

HERCA WORKSHOP EU-BSS DIRECTIVE IMPLEMENTATION

20th to 22nd May 2024
MADRID (SPAIN) | CSN HEADQUARTERS



Implementation of the requirements for “Emergency Workers”

Gareth Thomas
HERCA-WG Emergencies Chair

Overview (#1)



Implementation of Emergency Worker requirements has been identified as difficult and variable in many countries.

1. Review of what has been done in the past
2. Summarise EC, IAEA BSSD and ICRP definitions
3. Some of the challenges experienced in implementation
4. Possible solutions

This presentation is a collation of HERCA WGE thoughts and experiences.

What has been done in the past? (1/5)



Review of Current Off-site Nuclear Emergency Preparedness and Response Arrangements in EU Member States and Neighbouring Countries (ENER/D1/2012-474) - 2014



Table 6-1: Benchmarking for countries with NPP⁶

	BE	BG	CZ	FI	FR	DE	HU	NL	RO	SK	SI	ES	SE	UK	AM	CH
Requirement (IAEA GS-R-2)																
General requirements																
1. Basic responsibilities																
Functional requirements																
2. Establishing emergency management and operations																
3. Identifying, notifying and activating																
4. Taking urgent protective action																
5. Providing information and issuing instructions and warnings to the public																
6. Protecting emergency workers																
7. Assessing the initial phase																

Table 6-2: Benchmarking for countries without NPP⁷

	AT	HR	CY	DK	EE	GR	IE	IT	LV	LT	LU	MT	PL	PT	NO
Requirement (IAEA GS-R-2)															
General requirements															
1. Basic responsibilities															
Functional requirements															
2. Establishing emergency management and operations															
3. Identifying, notifying and activating															
4. Taking urgent protective action															
5. Providing information and issuing instructions and warnings to the public															
6. Protecting emergency workers															
7. Assessing the initial phase															

Compliant
 Requirement not applicable (State without nuclear power or not EU Member State)

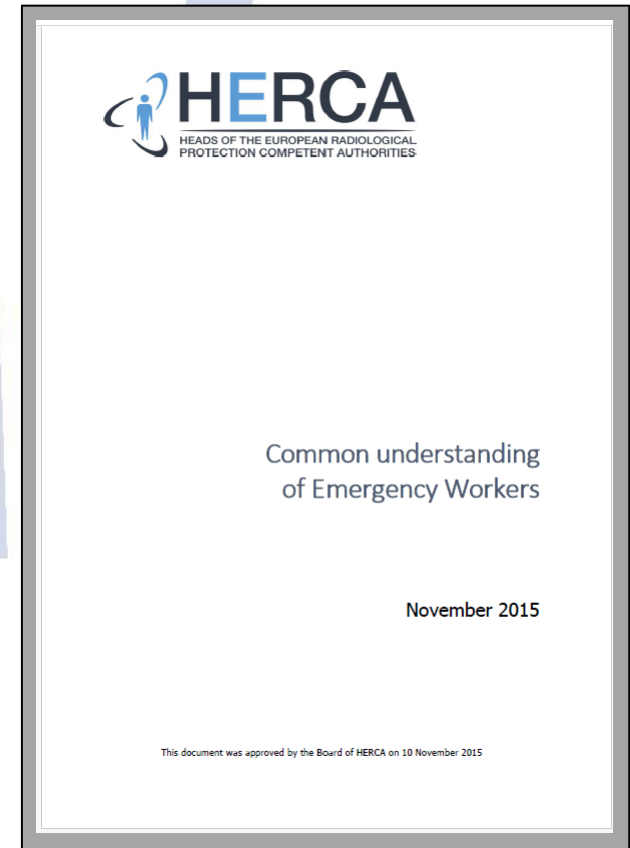
What has been done in the past? (2/5)

HERCA WGE **2015** questionnaire:

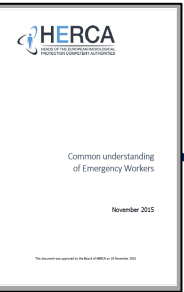
The mandate “Clearer guidance on who should be considered as emergency worker”.

13 countries participated.

Outcome: “Common Understanding of Emergency Workers (Nov 2015)” report.



