MELODI Multidisciplinary European Low Dose Initiative

5th International MELODI Workshop

7 – 10 October 2013, Brussels, Belgium

Workshop on risk communication and risk perception

Wednesday, 9th October, 16.00-18.00

Moderator: Tanja Perko, SCK• CEN

Communicating low doses is communicating about

Scientific uncertainties

Risk estimates

Probabilities

Perceptions

Radiological concepts

Units

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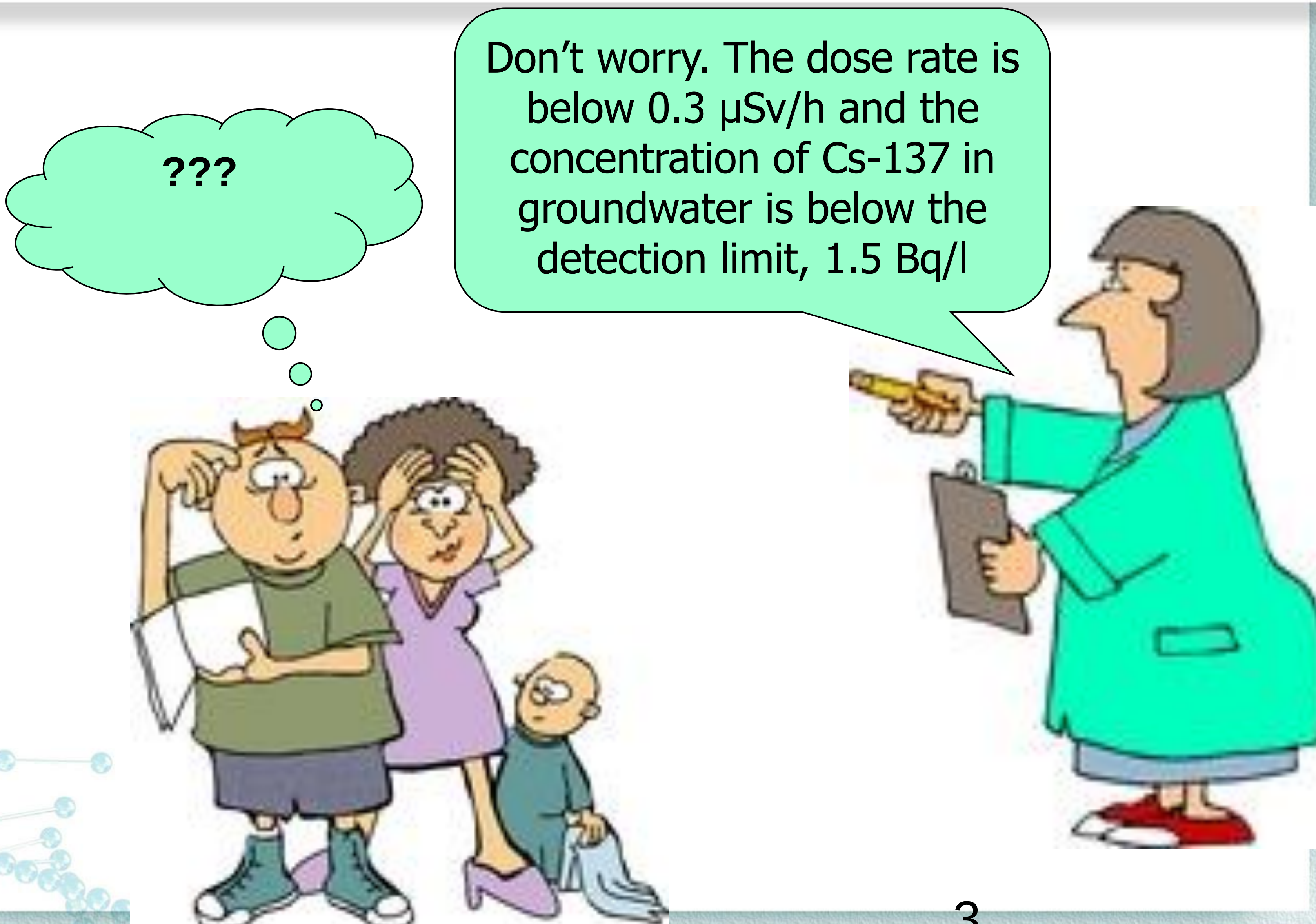
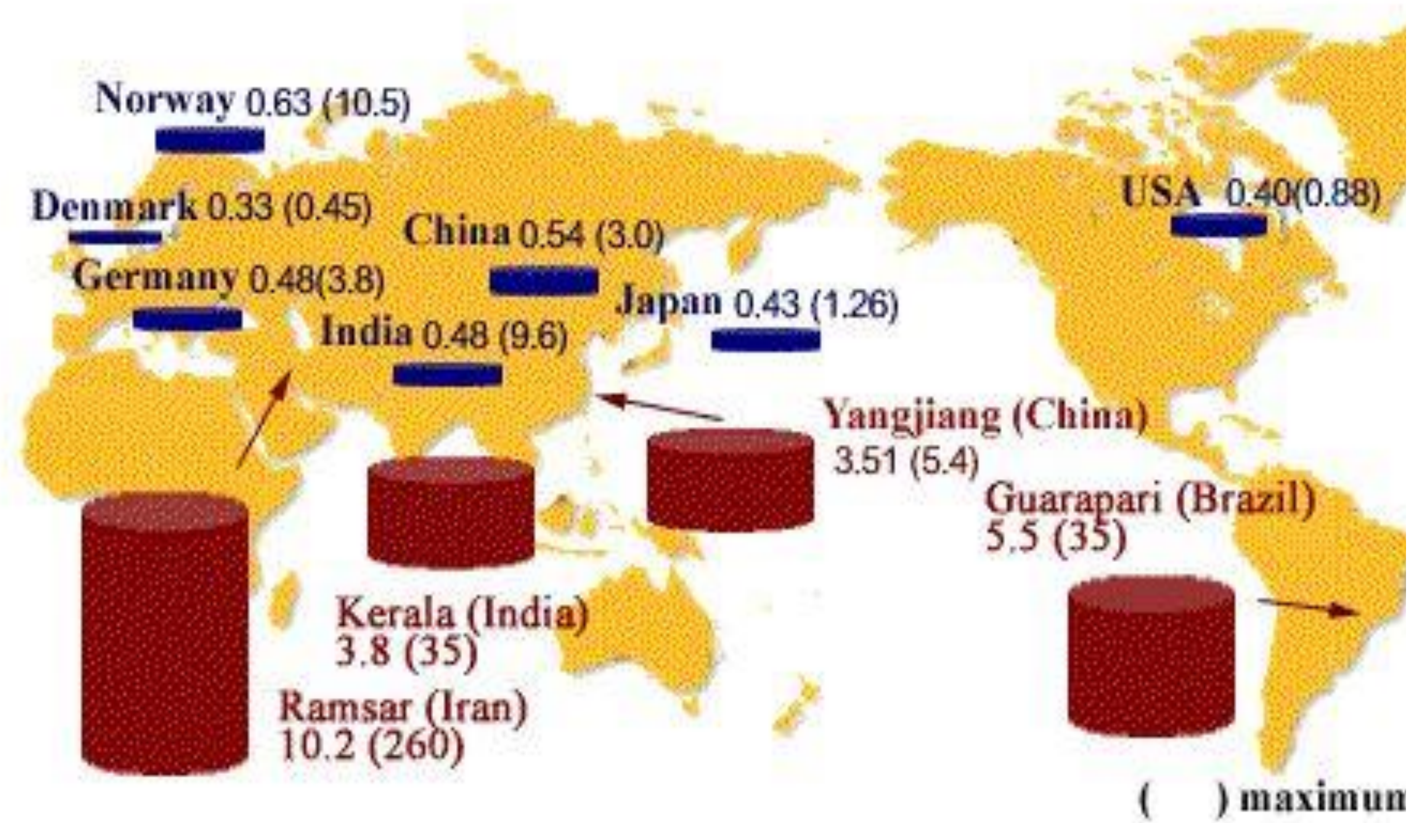
- Are these challenges scientifically well investigated?
- Do we have answers how to integrate scientific results in the risk governance?


