



Eagle findings related to communication and stakeholder involvement in nuclear and radiological emergencies

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ionizing radiation risks

decision-making

training
informed behaviors

education



Outlines

EAGLE activities linked to communication in nuclear emergencies

EAGLE Findings from:

- dialogues with editors and journalists
- survey of curriculums at schools
- mental model research
- investigation of the public knowledge
- public opinion surveys
- international EAGLE workshop “Let’s communicate IR!”
- e-survey

Conclusions

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Activities on communication in nuclear emergencies

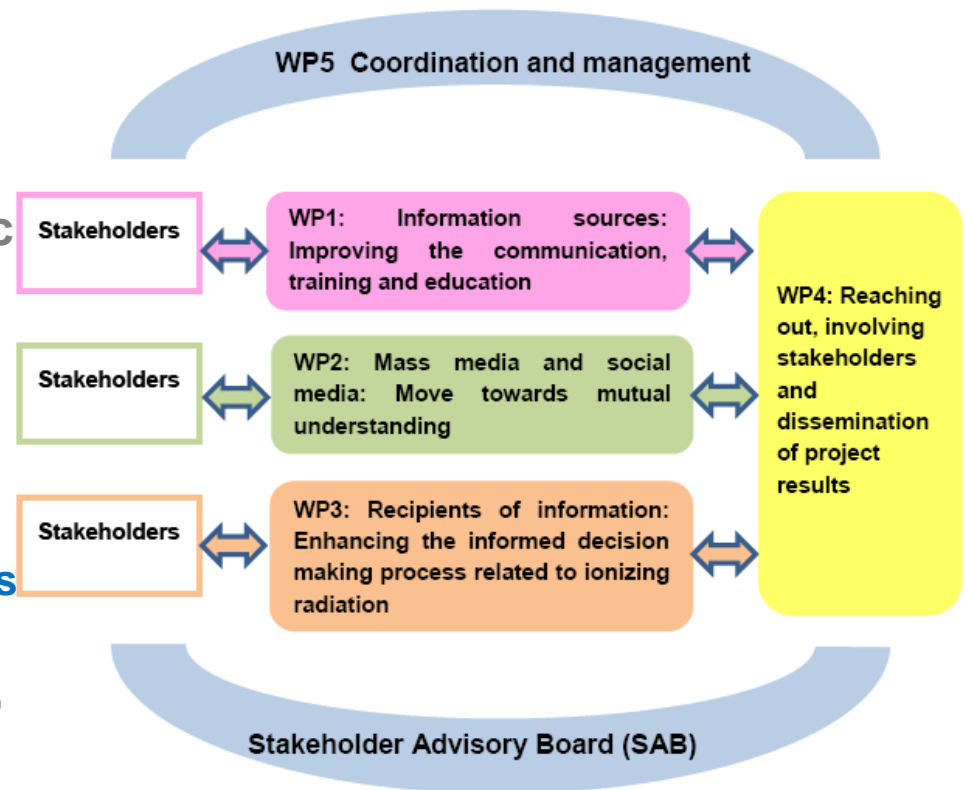
Activities towards a communication centred on the public for an informed decision:



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Nuclear emergency in EAGLE activities/investigations

- Sources of information for public
 - e-survey
- Communication towards the public
 - national dialogues
- General public – receptor
 - school curricula
 - people knowledge
 - public perception of risk, concerns
 - mental model
- Workshop “Let’s communicate IR”



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Sources of information

Analysis of education and training materials and activities regarding the ionizing radiation - D1.1 -

Analyses of ETI material in EU related to Fukushima accident - D1.2

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Education in school

- **EUROBAROMETER 2009 – on the sufficiency and adequacy of information received in school**
 - 58% of Europeans - information is not sufficient for children to acquire 'a *basic knowledge on the risks and benefits of energy choices in general and nuclear energy in particular*' (24% think that this information is probably sufficient and 4% find it certainly sufficient).
- **Overview of some selected *curriculum at schools* in Europe - to identify some general basic knowledge about ionizing radiation.**
 - While the **time** dedicated to ionising radiation concepts is rather **limited** in primary and secondary schools, the curriculums in EU countries mainly include **limited topic** related to the nuclear accidents.
 - The success in making teenagers learn these elements resides in the **ability** of the school teacher to raise their **curiosity** in making connections with facts or events of actuality (Fukushima accident was for the last years one of these), **training** and working/touching on their intuitive perception. **ionizing radiation risks** **informed behaviors**



