



**International Atomic Energy Agency**

# **Disused sources in the Code of Conduct and IAEA Safety Standards**

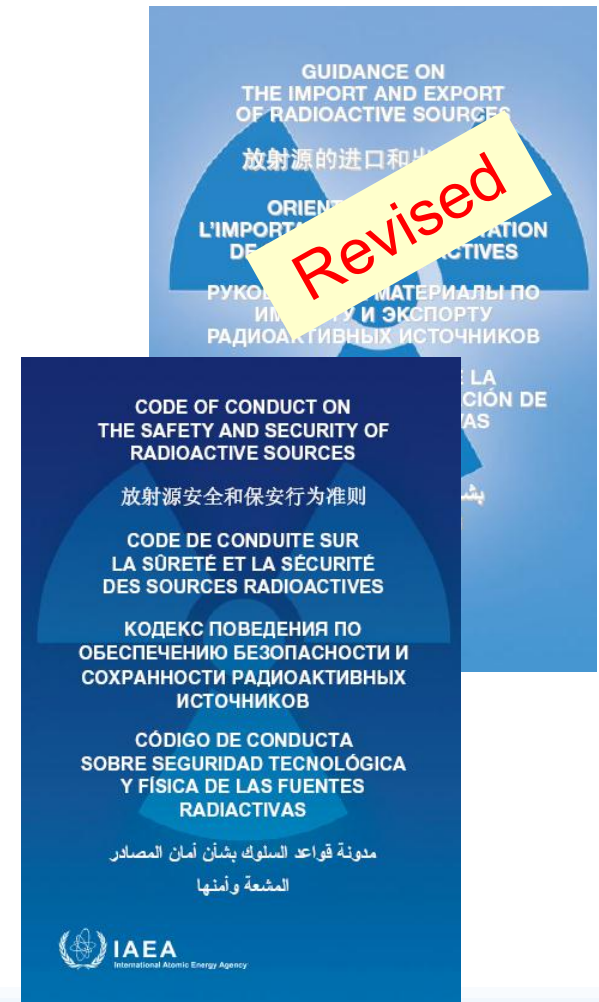
**E. Reber, NSRW/RIT  
M. Kinker, NSRW/WES**

# Contents

- **Code of Conduct**
- **Safety Standards**
- **Joint Convention**
- **Technical guidance on the management of disused sources**

# Code of Conduct and Import/ Export Guidance

- Set of Principles, Objectives and Guidance to ensure Safety and Security of sources
- Focuses on high activity sources (categorization safety guide RS-G 1.9)
- Approved by the Board and the General Conference in 2003 & 2011
- NOT part of the Safety Standards Series



# OBJECTIVES

CODE OF CONDUCT ON  
THE SAFETY AND SECURITY OF  
RADIOACTIVE SOURCES

放射源安全和保安行为准则

CODE DE CONDUITE SUR  
LA SÛRETÉ ET LA SÉCURITÉ  
DES SOURCES RADIOACTIVES

КОДЕКС ПОВЕДЕНИЯ ПО  
ОБЕСПЕЧЕНИЮ БЕЗОПАСНОСТИ И  
СОХРАННОСТИ РАДИОАКТИВНЫХ  
ИСТОЧНИКОВ

CÓDIGO DE CONDUCTA  
SOBRE SEGURIDAD TECNOLÓGICA  
Y FÍSICA DE LAS FUENTES  
RADIATIVAS

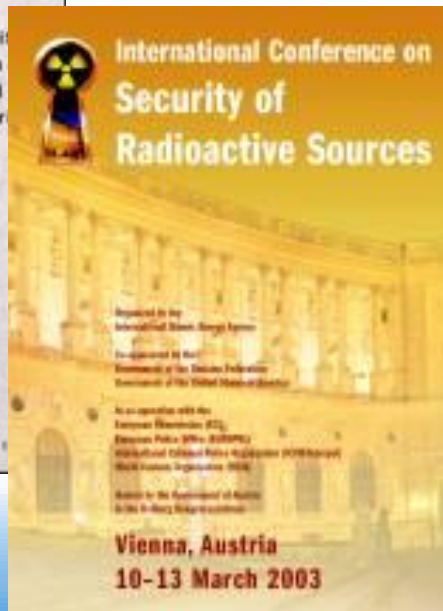
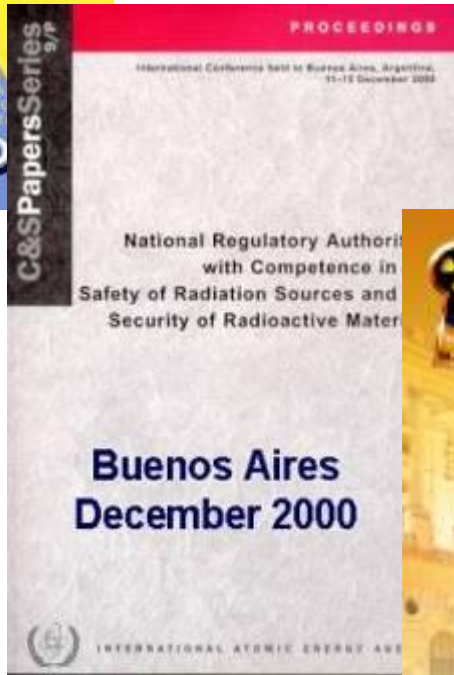
مدونة قواعد السلوك بشأن أمن المصادر  
المشعة وأمنها

