Some basic information of chemical and radiation sampling in Viet Nam

Building Capabilities for Chemical and Radiological Sampling

Network of ASEAN

Chemical Biological Radiological (CBR)

Defence Experts

ROLE OF ARMY AND CHEMICAL CORPS IN CBRN RESPONSE

The military is a force that plays an important role in prevention and response with incidents related to CBRN agents. In which, the Army has specialized forces that perform different types of missions.

Decree 81/2019/ND-CP dated 11th November 2019 issued by Vietnamese Government, on preventing and countering proliferation of weapons of mass destruction, Ministry of National Defense shall act as National presiding agency of Viet Nam regarding preventin and countering the proliferation of weapons of mass destruction.

ROLE OF ARMY AND CHEMICAL CORPS IN CBRN RESPONSE

The Vietnam People's Army Chemical Corps is a force assigned by the Head of the Ministry of National Defense to be the main force in responding and overcoming emergency situations related to chemical and radioactive agents, including situations of chemical-nuclear weapons attacks and response to incidents related to toxic chemicals, radiation...

High Command of Chemical was assigned as the standing agency of the national presiding agency; represent the national presiding agency in handling issues relating to preventing and countering the proliferation of weapons of mass destruction.

ROLE OF ARMY AND CHEMICAL CORPS IN CBRN RESPONSE

Currently, the Chemical Corps has

- Rescue centers for toxic chemicals, radioactive, nuclear incident,
- Environmental Response team
- National Action Center for Toxic Chemical and Environmental Treatment

Capable of performing national tasks when CBRN situations occurred

Vietnam's Response to Chemical Sampling

Purpose and general principle of sampling

We know that the goal of sampling is to choose a volume of the sample of the object to be analyzed in a sufficiently large quantity for research (or analysis), for the purpose of identifying the desired criteria (identifying the agents, analyzing and determining the content of substances, monitoring regularly,…).

1. Some principles

- According to each sample object and analytical substances (defined),

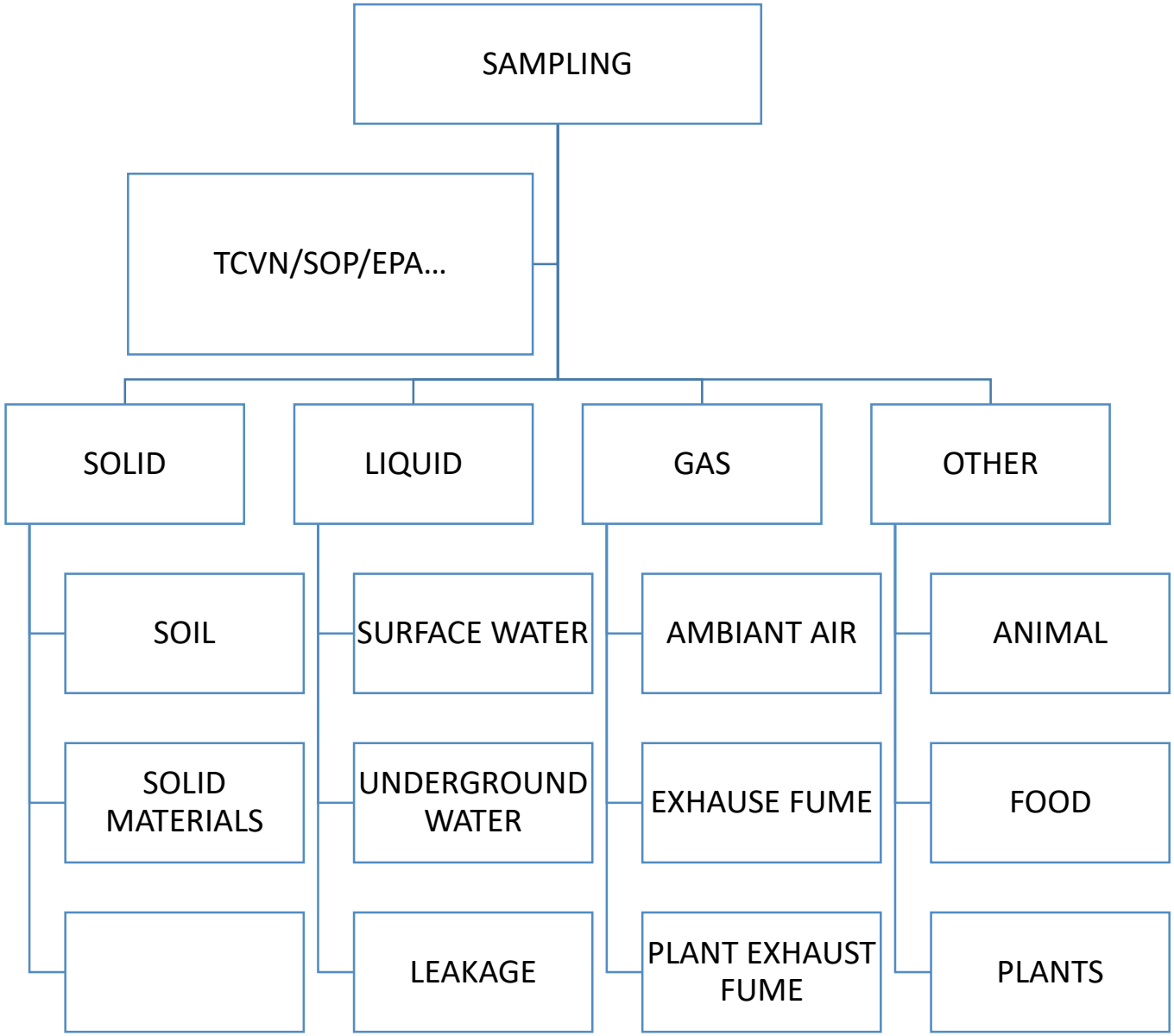
- According to standardised procedures for each type of task, e.g. International for Vietnamese Standard,

