

# SESSION ON ALTERNATIVE TECHNOLOGIES TO HIGH ACTIVITY RADIOACTIVE SOURCES

6<sup>TH</sup> REGIONAL REVIEW MEETING. COLOMBO, SRI LANKA

WEDNESDAY 07 MARCH 2018

FINAL AGENDA

## BACKGROUND

Radioactive sources are used daily in medical, industrial, agricultural and research applications around the world. If these sources should be lost or stolen and fall into the wrong hands, they could cause bodily harm, significant social disruption, environmental damage, and anxiety in the community. Such results would be damaging to the reputation and credibility of any organisation involved.

Of particular concern are Category 1 and 2 sources, which the IAEA defines as extremely dangerous and very dangerous. Although adequate security measures will significantly reduce the risks posed by high activity radioactive sources, replacing them altogether with a different, but equivalent, technology (X-rays, electron beams, ethylene oxide sterilization, etc.), the so-called *Alternative Technologies*, would permanently reduce the risk. Ongoing research, advancements in new technology, and improvements in existing technologies have made many alternatives to radioactive sources attractive and cost effective. However, more work is needed before certain applications can be replaced successfully with an alternative.

The movement to adopt alternative technologies is growing in some countries, as well as for some practices. This has been encouraged, at least in part, by the potential risks and liabilities posed by radioactive material. In other cases, complacency and the lack of incentives and viable alternatives have limited the movement to non-isotopic replacements.

When it comes to developing and promoting alternative technologies, many different stakeholders play an important role. Coordinated efforts at the international level and the engagement of all stakeholders is a prerequisite to an effective and sustainable movement towards alternative technologies. End users of radioactive sources are the key decision makers in this effort because they are generally the best qualified to assess the viability of replacing their current radioactive sources with an alternative. Regulators also play a major role because they can provide end users with information on such technologies and explain how others have benefitted from adopting them. Regulators may also implement policies to facilitate the adoption of alternative technologies; for example, they could create disincentives for the continued use of sealed sources. In addition, device manufacturers play a central role in the development of radionuclide-based devices and alternative technologies because they are continuously upgrading existing products and developing new ones. The move to adopt alternative technologies also requires a clear understanding of the roles and responsibilities of other important stakeholders, such as government agencies and professional associations.

Further information on this topic can be found in the WINS Special Report titled *Considerations for the Adoption of Alternative Technologies to Replace Radioactive Sources* (April 2017).

## OBJECTIVES OF THE DAY

One of the main objectives of the day is to discuss the advantages and limitations of alternative technologies to radioactive sources. This will help participants understand—and better prepare for—some of the challenges they could face when replacing their sources or purchasing a new equipment not using radioactive sources. Participants will have the opportunity to listen to and talk with alternative technology vendors, as well as with end-users and regulators who will share their experiences using or regulating the use of these technologies. Participants will also review the key questions to ask to assess if purchasing a new equipment or replacing the sources currently in use with alternatives is equally effective, less burdensome and has comparable costs.

Specifically, participants will:

- Review and share information on the availability of alternative technologies for applications using high activity sealed radioactive sources.
- Address the status of implementing alternative technologies in various regions of the world – in particular in the participating countries – and to share the experience of manufacturers and end users in developing and using alternative technologies.
- Encourage and facilitate dialogue between those who have experience in using alternative technologies and those who are considering converting to alternative technologies.
- Identify the barriers to conversion and understand the dynamics of successful transition.
- Discuss good practices for managing the volume of disused radioactive sources that result from the adoption of alternative technologies.
- Identify sources of reliable information on the topic.

## AGENDA OF THE DAY

### SESSION I: DEVELOPING A COMMON UNDERSTANDING

09:00 – 09:30 **Objectives** of the day and results of the pre-session questionnaire (Pierre Legoux, WINS)

09:30 – 09:45 **Plenary and Table discussion** on the main reasons and benefits of using alternative technologies.

### SESSION II: AVAILABLE NON-ISOTOPIC ALTERNATIVE TECHNOLOGIES AND LESSONS LEARNED FROM USING THESE TECHNOLOGIES

Key issues:

- What alternative technologies are currently available? Where can we find unbiased, relevant and reliable information?
- How acceptable are they? What areas still need further R&D?
- What are potential impediments to the adoption of alternative technologies? What are the incentives for replacement?

09:45 – 10:45 **Alternative Technologies for Blood Irradiation**

- A Manufacturer Perspective (Dan Aitkenhead, Best Theratronics, Canada)
- Lessons Learned From Converting a CS-137 Irradiator (Kristin Ramberg, Hospital Construction Agency, Norway)

10:45 – 11:00 Coffee Break



- 11:00 – 11:45 **Alternative Technologies for Radiation Therapy**
- A Manufacturer Perspective (Michael Sandhu, Varian Medical Systems, Switzerland)
  - Lessons learned from operating Linacs for Radiation Therapy (Athula Kumara, National Cancer Institute, Sri Lanka)
- 11:45 – 12:30 **Group Discussion:**
- Is there a movement to adopt alternative technologies in the medical sector?
  - Is the acceptance of alternative technologies different in various participating countries? What are the reasons for such differences?
  - What are the usual barriers to conversion? What are the possible solutions to overcome them?
- 12:30 – 13:30 Lunch
- 13:30 – 14:15 **Experiences and lessons learned from using alternative technologies in industrial irradiation** (Priyanga Rahnayaka, Sri Lanka Gamma Center)
- SESSION III: SUPPORTING THE TRANSITION TO ALTERNATIVE TECHNOLOGIES AND MANAGING ITS IMPACT ON RADIOACTIVE SOURCE END OF LIFE MANAGEMENT**
- Key issues:
- What are the key elements of an effective transition process towards alternative technologies?
  - What are the on-going regional or international efforts to support the development and dissemination of alternative technologies?
  - What is the impact of replacing sources by alternative technologies on the traditional supply chain of radioactive sources and on the back end of the life cycle?
- 14:15 – 14:30 **Plenary discussion** on the main elements of an effective transition towards alternative technologies
- 14:30 – 15:15 **Group discussion** to identify the key stakeholders and their role in developing and promoting alternative technologies
- Who are the main stakeholders?
  - What are their roles and responsibilities?
  - What do they need to know and what do they need to share to effectively play their role?
- 15:15 – 15:30 Coffee break
- 15:30 – 16:00 **International efforts to support the development and dissemination of alternative technologies** (Malika Taalbi, US DOE)
- 16:00 – 16:30 **End of Life Management of Radioactive Sources** (Kate Roughan, NEFW, IAEA)
- 16:30 – 16:45 **Plenary** discussion on good practices for managing disused sources
- SESSION IV: THE WAY FORWARD**
- Key issues:
- What have we learnt?
  - What are the opportunities for improvement and remaining challenges?
  - What could be the possible individual (participants) contributions?
- 16:45 – 17:30 **Group discussion** to review key findings of the workshop and to identify possible follow actions for each stakeholder group to encourage and facilitate the use of alternative technologies.
- 17:30 **End of the Day**