

Vietnam approach to responding to a security incident involving a source in use or storage

Workshop on Radioactive Source Security: Ensuring an Effective Response

Philippines, 2024

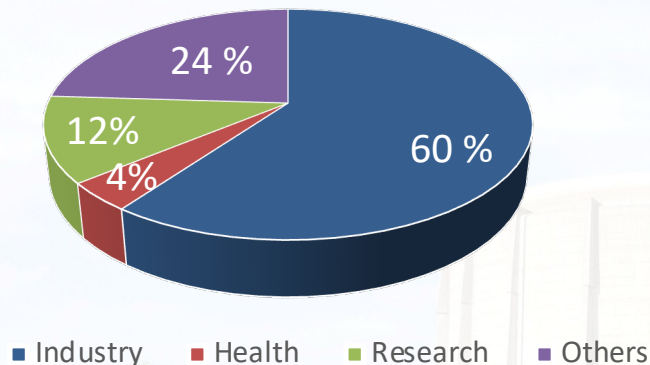
I. Overview

II. Emergency Response Plan

III. Deploying response measures

I.1. Distribution of radioactive sources in Viet Nam

Distribution of radioactive sources



- *Total over 6500 radioactive sources (over 3500 sources are in use (4% in health care, 60% in industry, 12% in research and 24% in other applications));*
- *More than 3000 radioactive sources are disused and being kept in storage*
- *Cat 1 source: 68 sources being used, 9 in storages*

Main applications

- ❖ Health: Tumor treatment (brachytherapy, tele therapy, gamma knife), Nuclear medicine, Irradiator (blood sample)
- ❖ Industry: Well-logging gauge, Non-destructive testing, Industrial gauge equipment (cement, beer, paper, steel, moisture-density of concrete, etc.), X-ray fluorescence devices (identify purify of gold, analyze content...), Irradiator (food/seafood); etc.
- ❖ Research, education: At institutes in the field of nuclear physics, etc.
- ❖ Other sections: Geology, agriculture, etc.

I.2. Basic Definition

- **Incident involving radiation:** is a state of radiation safety and security loss concerning a radiation source. Nuclear incident is a state of nuclear safety and security loss concerning nuclear materials, nuclear devices (*Article 1, Clause 82 of the Atomic Energy Law*).
- **The emergency response plan:** includes facility-level emergency response plan, provincial-level emergency response plan, and national-level emergency response plan (*Article 1, Clause 83 of the Atomic Energy Law*).

II.3. Emergency Response Plan

Vietnam has 3 levels Radiation **Emergency Response Plan**: Facility level, Provincial level, National level.

All facilities utilizing **radioactive sources** must develop Emergency response plan

When an incident exceeds the capacity of the facility-level response, it will escalate to the provincial-level response. When the incident exceeds the capacity of the provincial-level response, it will escalate to the national level.

