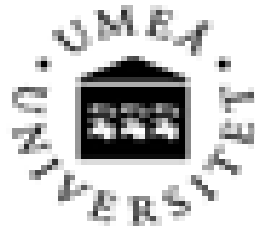



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**GHSI Public Health Emergency Medical
Countermeasures Workshop
November 4, 2009 Washington**

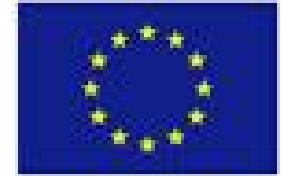
Prof. Dr. Viktor Meineke





MASs casualties and **H**ealth-care
following the release of
**toxic chemicals or radioactive
material**

**Preparedness on R/N mass
casualties in the EU 27**



- ❑ **Scenarios (WP 4),
FOI**
- ❑ **Present practise following mass exposure to radioactivity (WP 5),
InstRadBioBw,**
- ❑ **Present practise following mass exposure to toxic chemicals (WP 6),
SAMU**
- ❑ **Reviewing opportunities in biotechnology (WP 7),
KI**
- ❑ **Reviewing opportunities in ICT (WP 8),
CEIT**
- ❑ **Fore-sight of future European preparedness (WP 9),
HPA**
- ❑ **Coordination (WP 1 – 3),
The European CBRNE Center**

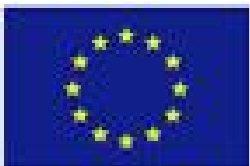
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C-Scenarios

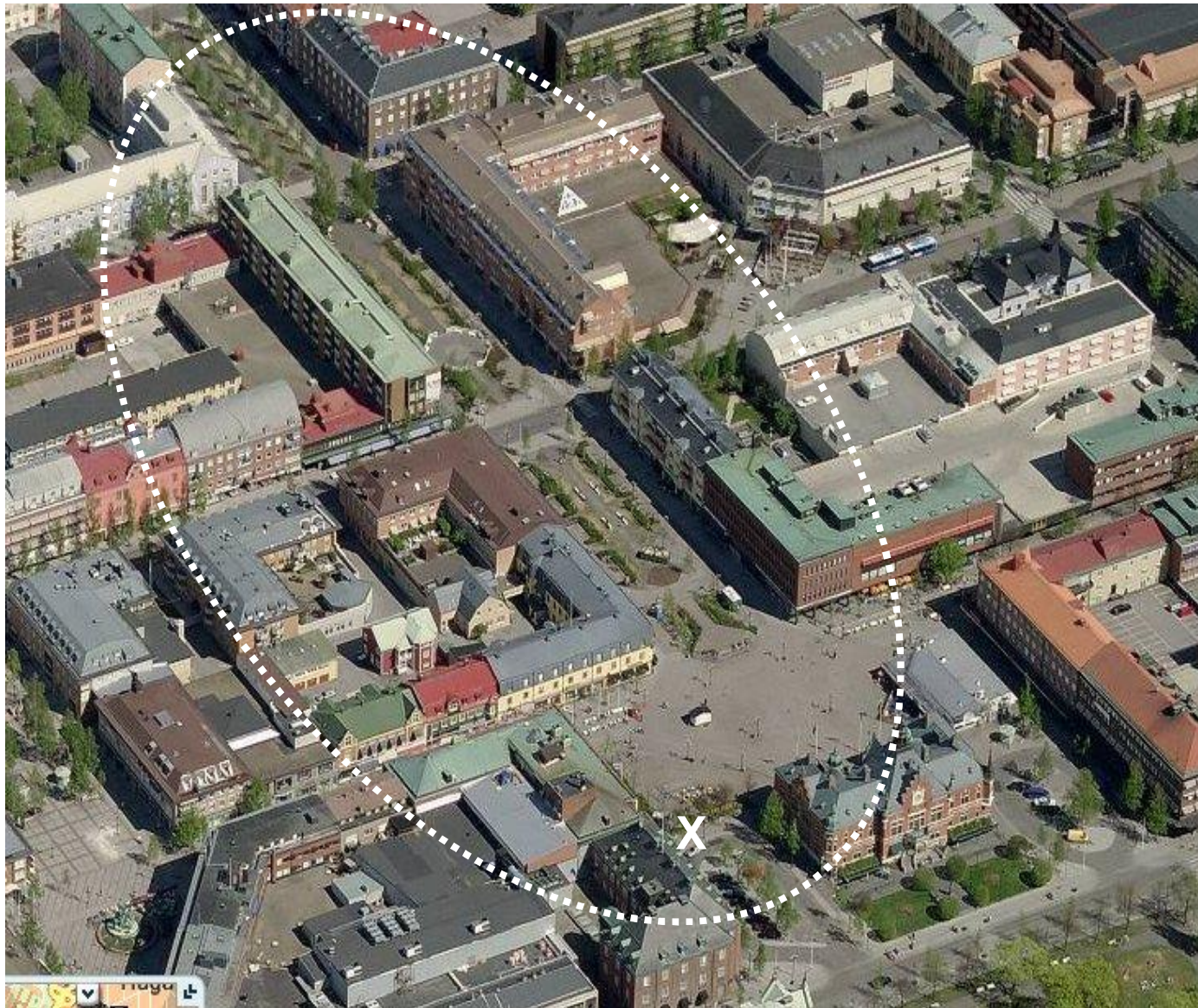
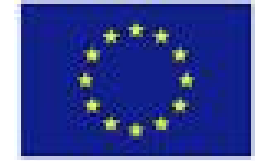
- Dispersion of persistent agent in urban area, (1).
- Release of toxic industrial chemical in semi-closed area, (2).
- Release of toxic industrial chemical in open space, (3).
- Dispersion of unknown toxic liquid in enclosed area, (4).

