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CPR Part 26

Security of Radioactive Sources

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I. GENERAL PROVISIONS

Section 1. Purpose

a. The regulations in this Part are issued pursuant to Section 2 of Republic Act No. 5207, as amended, which provides as a matter of policy, to protect the public against the use of radioactive materials and associated facilities for unauthorized purposes.

b. The main objectives of the regulations in this Part are:
   1. to achieve and maintain a high level of security of radioactive sources that is commensurate with the potential hazard posed by the source, while recognizing the need to ensure appropriate use of the source for beneficial purposes; and
   2. to prevent unauthorized access or damage to, and loss, theft or unauthorized transfer of radioactive sources, so as to reduce the likelihood of accidental harmful exposure to such sources or the malicious use of such sources to cause harm to individuals, society or the environment.

c. The regulations in this Part shall be used in conjunction with other regulations of the CPR covering radiation safety, and with regard to the control of radioactive sources.

d. Nothing in this Part shall be construed to limit actions as may be appropriate and necessary to protect the health, safety and security of the general public.

Section 2. Scope

a. The regulations in this Part shall apply to:
   1. the adoption, introduction, conduct, discontinuance, or cessation of a practice, and
   2. the design, manufacture, construction or assembly, acquisition, import or export, distribution, selling, loaning, locating, commissioning, processing, possession, use and operation, maintenance or repair, transfer or decommissioning, disassembly, transport, storage, recycling or disposal of a radioactive source within a practice.

b. The requirements of these Regulations shall also apply to radioactive sources within any practice, to include:
   1. radioactive sources, where the radioactive material is permanently sealed in a capsule or closely bonded, in a solid form and any radioactive material released if the radioactive source is leaking or broken.
   2. installations and facilities containing radioactive substances or devices which are used for industrial, medical, agricultural, research and education purposes; and
   3. disused radioactive sources any other radioactive material specified by PNRI rule, order, or amendment of the regulations.

c. These Regulations shall apply to intervention measures undertaken by PNRI licensees in the event of security incidents or emergencies involving their sources.

Section 3. Exemptions

These Regulations do not apply to:

a. Radioactive waste material in general, but are applicable to disused radioactive sources.
b. Unsealed radioactive material, however PNRI may require, under specific circumstances, the management of unsealed sources in accordance with this Part.
c. Nuclear material as defined in the Convention on the Physical Protection of Nuclear Material except for sources incorporating plutonium-239, such as in PuBe neutron sources.

Section 4. Definitions

As used in this Part:

a. **"Accounting"** means physically checking an appropriate radiation survey that all sources are present in their expected location.
b. **"Act"** means the Republic Act No. 5207, as amended, otherwise known as the "Atomic Energy Regulatory and Liability Act of 1968".
c. **"Administrative measures"** means the use of policies, procedures and techniques that direct personnel to securely and safely manage radioactive sources.
d. **"CPR"** means the Code of PNRI Regulations
e. **"Delay"** means security measures to impede or hinder the progress of an intruder.
f. **"Deterrence"** means security measures sufficient to deter a reasonable individual from gaining unauthorized access.
g. **"Disposal"** means the emplacement of radioactive sources in an appropriate facility without the intention of retrieval.
h. **"Disused source"** means a radioactive source which is no longer used, and is not intended to be used, for the practice for which a license has been granted.
i. **"Export"** means the physical transfer of one or more radioactive source(s) covered by these Regulations originating from the Philippines into an importing State, or to a recipient in an importing State.
j. **"Import"** means the physical transfer of one or more radioactive source(s) covered by these Regulations, into the Philippines or to a recipient in the Philippines and originating from an exporting State.

k. **"Inventorying"** means physically checking the identification of each individual source possessed by the license using appropriate means, such as serial numbers, manufacturer's name, size, dimension and activity.

l. **"License"** means the authorization granted by PNRI on the basis of a safety and security assessment and accompanied by specific requirements and conditions to be completed by the licensee.

m. **"Licensee"** means a holder of a specific PNRI license issued pursuant to the regulations of the Code of PNRI Regulations or CPR.

n. **"Orphan source"** means a radioactive source which is not under regulatory control, either because it has never been under regulatory control, or because it has been abandoned, lost, misplaced, stolen or transferred without proper authorization.

o. **"PNRI"** means the Philippine Nuclear Research Institute, which is the government agency having legal authority for exercising regulatory control with respect to radioactive sources, including issuing authorizations, and thereby regulating safety or security of radioactive sources

p. **"Practice"** means any human activity that introduces additional sources of exposure or exposure pathways or extends exposure to additional people or modifies the network of exposure pathways from existing sources, so as to increase the exposure or the likelihood of exposure of people or the number of people exposed.

q. **"Radioactive source"** means a radioactive material that is permanently sealed in a capsule or closely bonded in a solid form and which is not exempt from regulatory control. It shall also mean any radioactive material released if the radioactive source is leaking or broken. It does not mean material encapsulated for disposal, or nuclear material within the nuclear fuel cycles of research and power reactors.

r. **"Radioactive waste"** means material, whatever its physical form, remaining from practices or interventions and for which no further use is foreseen that contains or is contaminated with radioactive substances and has an activity or activity concentration higher than the level for clearance from regulatory requirements, and exposure to which is not excluded from the International Basic Safety Standards.

s. **"Response forces"** means persons, on-site or off-site who are qualified, authorized, and appropriately equipped and trained to counter an attempted unauthorized removal of radioactive sources or an act of sabotage.