- Collection and storage apparatus must meet the specifications,

- The proper packaging and transportation for sample,

- Records of sampling and sampling conditions,

- The sampling staff must be trained.


SAMPLING
TCVN/SOP/EPA…
SOLID
LIQUID
GAS
OTHER
SOIL
SOLID MATERIALS
SURFACE WATER
UNDERGROUND WATER
LEAKAGE
AMBIANT AIR
EXHAUSE FUME
PLANT EXHAUST FUME
ANIMAL
FOOD
PLANTS

Vietnam's Response to Chemical Sampling

STEP 1: The first step is to define the goal of sampling to have an appropriate approach (Verification, investigation, regular observation…).

- Collect preliminary information from sources (nature of incident, nature of object, weather, topographical features, past experience ...)

Vietnam's Response to Chemical Sampling

STEP 2: Sampling plan (personnel, vehicle, equipment, protection, sample quantity and types of samples to be collected...). Specifically, as follows:

- A sampling and measurement team usually has 4-5 people (people directly take samples of 2-3 technicians).
- The selection of equipment depends on the sampling objectives and results of preliminary information collection.
- The selection of the level of protective equipment depends on the characteristic of the sampling mission.

Vietnam's Response to Chemical Sampling

STEP 3: At the scene before sampling:

- Determine the scale of the incident. Determine wind direction, flow direction, topography where the incident occurred.
- Quickly assess situation based on visual cue such as plants, dead organisms along the stream spread of toxins, or other characteristic phenomena...
- For sampling of chemical incidents or chemical attacks, always carry out preliminary reconnaissance with field rapid measuring devices. Reconnaissance technicians must mark the zone of infected area, creating favorable conditions for technicians to take samples.

Vietnam's Response to Chemical Sampling

STEP 4: Sampling:

- Make sure the sampling staff performing the task is carefully protected with an appropriate PPE. Always have at least 2 technicians come into the scene (but not too many).
- Sampling method must comply with TCVN or EPA or SOP approved by the competent authority.

