Seven Myths of Risk
– an introduction to risk and the precautionary principle

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The concept of risk

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2. the *cause* of an unwanted event which may or may not occur.
3. the *probability* of an unwanted event which may or may not occur.
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2. the *cause* of an unwanted event which may or may not occur.
3. the *probability* of an unwanted event which may or may not occur.
4. the statistical *expectation value* of unwanted events which may or may not occur.
The concept of risk

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2. the *cause* of an unwanted event which may or may not occur.
3. the *probability* of an unwanted event which may or may not occur.
4. the statistical *expectation value* of unwanted events which may or may not occur.
5. the fact that a decision is made under conditions of *known probabilities* (“decision under risk”)
The first myth of risk

“Risk” must have a single, well-defined meaning.
Risk analysis

risk = probability × disutility
The second myth of risk

The severity of risks should be judged according to probability-weighted averages of the severity of their outcomes.
Values of (deterministic) outcomes

Probabilities

Risk assessment
The third myth of risk

Decisions on risk should be made by weighing total risks against total benefits.
RISK $
Ethical risk analysis

Respect every person’s prima facie right not to be exposed to risks!
The fourth myth of risk

Decisions on risk should be taken by experts rather than by laymen.
The fifth myth of risk

Risk-reducing measures in all different sectors of society should be decided according to the same standards.
Railways
Workplaces
Mammography
Air traffic
Nuclear energy
Risk calculus
The sixth myth of risk

Risk assessments should be based only on well-established scientific facts.
The seventh myth of risk

If there is a serious risk, then scientists will find it if they look for it.
A  0.0%  ⇒  0.5%
A  0.0%  ⇒  0.5%
B  1.0%  ⇒  1.5%
A  0.0%  ⇒  0.5%
B  1.0%  ⇒  1.5%
C  10.0%  ⇒  10.5%
A  0.0%  ⇒  0.5%  Detectable
B  1.0%  ⇒  1.5%  Individually indetectable
C  10.0%  ⇒  10.5%  Completely indetectable
Detectable
1 10^{-1} 10^{-2} 10^{-3} 10^{-4} 10^{-5} 10^{-6} 10^{-7} 10^{-8} 10^{-9}

Accepted
Detectable  Accepted