R-Scenarios

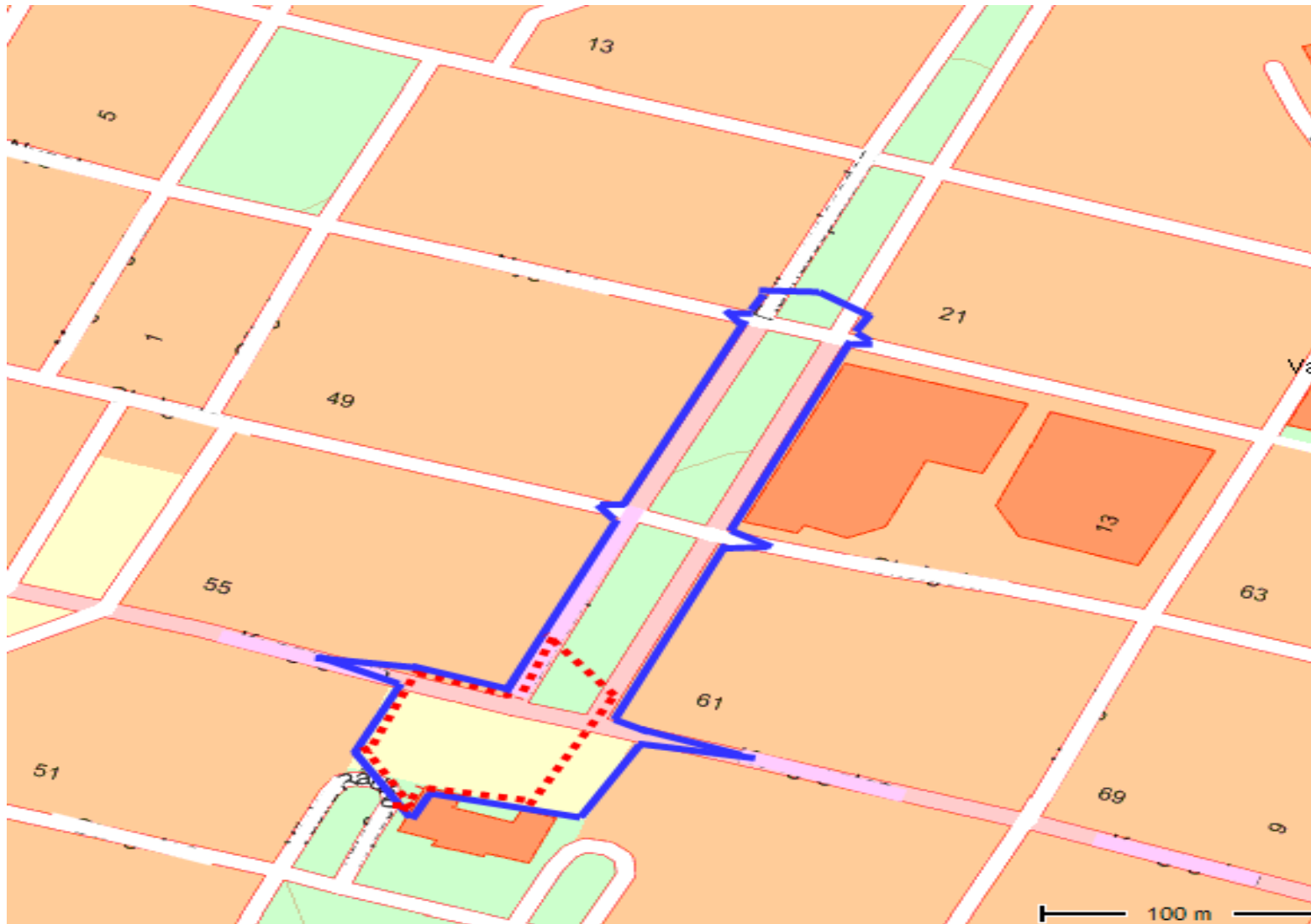
- Radiological dispersion outdoors, (5).
- Improvised radiation device in public area, (6).



