



Training of First Line Officers on Emergency Preparedness and Response

6th EUTERP WORKSHOP

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Athens, Greece

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Greek Atomic Energy Commission

Greek Atomic Energy Commission (EEAE)

The Greek Atomic Energy Commission (EEAE) is the competent regulatory authority for the control, regulation and supervision in the fields of nuclear energy, nuclear technology, radiological, nuclear safety and radiation protection.



EEAE is operating as a legal person of public law and enjoying full administrative and financial independence in relation to its duties. Its mission is the protection of the public, the workers and the environment from ionizing radiation and artificially produced non-ionizing radiation.



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DIRECTIVE

COUNCIL DIRECTIVE 2013/59/EURATOM of 5 December 2013

Article 98

Emergency preparedness

...

4. Member States shall ensure that emergency response plans are tested, reviewed and, as appropriate, revised at regular intervals, taking into account lessons learned from past emergency exposure situations and taking into account the results of the participation in emergency exercises at national and international level.

...

DIRECTIVE

COUNCIL DIRECTIVE 2013/59/EURATOM of 5 December 2013

ANNEX XI

**Emergency management systems and emergency response plans
as referred to in Articles 69, 97 and 98**

A. Elements to be included in an emergency management system

...

6. Arrangements for the provision of prior information and training for emergency workers and all other persons with duties or responsibilities in emergency response, including regular exercises

...

Integrated Management System

ISO 9001



*IAEA Safety Standards,
"The management
system for facilities and
activities", GS-R-3*

ISO 17025

- individual monitoring of occupationally exposed workers
- gamma spectrometry measurements
- radon measurements
- calibration of ionizing radiation instruments
- non-ionizing radiation measurements

ISO 17020

- inspections body of type A

ISO 29990

- design, development and provision of non-formal education and training in radiation protection and nuclear safety

ISO 29990:2010

An effective national programme on E&T in RP assumes that the E&T provider, has a well established Quality Management System (QMS).

The ISO 29990:2010 is

- a generic model for quality professional practice and performance
- a common reference for learning service providers in the: design, development and delivery of non-formal education



ISO 29990:2010

The QMS adopted is oriented to the vision and the mission of EEAE while focuses on:



LEGISLATIVE FRAMEWORK

EMERGENCY RESPONSE



RADIOLOGICAL/NUCLEAR SAFETY

Low (3013/2002) *"Upgrade of the civil protection"*



MD 1299 /2003 *"General Civil Protection Plan Xenokratis"*.



MD 7270/2006
"establishment of a task force for CBRN"

Annex "R" GSCP *"Xenokratis"*

GAEC Internal Emergency Plan 2004

National Plan on CBRN 2011

Low (181/74) *"Radiation Protection"*



Low (1733/87)
"establishment of GAEC"



PD (404/93) *"Organization of GAEC"*
PD (60/12) *"Nuclear Safety"*

MD 2739/94 *"public information"*

MD 1014/01 *"RPR"*

MD 10828/06 *"HASS"*

Sources of emergency exposure to ionizing radiation

- **Technological Accidents**

- Nuclear Reactors
- Radiotherapy
- Industrial Irradiators
- Lost/stolen radioactive sources
- Transportation



- **Terroristic actions**

- Radiological dispersal device (Dirty bombs)
- External Exposure to Radiation



Training groups

First Responders from:

- Fire Brigade
- Police
- Coast Guard

Customs – Prevention – Combating of Illicit
Trafficking of Nuclear and other Radioactive
Materials

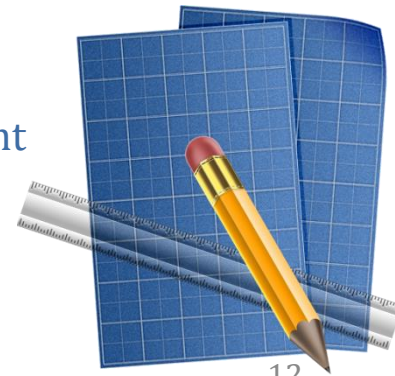
EEAE first Responders

Focus on : Fire Brigade and Police

Design of a training program

Parameters of the training programme

- **Duration:** 4 hours + Simulation exercise
- **Educational level of participants:** Secondary school at least
- **Lectures qualifications:**
 - ✓ EEAE has a pool of highly qualified and experienced lecturers
 - ✓ EEAE has also a number of first responders
- **Learning objectives:**
 - ✓ To familiarize first line officers with the principles of radiation protection
 - ✓ To familiarize first line officers with the principles of measurement of ionizing radiation
 - ✓ To understand the emergency response procedures
 - ✓ Including the cooperation and communication between different groups of first responders



