IAEA
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16. How to control the implementation of optimization of radiation protection?

Remember: Optimization an obligation of means (1)

"Optimization is ... an obligation of means, not of results

What does it mean to control its implementation?

It is not as easy to check if all (reasonable) means have been implemented to reduce exposures as low as reasonably achievable, than to check if the dose limit is not exceeded or if dosimeters are actually worn.

Do we check optimization implementation in verifying if dose results do not exceed dose objectives?

Remember: Optimization an obligation of means (2)

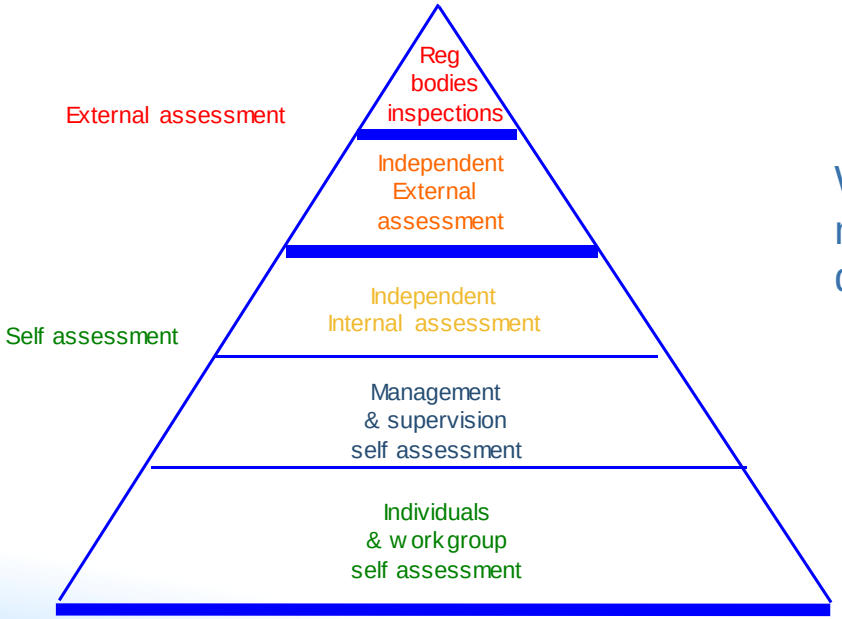
One will have to focus on the dose reduction means and not on the dose results themselves.

The dose objectives are not opposable “juridico” neither in front of the regulatory bodies neither of the hierarchy.

However everyone can ask why is there a gap? How can you explain it? Have you actually done all what is reasonable for reaching your objective?

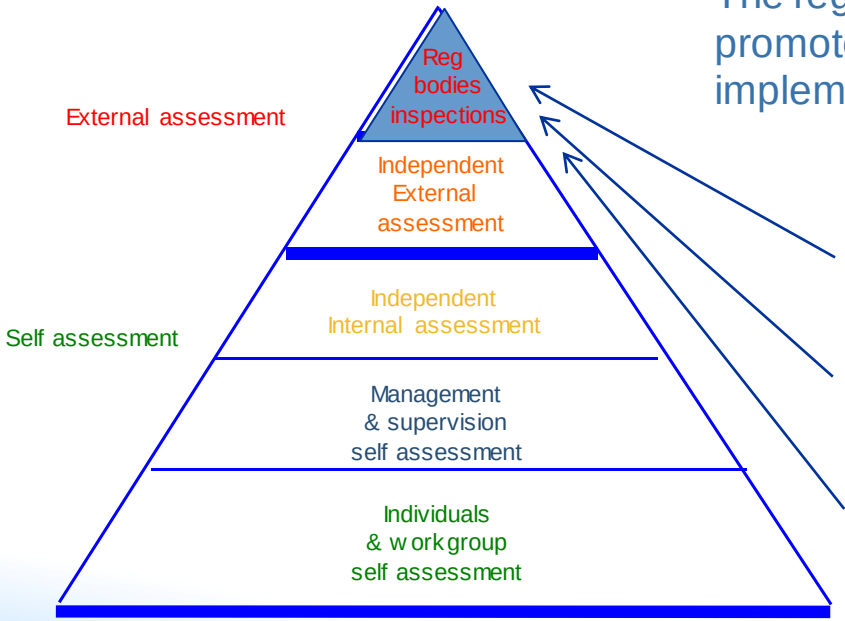
Who can, shall, check the implementation of optimization?

