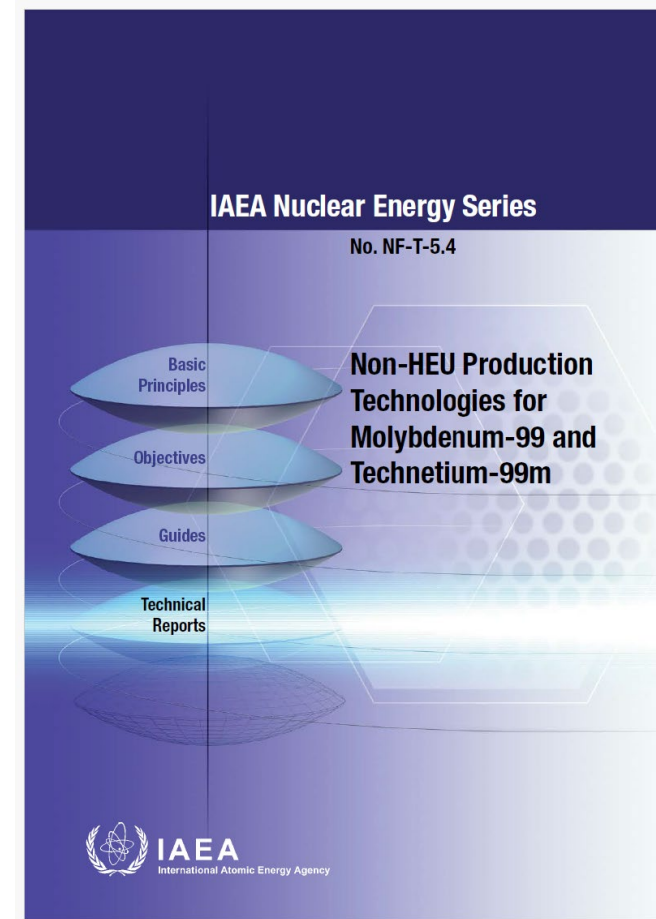


IAEA CRP Update

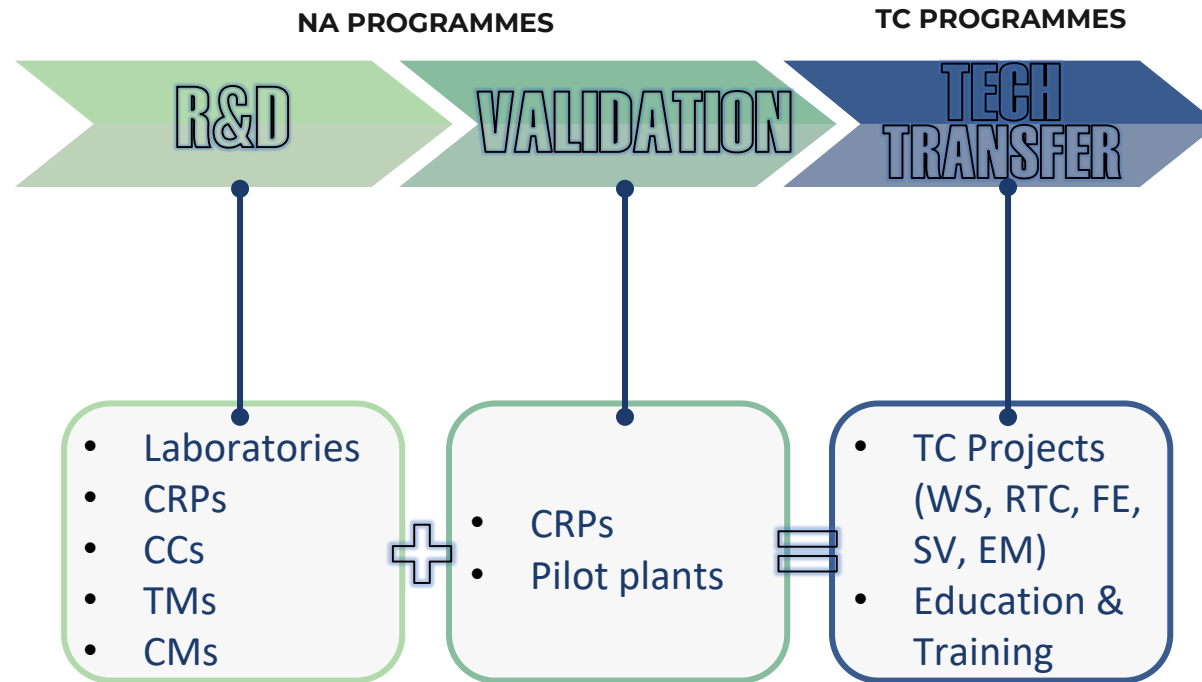
Sharing and Developing Protocols to Further Minimize Radioactive Gaseous Releases to the Environment in the Manufacture of Medical Radioisotopes, as Good Manufacturing Practice