**1. to achieve and maintain a high level of safety and security**

**2. to prevent loss of control & malicious use**

**3. to mitigate or minimize the radiological consequences of any accident or malicious act**

# Major Influences on the Code of Conduct



**CODE OF CONDUCT ON  
THE SAFETY AND SECURITY OF  
RADIOACTIVE SOURCES**

放射源安全和保安行为准则

**CODE DE CONDUITE SUR  
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**IAEA**  
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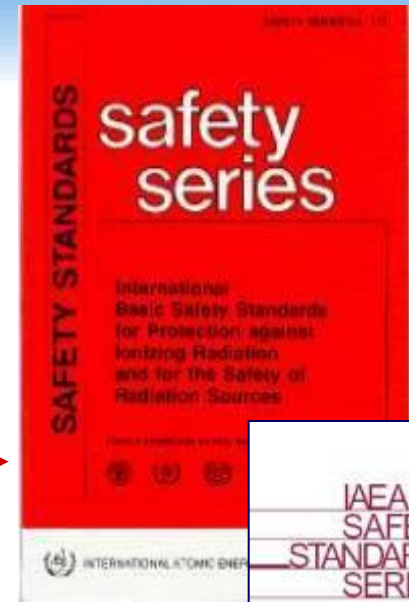
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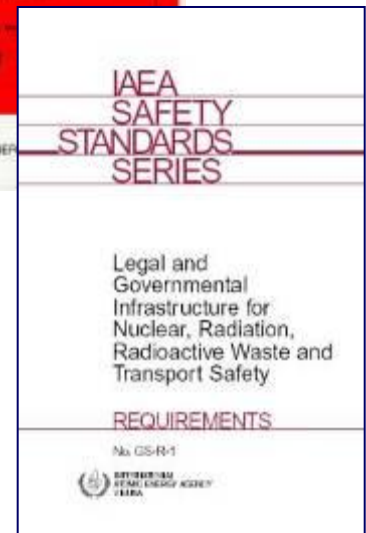
**Based on  
existing  
International  
Standards**



**Provides guidance on:**



**Legislation  
Regulations  
Regulatory body  
Import/export controls**



# Disused Sources Content



**“disused source” means a radioactive source which is no longer used, and is not intended to be used, for the practice for which an authorization has been granted.**



# Disused Sources Content

## States should:



- Ensure safety and security of radioactive sources at the end of their useful lives [para. 7(a)]
- Encourage reuse or recycling of radioactive sources [para. 14]
- Emphasize to ... those managing disused sources their responsibilities for the safety and security of radioactive sources. [para. 15]
- Ensure that the RB can attach conditions concerning disused sources regarding the return of disused sources to a supplier. [para. 20(e)(vii)]



# Disused Sources Content

## States should:

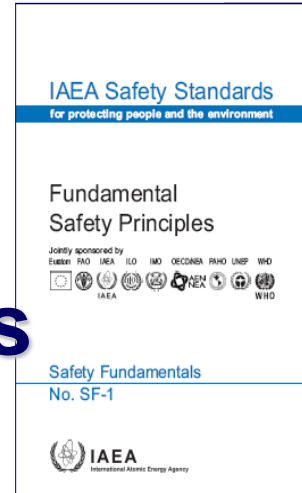


- Ensure that, where disused sources are stored for extended periods of time, the facilities in which they are stored are fit for that purpose. [para. 20(q)]
- Ensure that arrangements, including financial arrangements, are made for the safe management and secure protection of disused sources [para. 22(b)]
- Allow for re-entry into its territory of disused sources destined for authorized manufacturers if allowed by national law. [para. 27]



# IAEA SAFETY STANDARDS

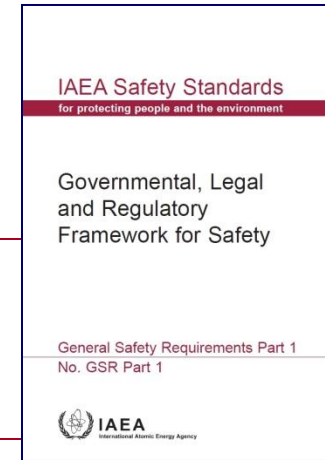
## Safety Fundamentals



underlying principles aimed at politicians and regulatory authorities

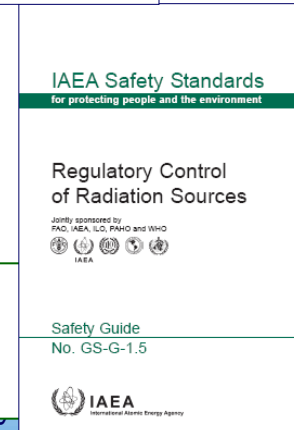
## Safety Requirements

specify obligations and responsibilities (“shall”)



## Safety Guides

recommendations on meeting requirements (“should”)

