INTEGRATED MATERIALS PERFORMANCE EVALUATION PROGRAM (IMPEP)
GOOD PRACTICES

As of March 6, 2014

WHAT'S NEW?

- **Creation of interdepartmental incident review Board.** The review team identified a good practice by Ohio regarding its creation of a board whose members included management from other Divisions including XRay and their legal department, to review all medical events and any other events involving potential overexposures in order to formulate a comprehensive and informed response by all board members.

- **Compliance checks on reciprocity applicants.** Nevada has a policy of checking on the compliance history of a licensee requesting reciprocity approval with the Agreement State or NRC Region that issued the radioactive materials license. If the check reveals that a reciprocity applicant has outstanding compliance issues with their licensing authority (Agreement State or NRC Region), Nevada will deny the reciprocity application. This practice does not necessarily have to lead to the denial of a reciprocity application but could also be used to make an informed decision on whether or not to perform a field inspection of the reciprocity licensee. (Under Status of Materials Inspection Program)

- **Expansion of source collection efforts.** Illinois expanded its Orphan Source Recovery Program to include high schools. This initiative is a non-emergency response hazard mitigation program that collects and properly disposes of unwanted radioactive material from the schools. The collection of unwanted radioactive material is at no cost to the schools. (Under Technical Quality of Incident and Allegation Activities)

- **Law enforcement at initial security inspections.** As part of the preparation of the initial site visit to a licensee's facility, Kentucky inspectors encouraged their licensees to invite a representative of the respective local law enforcement agency to attend the initial on-site visit to evaluate the Increased Controls. This practice was conducive to communicating the intent and clarifying the requirements of the Increased Controls, as well as helping the local the law enforcement agency understand their role in the Increased Controls. (Under Technical Quality of Inspections)

GENERAL

- **Self-audits.** U.S. Nuclear Regulatory Commission (NRC) Region II, Alabama, and Arkansas conducted self-assessment programs. The self-assessment programs were very effective in providing a methodology for the State or Region to evaluate their current program against the IMPEP performance indicators. The self-assessments were used to develop strategies to address weaknesses identified in prior IMPEP reviews.

COMMON PERFORMANCE INDICATORS

Technical Staffing and Training

- **Monthly current issue meetings.** The New York State Department of Health used monthly TeleVideo conferences to discuss ongoing issues and to keep their staff current on health physics and program issues.

- **Job skill criteria.** NRC Region II developed Skills Lists (one for materials and one for fuel cycle positions). These lists allowed the Region to identify important attributes for recruitment and to help provide back-up staff to assure complete program coverage.

- **Video feedback for instructors.** The Florida staff assembled and presented a basic health physics training module that included the use of video recording the instructor practice sessions for self-critique and improvement on the course presentation.

- **Emergency response outreach program.** Washington had an outreach program for providing emergency response training to first responders, hospital staff, and local government health agencies for response to radiological events including incidents resulting from terrorist activities. The training included the use of actual radiation sources and realistic scenarios and proved to be an effective tool for augmenting the capability of first responders.

- **Physicist outreach program.** Minnesota initiated an outreach program for licensee physicists. Approximately semi-annually, Minnesota hosts general information meetings with medical physicists and health physicists.

Status of Materials Inspection Program

- **Licensing and inspection database.** The Illinois Department of Nuclear Safety established an integrated user-friendly licensing and inspection database that tracked inspection due dates, along with a host of other information regarding specific licensees. This system allowed staff to readily retrieve inspection and licensing information in preparation for inspections or licensing actions.

- **Notification of temporary job sites.** North Carolina utilized a license condition that required all licensees authorized to use radioactive material at temporary locations to notify North Carolina of work being performed in the State and to provide information on when and where the work will take place. This information was posted on a bulletin board along with requests for reciprocity. Staff could select field inspections as needed and perform the inspections in an efficient manner.

- **GL Device tracking system.** Oregon instituted a program that tracks registered general license (GL) devices (i.e., gamma gauges and in-vitro test kits). Although other States track such devices, Oregon's implementation practices of the program were unique. In addition to requiring accountability of the devices, the State also performed on-site inspections and requested additional information (e.g., leak test results) from the general licensee.