STEP 5: After the sample is taken, store the sample in designated containers in accordance with the sample properties, type of sample, and regulations. Preliminary treatment of samples can be carried out, if necessary

- The whole sample must be coded and record information: misison, sample type, sampling time, coordination, some basic information (weather, sample characteristics), technician's name for documentation purposes. The above information may or may not be confidential, or partially confidential, depending on the nature of each task.
- The transportation of samples from the place of sampling to the laboratory must comply with the State's regulations on the transportation of dangerous goods

Vietnam's Response to Chemical Sampling

Sampling for analysis to determine the concentration of dioxin in soil

- In 2016, a mass dead fish occurred in Vietnam along the coast of Central provinces. To determine the cause of the phenomenon, a group of scientists took samples for analysis. 02 teams took samples in opposite directions to ensure the shortest time. Samples were taken include seawater samples (taken in different depths), samples of dead marine life washed ashore. By strictly complying with the analytical sampling procedures, the analytical results have helped the authorities to clarify the cause, determine the extent and level of environmental pollution.

Vietnam's Response to Chemical Sampling

Sampling for analysis to determine the concentration of dioxin in soil

Vietnam is a country heavily affected by toxic chemicals that persisted after the war. Over the past years, Vietnam has conducted surveys and assessments of dioxin pollution levels and implemented projects to clean up dioxin in affected areas. Sampling during these events included soil, water and air sampling. In which we focus on soil sampling. Soil samples were taken in matrix, taken at different depths to assess the degree of pollution. Therefore, an accurate assessment of the status of Agent Orange/dioxin contamination in Vietnam was given and advised authorities on solution to remediate the environment, ensuring a safe living for people.

Vietnam’s Response to Radiological Sampling

Purpose and objectives of radiological sampling

Radiological sampling has an important role in the radiation and nuclear incident monitoring and national response program because:

a) Serve the regular monitoring of natural and artificial radioactivity in the environment to ensure the health and safety of the people, which are designed in national environmental radioactive monitoring programs.

b) Serving the emegercy response to radiation or nuclear incidents.

2. Basic requirements of radiological sampling

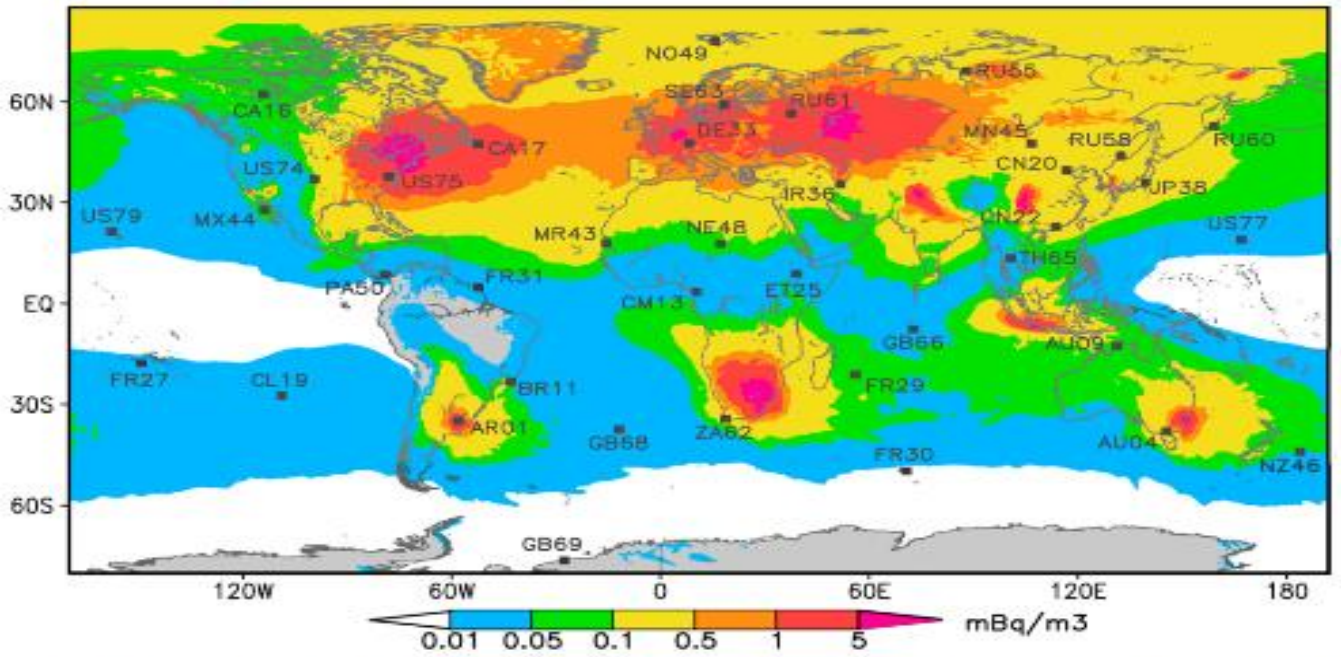
a) Radiological sampling procedure must be elaborated in detail in the regular and emergecy monitoring programs of each country. Sampling procedures should be established from the national laboratory level to the local monitoring stations.