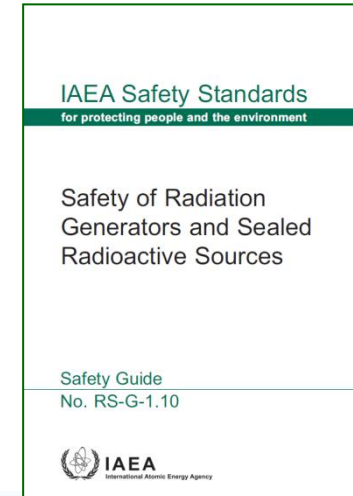
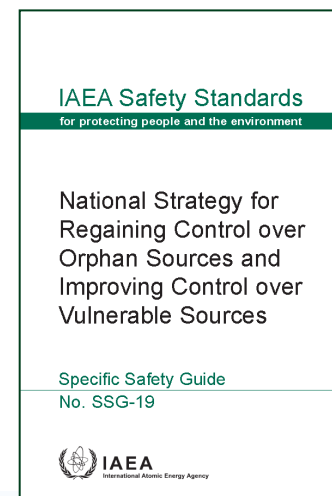
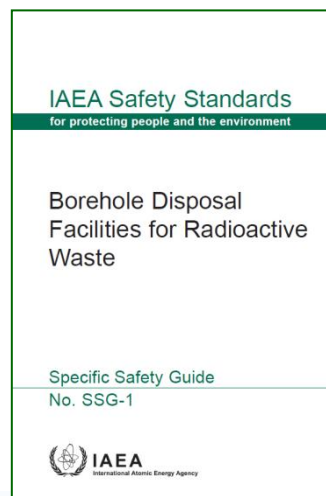
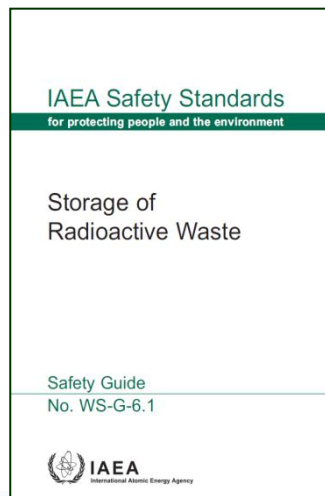
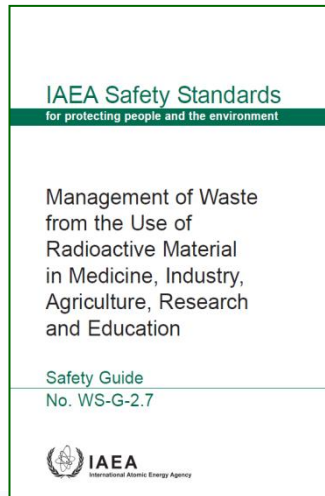
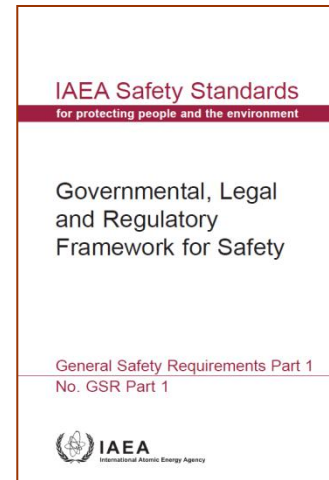
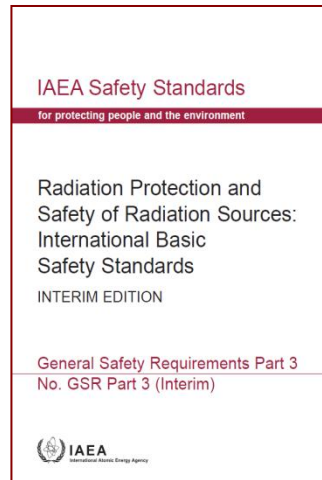


# Status of the IAEA Safety Standards

## Safety Standards are:

- **Non binding on Member States, but sometimes are formally adopted as requirements or used as source material for national regulatory guides**
- **Binding for IAEA's own activities**
- **Binding on States in relation to operations assisted by the IAEA or States wishing to enter into project agreements with IAEA**

# Disused sources in the Safety Standards



# Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards; GSR Part 3 (Interim)

**Para. 3.60 Arrangements made promptly for the safety and control over radioactive sources, including financial provision, once it has been decided to take them out of use.**

IAEA Safety Standards

for protecting people and the environment

Radiation Protection and  
Safety of Radiation Sources:  
International Basic  
Safety Standards

INTERIM EDITION

General Safety Requirements Part 3  
No. GSR Part 3 (Interim)





