



European  
ALARA  
Network

## 2016 Meeting of senior representatives of organisations in formal relations with ICRP

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IAEA

### Activities of the European ALARA Network

#### 1. Introduction

The strategic agenda of the European ALARA Network for 2015-2020 emphasises stakeholder involvement and the exchange of practical experiences in radiation protection optimisation between professionals, the authorities and the public.

The workshop “ALARA in Industrial Radiography – How can it be improved?”, took place 14-16 March 2016 in Bern, Switzerland and resulted in recommendations with respect to the optimisation of the radiation protection for the different stakeholders in the field. These recommendations and contacts made during the workshop are valuable input to the ICRP TG 106<sup>1</sup> for which we received the terms of reference.

The ALARA book is still under further development by the EAN ALARA culture working group, a review by the Commission is also an element of collaboration between EAN and the Commission.

The 17th European ALARA Network workshop on "ALARA in emergency exposure situations" is in preparation and will consider the challenges posed by the optimisations of exposures in emergency and post-accident situations. This will involve the review of national arrangements on assessing, monitoring and mitigating radiological consequences for public and occupational exposures and ALARA-based training for the different types of stakeholders who would be engaged in the emergency response and long-term recovery actions. The announcement of the workshop is available on the EAN-website (<http://www.eu-alara.net/index.php/workshops-mainmenu-38.html>).

#### 2. Feedback from the 16<sup>th</sup> European ALARA workshop “ALARA in Industrial Radiography – How can it be improved?”

Industrial radiography (for non-destructive testing (NDT)) using gamma and X-ray sources is a long-established and widespread practice. A key radiation protection principle is optimisation, to ensure that the radiation exposure of radiography workers and other persons is As Low As Reasonably Achievable (ALARA).

In 2001, in Rome, the 5th EAN Workshop specifically considered ALARA in industrial radiography. It was concluded that ALARA was not always being achieved, and improvements in radiography equipment, working procedures, training and safety culture were recommended.

Since then, industrial radiography has remained an area of concern in radiation protection, due to the levels of radiation exposure received and, in particular, the number and magnitude of accidental exposures. Consequently, EAN decided to re-visit this topic. The key elements of the recommendations resulting from the recent workshop are

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<sup>1</sup> Application of the commissions recommendations to activities involving mobile high activity sources, a task group of ICRP Committee 4, ICRP ref: 4829-5427-1291).

- Improvement of the safety culture through the implementation of quality standards and enhancement of the status of the profession as a whole (expert technical profession)
- Enhancing the stakeholder involvement of
  - Clients in the planning stage
  - Regulators stimulating safety culture together with the companies using inspection to assess the level of safety culture
  - NDT associations enhancing training and formal accreditation of radiography companies
  - Equipment suppliers enhancing the two-way communication with radiography companies regarding training, maintenance, correct use of the equipment, design,...
- Specification of minimum training requirements on an international basis, including “hands on” exercises. The training should include operational and accidental situations.
- Make self-assessment, ALARA-benchmarking and evaluation of the safety performance part of the culture
- Prepare for emergencies based on a comprehensive prior risk analysis taken the site specific elements into considerations together with the technical, human and organisational factors
- Perform practical training in radiography accident response using return of experience from past events
- Use of dose constraints based on IAEA-ISEMIR project feedback

These elements can be further examined as an input to the ICRP TG 106.

### **3. THE ALARA BOOK**

The continuous technological developments in ionising radiation applications and the increasing number of exposure situations highlight the need for further actions to develop and disseminate ALARA culture. At the same time, the number of radiation protection specialists with relevant knowledge and experience is decreasing due to retirement. Therefore, there is a need to re-establish the elements that constitute ALARA culture (exposure situations, attitudes, responsibilities etc) in order to facilitate its practical implementation. That's why the EAN working group on ALARA culture is preparing a publication “Optimisation of radiation protection (ALARA): a practical guidebook”. This guidebook will contain the following elements:

- Basic concepts of radiation protection and their origins
- The ALARA process and the ALARA procedure
- Elements supporting the approach
- Actors and their responsibilities
- Examples of ALARA implementation in practice

The ALARA Book is in the process of completion we aim to have the book ready in February 2016.

### **4. 17th European ALARA Network workshop on "ALARA in emergency exposure situations"**

Emergency exposure situations can arise as a result of a nuclear accident, a malicious or terrorist act, or any other unexpected radiological event. It requires a quick response and sustainable countermeasures and remedial actions in order to avoid or reduce adverse short-term and long-term consequences. Radiation exposures can be received by the public, first responders, workers and volunteers engaged in the post-accident recovery.

The ICRP recommendations and European Basic Safety Standards – the bases for national regulations - re-emphasize the principle of optimisation (ALARA) as applied to emergency exposure situations. For the purpose of radiological protection, reference levels for emergency exposure situations should be set. More importantly, it is necessary to establish emergency plans based on an optimum protection strategy, resulting in more good than harm for the exposed people and the affected territories. In that perspective, lessons learnt from the Fukushima accident are of utmost importance.

In the workshop we will review of national arrangements on assessing, monitoring and mitigating radiological consequences for public and occupational exposures and ALARA-based training for the different types of stakeholders who would be engaged in the emergency response and long-term recovery actions. The workshop will consist of presentations (oral and posters) intended to highlight the main issues, and a significant part of the program will be devoted to discussions within working groups. From these discussions, participants will be expected to produce recommendations on ALARA in emergency exposure situations, which are addressed to relevant local, national and international stakeholders. The following topics for the working groups were defined

- Can the ALARA principle be fully applied in Emergency Exposure Situation for the members of the public?
- Can the ALARA principle be fully applied in Emergency Exposure Situation for the occupationally exposed individuals?
- Predict the unpredictable. How to ensure emergency plans are optimal from a radiation protection point of view? How to act if the situation goes beyond prediction?
- Are new technologies (modelisation, robot etc.) an asset or a gadget for ALARA?

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