Transport of radioactive material in the Netherlands

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1. Netherlands
Dutch nuclear facilities

- Research centre Petten and the High Flux Reactor
- Delft Research Reactor
- COVRA, Vlissingen
- Borssele nuclear power plant
- Dodewaard nuclear power plant
- URENCO, Almelo
### Transports of nuclear material (averaged per year)

**Category I**
1. Uranium filters: NRG to COVRA (0.5)
2. MOX fuel: Areva (F) to EPZ (~1.5)

**Category II**
3. Spent fuel: EPZ to La Hague (F) (~3)
4. Vitrified waste and compacted residues: La Hague (F) to COVRA (~4)
5. Spent fuel: NRG to COVRA (1)
6. Spent fuel: RID to COVRA (0.5)

**Category III**
7. Fresh HEU-targets: CERCA (F) to NRG (<20)*
8. Irradiated HEU-targets: SCK (B) to NRG (<75)*
9. Irradiated HEU-targets: NRG to IRE (B) (<200)*
10. Irradiated HEU-targets: Poland to NRG (<50)*
11. Fresh fuel: CERCA (F) to NRG (<10)
12. Fresh fuel CERCA (F) to RID (<3)
13. Fresh fuel Lingen (D) to EPZ (<3)
14. UF6 (LEU) Urenco (between D, UK, B, F and NL) (tens of transports)

**Other (below category III)**
14. UF6 (feed and tails) Urenco (between D, UK, B, F and NL) (hundreds)
15. Transit of cat. III materials (e.g. fresh fuel D - > UK) (<10)

* Due to the HEU-LEU conversion programme, these shipments will be outside the scope of the IAEA Convention of Physical Protection in the near future
Transport of other radioactive material

Most transports of radioactive material are non nuclear (>95%)
Many thousands of transports each year

- Radiopharmaceuticals
- NDT sources
- Equipment and gauges
- Waste to national waste facility COVRA and 2 disposal sites (NORM only)
- NORM sludges, contaminated material and equipment, mostly from oil & gas industry (for treatment and disposal)
ANVS at a glance

• Regulatory body for all practices with radiation, including transport
• Both for safety and security
• Policy, regulation, authorisation, inspection, information, research and crisis management (EP&R)

• Established January 1st, 2015
• Merger of three organisations, combining available expertise
• Department of the Ministry of Infrastructure and the Environment
• Independent Authority after August 1st, 2017 (expected date)
• Approx. 140 FTE
• ANVS Transport Unit: approx. 10 FTE

“Continuous safety improvement”

https://english.autoriteitnvs.nl/
ANVS at a glance

For safe and secure transport ANVS coordinates with other national authorities:

- Human Environment and Transport Inspectorate (ILT)
- Ministry for Infrastructure and the Environment (Modal Regulations)
- National Police (traffic / security escort)
- Customs (import / export)
- Inspectorate SZW (HSE workers)

and cooperates with:

- TNO (package design assessments)
- RIVM (inspection support)
- Other CAs, e.g. FANC (B)
- EACA, IAEA, EC, etc.
Dutch legal framework

• All carriage of Dangerous Goods is governed by the Dutch Carriage of Dangerous Goods Act, *except class 7*

• All *practices* involving radioactive material, including *transport* are regulated by the Dutch Nuclear Energy Act

• The Transport of Fissionable Materials, Ores and Radioactive Substances Decree:
  - regulates licencing and notification of transports
  - stipulates the Modal Regulations apply
    (RID, ADR, ADN, IMDG Code, ICAO-TI)
Transport license or notification: *until* February 2018

- **A license** is required for:
  - the transport of *fissionable* material (including depleted uranium as shielding in a package!)
  - the import / export of consumer goods and radiopharmaceuticals
  - transport under special arrangement

- **Notification** is required for:
  - the transport of all other radioactive material (including high activity sources!)

- **Exemption:**
  - transports outside the scope of the Transport Regulations (SSR-6)
Transport license or notification: \textit{from} February 2018*

- A \textit{license} is required for:
  - the transport of \textit{fissionable} material (including \textit{except} depleted uranium as shielding in a package!)
  - the import / export of consumer goods and radiopharmaceuticals
  - transport under special arrangement
  - the transport of high activity sources

- \textit{Notification} is required for:
  - the transport of all other radioactive material (including high activity sources!)

- \textit{Exemption}:
  - transports outside the scope of the Transport Regulations (SSR-6)

*) After the implementation of the European BSS (Euratom/2013/59)
International transport regulations

2012
IAEA Safety Standards Series SSR-6

Radioactive material, all modes,

2015
UN Dangerous Goods “Model Regulations”

All DG, all modes

UN/ECE Modal Regulations: ADR, RID and ADN

2016
IMO IMDG Code

2017
ICAO Technical Instruction

Binding regulations

Air

Road, Rail and Inland Waterway

Sea

Authority for Nuclear Safety and Radiation Protection (ANVS)
IRRS mission 2014

Full scope mission (incl. transport)

- 2 Good Practices
- 19 Suggestions
- 26 Recommendations

(none specifically for transport)

The recommendation to “separate the regulatory body from the ministry responsible for energy policy” contributed to the establishment of the ANVS.
IRRS mission Good practices

Good Practice GP1:
The specific and comprehensive regulatory provisions in place allows for effective control of contaminated scrap metal and safe management of the contaminated material.

Good Practice GP2:
The Dutch regulator has taken the initiative to start a KWUREG. KWUREG is expected to harmonize experience from all countries with Siemens/KWU reactors i.e. for long term operation and to promote closer cooperation of those countries to cope with the effect of the phase-out in Germany.
Current activities & challenges

- Implementation EU Basic Safety Standards
- Database of packages used in the Netherlands not requiring CA approval
- Certification of B(U) container for the transport of ‘historical’ waste by ANVS and FANC (B)
- Review Dutch approach to special arrangements (also part of IRRS FU 2018)
- Establishing ANVS & Transport unit!
Thank you for your attention

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