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Dispersion of persistent agent in urban area, (1). Mash



- Area with severely injured
- Area with lightly injured

Dispersion of persistent agent in urban area, (1). Mash

Dispersion of persistent agent in urban area, (1).



Distance (metres)	Severely injured (%)	Lightly injured (%)
100	50	50
300	0	15

Injury categories

Severely injured

Produce corrosion and necrosis on skin, eyes and respiratory tract. Severe eye irritation can lead to blindness. The signs are typically delayed by several hours.

Lightly injured

Light eye irritation and skin ruddiness.

Traumatic injuries

Bleeding wounds on head or body.

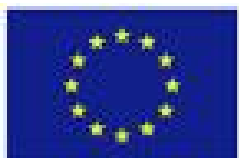
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Release of toxic industrial chemical in semi-closed area, (2).



Dispersion of unknown toxic liquid in enclosed area, (4).



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Dispersion of unknown toxic liquid in enclosed area, (4).

Deposition

Source = 2 TBq



Deposition on roads
1 - 10% of ground deposition

Deposition on roofs
10 - 100% of ground deposition

**Wind direction
over the area**



Radiological dispersion outdoors, (5).

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Recommendation from WP 4

**“Initiate a study on the nuclear case.”
i.e. the scenarios involving mass casualties following use of
a nuclear device or a nuclear power plant disaster.**

Problem with WP 4

“Sensitivity of the scenarios”



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Questionnaire - Chemicals



1.1 Organizational structures

1.2 Competence - Performance

2. Health system

2.1. Pre-hospital triage/

Detection in case of a chemical agent release,
Identification in case of a chemical agent release
Monitoring in case of a chemical agent release

2.2. Decontamination

2.3 Clinical diagnosis

2.4 Therapy, aftercare

Capacity for casualties of chemical agent release
Aftercare

3.0 Further comments

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Questionnaire – Ionizing Radiation



1.1 Organizational structures

1.2 Competence

1.3 National Characteristics

2.0 Health system

2.1 Pre-hospital triage/ Monitoring in case of a radiation accident

2.2 Decontamination:

2.3 Clinical diagnosis

2.4 Biological Dosimetry:

Dicentric chromosome definition:

FISH-translocation determination:

y-H2A.X-focus assay :

CB-micro nuclei assay:

COMET-assay:

RTQ-PCR based biodosimetry:

2.5 Physical dose reconstruction methods

2.6 Therapy, aftercare

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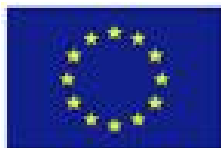
Preliminary results (1)

Chemicals:

17 member states responsive,
2 informed that they intend not to respond
8 are not yet communicating.

