SCK•CEN
STUDIECENTRUM VOOR KERNENERGIE
CENTRE D'ETUDE DE L'ENERGIE NUCLEAIRE

SCK•CEN ACADEMY
FOR NUCLEAR SCIENCE AND TECHNOLOGY

ABR IRPA BVS

Risicocommunicatie over straling (bescherming): aangepaste communicatiestrategie

Risk communication about radiation (protection): a tailored communication strategy

Tanja Perko

tanja.perko@sckcen.be

NVS, 24th of September 2019, Utrecht, Nederland

© SCK•CEN Academy

Risk communication about radiation (protection): a tailored communication strategy

Context

Why?

What?

When?

Who?

How?

What is your role?
How can you improve your communication?

© SCK•CEN Academy

Risk communication about radiation (protection): a tailored communication strategy

Context

Why?

What?

Rn radon

Different exposure situations

When?

Who?

How?

What is your role?
How can you improve your communication?

© SCK•CEN Academy

Risk communication about radiation (protection): a tailored communication strategy

Why?

What?

Context

Rn radon

Different exposure situations

When?

Different objectives

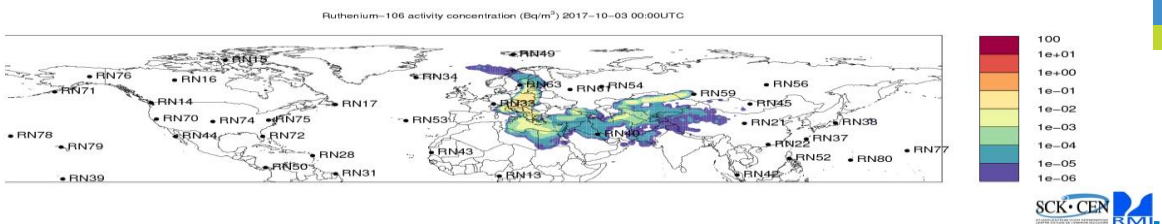
Who?

How?

e.g. Educate, increase awareness,
empower for informed decision-making, get accepted,
change behaviour …

What is your role?
How can you improve your communication?

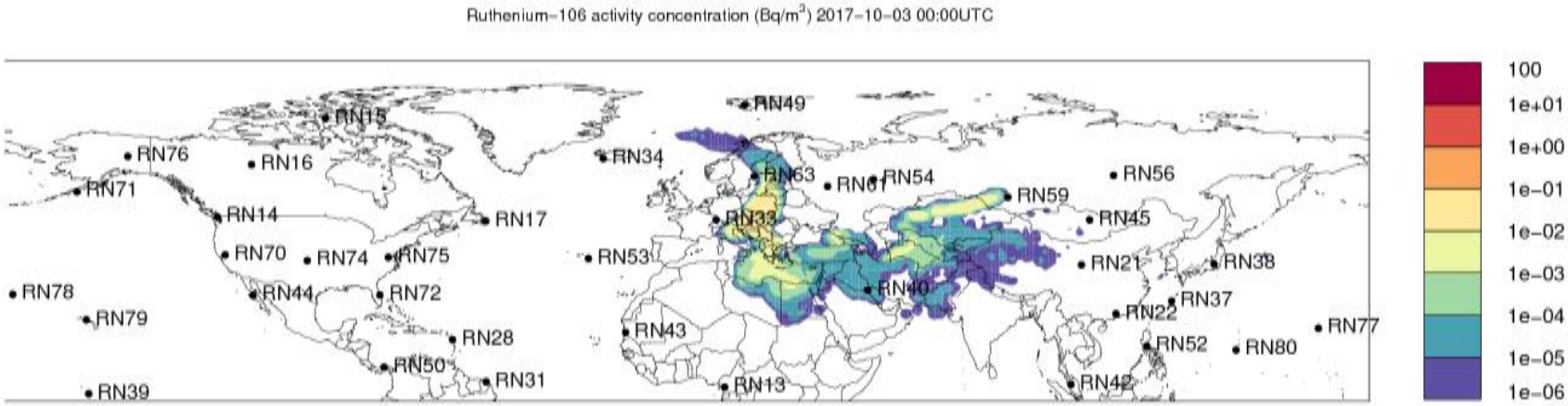
© SCK•CEN Academy



Discussion

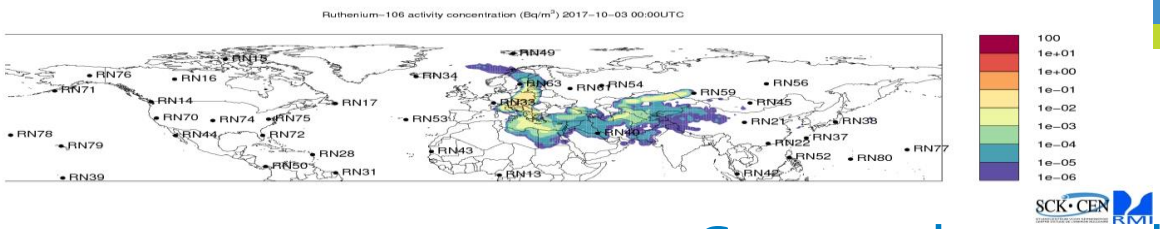
Identify objectives: September and October 2017, Ru-106