# Governmental, Legal and Regulatory Framework for Safety - GSR Part 1

IAEA Safety Standards

for protecting people and the environment

Governmental, Legal  
and Regulatory  
Framework for Safety

General Safety Requirements Part 1

No. GSR Part 1



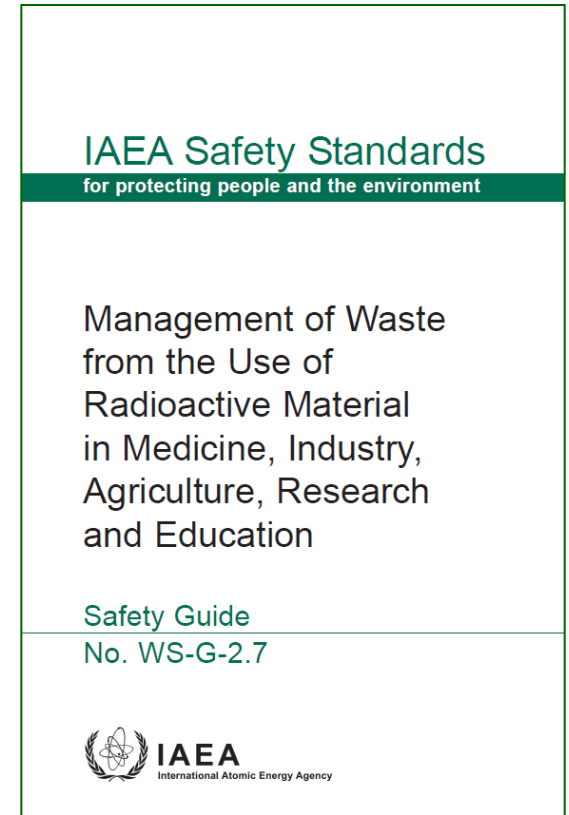
**Para. 2.33(c) Financial provisions shall be made for management of disused radioactive sources**

# Management of “non-nuclear power” radioactive waste Safety Guide No. WS-G-2.7

## Aspects to be considered for disused sources:

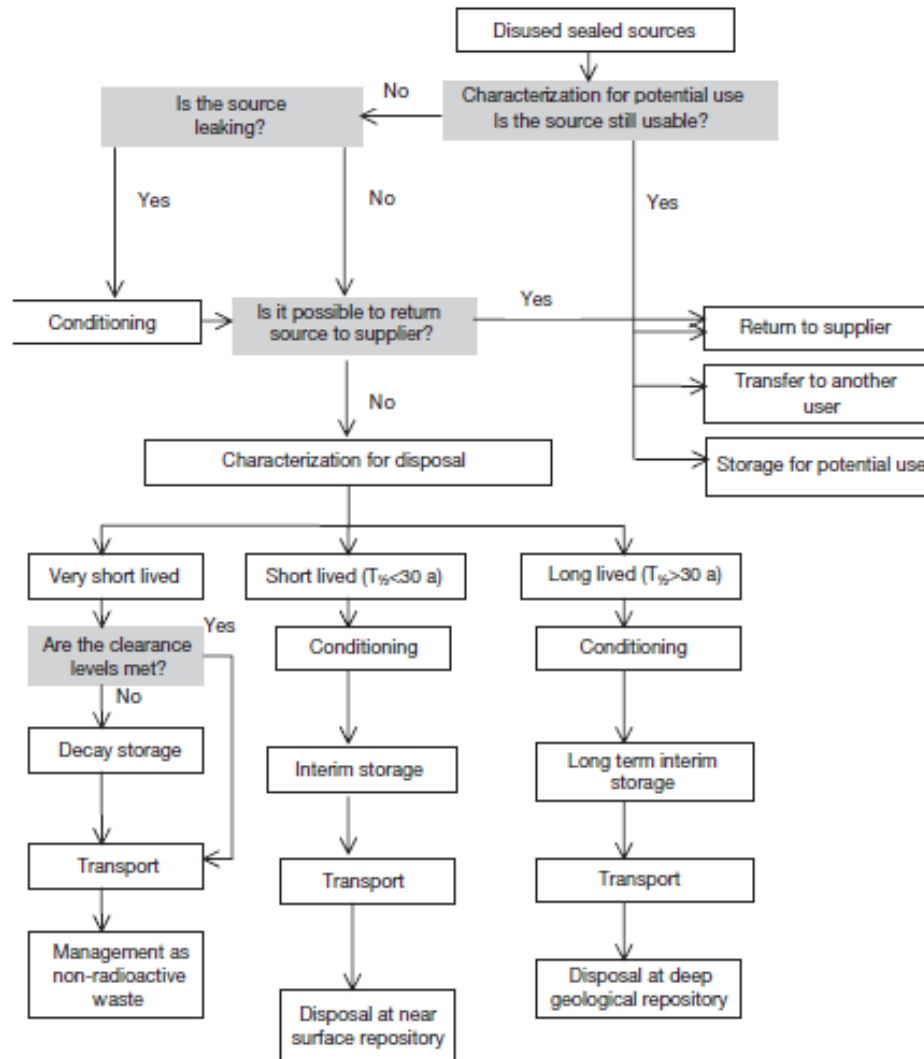
- Authorized use by another organization
- Return of source to supplier
- Temporary storage for sources with short half lives
- Conditioning
- Long term storage (such as a dedicated storage facility)
- Disposal