t. **"Sabotage"** means any deliberate act directed against a radioactive source or a facility where sources are managed which could directly or indirectly endanger the health and safety of personnel, the public and the environment by exposure to radiation or release of radioactive material.

u. **"Safety"** means measures intended to minimize the likelihood of accidents involving radioactive sources and, should such an accident occur, to mitigate its consequences.
v. **"Safety culture"** means the assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, protection and safety issues receive the attention warranted by their significance.
w. **"Security"** means measures to prevent unauthorized access or damage to, and loss, theft or unauthorized transfer of, radioactive sources.
x. **"Security culture"** means the assembly of characteristics and attitudes in organizations and of individuals which establish that security issues receive the attention warranted by their significance.
y. **"Spent source"** means a radioactive source that is no longer suitable for its intended purpose as a result of radioactive decay but may still present a radiological hazard.
z. **"Storage"** means the holding of radioactive sources in a facility that provides for their containment with the intention of retrieval in the future.
aa. **"Technical measures"** means the physical barriers to a radioactive source, device or facility in order to separate it from unauthorized personnel and to deter, or to prevent inadvertent or unauthorized access to, or removal of, a radioactive source.
bb. **"Timely detection"** means detection of any unauthorized access, which together with delay measures, is sufficient to enable guards or response forces to interdict the intruder or recover any stolen sources.
cc. **"Vulnerable source"** means a radioactive source that is currently under regulatory control, but for which the control is insufficient to provide assurance of long term safety and security.

Section 5. Interpretation

Except as specifically authorized by the Director, no interpretation of these Regulations made by any officer or employee of PNRI will be binding upon PNRI other than a written interpretation by the PNRI Director.

Section 6. General Obligations

No person shall engage in activities which involve practices or sources within practices except as authorized in a license issued by PNRI pursuant to a specific regulation of the CPR and unless the requirements of this Part are met.

Section 7. Access to Premises and Information

For purposes of implementing its licensing and regulatory functions pursuant to the Act, authorized representatives of PNRI shall have immediate access to premises and facilities in which authorized practices are conducted or sources are located in order to obtain information about the status of source security and verify compliance with regulatory requirements

Section 8. Resolution of Conflicts

If a conflict exists between the requirements contained in this Part and other laws and regulations PNRI shall initiate the appropriate steps towards its resolution.

Section 9. Additional Requirements

PNRI may impose additional requirements by regulation, order, or conditions of a license, in addition to those established in these Regulations, as it deems appropriate or necessary to protect health; minimize risk from radiation hazards; or protect the national interest.

Section 10. Communication

All communications and reports concerning the regulations in this Part should be addressed to:

The Director
Philippine Nuclear Research Institute
Commonwealth Avenue, Diliman
Quezon City

II. ADMINISTRATIVE REQUIREMENTS

Section 11. Responsibilities of Licensees

a. Each licensee shall bear the responsibility for establishing and implementing the administrative and technical measures that are needed for ensuring both the safety and the security for the authorized practices and sources and for compliance with all applicable requirements of these Regulations and the conditions of the license.
b. Each licensee shall designate qualified persons in key assignments related to the security of the radioactive source and/or facility. Other workers assigned tasks that could substantially affect the source security or the facility security shall also be identified.
c. Each licensee shall ensure that only workers authorized by reference in the license shall be permitted to fulfill such required assignments and tasks.

d. Each licensee shall ensure that such persons meet the requirements for training and trustworthiness specified in these Regulations.
e. Each licensee shall notify PNRI of its intention to introduce any amendment to an authorized practice, which could have implications to security, and shall not carry out such amendment unless specifically authorized by PNRI.

Section 12. Safety and Security Culture

Each licensee shall establish a management system, commensurate with the size and nature of the authorized activity, which ensures that:

a. policies and procedures are established that identify both safety and security as being of the highest priority;
b. problems affecting safety and security are promptly identified and corrected in a manner commensurate with their importance;
c. the responsibilities of each individual for safety and security are clearly identified and each individual is suitably trained and qualified;
d. clear lines of authority for decisions on safety and security are defined; and
e. organizational arrangements and lines of communications are established that result in an appropriate flow of information on safety and security at, and between, the various levels in the entire organization of the licensee.

Section 13. Radioactive Source Security Requirements

a. Licensees shall ensure the security of the sources under their responsibility.
b. Licensees shall ensure that, as applicable and appropriate, the location, design, construction and assembly, commissioning, operation and maintenance, and decommissioning of sources as well as devices and facilities are based on sound engineering practices that:
    1. take into account approved codes of practice, standards, and technical and scientific developments;
    2. are supported by reliable managerial and organizational features; and
    3. include adequate margins in the design, construction and operation of sources.

Section 14. Confidentiality and Information Security

a. Licensees shall establish information management systems, commensurate with the size and nature of the authorized activity, which ensure:
    1. that the confidentiality of information that it receives in confidence from another party is protected;

2. that information received in confidence from another party is only provided to a third party with the consent of the first party;
3. the confidentiality of information, the unauthorized disclosure of which could compromise security measures.

b. Information or documents that can be used to identify specific locations, specific security measures or weaknesses in the licensee's system of management of sources shall be controlled and distributed only on a need to know basis taking into account the national regulations on classified documents. This information includes:
   1. specific locations of sources;
   2. the facility's security plan and security system associated with the sources;
   3. temporary or permanent weaknesses in the security system;
   4. source utilization plans and records;
   5. proposed dates and times of shipments or transfers of sources; and,
   6. emergency response plans and systems.