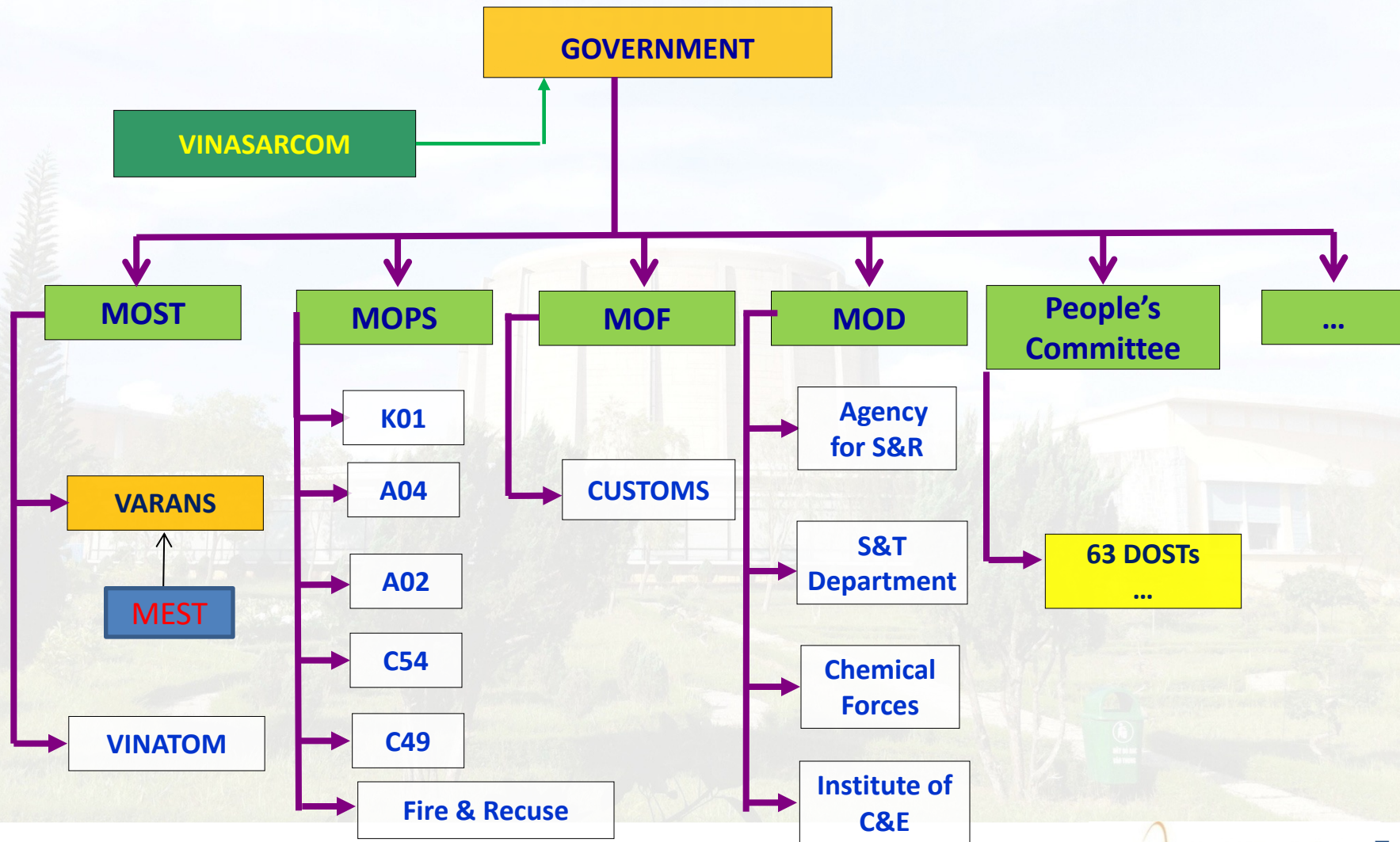


I.4. Responsibilities of organizations and individuals involved when an incident occurs.