2. Basic requirements of radiological sampling (cont)

b) Before collecting samples, we need to carefully calculate and choose the sampling location to ensure that the sample is representative of the area in the regular radioactive monitoring program.

2. Basic requirements of radiological sampling (cont)

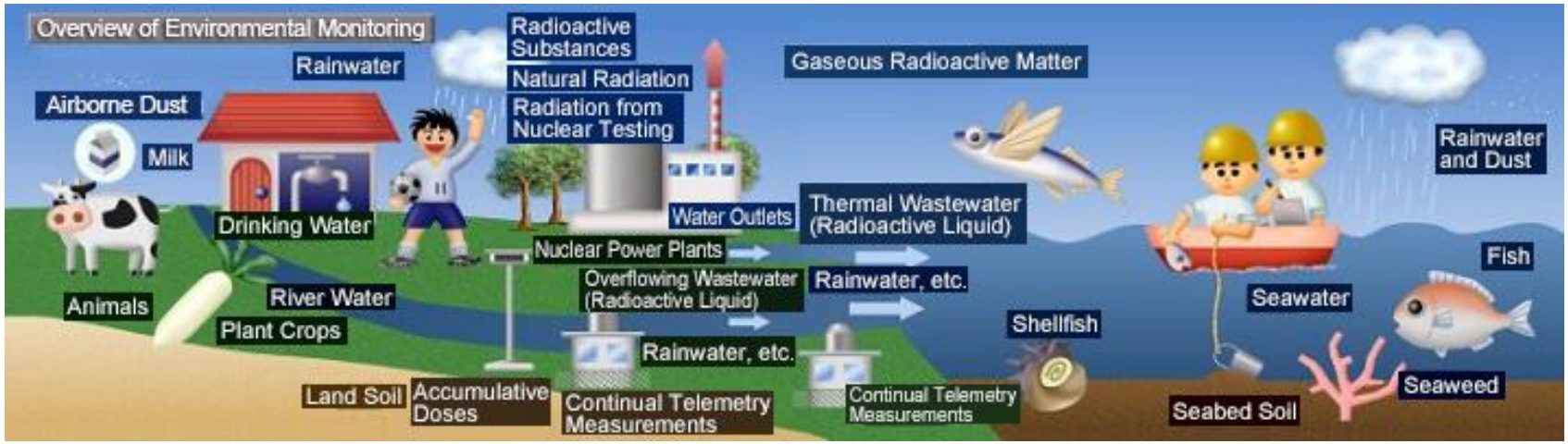
c) In the case of emergecy response to a radiation incident, a prediction model should be provided to localize and sample on the priority area. On the basis of the operational intevention level (OIL) and other factors, initial measures should be taken to protect people and the environment.



Hàm lượng trung bình hàng năm của Xe-133 được tính toán từ số liệu mô phỏng trong 2 năm tại mặt đất (0-100 m). Các trạm quan trắc Xe của IMS là các hình vuông màu đen

3. Sampling objects

- Objects of radiological sampling are devided into 04 classes: soil, water, food, air, in which these classes are taken into 15 different types of analysis samples.