Section 15. Trustworthiness of Persons Managing Sources

a. Licensees shall take measures to determine the trustworthiness of individuals involved in the management of radioactive sources.
b. Each licensee shall cause its staff and personnel to take appropriate background checks and psychological examinations from reputable institutions.
c. The measures to determine trustworthiness shall be appropriate to the highest security group of the authorized practices or sources within the practice.

Section 16. Human Factors

a. Each licensee shall ensure that all personnel on whom security depends are appropriately trained and qualified so that they understand their security responsibilities and can perform their duties with appropriate judgment according to defined procedures.
b. All employees shall be informed at least annually of the importance of effective physical protection measures and be trained in their implementation as appropriate.
c. Training programs shall be routinely evaluated and updated as necessary.
d. Each licensee, in co-operation with suppliers as appropriate, shall follow sound ergonomic principles in designing equipment and preparing operating procedures, in order to minimize the contribution of human errors to security incidents.
e. Each licensee shall provide appropriate equipment, security systems and procedures which:
   1. reduce, as far as practicable, the possibility of human errors leading to security incidents;
   2. provide means to detect human errors and to correct or compensate for them; and

3. facilitate intervention in the event of a security incident.

Section 17. Quality Assurance

a. Each licensee shall establish quality assurance programs based on standards acceptable to PNRI that provide, as appropriate:
   1. adequate assurance that the specified requirements relating to security are satisfied;
   2. assurance that the components of the security system are of a quality sufficient for their tasks; and
   3. quality control mechanisms and procedures for reviewing and assessing the overall effectiveness of security measures (see Section 18).

b. Quality assurance programs for sources in Security Groups A and B shall include annual exercises and evaluation of emergency response and security plans with subsequent revision as necessary.

Section 18. Testing and Verification of Compliance

Each licensee shall conduct performance testing of security systems to verify compliance with the requirements of these Regulations and the conditions of the license. Testing shall include drills and exercises in which personnel exhibit their understanding and ability to perform their required tasks.

III. TECHNICAL REQUIREMENTS

Section 19. Categorization of Radioactive Sources

a) A single radioactive source may be categorized and assigned to a security group based on the practice in which it is used, as provided in Table 1.

b) An aggregation of sources shall be categorized and assigned to a security group on the basis of the summation of the activity of each radionuclide divided by the corresponding D value. The calculated sum of A/D values shall be compared to the A/D values in the table and the appropriate security group assigned. Additional information is provided in Appendix I.

c) Sources that are no longer used in a practice listed in Table 1 shall be assigned to a security group on the basis of the ratio of the activity of the source divided by the corresponding D value. The calculated A/D value shall be compared to the A/D values in the table and the appropriate security group assigned.

Table 1. Security Groups and Source Categorization

Security Group	Source Category	Activity Ratio(A/D)	Practices
A	1	A/D ≥1000	Radioisotope thermoelectric generators (RTGs) Irradiators Teletheraphy Fixed multi-beam teletheraphy (gamma knife)
B	2	1000>A/D > 10	Industrial radiography High/medium dose rate brachytheraphy
C	3	10>A/D>1	Fixed industrial gauges (e.g. level, dredger, conveyor) Well logging gauges
D	4	1>A/D>0.01	Low dose rate brachytheraphy (except eye plaques and permanent implants) Industrial gauges that do not incorporate high activity sources (typically portable) Bone densitometers Static eliminators
	5	0.01>A/D and A>Exempt	Low dose rate brachytheraphy eye plaques and permanent implant sources X ray fluorescence devices Electron capture devices Mossbauer Spectrometry sources Positron Emission Tomography (PET) check sources

Section 20. Security Assessments

a. To meet quality assurance requirements, security assessments related to security measures for sources in Security Groups A and B shall be made by licensees, as appropriate, in order to:
   1. identify security threats specific to the licensee or evaluate changes to previously determined threats;
   2. assess security vulnerabilities in light of these threats; and
   3. assess the quality and extent of the security provisions.

Section 21. Security Measures

a. In order to meet the security performance objectives of the security group to which a radioactive source is assigned, a licensee shall either:
   1. comply with the Regulations that are applicable to the security group of the authorized practice or sources within the practice; or

2. adopt other security measures based upon a source-specific vulnerabilities analysis and the national threat. If this option is chosen, the licensee must demonstrate to PNRI that the security measures used meet the applicable performance objectives.

b. The performance objectives for the security groups shall be met by the use of a combination of administrative and technical measures. These security measures will be part of an integrated concept of safety and security involving industrial safety arrangements, radiation protection measures and appropriate design to achieve the necessary level of protection against unauthorized access to, or acquisition of, radioactive sources.

IV. REQUIREMENTS FOR THE ACQUISITION AND DISTRIBUTION OF RADIOACTIVE SOURCES

Section 22. Supply and Distribution of Sources

a. Each licensee who supplies or distributes radioactive sources shall ensure that:
   1. those to whom the sources are being supplied or delivered to are authorized by PNRI to receive the sources;
   2. the magnitudes, radionuclides and types of sources are consistent with the receiver's business and possession limits defined in the conditions of the receiver's license;

b. When purchasing sealed sources, both licensed supplier and receiver shall make contractual arrangements for the return of the spent sealed sources to the manufacturer or suppliers, wherever applicable.

c. Any licensee who proposes to import a sealed source containing radioactive material, that will have an activity of greater than 100 MBq 10 years after receipt shall:
   1. require the supplier, as a condition of any contract for purchase or as acceptance of any gift or donation, to receive the source back after its useful lifetime within one year of the licensee requesting such return, provided that the licensee seeks to return the source to the supplier not later than 15 years after purchase; and
   2. submit to PNRI a copy of relevant parts of the contract or acceptance document and obtain the supplier's written agreement prior to entering the contract or accepting the source as a gift or donation.

