

Preliminary steps to regulating the security of high-activity radioactive sources

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- 60 years of national regulatory control system of radioactive sources (radiation protection)

- This system regulates the whole life cycle of a ionizing radiation source, from its manufacturing (or import into France) until its disposal (or export out of France)

- New field : security of ionizing radiation sources (Nuclear Law : February 10, 2016) ; regulatory implementation from July 2017 ; focus on HASS



French sealed radioactive sources regulatory and control system



Missions

Regulation

Radiological emergencies

Authorization / Licenses

Inspection & Enforcement

Public Information

National Register

Who

Government



Independent
Regulatory Body



Autorité de sûreté nucléaire
Safety / RP of sources
Security of most sources

Governmental
Regulatory Body



Security of sources
in main nuclear industries

Technical Support Organization

IRSN

Institut de Radioprotection et de Sûreté Nucléaire

Inter agencies working group : ministries (energy, interior, defence), ASN (safety authority), IRSN (TSO)

Assessment of the present situation regarding sources security during radiation protection periodic inspections (ASN) :

231 installations assessed since 2011

Threat assessment

International benchmark (ASN) :

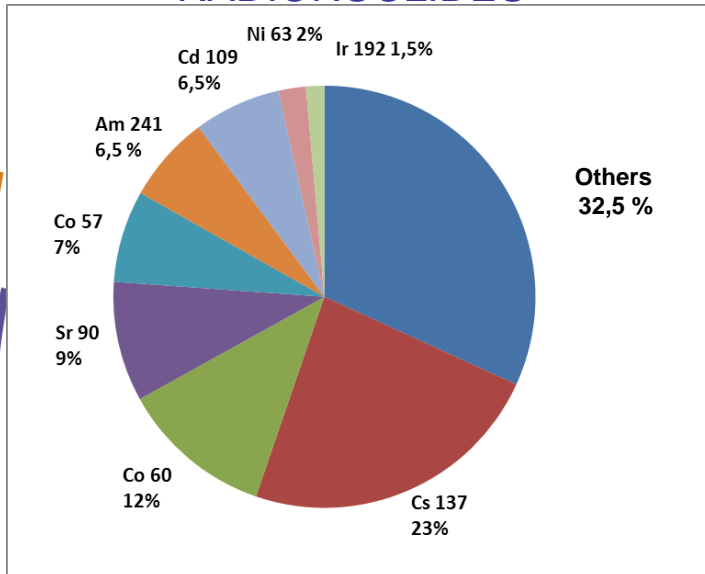
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Code of Conduct and Guidance on import and export

Foreign regulations: USA, Canada, UK, Hungary

- About 10 000 licenced uses and/or storages of sources
- 142 licenced suppliers of sources for industrial purpose
- 57 licenced suppliers of sources for medical purpose
- 30 219 sealed sources in users inventories (4 301 HASS for 284 holders)

RADIONUCLIDES



USE

RANGE OF ACTIVITY



MBq

GBq

TBq

Multiplicity and diversity of HASS uses and holders



Existing principles of RP regulations that benefit security :

- Justification
- Prior licence/registration
- Two other principles for tracking purpose
 - Return of disused sources (10 years max) unless extended
 - Financial security fund to be subscribed by supplier
- National register
 - A national register of sources including licence data and source data held by IRSN
 - Prior registration of source transfer
 - Suppliers' and holders' inventory (respectively quarterly and once a year)
- General statement about the responsibility of the licensee to protect sources against loss and theft.

- Main goal of the terrorists : major media impact, by all means
 - Transports
 - Public areas
 - State representatives : soldiers, police stations...
 - Industries

- Attacks can fail : a terrorist attack is hazardous
 - Thalys : terrorist stopped by American passengers
 - Saint Quentin Fallavier (gas industry) : attack stopped by fireman

 - “Soft targets” : maximizing impact / risk ratio

- High activity sources : an attractive target because of psychological impact, even if reduced casualties compared to other forms of action
- Better protection of High activity sources : “hardening” the HASS target, to deter terrorists

- Integration of sources security within existing regulations :
 - nuclear materials security regime (NSD) or
 - (in most cases) safety regime (ASN)

- No modification of existing provisions regarding safety, worker protection, transports of dangerous goods : when possible, consistency

- Consistency with protection of nuclear materials : graded approach (categorization...), threat assessment, defence in depth, security functions

- Consistency of the protection levels for installations and transports

- Consistency with international good practices (« no more no less », sometimes adaptations)

- Pragmatic approach taking into account licensee capacities :
 - Small entities (compared to nuclear industry)
 - Low security culture and competences
 - Adaptation to current uses

- Prescriptive approach :
 - No security assessment needed
 - Clear obligations : no need to have security expertise

To be continued :

Close dialog with licensees while regulation conception

Goals :

- Clear provisions
- Provisions adapted to current practices
- Good integration with other regulations

Lessons learned

- Practical implementation of barriers and access control
- Information protection versus worker regulatory information/ training
- Information protection versus transparency
- Insider threat protection : background checks, technical and/or organisational provisions

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ET DE LA MER



Questions ?