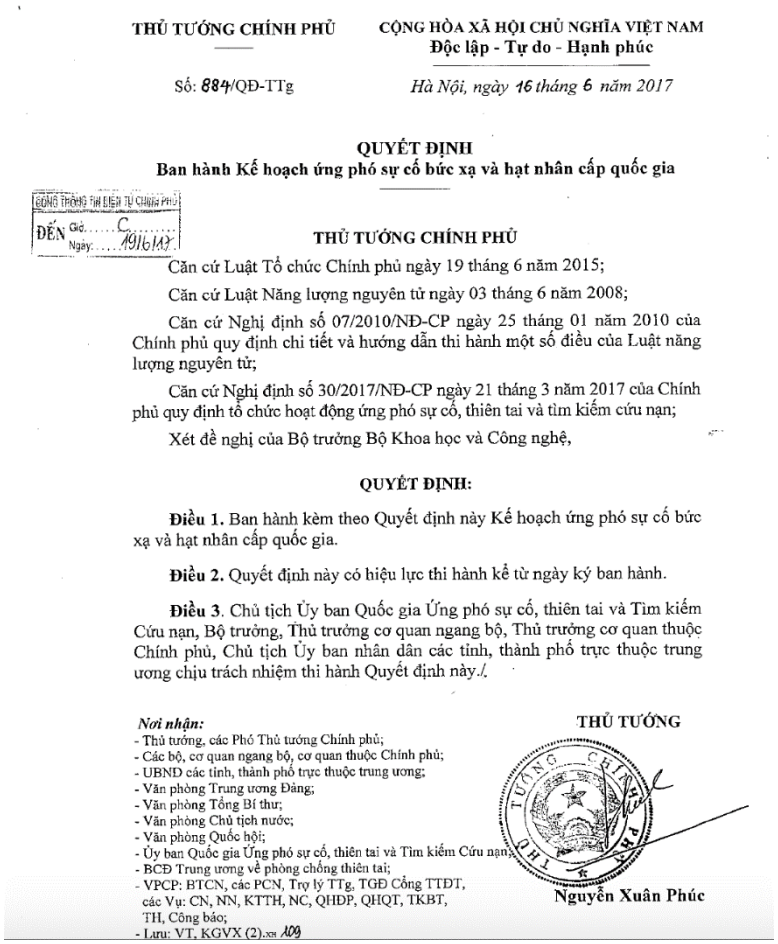


4. Brief introduction of the Viet Nam's radiological sampling program

a) Legal

Vietnam is one of the first countries in the ASEAN to develop a national radioactive monitoring program since 1976.

Vietnam has also developed a National Nuclear and Radiation Response Plan (Plan 884 - issued by the Prime Minister in 2017).



THỦ TƯỚNG CHÍNH PHỦ

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc

Số: 884/QĐ-TTg

Hà Nội, ngày 16 tháng 6 năm 2017

QUYẾT ĐỊNH
Ban hành Kế hoạch ứng phó sự cố bức xạ và hạt nhân cấp quốc gia

CỔNG THÔNG TIN ĐIỆN TỬ CHÍNH PHỦ
ĐẾN Giờ: C
Ngày: 19/6/17

THỦ TƯỚNG CHÍNH PHỦ

Căn cứ Luật Tổ chức Chính phủ ngày 19 tháng 6 năm 2015;

Căn cứ Luật Năng lượng nguyên tử ngày 03 tháng 6 năm 2008;

Căn cứ Nghị định số 07/2010/NĐ-CP ngày 25 tháng 01 năm 2010 của Chính phủ quy định chi tiết và hướng dẫn thi hành một số điều của Luật năng lượng nguyên tử;

Căn cứ Nghị định số 30/2017/NĐ-CP ngày 21 tháng 3 năm 2017 của Chính phủ quy định tổ chức hoạt động ứng phó sự cố, thiên tai và tìm kiếm cứu nạn;

Xét đề nghị của Bộ trưởng Bộ Khoa học và Công nghệ,

QUYẾT ĐỊNH:

Điều 1. Ban hành kèm theo Quyết định này Kế hoạch ứng phó sự cố bức xạ và hạt nhân cấp quốc gia.

Điều 2. Quyết định này có hiệu lực thi hành kể từ ngày ký ban hành.

