

# Current issues with transport of disused sources, denials of shipment

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# Possible scenarios

- A source which is still approved, in a facility, with good record keeping, needs to be returned
- A source is found with no obvious oversight or record
- A source which is no longer approved, in a facility, with good record keeping, needs to be returned

# Source approval for transport

- Special Form Radioactive Material (SFRM or SFC)
- Certifies limited dispersion of the source under specified conditions
- Certificates issued to DESIGN owners typically 3-5 year renewable (to allow for review)
- Some sources have limited life from manufacture included in the certificate
- Certification generally requires test data and manufacturing records

# Source approval for transport

- Transport uses “hazard index” – A1 or A2 values
- A2 considers dispersion and direct radiation
- SFRM effectively adds  $10^{-4}$  factor to the dispersion pathways
- A1 considers point source (direct radiation) and dispersion with the  $10^{-4}$  factor included

# Source approval for transport

- Type A package limit

	Not SFRM (TBq)	SFRM (TBq)
Co-60	0.4	0.4
Cs-137	0.6	2
Am-241	0.001	10

- Packages can take into account the SFRM
  - In these cases ONLY SFRM may be carried in these packages

# Transport requires a signature

I hereby declare that the contents of these consignments are fully and accurately described above by the proper shipping name and are classified, packed, marked and labelled, and are in all respects in proper condition for transport by road (ADR) according to the applicable International and National governmental regulations.

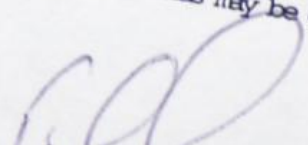
The consignments to which this certificate refers have been prepared by a known consignor whose operations, premises and procedures have been certified as secure by a validator accredited by the Department for Transport and the consignments do not contain prohibited articles. Accordingly, these consignments can be considered SPX cargo.

I understand that the consignments may be examined for security purposes and that a false declaration may be taken as evidence of an offence.

Van Number

Shippers Signature

For and on behalf of



# Real transport



# First option

- IAEA transport requirements
  - Normal package
    - Source certified as SFRM
    - Source not certified as SFRM
    - Source – re-certified as SFRM
    - All necessary approvals may be in place
  - Special arrangement
    - Risk based option
    - Requires regulatory approval
    - Can take into account unknowns (nuclide, form, activity)
    - Requires compensatory measures



# Second option

- Enforcement powers
  - Prohibit onward transport
    - “Do nothing without my permission”
  - Require someone to improve the situation
    - “Do something to achieve a specified goal”
  - Direct someone to take specific actions
    - “Do precisely what I tell you”

# Third option

- Regulatory exemption (e.g. ADR)
  - The carriage undertaken or under the supervision of the emergency services ... - to contain and recover dangerous goods involved in an incident or accident and move them to a safe place
  - Emergency transport intended to ... protect the environment provided that ...

# Consider

- Ask the source manufacturer if the source is certified – or if they can certify it
- Ask the source provider if they have a suitable package for return
- Returned sources are unlikely to have to be used – can an over-designed encapsulation be added to re-certify

# Avoid

- If a source is delivered in a package that is grandfathered then the package may not be available for return in 10 years
- Do not destroy records (e.g. routine wipe tests)

# Problems shipping

- Few sea routes available (for heavy packages) due mainly to restrictions in ports
- For air some airports are trained to receive radioactive material but not to send radioactive material
- WASTE
- National variations