- **Hand delivery of new licenses.** The Washington program had a policy of hand-delivering initial licenses, which gave their staff an opportunity to discuss the

ramifications of the license with the new licensee. South Carolina had a similar practice of hand-delivering new licenses.

- **Change of ownership/controlling interest.** Chapter 404 of the Florida Statutes required that a new license be issued if a licensee undergoes a change in ownership or controlling interest. These licensees were also inspected as new licensees and included in the initial inspection data. It was noted that promptly inspecting a licensee whose license authority was transferred to a new owner or had a change in controlling interest, not only protected public health and safety, but also promoted the common defense and security of materials.

- **Notification of reciprocity.** Utah used a custom database management system programmed to provide the staff with a "pop-up" window, each day upon logging in, that indicates who is working in the State under reciprocity during the next 7-day period. If there are no licensees working under reciprocity during that time period, the "pop-up" window indicates this as well. The system also tracks who has been in the State, when, where, and for how long.

- **Compliance checks on reciprocity applicants.** Nevada has a policy of checking on the compliance history of a licensee requesting reciprocity approval with the Agreement State or NRC Region that issued the radioactive materials license. If the check reveals that a reciprocity applicant has outstanding compliance issues with their licensing authority (Agreement State or NRC Region), Nevada will deny the reciprocity application. This practice does not necessarily have to lead to the denial of a reciprocity application but could also be used to make an informed decision on whether or not to perform a field inspection of the reciprocity licensee.

Technical Quality of Inspections

- **Customer satisfaction survey.** Utah employed a unique customer satisfaction survey approach to its inspections. At the conclusion of the inspection, the inspector would leave a copy of a brief questionnaire with the licensee. It identified the inspector by name and requested the licensee to rate both the inspection (scope, duration, clarity) and the inspector (knowledge, professionalism, responsiveness). The form also requested the licensee's views on how the Utah program might better serve their needs. The Utah program showed a very strong commitment to Total Quality Management and this mechanism of getting customer feedback fit very well into that overall program. Utah has subsequently expanded this program to include customer satisfaction surveys for licensing actions as well.

- **Inspection photography.** North Dakota inspectors included photographs of licensee operations in the inspection files. The photographs helped supervisors and future inspectors have a visual indication of licensees' facilities, equipment, and operations.

- **Internal communication.** California used a "License Review Alert Form," Form RH 2033, as a means to document in writing the communication between inspection staff and licensing staff. Using this form, information obtained by the inspection staff is communicated to the licensing staff responsible for license termination.

- **Cease and desist orders.** California used a “User's Declaration Form” to establish a legally-binding agreement between California and a licensee. The form can be executed by an inspector in the field to cause a licensee to discontinue a serious non-compliant activity.

- **Inspection program self-audit.** NRC Region III conducted a “quarterly inspection self-assessment” program. Each quarter, a senior inspector and a GG-13 inspector from each Inspection Branch spent a day reviewing one area of inspections. Topics included documentation using the field notes, completion of Inspection Follow-up System (IFS) data, and inspection of events. The inspectors selected appropriate documents for review and presented their findings, in writing, to the inspection branch chiefs. Findings have resulted in development of additional written guidance in the form of memoranda to the staff, as well as additional in-house training.

- **Violation response checklist.** New Hampshire used a violation response review checklist to document staff reviews of how the licensee addressed their response to each Notice of Violation.

- **Peer reviewed notes and correspondence.** The New York State Department of Labor’s inspection field notes and inspection correspondence were peer reviewed by one of the senior inspectors to assure consistency, thoroughness, and quality of reports.

- **Rule requirement checklist.** Oregon employed a unique method for educating the licensee of Oregon’s regulations, as they pertain to the licensee’s operation. At the conclusion of the inspection, the inspector would provide a checklist to the licensee that specified the Oregon administrative rule requirements applicable to the licensee. The licensee may use this checklist to facilitate the annual review of their radiation safety program. Additionally, the inspectors routinely utilized a form to document the “vertical slice” approach to their inspections, where several types of radioactive sources are tracked from their receipt to final disposal.

