



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

June 17, 2022

Mr. James Grice, Director
Colorado Department of Public Health and Environment
HMWM-RAD-B2
4300 Cherry Creek Drive South
Denver, CO 80246-1530

Dear Mr. Grice:

The U.S. Nuclear Regulatory Commission (NRC) uses the Integrated Materials Performance Evaluation Program (IMPEP) in the review of Agreement State and NRC radiation control programs. Enclosed is the draft IMPEP report, which documents the results of the Colorado Agreement State review conducted on May 2-6, 2022. 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 Colorado 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 radiation control 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 IMPEP process uses a team comprised of Agreement State and NRC staff to perform the reviews. All reviews use common criteria in the assessment and place primary emphasis on performance. The final determination of adequacy and compatibility of each program, based on the team's report, is made by the Chair of the Management Review Board (MRB) after receiving input from the MRB members. The MRB is composed of NRC senior managers and an Agreement State program manager.

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.

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 to be conducted on August 9, 2022, at 1:00 pm EST. The NRC will pay for travel for one representative to attend the meeting and will also provide you with Microsoft Teams connection information prior to the meeting.

J. Grice

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If you have any questions regarding the enclosed report, please contact me at (301) 415-0324 or Farrah Gaskins at (610) 337-5143.

Thank you for your cooperation.

Sincerely,



Signed by Anderson, Brian
on 06/17/22

Brian C. Anderson, Chief
State Agreement and Liaison Programs Branch
Division of Materials Safety, Security, State,
and Tribal Programs
Office of Nuclear Material Safety and Safeguards

Enclosure:
2022 Colorado Draft IMPEP Report

cc: Phillip Peterson, Unit Leader

SUBJECT: COLORADO FY2022 DRAFT IMPEP REPORT DATE June 17, 2022

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INTEGRATED MATERIALS PERFORMANCE EVALUATION PROGRAM

REVIEW OF THE COLORADO PROGRAM

May 2-6, 2022

DRAFT REPORT

EXECUTIVE SUMMARY

The results of the Integrated Materials Performance Evaluation Program (IMPEP) review of the Colorado Agreement State Program (Colorado) are discussed in this report. The review was conducted from May 2-6, 2022. In-person inspector accompaniments were conducted during the week of March 7, 2022, and on April 28, 2022.

The team found the state's performance to be satisfactory for all eight performance indicators reviewed.

The team did not make any new recommendations, and there were no recommendations from the 2018 IMPEP review for the team to consider.

Accordingly, the team recommends that the Colorado Agreement State Program be found adequate to protect public health and safety and compatible with the NRC's program. Since this is the second review where all indicators have been found satisfactory, the team recommends that a periodic meeting take in approximately 2.5 years and the next IMPEP review take place in approximately 5 years.

1.0 INTRODUCTION

The Colorado Agreement State Program (Colorado) review was conducted from May 2-6, 2022, by a team of technical staff members from the U.S. Nuclear Regulatory Commission (NRC) and the State of Tennessee. Team members are identified in Appendix A. In-person inspector accompaniments were conducted during the week of March 7, 2022 and on April 28, 2022. The inspector accompaniments are identified in Appendix B. The review was conducted in accordance with the "Agreement State Program Policy Statement," published in the *Federal Register* on October 18, 2017 (82 FR 48535), and NRC Management Directive (MD) 5.6, "Integrated Materials Performance Evaluation Program (IMPEP)," dated July 24, 2019. Preliminary results of the review, which covered the period of April 13, 2018, to May 6, 2022, were discussed with Colorado 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 Colorado on March 29, 2022. Colorado provided its response to the questionnaire on April 18, 2022. A copy of the questionnaire response is available in the NRC's Agencywide Documents Access and Management System (ADAMS) using the Accession Number [ML22110A132](#).

The Colorado Agreement State Program is administered by the Radiation Control Program (the Program). The Program is part of the Hazardous Materials & Waste Management Division (the Division), within the Department of Public Health and Environment (the Department). Organization charts for Colorado are available in [ML22154A445](#).

At the time of the review, Colorado regulated 302 specific licenses authorizing possession and use of radioactive materials. The review focused on the radiation control program as it is carried out under Section 274b (of the Atomic Energy Act of 1954, as amended) Agreement between the NRC and the State of Colorado.

