Perspectives of a Radiation Protection Officer

*The IAEA Safety Standards – Radiation Protection in Veterinary Medicine*

Dr. Amy Orders
Mandate to Develop Safety Standards

IAEA Statute (Article III.A.6)

To establish or adopt, in consultation and, where appropriate, in collaboration with the competent organs of the United Nations and with the specialized agencies concerned, standards of safety for protection of health and minimization of danger to life and property (including such standards for labour conditions), and to provide for the application of these standards to its own operation as well as to the operations making use of materials, services, equipment, facilities, and information made available by the Agency or at its request or under its control or supervision; and to provide for the application of these standards, at the request of the parties, to operations under any bilateral or multilateral arrangements, or, at the request of a State, to any of that State's activities in the field of atomic energy
IAEA Safety Standards

- Not binding on Member States but may be adopted by them
- Binding for IAEA's own activities
- Binding on Member States in relation to operations assisted by the IAEA
- Binding on Member States entering into project agreements with the IAEA

THE IAEA SAFETY STANDARDS: A GLOBAL REFERENCE FOR PROTECTING PEOPLE AND THE ENVIRONMENT
IAEA Safety Standards

Safety Fundamentals
- high level underlying principles

Safety Requirements
- specify obligations and responsibilities ("shall" statements)

Safety Guides
- recommendations to support requirements ("should" statements) based on international best practices
IAEA Safety Standards

Commission on Safety Standards (CSS)

- Nuclear Safety Standards Committee (NUSSC)
- Radiation Safety Standards Committee (RASSC)
- Transport Safety Standards Committee (TRANSSC)
- Waste Safety Standards Committee (WASSC)
- Emergency Preparedness and Response Standards Committee (EPReSC)
Radiation Safety Standards Committee (RASSC)

The Radiation Safety Standards Committee (RASSC) is a standing body of senior experts in radiation safety..... RASSC advises ..... on the radiation safety programme for the development, review and revision of standards relating to radiation safety and the programme for their application. Its objectives are to provide feedback and recommendations to the Agency on the radiation safety programme and areas for improvement, and to achieve consensus, quality, coherence and consistency in the development of IAEA safety standards.

Membership is open to all Member States
Radiation Safety Standards Committee (RASSC)
IAEA Safety Standards

Outline and work plan
- Preparation by the Secretariat
- Review by the committees and the Commission on Safety Standards

Drafting and revision of safety standard
- by the secretariat and consultants

Review
- by the safety standards committee(s)

Member States

Endorsement
- by the Commission on Safety Standards

Establishment
- by the IAEA Director General or the Board

Publication

SF and SRs: approval by Board
SGs: approval by DG
International Basic Safety Standards 2014

During the Board's consideration of measures to strengthen nuclear safety and security, the body approved the revised IAEA Safety Standards on the Safety of Nuclear Power Plants: Design (Safety Standards Series No. NS-R-1), as well as a revision of IAEA Safety Series No. 115, or Draft Safety Requirements: Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards. Subsequently, safety guides are developed in support of the BSS.

Radiation Protection in Veterinary Medicine

Justification

• Most of the techniques used or developed for humans will eventually be used also for animals
• Staff are often poorly trained in radiation protection issues
• Old disused equipment from human medicine is often used
• Justification of exposure is a key consideration, it is often absent as the market is driven by insurance considerations
• Exposures take place in many different environments – from state-of-the-art dedicated facilities to farmyards

• The use of radiation for the diagnosis and treatment of animals is not a “medical exposure” – cannot include in DS399
• pet-owners akin to comforters and carers in medical exposures
• Occupational and public exposures are key issues
Novel aspects of veterinary radiation safety
Veterinary World

- Academic institutions (variable equipment)
- Large Private Networks (all possible equipment)
  - US, UK, EU
- Independent clinics and hospitals (radiology suite +/- CTs)
  - France, 85% practices (6300) equipped with 1+ Xray

- Teleradiology
- Tele-RT planning
Pubmed Trends / Literature
Veterinary Radiology
Veterinary Computer Tomography

2-64 slices CTs
Cone-Beam CTs
Veterinary Dentistry

At institutions with dentistry experts
Veterinary Interventional Radiology
Veterinary Nuclear Medicine

+ Iodine 131 for hyperthyroidism
Veterinary PET imaging
Veterinary Radiotherapy

40 US/CA
20 EU
+ Australia
+ Japan
+ ...
Safety Culture and the BSS

- Organizational safety systems and behaviors
- Staff perceptions of management
- Risk perceptions
- Teamwork and communication
- Regulatory burden and expectations
ALARA challenges in academic and research environments

- Occupational concern from increased density = increased ALARA considerations
- Authentic imaging situations = ALARA second to worker safety
- Diagnostic quality = situational dependent versus safety as situational independent
Policy implementation via communication and practicality

Conventional diagnostic and interventional methodologies do not extend to all use cases.

Situational awareness of challenges associated with veterinary imaging modalities, inclusive of x-ray generating devices, radioactive materials, non-ionizing radiation options.

Collaborative network of professionals extending beyond the radiation worker to public/owners and unique location where services are needed.
Conclusion

Implementation of BSS principles must remain agile and adapt with levels and expectations of patient care, as well as access to advanced technologies and techniques.

Practicality of application must meet the regulatory burden of safety and compliance without diminishing diagnostic, therapeutic or research opportunities.

Novel patients require novel risk management and mitigation. Communication and shared understanding of goal is paramount to worker safety.