms from five to eight years in an effort to reduce the licensing burden on staff, the regulated community and because of effective and more frequent communications with licensees through licensing and compliance correspondence. A significant number of renewals is expected during the summer of 2018 and for the next few years related to the extended license terms given earlier in the review period. The team identified and reviewed two renewal applications exceeding one year and found the status of the review to be adequate. One of the renewal actions was close to completion and the second renewal action was pending a deficiency response from the licensee. In addition, the team identified 192 licensing actions that are in-house dating back to mid-2017.

In January 2018, the RAM Section licensing staff identified the need to perform an assessment of the adequacy of financial assurance instruments and implemented a process to ensure financial assurance amounts were adequate for the activities authorized on licenses. Previously, financial assurance evaluations were performed by an individual in the EM Section. When this individual left the agency in 2015, the EM Section continued to process the financial assurance actions. However, as the Agency continued to lose staff and without the capability of hiring new staff, financial assurance evaluations were overlooked and several financial assurance instruments were not re-evaluated at the required three-year frequency.

The team evaluated the use and implementation of the pre-licensing guidance. Illinois conducted pre-licensing site visits and updated the licensing preliminary screening

checklist to provide a basis for confidence that radioactive material will be used as specified on the license, in accordance with the current guidance. In addition, the team examined the use and implementation of the Risk Significant Radioactive Material (RSRM) Checklist. The team determined that the RAM Section has a licensing procedure to identify new licensees and amended licenses that should be subject to additional security measures. The RAM Section staff are using the updated RSRM checklist and implementing the procedure correctly.

c. Evaluation

The team determined that, except as noted below, during the review period the Illinois program met the performance indicator objectives listed in Section 3.4.a.

- Essential elements of license applications were not always submitted or elements were not always consistent with current regulatory guidance (e.g., financial assurance, increased controls, pre-licensing guidance).

During the review period, as the Agency continued to lose staff and without the capability of hiring new staff, financial assurance evaluations were overlooked. Several financial assurance instruments were not re-evaluated at the required 3-year frequency. The RAM Section licensing staff has implemented a process to ensure financial assurance amounts were adequate for the activities authorized on licenses.

Based on the IMPEP evaluation criteria in MD 5.6, the team recommends that Illinois' performance with respect to the indicator, Technical Quality of Licensing Actions, be found satisfactory.

d. MRB Decision

The final report will present the MRB's conclusion regarding this indicator.

3.5 Technical Quality of Incident and Allegation Activities

The quality, thoroughness, and timeliness of response to incidents and allegations of safety concerns can have a direct bearing on public health and safety. An assessment of incident response and allegation investigation procedures, actual implementation of these procedures, internal and external coordination, and investigative and followup actions, are a significant indicator of the overall quality of the incident response and allegation programs.

a. Scope

The team used the guidance in State Agreements procedure SA-105, "Reviewing the Common Performance Indicator: Technical Quality of Incident and Allegation Activities," and evaluated Illinois' performance with respect to the following performance indicator objectives:

- Incident response, investigation, and allegation procedures are in place and followed.
- Response actions are appropriate, well-coordinated, and timely.
- On-site responses are performed when incidents have potential health, safety, or security significance.
- Appropriate followup actions are taken to ensure prompt compliance by licensees.
- Followup inspections are scheduled and completed, as necessary.
- Notifications are made to the NRC Headquarters Operations Center for incidents requiring a 24-hour or immediate notification to the Agreement State or NRC.
- Incidents are reported to the Nuclear Material Events Database (NMED).
- Allegations are investigated in a prompt, appropriate manner.
- Concerned individuals are notified of investigation conclusions.
- Concerned individuals' identities are protected, as allowed by law.

b. Discussion

During the review period, 66 incidents were reported to the Bureau. The team evaluated 13 radioactive materials incidents which included: two incidents involving lost or stolen radioactive materials, three potential overexposures, seven medical events, and one report of damaged equipment. The Bureau dispatched inspectors for onsite follow-up for nine of the cases reviewed.

During the review period, 17 allegations were received by the Bureau. The team evaluated ten allegations, including six that the NRC referred to the Illinois Agreement State Program during the review period.