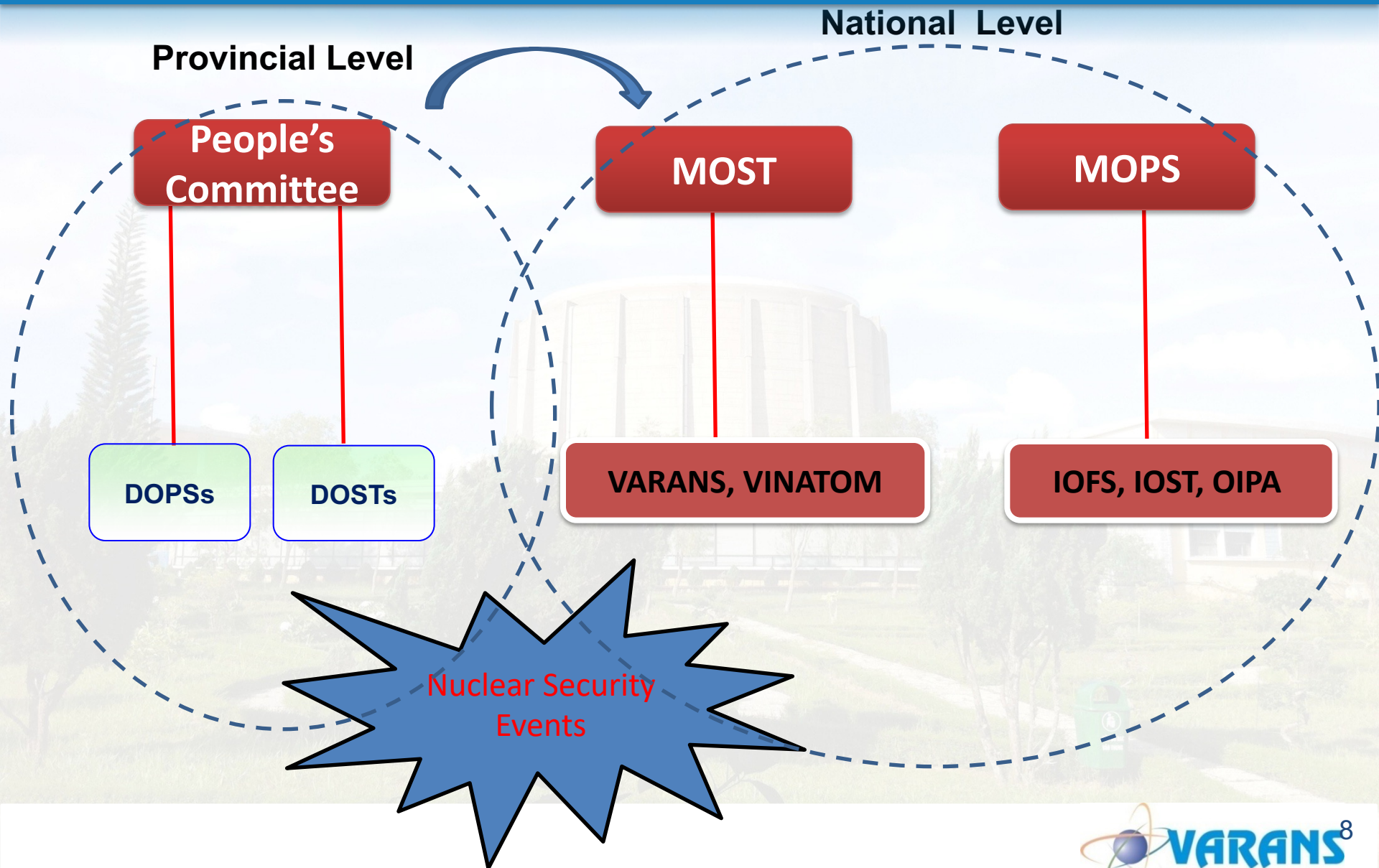
- Identify the incident **location**, preliminarily determine the cause, nature, and potential development of the incident.
- Mobilize personnel and **resources** of the facility to address the incident, contain its spread, minimize its consequences, organize emergency rescue for the injured, isolate hazardous areas, and maintain security.
- Notify **relevant authorities** of the information.
- Provide **information** and support for addressing and investigating the incident's causes.



I.5. State management in nuclear sectors



I.6. Engagement in security events



I.7. Regulatory Body for Radiation Safety

Responsibilities and Function of Nuclear Regulatory Body (VARANS)

- *To assist the Minister of S&T in the State management of radiation and nuclear safety (Atomic Energy Law, Article 8)*
- *Organize, regulate the environmental radiation monitoring & assessment of impact to environment*
- *Regulate, control the emergency response to radiological & nuclear incidents*
- *International Cooperation for promotion of capability building for state management in associated fields*

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II.1. Emergency Response Plan

1. General section

- Legal Basis: List the **main documents**.
- Scope of regulation and the target audience of the emergency response plan
 - **Target audience;**
 - **Scope.**
- Explanation of **concepts** and terms used in the incident response plan.



II.1. Emergency Response Plan

2. Basic information about the facility

- Description of the radiation-related work activities of the facility: Present specific procedures for conducting radiation-related tasks at the facility.
- Analyze risks and identify potential incident situations and consequences that may occur.
 - Analyze the most severe risks, situations, and consequences that incidents could cause.
 - Analyze the risks related to the loss of security of radioactive sources.
- Other risks!



II.1. Emergency Response Plan

3. Organizational structure and responsibilities of organizations and individuals involved in incident response.

Clearly define the organizational structure and present the incident response organizational chart.

