# INSC Project MC3.01/13

**EC Contract N° NSI/2014/343-969**

**"Training and Tutoring for experts of the NRAs and their TSOs for developing or strengthening their regulatory and technical capabilities"**

## TASK 2

## Tutoring Module

## on

## "Radioactive sources in medical, industrial and research related applications"

November 10th , 2017– January 5th, 2018

ITER – Rome (Italy)

## Draft

## Tutoring Programme

***November 2017***

**INSC Project MC3.01/13**
**EC Contract N° NSI/2014/343-969**

**TASK 2**

## "Radioactive sources in medical, industrial and research related applications"

## Duration: 8 weeks - November 10th , 2017– January 5th, 2018

## Venue: ITER – Rome (Italy)

Tutoring Coordinator: R. Remetti

The tutoring activity has been conceived as ''on the job training'' at ITER – Italy in the area of "Radioactive sources in medical, industrial and research related applications".
It will contribute to a concrete and practical "build-up" of knowledge allowing a sustainable transfer of approaches and methods.

## Tutoring objective and expected achievements :

To work on, and practice, key safety and security aspects of applications of Radioactive Sources (RSs) in different fields (with focus on medical application) is the main objective of this tutoring together with licensing procedure.

### Tutoring content:

The tutoring module (8 weeks for 2 tutees) is organized with an initial introduction on the use of RS and related safety issues.
The tutoring course will address the management of RSs in the medical field related requirements and in particular correspondent regulatory control and oversight activity. Application in industrial field will also be considered.

It will cover aspects related to management of the RSs, regulatory requirements, security aspects, authorization process, content of safety assessment and oversight, role and responsibilities of the operators and of the regulatory body.

Familiarization with EU Directive and the IAEA code of conduct on RSs will be ensured with the issues relate to implementation of the EU Directive for BSS (59/2013) and related impact on RSs application in medical field will be described.

The tutoring will include onsite visits to medical facilities and research/industrial facilities as far as possible.

The tutoring module will aim, in terms of results to be achievable to:

- Consolidate knowledge of safety and regulatory requirements for application of RSs in medical and industrial field.
- Familiarize with authorization process, regulatory review, control and oversight.
- Provide of RS application and related facilities organizing technical visits.

## WEEKLY PROGRAM

| Technical area & Presentation | Tutors |
|---|---|
| **Part I – Introduction and radiation protection** | |
| **1st Week (13 Nov – 17 Nov)** | |
| • Interaction of radiation with matter, shielding and detection techniques<br>• Radiation protection requirements<br>• Protection of workers, public and environment<br>• Dose calculation<br>• Concept of critical group and reference individual<br>• Visit to Laboratory at "La Sapienza" University | A. Madonna (ITER)<br>R. Remetti (ITER) |
| **Part II – Use and categorization of RS** | |
| **2nd Week (20 Nov – 24 Nov)** | |
| • Overview of RS application<br>• Categorization of Radioactive Sources<br>• National Register<br>• Import & Export of Radioactive Sources<br>• Directive 2003/122/Euratom to high-activity sealed radioactive sources (HASS) | M. Dionisi (ISPRA)<br>R. Remetti (ITER) |
| **Part III – Management of radioactive sources (RS)** | |
| **3rd Week (27 Nov – 01 Dic)** | |
| • Authorization on use of RS in medical and industrial field<br>• Management of used RS, requirements and obligations (practical examples)<br>• Responsibility of the licensee and supplier<br>• Recovery of orphan sources<br>• Visit to Nucleco in Casaccia (TBD) | S. Rizzo (Sogin)<br>Farina (Nucleco) |
| **Part IV – Medical application of RS** | |
| **4th Week (04 Dic – 08 Dic)** | |
| • Different medical facilities and application<br>• Protection of patient and EC Directive 59/2013<br>• ALARA application<br>• Role and function of RPE and RPO<br>• Role of Medical Physics Expert<br>• Visit to IFO (Regina Elena Hospital Institute for cancer) | R. Remetti (ITER)<br>L. Strigari (IFO) |

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|---|---|
| **Part V – Regulatory licensing and oversight** | |
| **5th Week (11 Dic – 15 Dic)** | |
| • Regulator's role and functions<br>• Authorization procedure for use of RSin Italy and Hungary<br>• Regulatory inspections on medical application of RS<br>• Protection from natural sources of radiation and regulatory requirements<br>• The EC Directive 59/2013 and authorization procedure<br>• The EC Directive 59/2013: Occupational, medical and public exposure | R. Remetti (ITER)<br>C. Salierno (ISPRA) |
| **Part V – International legal instruments** | |
| **6th Week (18 Dic – 22 Dic)** | |
| • Legal framework for use and application of RS<br>• IAEA Role and function<br>• IAEA Code of Conduct on the Safety and Security of Radioactive Sources<br>• IAEA Guidance on I/E of RS<br>• IAEA Standards on Transport of RM | S. Trivelloni (ISPRA)<br>R. Remetti (ITER)<br>F. Zambardi (ITER) |
| **Part VII – RS security & lessons learnt** | |
| **7th Week (25 Dic - 29 Dic)** | |
| • Security of RS and international requirements<br>• Borders monitoring<br>• Experience feedback from management of RS<br>• Relevant accidents involving RS<br>• NRA role in public involvement | G. Sedda (ISPRA)<br>S. Rizzo (SOGIN)<br>A. Madonna (ISPRA) |
| **Part VIII – Finalization & Reporting (1 Jan – 5 Jan, 2018)** | |
| **8th Week** | |
| • Tutees common Report elaboration and finalization | |

At the end of the Tutoring Module the Tutees will elaborate a common Report containing the following:

- **INTRODUCTION**
- **TUTORING OBJECTIVE**
- **TUTORING PROGRAM**
- **ACTIVITIES PERFORMED**
- **MAIN RESULTS**
- **CONCLUSIONS**

The Tutees Report will be agreed with the tutoring coordinator.

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