???
Don’t worry. The dose rate is below 0.3 µSv/h and the concentration of Cs-137 in groundwater is below the detection limit, 1.5 Bq/l


Norway 0.63 (10.5)
Denmark 0.33 (0.45)
China 0.54 (3.0)
USA 0.40(0.88)
Germany 0.48(3.8)
Japan 0.43 (1.26)
India 0.48 (9.6)
Yangjiang (China)
3.51 (5.4)
Guarapari (Brazil)
5.5 (35)
Kerala (India)
3.8 (35)
Ramsar (Iran)
10.2 (260)
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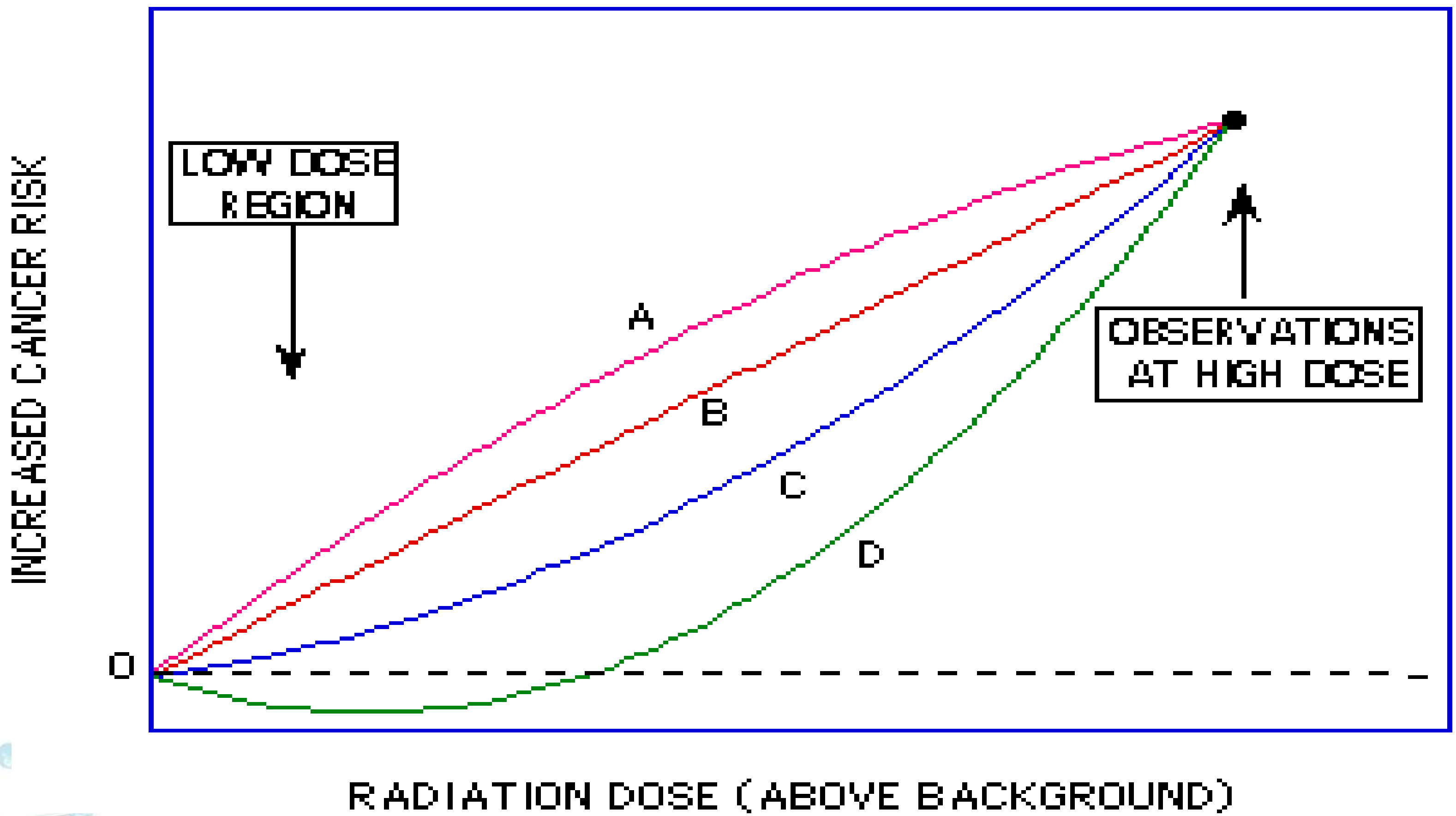