The team found that all reported incidents and allegations were promptly reviewed upon receipt, and that reactive inspections, when warranted, were timely and thorough. Illinois maintained adequate focus on risk-significance, root cause analysis, and independent verification of licensee assessments during in-office and on-site reviews. All of the allegations reviewed were appropriately closed. Concerned individuals were notified of the actions taken and alleged's identities were protected.

The team also evaluated the RAM Section's reporting events to the NRC's Headquarters Operations Officer (HOO). The team identified that a small fraction (less than ten percent) of NRC-reportable events were not reported to the HOO in a timely fashion. The RAM Section believed that the reporting criteria were based on the date that they could confirm an event had occurred, rather than the date that they had been notified, as stated in the Appendix to State Agreements procedure SA-300, "Handbook on Nuclear Material Event Reporting in the Agreement States." In each of these instances, the team found that the RAM Section had promptly initiated an assessment of the event, and that the reporting delay was attributed to confirmation. Examples of delayed reporting include confirmation that a source was leaking after receiving conflicting reports from the licensee and a radiation oncology treatment that had exceeded the medical event criteria. After discussion with the team, the RAM Section revised their policies and procedures for incidents to ensure that future NRC-reportable events would be reported to the HOO within the required timeframes.

c. Evaluation

The team determined that, during the review period, Illinois met the performance indicator objectives listed in Section 3.5.a., and recommends that Illinois' performance with respect to the indicator, Technical Quality of Incident and Allegation Activities, be found satisfactory.

d. MRB Decision

The final report will present the MRB's conclusion regarding this indicator.

4.0 NON-COMMON PERFORMANCE INDICATORS

Four non-common performance indicators are used to review Agreement State programs: (1) Compatibility Requirements; (2) Sealed Source and Device (SS&D) Evaluation Program; (3) Low-Level Radioactive Waste Disposal (LLRW) Program; and (4) Uranium Recovery (UR) Program. All four non-common performance indicators applied to this review.

4.1 Compatibility Requirements

State statutes should authorize the State to establish a program for the regulation of agreement material and provide authority for the assumption of regulatory responsibility under the agreement. The statutes must authorize the State to promulgate regulatory requirements necessary to provide reasonable assurance of protection of public health, safety, and security. The State must be authorized through its legal authority to license, inspect, and enforce legally binding requirements, such as regulations and licenses. NRC regulations that should be adopted by an Agreement State for purposes of compatibility or health and safety should be adopted in a time frame so that the effective date of the State requirement is not later than three years after the effective date of the NRC's final rule. Other program elements, as defined in Appendix A of State Agreements procedure SA-200, "Compatibility Categories and Health and Safety Identification for NRC Regulations and Other Program Elements," that have been designated as necessary for maintenance of an adequate and compatible program, should be adopted and implemented by an Agreement State within 6 months following NRC designation.

a. Scope

The team used the guidance in State Agreements procedure SA-107, "Reviewing the Non-Common Performance Indicator: Compatibility Requirements," and evaluated Illinois' performance with respect to the following performance indicator objectives. A complete list of regulation amendments can be found on the NRC Web site at the following address: <https://scp.nrc.gov/regtoolbox.html>.

- The Agreement State program does not create conflicts, duplications, gaps, or other conditions that jeopardize an orderly pattern in the regulation of radioactive materials under the Atomic Energy Act, as amended.

- Regulations adopted by the Agreement State for purposes of compatibility or health and safety were adopted no later than three years after the effective date of the NRC regulation.
- Other program elements, as defined in SA-200 that have been designated as necessary for maintenance of an adequate and compatible program, have been adopted and implemented within six months of NRC designation.
- The State statutes authorize the State to establish a program for the regulation of agreement material and provide authority for the assumption of regulatory responsibility under the agreement.
- The State is authorized through its legal authority to license, inspect, and enforce legally binding requirements such as regulations and licenses.
- Impact of sunset requirements, if any, on the State's regulations.

b. Discussion

Illinois became an Agreement State on June 1, 1987. The Agency is designated as the State's radiation protection agency under the provisions of the Radiation Protection Act of 1990, as amended (420 Illinois Compiled Statutes (ILCS) 40). The Bureau implements the radiation control program for the Agency. The Radiation Protection Act of 1990 grants the Agency the authority to promulgate rules and regulations to be followed in the administration of the State's radiation protection program. This is the only legislation that affects the program that is subject to sunset laws. Public Act 91-752, which was effective June 1, 2005, extended the sunset date for the Radiation Protection Act until January 1, 2021. The act will be reviewed prior to sunset and further extension will need to be granted by the legislature.

