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Senior Regulators Meeting 20 Sept. 2018

Radiation Protection and Safety in Veterinary Medicine Draft Safety Report

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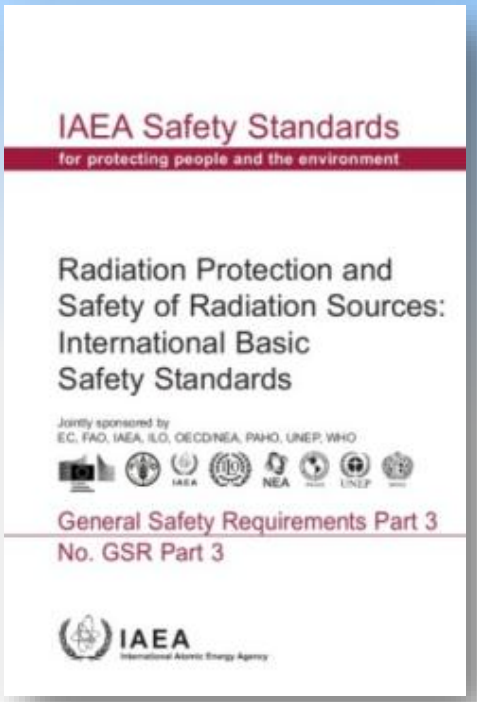
Objective

- Discuss the evolution of the safety report and authorization activities in veterinary medicine.
- Highlight some of the recommendations.
- Address some key variations in radiation protection unique to veterinary practices that are included in the safety report.

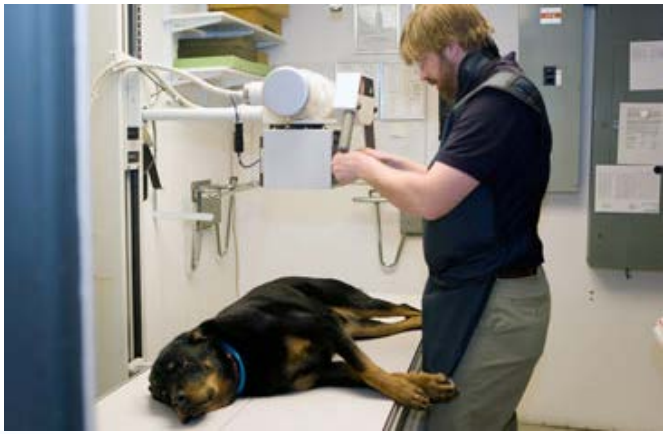
Radiation Used Veterinary Medicine



- The International Basic Safety Standards requires that veterinarian (all) uses of radiation sources meet the standards.
- The use of radiation for the diagnosis and treatment of animals is not defined as a medical exposure.
- However, many applications of radiation in medicine are being used in veterinary centres around the world
- There is no specific IAEA guidance on radiation used in veterinary medicine. Guidance is in publication.

International Basic Safety Standard

- The BSS recognizes radiation used in veterinary medicine as a potential exposure pathway
- Classified radiation sources used in veterinary medicine as a planned exposure (para 3.1(a))
- Meets the requirement for a planned exposure situation (para 3.2(a))



Radiation Exposure in Veterinary Medicine

- Concern for the radiation worker (veterinary assistants, animal handlers, veterinarians).
- Concern for the pet owner and family.
- Concern for the public in areas where radiation procedures are performed.

Why developed guidance?

Prevent the unnecessary exposure of workers to radiation

Implementation

- Initiated at the request of RASSC in 2014
- Consultancy to developed the outline of the document 2015
- Document development approved by DGOC 2015
- First consultancy to develop the draft 2016
- Edits and revisions to the draft
- Second consultancy to finalize the draft 2017
- Presented draft version to RASSC in June 2018

Objectives

- Provide guidance on the safe use of radiation in veterinary medicine for workers and members of the public.
- The safety report stresses occupational exposure and public exposure in the use of radiation in veterinary medicine and safety issues that should be considered in order to be compliant with the BSS.
- The safety report is intended primarily for regulators and workers in veterinary medicine, but will also have relevance for professional bodies, ethics committees and suppliers of equipment and software.
- The safety report includes the topics of source security and emergency response that might arise with the use of radioactive material in veterinary medicine.

