

Social and Ethical Aspects of Radiation Risk Management

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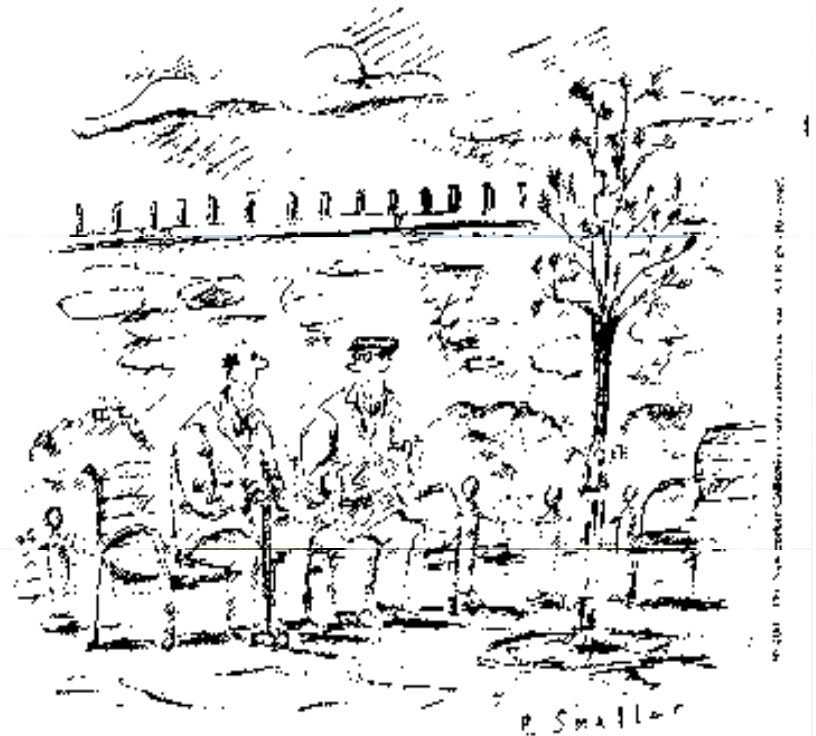
“Risk” is not synonymous with “probability of harm

Rank according to “probability of death”	Rank according to “risk”
Smoking	Genetically modified organisms
Driving	Nuclear power
Alcohol	Alcohol

Factors Influencing Radiation Risk Perception

- Benefit to self
- Personal control
- Effects in children (Responsibility)
- Time – delay in negative effects

All have ethical and psychological relevance

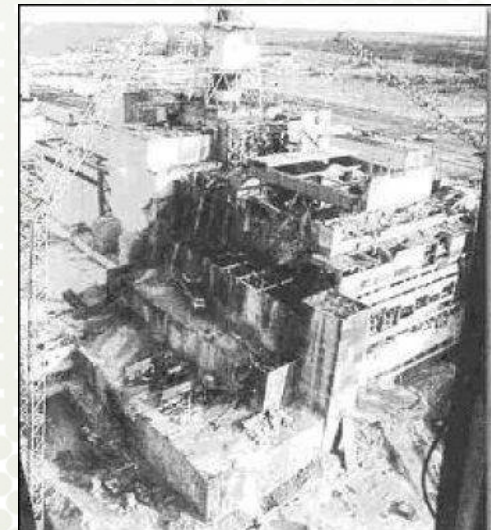
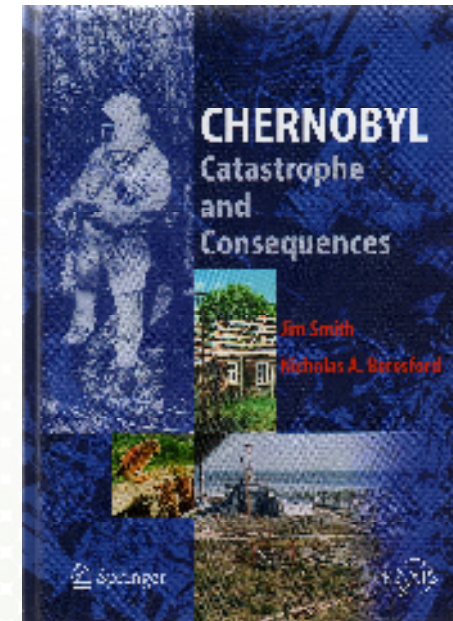


"My goal is to die before there's a technology breakthrough that forces me to live to a hundred and thirty."