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 Colorado's performance.

2.0 PREVIOUS IMPEP REVIEW AND STATUS OF RECOMMENDATIONS

The previous IMPEP review concluded on April 12, 2018. The final report is available in [ML18180A318](#). 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

Legislation Regulation and other Program Elements: Satisfactory
Recommendation: None

Sealed Source and Device Registration Program: Satisfactory
Recommendation: None

Uranium Recover Program: Satisfactory
Recommendation: None

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

The 2018 review team did not make any recommendations.

3.0 COMMON PERFORMANCE INDICATORS

Five common performance indicators are used to review the NRC and Agreement State radiation control 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, 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 assessed. 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 Colorado's performance with respect to the following performance indicator objectives:

- A well-conceived and balanced staffing strategy has been implemented throughout the review period.
- 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.
- 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.
- 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 team determined that Colorado had sufficient staff to carry out the responsibilities of the Agreement State Program and a good balance between licensing and inspection staffing levels. Colorado's radioactive materials program is comprised of 12 FTE, when fully staffed. The Radiation Management Program Manager oversees both radioactive materials and machine regulation. The Radioactive Materials Unit Leader supervises the unit responsible for radioactive materials licensing and inspection. The Compliance Lead oversees inspection-related activities in the unit, while the Licensing Lead oversees the licensing activities of the unit.

At the time of the review, there were no vacancies. During the review period, four staff members left Colorado and four staff members were hired. One of the staff members retired, one staff member passed away, and two staff members left for other opportunities. The positions were vacant from a few weeks to a few months. Vacancies had minimal impact on Colorado's performance with respect to the other indicators reviewed.

Colorado has a training and qualification manual compatible with the NRC's IMC 1248. The training program is managed by the Radioactive Materials Unit Leader and the Compliance and Licensing Leads who set personal training goals for staff, as well as document and discuss progress with staff. The Radioactive Materials Unit Leader and the Compliance and Licensing Leads also determine when staff are sufficiently trained to work independently while performing licensing and inspection-related activities, including partial qualification for certain activities.

Staff in the Colorado program understand training expectations and are qualified in an appropriate amount of time. All staff receive training and experience to become qualified to perform both inspection and licensing activities. Staff spoke highly of Colorado's commitment to training, especially support to attend NRC-sponsored training, the use of on-the-job training, and peer assistance while learning new duties. Experienced staff also receive support for refresher training that is compatible with the expectations detailed in the NRC's IMC 1248. The team determined that qualified licensing and inspection staff are completing at least 24 hours of refresher training every 2 years.

c. Evaluation

The team determined that, during the review period, Colorado met the performance indicator objectives listed in Section 3.1.a. Based on the criteria in MD 5.6, the team recommends that Colorado's performance with respect to the indicator, Technical Staffing and Training, be found satisfactory.

d. MRB Chair's Determination

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

3.2 Status of Materials Inspection Program

Inspections of licensed operations are essential to ensure that activities are being conducted in compliance with regulatory requirements and consistent with good safety

and security practices. The frequency of inspections is specified in [IMC 2800](#), “Materials Inspection Program,” and is dependent on the amount and type of radioactive 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 [SA-101](#), “Reviewing the Common Performance Indicator, Status of the Materials Inspection Program,” and evaluated Colorado’s performance with respect to the following performance indicator objectives:

- Initial inspections and inspections of Priority 1, 2, and 3 licensees are performed at the prescribed frequencies (<https://www.nrc.gov/materials/miau/mat-toolkits.html>).
- 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.
- Candidate licensees working under reciprocity are inspected in accordance with the criteria prescribed in IMC 2800 and other applicable guidance or compatible Agreement State Procedure.
- 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

Colorado performed 181 priority 1, 2, and 3 inspections and initial inspections during review the period. Of these, Colorado conducted 3, or 1.4 percent overdue. One initial inspection was only overdue by 1 day, and the other initial inspection was overdue by less than a month because the inspector could not get in touch with the radiation safety officer (RSO) to set up an inspection date. Once the licensee’s corporate office informed Colorado that the RSO was no longer working for them, an inspection was scheduled and completed with the new RSO. One Priority 2 inspection was also completed overdue, because a data entry delay in Web-Based Licensing (WBL) created an error in the due date in WBL. Colorado’s inspection frequencies are the same for similar license types in NRC’s program.