Who shall: The evaluation levels, The assessment process (1)



Who? As can be seen, many, many individuals at different levels

Who shall: The evaluation levels, The assessment process (2)

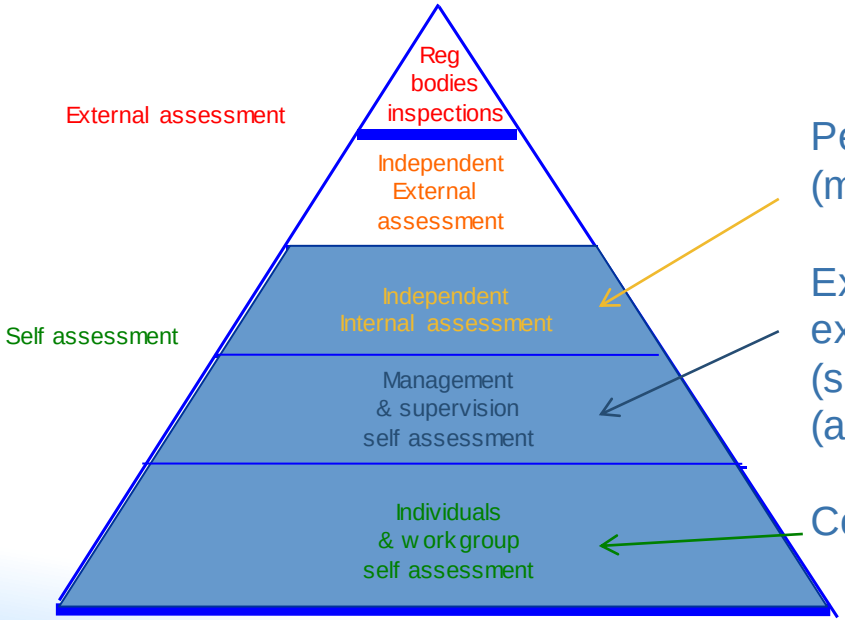


The regulatory bodies should promote and require optimization implementation through:

Regulations
licensing
and inspections
(bad points)
Encouragement
(liaison , good points)

Assistance ?

Who shall: The evaluation levels, The assessment process (3)



Peer reviews, benchmarking (mainly for large utilities)

External expertise, Qualified experts, professional audits (small users) Internal expertise RPO (all)

Communication and involvement

Optimization: what is to be checked?

Even if we focus mainly on what can be done by the RPO, one can now ask more generally:

According to what has been presented and discussed during the whole week, what is to be checked?

Optimization implementation: what is to be checked?

The two mains domains that should be evaluated or controlled, whatever the level of control are:

- The implementation of the optimization procedure for selecting optimal solutions for a specific dossier.
- The existence of “the best conditions” in terms of available tools, adapted structures and procedures and commitment of all concerned stakeholders for the decision making allowing to select the optimal solutions for all concerned “dossiers”.

But then how to do it ?

Optimization implementation: how to check it?

Answering to the two questions:

Is the unit (plant, service, department, hospital) background in favour of optimization?

Is optimization formally and efficiently implemented?

Should be done making use of check lists and referring to self assessment documents from the facility or the profession (if any).

Should be done according to your own feedback experience and those of peers.

Is the unit (plant, service, department, hospital) background in favour of optimization? Structures (large units)

Existence and place of an occupational risks management (eventually optimization) programme in contractual documents and unit organization reports?

Contents of the programme?

Creation and role of an occupational risks management (eventually optimization) decision committee?

Composition of the committee? Adequacy of participants and chairperson?

Operation of the committee? (meetings frequency; number of decisions, attribution of follow up responsibilities,…)

Other specific structures?

Is the unit (plant, service, department, hospital) background in favour of optimization? Structures (small units)

Existence and place of occupational risks in management and contractual documents and unit organization reports? Is optimization integrated?

How many RPO's belongs to the unit?

Percentage of their workload devoted to that function?

Have they (or an eventual health physics head) direct access to the manager?

Do the unit benefit from advices from one or several RPE? Are they members of the unit?

Coherence of all abovementioned answers to those of other same size units in the same domain?
Are they ways to keep track of the workers feedback?

