# Training programs of workers dealing with nuclear security: national and regional aspects

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# Introduction

The Greek Atomic Energy Commission (GAEC) is the competent authority for radiation protection and nuclear safety.

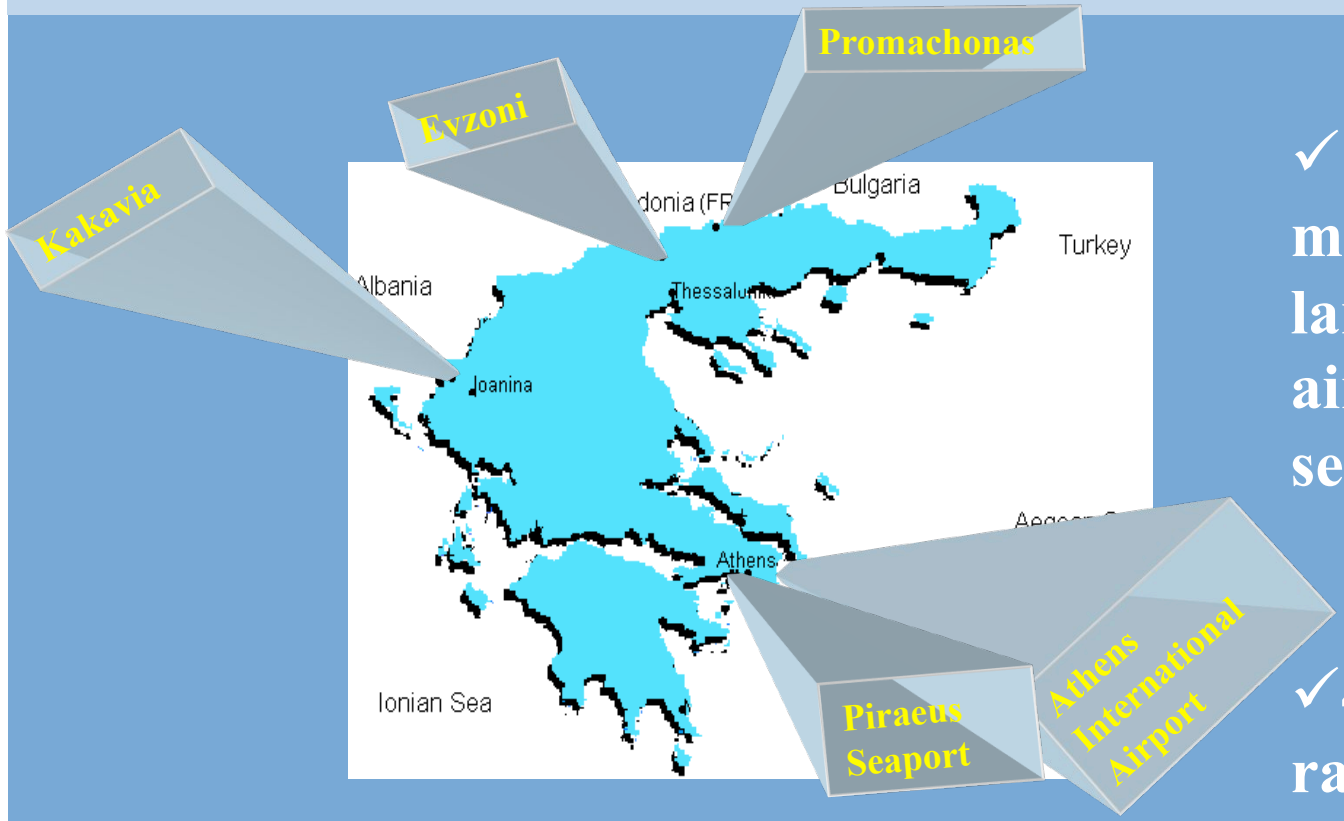
Among others is responsible for the prevention, detection and response in case of malicious acts (nuclear / radiological) and therefore:

- shields the country from the danger of malicious acts
- takes measures for the confrontation of relevant incidents

# Introduction

On the occasion of the Athens Olympic Games in 2004, the prevention, detection and response system in the country has been upgraded e.g:

# *Fixed radiation monitors & Portable radiation detection equipment*




✓ 57 fixed radiation monitors at 3 main land borders, Athens airport and Piraeus seaport.