Type of en emergency	Examples of possible objectives of a communication plan
Unexplained increase of radioactivity	



Ruthenium-106 activity concentration (Bq/m3)
(Source: P De Meutter et al., 2018)

© SCK•CEN Academy



Discussion

Identify objectives: September and October 2017, Ru-106

Type of en emergency	Examples of possible objectives of a communication plan
Unexplained increase of radioactivity	- Information that low concentrations of Ru-106/103 in EU don't present any health risk to EU citizens should be communicated in all mainstream media - Nuclear safety authorities in region will issue a complimentary information - Trust building: Director will give 3 interviews and expert XY will be constantly available for public questions - The origin of Ru-106 will be communicated by IAEA first and experts will give an explanation based on scientific results (when ready) - Concerned citizens will know single (our) point of contact…

© SCK•CEN Academy

Risk communication about radiation (protection): a tailored communication strategy

Context

Why?

What?

Rn radon

Different exposure situations

When?

Different objectives

Who?

Many factors influencing comm. effect

How?

e.g: •risk-perception, • perceptions of efficacy, • attitudes, • subjective norms (important others), • descriptive norms (believes about other's people behavior), • past behaviour • moral norms, • self-efficacy,, •protective efficiency of an action, • threat …

© SCK•CEN Academy

Risk communication about radiation (protection): a tailored communication strategy

Why?

What?

Context

Rn radon

When?

Different exposure situations

Who?

Different objectives

How?

Many factors influencing comm. effect

What is your role?

How can you improve your communication?

Discussion

© SCK•CEN Academy

Risk communication about radiation (protection): a tailored communication strategy

Context

Why?

What?

Differe… …s

When?

…tives

Who?

…dencing comm. effect

How?

What is your role?

H… you improve your communication?

COMMUNICATION IS YOUR JOB

© SCK•CEN Academy

Legal and legitimate background

Nuclear safety directive

Directive 2009/71/EURATOM establishing a Com
nuclear installations and its amendment, Directiv

Worldwide, the nuclear safety of nuclear installations is governed by na
supplemented by an EU Directive. The Directive 2009/71/EURATOM
adopted by the Council of the European Union on 25 June 2009, provid
of the Directive takes into account expert input from ENSREG as well

The objective of the Directive is to maintain and promote the co
ments for a high level of nuclear safety to protec