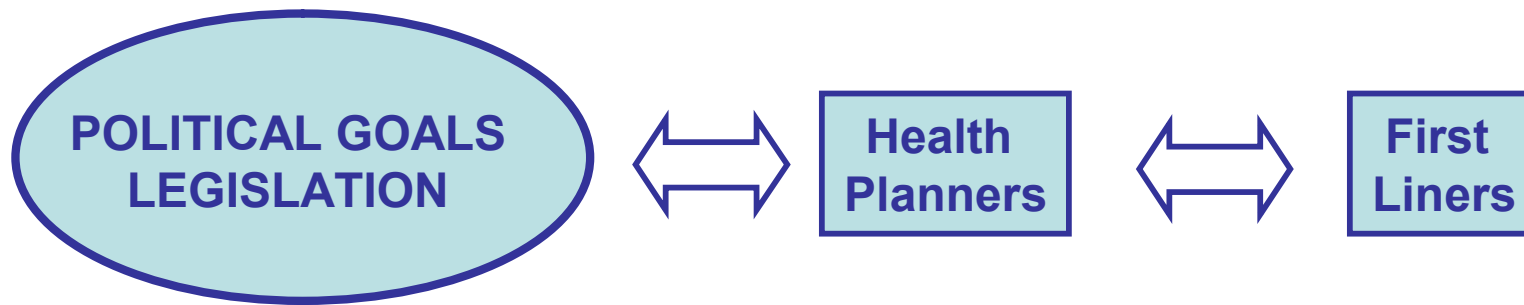
Radioactivity:

20 member states responsive,
7 are not yet communicating.



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Preliminary results (2)



- Awareness generally low
- Less interest outside the “planning community”
- Difference between radioactivity and chemicals



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Preliminary recommendation from WP 5 and 6

Promote interest and knowledge among “first-liners “.

- Use and stimulate existing networks
- Use and stimulate existing conferences
- There is a need for seminars, round-tables, exhibitions and dissemination.



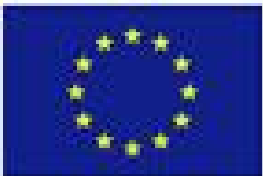
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Reviewing opportunities in biotechnology (WP 7)

- Chemicals
- Radiation

Reviewing opportunities in ICT (WP 8)

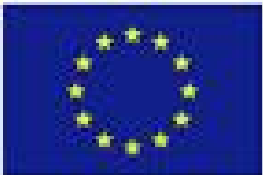
- Sensors
- Communication
- Tags
- Information handling



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Fore-sight of future European preparedness (WP 9),

- Limitations**
- Present Situation**
- "Reach-out"**
- Technologies**
- Ongoing activities**
- Recommendations**



