

NEW SECURITY ELEMENTS IN AELB'S INSPECTION

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Atomic Energy Licensing Board

National Radioactive Source Security Awareness Seminar
(30 June 2008)

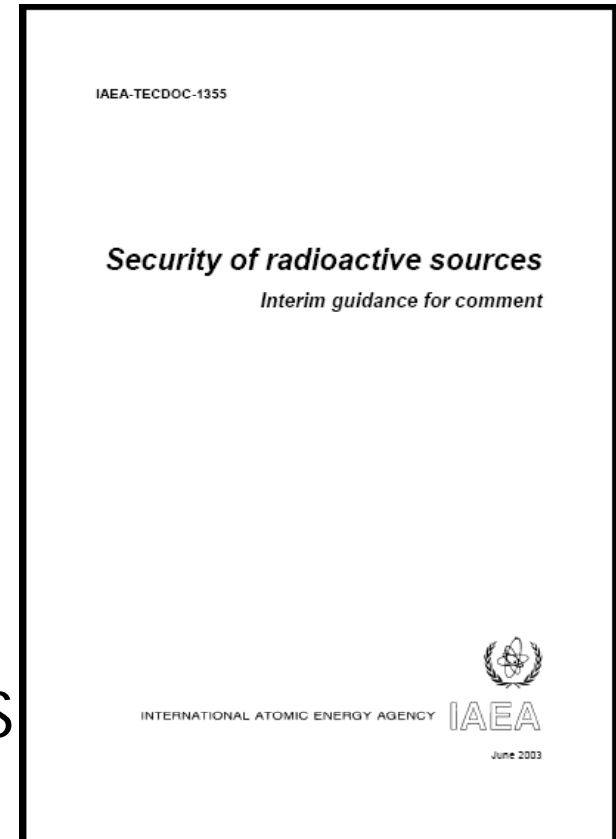
CONTENT

- 1) IAEA TECDOC 1355 - SECURITY OF RADIOACTIVE SOURCES
- 2) IAEA TECDOC 1344 - CATEGORIZATION OF RADIOACTIVE SOURCES
- 3) INSPECTION
- 4) SECURITY ELEMENT

IAEA - TECDOC- 1355 (June 2003)

Security of radioactive sources

PURPOSE - TO ENSURE SECURITY OF SOURCES THAT MEASURES TO BE APPLIED **TO PREVENT UNAUTHORIZED ACCESS TO RADIOACTIVE SOURCES** AT ALL STAGES OF THEIR LIFE CYCLE, AS WELL AS LOSS, THEFT AND UNAUTHORIZED TRANSFER OF SOURCES



SECURITY MEASURES

ADMINISTRATIVE

- access control procedures;
- alarmed access points (e.g. with radiation detectors);
- key control procedures;
- video cameras or personal surveillance;
- records related to the management of sources

- source inventories;
- regulations and guidance;
- reliability and trustworthiness of personnel;
- information security;
- quality assurance measures; and
- establishment of a safety culture and security culture

TECHNICAL

- fences;
- walls;
- cages;
- transport packaging;
- locks and interlocks for doors (or access points)
- locked, shielded containers



STORAGE - FENCE (technical)



IAEA - TECDOC- 1344 (July 2003)

