

Draft policy for health professional organisations

Eliminating highly enriched uranium (HEU) from radiopharmaceutical production

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Nuclear weapons remain the pre-eminent immediate threat to the health and survival of humans and the biosphere. The use of even a single nuclear weapon would overwhelm medical resources, contravene international law, pose significant and uncontrollable risks of escalation, and can never be justified.

Eliminating the threat posed by nuclear weapons requires the outlawing of nuclear weapons and dismantling current nuclear weapon stockpiles, but also depends on eliminating access to fissile material – the fuel for nuclear weapons. The near-universal use of weapons-grade, highly enriched uranium (HEU, more than 90% U-235) to produce nuclear reactor-derived radiopharmaceuticals is a significant and unnecessary nuclear proliferation and terrorist hazard. Conversion of such production to low-enriched uranium, which is not directly usable for weapons, is technically feasible and readily achievable.

Radiopharmaceutical producers in the Netherlands and South Africa have indicated they plan to convert from HEU to LEU, but suggest this may take 10 years, and have not made firm commitments or spelt out clear timeframes. The largest suppliers have not yet indicated they are even planning such conversion.

Health professionals have a strategic opportunity and obligation to progress the elimination of medically-related commerce in and use of HEU, closing one of the most vulnerable pathways to a terrorist nuclear bomb.

We urge:

1. Radiopharmaceutical suppliers to expedite universal conversion of isotope production targets and reactor fuel from HEU to LEU as soon as possible.
2. The governments of Belgium, Canada, France, the Netherlands and South Africa, and Euratom, to require isotope production reactors within their jurisdiction, utilising HEU fuel or targets, to promptly be converted to LEU fuel and targets.
3. All governments and regional authorities to require any new isotope production facilities within their jurisdiction not to use HEU.
4. The governments that supply HEU (France, Russia, South Africa, USA and UK) to institute compelling incentives – preferably coordinated - for radiopharmaceutical producers to convert to LEU in the near future. Such measures could include a cut-off date of no more than 3 - 5 years for continued HEU supply, possibly in combination with substantial and progressive escalation in the price charged for HEU.
5. Development of a code of conduct against the civilian production, trade and use of HEU. Stockpiled and waste HEU should be converted into useable LEU.

6. Priority and funding for research and development of non-reactor generation of isotopes currently sourced from reactors, in particular molybdenum-99.
7. As an interim measure, investigation of the possibility of utilising existing nuclear power and/or research reactors to produce medical isotopes, to minimize the need for construction of new dedicated isotope production reactors.
8. Clinicians to optimize clinical application of non-ionising and non-reactor based ionising radiation imaging technologies. Clinicians should consider and use alternatives to procedures which require reactor-produced isotopes whenever the care of their patients can be served as well or better by alternatives which either avoid ionising radiation altogether (such as ultrasound and MRI), utilise non-reactor isotopes (such as PET scanning), or utilise conventional X-rays (such as modern spiral CT scanning).
9. Radiopharmaceutical distributors and nuclear medicine departments to procure isotopes produced without HEU wherever possible; and/or encourage their supplier(s) to convert to LEU.
10. Other national, regional and international medical organizations, including the World Health Organisation and World Medical Association to become apprised of this issue, adopt similar policies, and coordinate and lead international medical efforts to eliminate HEU from radiopharmaceutical production worldwide as quickly as possible.