Section 23. Export of Radioactive Sources

a. Licensees intending to export Category 1 or 2 radioactive sources, particularly disused or spent sources shall apply to PNRI for an authorization and must receive such authorization prior to exportation.

b. The application for export shall include:
   1. confirmation letter from the importing State that the recipient is authorized to receive and possess the source or sources to be exported;
   2. a copy of the recipient's valid authorization issued by the competent authority of the Importing State;
   3. copies of relevant parts of any contracts to re-import the source once it becomes disused;
c. Licensees intending to export Category 1 or 2 radioactive sources shall also notify the regulatory body of the importing State, and should receive confirmation of such notification at least 7 days in advance of the shipment.

Section 24. Import of Radioactive Sources

a. Licensees intending to import Category 1 or 2 radioactive sources shall apply to PNRI for an authorization and must receive such authorization prior to importation.
b. The application shall include the following information:
   1. name of the exporter and photocopy of exporter's valid license issued by the competent regulatory country of the exporting country;
   2. exporter location and legal address or principal place of business;
   3. relevant radionuclides and radioactivity, and uses of the source(s);
   4. name of local distributor and photocopy of distributor's valid license issued by PNRI;
   5. the provisions for return or disposal of the source once it becomes disused, including copies of any contracts with distributor and exporter to re-export the source.
c. A licensee who is only authorized by PNRI to import, sell or distribute radioactive sources shall import these sources only if the recipient or consignee in the Philippines has a valid PNRI license to receive the source and is capable to manage the source consistent with the regulations of this Part. The authorized seller shall ensure that the manufacturer/exporter of the radioactive source is authorized by the regulatory authority of the Exporting State to export such sources to the Philippines.
d. Each licensee shall ensure that the Exporting State allows the re-entry of spent or disused sources if, in the framework of that State's national laws, it has approved that spent or disused sources be returned to a manufacturer authorized to manage the spent or disused sources.

Section 25. Transfer of Sources

Radioactive sources shall not be transferred without a valid written authorization from PNRI.

Section 26. Transport Requirements

a. Licensees transporting radioactive sources either domestically or internationally shall comply with the requirements of CPR Part 4, "Regulations for the Safe Transport of Radioactive Materials in the Philippines ", and all applicable transport requirements including:
   1. The IAEA Regulations for the Safe Transport of Radioactive Material; and
   2. The UN Recommendations on the Transport of Dangerous Goods.

V. SECURITY PERFORMANCE REQUIREMENTS

Section 27. Security Group Performance Objectives

a. Four security groups for radioactive sources are defined based on the performance objectives required to cover the range of security measures needed.
b. The performance objectives for each group are defined below.
   1. Security measures for radioactive sources in Security Group D shall be established that:
      i. ensure safe use of the source; and,
      ii. adequately protect it as an asset; and,
      iii. verify the presence of the source annually.
   2. Security measures for a radioactive source in Security Group C shall be established that:
      i. deter unauthorized access; and,
      ii. verify the presence of the source semi-annually.
   3. Security measures for a radioactive source in Security Group B shall be established that:
      i. deter unauthorized access;
      ii. detect unauthorized access and acquisition of the source in a timely manner; and,
      iii. verify the presence of the source weekly.
   4. Security measures for a radioactive source in Security Group A shall be established that:
      i. deter unauthorized access; and,
      ii. detect unauthorized access and acquisition of the source in a timely manner;
      iii. provide for timely response with a capability to recover the source(s); and,
      iv. verify the presence of the source daily.

Section 28. Requirements for Security Plans

a. A security plan is required for:

1. radioactive sources in Security Groups A or B, including the facility in which the sources are to be managed;
2. a source and/or facility in which the source is to be managed if deemed necessary by PNRI in the light of the risks posed and the current national threat assessment.

b. Security plans shall contain, as a minimum, the information detailed in Appendix V.
c. Security plans shall be tested and evaluated annually against the security performance objectives and shall be reviewed based upon the results of the test.
d. Identified deficiencies in the plan or security systems shall be promptly remedied and reported in accordance with Section 37.

Section 29. Compensatory or Alternative Measures for Mobile Radioactive Sources

a. In cases where the required security measures stated in the license cannot be fully met during field or offsite operations, the licensee may propose alternative compensatory measures that will provide an equivalent level of security.
b. Such measures must be approved by PNRI at least fifteen (15) days before commencing a field or offsite operation.
c. Alternative compensatory measures shall be valid only for the period indicated in the specific authorization, after which the security measures prescribed in the license will be re-established.

Section 30. Access Control Requirements

a. Access to radioactive sources shall be commensurate with the security group of the radioactive source, practice or facility, and kept to the minimum necessary, while still allowing the sources to be used for their intended purpose.
b. Each licensee shall control access at all times to radioactive materials and devices containing radioactive materials and limit access to such radioactive materials and devices only to individuals who have prior written approval from the licensee.
c. Each licensee shall maintain current a list of approved-individuals who are granted unescorted access to radioactive materials and devices that contain radioactive materials and shall document the basis for assuring that the approved-individual is trustworthy and reliable.
d. Only persons who have been determined to be trustworthy shall have unescorted access.
e. Persons whose trustworthiness has not been determined shall be escorted by, or kept under continuous surveillance of, a person authorized unescorted access.
f. The identity of all persons accessing the source location shall be verified and they should be issued with appropriately registered passes or badges.

g. All employees with authorized access shall be reviewed periodically as to need for access and continued fitness for authorization.