Syllabus

A. Fundamentals → 4 h

A.1 The physics of ionizing radiation

- *Radioactivity*
- *Dosimetric quantities and units*
- *Biological effects*

A.2 Sources of ionizing radiation

- Threats
- Facilities / activities
- Signs - labels

A.3 Principles of detection → *Lesson plan example*

A.4 Accidents

B. Simulation of an emergency situation → *Field exercise example*



Lesson Plan

A.3 Principles of detection

Type	Classroom based training
Learning Outcome	First responders should be able to use a detector and communicate the measurement
Learning Objectives	The participants will be informed on • The basic principles of radiation detection • To understand the operation of the available detectors
Content	• Radiation Detection Principles • Different type of detectors • Demonstration of the available detectors
Duration	1 h
Equipment	Power Point, video projector

Simulation of an emergency situation

- Simulation of a car accident
- One of the cars involved in the accident is used for the transportation of ionizing radiation sources



Simulation of an emergency situation

Fire brigade arrives on the scene, fire fighting techniques are applied

Establishment of the Command Post



Simulation of an emergency situation



Recognition of the radiological parameter
(labels or detectors)



Use of personal protective equipment



Rescue of casualties

Inform the command post and the regulatory body

Simulation of an emergency situation

Detecting and establishing zones



Simulation of an emergency situation

Communicate the situation
Collaboration with the other first responders
Procedures



Understanding the procedures of the other teams

Simulation of an emergency situation

Decontamination options (if needed)



Evaluation of the program

- Discussing the exercise – lessons learnt
- Feedback from the participants by filling a questionnaire
- Feedback from the lecturers by filling a questionnaire
- Questions are related inter alia to the
 - ✓ Structure of the seminar
 - ✓ Presentations
 - ✓ Learning objectives
- Mean results >4.5 for all the questions



		Ερωτηματολόγιο ικανοποίησης συμμετεχόντων & προτάσεις βελτίωσης				
«Ακτινοπροστασία στους εξωτερικούς εργαζόμενους» «Ημερομηνία & τόπος διεξαγωγής»						
Ερωτηματολόγιο						
Κυκλώστε έναν αριθμό που περιγράφει καλύτερα τη γνώμη σας σύμφωνα με την παρακάτω κωδικοποίηση: 1= διαφωνώ απόλυτα, 2= διαφωνώ, 3= ουδέτερα, 4 = συμφωνώ και 5= συμφωνώ απόλυτα						
1.	Το σεμινάριο ήταν καλά οργανωμένο	1	2	3	4	5
2.	Οι στόχοι του προγράμματος επιτεύχθηκαν	1	2	3	4	5
3.	Το σεμινάριο ήταν χρήσιμο για τη γενική μου ενημέρωση	1	2	3	4	5
4.	Το σεμινάριο ήταν χρήσιμο για το αντικείμενο της εργασίας μου	1	2	3	4	5
5.	Το σεμινάριο με βοήθησε να κατανοήσω τα προβλήματα που αντιμετωπίζω στην εργασία μου	1	2	3	4	5
6.	Το σεμινάριο θα με βοηθήσει να είμαι αποτελεσματικότερος/η στην εργασία μου	1	2	3	4	5
7.	Θα ήθελα να συμμετάχω ξανά σε παρόμοιο σεμινάριο	1	2	3	4	5
8.	Θα σύστηνα στους συναδέλφους μου να παρακολουθήσουν το σεμινάριο	1	2	3	4	5
9. Η συνολική διάρκεια του σεμιναρίου ήταν:						
Πολύ μεγάλη		Μεγάλη		Κατάλληλη		Μικρή
☐		☐		☐		☐
10. Το επίπεδο του σεμιναρίου σε σχέση με τις γνώσεις, τις δεξιότητες και την επαγγελματική σας εμπειρία ήταν:						
Πολύ χαμηλό		Χαμηλό		Κατάλληλο		Υψηλό
☐		☐		☐		☐
11. Αξιολογήστε το εκπαιδευτικό υλικό ως προς τα ακόλουθα: (Παρακαλούμε χρησιμοποιήστε κλίμακα 1-5 με άριστα το 5)						
11.1	Δομή					
11.2	Παρουσίαση					
11.3	Ορθότητα περιεχομένου					
11.4	Πληρότητα υλικού					

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Evaluation of the program

Conclusions

- Learning objectives are more effectively achieved via the practical exercises
- Suggestions for interaction with other involved parties were expressed
- The collaboration attitude of the first line officers and the need for continuous training were highlighted
- The fear of the ionizing radiation is not easily defeated

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HEALTH PHYSICS

THE RADIATION SAFETY JOURNAL



The Official Journal of
the Health Physics Society



www.health-physics.com

Full Text
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Lippincott
Williams & Wilkins
a Wolters Kluwer business

Nuclear Security and Radiological Preparedness for the Olympic Games, Athens 2004: Lessons Learned for Organizing Major Public Events

Health Physics 91(4):318-330;2006

EEAE <http://www.eeae.gr>

Thank you!



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