Background

- IAEA has an official role in promoting the peaceful uses of nuclear technology
- Under these auspices the production of medical isotopes has had some focus at the IAEA
- Because of this the IAEA decided to create a cooperative research project to study gaseous releases from medical isotope production

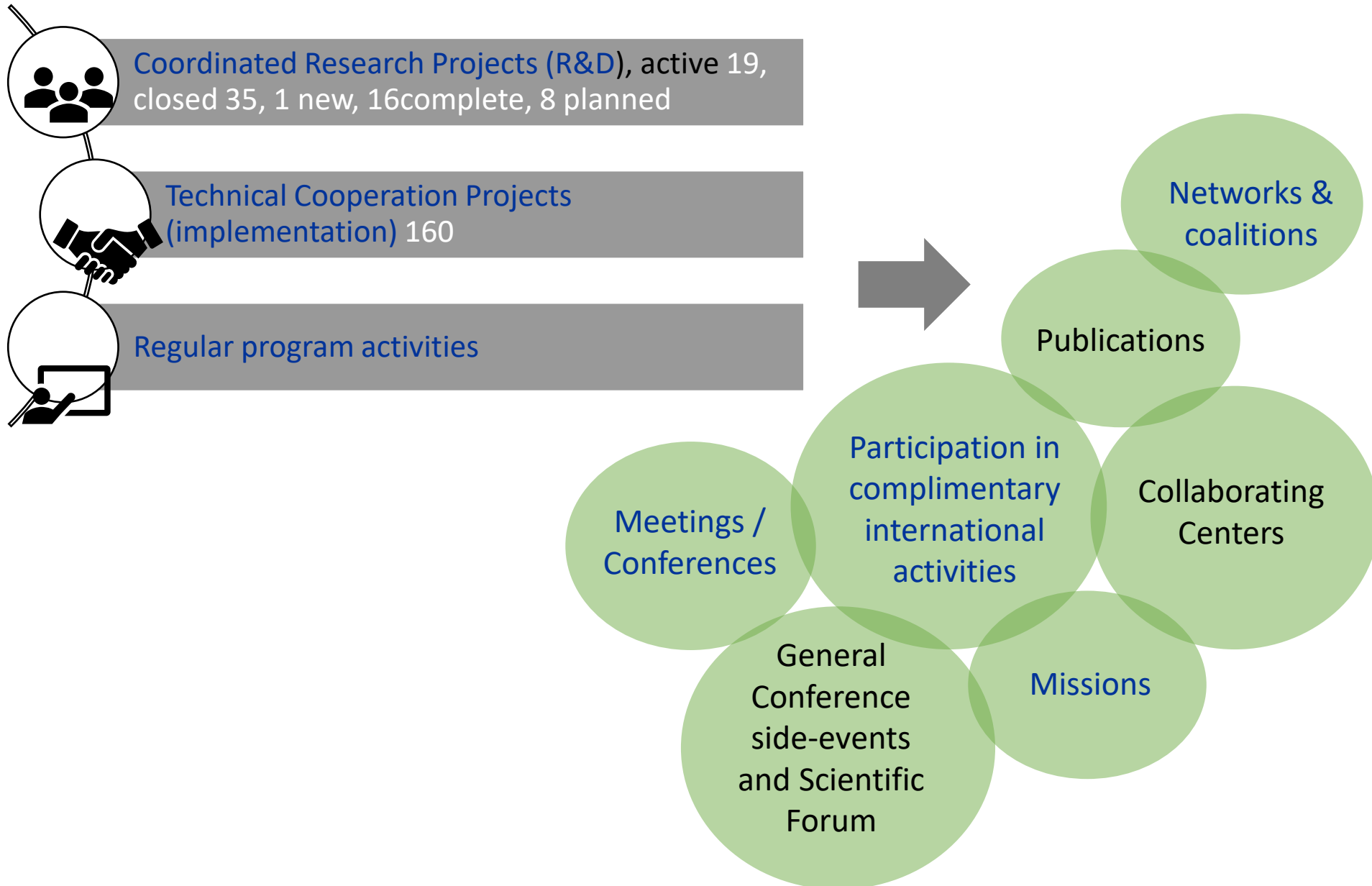


IAEA Mechanism



IAEA makes direct contributions to 9 of 17 Goals through nuclear science and technology

IAEA Projects and activities



A new IAEA CRP started in 2015:

Sharing and Developing Protocols to Further Minimize Radioactive Gaseous Releases to the Environment in the Manufacture of Medical Radioisotopes, as Good Manufacturing Practice (F23031)

Background

- ✓ Request made to the IAEA in a letter (dated 09 May 2014) from the Permanent Missions of five IAEA MSs – Australia, Belgium, the Netherlands, the Republic of Korea and the USA. Positive reply from IAEA on 03 June 2014

Overall Expected Outcome and Results

- Overall Expected Outcome

The outcome from this CRP will be making information and actions needed to meet the internationally accepted target for radioactive gases emissions (generated also under this CRP) available to the relevant medical radioisotope producers in order to reduce/mitigate radioactive gases emissions during the production of medical radioisotopes.

- Expected Outputs

The CRP is expected to produce a document containing guidelines on how to minimize and mitigate the radioactive gaseous releases to the environment resulting from the production of medical radioisotopes via the irradiation and processing of uranium targets, according to "Good Manufacturing Practice and Good Laboratory Practice requirements".

1st Research Coordination Meeting– August 2015



- Research Objectives of the CRP
 - Identify the sources of gaseous releases
 - Evaluate the impacts of emissions on NEM by using ATM
 - Validate ATM and quantify uncertainty using stack and monitoring data
 - Develop research activities focused on efficient methods to reduce emissions if possible
 - Explore stack measurement systems and data exchange methodologies

- Planned Outcome
 - Foster collaboration between medical isotope producers and organizations with the expertise on trapping and monitoring radioactive gases

