

11.1 The ALARA programme : A safety programme adapted to radiation protection relying on a common culture

Implementing the Radiation Protection Optimization procedure...

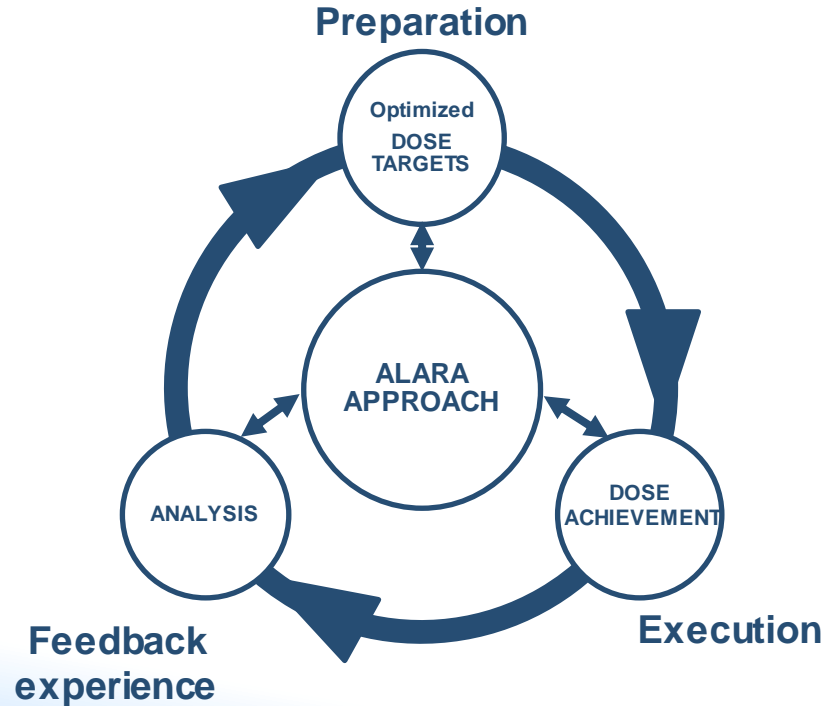
Will lead to optimised dose objectives in terms of collective dose, and eventually individual doses

They have to be checked against reality,

- To point out gaps,
- To keep track of actual new data, for improving situation on the spot and often...

... making feedback analysis to prepare the next operations, making use again of the radiation protection optimisation procedure

... Within a global ALARA approach following the operational phases of any activity



The preparation phase should allow to set up optimized dose targets at the end of the optimization procedure implementation

The execution phase should allow to compare objectives and actual doses in order to set up corrective actions when needed

The feedback phase should allow to analyse the results in such a way as to improve the future

Relying on a common ALARA culture through a kind of ALARA programme

To ensure that the « global ALARA approach » will be well, regularly and efficiently implemented one has to rely on the commitment of all concerned stakeholders,

That supposes the development of a common ALARA Culture

That supposes also the existence and availability of :

- Ad hoc decision-making and coordination structures
- Adequate procedures
- Adapted tools

These four A and one C being the components of a kind of ALARA programme

The ALARA programme should be

Part of the Quality Management system for Radiation Protection



The ALARA culture being equivalent (part of) of the Safety Culture for radiation protection

IAEA Safety Culture publications



Document	Title
Safety Fundamentals No. SF-1	Fundamental Safety Principles
General Safety Requirements No. GSR Part 2	Leadership and Management for Safety
Safety Guide GS-G-3.1	Application of the Management System for Facilities and Activities
Safety Guide GS-G-3.5	The Management System for Nuclear Installations
Safety Series No. 75-INSAG-4	Safety Culture
Safety Series No. 75-INSAG-15	Key Practical Issues in Strengthening Safety Culture
Safety Report Series No. 11	Developing safety Culture in Nuclear Activities
Safety Report Series No. 42	Safety Culture in Maintenance of Nuclear Power Plants
Safety Report Series No. 74	Safety Culture during Pre-Operational Phases
Safety Report Series No. 83	Performing Safety Culture Self-Assessment?
Safety reports Series No. 1	Examples of Safety Culture - Practices
TECDOC-1321	Self-Assessment of Safety Culture in Nuclear Installations
TECDOC-1329	Safety Culture in Nuclear Installations
TECDOC-1707	Regulatory Oversight of Safety Culture in Nuclear Installations

Definition of the Safety Culture (INSAG)

Safety Culture is that assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, protection and safety issues receives the attention warranted by their significance. (IAEA Glossary, 2018 Edition)

What is the **ALARA Culture** ?