Other legislation that affects the radiation control program is as follows: the Illinois Emergency Management Agency Act (20 ILCS 3305); the Nuclear Safety Law of 2004 (20 ILCS 3310); the Radioactive Waste Storage Act (420 ILCS 35); the Illinois Low-level Radioactive Waste Management Act (420 ILCS 20); the Uranium and Thorium Mill Tailings Control Act (420 ILCS 42), which provide authority for the low-level radioactive waste disposal and uranium recovery programs; Freedom of Information Act (5 ILCS 140); and Illinois Administrative Procedure Act (5 ILCS 100). There was no legislation enacted during the review period that affected the radiation control program.

Illinois' administrative rulemaking process takes approximately 12 months from drafting to finalizing a rule. The public, the NRC, other agencies, and all potentially affected licensees and registrants are offered an opportunity to comment during the rulemaking process. Comments are considered and incorporated, as appropriate, before the regulations are finalized and approved by the Joint Committee on Administrative Rules (JCAR), a bipartisan legislative committee. Once drafted, a proposed regulation is sent to the Agency Director's office and to the Governor's office for initial approval. Next, the proposed regulation is submitted to the JCAR and comments on the regulation are then requested with publication in the Illinois Register. Typically, the public comment period lasts 45 days. After comment resolution and a hearing before the JCAR, the Agency may file for regulation adoption. An expedited process may be used for regulations that require strict compatibility with the NRC. The Agency also has the authority to issue

legally binding requirements (e.g., license conditions) in lieu of regulations. The Agency's regulations are not subject to sunset laws.

During the review period, ten regulation amendments were due for adoption. Illinois adopted all ten regulation packages by the due date. Illinois has also adopted two regulation packages due later in 2018, which is beyond the current IMPEP review period.

c. Evaluation

The team determined that, during the review period, Illinois met the performance indicator objectives listed in Section 4.1.a., and recommends that Illinois' performance with respect to the indicator, Compatibility Requirements, be found satisfactory.

d. MRB Decision

The final report will present the MRB's conclusion regarding this indicator.

4.2 SS&D Evaluation Program

Adequate technical evaluations of SS&D designs are essential to ensure that SS&Ds will maintain their integrity and that the design is adequate to protect public health and safety. NUREG-1556, Volume 3, "Consolidated Guidance about Materials Licenses: Applications for Sealed Source and Device Evaluation and Registration," provides information on conducting SS&D reviews and establishes useful guidance for teams. Under this guidance, three sub elements: Technical Staffing and Training, Technical Quality of the Product Evaluation Program, and Evaluation of Defects and Incidents Regarding SS&D's, are evaluated to determine if the SS&D program is satisfactory. Agreement States with authority for SS&D evaluation programs who are not performing SS&D reviews are required to commit in writing to having an SS&D evaluation program in place before performing evaluations.

a. Scope

The team used the guidance in State Agreements procedure SA-108, "Reviewing the Non-Common Performance Indicator: Sealed Source and Device Evaluation Program," and evaluated Illinois' performance with respect to the following performance indicator objectives:

Technical Staffing and Training

- A well-conceived and balanced staffing strategy has been implemented throughout the review period.
- Qualification criteria for new technical staff are established and are being followed or qualification criteria will be established if new staff members are hired.
- Any vacancies, especially senior-level positions, are filled in a timely manner.

- Management is committed to training and staff qualification.
- Individuals performing SS&D evaluation activities are adequately qualified and trained to perform their duties.
- SS&D reviewers are trained and qualified in a reasonable period of time.

Technical Quality of the Product Evaluation Program

- SS&D evaluations are adequate, accurate, complete, clear, specific, and consistent with the guidance in NUREG-1556, Volume 3.

Evaluation of Defects and Incidents

- SS&D incidents are reviewed to identify possible manufacturing defects and the root causes of these incidents.
- Incidents are evaluated to determine if other products may be affected by similar problems. Appropriate action and notifications to NRC, Agreement States, and others, as appropriate, occur in a timely manner.

b. Discussion

Technical Staffing and Training

The RAM Section has four staff qualified to perform SS&D reviews. At the time of the review, the Agency had plans to hire and train two additional staff members to be fully qualified to perform SS&D evaluations to replace two staff who are planning to retire in 2018. The license reviewers referred to in Section 3.0 of this report also complete the SS&D reviews. During the review period, two of the SS&D staff members left the program. However, three individuals have been trained to perform SS&D evaluations, including attending the NRC's SS&D Workshop.