MELODI

Regulations/guidance

500 mSv is the highest effective dose adopted as a guidance value for restricting exposure of emergency workers under exceptional circumstances (i.e. lifesaving actions, prevention of catastrophic conditions that could significantly affect people and the environment).

100 mSv is the maximum effective dose proposed as a reference level recommended for urgent protective actions during emergency exposure situations.

20-100 mSv is the recommended range in emergency planning of annual residual effective dose after urgent protective actions have been taken.

50 mSv effective dose in a single year is the limit for occupational exposure of workers, provided that the total dose over five consecutive years does not exceed 100 mSv (i.e. this means an average effective dose of 20 mSv per year).

20 mSv per year is the maximum effective dose proposed as reference level for planning long term protective actions after an emergency is over (i.e. during an existing exposure situation).

10-20 mSv per year is the range of effective dose proposed as reference level for protective actions in the emergency aftermath (i.e. during an existing exposure situation).

10 mSv is approximately the annual effective dose corresponding to the reference level of radon concentration in air of residential dwellings

1.0 mSv is the annual effective dose limit established for members of the public in planned exposure situations (limits do not apply to existing or emergency exposure situations)

0.1 mSv is the individual dose criterion (IDC) to establish guidance levels of radionuclides in drinking water in normal situations (i.e. not applicable in emergency exposure situations)

0.01 mSv is the level of effective dose below which radioactive sources can be exempted from regulatory control

Comparison with examples of levels of effective dose

Exposure to natural sources of radiation

100 mSv per year is the annual average effective dose in very high background radiation areas in Iran.

3–15 mSv is the annual average effective dose in some high background radiation areas in the world (e.g. Brazil, China, India, Iran).

2.4 mSv is the worldwide annual **average** effective dose from natural sources

0.1 mSv is the effective dose due to exposure to cosmic rays during some transoceanic flights (may be higher in transpolar flights during solar flares).
One stop Seoul-Montreal or NY-Tokyo 0.1 mSv
Nonstop NY- Tokyo: 0.07 mSv
Nonstop Buenos Aires-Paris; London-NY: 0.035 mSv

0.01 mSv would be the level of effective dose for a visitor who stay one hour inside an archaeological site (e.g. Egyptian tomb) due to external exposure from rocks and internal exposure from radon inhalation

Effective dose due to medical exposures

5–70 mSv usual average effective doses for interventional procedures

0.3–20 mSv usual average effective doses for nuclear medicine imaging procedures

15 mSv abdomen/pelvis CT scan

2.0 mSv head CT scan

1.0 mSv lumbar spine X-ray

0.7 mSv abdomen/pelvis X-ray

0.02 mSv Chest X-ray

0.005 mSv Dental X-ray

Challenges

- Can be risk communication related to ionizing radiation improved and what are the future research needs and opportunities?

- How can future research in the field of risk communication and risk perception help the scientific community to better communicate about low doses and medical use of ionizing radiation?