“A set of shared knowledge (risk awareness inter alia), of common objectives, attitudes and behaviours, which allow occupational exposure management to benefit from a joint assumption of responsibility by the various stakeholders concerned”.

The Purpose of Safety (ALARA) Culture is generally defined as : to encourage a questioning and learning attitude to protection and safety, whilst discouraging complacency.

Risk awareness as a core part of the ALARA Culture

This is a core part of the ALARA Culture: why to reduce doses at low dose rates and low doses if there would be no effect?

Therefore, the awareness about the stochastic and deterministic effects, their frequencies and gravity as well as relationship with the exposure is essential

The risk awareness gives then a meaning, a rationale to individual and collective attitudes and behaviors.

A Quality Management Programme

Should ensure that:

- safety and protection requirements are satisfied
- the overall effectiveness of protection and safety is periodically reviewed

In the case of an ALARA programme just consider that protection includes radiological protection.

Commitment to Optimization : Who should be concerned?

Those who

- Regulate
- Manage
- Prepare, plan, design
- Perform the jobs
- Follow up and check the jobs

Both belonging to

- Utilities/Operators
- And contractors in the situation where the jobs are not preformed by the owner of the source(s)
- And regulatory bodies

The Authorities' Commitment

Setting Regulations

International BSS and nearly all national regulations with the 3 radiation protection principles; optimization being the core of the system.

Optimization remains a general requirement and not precise mandatory procedures

Willingness to enforce optimization implementation as mandatory

- Guidelines relying on good practices from the professions
- Dialog and flexibility as primary approach
- Control : stop and fines when needed

The Managers' Commitment

To set up a radiological protection policy (or an occupational risk prevention and protection policy) including dose objectives

To provide an impetus

- Setting overall targets
- Defining responsibilities
- Setting decision structures
- Enforcing adequate procedures

To allocate resources and recognising efforts

- Human
- Technical
- Financial

To set up a climate of trust



The Managers ' Commitment

Difference between dose limit, dose constraint, optimization objectives (1)

- The **dose limits** are set up by the regulations and shall not be exceeded without being outlaw: they are always **individual** doses and sum of external and internal doses.
 - *What are they in your country?*
- The **dose constraints** are generic managerial dose targets often set up by the managers (industry) or profession (medical) as progress objectives: they may be **individual** or **collective** doses; they may refer to external doses internal doses or both.
 - *Do you know some dose constraints in your organisation or country?*

The Managers' Commitment

Difference between dose limit, dose constraint, optimization objectives (2)

The **optimization dose objectives** (collective and individual) are the results of the decision process at the end of the implementation of the optimization procedure after assessing and comparing all protection options and checking those which are reasonable. They shall always stand lower than the dose limit, and if possible to the dose constraints if any. In case of important stakes they are decided by the managers.

Staff's commitment

For exposed and non exposed people: integrating radiological protection into their job

For exposed people: Individual responsibility to protect jointly others and themselves, involvement, and participation to optimization

For non exposed people: individual responsibility to protect exposed people

For both: Production and circulation of the needed information for implementing Optimization

Initial training suited to the various functions and responsibility levels

Regular recycling

Commitment within the relationships between a utility and its contractors if any

Shared responsibility operator (owner of the source)/employer

Contractual radiological protection reciprocal requirements

- specifications, orders, optimization as a criterion for proposals analysis, feedback experience analysis requirement

Partnership/optimization procedure common implementation

optimization as an evaluation criterion of service providers

Development and maintenance of a common ALARA culture

As a conclusion: Commitment to optimization should become...

...a personal commitment within a context of:

Regulatory and institutional requirements
with ALARA being part of all groups objectives
with ALARA being part of the quality of “their” job output
and part of everyday behaviour