In addition to the three overdue inspections discussed above, the team noted that an additional nine inspections were conducted overdue because of pandemic-related impacts. Temporary Instruction (TI) 003, “Evaluating the Impacts of the COVID-19 Public Health Emergency as Part of the Integrated Materials Performance Evaluation Program (IMPEP),” states, in part, that for inspections that exceed the scheduling window with overdue dates falling inside the defined timeframe of the pandemic, the number of overdue inspections should be noted in the report but should not be counted in the calculation of overdue inspections described in SA-101, Appendix A, provided that Colorado continues to maintain health, safety, and security. Therefore, the team did not include these nine inspections when performing the calculation of the percent of overdue inspections.

There were no inspections overdue at the time of the IMPEP review.

A sampling of 23 inspection reports indicated that one of the inspection findings were communicated to the licensees beyond Colorado's goal of 30 days after the inspection exit. This communication was less than 45 days after the inspection exit; therefore, the team decided this delay was not significant.

Colorado's inspection procedures state that the radioactive materials unit will attempt to inspect reciprocity licensees with an emphasis to inspect Priority 1, 2, and 3 licensees. Colorado inspected 29 of the 626 reciprocity licensees during the review period. Colorado completed 11 reciprocity inspections in calendar year 2018, nine in 2019, four in 2020, four in 2021, and one so far in 2022. The team observed that, given restrictions associated with the pandemic, Colorado only completed 9 of 384 potential reciprocity inspections between 2020 and 2022. TI-003 states, in part, that if these impacts are outside Colorado's control, they should not be considered by the IMPEP team while establishing the overall rating, provided Colorado continued to maintain health, safety, and security.

All Priority 1, 2, and 3 and initial inspections must be completed in accordance with the guidance provided in IMC 2800. Nearly all inspections were completed within the required time frame.

c. Evaluation

The team determined that, during the review period, Colorado met the performance indicator objectives listed in Section 3.2.a. Based on the criteria in MD 5.6, the team recommends that Colorado's performance with respect to the indicator, Status of Materials Inspection Program, be found satisfactory.

d. MRB Chair's Determination

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

3.3 Technical Quality of Inspections

Inspections, both routine and reactive, provide reasonable 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 inspection program.

a. Scope

The team used the guidance in SA-101 and evaluated Colorado's performance with respect to the following performance indicator objectives:

- The team used the guidance in SA-102, "Reviewing the Common Performance Indicator: Technical Quality of Inspections," and evaluated Colorado's 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.
- Inspection guides are compatible with NRC guidance.
- An adequate supply of calibrated survey instruments is available to support the inspection program.

b. Discussion

The team evaluated 23 inspection reports and enforcement documentation, and interviewed inspectors involved in materials inspections conducted during the review period. The team reviewed casework for inspections conducted by nine of Colorado's inspectors and covered medical, industrial, commercial, academic, research, and service licenses. The team identified that Colorado's inspection results were well-documented and violations were well supported. Colorado follows its own documented inspection and enforcement procedures.

A team member accompanied four inspectors on March 7-11, 2022, which were conducted in-person. The team found that inspectors were well-prepared and thorough, and the inspectors assessed the impact of licensed activities on health, safety, and security. Inspectors observed the use of radioactive materials whenever possible. During interviews of licensee staff, inspectors used open-ended questions, and were able to develop a basis of confidence that radioactive materials were being used safely and securely. Any findings observed were brought to the licensee staff member's attention at the time of the inspection and again to the licensee's management during the inspection closeout. All findings and conclusions were well-founded and documented. The inspector accompaniments are identified in Appendix B.

The team also found that supervisory accompaniments were performed annually for all qualified inspectors, except for two inspectors. During the pandemic in 2020, two inspectors were not accompanied by a supervisor due to the limitation of inspections during the pandemic. Colorado did not restart doing inspections until later in 2020, causing the supervisor to have a short period of time to get all inspector accompaniments done by the end of the year. TI-003 states, in part, that if these impacts are outside Colorado's control, they should not be considered by the IMPEP team while establishing the overall rating, provided Colorado continued to maintain health, safety, and security. The team determined that Colorado continued to maintain health, safety, and security.