Section 31. Key Control Requirements

a. Key control measures shall be commensurate with the security group of the radioactive source, practice or facility.
b. A record shall be kept of all persons having access to, or possession of, keys concerned with the management of radioactive sources.

Section 32. Emergency Security Plans

a. Each licensee for radioactive sources, practices or facilities in Security Groups A and B shall have specific emergency security response plans and procedures, in addition to the safety requirement to have an emergency plan as a license condition pursuant to the corresponding regulations of the CPR for the particular Security Group.
b. Radioactive sources in Security Group C are not required to have specific emergency security plans, but shall be included in a generic facility or practice emergency plan.
c. The emergency security plans shall be appropriate to the type, magnitude and number of radioactive sources. As a minimum, specific emergency plans shall include:
    1. notifications in the event of a loss of a source, including an immediate report to PNRI in accordance with Section 37 of this Part;
    2. initial measures to recover lost or stolen sources;
    3. measures to quickly secure previously unaccounted for sources, found orphan sources, or lost or stolen sources that are recovered;
    4. response to a specific or increased security threat in accordance with Section 33 of this Part; and,
    5. press release procedures.
d. Emergency security plans and procedures shall be exercised, evaluated and updated at least once per year.

Section 33. Specific or Increased Security Threat

a. Each licensee shall closely cooperate with PNRI for any response planning to an increased threat of malevolent use regarding his radioactive sources, practice or facility.

b. Each licensee shall establish pre-arranged procedures with law enforcement regarding intelligence information and use of appropriately reliable and secure communications as well as the reactions to an increased threat.
c. If a licensee for a radioactive source in Security Groups A or B becomes aware, or suspects that there is a specific threat targeting a source or source storage location, security measures shall be increased in accordance with the threat, and may include:
    1. immediately returning the source to its secure storage location if it is in use;
    2. providing a 24-hour guard, using additional video camera observation, or an additional intrusion alarm;
    3. ensuring that law enforcement and the regulatory body are made aware of the suspected threat;
    4. reviewing security procedures, facility layout, and radiation safety practices with the law enforcement and emergency response personnel;
    5. making sure that emergency response procedures are current, including ensuring that local medical facilities are available where there are personnel trained and equipped to handle radiological emergencies.
d. Increased security measures shall be continued until such time as it is determined that the specific threat is no longer present.

VI. MANAGEMENT OF DISUSED RADIOACTIVE SOURCES

Section 34. Conditioning and Storage of Disused Sources

a. A licensee shall not dismantle any sealed radioactive source or device containing a radioactive source unless specifically allowed in its license.
b. Radioactive sources that have been conditioned for long-term storage or disposal in facilities, which are specifically licensed for long-term storage of radioactive sources, shall be categorized according to the aggregation within a conditioned container or storage location
c. Facilities specifically licensed for long-term storage of radioactive sources shall meet the requirements for the highest security group for which they have been authorized.

Section 35. Prompt Disposition of Disused Radioactive Sources

a. Licensees shall review their radioactive source inventory at least annually to identify any sources that are not in routine use and have become disused.
b. Unless the license allows otherwise, arrangements shall be made for the prompt disposition of any disused radioactive source.

c. Licensees shall dispose their disused sources within the period fixed by PNRI after determining that extended or long-term storage of disused sources will pose increased threat to the security of the radioactive sources.
d. Disposition of a source may include:
    1. Transfer to another licensee with an appropriate authority for further use;
    2. Return to the manufacturer or supplier;
    3. Transfer to a licensed interim, or long-term storage facility; or
    4. Disposal in accordance with the requirements of Chapter VI of CPR Part 3.

VII. RECORDING AND REPORTING REQUIREMENTS

Section 36. Records and Inventories

a. Records shall be maintained by licensees of the results of testing and verification of compliance, including records of the tests carried out in accordance with requirements of this Part.
b. Each radioactive source shall be inventoried annually and accounted for at the frequency specified in this Part that applies to its security group.
c. Records of inventories and accountings shall be protected at a security level consistent with the sources included.
d. Records shall be maintained and updated following:
    1. the annual inventory;
    2. whenever the recorded parameters change; and particularly,
    3. whenever radioactive sources are transferred.
e. Individual source records shall include the:
    1. location of the source;
    2. radionuclide;
    3. radioactivity on a specified date;
    4. serial number or unique identifier;
    5. chemical and physical form;
    6. source use history, including recording all movements into and out of the storage location;
    7. receipt, transfer or disposal of the source.