Incident Response Command Team

Incident Response Teams

Other Departments

4. Response scenario for a radioactive source loss incident

Response actions	Implementers	Content
Step 1: Incident Notification	Radiation staff / Detector	<ul style="list-style-type: none">- Immediately report to the person in charge of radiation safety;- Immediately inform the security personnel;- Preserve the scene and follow the instructions of the person in charge of radiation safety.
Step 2: Incident Reporting	Safety officer	<ul style="list-style-type: none">- Immediately report to the Director;- Direct the organization of search within the area;- Immediately inform the local Police.
Step 3: Containment	Director	<ul style="list-style-type: none">- Immediately report to the local Police;- Immediately inform VARANS- Immediately inform the local

4. Response scenario for a radioactive source loss incident

Response actions	Implementers	Content
Step 4: Implement Retrieval	Safety officer and radiation staff	<ul style="list-style-type: none">- Retrieve the radioactive source if found and within the capability of retrieval.- If not, report to the Director to request assistance.
Step 5: Request Assistance	Director	<ul style="list-style-type: none">- Request assistance from the Department of Radiation and Nuclear Safety or relevant authorities as listed in Section I of this Plan.
Step 6: Record Incident Documentation	Safety officer	<ul style="list-style-type: none">- Execute the incident documentation record. Lưu hồ sơ sự cố

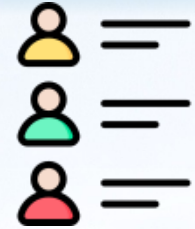
II.1. Emergency Response Plan

5. Attachments

1. Inventory of radioactive sources and radiation equipment of the facility (including information on sources/equipment and relevant licenses).
2. Site layout plan of the facility, where radiation-related work is conducted.
3. Inventory of equipment used during the incident response process.
4. List, addresses, and contact numbers of organizations and individuals involved in the incident response process, as well as supporting organizations and individuals.
5. Forms: including notification and information receipt forms, assistance request forms, reports during the response process, and after the incident concludes.

II.2. The Contents of the Response Plan

- Emergency **Contact List**: Police, Department of Science and Technology, Healthcare, Varans
- The emergency response **scenario** includes: radioactive source loss incident, exceeding permissible dose limits...
- Annual regular **exercises** are organized with various types of simulations: communication network connectivity, coordination between units, large-scale exercises...



II.3. Conducting emergency response exercise



II.3. Conducting emergency response exercise



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Deploying response measures

For a lost radioactive source:

1. Forces participating in the emergency response
2. Responding to a lost radiation source

1. Forces participating in the emergency response

Participating forces in the response:

- Viet Nam Agency for Radiation and Nuclear Safety (**VARANS**)
- Department of Science and Technology (**DOST**)
- **Facility**: Security forces, medical personnel, and company staff.
- **Police** forces including the General Department of Economic Security - Ministry of Public Security, Provincial Police, District Police, in coordination with relevant Provincial Police.



2. Responding to a lost radiation source

- Establishing access control using Radiation Portal Monitors (**RPMs**) or the **SPARC** system, which combines handheld radiation detection devices such as Radeye and Identifinder.
- Searching and securing the internal areas of the facility using **Packeye** or **Radeye**.
- Coordinating with the police to search other areas, including the vicinity of the plant, scrap metal facilities within the province, and other areas using the AT6101C **backpack** radiation detection system.



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THE LATEST NEWS:



Cooperation with Japan on improvement of national legal system on compensation for nuclear damage

On 14 August, Minister of Economy, Trade and Industry of Japan Yukio Edano came to visit and work with Minister of Science and Technology Nguyen Quan on cooperation in the field of nuclear energy.

ANNOUNCEMENT

AGENCY'S ACTIVITIES



Fourth international meeting on Next Generation Safeguards

From 3 to 5 July, the Vietnam Agency for Radiation and Nuclear Safety (VARANS) in collaboration with the U.S Department of Energy/National Nuclear Security Administration (DOE/NNNSA) organized the Fourth international meeting on Next Generation Safeguards. Deputy Director General of VARANS Le Quang Hiep came to attend and address the opening speech.

- ▣ Seminar on nuclear regulatory body
- ▣ Implementing EC project on strengthening capabilities of the regulatory body
- ▣ Essential knowledge workshop on PSA
- ▣ France to support training of nuclear human resources for VN

NEWS & EVENTS

Thank you for your attention !