What has been done in the past? (3/5)



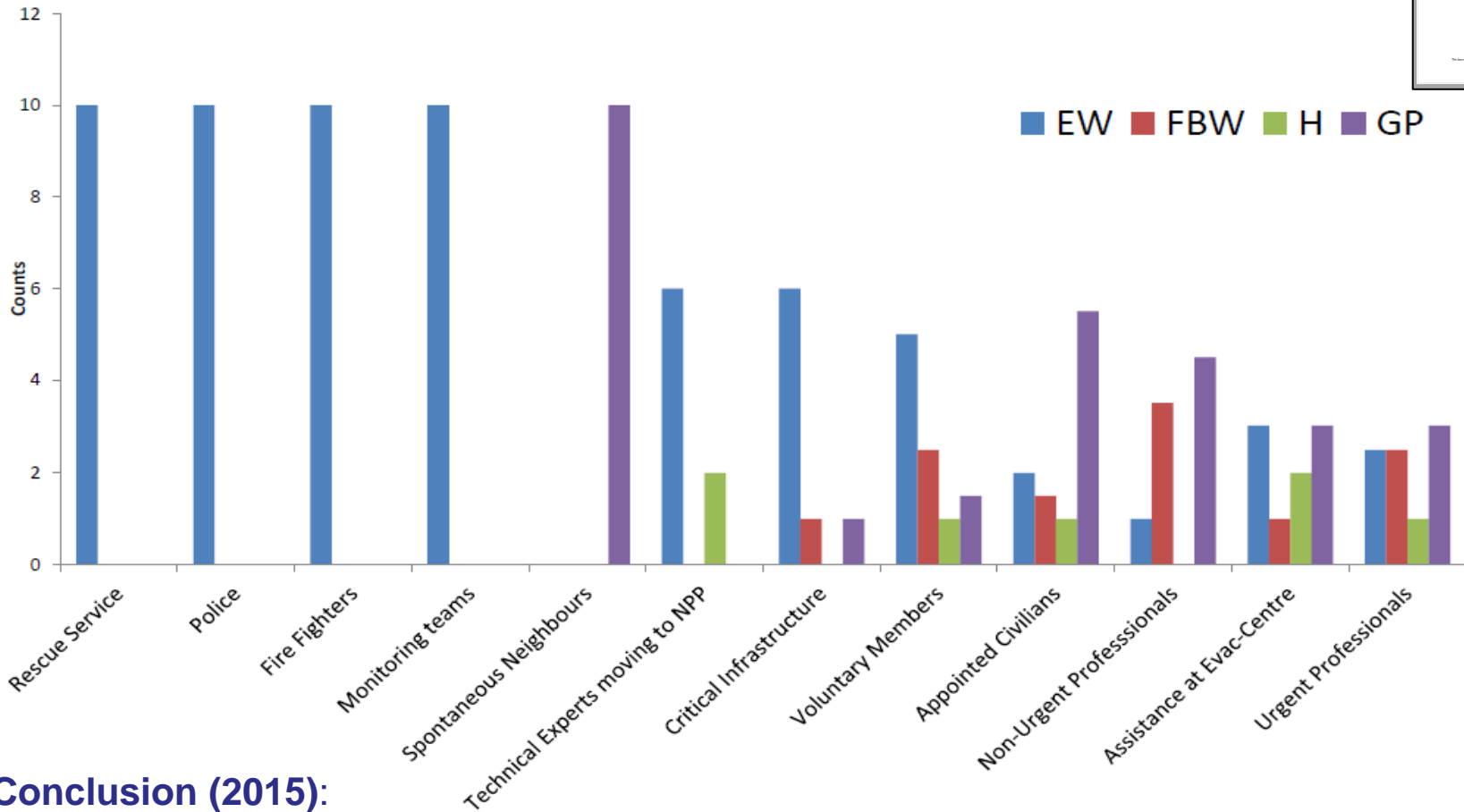
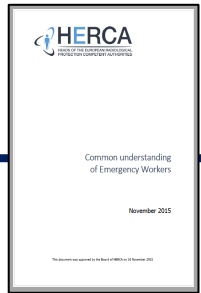
Roles:

1. Rescue service
2. Police
3. Fire fighters of auxiliary fire brigades
4. Voluntary members of e.g. Red cross or other Civil Protection organisation
5. Spontaneously helping neighbours
6. Civilians appointed by the rescue leader to assist
7. Professional personnel from the local hospital, school or children day care centre assisting the patients, pupils or children in urgent matters.
8. Professional personnel from the local hospital, school or children day care centre assisting the patients, pupils or children in routine affairs that could be delayed or skipped.
9. Monitoring teams
10. Technical experts or other professionals on their way to the NPP to support
11. Service personnel assisting at the evacuation centre(s) e.g. providing supplies, technical support etc.
12. Professionals performing necessary work on critical infrastructure