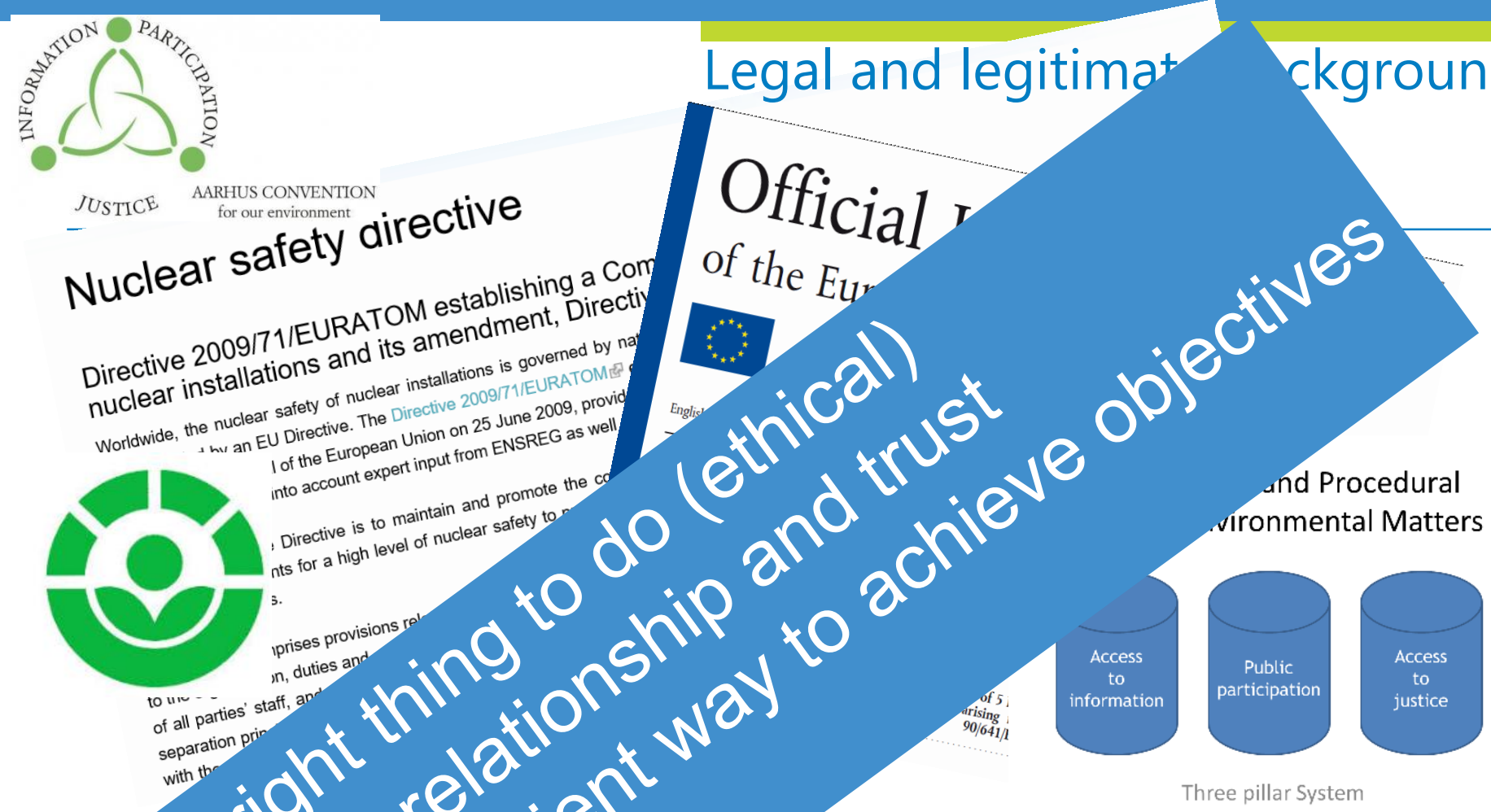
ns.

mprises provisions relating to the establishm
ion, duties and responsibilities of the compe
taff, and to the provision of information to
nciple which indicates that the competent
otion or utilisation of nuclear energy. In addi

Revised Basic Safety Standards Directive 2013/59/Euratom;
Amended Nuclear Safety Directive 2014/87/Euratom;
The Aarhus Convention;
EC EURATOM Drinking Water directive 2013/51/EURATOM;
The 2007 Recommendations of the International Commission on Radiological Protection. ICRP Publication 103. Ann. ICRP 37 (2-4)

© SCK•CEN Academy

Legal and legitimat ckground



It is right thing to do (ethical)
It builds relationship and trust
It is an efficient way to achieve objectives

R s Directive 2013/59/Euratom;
An irective 2014/87/Euratom;
The
EC EU g Water directive 2013/51/EURATOM;
The 20 endations of the International Commission on Radiolog otection. ICRP Publication 103. Ann. ICRP 37 (2-4)

© SCK•CEN Academy

Objectives of risk communication

Education

Marketing practice

Participatory practice

Risk message

Risk dialogue

Risk governance

© SCK•CEN Academy

Objective

Discussion

Example

Objective: 400 measurement kits with instructions will be distributed.

Education

Marketing practice

Participatory practice

Risk message

Risk dialogue

Risk governance

© SCK•CEN Academy

Objective

Discussion

Example

Objective: 400 measurement kits with instructions will be distributed.

Education

Marketing practice

Participatory practice

Risk message

Risk dialogue

Risk governance

"Radon is a natural radioactive gas – 2nd cause of lung cancer – that you can avoid"

