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Management of radioactive waste in nuclear medicine

Abstract:

The management of radioactive waste in nuclear medicine is a critical aspect of ensuring radiation safety, environmental protection, and regulatory compliance. Nuclear medicine procedures generate various forms of radioactive waste, including solid, and liquid which primarily from diagnostic and therapeutic applications involving radionuclides such as Technetium-99m, Iodine-131, and Fluorine-18. This presentation demonstrates the categorization, handling, storage, decay management, and disposal methods for radioactive waste in clinical settings, with a focus on minimizing occupational exposure and public risks. Emphasis is placed on the implementation of the ALARA (As Low As Reasonably Achievable) principle, proper segregation and labeling of waste, use of shielded storage containers, decay-in-storage protocols for short-lived isotopes, and adherence to national and international regulatory frameworks, including those created by the International Atomic Energy Agency (IAEA). The study also pays attentions to best practices for staff training, incident response, and waste minimization strategies to encourage safety and sustainability in nuclear medicine departments. Efficient waste management not only confirm compliance but also supports the ethical and responsible use of radioactive materials in modern healthcare. To protect staff, patients, and the public from radiation exposure in hospitals, both national and international regulations must be applied to ensure the primary goal of protecting people and the environment from the harmful effects of ionizing radiation. This is achieved by establishing safety standards, regulating the safe use of radioactive materials, and minimizing exposure.

Biography

Hasna Al Bandar is a Saudi physicist with over 20 years of experience in nuclear medicine. She holds degrees in Physics and Medical Physics, and is licensed as a Radiation Safety Officer. Currently serving as Senior Medical Physicist at Prince Sultan Military Medical City, she is an active member of the Saudi Medical Physics Society and the Middle East Committee of Medical Physics, with numerous research contributions in the field.