The team noted that Colorado has ample supplies of radiation survey meters such as Geiger-Mueller meters, scintillation detectors, ion chambers, micro-R meters, and neutron detectors to support its inspection program. The portable instruments used during the inspector accompaniments were operational and calibrated.

c. Evaluation

The team determined that, during the review period, Colorado met the performance indicator objectives listed in Section 3.3.a. Based on the criteria in MD 5.6, the team recommends that Colorado's performance with respect to the indicator, Technical Quality of Inspections, be found satisfactory.

d. MRB Chair's Determination

The final report will present the MRB Chair's determination 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, implementation of those procedures, and documentation of communications and associated actions between the State 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 [SA-102](#) and evaluated Colorado's performance with respect to the following performance indicator objectives:

- The team used the guidance in [SA-104](#), "Reviewing the Common Performance Indicator: Technical Quality of Licensing Actions," and evaluated Colorado's 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., pre-licensing guidance, Title 10 *Code of Federal Regulations* (10 CFR) Part 37, financial assurance, etc.).
- 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 the physical protection of Category 1 and Category 2 quantities of radioactive material (10 CFR Part 37 equivalent).
- Documents containing sensitive security information are properly marked, handled, controlled, and secured.

b. Discussion

During the review period, Colorado performed 1,037 radioactive materials licensing actions, and the team evaluated 21 of those licensing actions. The licensing actions selected for review included four new applications, eight amendments, four renewals, two terminations, and three financial assurance evaluations. The team evaluated casework which included the following license types and actions: broad scope, medical diagnostic and therapeutic, accelerator production, industrial radiography, research and development, academic, nuclear pharmacy, gauges, well-logging, service providers, financial assurance, and administrative. The casework sample represented work from 12 former and current license reviewers.

The team noted that Colorado requires license renewals to be submitted every 5 years. The team reviewed Colorado's license templates, standard conditions, licensing

checklists, and use of the WBL program. The Colorado licensing checklists provide reminders for various licensing action issues including those associated with new license requests, renewals, decommissioning, terminations, and change of control actions. The team noted that Colorado conducts a public dose evaluation for each licensing action. The team also noted that Colorado clearly identifies any enforcement requirements by issuing administrative amendments incorporating compliance orders.

The team assessed Colorado's use of NRC's pre-licensing guidance and the pre-licensing site visits in evaluating new license applications. The team concluded that Colorado conducted pre-licensing site visits for all unknown entities in accordance with the checklist, and properly implemented the guidance.

The team evaluated Colorado's use of the NRC's Risk Significant Radioactive Materials (RSRM) Checklist, and the evaluation of Colorado requirements compatible with NRC's security requirements. The team determined that Colorado completed on-site security reviews for all new license applications, new location of use authorizations, and possession limit increases that would be identified using the NRC's RSRM checklist. Although the NRC's checklist was not used, the Colorado's checklist reflected all items identified in the NRC checklist, and Colorado licensing staff were well-versed in RSRM security requirements. The Colorado checklist regarding RSRM met all elements of the NRC's RSRM checklist.

The team observed that Colorado's use of comprehensive checklists for its licensing actions assured that licensing decisions were well-documented, and properly addressed health, safety, and security issues. The team observed that Colorado adequately considered the licensee's inspection and enforcement history in completing renewals. For all actions, secondary level reviews were performed by the Materials Program Licensing Lead, and all licenses were issued by the Materials Program Unit Leader.

No impacts related to the pandemic were seen related to this indicator.

c. Evaluation

The team determined that, during the review period, Colorado met the performance indicator objectives listed in Section 3.4.a. Based on the criteria in MD 5.6, the team recommends that Colorado's performance with respect to the indicator, Technical Quality of Licensing Actions, be found satisfactory.

d. MRB Chair's Determination

The final report will present the MRB Chair's determination 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, safety and security. An assessment of incident response and allegation investigation procedures, actual implementation of these procedures internal and external coordination, timely incident reporting, and investigative and follow-up actions, are a significant indicator of the overall quality of the incident response and allegation programs.

a. Scope

The team used the guidance in [SA-104](#) and evaluated Colorado's performance with respect to the following performance indicator objectives:

- Incident response 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 follow-up actions are taken to ensure prompt compliance by licensees.
- Follow-up inspections are scheduled and completed, as necessary.
- Notifications are made to the NRC Headquarters Operations Center (HOO) 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) and closed when all required information has been obtained.
- Allegations are investigated in a prompt, appropriate manner.
- Concerned individuals are notified within 30 days of investigation conclusions.
- Concerned individuals' identities are protected, as allowed by law.

b. Discussion

During the review period, 33 incidents were reported to Colorado. The team evaluated 16 radioactive materials incidents which included 9 lost or stolen radioactive materials events, 1 potential overexposure, 3 medical events, 1 damaged equipment event, 1 leaking source, and 1 event related to an inability to retract a source. The Colorado dispatched inspectors for on-site follow-up for 7 of the 16 cases reviewed. The team determined that appropriate actions were taken.