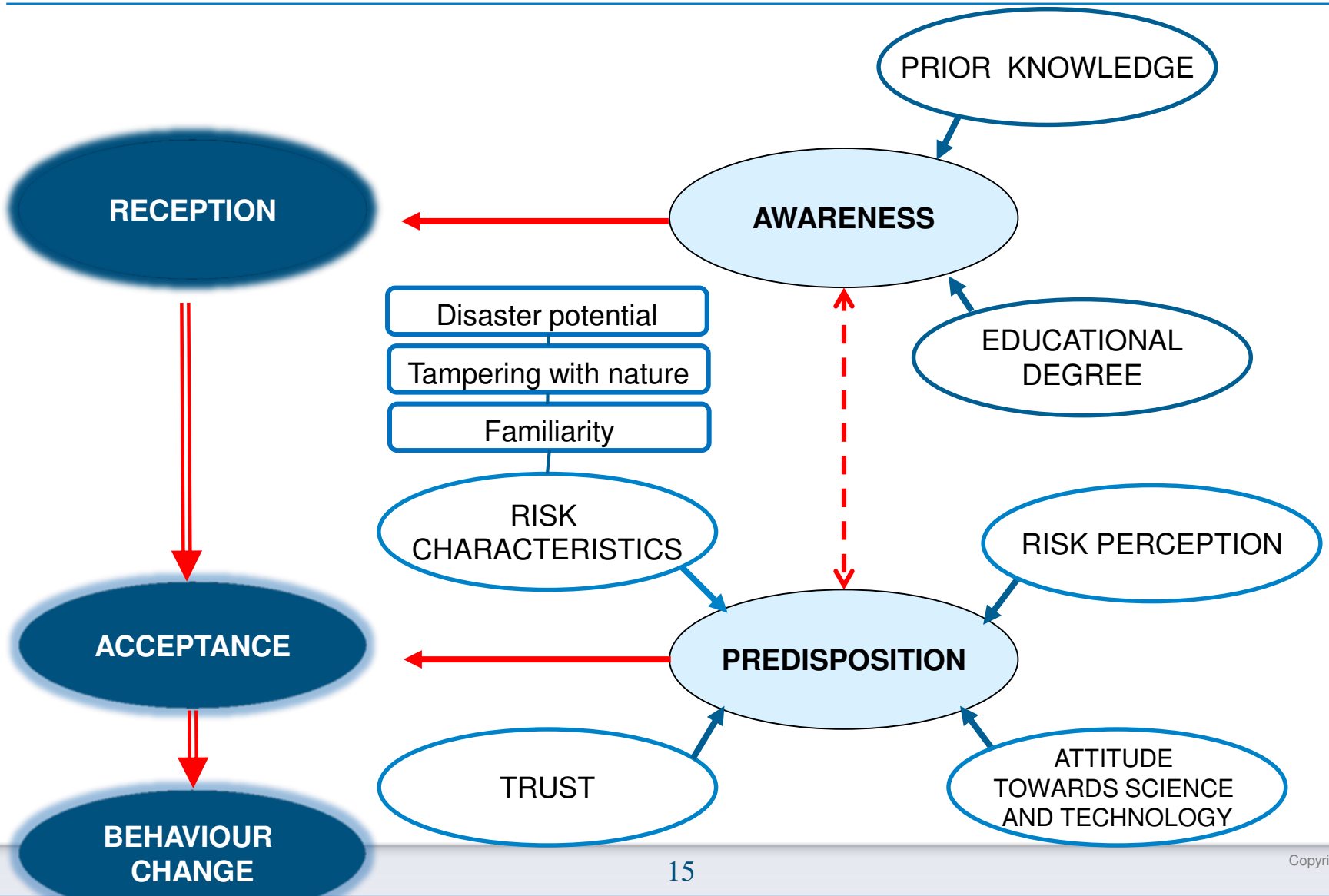
Call line for radon, Radon day

Local community engagement, citizen science

© SCK•CEN Academy

Perko T. et al,, Risk Analysis (2013) and Journal of Risk Research (2014)

Theoretical background
model for risk communication



Copyright © 2012 SCK•CEN

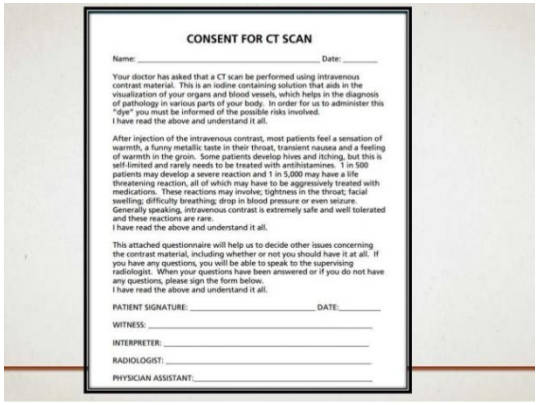
Discussion

Factors influencing communication

Example:
Emergency

- attitudes,
- subjective norms (important others),
- perceptions of efficiency,
- descriptive norms (believes about other's people behavior),
- past behavior
- moral norms,
- self-efficacy,
- threat,
- risk perception…

Example:
Medical application


CONSENT FOR CT SCAN

Name: _____ Date: _____

Your doctor has asked that a CT scan be performed using intravenous contrast material. This is an iodine containing solution that aids in the visualization of your organs and blood vessels, which helps in the diagnosis of pathology in various parts of your body. In order for us to administer this "dye" you must be informed of the possible risks involved.
I have read the above and understand it all.

After injection of the intravenous contrast, most patients feel a sensation of warmth, a funny metallic taste in their throat, transient nausea and a feeling of warmth in the groin. Some patients develop hives and itching, but this is self-limited and rarely needs to be treated with antihistamines. 1 in 500 patients may develop a severe reaction and 1 in 5,000 may have a life threatening reaction, all of which may have to be aggressively treated with medications. These reactions may involve; tightness in the throat; facial swelling; difficulty breathing; drop in blood pressure or even seizure. Generally speaking, intravenous contrast is extremely safe and well tolerated and these reactions are rare.
I have read the above and understand it all.