Illinois has a training program for SS&D reviewers equivalent to the NRC training requirements listed in the NRC's IMC 1248, Appendix D.

The team interviewed staff members involved in SS&D reviews and determined that they were familiar with the procedures used in the evaluation of sources and devices and had access to applicable reference documents. Of the RAM Section's four qualified reviewers with full signature authority, all of the reviewers have a BS degree in physical or life sciences.

Technical Quality of the Product Evaluation

Illinois has 37 SS&D licensees. The team evaluated all 44 SS&D actions processed during the review period. These actions included nine amendments, two new applications, and 33 inactivated registrations.

Based on the information reviewed, the team determined that the technical evaluation of the actions were adequate, accurate, complete, and clear. The team verified that SS&D

reviewers had access to the guidance from the NRC's SS&D workshop; NUREG-1556, Volume 3, Revision 1; and applicable American National Standards Institute standards. The team found that these documents were used and followed during SS&D reviews.

Evaluation of Defects and Incidents Regarding SS&Ds

No incidents related to SS&D defects involving sources or devices registered by the State of Illinois were reported during the review period. Incident procedures are in place should an SS&D-related incident occur. The Bureau is aware of the need to review such incidents as potentially generic in nature with possible wide-ranging effects.

c. Evaluation

The team determined that, during the review period, Illinois met the performance indicator objectives listed in Section 4.2.a., and recommends that Illinois' performance with respect to the indicator, Sealed Source and Device Evaluation Program, be found satisfactory.

d. MRB Decision

The final report will present the MRB's conclusion regarding this indicator.

4.3 Low-Level Radioactive Waste Disposal Program

The objective is to determine if the Illinois Low-Level Radioactive Waste (LLRW) disposal program is adequate to protect public health and safety. Five sub-elements are used to make this determination: (1) Technical Staffing and Training; (2) Status of Low-Level Radioactive Waste Disposal Inspection Program; (3) Technical Quality of Inspections; (4) Technical Quality of Licensing Actions; and (5) Technical Quality of Incident and Allegation Activities.

a. Scope

The team used the guidance in State Agreements procedure SA-109, "Reviewing the Non-Common Performance Indicator: Low-Level Radioactive Waste Disposal Program," and evaluated Illinois' performance with respect to the following performance indicator objectives:

Technical Staffing and Training

- Qualified and trained technical staff are available to license, regulate, control, inspect, and assess the operation and performance of the low-level radioactive waste disposal facility.
- Qualification criteria for new low-level radioactive waste technical staff are established and are followed or qualification criteria will be established if new staff members are hired.
- Any vacancies, especially senior-level positions, are filled in a timely manner.

- There is a balance in staffing the low-level radioactive waste licensing and inspection programs.
- Management is committed to training and staff qualification.
- Individuals performing low-level radioactive waste licensing and inspection activities are adequately qualified and trained to perform their duties.
- Low-level radioactive waste license reviewers and inspectors are trained and qualified in a reasonable period of time.

Status of Low-Level Radioactive Waste Disposal Inspection Program

- The low-level radioactive waste facility is inspected at prescribed frequencies.
- Statistical data on the status of the inspection program are maintained and can be retrieved.
- Deviations from inspection schedules are coordinated between low-level radioactive waste technical staff and management.
- There is a plan to perform any overdue inspections and reschedule any missed or deferred inspections; or a basis has been established for not performing any overdue inspections or rescheduling any missed or deferred inspections.
- Inspection findings are communicated to licensees in a timely manner.

Technical Quality of Inspections

- Inspections of low-level radioactive waste licensed activities focus on health, safety, and security.
- Inspection findings are well-founded and properly documented in reports.
- Management promptly reviews inspection results.
- Procedures are in place and used to help identify root causes and poor licensee performance.
- Inspections address previously identified open items and violations.
- Inspection findings lead to appropriate and prompt regulatory action.
- Supervisors, or senior staff as appropriate, conduct annual accompaniments of each low-level radioactive waste inspector to assess performance and assure consistent application of inspection policies.
- Inspection guides are consistent with NRC guidance.
- An adequate supply of calibrated survey instruments is available to support the inspection program.