## Appendix VI – Techniques for the management of disused sources



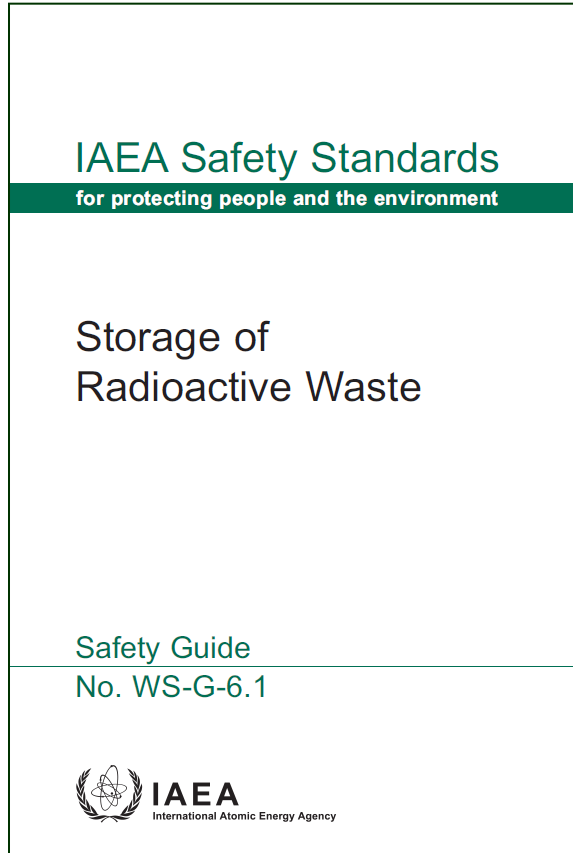
# Flow Diagram for the Management of Disused Sources

## Safety Guide No. WS-G-2.7



# Storage of Radioactive Waste

## Safety Guide No. WS-G-6.1

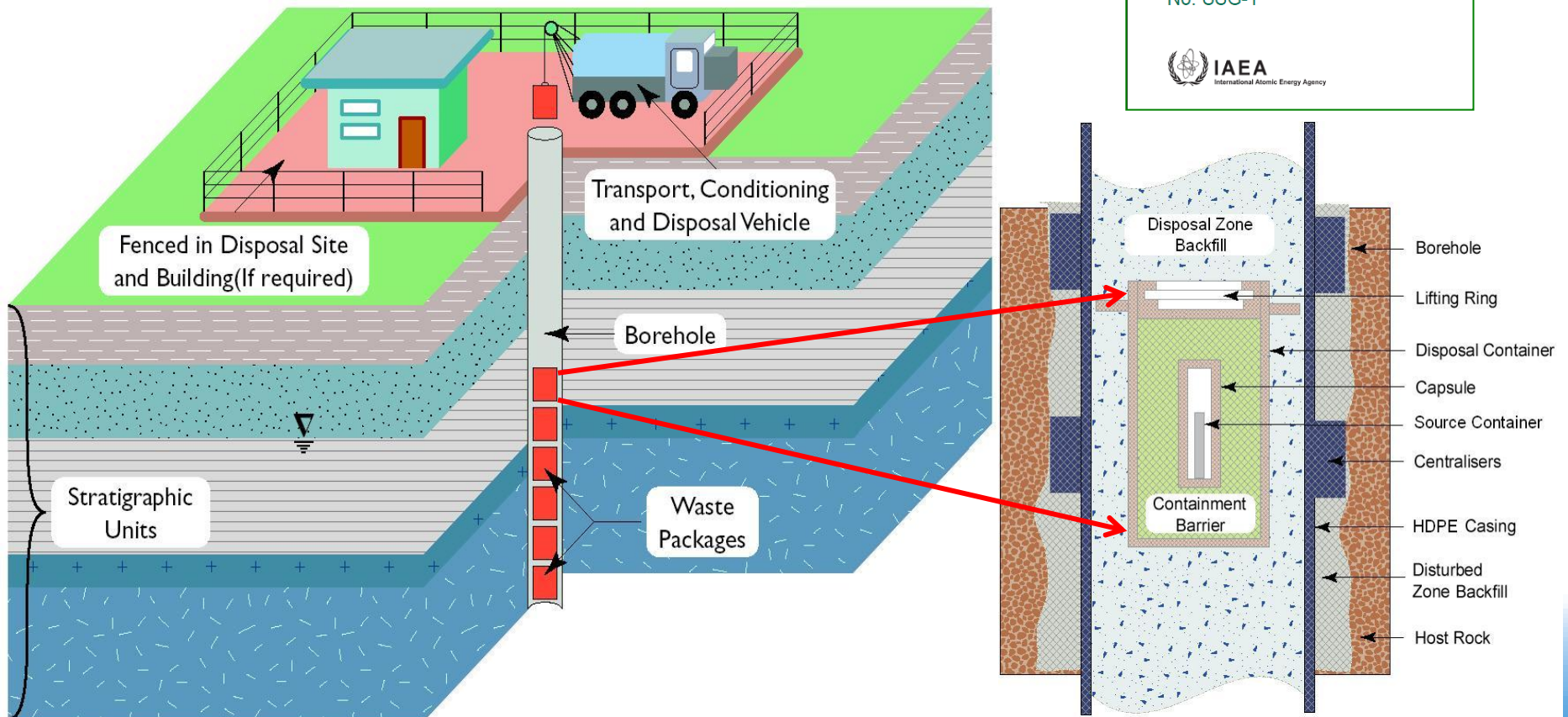
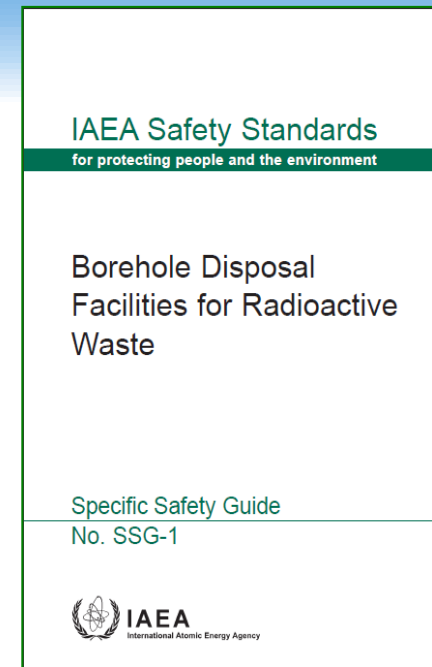