The team also evaluated Colorado's reporting of incidents to the NRC's Headquarters Operations Officer (HOO). The team noted that in each case requiring HOO notification, Colorado reported the incidents within the required time frame. The team also evaluated whether Colorado had failed to report any required incidents to the HOO and did not identify any missed reporting requirements.

During the review period, eight allegations were received by Colorado. The team evaluated all eight allegations, including three allegations that the NRC referred to the State, during the review period. The team found that Colorado took prompt and appropriate action in response to the concerns raised. Documentation for each allegation reviewed was complete, concise, and thorough. Concerned individuals were notified of the results of the investigation whenever possible.

c. Evaluation

The team determined that, during the review period, Colorado met the performance indicator objectives listed in Section 3.5.a. Based on the criteria in MD 5.6, the team recommends that Colorado's performance with respect to the indicator, Technical Quality of Incident and Allegation Activities, be found satisfactory.

d. MRB Chair's Determination

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

4.0 NON-COMMON PERFORMANCE INDICATORS

Four non-common performance indicators are used to review Agreement State programs: (1) Legislation, Regulations, and Other Program Elements; (2) Sealed Source and Device (SS&D) Evaluation Program; (3) Low-Level Radioactive Waste (LLRW) Disposal Program; and (4) Uranium Recovery Program. The NRC does not retain regulatory authority for SS&D Evaluation, LLRW Disposal, and/or Uranium Recovery Program(s); therefore, all non-common performance indicator applied to this review.

4.1 Legislation, Regulations, and Other Program Elements

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 State's agreement with the NRC. The statutes must authorize the State to promulgate regulatory requirements necessary to provide reasonable assurance of adequate 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. The 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 3 years after the effective date of the NRC's final rule. 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 Program Element Table indicating the Compatibility Categories for those program elements other than regulations can be found on the NRC Web site at the following address: <https://scp.nrc.gov/regtoolbox.html>.

a. Scope

The team used the guidance in SA-107, "Reviewing the Non-Common Performance Indicator, Legislation, Regulations, and Other Program Elements," and evaluated Colorado's performance with respect to the following performance indicator objectives. A complete list of regulation amendments can be found on the NRC website 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 3 years after the effective date of the NRC regulation.
- Other program elements, as defined in [SA-200](#), "Compatibility Categories and Health and Safety Categories and Safety Identification for NRC Regulations and other Program Elements" that have been designated as necessary for maintenance of an adequate and compatible program, have been adopted and implemented within 6 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.
- Sunset requirements, if any, do not negatively impact the effectiveness of the State's regulations.

b. Discussion

Colorado became an Agreement State on February 1, 1968. Colorado's radiation control authority and regulations are authorized by Title 25, Article 11, Colorado Revised Statutes (C.R.S.), known as the Radiation Control Act. Colorado's legislature is a part-time legislative body, with each regular session taking place January through May of each year. Legislation enacted during the regular session typically takes effect by August of the same year pending approval by the Governor.

During the review period, Colorado's enabling legislation was amended in both 2018 and 2019. The 2018 legislation change was initiated by the department and repealed a prohibition against the adoption of rules concerning the disposal of Technologically-Enhanced Naturally Occurring Radioactive Materials (TENORM). The 2019 legislation change was initiated by the legislature Statutory Revision Committee to make minor wording changes for consistency with other legislation. The change clarified statutory language allowing members of the Radiation Advisory Committee to be compensated for their actual and necessary expenditures.