- **Inspection compliance history form.** The Utah program utilized an inspection compliance history form both for the materials program and the low-level radioactive waste disposal program. The compliance history form included all of the past inspection findings for the facility and was used not only to help the inspector prepare for the inspection, but also as a teaching tool during the inspection to help the licensee better understand the issues and past history of the licensee.

- **Field operations database.** NRC Region IV kept a database of sites where licensees may conduct field operations. Inspectors used the database in conducting unannounced field inspections when they are in the vicinity for a routine inspection.

- **Post-inspection violation protocol.** If inspection findings are determined to be violations after the conclusion of the inspection, the Iowa Bureau of Radiological Health contacts the licensee via telephone to give the licensee a “heads up” before the formal Notice of Violation is issued. The inspector and the licensee discuss each violation in detail so the licensee clearly understands the cited violations. This helps to ensure that the licensee initiates corrective actions in a timely manner.

- **Law enforcement at initial security inspections.** As part of the preparation of the initial site visit to a licensee's facility, Kentucky inspectors encouraged their licensees to invite a representative of the respective local law enforcement agency to attend the initial on-site visit to evaluate the Increased Controls. This practice was conducive to communicating the intent and clarifying the requirements of the Increased Controls, as well as helping the local the law enforcement agency understand their role in the Increased Controls.

Technical Quality of Licensing Actions

- **Computerized license templates.** The Illinois Department of Nuclear Safety developed extensive licensing guidance for its staff, as well as an effective system of using licensing templates for individual reviewers via personal computer. These templates were contained on the Department's computer network. Each reviewer had a personal computer tied into the network and was able to generate a completely new document each time the license is amended, which reflected the changes in the license in boldface type.

- **License database automation.** NRC Region IV made advances in license automation using Word Perfect macros and search techniques, which allowed the Region to search its database to respond more promptly to queries about specific or generic licensing issues.

- **License information tracking system.** The Illinois Department of Nuclear Safety used an administrative control technique referred to as "Blue Sheets." These blue sheets were prepared by an administrative assistant, who also enters critical license application data onto the Department's computer network. The blue sheets were found to be effective for tracking the progress of licensing actions for fees, technical evaluations, telephone calls, deficiency letters, responses, acknowledgment letters, mailing dates, and supervisory reviews. This same blue sheet information was used to generate periodic internal reports via the network. These reports were used to identify licensing actions by type, program code, date, licensee name, and reviewer name.

- **Annual expiration of licenses to ensure fee collection.** New Hampshire used a different approach to fee collection, which also provided a mechanism to assure that basic administrative information about the licensee was up to date. The approach was referred to as a simple license renewal, which differed from New Hampshire's standard 5-year technical license renewal. Under this system, licenses expired on an annual basis. Each year, the licensee received a letter informing them of the pending expiration of the license. To renew the license, the licensee was required to return the annual fee along with a form, which updated key information about the facility. This enabled the State to keep its records about licensee operations current, at least, on an annual basis. It was noted that all proposed changes to the licensed program had to be submitted by a separate letter requesting amendment of the license.

- **Licensing action quality control team.** NRC Region III used a unique quality control approach in its materials licensing program. In this approach, a quality control team of license reviewers would meet on a monthly basis to review 1-5 percent of the completed

casework before it was dispatched. This helped to assure uniform quality and provided timely feedback on appropriate licensing procedures to licensing staff.

- **Licensee responsibility cover letter.** Nevada tied every new or renewed license through license condition to an attached cover letter, which clearly explained the licensee's responsibilities when the licensee receives the license.
- **Financial assurance spreadsheet.** The Massachusetts program developed a spreadsheet to assist in determining the amount of financial assurance required based on the possession limit of radioactive material on the license.