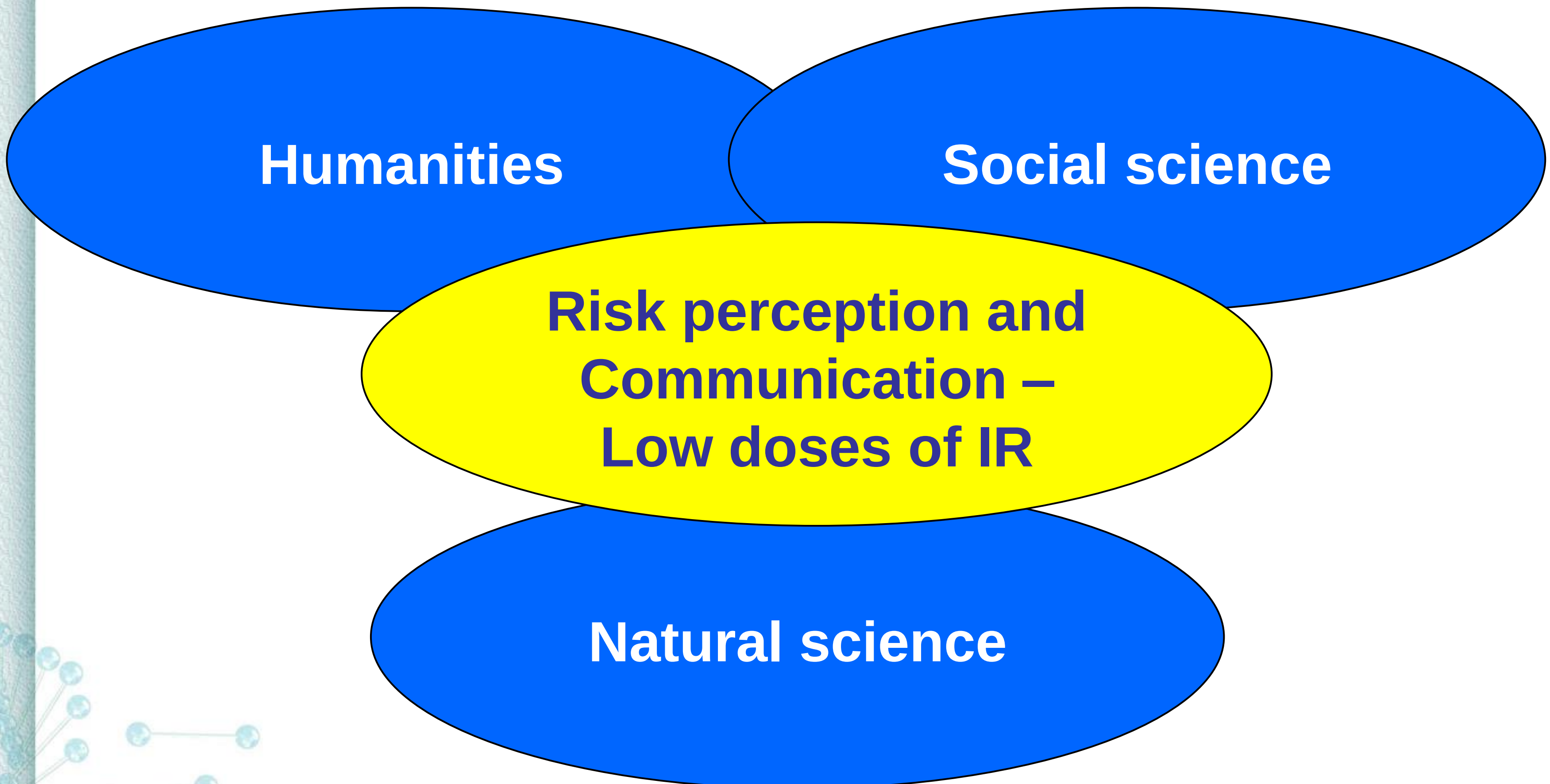
- How do you communicate scientific uncertainties, is it possible to differentiate between basic or "all agreed upon" facts and such areas that currently involve differing expert opinions?