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Curricula in Physics

Cyprus, Italy, Lithuania, Poland, Romania, Slovenia, Swiss

In Romania

- *Nuclear radiations elements*
- *Biological effects of radiations*
- *Radioprotection*
- *Nuclear energy :*
- *Nuclear applications in the day-by-day live*
- ***Nuclear accidents***
 - ***Sources, causes – with Chernobyl accident as illustrative example.***
 - ***Population protection measures in the areas with nuclear risk – behaviour rules***



Cyprus

- *simple reference to nuclear waste products and their impact on the environment and human health,*
- ***accidents in nuclear power stations.***

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Analysis of E&T materials & activities

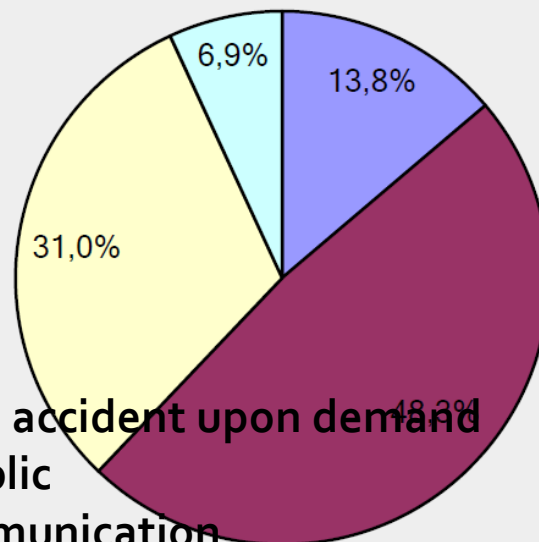
- interviewees and questionnaire with information sources on the impact of Fukushima accident on communication practices at the level of information sources:

47 organisations from 18 EU member states:

medical institutions, NPPs, regulatory organisations, WMOs, TSOs.

- 50% - reacted on the Fukushima accident upon demand from the media or the public
- 30% - started self-initiated communication

How did your organization react in the context of the Fukushima accident regarding communication with the public?



- The institution did not communicate as it is not responsible for communication with the public in case of nuclear incidents or accidents
- Communication upon demand from media or the public
- Systematic self-initiated communication
- Other (please specify)



Communication: ways and topics

Communication ways

- **Website** - as their primary means of communication with public.
- > 50% of organizations - **interviews in mass media** with a nuclear/radiological specialist (Fukushima was a highly complex event, needed a lot of clarification..)
- **Articles in the newspapers and press conferences** also played an important role.

Main topics on Fukushima accident in 2011?

- Immediate - **worries about the health and environmental impacts** in the affected areas and their country
- Later on - **long term health and environmental effects and impacts on nuclear energy policy.**
- Psychological impacts seem to have been less important.