Technical Quality of Licensing Actions

- Licensing action reviews are thorough, complete, consistent, and of acceptable technical quality with health, safety, and security issues properly addressed.
- Applicable low-level radioactive waste guidance documents are available to reviewers and are followed (e.g., pre-licensing guidance, regulatory guides, etc.).
- Essential elements of license applications have been submitted and elements are consistent with current NRC or Agreement State regulatory guidance for describing the isotopes and quantities used, qualifications of authorized users, facilities,

- equipment, locations of use, operating and emergency procedures, and any other requirements necessary to ensure an adequate basis for the licensing action, e.g., financial assurance, increased controls/Part 37, etc.
- Low-level radioactive waste license reviewers, if applicable, have the proper signature authority for the cases they review independently.
- License tie-down conditions are stated clearly and can be inspected.
- Deficiency letters clearly state regulatory positions and are used at the proper time.
- Reviews of renewal applications demonstrate a thorough analysis of a licensee's inspection and enforcement history.
- Licensing practices for risk significant radioactive materials are appropriately implemented including increased controls and fingerprinting orders (Part 37 equivalent).
- Documents containing sensitive security information are properly marked, handled, controlled, and secured.

Technical Quality of Incident and Allegation Activities

- Low-level radioactive waste incident response, investigation, and allegation procedures are in place and followed.
- Response actions are appropriate, well-coordinated, and timely.
- On-site responses are performed when incidents have potential health, safety or security significance.
- Appropriate followup actions are taken to ensure prompt compliance by licensees.
- Followup inspections are scheduled and completed, as necessary.
- Notifications are made to the NRC Headquarters Operations Center for incidents requiring a 24-hour or immediate notification to the Agreement State or NRC.
- Incidents are reported to the NMED.
- Allegations are investigated in a prompt, appropriate manner.
- Concerned individuals are notified of investigation conclusions.
- Concerned individuals' identities are protected, as allowed by law.

b. Discussion

The Sheffield disposal site is a closed facility in maintenance and monitoring mode. It is located approximately three miles southwest of the town of Sheffield in Bureau County, Illinois. The facility began disposing low-level radioactive waste in 1967, and closed in 1978 after reaching capacity. The site includes 3.2 million cubic feet of low-level radioactive waste buried in 21 shallow earthen trenches on 20.4 acres, varying from 8 to 25 feet deep. The State of Illinois became the Sheffield disposal site long term custodian in 2000.

In 1976, radioactive contamination was observed in ground water in the southeast quadrant of the original 20.4-acre Sheffield disposal site; however no contamination was detected in a stream or in an adjacent lake. In 1988, a settlement agreement between US Ecology and the State of Illinois required US Ecology to close the site with a clay trench cap and purchase a 196-acre buffer zone surrounding the site. The buffer zone includes a small lake and a small stream to the south and southeast. Since installation

of the clay cap, radioactive constituents in the ground water have steadily decreased. This buffer zone will be transferred to the State of Illinois by 2038 for continued monitoring activities.

Technical Staffing and Training

The staff that supports the LLRW program includes a manager and staff members from the EM Section for a total of approximately 0.3 FTE. The FTE was determined by the needs of the LLRW program based on operations at the Sheffield disposal site. The staff that supports the site has diversified backgrounds in health physics, engineering, and earth sciences. Personnel from the EM Section assist with the quarterly collection of ground water. The EM Section has a documented training and qualification program for the LLRW program staff. The team determined that the staffing levels and staff qualifications for the LLRW program are adequate.

Status of Low-Level Radioactive Waste Disposal Inspection Program

The Sheffield disposal site is in maintenance and monitoring mode. There are no licensed facilities or activities to inspect, and no expectation that a facility will become licensed in the next review cycle.

Technical Quality of Inspections

The EM Section staff are on-site quarterly to collect ground water samples and samples from nearby residential potable sources of drinking water. The team evaluated the results of the quarterly water samples. Based on the information reviewed, the team determined that the tritium effluent concentration levels were below the limits in Title 10 of the *Code of Federal Regulations* Part 20 Appendix B and are exhibiting a declining trend.

In addition, the EM Section has a land survey performed of the trench cap every five years, to look at changes in the trench cap. The Sheffield disposal site also has a contractor on-site daily to perform maintenance and monitor the fence and trench cap. Due to an oversight by management, no inspector accompaniments were performed during the review period.