This attached questionnaire will help us to decide other issues concerning the contrast material, including whether or not you should have it at all. If you have any questions, you will be able to speak to the supervising radiologist. When your questions have been answered or if you do not have any questions, please sign the form below.
I have read the above and understand it all.

PATIENT SIGNATURE: _____ DATE: _____

WITNESS: _____

INTERPRETER: _____

RADIOLOGIST: _____

PHYSICIAN ASSISTANT: _____

Human behaviour is primarily driven by **perception and not by facts**.
(Renn, 2008)

© SCK•CEN Academy

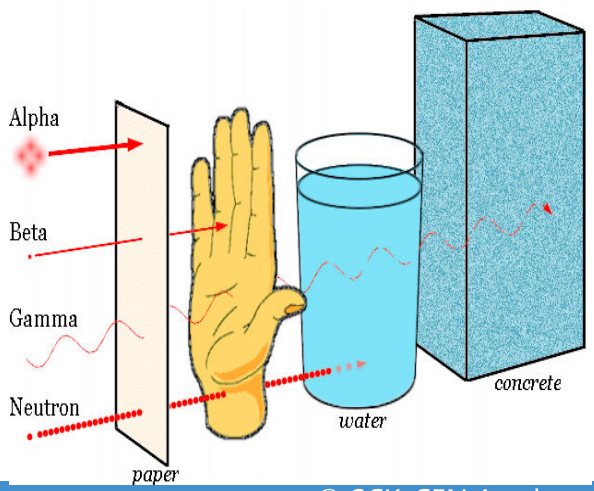
Risk perception (examples of factors)

Risk characteristics	Explanation of influence	Explanatory scale	Possible communication approach
Personal control	Increases risk tolerance	controllable – not controllable	Practical and emotional involvement in risk governance.
Institutional control	Depends upon confidence in institutional performance	trust, confidence in institution	Building social and institutional trust in risk management.
Voluntariness	Increases risk tolerance	voluntary - involuntary	Stakeholder process
Familiarity	Increases risk tolerance	familiar – not familiar	Communication campaign makes it familiar
Dread / fear	Decreases risk tolerance	fear – no fear	Since feeling of helplessness triggers fear give the instruction what to do …

© SCK•CEN Academy

Communication strategy in 6 steps

1. Define objectives
2. Identify the audience (stakeholders)
3. Develop messages, examples of text or graphics
4. Select key communications methods/channels
5. Plan your work: resources and timing
6. Evaluate and improve your strategy



© SCK•CEN Academy

Discussion

Communication strategy
Example: Improve radiation protection behaviour

1. Define objectives
2. Identify the audience (stakeholders)
3. Develop messages, examples of text or graphics
4. Select key communications methods/channels
5. Plan your work: resources and timing
6. Evaluate and improve your strategy

Scenario: It has been noticed that surgeons in your hospital during procedures often don't wear dosimeters at all prescribed places.