Section 37. Reporting Requirements

a. In addition to any reporting required by radiation protection regulations, licensees shall make the following reports to PNRI:

1. Initial radioactive source inventory data according to Section 36 and subsequent changes to those data, except for routine movements of the source allowed in the license;
2. Unusual events or incidents, such as:
    i. loss of control over a radioactive source;
    ii. unauthorized access to, or unauthorized use of, a source;
    iii. failures of equipment containing sources, which may have security implications;
    iv. discovery of any unaccounted sources;
    v. receipt of specific or general malicious threats.
3. Identified security system vulnerabilities and corrective actions taken.
4. Any intentions to introduce modifications to any practice with a radioactive source whenever the modifications could have significant implications for safety or security.
5. A copy of relevant parts of any contract or acceptance document relating to the return of sources intending to be imported.

b. Any violation of the regulations in this Part shall be communicated to PNRI within 24 hours, and shall include the information required by Section 38.

c. For radioactive sources in Security Groups A and B immediate (within one hour) reports are required for:
    1. lost sources;
    2. actual or attempted theft or sabotage of sources;
    3. receipt of a specific or general malicious threat.

d. Unless otherwise specified, all reports required by this Article shall be made in writing within 30 days.

e. Licensees shall ensure that information on normal operational performance as well as abnormal conditions and events significant to radioactive source security is made available to the regulatory body and other relevant parties, including other users, as specified by PNRI.

Section 38. Non-Compliance and Incidents

a. In the event of a breach of any applicable requirement of these Regulations, the licensee shall, as appropriate:
    1. investigate the breach and its causes, circumstances and consequences;
    2. take appropriate action to remedy the circumstances and to prevent a recurrence of similar situations;
    3. report to the regulatory body within 24 hours: the causes of the breach; its circumstances and consequences; and on the corrective or preventive actions taken or to be taken; and
    4. take whatever other actions are necessary as required by these Regulations.

b. Whenever a situation involving the loss of control (e.g. loss, theft or security breach) of a source in Security Group A or B (see Section 27) has occurred, or is occurring PNRI shall be informed immediately (within one hour).
c. Failure to take corrective or preventive actions within a reasonable time as determined by PNRI shall be grounds for enforcement.

Section 39. Feedback of Operating Experiences

Each licensee shall ensure that information on operational performance, as well as abnormal conditions, and events that are significant to radioactive source security is made available to PNRI upon request.

VIII. ENFORCEMENT

Section 40. Notice of Violation

A notice of violation shall be issued to the licensee if found to have violated any rule or regulation issued by PNRI; or any term or condition of the license issued hereunder.

Section 41. Suspension; Modification; or Revocation of License

a) PNRI may revoke, suspend or modify a license to use a radioactive source, or prohibit the possession of a radioactive source, upon finding a lapse in security or non-compliance with applicable regulatory requirements.
(b) PNRI may, upon finding of willful violations or attempted violations of its regulations or specific provisions of the Act committed by any person under the jurisdiction of the Act, recommend to the Department of Justice for prosecution under national criminal statutes and codes.

IX. EFFECTIVE DATE

Section 42. Effective Date.

These regulations shall take effect fifteen (15) days after publication in the Official Gazette.

Approved: **ALUMANDA M. DELA ROSA, Ph.D**
Director, PNRI

Date: October 12, 2006

APPENDIX I. TABLE OF D-VALUES

A. For an aggregation of sources of a single radionuclide in a single storage or use location where sources are in close proximity, such as in storage facilities or manufacturing processes, the total activity shall be treated as one source for the purposes of assigning a category. If sources with several radionuclides are aggregated, then the sum of the A/D ratios shall be used to determine the category in accordance with the formula:

$$Aggregate\ A/D = \sum_n \frac{\sum_i A_{i,n}}{D_n}$$

where:

Ai,n = activity of each individual source *i* of radionuclide *n.*
Dn = D value for radionuclide *n.*