**Para. 4.18: Segregated and stored separately**

**Para. 4.19: Conditioning or encapsulation**

**Checked for leakage**

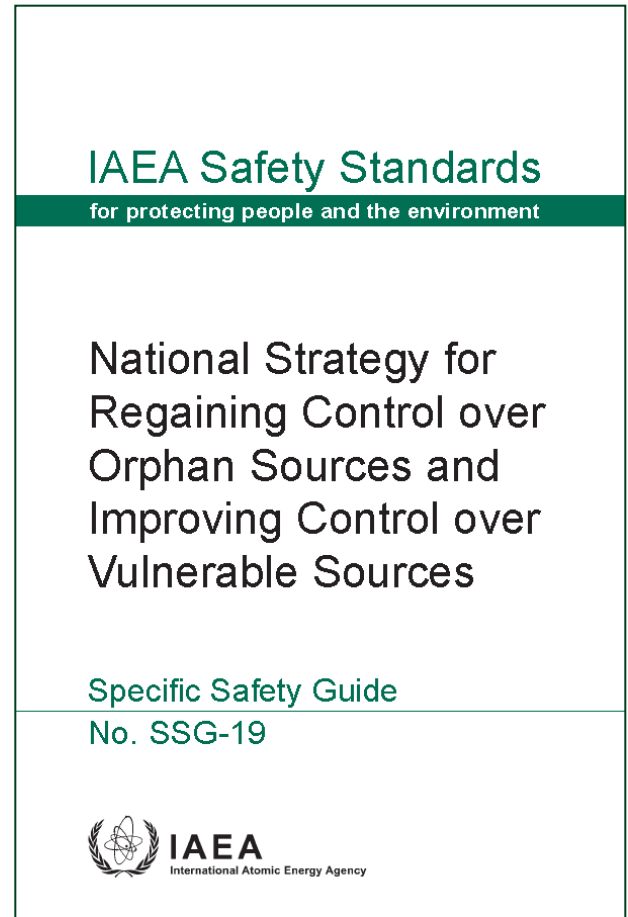
# SSG-1 Borehole Disposal



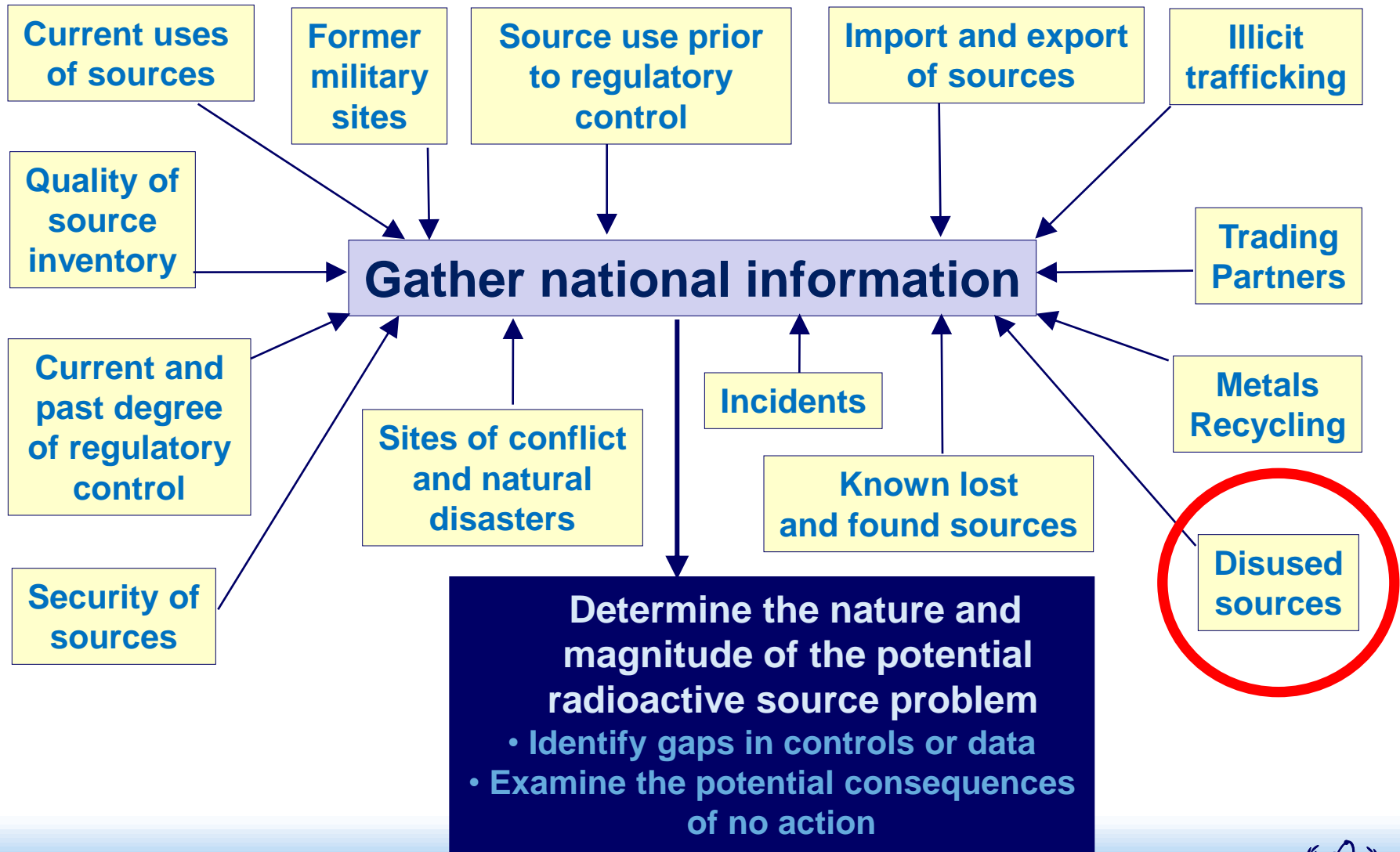


# National Strategy Safety Guide SSG-19

- **A methodology for establishing a national strategy for regaining control over orphan sources and improving control over vulnerable sources**
- **Published 2011**

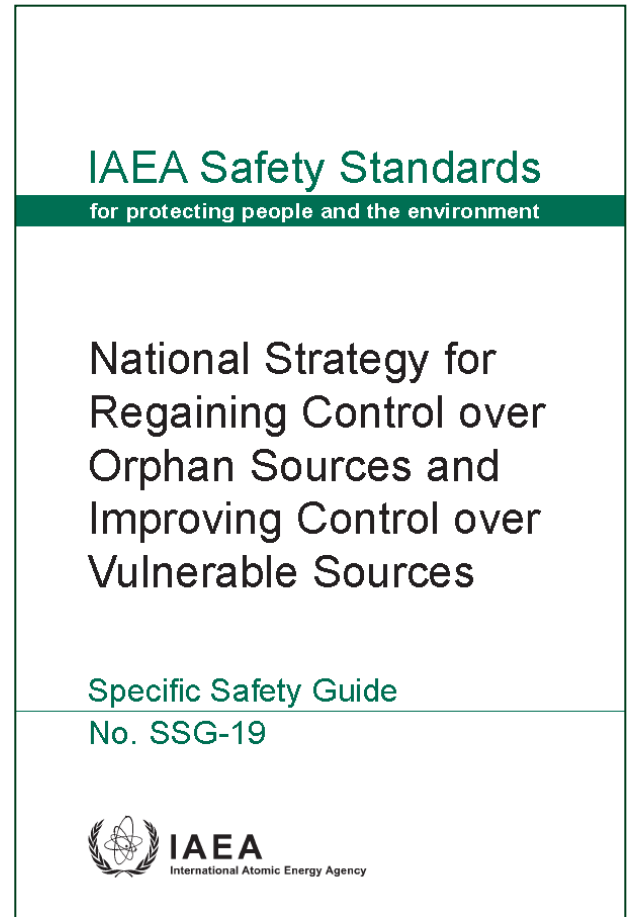


