

ALARA in Safety and Security of Sources: an ICRP perspective

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Abstract

As defined by ICRP Publication 103, *safety* is the “*achievement of proper operating conditions, prevention of accident or mitigation of accident consequences*” and *security* is the “*prevention and protection of, and response to, theft, sabotage, unauthorized access, illegal transfer, or other malicious acts involving nuclear material, other radioactive substances or their associated installations*”. These definitions are coherent with the respective IAEA definitions.

In normal operation, safety of radioactive sources is ensured by security measures associated with appropriate protection measures. As stated in ICRP Publication 103 (paragraph 271), *security of radioactive sources is a necessary, but not sufficient, condition to ensure source safety. Radioactive sources can be secure, i.e. under proper control, and still not safe, i.e. prone to accident*”. When security measures fail, safety is then ensured by protection measures to mitigate the consequences of the event.

The objective of the presentation is to discuss from the ICRP point of view how ALARA is integrated into the management of safety and security of radiation sources. The key points emerging from recent ICRP Publications are the following:

- The new system of radiation protection recommended by ICRP in its Publication 103 and subsequent publications (ICRP 109 and 111) is complete and coherent to manage all exposure situations (planned, emergency and existing) that may result from the handling of radioactive sources.
- ALARA is the cornerstone of the system to control exposures in both normal operations or in case of failure of security measures (emergency and recovery situations).
- ICRP Publications 103, 109 and 111 propose ranges of values to select proper dose constraints and reference levels for the practical implementation of ALARA in these exposure situations.