B. Activity corresponding to a 'dangerous' source (D-value) for selected radionuclides and useful multiples thereof.

Radionuclide	1000 x D		10 x D		D		0.01 x D	
	(TBq)	(Ci)	(TBq)	(Ci)	(TBq)	(Ci)	(TBq)	(Ci)
Am-241	6.E+01	2.E+03	6.E-01	2.E+01	6.E-02	2.E+00	6.E-04	2.E-02
Am-241/Be	6.E+01	2.E+03	6.E-01	2.E+01	6.E-02	2.E+00	6.E-04	2.E-02
Au-198	2.E+02	5.E+03	2.E+00	5.E+01	2.E-01	5.E+00	2.E-03	5.E-02
Cd-109	2.E+04	5.E+05	2.E+02	5.E+03	2.E+01	5.E+02	2.E-01	5.E+00
Cf-252	2.E+01	5.E+02	2.E-01	5.E-00	2.E-02	5.E-01	2.E-04	5.E-03
Cm-244	5.E+01	1.E+03	5.E-01	1.E+01	5.E-02	1.E+00	5.E-04	1.E-02
Co-57	7.E+02	2.E+04	7.E+00	2.E+02	7.E-01	2.E+01	7.E-03	2.E-01
Co-60	3.E+01	8.E+02	3.E-01	8.E+00	3.E-02	8.E-01	3.E-04	8.E-03
Cs-137	1.E+02	3.E+03	1.E+00	3.E+01	1.E-01	3.E+00	1.E-03	3.E-02
Fe-55	8.E+05	2.E+07	8.E+03	2.E+05	8.E+02	2.E+04	8.E+00	2.E+02
Gd-153	1.E+03	3.E+04	1.E+01	3.E+02	1.E+00	3.E+01	1.E-02	3.E-01
Ge-68	7.E+02	2.E+04	7.E+00	2.E+02	7.E-01	2.E+01	7.E-03	2.E-01
H-3	2.E+06	5.E+07	2.E+04	5.E+05	2.E+03	5.E+04	2.E+01	5.E+02
I-125	2.E+02	5.E+03	2.E+00	5.E+01	2.E-01	5.E+00	2.E-03	5.E-02
I-131	2.E+02	5.E+03	2.E+00	5.E+01	2.E-01	5.E+00	2.E-03	5.E-02
Ir-192	8.E+01	2.E+03	8.E-01	2.E+01	8.E-02	2.E+00	8.E-04	2.E-02
Kr-85	3.E+04	8.E+05	3.E+02	8.E+03	3.E+01	8.E+02	3.E-01	8.E+00
Mo-99	3E+02	8.E+03	3.E+00	8.E+01	3.E-01	8.E+00	3.E-03	8.E-02
Ni-63	6.E+04	2.E+06	6.E+02	2.E+04	6.E+01	2.E+03	6.E-01	2.E+01
P-32	1.E+04	3.E+05	1.E+02	3.E+03	1.E+01	3.E+02	1.E-01	3.E+00
Pd-103	9.E+04	2.E+06	9.E+02	2.E+04	9.E+01	2.E+03	9.E-01	2.E+01
Pm-147	4.E+04	1.E+06	4.E+02	1.E+04	4.E+01	1.E+03	4.E-01	1.E+01
Po-210	6.E+02	2.E+03	6.E-01	2.E+01	6.E-02	2.E+00	6.E-04	2.E-02
Pu-238	6.E+01	2.E+03	6.E-01	2.E+01	6.E-02	2.E+00	6.E-04	2.E-02
Pu-239[d]/Be	6.E+01	2.E+03	6.E-01	2.E+01	6.E-02	2.E+00	6.E-04	2.E-02
Ra-226	4.E+01	1.E+03	4.E-01	1.E+01	4.E-02	1.E+00	4.E-04	1.E-02
Ru-106(Rh-106)	3.E+02	8.E+03	3.E+00	8.E+01	3.E-01	8.E+00	3.E-03	8.E-02
Se-75	2.E+02	5.E+03	2.E+00	5.E+01	2.E-01	5.E+00	2.E-03	5.E-02
Sr-90(Y-90)	1.E+03	3.E+04	1.E+01	3.E+02	1.E+00	3.E+01	1.E-02	3.E-01
Tc-99m	7.E+02	2.E+04	7.E+00	2.E+02	7.E-01	2.E+01	7.E-03	2.E-01

Tl-204	2.E+04	5.E+05	2.E+01	5.E+03	2.E+01	5.E+02	2.E-01	5.E+00
Tm-170	2.E+04	5.E+05	2.E+02	5.E+03	2.E+01	5.E+02	2.E-01	5.E+00
Yb-169	3.E+02	8.E+03	3.E+00	8.E+01	3.E-01	8.E+00	3.E-03	8.E-02

APPENDIX II : ADMINISTRATIVE AND TECHNICAL SECURITY MEASURES

Administrative Measures are the use of policies, procedures, and techniques that direct personnel to securely and safely manage sources. Administrative measures shall be used to support or supplement technical measures. Administrative measures that may be used include:

1. access control procedures (e.g. authorized personnel and escorts);
2. alarmed access points (e.g. with radiation detectors);
3. key control procedures;
4. video cameras or personal surveillance;
5. records related to management of sources;
6. accounting and inventorying;
7. procedures that follow regulations and guidance;
8. assessment of the reliability and trustworthiness of personnel;
9. information security;
10. quality assurance; and,
11. establishment of a safety culture and a security culture.

***Note**: Even if surveillance measures involve intrusion detectors as opposed to human observation, they are considered administrative measures in that they do not provide a physical barrier.*

Technical Measures pose a physical barrier to the radioactive source, device or facility and shall be used to separate it from unauthorized personnel and to deter, or to prevent, inadvertent or unauthorized access to, or removal of, a radioactive source in accordance with these Regulations. Technical measures are generally hardware or security devices and include:

1. fences;
2. walls;
3. cages;
4. transport packagings;
5. locks and interlocks for doors;
6. locked, shielded containers; and,
7. intrusion-resistant source-holding devices.

APPENDIX III : MAIN REQUIREMENTS FOR EACH SECURITY GROUP

<table>
<tr><th>Group A</th><th>Group B</th><th>Group C</th><th>Group D</th></tr>
<tr><td colspan="4">General administrative measures including authorized personnel</td></tr>
<tr><td>Daily accounting</td><td>Weekly accounting</td><td>Semi-annual accounting</td><td>Annual accounting</td></tr>
<tr><td colspan="2">Access control to source location allowing timely detection of unauthorized access</td><td>Access control to source location</td><td rowspan="13">No specific provisions.

Routine measures to ensure safe use, and protect as an asset</td></tr>
<tr><td colspan="3">Deterrence provided by:</td></tr>
<tr><td>A. Two technical measures separating the source from unauthorized access</td><td>B. Two measures (one technical) separating the source from unauthorized access</td><td>C. One technical measure separating the source from unauthorized access</td></tr>
<tr><td colspan="2">Specific emergency response plan</td><td>Generic emergency response plan</td></tr>
<tr><td colspan="2">Background checks and badges for personnel authorized for unescorted access</td><td rowspan="9"></td></tr>
<tr><td colspan="2">Security plan and security assessments</td></tr>
<tr><td colspan="2">Information security</td></tr>
<tr><td colspan="2">Upgrade security for increased threat</td></tr>
<tr><td colspan="2">Timely detection by:</td></tr>
<tr><td>A. Remotely monitored reliable intruder system</td><td>B. Local alarm and response by attentive personnel</td></tr>
<tr><td>Timely response to an alarm by guards or response forces</td><td></td></tr>
</table>

APPENDIX IV: SECURITY MEASURES FOR SOURCES IN USE AND STORAGE

A. Security Measures for Practices and Sources in Security Group D

The licensee shall meet the performance objectives of security measures for sources in Security Group D stated in Section 27.b (1) by:

a. ensuring that only authorized personnel are engaged in the management of sources; and,
b. protecting sources at a minimum in accordance with applicable radiation protection regulations and industrial standards; and,
c. protecting sources on the basis of their asset value; and,
d. inventorying the sources annually.