Is the unit (plant, service, department, hospital background in favour of optimization? Commitment

Are all stakeholders aware of the radiological risk assumptions? Are they all aware about the regulations? Were these part of recent trainings?

Are responsibilities attributed to all with respect to optimization and other occupational risks management? Is optimization integrated into the individual annual goals?

What are the means devoted to motivating all stakeholders in particular the project leaders, MD, workers? Training? Information? Bonus?

Is there a unit policy defining dose progress objectives? Operational dose constraints? ……

How are all these items included into contractual documents concerning outside workers? (participation to the optimization process ahead? optimization implementation as an evaluation criterion afterwards,…)

Is the unit (plant, service, department, hospital) background in favour of optimization? Tools and procedures (1)

Are they available adapted dosimetry tools for analytical purpose?

either for all workers follow up day to day ?

or when needed to make a workshop optimisation study? (new workshop, new operation, verification study after several years, months,…)

Are they used efficiently? Are analytical data (dose per task, per workers' specialties, per areas) available? Are the mishaps well known and followed up?

Are there predictive tools? How are they used?

Are there feedback data base?

Are there radiological work permits?

Is the unit (plant, service, department, hospital background in favour of optimization? Tools and procedures (2)

Are they some procedures to make use of all the previous tools and to make decision on:

- the reasonable options (preparation phase) ?
- the corrective actions (follow up phase) ?
- the future operations improvements (feedback phase) ?

Are there different levels of formalisation of these procedures according to the level of the doses stakes?

- different partners concerned?
- different levels of formalisation for the optimization study?
- different decision levels?

Is the unit (plant, service, department, hospital) background in favour of optimization? Tools and procedures with contractors (3)

Are the contractors aware radiological protection site procedures?

Are they radiological protection and optimization clauses in the order?

Are they required to:

- participate to the optimization study in advance?
- keep track of the needed information during the job?
- make improvements proposals after the job?

Is optimization implementation an item of their post job evaluation and a selection criterion later on?

Is the unit (plant, service, department, hospital) background in favour of optimization? Tools and procedures (4)

During the preparation phase,

are the radiological protection constraints integrated into the planning?
are all servicing jobs doses integrated into the optimization study?

During the follow up phase,

are they radiological protection hold points?
are they rules for starting to look for corrective actions?

During the feedback phase

How has the feedback from the workers been kept and analysed?
Is there a participation of those in charge of optimization to internal or external feedback exchange structures, systems and networks?

Is optimization formally and efficiently implemented? Prediction phase

At what stage of the preparation is optimization (occupational doses?) first taken into account ? At the early design stage? Just before the operation? In between (when?)?

Is the process to be optimised well defined (what is included or excluded)?

How are the dosimetry stakes evaluated?

How is the ”reference” dose prediction estimated?

- Is it realistic or very conservative?
- How are evaluated the hypothesis?
  - For dose rates?
  - Contamination ambiance?
  - Exposed workload?
- Does it makes use of all available feedback?
- Does it make use of all adapted prediction tools?
- Are the “good practices” (state of the art) integrated into it?

Is optimization formally and efficiently implemented? Prediction phase

Is the question “what can be done for reducing reasonably doses” with regards to that reference, actually asked?

Do the forecasts allow an analytical approach as detailed as needed
per task
per occupational category
in terms of collective dose
of number of workers

Are there “credible” options well defined, quantified and analyzed?

Does it makes use of all available feedback?

Do you miss some obvious options (exhaustiveness)?

Is optimization formally and efficiently implemented? Prediction phase

Is the time spent for implementing the optimization study adapted to the stakes? (in other terms, is the report accordingly serious and documented?)

Is the decision process for selecting the options well documented?

Are the criteria for the decision explicit? What about the costs?

When possible, are they well quantified?

Is the decision making methodology clear enough?

Can you consider the final prediction as an optimized dosimetry objective ?

Is optimization formally and efficiently implemented? Follow up phase.

Do the recorded data allow to check dose and exposed time predictions against reality in terms of :

Jobs ?
Areas?
Occupational categories?

Is the information requested concerning the mishaps and are the corresponding doses and exposed times recorded?

Are the RWP well fulfilled?

And Now?
Are you able to check optimization implementation?

Do you miss important questions for controlling optimization implementation in your facility?

Are there questions more adapted to your situation?

What would you suggest?

What should be useful now?

a more detailed check list?
another kind of tool?
……?