© SCK•CEN Academy

Discussion

Communication strategy
Example: Improve radiation protection behaviour

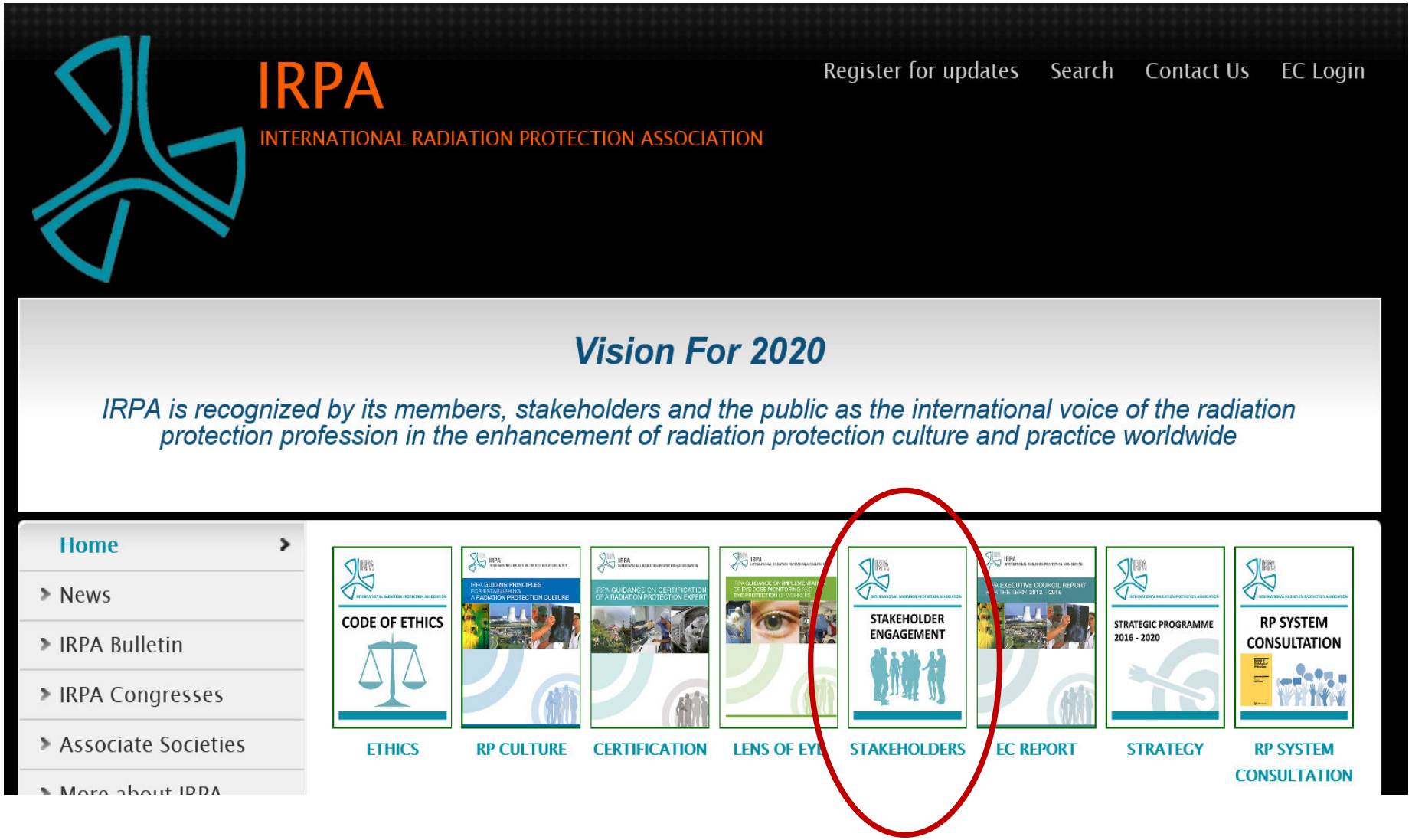
Stakeholder Engagement", should play an important and integral part in the decision-making processes related to radiological protection

IRPA, 2004

Scenario: It has been noticed that surgeons in your hospital during procedures often don't wear dosimeters at all prescribed places.

Could you engage these stakeholders in decision making?

© SCK•CEN Academy



© SCK•CEN Academy

IRPA Guiding Principles for Radiation Protection Professionals on Stakeholder Engagement

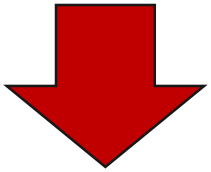
IRPA, 2004

1. Identify opportunities for engagement and ensure the level of engagement is proportionate to the nature of the radiation protection issues and their context.
2. Initiate the process as early as possible, and develop a sustainable implementation plan.
3. Enable an open, inclusive and transparent stakeholder engagement process.
4. Seek out and involve relevant stakeholders and experts.
5. Ensure that the roles and responsibilities of all participants, and the rules for cooperation are clearly defined.
6. Collectively develop objectives for the stakeholder engagement process, based on a shared understanding of issues and boundaries.
7. Develop a culture which values a shared language and understanding, and favours collective learning.
8. Respect and value the expression of different perspectives.
9. Ensure a regular feedback mechanism is in place to inform and improve current and future stakeholder engagement processes.
10. Apply the IRPA Code of Ethics in their actions within these processes to the best of their knowledge.

© SCK•CEN Academy

New trends have entered the radiation protection field

- Citizens journalism
- Social media
- Open source information
- New regulations on public rights for information and stakeholder engagement
- Science diplomacy
- Citizens science