B. Security Measures for Practices and Sources in Security Group C

The licensee shall meet the performance objectives of security measures for sources in Security Group C stated in Section 27.b (2) by:

a. complying with the requirements of Appendix IV.A; and,
b. separating unauthorized personnel from the radioactive sources by at least one technical measure; and,
c. providing access control to areas where the sources are present (see also Section 30 and 31); and,
d. accounting for sources semi-annually; and
e. ensuring that emergency plans include security considerations relating to the sources.

C. Security Measures for Practices and Sources in Security Group B

The licensee shall meet the performance objectives of security measures for sources in Security Group B stated in Section 27.b (3) by:

a. complying with the requirements of Appendix IV.A; and,
b. separating unauthorized personnel from the radioactive sources by at least two security measures, at least one of which shall be a technical measure; and,
c. providing access control to areas where the sources are present such that every unauthorized access to the sources shall be detected by attentive personnel responding to a local alarm (see also Section 30 and 31); and,
d. accounting for sources weekly; and,
e. developing, exercising and maintaining a specific emergency response plan for the sources in accordance with Section 32; and
f. performing background checks to ensure the trustworthiness of individuals engaged in the management of the sources in accordance with Section 15; and,
g. developing, exercising and maintaining a security plan in accordance with Appendix V; and,
h. controlling security sensitive information in accordance with Section 14.b and
i. developing, and implementing when needed, the pre-arranged plans for response to an increased threat of malevolent use in accordance with Section 33.

D. Security Measures for Practices and Sources in Security Group A

The licensee shall meet the performance objectives of security measures for sources in Security Group A stated in Section 27.b (4) by:

a. complying with the requirements of Appendix IV.A and,
b. separating unauthorized personnel from the radioactive sources by at least two technical security measures; and,

c. providing access control to areas where the sources are present such that every unauthorized access to the sources shall be detected by a remotely monitored reliable intruder alarm (see also Section 30 and 31); and,
d. reliable communication capability providing for appropriate, timely action by guards or response forces (or law enforcement authorities) to any intruder alarms; and,
e. accounting for sources daily; and,
f. developing, exercising and maintaining a specific emergency response plan for the sources in accordance with Section 32; and
g. performing background checks to ensure the trustworthiness of individuals engaged in the management of the sources in accordance with Section 15; and,
h. developing, exercising and maintaining a security plan in accordance with Appendix V; and,
i. controlling security sensitive information in accordance with Section 14.b; and,
j. developing, and implementing when needed, the pre-arranged plans for response to an increased threat of malevolent use in accordance with Section 33.

APPENDIX V. FORM AND CONTENT OF SECURITY PLAN

A security plan is required for radioactive sources in Security Groups A or B, including the facility in which the sources are to be managed. A Security Plan may be deemed necessary if the regulatory authority determines a significant security threat on a source, and/or facility in which the source is to be managed, which is not under any of the Security Groups in the light of the risks posed and the current national threat assessment. Security plans shall be tested and evaluated annually against the security performance objectives. A review of the security plan shall be based upon the results of the test. Any identified deficiencies in the plan or security systems shall be promptly remedied and reported accordingly. The security plan should include everything to evaluate and to understand the security concept being used for the source. The following information would typically need to be included in the plan.

1. **A description of the source and its use.**
   - Use the information in the license about the source and its use.
   - Specify aggregation of sources if multiple sources are used.

2. **A description of the environment, building and/or facility where the source is used or stored, including:**
   - School buildings, Industrial, residential or commercial establishments near the licensed facility
   - Potential collateral effect on the facility caused by fire, floods or typhoons.
   - History of civil strife such as strikes or political demonstrations
   - Peace and order condition, occurrence of crime

3. **The location of the building or facility relative to areas accessible to the public, including:**
   - Location of nearest public thoroughfares
   - Distance from nearest police or military outposts or installation

4. **The objectives of the security plan for the specific practice, including:**
   - the specific concern to be addressed: theft, destruction, or malevolent use;
   - the kind of control needed to prevent undesired consequences; and
   - equipment or premises that will be secured.

5. **The technical security measures to be used, including:**
   - the measures to secure, provide surveillance, detect, delay, respond and communicate;, such as fences, walls, cages, transport packaging, locks and interlocks, and
   - procedures to evaluate the quality of the measures against the assumed threat.

6. **The administrative measures to be used, including:**
   - Regulations, guidance, policies and directives
   - Establishment of safety and security culture
   - the roles and responsibilities of the various people and groups;
   - routine and non-routine operations and maintenance;
   - determination of the trustworthiness of personnel and methods for access authorization;
   - the application of information security;
   - emergency plans;
   - training.

7. The process for periodically evaluating the effectiveness of the plan and updating it accordingly.

- Schedule of inventory control
- Schedule of review and evaluation of plan and the independent group that will perform the review

8. Any compensatory measures that may need to be used, including:

- Security procedures when transporting portable sources to temporary field offices or jobsites;
- Storage procedures at temporary sites;

9. References to existing regulations or standards.