Technical Quality of Licensing Actions

There are no licensed facilities or activities at the Sheffield disposal site and no expectation that a facility will become licensed in the next review cycle.

Technical Quality of Incident and Allegation Activities

There were no reported incidents or allegations for the Sheffield disposal site for this review period.

c. Evaluation

The team determined that, except as noted below, during the review period, Illinois met the performance indicator objectives listed in Section 4.3.a.

- Supervisors, or senior staff as appropriate, did not conduct annual accompaniments of each low-level radioactive waste inspector to assess performance and assure consistent application of inspection policies.

Inspector accompaniments were not performed because the low-level radioactive waste site is in maintenance and monitoring mode and management did not consider the ground water sampling as an inspection.

Based on the IMPEP evaluation criteria in MD 5.6, the team recommends that Illinois' performance with respect to the indicator, Low-Level Radioactive Waste Disposal Program, be found satisfactory.

d. MRB Decision

The final report will present the MRB's conclusion regarding this indicator.

4.4 Uranium Recovery Program

The objective is to determine if the Illinois Uranium Recovery Program is adequate to protect public health and safety. Five sub-elements are used to make this determination: (1) Technical Staffing and Training; (2) Status of Uranium Recovery Inspection Program; (3) Technical Quality of Inspections; (4) Technical Quality of Licensing Actions; and (5) Technical Quality of Incident and Allegation Activities.

a. Scope

The team used the guidance in State Agreements procedure SA-110, "Reviewing the Non-Common Performance Indicator: Uranium Recovery Program," and evaluated Illinois performance with respect to the following performance indicator objectives:

Technical Staffing and Training

- Qualified and trained technical staff is available to license, regulate, control, inspect, and assess the operation and performance of the uranium recovery program.
- Qualification criteria for new uranium recovery technical staff are established and are being followed or qualification criteria will be established if new staff members are hired.
- Any vacancies, especially senior-level positions, are filled in a timely manner.
- There is a balance in staffing the uranium recovery licensing and inspection programs.
- Management is committed to training and staff qualification.

- Individuals performing uranium recovery licensing and inspection activities are adequately qualified and trained to perform their duties.
- Uranium recovery license reviewers and inspectors are trained and qualified in a reasonable period of time.

Status of Uranium Recovery Inspection Program

- The uranium recovery facility is inspected at prescribed frequencies.
- Statistical data on the status of the inspection program are maintained and can be retrieved.
- Deviations from inspection schedules are coordinated between uranium recovery technical staff and management.
- There is a plan to perform any overdue inspections and reschedule any missed or deferred inspections; or a basis has been established for not performing any overdue inspections or rescheduling any missed or deferred inspections.
- Inspection findings are communicated to licensees in a timely manner.

Technical Quality of Inspections

- Inspections of uranium recovery licensed activities focus on health, safety, and security.
- Inspection findings are well-founded and properly documented in reports.
- Management promptly reviews inspection results.
- Procedures are in place and used to help identify root causes and poor licensee performance.
- Inspections address previously identified open items and violations.
- Inspection findings lead to appropriate and prompt regulatory action.
- Supervisors, or senior staff as appropriate, conduct annual accompaniments of each uranium recovery inspector to assess performance and assure consistent application of inspection policies.
- Inspection guides are consistent with NRC guidance.
- An adequate supply of calibrated survey instruments is available to support the inspection program.

Technical Quality of Licensing Actions

- Licensing action reviews are thorough, complete, consistent, and of acceptable technical quality with health, safety, and security issues properly addressed.
- Applicable uranium recovery guidance documents are available to reviewers and are followed (e.g., pre-licensing guidance, regulatory guides, etc.).
- Essential elements of license applications have been submitted and meet current NRC or Agreement State regulatory guidance (e.g., financial assurance, increased controls, etc.)
- Uranium recovery license reviewers, if applicable, have the proper signature authority for the cases they review independently.
- License conditions are stated clearly and can be inspected.

- Deficiency letters clearly state regulatory positions and are used at the proper time.
- Reviews of renewal applications demonstrate a thorough analysis of a licensee's inspection and enforcement history.
- Licensing practices for risk significant radioactive materials are appropriately implemented including increased controls and fingerprinting orders (Part 37 equivalent).
- Documents containing sensitive security information are properly marked, handled, controlled, and secured.