- **Allowed devices on license.** NRC Region III had written material licenses that list allowed devices by manufacturer and model number rather than listing sources by manufacturer and model number. Because multiple sources can often be used in a single device, this approach provided increased flexibility to licensees and reduced the burden associated with license amendments to NRC staff.

- **Portable gauge model numbers.** Iowa identified a potential problem associated with model number designations involving Troxler 3400 Series and other Troxler Model 34XX portable gauges. To avoid the potential problem, Iowa revised all portable gauge licenses that authorized Troxler 3400 Series by removing the 3400 series authorization and specifying each portable gauge in the Series by its own model number. This licensing practice can be extended to other portable gauges distributed by manufacturers that use model numbers.

- **Pre-screening of licensing actions.** NRC Region IV pre-screened licensing actions prior to assigning them to the license reviewers. The process involved the Branch Chief and the senior staff of the Licensing Branch meeting weekly to pre-screen every licensing action to determine if the licensee and/or applicant had provided adequate information for license reviewers to review the application. Applications with insufficient information (i.e., no signature, missing referenced information, no supporting documentation, etc.) were provided to the staff for follow-up. After the licensee had responded with the additional information, the review could be completed. This pre-screening approach to the licensing process had greatly increased the timeliness of licensing actions, reduced the need for lengthy deficiency correspondence, and increased the effectiveness and efficiency of reviewing licensing actions.

- **Recovery and remediation fee.** Illinois had instituted an orphan source program that was funded through a "Recovery and Remediation Fee" assessed over the first two-year period to all new licensees. These fees went into a special fund to be used for the recovery and remediation of radioactive materials. When sources were abandoned, the State stored these sources in a secure storage facility and tracked the status of the sources in a database. Periodically, the State sent their staff to collect these sources and package them for disposal. Illinois then contracted with a broker to pick up and arrange for disposal of the orphan material using the special funds.

- **Identification of changes to licenses.** Texas included in the transmittal letter for an amended license a description of the changes (a roadmap), so that the changes to the license were readily visible and easily identified by the licensee.

- **Transmission of licenses via certified mail.** Minnesota instituted a policy for license issuance that requires all licenses to be sent by certified mail with return receipt requested. This practice, if used for licenses containing sensitive unclassified, non-safeguards information (SUNSI), places additional control on SUNSI documents by helping to ensure that the license document is received by the correct licensed facility and is delivered to the appropriate addressee. First class mail does not provide this level of protection.

- **Sharing medical licenses with nuclear pharmacies.** Washington developed a practice of transmitting copies of medical licenses they have amended within a calendar quarter to each of their nuclear pharmacy licensees. This enables a pharmacy to cross-reference the copy of the license provided by the client with the copy provided by the State. The State's nuclear pharmacy licensees support this practice, as it allows them to have a current copy of their clients' licenses. Washington's nuclear pharmacy licensees have agreed to maintain appropriate document control over the license documents in their possession.

- **License condition for terminated licenses.** Louisiana implemented a unique license condition in terminated licenses that states "If the Department determines that the information supplied is incorrect or defective, the applicability of a specific license may be reassessed." With this approach, the condition effectively holds the former licensee liable when inaccurate information provided by the licensee in the termination of the license. In such cases, the Department has a right to pursue actions against the former licensee, if warranted.

- **Decommissioning information request.** NRC Region III developed a document entitled, "Information that Should be Submitted to the NRC Staff for Decommissioning and Termination of Licensed Facilities." The document was provided to licensees intending to request authorization for release of a room or building for unrestricted use or for termination of licensed activities.

- **Decommissioning forms and checklists.** NRC Region II developed forms and checklists that were used to verify that all information on decommissioning licensing actions had been incorporated into license files.

- **Decommissioning guidance website.** NRC Region III developed a decommissioning guidance website. The website contains links to pertinent information and guidance documents for decommissioning, such as NUREGs, and includes a number of out-of-print and hard-to-find documents.

Technical Quality of Incident and Allegation Activities

- **Team review of incidents and allegations.** In Maryland, all complex events and allegations, as well as those with the potential for impacting public safety, were evaluated by the radioactive materials supervisor, management, and staff, in order to determine an appropriate response. The response varied based on the safety significance of the event, from resolution through telephone discussion, to immediate

response by a team of two health physicists, and, in some cases, included issuance of a press release to the media.