Some questions

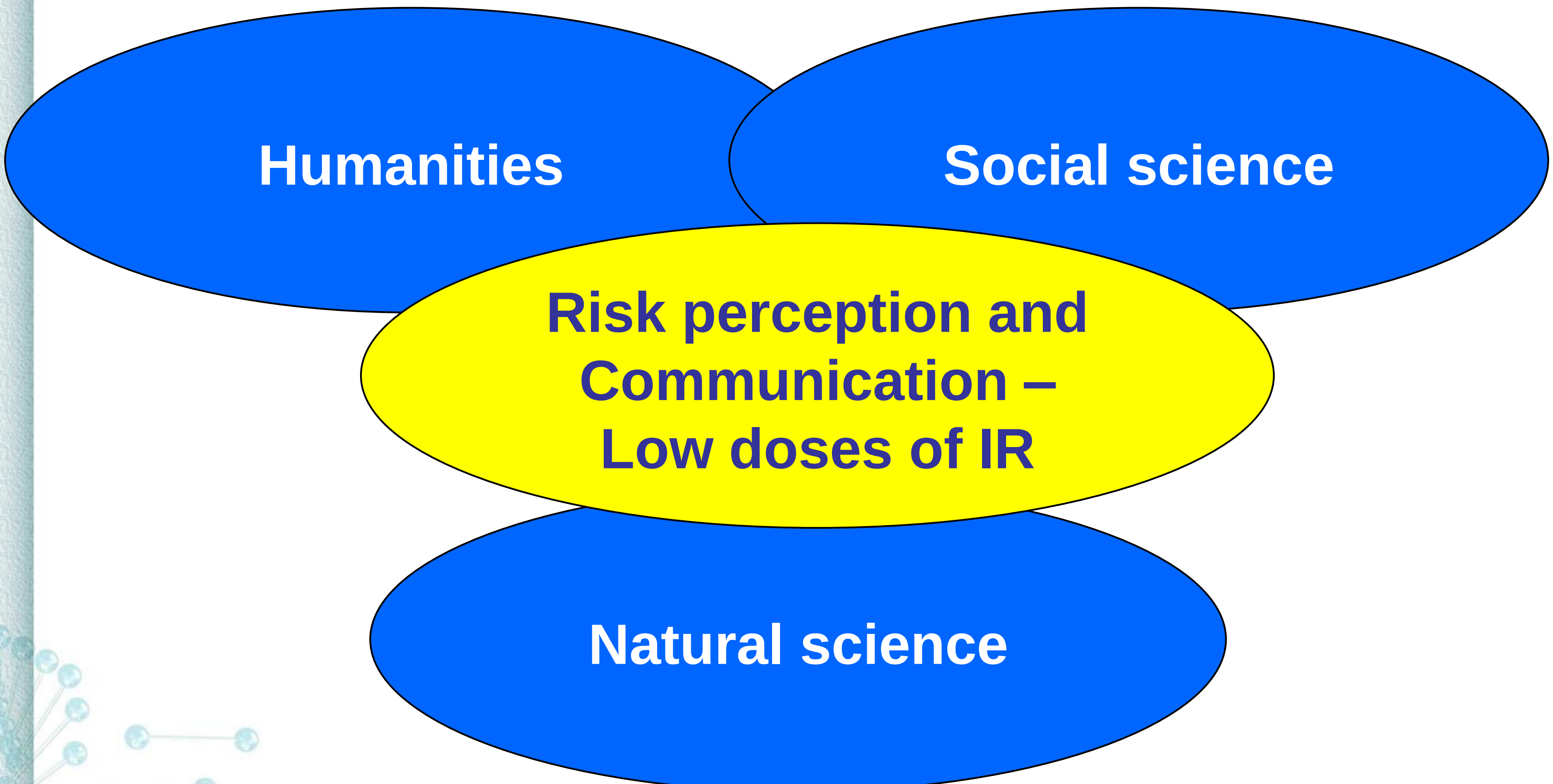
- How to move toward the ideal low dose risk communication - to make informed decisions related to radiation risks and to establish two-way communication and joint problem solving?

- How can new research topics improve the understanding of the role and potential use of the social networks for a better understanding of the effects of low-dose and use of ionizing radiation for medical purposes?

Foundation for a discussion between



Britt-Marie Drottz Sjöberg



Peter Michael Booth