Technical Quality of Incident and Allegation Activities

- Uranium recovery incident response, investigation, and allegation procedures are in place and followed.
- Response actions are appropriate, well-coordinated, and timely.
- On-site responses are performed when incidents have potential health, safety, or security significance.
- Appropriate followup actions are taken to ensure prompt compliance by licensees.
- Followup inspections are scheduled and completed, as necessary.
- Notifications are made to the NRC Headquarters Operations Center for incidents requiring a 24-hour or immediate notification to the Agreement State or NRC.
- Incidents are reported to the NMED.
- Allegations are investigated in a prompt, appropriate manner.
- Concerned individuals are notified of investigation conclusions.
- Concerned individuals' identities are protected, as allowed by law.

b. Discussion

The EM Section administers the uranium recovery program. At the time of the IMPEP review, the EM Section regulated one rare earth facility, which is in the process of decommissioning. The rare earth facility is located on a 43 acre parcel of land within the city limits of West Chicago. The rare earth facility is surrounded by light commercial shopping areas and residential housing. A rail line separates the housing on the west side of the facility. The rare earth facility operated from 1932 through 1973, producing and refining chemicals and metals, including thorium and rare earth compounds. The thorium was produced for commercial entities and the federal government.

During the review period, the site completed all soil remediation activities and has operated primarily in maintenance and monitoring mode. In addition, ongoing environmental monitoring activities continue to be performed. The final phase of decommissioning will address the ground water issues. At the time of the review, the EM Section was evaluating various ground water treatment options to determine the best path forward. After completion of the decommissioning activities, the area will be converted into a public park.

Technical Staffing and Training

In reviewing this sub-element, the team considered staffing levels, the technical qualifications of the staff, staff training, and staff turnover. EM Section staff members and management are responsible for licensing actions, inspections, and routine environmental sampling at the rare earth facility. The EM Section, which is supervised by the Section Head, is divided into three units: Environmental Monitoring, Environmental Compliance, and LLRW & Decommissioning. The EM Section has one technical staff member located in West Chicago.

At the time of the review, one technical staff member and one manager provided technical support to the EM Section by managing the uranium recovery program for a total of approximately 0.3 FTE. The FTE was determined by the needs of the uranium program based on the rare earth facility operations. The staff also provide decommissioning and license termination support. There are an additional five personnel in the EM section that are available to assist with environmental monitoring if necessary.

At the time of this review, there were no vacant positions in the uranium recovery program. The EM Section uses contractor personnel for engineering technical support for evaluation and construction oversight of decommissioning activities at the rare earth facility. The EM Section and contractor staffing levels have decreased throughout the IMPEP review period, as activities decline at the rare earth facility.

The team examined staff training records as well as interviewed various staff members regarding training and areas of expertise. The staff has expertise in various technical disciplines including health physics, geology, hydrology, environmental laboratory analysis, and engineering. The EM Section has a documented training and qualification program for uranium recovery staff. The team determined that the staffing levels and staff qualifications for the uranium recovery program are adequate.

Status of Uranium Recovery Inspection Program

The EM Section has an inspector who performs ongoing, continuous site assessment and inspection-related activities at the rare earth facility. Interviews with the inspector and program management indicated that issues and findings are reported to management primarily through e-mail and phone. Formal correspondence is sent to the licensee, when warranted. The EM Section plans to conduct inspections and issue formal inspection reports when the site enters the next phase of decommissioning activities.

In addition to the inspector, the EM Section relies upon contractors who perform periodic site assessments, quality assurance audits, and evaluations of activities at the rare earth facility. The licensee also performs similar audits which are reported to the EM Section, which reviews the contractor audits and reports and takes appropriate enforcement actions.

The frequency identified for the source material recovery category is five years. The EM Section performed inspections more frequently than required. The team reviewed three inspection reports within this five year review period. The team noted that there were no overdue inspections in the uranium recovery program.

The team determined that inspection correspondence was issued within 30 days of the inspections or audits in all cases. Program management reviewed all inspection findings. Appropriate follow up actions were conducted when items of noncompliance were identified by the EM Section inspector, Bureau contractors, or as a result of audit findings by the licensee.