✓456 portable radiation detection equipment at 32 cargo and passengers entry points.

## *Fixed Detection Systems*
## *Athens International Airport – Extra Schengen Passengers Terminal*

# , Fixed Detection Systems
# Piraeus Seaport – Passengers Terminal

fixed detection systems

GAEC

# *Fixed Detection Systems*
# *Piraeus Seaport – Vehicle Monitors*

**vehicle monitors**

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## *Fixed Detection Systems*
## *Piraeus Seaport – Temporary Gate for Cruise Boats during the O.G.*

**fixed detection systems**

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# *Handheld Equipment*

*300 pagers*

- ✓**Custom officer protection**
- ✓**Radioactivity indication**

*100 survey meters*

- ✓**Secondary inspection**
- ✓**Radiation rate**

*60 isotope identifiers*

- ✓**Secondary inspection**
- ✓**Localization and identification**
- ✓ **of radioactive material**

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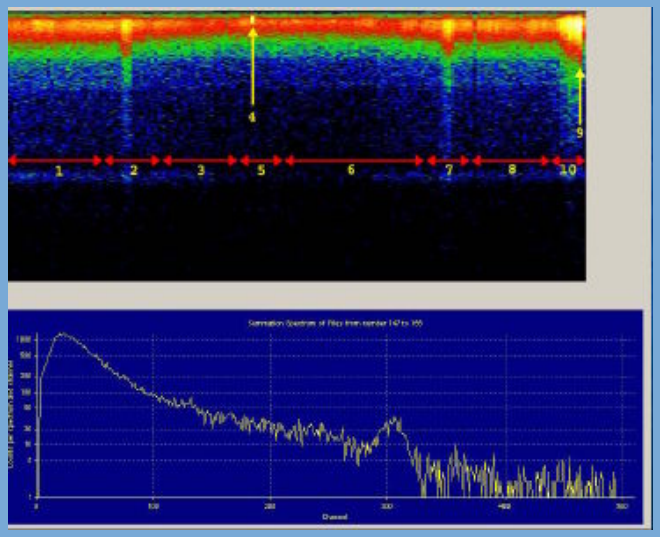
# *Radiation Detection at Olympic Games Installations prior to the Olympic Games*



- ✓Portable spectrometers
- ✓Large volume NaI
- ✓Pagers
- ✓Plastic scintillators

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# *Radiation Detection at Olympic Games Installations During the Olympic Games*


- ✓181 detectors
- ✓32 identification systems
- ✓Security officers
- ✓ GAEC scientific staff

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# National training courses on Nuclear Security



The use of such radiation detection equipment and the detection response, required technical knowledge and specialized training.

Thus, adequate training, technical support, and follow-up was provided to the personnel authorized to use these systems.

# National training courses on Nuclear Security



- GAEC provided training courses on:
  - radiation protection, prevention, detection, detection response, emergency preparedness and response to about **3000 of persons** involved in the national emergency plan
  - Nuclear security, illicit trafficking of radiation sources organized at the customs offices around Greece, to about 400 first line officers.

# National training courses on Nuclear Security

**The mechanism developed had to be maintained and improved through continuous training and knowledge dissemination on the new techniques and methodologies.**

To assure the sustainability of national operational capability on prevention, preparedness and response.

- refresher training courses
- Train the Trainers courses

# National training courses on Nuclear Security

Today GAEC provides regular training courses related to the nuclear security, addressed to :

- Military forces,
- Coast guards,
- Fire brigade,
- Front Line Officers (FLOs), and
- Mobile Expert Support Teams (MESTs)

# National training courses on Nuclear Security

In addition GAEC participates or contributes:

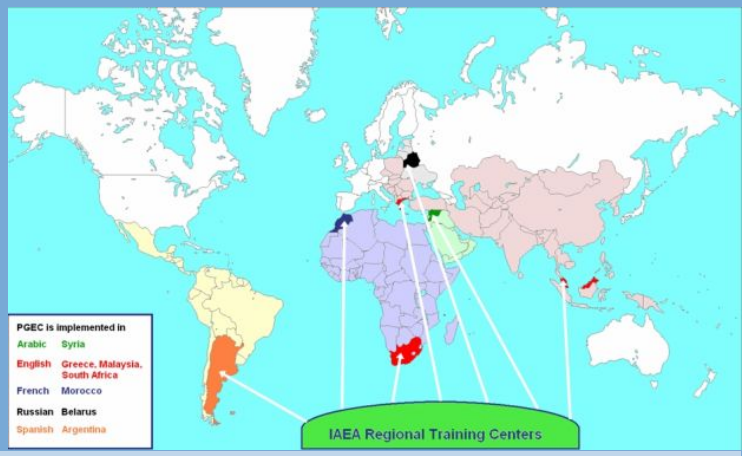
- in training courses on nuclear security and emergency response exercises **organized periodically by the organizations involved in the national emergency plan**.
- In an extensive training of 504 police officers was organized **by the police concerning the detection response to CBRN threats** (2007).
- in the yearly training on transportation of radioactive material by air, **organized by the airport fire brigade**.

# International training courses on Nuclear Security

- GAEC, since 2003, is the IAEA's regional Training Centre for Europe in the English language.

- It hosts every two years, the 22 weeks *'**Postgraduate Educational Course on Radiation Protection and the Safety of Radiation Sources'**,* co-organized and co-funded by the IAEA.

**The syllabus of this course contains elements of nuclear safety and security**



# International training courses on Nuclear Security

GAEC since 2005, is also an IAEA's **International Training Centre in Nuclear Security** (NS)

It has organized in collaboration with the IAEA, ten international specialized courses, co-funded by the European Union, for Front Line Officers (FLOs) and Mobile Expert Support Teams (MESTs) on NS in the fields of :

- advanced detection equipment,
- data networking & remote monitoring and
- sustainability of border Radiation detection equipment.

(Course duration = 1 week)

# **Structure**
## of the training programmes

The main tasks of the workers dealing with security in case of a radiological/nuclear event are :

- Detection of the presence of radiation using installed and/or portable detection instruments
- Localisation of the radiation source using portable detection instruments (e.g. Personal Radiation Detector)
- Identification of the radiation source using the Radionuclide Identification Device.
- Isolation of the radiation source

# **Structure**
## of the training programmes

Main objectives :

- Understand basic notions on health physics and radiation protection principles
- Introduce the international nuclear security legal instruments
- Raise awareness on illicit trafficking
- Enhance coordination between FLOs and MESTs
- Familiarize with relevant procedures
- Develop competence on prevention, detection and monitoring technology

# ALARA elements in the syllabus of the training programmes

- Security workers are not occupationally exposed workers or emergency workers. The dose limit of 1mSv/y for the members of the public is applied.

- In the context of the optimisation principle, dose constraints at levels below public dose limits should be applied (e.g. 0.3mSv/y ).

- Due consideration has to be given during their training o**n the procedures to be followed,** where the application of the ALARA principle is of vital importance,

# ALARA elements in the syllabus of the training programmes

The procedures for FLOs performing activities during a nuclear security event, include the

- **assessment phase** (confirmation of an alarm)
- **the response phase** (recovery, safe handling and returning the material back to regulatory control).

In these procedures the

- **alarm levels** to radiation detection instruments, (e.g. 100 µSv/h at 1m)
- **distances** from the isolated sources and
- **dose rate levels** in working areas,

**have to be set in such a way that the FLO do not exceed the established annual dose constraint, according to the ALARA principle.**

# Conclusion

- The provision of training courses addressed to workers dealing with nuclear security is a key element to strengthen the country capacities for prevention of, detection of and response to Radiological / Nuclear incidents.
- The structure of the courses must take into account the specific tasks of these workers in case of a radiological / nuclear event, and due consideration has to be given in the training on the procedures to be followed.

# Conclusion

- The good knowledge of the procedures followed during an alarm, will help them to work efficiently and **optimise** the dose received.

- Although NS training courses are not addressed to people familiar with radiation, the training on the procedures to be followed has to contain simple notions relevant to the ALARA principle.

Thank you for your attention

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