U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

OAS
Organization of Agreement States

Phase 3: Revision of NRC's Material Inspection Procedures

In addition to NRC working group members, the OAS members include:
Augustinus Ong (NH), OAS Co-Chair
Brian Goretzki, (AZ), Amy Ford (TN)
and Steve Mack (AR)

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

OAS
Organization of Agreement States

Acknowledgement of the help for the following slide presentation:

Anthony McMurtray
Materials Safety and Tribal Liaison Branch
Division of Materials Safety, Security, State and Tribal Programs
Office of Nuclear Material Safety and Safeguards

Recent Inspection Program Revisions

IMC 2800 (Materials Inspection Program)

- 2017 Phase 1: Revised to allow additional time extensions between inspections
- 2020 Phase 2: Major revision to emphasize risk-inform elements of the materials inspection program:
  - Enhance coordination and communication among the NRC regional offices and the Agreement States
  - Change the documentation of materials inspections
  - Allow flexibility for in-office reviews

Phase 3 Inspection Program Changes

IMC 2800 Working Group began revising the routine inspection procedures (IPs) to implement risk-informed approaches to the materials inspection program:

IP 87121 Industrial Radiography Programs
IP 87122 Irradiator Programs
IP 87123: Well Logging Programs
IP 87124 Fixed and Portable Gauges
IP 87125 Materials Processing/Manufacturer Programs
IP 87126 Industrial/Academic/Research Programs
IP 87127 Radiopharmacy Programs
IP 87128 Manufacturing and Distribution of Exempt Products
IP 87130 Nuclear Medicine Programs, WD Not Required
IP 87131 Nuclear Medicine Programs, WD Required
IP 87132 Brachytherapy Programs
IP 87133 Medical Gamma Stereotactic Radiosurgery and Teletherapy Programs
IP 87134 Medical Broad-Scope Programs
IP 87137 10 CFR Part 37 Materials Security Programs

Overall Changes to Existing Routine Inspection Procedures

- Changed “focus elements (FE’s)” to “risk modules (RM’s)” to highlight specific risk activities for each unique inspection type (e.g., nuclear medicine)
- Added “level of effort” estimates to each of the new/revised inspection procedures
- Separated some of the inspection types listed in existing IPs into new procedures to provide more focus on specific risks activities
- Provided lessons learned type examples to higher risk activities

Examples of Risk Activities Focus in New Draft Inspection Procedures

- **Fixed Gauges**
  - Lock-out, tag-out
- **Portable Gauges**
  - Security of gauges, especially during transportation
  - Activities at temporary jobsites
- **Broad Scope (formerly part of IP 87126 (Industrial/Academic/Research))**
  - Unsealed materials
  - Oversight and storage of materials, including inventory controls
- **Veterinary Use (formerly part of IP 87126)**
  - Potential exposure pathways from use of radioactive materials in animals
- **Nuclear Medicine**
  - Observation of positron emission tomography (PET) and therapy treatments
  - Security and control of materials (diagnostic and therapeutic)

Working on Routine Inspection Procedure Changes

- Well Logging
- Irradiators
- Industrial Radiography
- Radiopharmacy Programs
- Materials Processor/Manufacturing Programs
- Medical Gamma Sterotactic Radiosurgery and Teletherapy Programs
- Brachytherapy Programs
- 10 CFR Part 37 Materials Security Programs

From OAS Program Perspectives

- An experienced inspector may look at our risk-informed modules (RM's) and not agree with the order
- As an experienced inspector we have our preferences which can still be met using these procedures. The main point of the IP's is to provide a more risk informed guide on what to look for during an inspection especially for those with less experience.
- The idea of risk informing the IP's is to give proper weight to the areas of significant risk, to ensure the health and safety of workers, safe and secure use of RAM, and the protection of the public health.
- Items that the WG felt were of less risk significance were not removed but placed as appendices in each IP. These items may not pose as much risk, but may very well point to the health and oversight of a licensee's Radiation Safety Program.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

LEIRA CUADRADO

SENIOR PROJECT MANAGER
U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

Other Activities and Schedule

- IP revisions to be reviewed by the Agreement States in at least 3 groups
  - First group of IP revisions scheduled to go out for comments in August 2021
  - Second group scheduled go out for comments September/October 2021
  - Third group scheduled go out for comments November/December 2021
- Outreach will be conducted with each group that is sent for comments

Organization of Agreement States

First set of procedures for comments:

Current IPs	Proposed Revised IP
IP 87124 “Fixed and Portable Gauges”	IP 87124, “Fixed Gauge Programs”
	IP 87139, “Portable Gauge Programs”
IP 87126 “Industrial, Academic, and Research Programs”	IP 87126, “Broad Scope Academic and R&D Programs”
	IP 87140, “Source, Special Nuclear Material and Other Alpha Emitter Use Programs”
	IP 87141, “Limited Scope Academic and R&D Programs Including Animal Use”
	IP 87142, “Sealed Sources and Devices (Other) (Those Used in Measuring Systems, Analytical Instruments, Calibration and Checking of Instruments, and Similar Purposes)”
	IP 87143, “Self-Shielded Irradiator and Calibrator Devices”
	IP 87144, “Veterinary Use Programs”
IP 87130, “Nuclear Medicine Programs – Written Directive Required”	IP 87130, “Nuclear Medicine Programs”
IP 87131, “Nuclear Medicine Programs – Written Directive Not Required”	

Example of Risk Modules

IP87126 – BROAD SCOPE ACADEMIC AND R&D PROGRAMS

RM-1: OBSERVATION OF ACTIVITIES

- Observation of representative sample of licensed activities, including activities conducted by radiation safety staff and by authorized users.

RM-2: ASSESSMENT OF DOSE TO WORKERS AND THE PUBLIC

- Specialized activities that have the potential to cause internal doses that require monitoring due to use of unsealed radioactive material, external radiation, and the results of public doses due to effluent releases.

RM-3: SURVEYS FOR CONTAMINATION AND EXPOSURE CONTROL

- Attention to observing licensee personnel, using properly calibrated instruments to conduct surveys for contamination and for potential sources of external exposures to workers and to non-users.

RM-4: SAFETY AND SECURITY OF LICENSED MATERIALS

- Attention to safety, inventory control, and security of broad scope licensed material at the various locations where licensed materials are used and stored.

RM-5: RM-5 MANAGEMENT OVERSIGHT

- Adequate implementation of the radiation control program by the RSO, management's approval process for the uses of sealed and unsealed sources, and the radiation safety training of users.

Revisions to Inspection Manual Chapter 2800

- Dispositioning of low-safety significance issues
- Strengthening and leveraging the collective inspection and oversight effort of the National Materials Program
- Enhancing the coordination for multi-regional licensees

Questions?

Leira Cuadrado

Leira.Cuadrado@nrc.gov

Senior Project Manager

or

Augustinus Ong

Augustinus.ong@dhhs.nh.gov

OAS Working Group Co-Chair

Organization of Agreement States