- **Audits of allegations.** NRC Region I conducted bi-monthly staff and semi-annual management audits of selected radioactive materials allegations. These audits verified such items as the completeness and clarity of allegation information, the timeliness of correspondence and Allegation Panels, and the appropriateness of panel actions and closure letter.

- **Quality Assurance Health Physicist.** The California program utilized a Quality Assurance Health Physicist. The position strengthened the Program's performance and ensured that health and safety issues were properly addressed.

- **Incident initial responder list.** North Dakota compiled a list of trained personnel in the State who would be willing to respond to a radiation incident, such as a transportation incident, and to provide initial assessment of the incident or assist during the incident until State radiological emergency response personnel can arrive. The list included the names of volunteers, their location within the State, the types of equipment they have available, and their contact telephone numbers.

- **Issuance of generic communications.** Wisconsin reviewed and analyzed all incidents to establish and evaluate root causes, to recognize generic issues, and to notify affected licensees of their findings if a trend is identified. In particular, after responding to several incidents resulting from MICK® Applicator malfunctions, Wisconsin researched the issue through NMED. The State discussed the issue with the relevant hospitals, the device manufacturer, other Agreement States, and the NRC. The State concluded that the malfunction was a generic issue and issued an Information Notice (IN) on June 9, 2005. The IN informed Wisconsin medical licensees of the incidents and alerted them to issues associated with the applicator. The information was shared with the NRC, and shortly thereafter, on June 23, 2005, the NRC issued IN 2005-17: Manual Brachytherapy Source Jamming, using Wisconsin's IN as an attachment.

- **Allegation handling training.** In addition to Agency-mandated allegation training, Region II required new hires to attend a PowerPoint presentation regarding allegation management, as well as listen to sound clips of actual allegations. While listening to the sound clips, new hires filled out forms to document the "allegations." Once all of the training modules were completed successfully, the individuals were certified to accept allegations.

- **Picture gallery.** NRC Region III created a picture gallery of radioactive material-related photographs. The gallery, which is organized by types of use and modality, contains photographs and schematic diagrams of devices, sources, and facilities. The gallery provides the ability to include pictures and diagrams in incident briefings to enhance the effectiveness of the briefings to individuals that may not be knowledgeable of such sources, devices, or facilities. The gallery also provides an excellent source of visual aids for inclusion in non-incident-related discussions and presentations, such as in-house training courses or topical seminars. The gallery can also be used to educate new staff members on the appearance and use of such devices, sources, and facilities.

- **Expansion of source collection efforts.** Illinois expanded its Orphan Source Recovery Program to include high schools. This initiative is a non-emergency response hazard mitigation program that collects and properly disposes of unwanted radioactive material from the schools. The collection of unwanted radioactive material is at no cost to the schools.

NON-COMMON PERFORMANCE INDICATORS

Compatibility Requirements

- **Reading proposed regulations aloud.** The California program reviewed draft regulations by reading the regulations out loud to available staff. This practice provided the technical and administrative staffs, the individuals responsible for implementing the regulations, and those most often in contact with the licensees the opportunity to identify potential problems before the regulations were finalized.

- **Adoption by reference.** Adopting regulations by reference allowed the State of Oklahoma to implement regulations quickly and avoid potential compatibility conflicts. It also reduced confusion for reciprocity and multi-State licensees.

Sealed Source and Device (SS&D) Evaluation Program

- **Screening of applications.** The NRC SS&D evaluation program instituted a screening process for all SS&D applications. The initial screening of an application saved time and effort. An application was initially reviewed to determine if there was enough information to perform the review. If incomplete, or if information was lacking, the application was returned to the applicant without further review.

- **QA/QC of registrants.** Georgia conducted quality assurance and quality control inspections on all SS&D registrants to ensure accuracy and consistency in the production of sources and devices.