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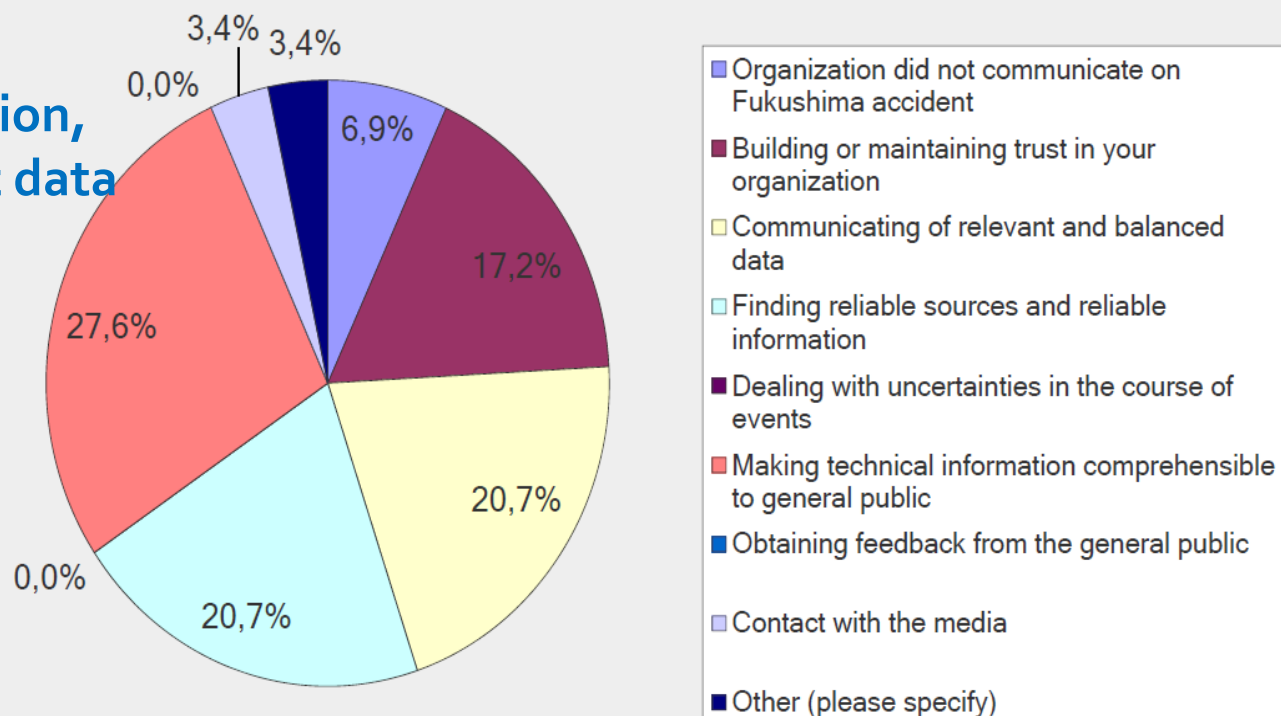
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Communication: challenges

Most important challenges in communication about Fukushima?

- make technical information comprehensible to the general public
- finding reliable information,
- communicating relevant data
- building trust

What was the most important challenge for your organization in communication about Fukushima?





Changes in the communication strategy

- The **strategy of communicating** after the Fukushima accident has not substantially changed **information and professional explanation**.
 - Information sources included only **some facts about the accident**
 - Some of the information sources introduced **more safety issues**
 - Only in the crisis time there was an **increased interest from media and the public**
- **ETI materials** - In majority - **no changes** after the Fukushima accident.
 - which is somehow surprising in view of the most important challenges in communications (building trust, communicating relevant data, reliable information, comprehensible technical information) Fukushima accident represented a communication challenge during the time when the situation was very critical.
- Sources consider their **way of communication is satisfactory** for standard situations
- Sources recognised they have problems in **managing crisis communication** in the case of infrequent and unexpected events.
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 - education**



Communication channels

Media dialogues conducted in 4 countries in 2014 by EAGLE consortium members. (France, Poland, Romania, Slovenia)

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Media dialogues

Conducted in 2014 in: France, Poland, Romania, Slovenia

Participants: sources and journalists

FRANCE

- words such as “cloud; significant contamination” were loosely employed by authorities (both Japanese and French) as well as by the media. Such language was viewed as spreading worry and little information.
 - The public lacks reference points to help understand the information presented
 - Communicating these subjects should take advantage of infographics and tools developed for social media, to allow the public to visualize and better understand data.”
 - "in the case of nuclear accident, there is so much uncertainty in the first hours and days that with or without basic knowledge, people probably cannot take excellent decisions. The only thing they are (or should be) well equipped to do is to follow authoritative instructions." This is another argument for trust-building and relationship-building activities by sources outside the times of crisis.
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Media dialogues

ROMANIA

- “Another important fact acting during Fukushima accident was the **lack of verified information**”...
- The desire to have more and more news inclines to introduce **“pseudo-information”** in media and also **“pseudo-experts”** in debates, interviews, etc. (including fortune tellers, astrologers).

