SAB-EE
Charge question A

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Summary of written comments

Plus

- That the document appears at all
- Recognize the importance of EE in uncertainty quantification
- Recognize that subjective probability is the primary formalism for encapsulating EE
- Findings chapter 7.

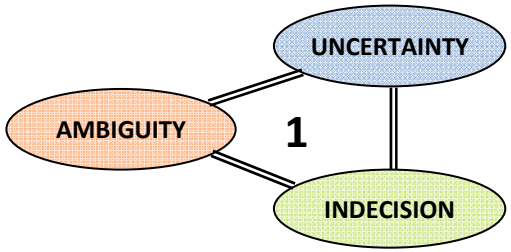
Min

1. Literature is very old
2. Insufficient focus on applications
3. No attention for performance validation
4. No attention for dependence between variables
5. Combination given very short shrift
6. Transferring expert distributions on observable quantities to parameters of a model (probabilistic inversion) is missing
7. Costing is unrealistic

There are more mins, but the plusses are more important.

1. Websites & Links

- *Radiation Protection Dosimetry* 90: (2000)
  http://rpd.oxfordjournals.org/cgi/content/short/90/3/295
- *EU-USNRC Probabilistic accident consequence uncertainty analysis*
  http://www.osti.gov/bridge/basicsearch.jsp
  http://www.osti.gov/energycitations/basicsearch.jsp
- *EU Probabilistic accident consequence uncertainty assessment using COSYMA*
  http://cordis.europa.eu/fp5-euratom/src/lib_docs.htm
- *Reliability Engineering and System Safety, Special Issue Expert Judgment vol 93 no 5, 2008.*
  http://www.sciencedirect.com/science?_ob=PublicationURL&_tockey=%23TOC%235767%232008%23999069994%23678744%23FLA%23&_cdi=5767&_pubType=J&_auth=y&_acct=C000022004&_version=1&_urlVersion=0&_userid=458509&md5=e172814069b8ed1945b6175effa797ff
- *RFF workshop expert judgment*
  http://www.rff.org/rff/Events/Expert-Judgment-Workshop.cfm
- *TU Delft Website NASA 2 day EJ Short Course*
  http://dutiosc.twi.tudelft.nl/~risk/



2&7: EU- USNRC EJ Uncertainty Analysis of accident consequence models $4M(1990) incl $15k per expert ($260 per expert-variable; other studies ~ $100/exprt-vbl)

Expert panel	Number of experts[1]	Year	Reference
Atmospheric dispersion	8	1993	Harper *et al* 1995 Cooke *et al* 1995
Deposition (wet and dry)	8	1993	Harper *et al* 1995 Cooke *et al* 1995
Behaviour of deposited material and its related doses	10	1995	Goossens *et al* 1997
Foodchain on animal transfer and behaviour	7	1995	Brown *et al* 1997
Foodchain on plant/soil transfer and processes	4	1995	Brown *et al* 1997
Internal dosimetry	6	1996	Goossens *et al* 1998
Early health effects	7	1996	Haskin *et al* 1997
Late health effects	10	1996	Little *et al* 1997
Countermeasures	9	2000	Goossens *et al* 2001

8 * 8 * 10 * …9 > 67,000,000

3. Experts, and their combinations, are statistical hypotheses

Case Name	weighting scheme	P-value	Mean Information
DISPERSION	Perform	0.9	1.024
	Equal	0.15	0.811
DRY DEPOSITION	Perform	0.52	1.435
	Equal	0.001	1.103
WET DEPOSITION	Perform	0.25	1.117
	Equal	0.001	0.793
ANIMAL	Perform	0.75	2.697
	Equal	0.55	1.778
SOIL/PLANT	Perform	0.0001	1.024
	Equal	0.0001	0.973
INTERNAL DOSE	Perform	0.85	0.796
	Equal	0.11	0.56
EARLY HEALTH	Perform	0.23	0.216
	Equal	0.07	0.165
LATE HEALTH	Equal	*******	0.28

Table 3: Performance scores for equal weight and performance based combinations, per panel

4. Dependence

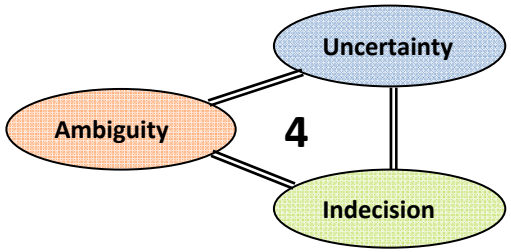
Dependencies:

Age Groups: Given that the true LD_{50} for individuals over 40 years old is determined to be above your 50% value, what is the probability that the true LD_{50} for individuals under 40 years old is also above your 50% value? Give your response by dose rate:

100 Gy/hr	_____
10 Gy/hr	_____
1 Gy/hr	_____
0.2 Gy/hr	_____

Dose Rate: Given that the true LD_{50} is determined to be above your 50% value for the higher dose rate, what is the probability that the true LD_{50} is also above your 50% value for the lower dose rate? Give your estimates by age group.