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Questionnaire



www.mash-online.eu

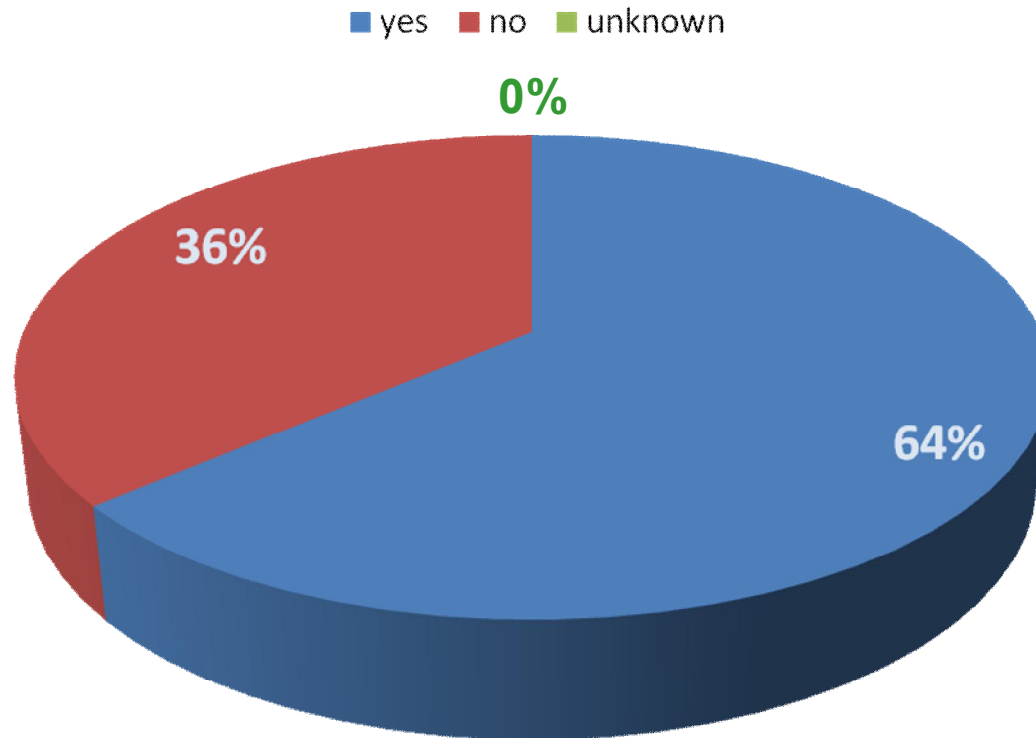
Participants:

09.02.09

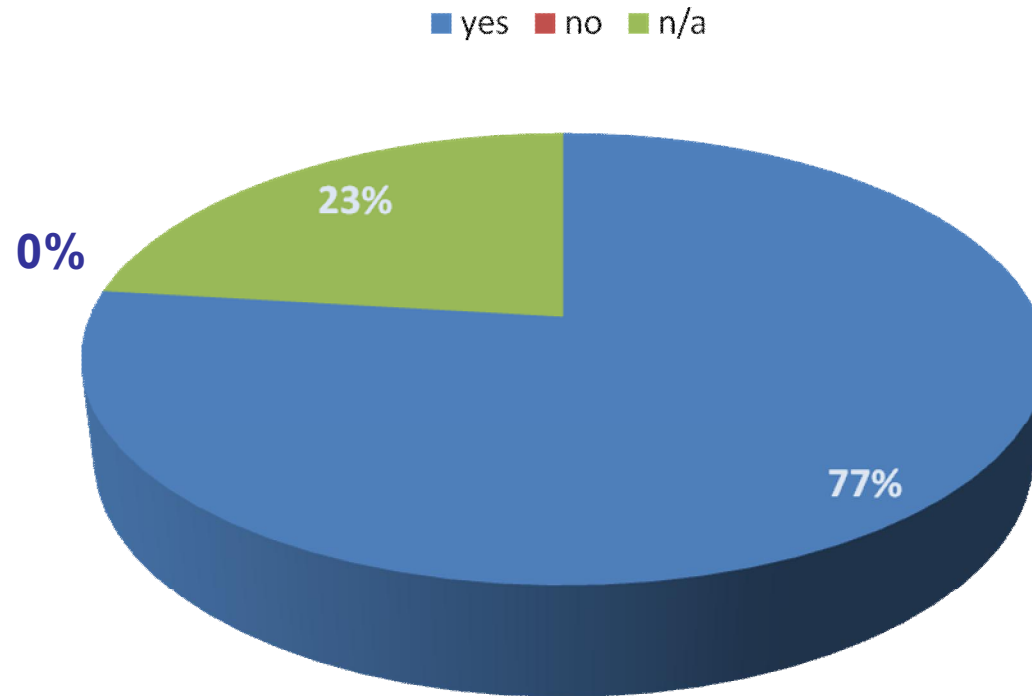
26 Representatives from 20 countries

Prerequisites

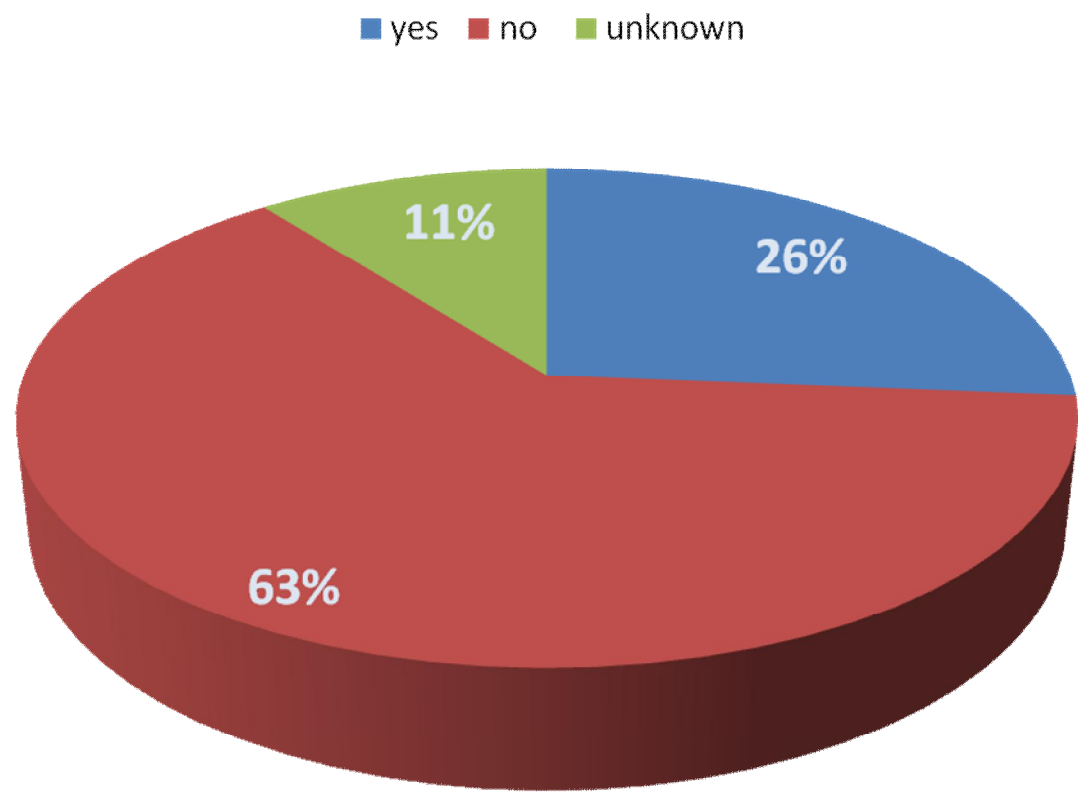
Institutes with prerequisites to coordinate mass casualties