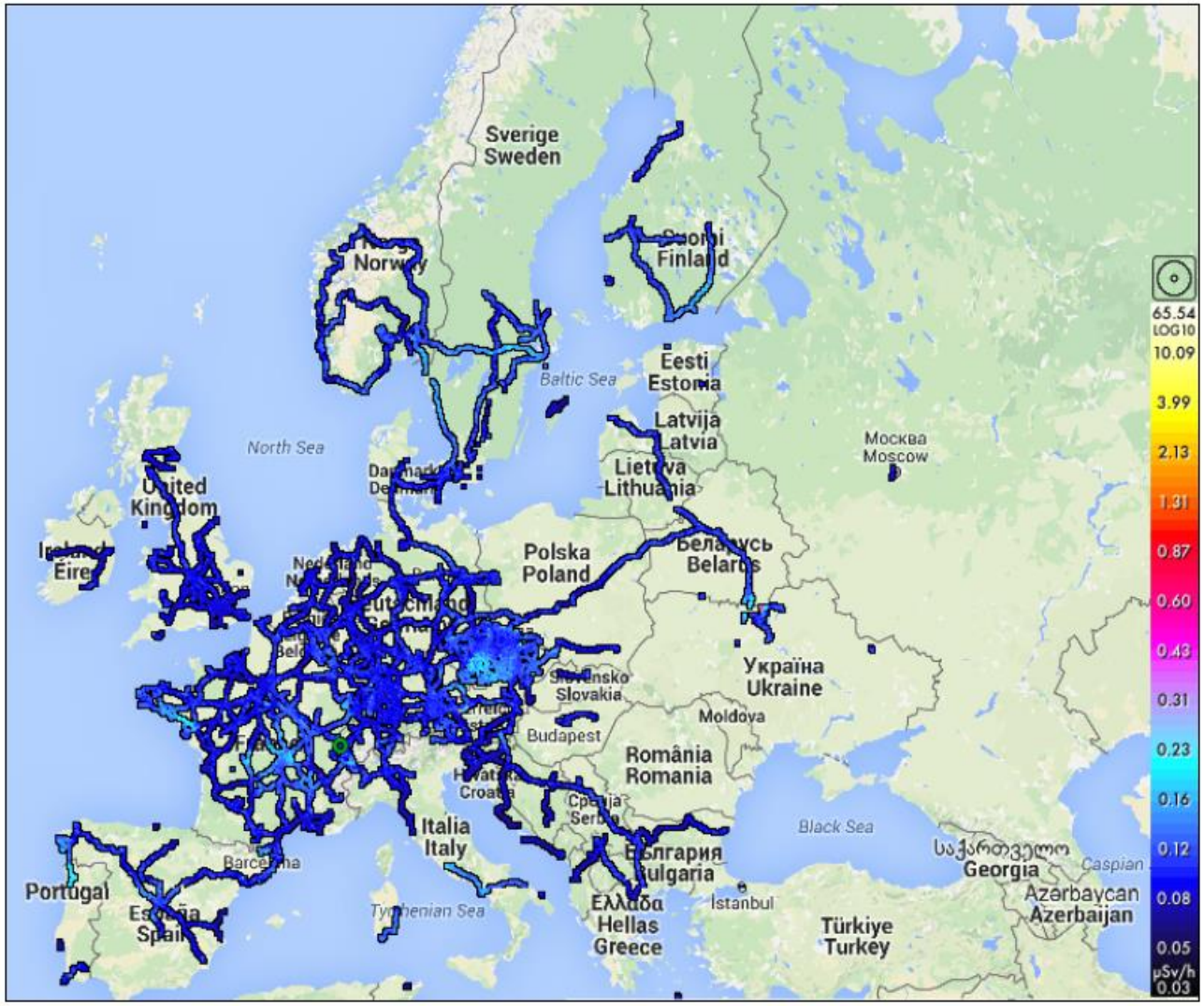
Address risk perception factors

Familiarity, controllability, trust, social trust, dread ….

an opportunity to **make informed decisions**

© SCK•CEN Academy

Example: Open- source, citizen-science-centered radiation mapping solutions through a process of collaborative open innovation, SAFECAST



Safecast web map showing data from Europe as of May 2016

Automobile

Bicycle

Hand-carry

Aerial drone
(under development)

Brown, 2016

© SCK•CEN Academy

Social media

- Popular
- Collaborative
- Participatory
- Decentralised
- Accessible

© SCK•CEN Academy

Misrepresentations and mistakes in media

Radiological risks related to Fukushima in European media:

- References to non-existing norms (e. g. levels in the enviroment)
- Using norms for drinking water as benchmark for seawater
- Mixing up allowed levels for general population and emergency workers
- Mixing up dose and dose rate
- Presenting permitted levels as «safe»

