



# **Improving Medical Radiation Regulations**

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# **United States Nuclear Regulatory Commission (US NRC)**

**The NRC's mission is to regulate civilian use of byproduct, source, and special nuclear materials**

- **“to ensure adequate protection of public health and safety, to promote the common defense and security, and to protect the environment.”**

# **United States Nuclear Regulatory Commission (US NRC)**

**The NRC's regulatory mission covers three  
main areas:**

- *Reactors***
- *Waste***
- *Materials***
  - **Uses of nuclear byproduct materials in *medical*, industrial, and academic settings and facilities that produce nuclear fuel****

# **“Byproduct material”**

- **The Energy Policy Act of 2005, Pub. L. No. 109-58, 119 Stat 594 (2005), expanded the NRC’s regulatory authority over byproduct materials as defined in the Atomic Energy Act of 1954, as amended (AEA), to include:**
- **Certain *naturally-occurring and accelerator-produced radioactive materials* (NARM) including Ra-226**

# “Byproduct material”

- **NRC’s final rule (72 FR 55864; Oct 1, 2007) entitled, “Requirements for Expanded Definition of Byproduct Material,” (the NARM rule) redefined “byproduct material” to include much more than just fission products**
  - **e.g. positron emitting radionuclides and PET**
- **A big step in the right direction**

# **But now ionizing radiation in medicine is expanding once again**

- **GammaKnife radiosurgery vs Cyber Knife vs conventional linac**
  - **One is NRC-regulated, the other not**

# **But now ionizing radiation in medicine is expanding once again**

- **Ir-192 HDR brachytherapy vs electronic brachytherapy (e.g. Xofig) and contact radiation therapy devices (e.g. Santax Medico TOPEX SRT 100)**
  - **One type is NRC-regulated, the other not**

# **But now ionizing radiation in medicine is expanding once again**

- **PET/CT machines**
  - *Part* of the machine is NRC-regulated, the other is not
- **Co-60/MRI machines??**



# **The old NRC**

- **The NRC's mission is to regulate civilian use of byproduct, source, and special nuclear materials**

# **The new NRC?**

- **The NRC's mission is to regulate civilian use of ionizing radiation**
- **The IRRC?**

# Acronyms

- **AEA – Atomic Energy Act**
- **Co-60 – Cobalt-60**
- **CT – computed tomography**
- **Ir-192 – Iridium-192**
- **IRRC - Ionizing Radiation Regulatory Commission**
- **NARM - naturally-occurring and accelerator-produced radioactive materials**
- **NRC – U.S. Nuclear Regulatory Commission**
- **PET – Positron Emission Tomography**