ARE MEDICAL RADIOISOTOPE SHORTAGES A THING OF THE PAST?

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• Decision to establish the HLG-MR – at the request of OECD Nuclear Energy Agency member countries, following the 2009-2010 supply shortage.

  – At present, about 40 experts representing the governments of 17 countries, the European Commission, the International Atomic Energy Agency, and the Euratom Supply Agency

• HLG-MR Terms of Reference

  – Review the total $^{99}$Mo supply chain from uranium procurement for targets to patient delivery and identify weak points and issues

  – Recommend options to address the vulnerabilities to help ensure stable and secure supply of radioisotopes

  – Work with supply chain participants to implement policy recommendations

• Currently in its third mandate (2013-2015)
This presentation includes:

- a summary of the results from a $^{99}$Mo/$^{99m}$Tc capacity/demand forecast (2015-2020); and,

- a description of the second self-assessment by global supply chain participants to evaluate their progress with implementation of the HLG-MR policy principles.
Demand

- 10 000 six-day Ci/week (in 2012, estimated to increase by 0.5%/year since) and projected to increase only slightly in mature markets and moderately in emerging markets.

Production Capacity

- Expected significant reduction in irradiation capacity from the exit of NRU (2016) and OSIRIS (around the same time) and commitment to LEU conversion (by 2016-17)

- Uncertainty of new irradiation/processing capacity coming online within their announced timelines and being able to penetrate the market

- What is the status of American projects? How likely are they to be commissioned within the announced timelines?
Current Processing Capacity and Demand

6-day curies EOP

- Current irradiation capacity
- Current processing capacity

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Mo-99 Topical Meeting, 24-27 June 2014

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• Included in total irradiation and processing capacity:
  – All current producers
  – Selected new producers, with a 1-year delay in commissioning their projects
• Full LEU conversion is delayed by 1 year
• Non-reactor-based projects have a 50% probability of operating at full capacity
'Project Delays' Alternative Scenario – Processing Capacity

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- Total processing capacity
- Demand + 35% ORC
- Demand + 62% ORC

6-day curies EOP

Values range from 100,000 to 600,000 curies EOP.
‘Project Delays’ Alternative Scenario – Processing Capacity

6-day curies EOP

- Total irradiation capacity - All technologies
- Total processing capacity

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Conclusions

- Increased risk of supply shortages in 2015-2017 largely from insufficient processing capacity

- Uncertainty whether alternative production technologies will produce within their announced timelines and be price-competitive

- Continuing unsustainable economic situation – disincentive for commercial infrastructure investment

- Some planned, new production capacity to be commissioned in 2018-2020 may not be on full-cost recovery, which will negatively impact commercial projects and potentially create significant over-capacity in the market

- Need to implement the HLG-MR policy approach, particularly full-cost recovery and outage reserve capacity
• Periodic reviews of the $^{99}$Mo/$^{99m}$Tc supply chain: Self-assessment – second review currently underway
  
  – Analyse and report on the functioning of the $^{99}$Mo/$^{99m}$Tc supply chain

  – Provide a “monitoring mechanism” for the HLG-MR on the progress of the supply chain in implementing the HLG-MR policy approach

  • Highlight supply chain participants who have implemented or are making good progress, and those who have not

  – Increase awareness of actions taken by the supply chain

  – Provide basic information on the status of the supply chain

• Questionnaires sent to: governments, reactor operators, processors, generator manufacturers, and end-user/industry associations
• Continued government subsidisation of $^{99}$Mo production at reactors and some processors

• Long-term contracts at below-market prices

• Short-term exploitation of subsidised production and the practice of international reverse auctions, where suppliers compete on price

• No or inadequate payment for outage reserve capacity

• In the absence of adequate provisions for outage reserve capacity, apparent over-capacity when all existing reactors and processors are available

• Simultaneous transition to full-cost recovery and LEU conversion creating technical and economic challenges for some processors

• Insufficient reimbursement for the medical isotope at the end-user level
• Prepare a report on the results from the second self-assessment of the global $^{99}$Mo/$^{99m}$Tc supply chain and publish it later in 2014

• Engage more closely with governments on:
  – the need to reduce and eliminate subsidies for $^{99}$Mo production;
  and
  – providing appropriate reimbursement for the isotope in nuclear medicine procedures

• Engage more closely with $^{99m}$Tc generator manufacturers and the medical community on the need to implement the HLG-MR policy approach for long-term security of supply
• The Supply of Medical Radioisotopes Series
  – Medical Isotope Supply in the Future: Production Capacity and Demand Forecast for the $^{99}$Mo/$^{99m}$Tc Market, 2015-2020
  – Implementation of the HLG-MR Policy Approach: Results from a Self-assessment by the Global $^{99}$Mo/$^{99m}$Tc Supply Chain
  – Market Impacts from Converting to Low-Enriched Uranium Targets for Medical Isotope Production

• Guidance documents
  – Provision of Outage Reserve Capacity for Molybdenum-99 Irradiation Services
  – Full-cost Recovery for Molybdenum-99 Irradiation Services
  – Full-cost Recovery Identification Workbook

• All documents are reports are available at: http://oecd-nea.org/med-radio/docs/
Thank You!

http://www.oecd-nea.org/