“Japonia: Accidentul de la Fukushima se situeaza la nivelul 6 pe o scara de 7”



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General Public perceptions

Report on public views across EU on education and information in the post-Fukushima context (D3.1)

Report on mental models related to ionising radiation (D3.2)

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Public perception about nuclear accidents

- 2008-2009 - nuclear accidents were not widely feared by Europeans.
- In average - 16% in the EU27 countries felt at risk from a nuclear accident
 - in many countries, this proportion was below 15%.
 - Luxembourg - 44%, **France - 33%** and Germany - 33%.
 - Finland, **Belgium** and Lithuania - 25%
 - Portuguese - 1%

Activity	Risk to your health in the next 20 years % (very high or high risk)	
	Belgium	France
Radioactive waste	52	57
Nuclear accident	53	55
Terrorist attack with radioactive sources	51	47
Residual radioactivity	41	43
	(in food)	(in the environment)
Food sterilization by irradiation	31	37
Natural radioactivity	20	22
Medical X-rays	20	14
Radiation from mobile phones	26	34



EAGLE Barometer: Confidence in authority

- 42 -46% of Belgium and France population - **high and very high confidence in the measures taken regarding accidents in nuclear installations, and against terrorist attacks**
- 1/3 of Belgian population Belgium and 1/4 of French population - **high and very high confidence in authorities** -food sterilisation by irradiation and protection the population against risks from residues of radioactivity in food.

Risk from.....	Level of confidence in authorities (%) in:	
	Belgium	France
Nuclear accident	46	43
Terrorist attack with radioactive sources	44	42
Radioactive waste	43	33
Residual Radioactivity in environment	36	27
Food sterilization by irradiation	35	24
Natural radioactivity	26	21
Medical X-rays	40	29
Radiation from mobile phones	27	19

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Sources of information in nuclear emergency

EAGLE barometer: Use of sources of information about the Fukushima accident

The nuclear accident in Fukushima is still strongly remembered by the population.

EU picture (Eurobarometer 2009):
mass media - main source of information about nuclear issues.

- 72% - Television
- 40% - Newspapers

SOURCE	BELGIUM %	FRANCE %
TV	93	92
Radio	49	43
Newspapers (printed)	48	38
Internet sources	30	30
Information and rumours (on the street, in local shops or pubs)	7	24
Personal communication (with friends, neighbours, relatives)	15	4
Other sources	3	2

	BELGIUM (%)	FRANCE (%)
Satisfaction on the received information on Fukushima	48	56



Mental models related to ionising radiation

France, Poland, Romania and Slovenia

Individually interviews - common protocol - to allow comparison of the results and findings. Pilot testing of the research was done in Hungary.)

- “Radioactivity” is immediately associated with nuclear accident at Chernobyl and Fukushima (or in a few cases, with military applications).
- “Radioactivity” rapidly arouses signs of anxiety ; this anxiety appears more pronounced than that associated with natural radioactivity
- As the interview proceeds, and as persons are asked to reflect on the probabilities of a nuclear accident or other unrelated risk events in France, anxiety subsides somewhat but it does not disappear.
- Some persons display an attitude toward nuclear energy that may be described as "confident" or as "realist/fatalist" but others, and particularly younger subjects, continue to express "anxious/hostile" attitudes in their analysis of nuclear risk and its governance.



Causes of a nuclear accident

Causes:

Interviewees have a high awareness that nuclear operators carry a significant responsibility for collective safety.

- inherent dangers of the technology
- human causes: unavoidable limits to human control, the possibility for human error,
- possible failures of risk governance: insufficiently qualified workers; insufficiently frequent or deep safety verifications; insufficient uptake of operating feedback;
- new compounded risks: terrorism or climate change
- Moreover, they fear **economic pressures** or the arrogance of powerful stakeholders that could lead to a **reduction of safety**.