All Colorado State agencies are required to plan for future regulatory changes at least 1 year in advance through establishment of a regulatory agenda, which is issued in November of each year. Whether a rulemaking activity will take place in the second or possibly third year following NRC issuance is dependent upon the date of the NRC rule change. Most rulemaking efforts are completed in approximately 12 to 14 months. On average, the State can promulgate regulations in 6 to 12 months, depending on the resolution of comments received during the various comment periods. Comments are requested from a Radiation Advisory Committee, the NRC, and the affected community.

Under the State Administrative Procedure Act, the Colorado legislature is authorized to sunset agency regulations adopted or amended between November 1 and October 31 of each year if they are found to exceed the rulemaking authority of the agency or are inconsistent with law C.R.S. § 24-4-103(8)(c)(I). When such a finding is made, the regulations are designated to expire the following May 15. Additionally, each year after Colorado's legislative session, the Office of Legislative Legal Services reviews existing regulations to determine if they conflict with laws enacted during that legislative session. Historically, the Colorado Rules and Regulations Pertaining to Radiation Control have always been approved for continuation each year; as such regulations are necessary for Colorado to maintain its authority under the agreement with the NRC, consistent with the state's policy C.R.S. § 25-11-102.

During this review period, Colorado submitted one proposed regulation amendment, eight final regulation amendments, and two revised final regulation amendments. No amendments were submitted late. At the time of this review, and no amendments were overdue.

The team reviewed guidance documents that Colorado uses to meet the requirements of other program elements (e.g., Pre-Licensing Guidance, Inspection Procedures, etc.) that the NRC has designated as necessary for the maintenance of an adequate and compatible program. These are living documents and changes are made as needed. The team found that all documents reviewed were compatible.

c. Evaluation

The team determined that, during the review period, Colorado met the performance indicator objectives listed in Section 4.1.a., and, based on the criteria in MD 5.6, recommends that Colorado's performance with respect to the indicator, Compatibility Requirements, be found satisfactory.

d. MRB Chair's Determination

The final report will present the MRB Chair's determination 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 the SS&D reviews and establishes useful guidance for teams. In accordance with MD 5.6, 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 [SA-108](#), "Reviewing the Non-Common Performance Indicator, Sealed Source and Device Evaluation Program," and evaluated Colorado's 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 the NRC, Agreement States, and others, as appropriate, occur in a timely manner.

b. Discussion

Technical Staffing and Training

Colorado has four staff qualified to perform SS&D reviews, and there are currently no vacancies. During the review period, none of the SS&D staff members left Colorado and no staff members were hired. Colorado has a training program equivalent to NRC training requirements listed in the NRC's IMC 1248, Appendix D. The team determined that individuals performing SS&D evaluation activities are adequately qualified and trained to perform their duties.

Technical Quality of the Product Evaluation

Colorado has three SS&D licensees. During the review period, the State processed one amendment. The team evaluated the amendment and found that the evaluations were adequate, complete, and consistent with the guidance.

Evaluation of Defects and Incidents Regarding SS&Ds

The team did not evaluate incidents involving SS&D registered products during the review period. None of the incidents were related to manufacturing or design of the sources/devices manufactured or distributed by a licensee with a SS&D registered by Colorado.

c. Evaluation

The team determined that, during the review period, Colorado met the performance indicator objectives listed in Section 4.2.a. Based on the criteria in MD 5.6, the team recommends that Colorado's performance with respect to the indicator, SS&D Evaluation Program, be found satisfactory.

d. MRB Chair's Determination

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

4.3 LLRW Disposal Program

In 1981, the NRC amended its Policy Statement, "Criteria for Guidance of States and NRC in Discontinuance of NRC Regulatory Authority and Assumption Thereof by States Through Agreement," to allow a State to seek an amendment for the regulation of LLRW as a separate category. Those States with existing Agreements prior to 1981 were determined to have continued LLRW disposal authority without the need for an amendment. Although, the State has authority to regulate a LLRW disposal facility, the NRC has not required States to have a program for licensing a disposal facility until such time as the State has been designated as a host State for a LLRW disposal facility. When an Agreement State has been notified or becomes aware of the need to regulate a LLRW disposal facility, it is expected to put in place a regulatory program that will meet the criteria for an adequate and compatible LLRW disposal program. There are no plans for a LLRW disposal facility in Colorado. Accordingly, the team did not review this indicator.