Categories:

- **EW:** Emergency Worker (2013/59/EURATOM)
- **H:** Helper (IAEA GSR-Part 7)
- **FBW:** Worker (Nordic Flagbook)
- **GP:** General Public

What has been done in the past? (4/5)



Conclusion (2015):

Whilst discrepancies were identified, the impact is deemed to be marginal. There is no need for additional harmonisation activities.

However (post 2015)! Practical implementation challenges have arisen during implementation.

What has been done in the past? (5/5)



NUCAdvisor report (2023)

Implementation of nuclear and radiological emergency preparedness and response requirements in EU Member States and neighbouring countries

Did not consider definitions of 'emergency workers'.



Implementation of nuclear and radiological emergency preparedness and response requirements in EU Member States and neighbouring countries

CONTRACT ENER/2020/NUCL/SI2.838109

Final Report

Overview (#2)



Challenges connected to the interpretation and implementation of the definition of emergency worker

Variations include:

Who (NPP workers, emergency services, other workers, carers, volunteers, security, etc), **when** (routine operations/ emergencies), **where** (on-site/ off-site/ PAZ-UPZ), **what** (training and exercises, health surveillance, dosimetry)

- UK local authorities have said: *“Emergency workers – in broad terms we find this area challenging and how to embed arrangements in off-site emergency plans. This is particularly relevant in relation to members of the public and especially volunteers”*.
- Is it a topic being discussed at:
 - EC? European research work? IAEA (EPR_eSC)? NEA CRPPH-WPNEM?

COUNCIL DIRECTIVE 2013/59/EURATOM

Article 4: Definitions

- (29) "emergency occupational exposure" means exposure received in an emergency exposure situation by an emergency worker;
- (31) "**emergency worker**" means any person having a defined role in an emergency and who might be exposed to radiation while taking action in response to the emergency;

COUNCIL DIRECTIVE 2013/59/EURATOM

Article 17: Prior information and training for emergency workers

1. MS shall ensure that **emergency workers** who are identified in an emergency response plan or management system are given adequate and regularly updated information on the health risks their intervention might involve and on the precautionary measures to be taken in such an event.taking into account the range of potential emergencies and the type of intervention.
2. As soon as an emergency occurs, the information referred to in paragraph 1 shall be supplemented appropriately, having regard to the specific circumstances.
3. MS shall ensure that the undertaking or the organisation responsible for the protection of **emergency workers** provides to **emergency workers** appropriate training
4. MS shall ensure that, in addition to the emergency response training referred to in paragraph 3, the undertaking or the organisation responsible for the protection of **emergency workers** provides these workers with appropriate radiation protection training and information.

COUNCIL DIRECTIVE 2013/59/EURATOM

Article 53: Emergency occupational exposure

2. For situations where (remaining below dose limits) is not feasible:
 - a) reference levels for emergency occupational exposure shall be set, in general below an effective dose of 100 mSv;
 - b) in exceptional situations, in order to save life, prevent severe radiation-induced health effects, or prevent the development of catastrophic conditions, a reference level for an effective dose from external radiation of emergency workers may be set above 100 mSv, but not exceeding 500 mSv.
3. Member States shall ensure that **emergency workers** who are liable to undertake actions whereby ... 100 mSv may be exceeded are clearly and comprehensively informed in advance of the associated health risks and the available protection measures and undertake these actions voluntarily.
4. In the event of an emergency occupational exposure, MS shall require radiological monitoring of emergency workers...
5. In the event of an emergency occupational exposure, MS shall require special medical surveillance of emergency worker...

COUNCIL DIRECTIVE 2013/59/EURATOM

- **ANNEX XI: Emergency management systems and emergency response plans as referred to in Articles 69, 97 and 98**
 - A. Elements to be included in an emergency management system:
 1. Assessment of potential exposures;
 2. Clear allocation of the responsibilities
 3. Establishment of emergency response plans
 4. Reliable communications ... cooperation and coordination ... at appropriate national and international levels;
 5. Health protection of **emergency workers**;
 6. Arrangements for the provision of prior information and training for **emergency workers** and all other persons with duties or responsibilities in emergency response, including regular exercises;
 7. Arrangements for individual monitoring or assessment of individual doses **of emergency workers** and the recording of doses;

IAEA: GSR Part 7

Emergency worker: A person having specified duties as a worker in response to an emergency.