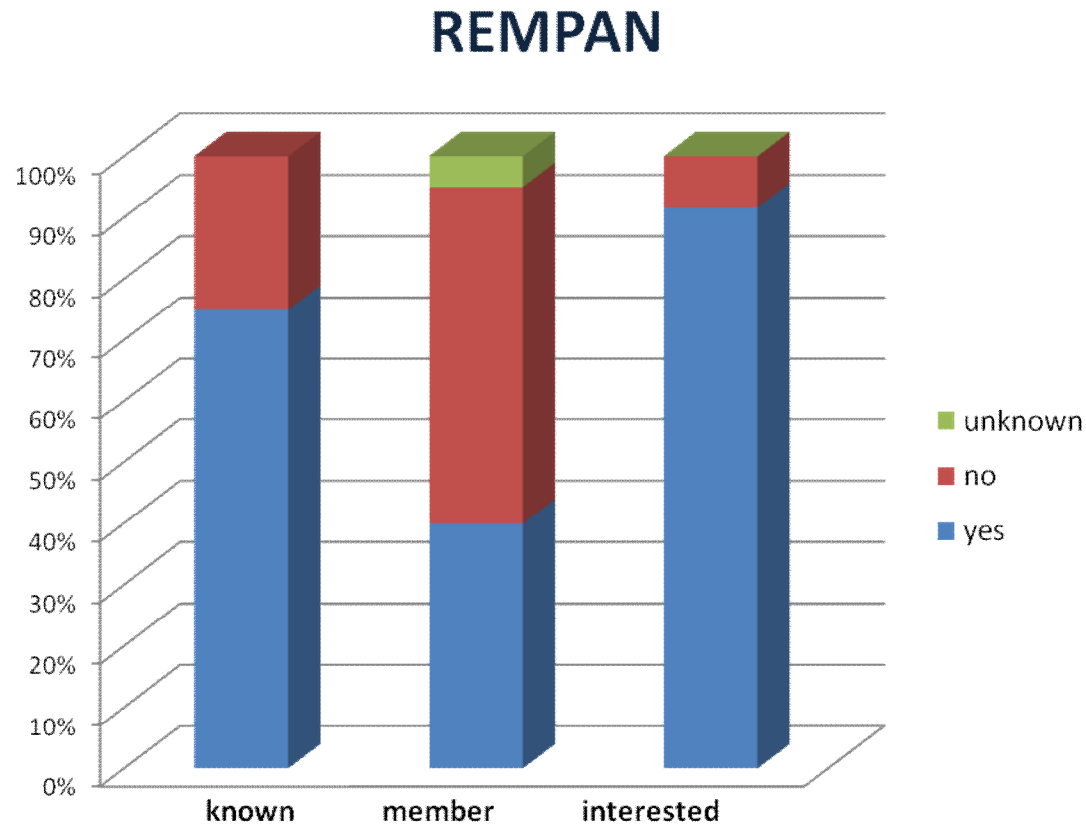
Interest in a European-cooperation programme for educating expert teams