4.4 Uranium Recovery Program

The objective is to determine if Colorado's uranium recovery Program is adequate to protect public health and safety, and the environment. 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 Colorado's 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 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 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, non-compliance, 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.
- Essential elements of license applications have been submitted and meet current NRC or Agreement State regulatory guidance (e.g., financial assurance, 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 fingerprinting orders (10 CFR 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 follow-up actions are taken to ensure prompt compliance by licensees.
- Follow-up inspections are scheduled and completed, as necessary.
- Notifications are made to the NRC HOO for incidents requiring a 24-hour or immediate notification to the Agreement State or the NRC.
- Incidents are reported to the NMED and closed when required information is obtained.
- 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

Technical Staffing and Training

The team determined that the Colorado's qualifications and staffing levels for the uranium recovery program were adequate. At the time of the review, there were no

vacancies; one qualified technical staff member performed most of the project management, inspections, and licensing actions for Colorado's uranium recovery program. Colorado had one qualified uranium recovery staff over the course of the review period.

The uranium recovery program has a training program equivalent to the NRC training requirements listed in IMC 1248, Appendix E. The uranium recovery program staff has training in health physics, geology/hydrogeology, and inspection procedures. The staff also receive annual facility safety refresher training and attend NRC-sponsored training and webinars. The uranium recovery program technical staff member demonstrated thorough understanding of State regulations and the NRC guidance related to uranium recovery.

The uranium recovery program also has access to individuals from within Colorado's Hazardous Materials and Waste Management Division, and the Department, for technical support. The uranium recovery program also has the capability to contract with consulting firms to assist, as needed.

Status of the Uranium Recovery Inspection Program

The uranium recovery program staff performed five inspections during the review period. Due to the pandemic, in 2020 one inspection was performed remotely. The review determined that Colorado completed the uranium recovery inspections in accordance with the frequency in [IMC 2801](#), "Uranium Mill and 11e.(2) Byproduct Material Disposal Site And Facility Inspection Program."

Inspection findings for the uranium recovery disposal program were communicated by formal correspondence to the licensee within 30 days following the inspection.

Colorado updated the Radioactive Materials Unit Inspection Manual (revised August 2020) to align with the revision of IMC 2800 issued March 2, 2020.

Technical Quality of Inspections

On April 28, 2022, the team accompanied one inspector at the Colorado Legacy Land, LLC, Cotter Cañon City Mill site near Cañon City, Colorado, for the on-site portion of the inspection. The mill is not active and is currently developing a decommissioning plan with the goal of transferring to the U. S. Department of Energy for long term care and maintenance. The current estimated date for this transfer is calendar year 2045. This on-site portion of the inspection focused on site conditions, radiation safety, worker protection, environmental monitoring, radiation postings, and perimeter monitoring. A remote review of the inspection documents (training records, dosimetry, instrument calibration, annual audits, etc.) was conducted using a shared file system from March 31, 2022, to April 20, 2022. The inspector provided details associated with their findings based on the records review on April 20, 2022, and again at the conclusion of the onsite portion of the inspection on April 28, 2022.

Colorado inspection staff uses a checklist format to report the investigation results to the licensee. The internal documentation of the inspection findings is well organized and make it apparent what the inspector reviewed and observed and the results. The internal documentation is comprehensive and a useful tool for the next inspector visiting the site.

The team evaluated all five inspection files which included radiological, industrial and chemical hazards, environmental monitoring, effluents, etc. Colorado's records indicated that supervisor accompaniments of the inspector were performed during the review period. Due to the pandemic, one accompaniment was performed remotely in 2020.

The review team determined that the State has an adequate supply of properly calibrated radiation detection equipment to support the inspection program. Calibrations are performed annually. In all inspection records reviewed, the review team found that surveys had been performed with properly calibrated survey equipment

Technical Quality of Licensing Actions

The team examined the files and associated documentation related to the licensing of conventional uranium recovery mill facilities under the uranium recovery program. The uranium recovery program manages the following uranium recovery sites:

1. Colorado Legacy Land (formally Cotter Corporation Cañon City Mill)
2. Umetco Uravan Mill
3. Hecla Durita Mill
4. Sweeney Mill

The team also examined files and associated documentation related to two decay chain contamination sites:

1. Colorado Legacy Land (formally Cotter Corporation) Schwartzwalder Mine
2. Homestake Mining

It should be noted that these sites are no longer solely managed by uranium recovery program staff.