Suggestions for reducing the risk of nuclear accident

- collegial and pluralistic decision making,
- contribution of civil society to vigilance.

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Insights on the mental model (1)

How you explain the interaction at long distance e.g. Chernobyl and Fukushima on European territories?

- Many interviewees - **correctly describe the process** of radioactive dust spreading across the wide area around the source, finally falling to the earth surface with rain or snow. The dust dilutes with distance.
- Some people believe that the radiation can spread on long distances with **waves** – although they are not very strong any more, they might travel very long distances.
- The elder Romanian respondents were more informed about spreading of the radioactive dust, since they live relatively close to the Chernobyl, Ukraine, and were thus more affected during the nuclear accident.



Insights on the mental model (2)

What can happen in nuclear accident?

- large impact area and a great magnitude of the impact.
- All received a lot of information through media after these two accidents.
 - explosion, disaster, deaths, spreading of the radioactive materials.
 - irradiation of population, evacuation, destruction of the environment and health issues are the secondary effect.

How can you protect yourself, your family?

- move away from the site of the accident as quickly as possible; protective clothes.
- They ask that measures to protect population and the environment in case of a nuclear accident be introduced by nuclear scientists, experts on the area of nuclear energy and doctors, but
- civil initiative should be invited to cooperate by all important decisions.



Expectations from mass media

The role of mass-media

- transferring the information from the site of an accident to the public without influences from any party and without exaggeration.
 - objective and practical information, clear, critical and without dramatizing.
 - different information sources
 - strictly **verified** information to the public.
 - stick on the **facts** and not about what is told them to report by **authorities**, which often try to **hide the facts**.



The role of public

During an emergency

- follow the instructions of the experts,
- avoid panic and
- follow the guidelines of the responsible authorities.

Before an accident

- Take advantage on existing opportunities to actively cooperates
 - siting, investigations of the environmental impact, controlling the acceptability of power plants by means of regulatory bodies.



EAGLE Conference

Report from Initial project conference 'Let's Communicate about Ionising Radiation' (D 4.10)

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'Let's Communicate about Ionising Radiation'

- The first EAGLE public event -26th of November 2013 in Paris.
- 51 Participants: stakeholders from 10 EU countries, including:
 - nuclear industry, national radioactive waste management organisations, regulatory bodies, medical implementers, members of the media and civil society.
 - sources of information - 24 participants
 - general public - 17 participants
 - media sector - 10 participants

Messages on:

- Trust in authorities
- Content of information



Lack of trust in authorities

Reasons:

- poor and irregular communication over time from the part of authorities has broken public trust.
- strong perception - communication by authorities is driven by interest; they are often concealing or holding back the truth.
 - safety philosophy of institutions - do not communicate to the public the whole truth, i.e. that accidents are possibilities that could actually happen.
 - many minor incidents are not reported at all in some cases

Differences between countries - participants agreed that it would be interesting to examine how and why the level of public/media trust in authorities varies between countries.

- Finnish media has a good level of trust in its Radiation Safety Authority.

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Messages on information provided

Information during emergency situation:

- information is **unreliable, incomplete,**
- **poor information in the evolving situation** which was also evident in case of Fukushima Daiichi NPP accident.

Difficulties in communication:

- **Journalists must balance diverse opinions** provided by independent experts or by official spokespersons, who often are not prepared to provide immediate answers to questions of public concern in **understandable language.**



Conclusions

- The **nuclear accidents haven't had a major impact on ETI materials** and activities; or communication strategy (basic knowledge about nuclear energy hasn't change with the accident).
- Main source of information is **media source - TV, recently also internet;** **independent sources are appreciated**, due to low trust in governmental sources of information.
- The **knowledge** investigated with mental model approach is only one of the dimensions of the communications with public.
- The most important factors to be considered are those linked with **perception of risks** due to different activity or technology, **trust, involvement of the people in the process and opportunities for participation in decision making**.
- This should be constantly take into consideration and also applied in the communication strategies from different sources providing information to the lay population.

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