59th Regular Session of the IAEA General Conference
Senior Regulators' Meeting

Panel Discussion:
Regulating the Security of Radioactive Material and Associated Facilities: Good Practices and Lessons Learned

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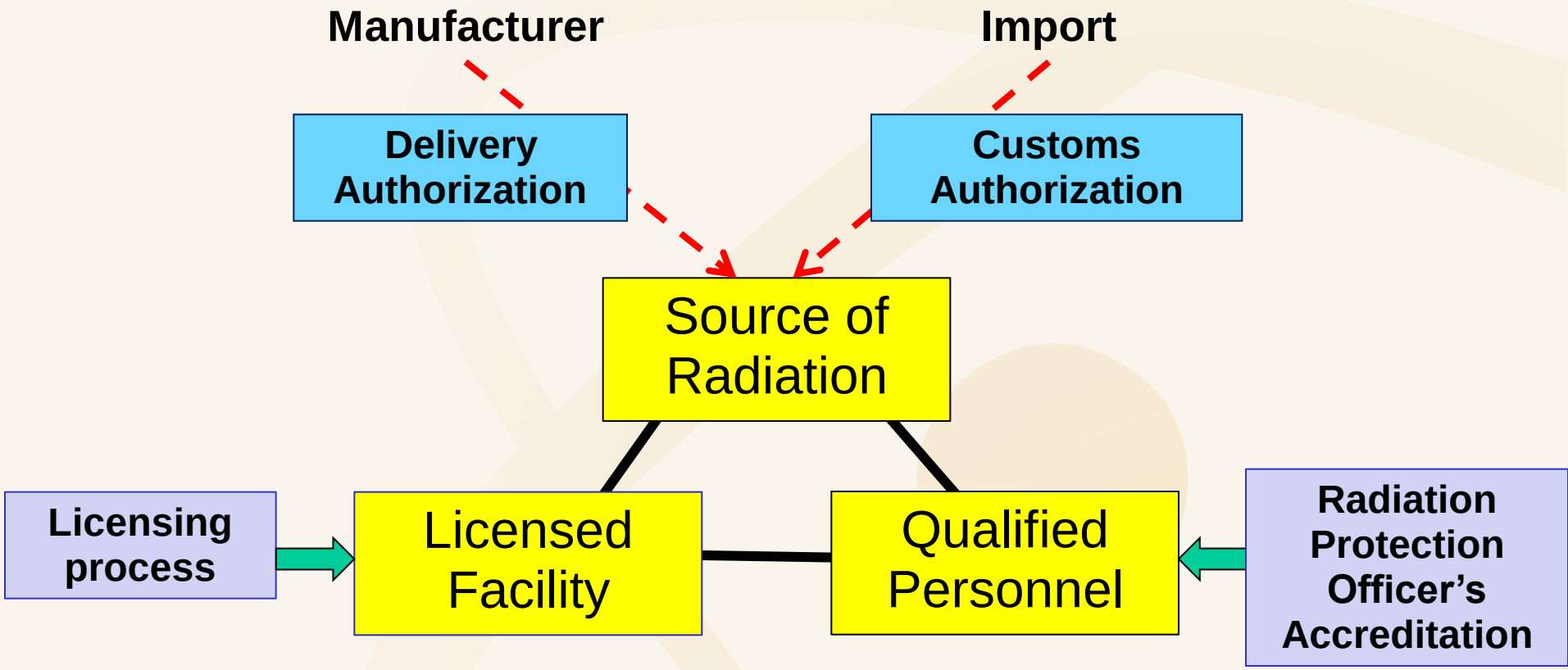
Control of facilities with radioactive sources

After the 1987 Goiania Cs-137 accident, a great effort was made in order to identify and recover all sources without registration and authorization of CNEN:

- First regulatory requirement for radioactive sources was issued in 1969. It was expected that sources out of regulatory control could exist before the control be established.
- Hospitals, universities and research institutes were visited in the whole country. Disused sources were taken to CNEN facilities to be stored in safe places.
- A national system for registering and control was implanted integrating sources, facilities and qualified personnel