		Under 40	Over 40
100 Gy/hr	10 Gy/hr	_____	_____
10 Gy/hr	1 Gy/hr	_____	_____
1 Gy/hr	0.2 Gy/hr	_____	_____



5. Combination

Ship-borne NIS Reduce Great Lake Ecosystem Services:

A Structured Expert Judgment Study

Ecologists

John Rothlisberg

Center for Aquatic

University of Notr

Risk Analyst

Roger Cooke, Re

Economist

David Finnoff, U

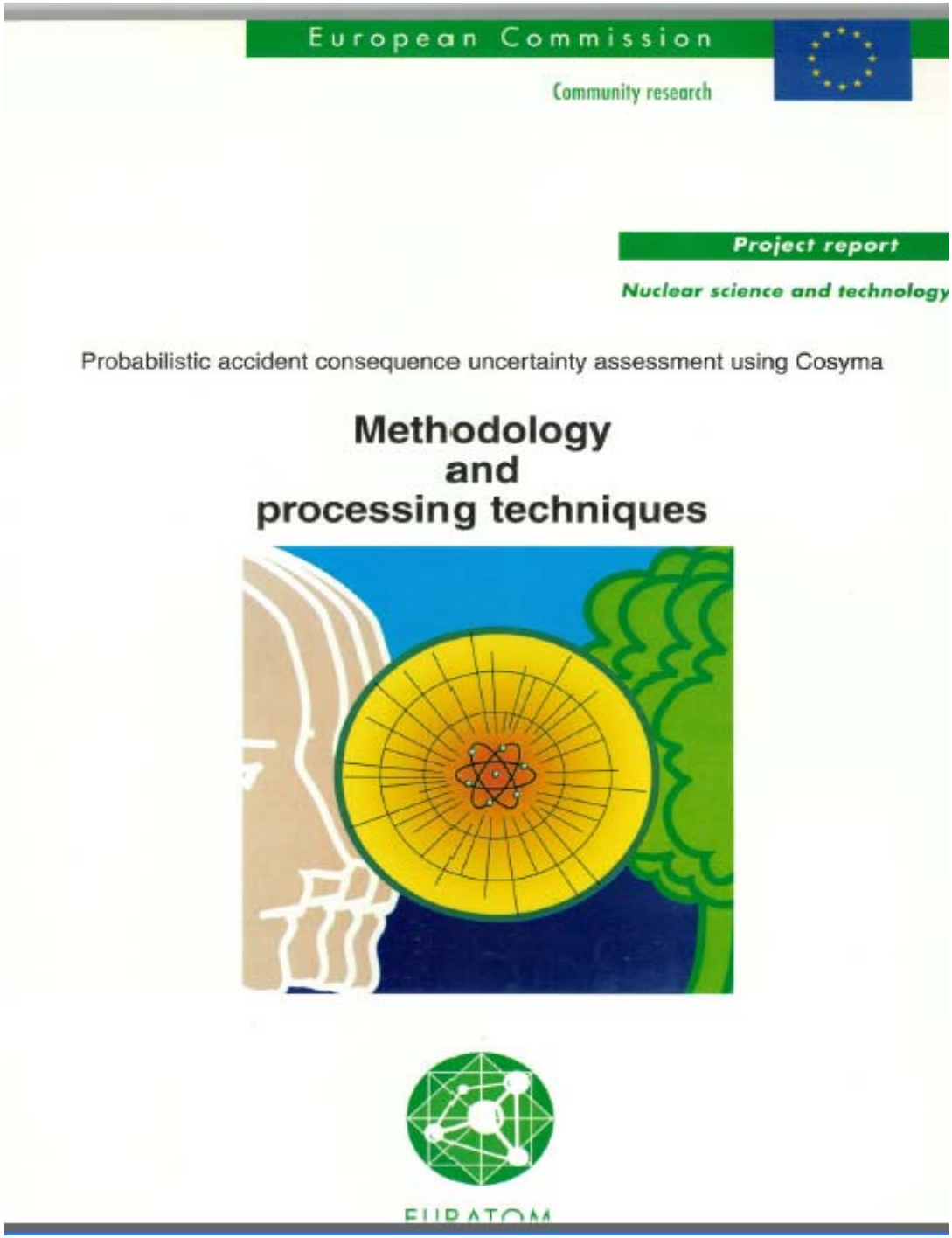
Funding

NOAA Sea Grant,

expert	P-value	Mean rel. inf	# Calibr Vbls	Unnormalized weight
1	4.03E-05	0.801	13	3.79E-05
2	0.09646	1.007	13	0.06771
3	0.00012	1.522	13	0.0001476
4	0.00012	1.508	13	0.0001177
5	0.00075	0.5782	13	0.0008441
6	0.4539	0.4212	13	0.1244
7	0.00012	1.17	13	0.0001161
8	4.86E-06	1.372	13	6.64E-06
9	1.91E-09	2.336	13	5.47E-09
PERF DM	**0.9281**	**0.4235**	**13**	**0.2403**
EQ WGT DM	**0.04411**	**0.2671**	**13**	**0.01353**

5. Combination

- Pre 1990
  - Linear Pool? Geom mean? harmonic mean? etc.
  - Marginalization, zero preservation, independence preservation, Bayesian externality
  - Scoring rules
  - Self-weights, peer weights
  - Graduate students in psychology
- Post 1990,
  - Real experts
  - Performance measurement
  - Training
  - Evaluate combination schemes against data

Even if you do not combine, you should validate performance, Else NOT SCIENCE

6. Probabilistic Inversion