IRPA
INTERNATIONAL RADIATION PROTECTION ASSOCIATION

Perko T. at al (2014); Journal of radiation protection

© SCK•CEN Academy

Potentially misunderstood radiation terms

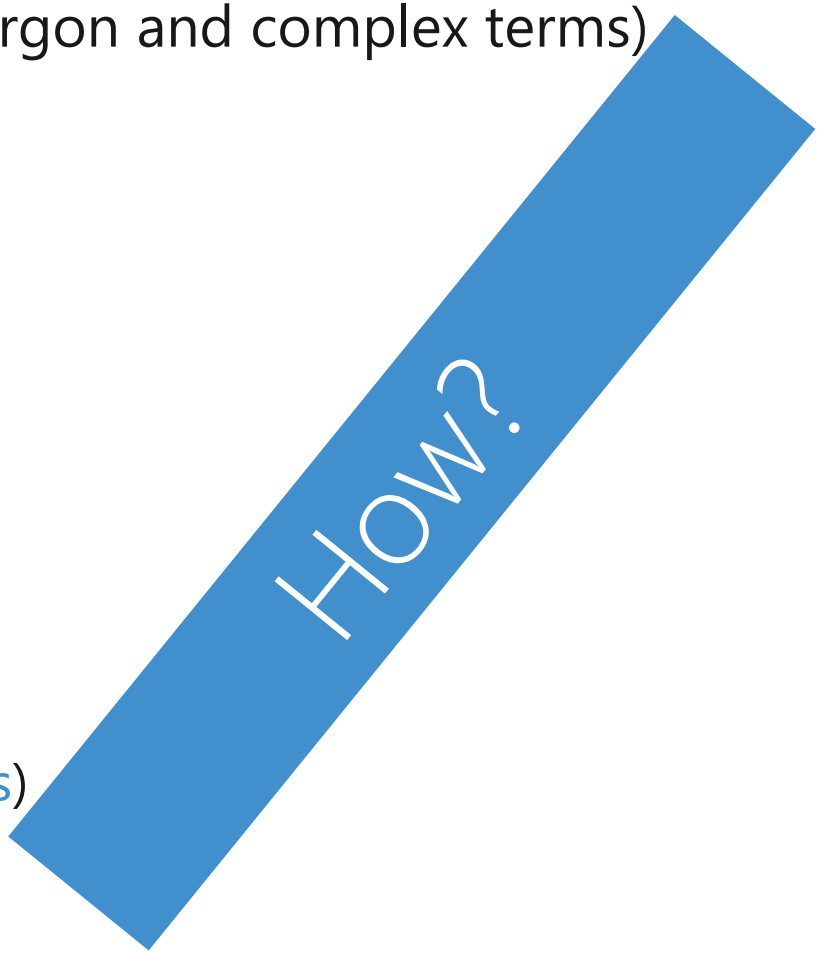
- Background radiation
- Contamination
- Detrimental health effects
- Dose
- Hereditary genetic damage
- In the path/Downwind
- Internal/external contamination
- Low/high radiation levels
- Potassium iodine
- Protective actions
- Protective measures
- Radiation particles
- Radiation protection standards and practices
- Radioactive material
- Sievert/Becquarel
- Responders
- Risk of exposure
- Sheltering

© SCK•CEN Academy

Messages should be

- Simple and understandable (avoid jargon and complex terms)
- Meet people's needs and concerns
- Avoid speculating, stick to the facts
- Respect different risk perceptions
- Be brief, concise and clear
  - (27 words, 3 key messages, 9 seconds)

(Coello)



© SCK•CEN Academy

Anticipate answers
Example: How much radiation is safe?

- There is not known safe amount of radiation.

  - We always assume that less radiation is better.

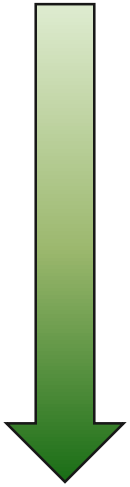
  - There are measures you can take to minimize your exposure.

  - Your local officials can advise you on what measures to take.

Source: US Environmental Protection Agency

© SCK•CEN Academy

What should I do if I think I may have been contaminated?

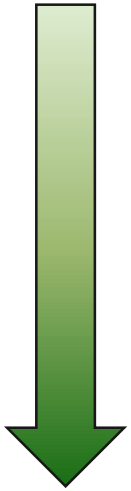


© SCK•CEN Academy

Structure your message

What should I do if I think I may have been contaminated?

- Shower and change into clean clothes.
- Place clothing in a plastic bag and seal it.
- Place the bag as far away as possible from humans and animals.



- Bagged clothing can be examined later to determine if you were contaminated.
- Stay informed.

© SCK•CEN Academy

How do I detect radiation?

© SCK•CEN Academy

How do I detect radiation?

- You cannot sense radiation.
- Radiation can only be detected using specialized instruments.
- Experts are skilled in using these instruments.

© SCK•CEN Academy

Conclusions
Tips and tricks for today's workshop

- Communication is your job
- Identify your objectives
- Use the following template for your communication

Stakeholders/ Audience	Main concerns	Main messages	Communication channels

- Try to engage and not only to inform or educate
- You use 27 words, 3 key messages, 9 seconds for explanation

© SCK•CEN Academy

Group work

Explain
27 words, 3 key messages, 9 seconds

- Background radiation
- Contamination
- Detrimental health effects
- Dose
- Hereditary genetic damage
- In the path/Downwind
- Internal/external contamination
- Low/high radiation levels
- Potassium iodine
- Protective actions
- Protective measures
- Radiation particles
- Radiation protection standards and practices
- Radioactive material
- Sievert/Becquarel
- Responders
- Risk of exposure
- Sheltering

© SCK•CEN Academy