Participants in the development of the safety report

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Radiation Protection and Safety in Veterinary Medicine Considerations

Safety Report

- Organization similar to medical
  - Specific guidance
    - Diagnostic Imaging
    - Nuclear Medicine
    - Radiotherapy
  - Four (4) appendices
    - Protective clothing for diagnostic and interventional radiology
    - Instructions on the release of animals following the administration of Iodine 131 or compounds labelled with iodine 131
    - Spill procedures
    - Radiation safety features of rooms used for storage, preparation and implantation of sealed sources of radiation
  - One Annex
    - HERCA guidelines on radiation protection training of Veterinarian professionals

RADIATION PROTECTION AND SAFETY IN VETERINARY DIAGNOSTIC RADIOLOGY USING X RAY

3.1 GENERAL

3.2 SAFETY OF VETERINARY RADIATION FACILITIES AND RADIOLOGICAL EQUIPMENT

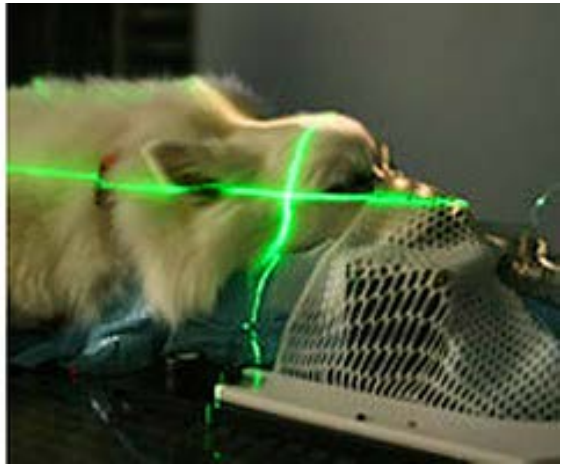
3.3 OCCUPATIONAL RADIATION PROTECTION

3.4 RADIATION PROTECTION OF THE PUBLIC

Radiation Protection and Safety in Veterinary Medicine Considerations

Safety Report

- Each specific speciality addresses
  - **Occupational exposure guidance**
  - **Public exposure guidance**
  - **Pet owners exposure guidance**
  - **Security (when applicable)**
  - **Emergency response (when applicable)**



Nuclear Medicine and Radiotherapy have similar chapters

- Includes security when applicable
- Safety of radioactive sources
- Animal release
- Disposal of waste

Unique Challenges in Radiation Veterianary Medicine

- Different subset of workers are used in veterinary medicine.
- Different environments where imaging and therapy are performed.
- Different instructions needed for pet owners
- The inability for the patient to follow instructions.
- The risk of harm from radiation exposures may not be as great as the risk of harm from an agitated animal.

Is radiation protection and safety in veterinary medicine important?

INES Event Rating Form

Event Title: **Overexposure of a worker**

Date of Event: **14 March 2018**

Event Location/Facility Name: **Veterinary clinic** in Tampere

- An animal keeper was contaminated with I-131 in a veterinary clinic on March 14 2018.
- The veterinary clinic uses I-131 for feline hyperthyroidism treatments.
- On the treatment iodine is administrated to the cat as a single injection under the skin.
- On March 14 2018 five cats were treated with I-131 with administrated activities in the range of 44 -122 MBq. The animal keeper's neck was contaminated from activity left on cat's fur.

- On March 16 2018 the animal keeper made measurements and noticed high dose rates near her neck. She notified radiation protection officer (RPO) about her findings. The RPO instructed animal keeper to take pill of stable iodine.

- Next day the RPO made measurements of animal keepers neck and estimated that at least area of 4 cm2 was affected with activity of 360 kBq. After decontamination activity on the neck was measured to be about 100 kBq. On March 19 2018 the RPO measured her neck again and activity was found to be about 60 kBq. The RPO estimated that the animal keepers neck's skin dose was 2 Sv with affected area of 4 cm2.

- Finnish Radiation and Nuclear Safety Authority (STUK) was notified about the incident on March 28 2018. On April 4 2018 additional measurements were made in STUK. Thyroid's I-131 activity was found to be 2,9 kBq, from there thyroid activity was estimated to have been 18 kBq on March 16 2018. The estimated equivalent dose to the thyroid was 27 mSv with estimated effective dose of 1,4 mSv.

Prevent the unnecessary exposure of workers to radiation

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Thank you!