Control of Facilities with Radioactive Sources



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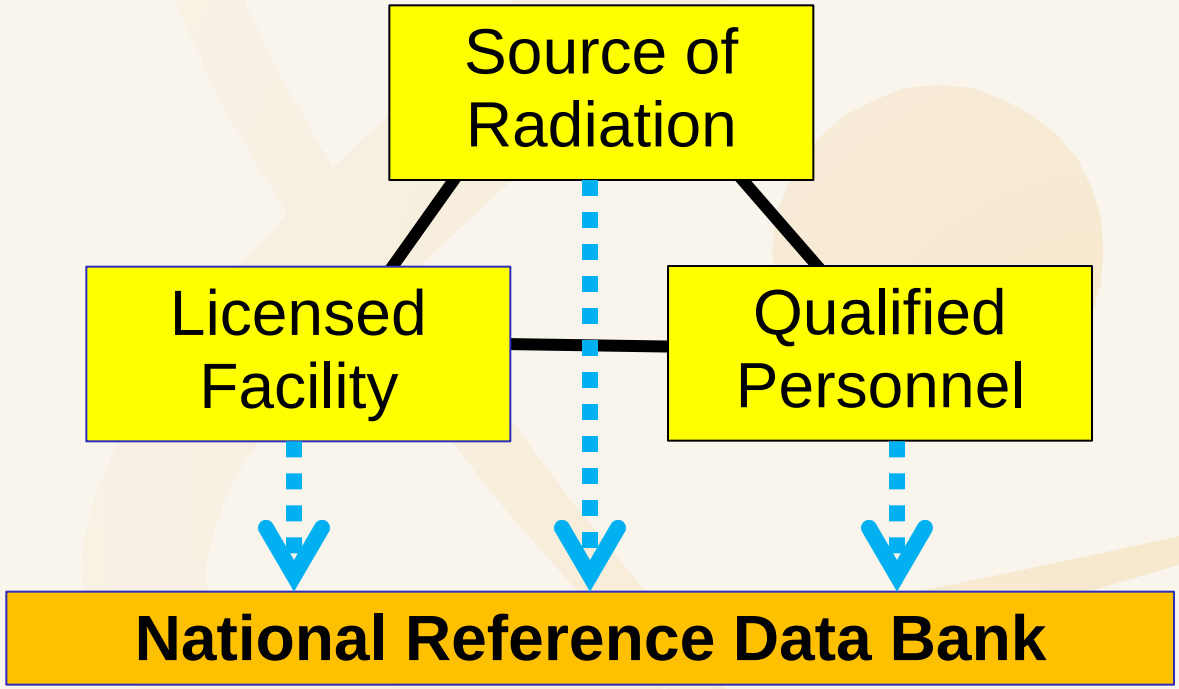

Actions to Improve the Security and Control of Radioactive Sources

Licensing arrangements:

- Radiotherapy & gamma irradiator sources are required to return to the suppliers after their useful lives.
- Gammagraphy sources: return of spent sources to IPEN is required for new source acquisitions (inventory control, operating capacity).
- Operator and radiation protection officer responsibility about security in operation, transport and storage of sources is stressed.
- During the licensing process for facilities with sources category I and II, a physical protection plan is required to assessed before the approval of the construction of the installation.

Actions to Improve the Security and Control of Radioactive Sources

Transport:

For category I sources, besides the approval of the physical protection plan, the transport is made in convoy with participation of police, emergency team, firemen and soon on.

For terrestrial transport of gammagraphy sources and other category II sources, must have a vehicle tracking system in the mean of transport .

Detecting orphan sources

Control activities have been implemented by industries that use scrap metal and include the operation of special monitoring systems, such as gate and portal monitors, to identify potential contaminated scrap metal materials.

Actions to Improve the Security and Control of Radioactive Sources

CNEN has established several agreements with other countries about communication and harmonized procedures for mutual consulting in order to authorize the import or export of radioactive sources (Ex.: Canada, USA and Argentina).

CNEN participates in the “Specialized Technical Group on Nuclear/ Radioactive Materials”, which is focused on source trafficking across the MERCOSUL Member States

Actions to Improve the Security and Control of Radioactive Sources

Brazil is part of the Megaports Initiative – the main harbors are being equipped with detectors and equipment for containers inspection

Improving knowledgement in security

CNEN gave training for several people from police, military and health organizations during the preparation for the major public events that happened in Brazil.

The participation of CNEN staff in the activities for preventing security threats during major public events was also important for training CNEN's servers.

In 2014, with the collaboration of IAEA, a specific security course was given for about 40 CNEN's officers in charge of inspections in industry, health and research facilities that use radioactive sources.

Regulating Security Licensing

First CNEN Security Standard: was NE 2.01 – *Physical Protection of Operational Units of Nuclear Area:*

- Sensitive installations – security control developed under the view of complementation of safeguards measures.
- The security licensing process is part of the overall process of nuclear licensing of the facility.

Note: Important and fruitful cooperation with the IAEA and with USDOE-NNSA allowed to reach a good level of security for those facilities.