There are no operation sites in Colorado. The Colorado Legacy Land Schwartzwalder Mine and Homestake Mining sites operate as water treatment of uranium. The Umetco Uravan Mill and the Hecla Durita Mill are in closure status and in pursuit of license termination and transitioning to long-term care. Colorado oversees the site decommissioning at The Cotter Corporation Canon Mill and has taken steps to place a restrictive notice on the property of the Sweeney Mill to prevent the property from being sold or manipulated.

Colorado completed four license amendments during the review period. These completed licensing actions consisted of a RSO and alternate RSO change, revisions to standard operating procedures under the radiation protection program, environmental data reporting and environmental air monitoring revisions, annual land use survey revision, and annual financial assurance updates. The team interviewed staff members about the status of each regulated site. Management and staff were familiar with the technical details and conditions existing at each site.

The team concluded that the licensing actions were complete, consistent, and of acceptable quality. Colorado staff use a review procedure and checklist for licensing reviews. All response letters for each incoming request or report contained secondary technical or management review and approval.

The team evaluated the decision analysis reports for all the licensing actions which included public comments. The decision analysis documents contained a thorough evaluation of the application, as well as an adequate basis for the staff's licensing decision.

Technical Quality of Incident and Allegation Activities

Colorado received three incident reports associated with uranium recovery facilities over the review period. The team reviewed the Colorado's response to each incident and noted that the response to the incidents was appropriate, well-coordinated, and timely. There were no allegations reported to Colorado during the review period.

c. Evaluation

The team determined that, during the review period, Colorado met the performance indicator objectives listed in Section 4.4.a. Based on the criteria in MD 5.6, the team recommends that Colorado's performance with respect to the indicator, Uranium Recovery Program, be found satisfactory.

d. MRB Chair's Determination

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

5.0 SUMMARY

Colorado's performance was found to be satisfactory for all eight performance indicators reviewed.

The team did not make any recommendations regarding program performance and there were no recommendations from the 2018 IMPEP for the team to consider.

Accordingly, the team recommends that Colorado be found adequate to protect public health and safety and compatible with the NRC's program. Since this is the second review where all indicators have been found satisfactory, the team recommends that a periodic meeting take in approximately 2.5 years and the next IMPEP review take place in approximately 5 years.

LIST OF APPENDICES

Appendix A IMPEP Review Team Members

Appendix B Inspector Accompaniments

APPENDIX A

IMPEP REVIEW TEAM MEMBERS

Name	Areas of Responsibility
Farrah Gaskins, Region I	Team Leader
Randy Erickson, Region IV	Technical Staffing and Training Inspector Accompaniments Legislation, Regulations, and Other Program Elements
Stuart Belva, State of Tennessee	Status of Materials Inspection Program Technical Quality of Inspections
Sara Forster, Region III	Technical Quality of Licensing Actions
Stephen Poy, NMSS	Technical Quality of Incident and Allegation Activities Sealed Source and Device Evaluation Program
Gehan Flanders, Region III	Uranium Recovery Program Status of Inspection Program Technical Quality of Inspections Technical Quality of Incidents and Allegations
Thomas Lancaster, NMSS	Uranium Recovery Program Technical Staffing and Training Technical Quality of Licensing
Martha Poston-Brown, NMSS	Uranium Recovery Program Inspector Accompaniment

APPENDIX B

INSPECTOR ACCOMPANIMENTS

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

Accompaniment No.: 1	License No.: CO 859-01
License Type: Nuclear Pharmacy	Priority: 2
Inspection Date: 3/7/22	Inspector's initials: RL

Accompaniment No.: 2	License No.: CO 314-01
License Type: Nuclear Medicine with HDR	Priority: 2
Inspection Date: 3/8/22	Inspector's initials: TT

Accompaniment No.: 3	License No.: CO 314-01
License Type: Nuclear Medicine with HDR	Priority: 2
Inspection Date: 3/9/22	Inspector's initials: MG

Accompaniment No.: 4	License No.: CO 1196-01
License Type: Wall Thickness Pipe Gauge	Priority: 5
Inspection Date: 3/11/22	Inspector's initials: MC

Accompaniment No.: 5	License No.:CO-369-01
License Type: Decommissioning	Priority: 1
Inspection Date: 4/28/2022	Inspector's initials: SW