# National Strategy Assessment



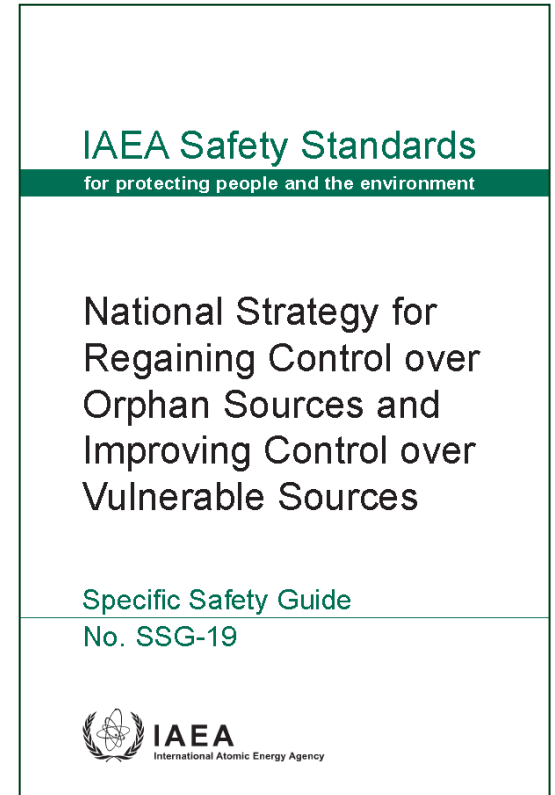
# National Strategy Safety Guide SSG-19

- **Disused sources part of a national strategy**
- **Disused sources should be identified**
- **Raise awareness of users:**
  - **Recommended Working Life**
  - **Transport Issues**
  - **Disposal/return to manufacturer/supplier**
- **Encourage users to transfer disused sources to disposal facility or manufacturer/supplier**