Regulating Security Licensing

A Task Group is currently working to split the standard CNEN NE 2.01 in three more specific standards:

- Security of nuclear materials and associated facilities;
- Security of radioactive sources
- Security in the transport of radioactive materials

Major Difficulties

- Security culture in organizations
- Extension of the country and borders, in case of Brazil
- Costs for training and equipment for small facilities

Facilities with Radioactive Sources

Category I:

- 5 industrial Irradiators (700 individual sources)
- 91 Co-60 equipment for radiotherapy
- 20 Cs-137 blood irradiators

Category II:

- 235 industrial gammagraphy equipment (25 companies)

Category III:

- 3,919 Nuclear gauges and control devices (in 690 facilities)
- 279 sources for oil exploitation (25 companies)

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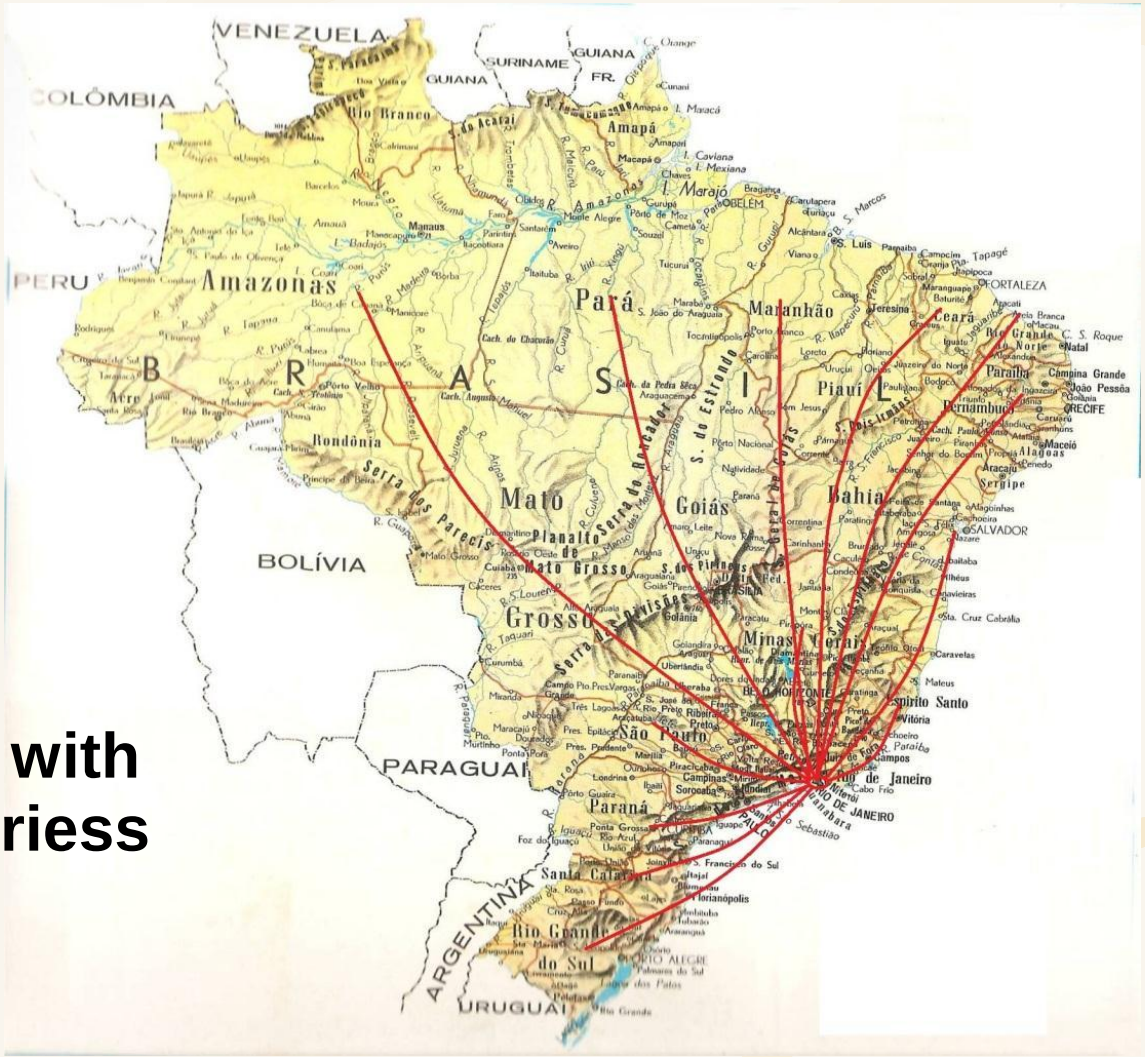
Inspections and control in Brazil



Borders with 10 countriess

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Thank you for your attention!
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