- Established workplans for participants:
Belgium, Canada, France, Germany, Indonesia, Korea, Poland, USA

2nd Research Coordination Meeting– March 2017



- IAEA Headquarters, Vienna, Austria
- Participants gave updates on their work plans and discussed coordination among participants

3rd Research Coordination Meeting–March 2018



- IAEA Headquarters, Vienna, Austria
- Reviewed work plan results achieved by participants
- Results summarized in a report for the 3rd RCM

Consultants' Meeting – October 2023



- IAEA Headquarters, Vienna, Austria
- Consultants from 3 member states (South Korea, Belgium, USA)
- A draft Recommendations TECDOC publication was prepared
- Draft TECDOC ready for review by end of January 2024
 - Review will be requested from all CRP participants and representatives from the CTBTO and IAEA

TECDOC Table of Contents

1. Introduction
2. Origin of Radioactive Gaseous Emissions
3. Abatement
4. Stack Monitoring
5. Atmospheric Transport and Dispersion
(Modelling)
6. Recommendations

*Minimizing the interference of
radioactive gaseous releases during
radioisotope production with
nuclear event monitoring*

Recommendations (for consideration)

Major Recommendations

1. Support engagement between the medical isotope production and nuclear explosion monitoring communities to continue to raise awareness of the challenges within each community and how they impact each other.
2. Consider participation in studies to minimize releases by optimizing isotope production processing procedures and abatement technologies, without inhibiting the production of isotopes.
3. Encourage voluntary incorporation of facility stack data sharing technology for treaty verification purposes (not regulatory), while still protecting intellectual property.
4. Develop scientific methods to better allow for discrimination of emissions from the signatures of nuclear explosions.

Proposed Next Steps

- Do no harm to the ability to produce Mo-99
- Create an IAEA – CTBTO PrepCom working group to coordinate on better understanding the impact of isotope production on the IMS
- IAEA hosts technical meetings on non regulatory emission mitigations and stack monitoring

Thank you

Please reach out if you would like to
review the TECDOC publication