- **Registering sources as parts of devices.** Georgia registered sealed sources as part of device evaluations when a source was not previously registered. The sealed source was registered as part of the device and the registration certificate noted in the text that the source was approved for use in such an application only. Georgia made such source registrations prominent by placing a note on the first page in the sealed source designation place.

- **Linking SS&D casework to material license.** When Ohio completed SS&D casework, the updated SS&D registration was tied to the applicant's radioactive materials license. When a sealed source and/or a device was introduced in an applicant's product line, a design or radioactive material strength was modified, or an error was corrected, all these actions were reflected in applicant's license.

- **Central registration files.** Massachusetts maintained a records filing system that provided a readily accessible historical overview of all the current, as well as the previous, actions for each SS&D registration. Specifically, all actions ranging from initial

approval through consequential amendments, changes, and corrections to the latest action were maintained and stored in one file. In the file, the individual actions were clearly separated from each other and fully documented.

- **Safety evaluation checklists.** In performing the SS&D safety evaluations, Massachusetts used a checklist for each case to assure that all aspects of the safety evaluation had been satisfactorily completed. Both reviewers initialed and dated the check list, and in addition, the SS&D supervisor also reviewed, initialed, and dated the checklist, thus, providing an additional quality assurance check for the safety evaluation process.

- **Additional quality assurance measures.** Maryland completed each SS&D case using two checklists unique to its SS&D program, in addition to the universally-used technical checklist in NUREG-1556, Volume 3, Revision 1. Maryland uses a 'completeness review checklist,' which delineates in great detail the specific issues that must be addressed in the registration certificate, and a 'concurrence review checklist,' which assures that the concurring SS&D reviewer would not miss the significant issues in completing the casework.

- **Event analysis.** Maryland developed an "Event Flow Chart," which leads to decision points to identify major issues involved in the event evaluation through a series of yes/no questions. The major issues addressed by the flow chart include human errors, the manufacturer's root cause analysis, and the need for engineering analysis. Maryland also retroactively applied the Event Flow Chart to incident reviews that had already been closed out in order to determine the validity of its earlier resolutions.

- **Comprehensive SS&D Procedures.** California developed a comprehensive procedure to conduct safety evaluations of events and SS&D incidents (Procedure No. 04-03-005). The procedure addresses the entire evaluation process in a highly comprehensive manner. For example, the procedure defines the roles and responsibilities for the supervisor, as well as for the staff; delineates how to interface with other organizations; describes how to conduct the investigation for the event; and specifies the documentation requirements. Such a procedure can help a program ensure completeness of technical reviews of SS&D incidents, including identification of generic issues.

<u>Low-level Radioactive Waste Disposal Program</u>

- **Site and shipment photography.** South Carolina made efficient use of digital images to document site and shipment conditions. Variations were photographed for future use or to send to the shipper in the case of a violation. This practice efficiently documented violation information and the exact details of the violation to the shipper.

- **Modular inspections.** Utah implemented modular inspections, as compared to annual inspections, of low-level waste disposal facilities to enable the Division to utilize technical staff more efficiently, provide for more timely inspections, and provide better oversight of waste facility operations and performance.

- **Security plan as license condition.** Utah incorporated the Envirocare security plan into the license as a specific license condition, and thus made the licensee more accountable for incoming/outgoing radioactive material at the site. The State was in a better position to monitor, inspect, and enforce safety and security aspects regarding release of contaminated tools, containers, and materials from the site.

- **Closure criteria for disposal cells.** Texas attached, as an appendix to the active on-site disposal license, the closure criteria for the closed disposal cells, which kept the as-closed conditions in the license even though new criteria were established for the newer cells.

Uranium Recovery Program

- **Construction photography.** Colorado utilized photographic documentation of decommissioning construction activities.

- **Notification of change in business structure.** The State of Washington put conditions in licenses that the licensees must notify the State in writing 30 days prior to any change in their business structure. This license condition provided the State with the opportunity to evaluate if changes in the licensee's business structure could adversely affect the licensee's ability to continue to provide adequate decommissioning funding.