Điều 3. Chủ tịch Ủy ban Quốc gia Ứng phó sự cố, thiên tai và Tìm kiếm Cứu nạn, Bộ trưởng, Thủ trưởng cơ quan ngang bộ, Thủ trưởng cơ quan thuộc Chính phủ, Chủ tịch Ủy ban nhân dân các tỉnh, thành phố trực thuộc trung ương chịu trách nhiệm thi hành Quyết định này./.

Nơi nhận:
- Thủ tướng, các Phó Thủ tướng Chính phủ;
- Các bộ, cơ quan ngang bộ, cơ quan thuộc Chính phủ;
- UBND các tỉnh, thành phố trực thuộc trung ương;
- Văn phòng Trung ương Đảng;
- Văn phòng Tổng Bí thư;
- Văn phòng Chủ tịch nước;
- Văn phòng Quốc hội;
- Ủy ban Quốc gia Ứng phó sự cố, thiên tai và Tìm kiếm Cứu nạn;
- BCĐ Trung ương về phòng chống thiên tai;
- VPCP: BTCN, các PCN, Trợ lý TTg, TGĐ Cổng TTĐT, các Vụ: CN, NN, KTTH, NC, QHĐP, QHQT, TKBT, TH, Công báo;
- Lưu: VT, KGVX (2).xxx 109