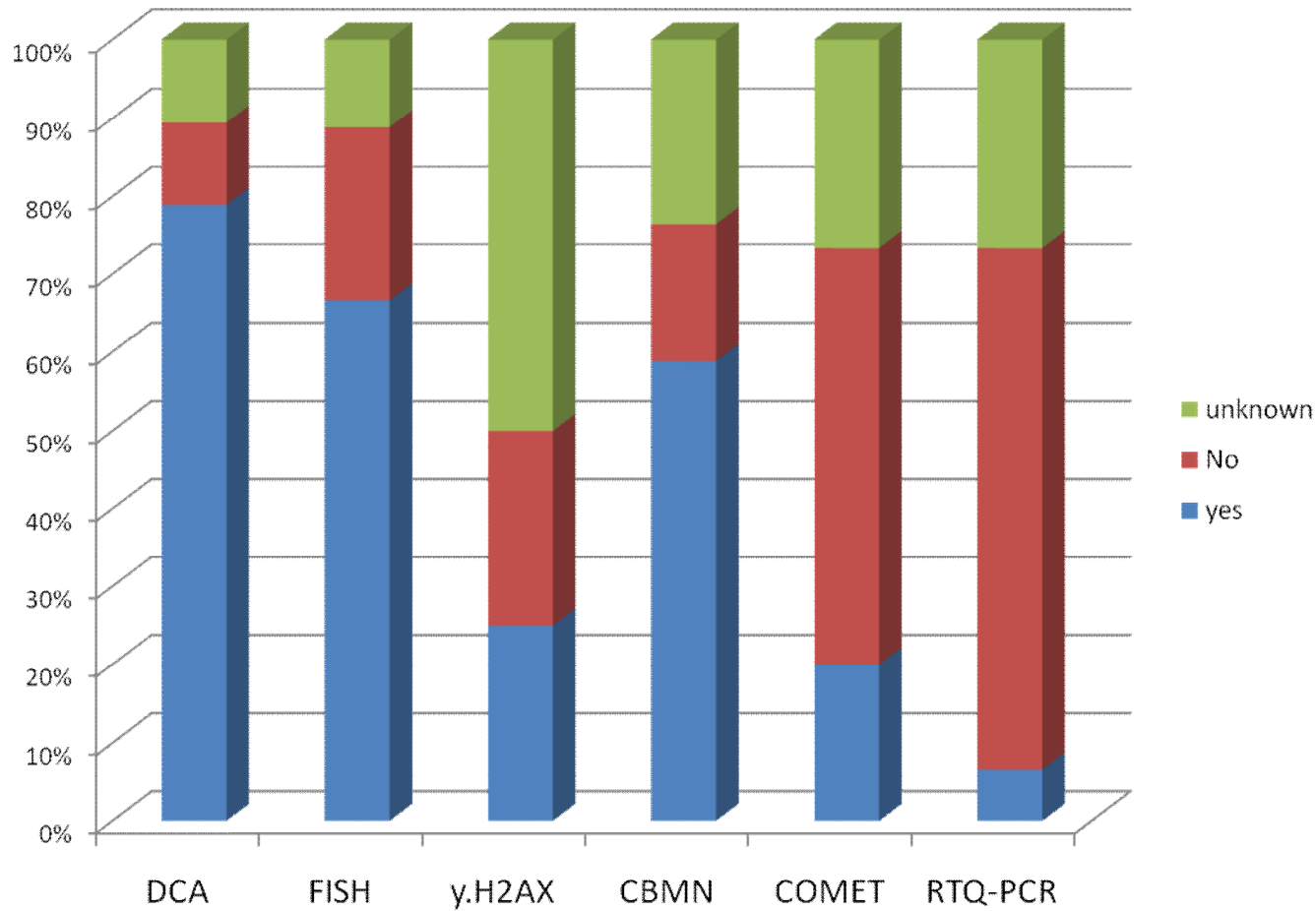
Special training on triage of radiation victims in the curriculum of emergency physicians



International Radiation Accident Management Networks



Biodosimetry: Available Tools



Prerequisites for a successful medical radiation accident management

- Information / communication chain
- Standardized triage procedures
- Individual radiation damage assessment
- Identification of appropriate treatment facilities
- Expert guided treatment
- Training of medical doctors and emergency personnel
- Stockpiling
- Institutional and Laboratory networks

Information / communication chain

- “ How to coordinate EU individual country activities?
- “ Which institution within the EU does serve as a focal point of contact?



Stockpiling

- “ What kind of drugs need to be stored (e.g. cytokines, decorporating agents, etc.)
- “ Where to store these substances?
- “ Cooperation with international stockpiling programs reasonable?
- “ How to organize stockpiling?

Training of medical doctors and emergency personnel

- “ Training for first-responders
- “ Continuing education for medical doctors in the fields of radiation biology and radiation medicine
- “ Specialists training (e.g. hematologists, intensive care doctors, surgeons, dermatologists)
- “ PhD programs in radiation biology or radiation medicine



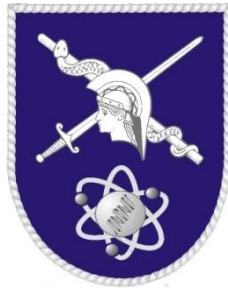
European modules have to be developed, an international harmonization is needed

Summary and Conclusions

- “ The overall interest in preparedness among the EU 27 states is high (rad / nuc > chem)
- “ There are already a lot of existing capabilities in different areas of response
- “ A central coordination of emergency planning and response is needed
- “ Interfaces to international activities (such as GHSI) have to be defined and established

*Thank you very much for your
attention!*

**Bundeswehr Institute of Radiobiology
affiliated to the University of Ulm**



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