Technical Quality of Inspections

In reviewing this sub-element, the team examined contractor audit reports, contractor environmental reports, and inspection reports, and interviewed the program management and inspector. The inspector interviews and casework reviews confirmed that EM Section inspections of the rare earth facility were adequate and included reviews of operational activities and pertinent records. The team also confirmed that the EM Section appropriately communicated issues and violations to the licensee.

The team determined that the ongoing activities of the inspector and periodic site and contractor audit reports provided appropriate depth of coverage, and addressed license conditions and regulatory requirements. The activities and reports also demonstrated that the EM Section pursued corrective actions for items of noncompliance. Inspection and audit files contained information, data, and diagrams documenting both general facility features and items of interest or concerns. The EM Section manager stated that inspection accompaniments had been performed, however; the team did not identify any inspection accompaniment documentation.

Technical Quality of Licensing Actions

For this sub-element, the team examined licenses and associated documentation related to licensing, license amendments, and other licensing documentation of the rare earth facility undergoing decommissioning. The team found that license renewals occurred annually with limited changes in license conditions. In 2011, through court actions, the site was transitioned to Weston Solutions who acts as the rare earth facility trustee. Based on the casework evaluated, the team concluded that the licensing actions were of adequate quality and consistent with the EM Section procedures, Illinois regulations, and good health physics practices.

Technical Quality of Incident and Allegation Activities

There were no reported incidents or allegations for this review period.

c. Evaluation

The team determined that, during the review period, Illinois met the performance indicator objectives listed in Section 4.4.a., and recommends that Illinois' performance

with respect to the indicator, Uranium Recovery Program, be found satisfactory.

d. MRB Decision

The final report will present the MRB's conclusion regarding this indicator.

5.0 SUMMARY

As noted in Sections 3.0 and 4.0 above, Illinois' performance was found to be satisfactory for eight out of nine performance indicators reviewed and satisfactory, but needs improvement, for the indicator, Technical Staffing and Training. The team did not make any recommendations regarding the Illinois Agreement State Program's performance and there were no recommendations from previous reviews for the team to consider.

Accordingly, the team recommends that the Illinois Agreement State Program be found adequate to protect public health and safety and compatible with the NRC's program. Based on the results of the current IMPEP review, the team recommends that the next full IMPEP review take place in approximately 4 years, with a periodic meeting in approximately 2 years.

LIST OF APPENDICES

Appendix A	IMPEP Review Team Members
Appendix B	Inspection Accompaniments

APPENDIX A

IMPEP REVIEW TEAM MEMBERS

Name	Areas of Responsibility
Lizette Roldán-Otero, Ph.D., NMSS	Team Leader Inspection Accompaniments Status of Materials Inspection Program
Darren Piccirillo, RIII	Staffing and Training (shadowed Mr. Tharakan) Compatibility Requirements (shadowed Mr. Tharakan)
Binesh Tharakan, RIV	Technical Staffing and Training Compatibility Requirements
Megan Shober, WI	Technical Quality of Inspections
Michelle Hammond, RIV	Technical Quality of Licensing Actions
Ryan Craffey, RIII	Technical Quality of Incident and Allegation Activities
Steve Poy, NMSS	Sealed Source & Device Evaluation Program
Kevin Seibert, WA	Low-Level Radioactive Waste Disposal Program Uranium Recovery Program

APPENDIX B

INSPECTION ACCOMPANIMENTS

The following inspection accompaniments were performed prior to the on-site IMPEP review:

Accompaniment No.: 1	License No.: IL-01232-01
License Type: <i>e.g., Medical Institution/HDR</i>	Priority: 2
Inspection Date: 12/6 - 7/17	Inspector: JP

Accompaniment No.: 2	License No.: IL-02476-01
License Type: <i>e.g., Industrial Radiography</i>	Priority: 1
Inspection Date: 12/9/17	Inspector: JP

Accompaniment No.: 3	License No.: IL-01867-01
License Type: <i>e.g., Medical Institution/HDR</i>	Priority: 2
Inspection Date: 3/27/18	Inspector: RM

Accompaniment No.: 4	License No.: IL-01773-01
License Type: <i>e.g., R&D Broadscope/Irradiator</i>	Priority: 3
Inspection Date: 3/28/18	Inspector: SK

Accompaniment No.: 5	License No.: IL-01089-01
License Type: <i>e.g., Industrial Radiography</i>	Priority: 2
Inspection Date: 3/29/18	Inspector: RM