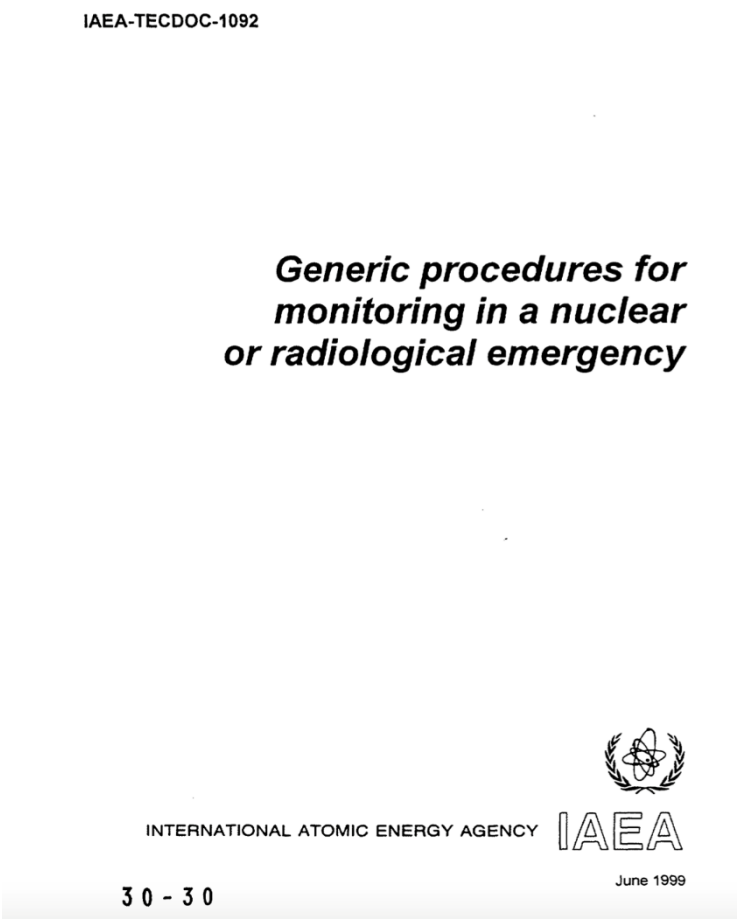
THỦ TƯỚNG

Nguyễn Xuân Phúc

4. Brief introduction of the Viet Nam's radiological sampling program

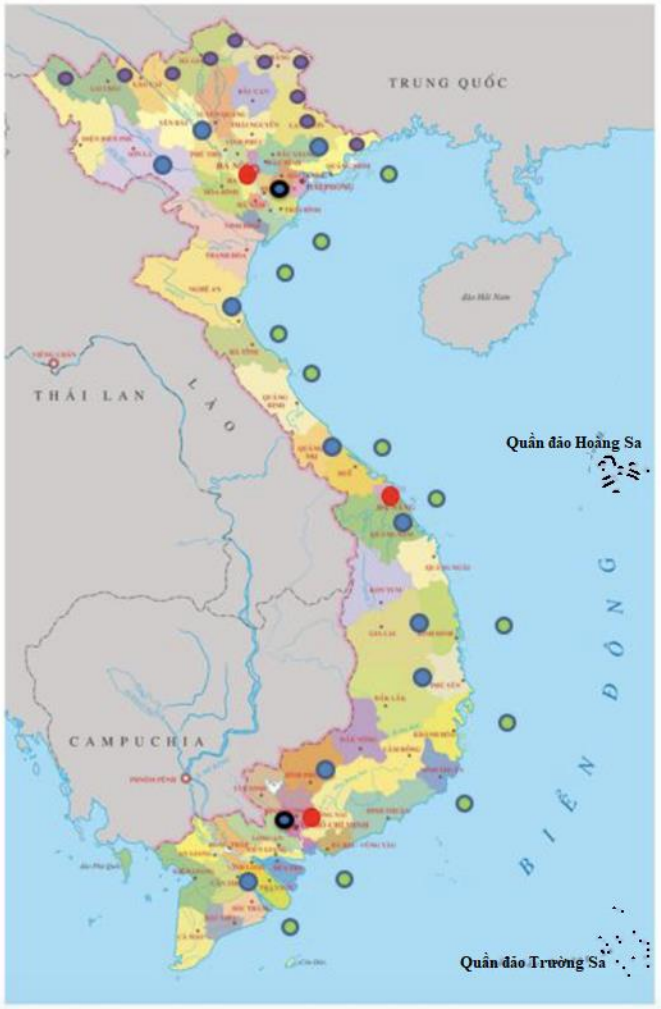
b) Technical

The radiological sampling is determined in the monitoring programs and in compliance with the recommendations of the IAEA (IAEA - TECDOC - 1092).



4. Brief introduction of the Viet Nam's radiological sampling program

Currently, Viet Nam Ministry of National Defence is implementing the construction of an automatic radioactive monitoring and warning system covering the whole country, connecting to the data center and operating in Ha Noi.



Vietnam's Response to Radiological Sampling

5. Experience of Vietnam in radiological sampling

Vietnam has a number of additions methods to enhance radiological sampling and analysis, as follows:

a) Train on regular radiological sampling for local monitoring stations, on-site incident response teams (once a year), focusing on practice on their equipped devices.

Vietnam's Response to Radiological Sampling

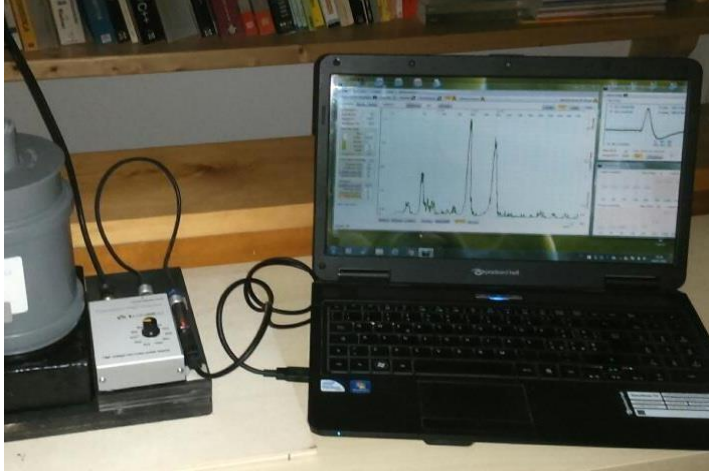
5. Experience of Vietnam in radiological sampling

b) Develop a sampling procedure suitable to the existing equipment and manpower to exploit the equipments more effectively.

Vietnam's Response to Radiological Sampling

5. Experience of Vietnam in radiological sampling (cont.)

c) Systematically and scientifically establish a radiological program.



Vietnam's Response to Radiological Sampling

5. Experience of Vietnam in radiological sampling (cont.)

With the existing experience, techniques and equipment, radioactive monitoring stations in Vietnam have observed, sampled, analyzed and detected abnormal radioactivity changes in the nuclear power plant the disaster, such as Chernobyl NPP (1986) and Fukushima NPP (2011).

THANK YOU VERY MUCH!