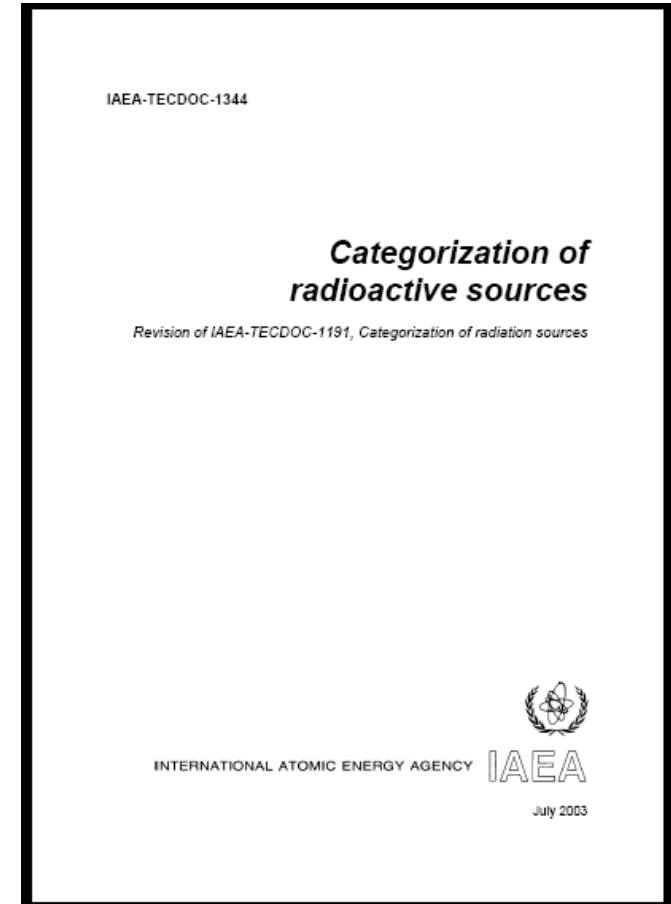
Categorization of radioactive sources

OBJECTIVE - TO PROVIDE A SIMPLE, LOGICAL SYSTEM **FOR RANKING RADIOACTIVE SOURCES BASED ON THEIR POTENTIAL TO CAUSE HARM TO HUMAN HEALTH.**

FORMALIZING RATIO = A/D

A- Activity radionuclide (TBq)

D - constant for radionuclide (TBq)



SUMMARY OF CATEGORIZATION SYSTEM

Category	Type of Sources	Activity ratio A/D
1	Teletherapy sources Irradiators	$A/D \geq 1000$
2	Industrial gamma radiography sources High/medium dose rate brachytherapy sources	$1000 > A/D \geq 10$
3	Industrial gauges with high activity sources (Fixed level gauge) Well logging gauges	$10 > A/D \geq 1$
4	Low dose rate brachytherapy sources Industrial gauges with moderate/low activity sources (Fill, level, portable gauge eg Troxler)	$1 > A/D \geq 0.01$
5	Positron emission tomography (PET) sources Electron capture devices X-ray fluorescence devices	$0.01 > A/D$ & $A >$ exempt

CATEGORIZATION & APPLICATION IN ACTIVITIES CONTROL BY AELB

- CATEGORY 1 - IRRADIATOR (ANSELL, STERIL GAMMA, ISOTRON)
- CATEGORY 2 - NDT
- CATEGORY 3 - FIXED LEVEL GAUGES/ WELL LOGGING
- CATEGORY 4 - THICKNESS/ FILL LEVEL GAUGES, PORTABLE GAUGES FOR MOISTURE/ DENSITY MEASUREMENT eg. TROXLER
- CATEGORY 5 - IRRADIATING APPARATUS (USING RADIOACTIVE SOURCES)

SYSTEM FOR NOTIFICATION, REGISTRATION AND INSPECTIONS

CATEGORY	Licensing	NOTIFICATION	INSPECTION
1	Yes	Yes Transportation	Every year Transportation
2	Yes	Yes IR Works/ Transfer of sources	Every year Spot-check
3	Yes	No	6 month before expiry
4	Yes	No	6 month before expiry
5	Yes	No	6 month before expiry

SUMMARY: FREQUENCY OF INVENTORY & ACCOUNTING

CATEGORY	SECURITY	INVENTORY (RECORD)	ACCOUNTING (BM/3)
1	A	Every DAY	YEARLY/ WHEN ANY CHANGES IN POSSESSION
2	B	Every WEEK	YEARLY/ WHEN ANY CHANGES IN POSSESSION
3			
4	C	Every 6 month	YEARLY/ WHEN ANY CHANGES IN POSSESSION
5	D	No specific requirement	YEARLY/ WHEN ANY CHANGES IN POSSESSION

INSPECTION

TYPE OF INSPECTION:

1. ANNOUNCE INSPECTION
2. UNANNOUNCE INSPECTION
3. PORT OF ENTRY

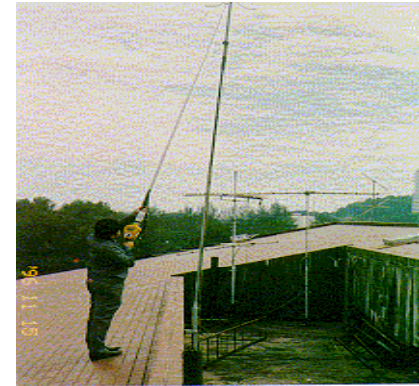
FREQUENCY OF INSPECTION:

1. CURRENT SITUATION

NDT - YEARLY

IRRADIATOR - YEARLY/ DURING TRANSPORTATION

OTHERS - 6 MTHS BEFORE LICENSE EXPIRED



INSPECTION

FREQUENCY OF INSPECTION:

2. BASE ON CATEGORY OF RADIOACTIVE MATERIAL
(CATEGORIZATION)



CATEGORY 1 - IRRADIATOR : YEARLY & DURING TRANSPORTATION

CATEGORY 2 - NDT : YEARLY & SPOT CHECK

CATEGORY 3 - FIXED GAUGING & WELL LOGGING : 6 MTHS BEFORE
LICENSE EXPIRED

CATEGORY 4 - GAUGING : 6 MTHS BEFORE LICENSE EXPIRED

CATEGORY 5 - IRRADIATING APPARATUS : 6 MTHS BEFORE LICENSE
EXPIRED



SECURITY ELEMENT

INSPECTION BASED ON:

1. LICENCE CONDITIONS
2. RADIATION PROTECTION PROGRAM (RPP)

A. LICENSE:

- Valid

B. RADIATION WORKERS:

- Authorized
- Reliable(trustworthiness)
- Trained (course, exam etc)

SECURITY ELEMENT

c. RECORDS & INVENTORIES:

- Location of radioactive sources (traceable)
- Notify when transfer the radioactive materials
- Access control
- Accounting record annually or when there any changes in possession (BM/3)
- Inventory:

Daily

Category 1

Weekly

Category 2&3

Semi-annually

Category 4

Annually

Category 5

SECURITY ELEMENT

d. IMPORT/ EXPORT:

- Notification
- Verification on documentation and sources (port of entry)

e. TRANSPORTATION:

Category 1:

- Required escort
- Inspect by the AELB
- Check the background of transportation workers
- Supervise by radiation workers

Category 2 & 3:

- Check the background of transportation workers
- Supervise by radiation workers

SECURITY ELEMENT

f. STORAGE:

- Approved
- Locked & fixed container
- Locked storage
- Access control to storage (recorded)
- Detection of unauthorized (alarm/ camera etc)
- Modification permitted

g. RADIOACTIVE SOURCES

- All licensed (Lampiran A)
- Inventory (base on category - daily, weekly, semi-annually, annually)
- Accounting yearly (BM/3)

SECURITY ELEMENT

h. RADIOACTIVE SOURCES IN USE (specially NDT)

- Shall not be left unattended
- Send back to temporary storage approved

i. SECURITY CONTROL:

- Threat Assessment documents approved
- Security Plan approved and yearly reviewed
(verified: to make sure in place, functioning and implemented)

❖ SECURITY DEVICES

- Physical condition
- Security Devices/ System to prevent unauthorized access are periodically tested, evaluated

SECURITY ELEMENT

❖ ABNORMAL EVENTS

- Abnormal events that may affect security should be reported promptly and recorded (eg. loss of control over sources, unauthorized access, malicious act threatening etc)

❖ How to recover?

- Notify AELB within 24 hrs
- Report to the Police
- Action to be taken to recover back the sources (if loss/ theft)

Note:

WHATEVER SECURITY FEATURES ESTABLISHED AND APPROVED BY THE AELB SHALL NOT BE MODIFIED/ CHANGED PRIOR TO AELB APPROVAL

THANK YOU



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