"What is the relevance for the rationality of risk perception and risk management?"

Case Study: The Chernobyl Accident

- “The social and psychological consequences of Chernobyl far outweigh any direct health effects from radiation exposure” (IAEA, 1991, + +)
- The enormous social and economic costs raise questions about the ethical justification of dose reduction measures
- Aggravated by political upheaval and economic in FSU during the 1990s



Oughton and Bay, 2005; EU Projects,
STRATEGY and EURANOS

Social and Ethical Costs Of the Accident

- Loss of Agricultural Land – 800,000 hectares of agricultural land; 700,000 hectares of forest
- Relocation
 - 282 rural settlements relocated in Belarus
 - Integration problems
 - Demographic parameters (age, economic resources, etc)
 - Stigma
- Rural Breakdown
 - 43 % migration from the Gomel region between 1986 and 2000
 - Shortage of doctors and teachers

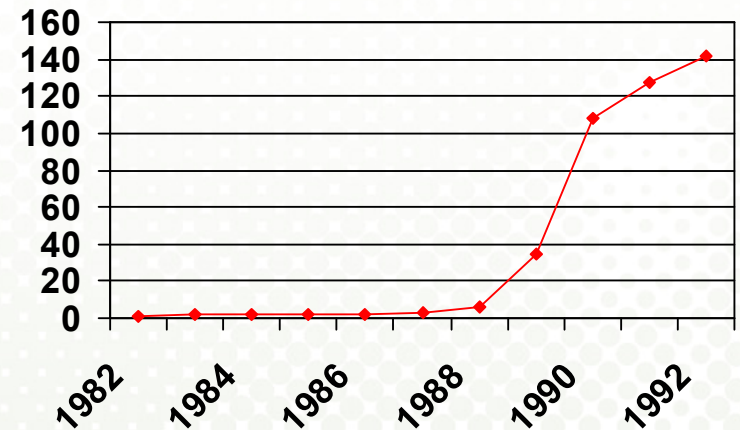


UNDP 2002, The Human Consequences
of the Chernobyl Nuclear Accident

Indirect Health Effects

- "Secondary" effects
 - Heart, lung, kidney problems
 - Immune system depression
 - Birth defects
- "Stress and Social effects"
 - Increased smoking, alcohol abuse, depression, anaemia, AIDs
- Pregnancy – Communication Challenges
 - Increased voluntary abortion in Italy and Denmark (Knudsen, 1991; Spinelli and Osbourne, 1991)

Registered "Illnesses" in Ukraine per 10,000 Inhabitants



Petryna, 2002



Reindeer herders in Norway

- In 1986 maximum permitted levels of Cs-137 in food stuffs was 600 Bq/kg
- In 1987, >95% of reindeer meat was above this level
- To save the Sami reindeer culture, Norwegian Authorities raised the permitted level to 6000 Bq/kg
- Widely accepted as the rational thing to do by public and politicians
- No influence on sales of reindeer meat
- No need to appeal to hormesis



Conclusion

- Radiation contamination has negative consequences besides increase in dose and cancer fatalities. These can be enhanced by public anxiety, but are aggravated by mis-management of risks by authorities and regulators
- Risk management needs a holistic multidisciplinary approach, including consideration of social and ethical factors
- Countermeasures need to be directed at outcomes other than dose reduction – personal control is central
- Hormesis is important in risk assessment and management, not as the dominant philosophy, rather as an illustration of the uncertainty and small size of risks below “practical thresholds”

EU STRATEGY project
www.strategy-ec.org