- **Emergency workers** may include workers employed, both directly and indirectly, by registrants and licensees, as well as personnel of response organizations, such as police officers, firefighters, medical personnel, and drivers and crews of vehicles used for evacuation.



Requirement 11: Protecting emergency workers and helpers in an emergency

The government shall ensure that arrangements are in place to protect **emergency workers** and to protect helpers in a nuclear or radiological emergency.

- designated in advance/ fit for the intended duty/ health surveillance/ integrate emergency workers and helpers who were not designated in advance/ training/ instructions/ managing doses/ informed consent.

ICRP 146: Radiological Protection of People and the Environment in the Event of a Large Nuclear Accident

ICRP considers that the term 'responder' is appropriate to refer to all of these individuals.”

The first responders to be involved on-site are workers to implement the initial actions to respond to the accident, stabilise the installation, and mitigate the off-site consequences. They are still under the responsibility of the operating management, the radiological situation is such that they can no longer be managed according to the planned exposure situation.

Depending on the situation, other responders from outside are likely to join in to support the workers from the installation. This may include specialised teams generally working under the responsibility of their own organisations, or workers from other facilities generally acting under the responsibility of the management of the damaged installation. In some circumstances, military personnel may also be mobilised with a special status, which falls within the military organisation.

Responders should be identified and trained, either in advance (i.e. emergency teams) or just before their involvement (e.g. citizens, workers such as bus drivers).

Chernobyl: Early phase ~ 600 responders, including staff, firemen involved in the initial response, security personnel, and staff from the local medical facility. Later ~ 600,000 responders/ 'liquidators' (civilian or military personnel).

The challenge?

EU BSS states that “emergency worker” means any person having a defined role in an emergency and who might be exposed to radiation while taking action in response to the emergency”.

Assuming all ‘might be exposed’, there are discussions in MSs on how workers who do not have a clearly defined role in an emergency or do not take specified action in response to the emergency, but whose work assignments need to continue to protect vital societal functions and critical infrastructure should be treated.

Examples can be rescue service personnel, hospital staff and domestic services personnel who may not be able to follow recommended protective actions for the public, e.g. sheltering.

These workers should reasonably be treated as emergency workers, both in terms of individual rights, such as the right to be a volunteer above a certain radiation dose, and individual obligations, such as the obligation to perform work assignments up to a certain radiation dose.

The key questions are therefore:

- **Who** can be considered as having ‘a defined role in an emergency’?
- **When** does the role commence?
- **Where/ what** can be considered as ‘actions taken in response to the emergency’?

Who ?

- Example roles within organisation/agencies deemed as emergency workers:
 - NPP workers (on-site and at remote emergency centres)
 - Police manning cordon to DEPZ
 - Paramedic sent into DEPZ for non-radiological emergency
 - Fire rescue attending fires on site and off site
 - Other workers (hospital, pharmacist /delivery driver/volunteer) sent into DEPZ to deliver essential medicine
 - Care workers and social workers (in-house staff, travelling visiting staff)
 - Drivers sent in to evacuate e.g. a school, nursery or care home,
 - Bus drivers, train drivers, postal workers, teachers, essential key workers who may have roles to undertake
 - Staff working at an emergency/ reception shelter/centre
 - Volunteers (pre-organised and turning up on the day)
 - Security services (on-site)
 - Military personnel support

When ?

- When does an event become an “emergency”?
- How to consider **minor deviations/ anticipated operational occurrences** (IAEA term) from desired operating modes with the potential to give rise to doses < 0.1 mSv to operators or < 0.01 mSv to a hypothetical person outside the site. E.g. Loss of normal electrical power and faults such as a turbine trip, malfunction of individual items of a normally running plant, failure to function of individual items of control equipment, and loss of power to main coolant pump.
- During emergency planning Vs “As soon as an emergency occurs” interpretation & implementing emergency workers (Potential for legal challenge?)
- Emergency workers = defined role in plan? / Anyone who may receive exposure $>$ dose limits?
- Assessing potential exposures for individuals, groups, categories of emergency workers in order to set appropriate reference levels (< 100 mSv, noting that IAEA GSR Part 3 and GSR part 7 have the informed consent level at 50 mSv).
- Recording what reference levels are set. (Is exceptional circumstances > 100 mSv external only a problem?)
- How to inform of their reference level, and changes during an emergency?
- How to record voluntary acceptances?