# National Strategy Safety Guide SSG-19

- **Authorization conditional on identification of disposal route for disused sources**
- **When control of disused sources is not adequate:**
  - **Upgrade facility**
  - **Transfer to:**
    - **Centralized interim storage facility**
    - **Disposal facility**
    - **Manufacturer/supplier**



# Safety of Radiation Generators and Sealed Radioactive Sources; Safety Guide No. RS-G-1.10

IAEA Safety Standards

for protecting people and the environment

Safety of Radiation  
Generators and Sealed  
Radioactive Sources

Safety Guide

No. RS-G-1.10

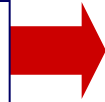
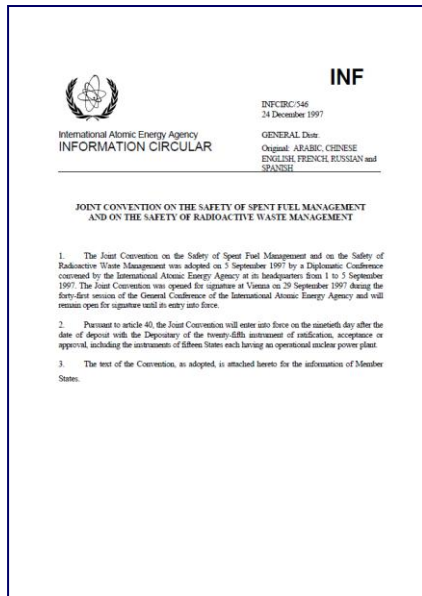


## Management options for disused sources:

- **Storage prior to disposal**
- **Transfer to another authorized user**
- **Return to manufacturer and/or supplier**
- **Decommissioning and disposal**



# Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management



**Adopted: 1997**

**Entered into force: 2001**

**Scope (civilian uses):**

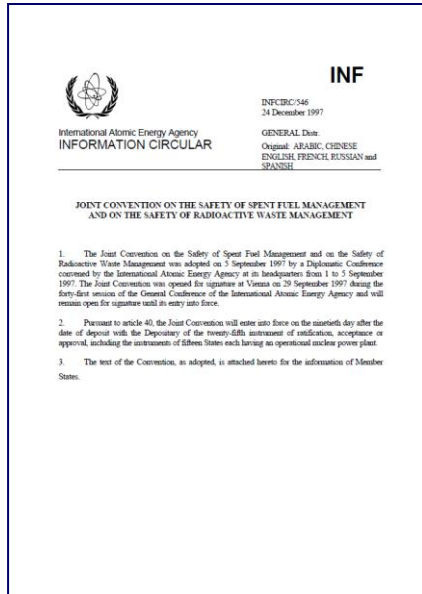
- **Safety of spent fuel mgmt.**
- **Safety of radioactive waste mgmt.**
- **Disused sealed sources**
- **Discharges**

**Focus is States with civilian nuclear power**

# Joint Convention

## Article 28 - Disused Sealed Sources

### States shall:



- Ensure that the possession, remanufacturing or disposal of disused sealed sources takes place in a safe manner [Article 28-1]
- Allow for reentry into its territory of disused sealed sources to a qualified manufacturer, if allowed by law [Article 28-2]

# Technical aspects of the management of disused sources

- **Reference design for a centralized spent sealed sources facility; IAEA-TECDOC-806 (1995)**
- **Conditioning and interim storage of spent radium sources; IAEA-TECDOC-886 (1996)**
- **Handling, conditioning and storage of spent sealed radioactive sources; IAEA-TECDOC-1145 (2000)**
- **Management for the prevention of accidents from disused sealed radioactive sources; IAEA-TECDOC-1205 (2001)**
- **Management of spent high activity radioactive sources (SHARS); IAEA-TECDOC-1301 (2002)**
- **Management of disused long lived sealed radioactive sources (LLSRS); IAEA-TECDOC-1357 (2003)**

# Policy and strategy for the management of disused sources

- **Policies and Strategies for Radioactive Waste Management; IAEA Nuclear Energy Series No. NW-G-1.1 (2009)**

# Conclusions

- **Code of Conduct contains several paragraphs that address disused sources**
- **The Safety Standards address disused sources specifically and also when they are declared as radioactive waste**
- **Joint Convention addresses disused sources, but the focus of the JC is on nuclear power States**
- **Technical guidance is available concerning the management of disused sources**



**THANK YOU**  
**FOR YOUR ATTENTION**