Where ?

- Does the definition apply everywhere? (On-site/ off-site/ PAZ-UPZ)?
- Who (other than blue light services) could be emergency workers – is this focussed on on-site? Doses to (for example) bus drivers would likely be low if entering the PAZ only for short duration?
- Does this include routine operations and emergencies?
- Is there consistency amongst national operators?
- Is there consistency between neighbouring countries and across Europe?



What ?

- Training aspects – requirements (preparations/scheduled training or ‘just in time’ training delivered when required). Is escort / chaperone/ supervisor training sufficient?
- How do you plan for ‘supplementary’ training? (Content, cost, scheduling, location, by who)
- Health surveillance practicalities.
- Should some emergency workers be Category A workers?
- Dosimetry (external & internal) practicalities / national dose register implications?
- Access to and appointment of a Radiation Protection Expert (RPE). Interpretation – majority of ‘possible’ professions (teachers, careers etc.) would not have access to RPE advice routinely or in an emergency.
- Participation of ‘all’ emergency workers in emergency exercises.
- Mutual aid arrangements (nationally and internationally). E.g. Training, dosimetry, health surveillance, monitoring.
- Procedures: In UK, ambulance staff huge resistance over many years to procedures that allow staff to receive emergency exposures.

Possible solutions

EC, IAEA, ICRP definitions must be relatively broad as adoption must fit in with wider national general/ civil emergency planning.

Options for MSs	Have a clearly defined role	Do not have a clearly defined role	Take specified action in response	Do not take specified action in response	Example number:N PP DB accident
Option 1 – Individual focussed	On-site response. Off-site road blocks and KI distribution.	Other on-site workers, ambulance, fire, social care, teachers, bus drivers	Address the emergency, secure the PAZ/UPZ, distribute KI.	Actions planned for but not known if will be needed due to spatial demographics.	100s
Option 2 – Group focussed by role	On-site response, all emergency services, all workers with a role assisting others.	Other on-site workers, other workers	All actions within the PAZ.	Actions planned for but not known if will be needed due to spatial demographics.	Many 1000s
Option 3 – Group focussed by action	On-site response, any group of workers in/sent into the PAZ to help others.	Other on-site workers, workers taking protective action in the PAZ for their own safety.	All actions within the PAZ.	Actions planned for but not known if will be needed due to spatial demographics.	1000s

Potential solution (Finland)

The Finnish legislation:

- defines emergency workers identically to BSS
- includes another category of *emergency assistants*

Emergency assistant is “a person other than an emergency worker who provides assistance in protective actions or participates in other work necessary for critical functions of society during an emergency exposure situation.” This definition does include the IAEA helpers, but also those workers who are may be exposed to their work, but are not included in the emergency worker category.

In contrast to emergency workers, *emergency assistants* do not need to be nominated beforehand and thus they cannot be trained beforehand. Emergency assistants have also stricter requirements for ensuring voluntary participation and stricter limitation on doses that may be received during actions. After the emergency, they would have same rights for medical follow-up as emergency workers.

Potential solution (Finland)

This works if we consider the original intent of the emergency worker definition:

Emergency workers are considered to be only those workers that clearly have a risk of receiving greater doses due to their position. In practical terms, that is mostly persons in licensees' emergency organisation, field personnel of the Rescue Service, some specific groups in police, and measurement teams of some organisations. This relatively limited group of personnel means that the training and voluntarily requirements are possible to implement and follow more strictly.

The remaining groups would be considered emergency assistants, allowing them also take actions during emergency, but with stricter limitations on what they can do. This structure also means that this (potentially) larger group of people do not need to be identified in advance.



Overview (#1)



Implementation of Emergency Worker requirements has been identified as difficult and variable in many countries.

1. Review of what has been done in the past
2. Summarise EC, IAEA BSSD and ICRP definitions
3. Some of the challenges experienced in implementation
4. Possible solutions

This presentation is a collation of HERCA WGE thoughts and experiences.

HERCA WGE not wish to make Directives & Safety Standards more explicit and incorrectly restrict wider national arrangements. Options for guidance could be from HERCA, NEA-WPNEM, EC, IAEA EPR Series, etc.....