Risk Information in Decision-making

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Risk Analysis:

- Risk Assessment
- Risk Communication
- Risk Management

Outrage Factors

- Factor analysis of risk perceptions
- Outrage factors: anger, priority, action
- Relevance?

Outrage and Risk Assessment:

outrage

stress

illness

Outrage and Risk Communication:

outrage

doubt

conflict

Outrage and Risk Management:

outrage

perceptions

decisions

Strategy

- outrage factors
- recommendations
- decision models

1. Coerced

- **Voluntary:**
  home
- **Group:**
  office

Strategy: give people a choice

2. Industrial

- **Natural:**

  farms

- **Industrial:**

  labs, manufacturing, offices

Strategy: avoid comparisons

3. Exotic

- **Familiar:**

  heat, cold stress

- **Exotic:**

  mycotoxins

Strategy: educate

4. Memorable

- **Positive:**

  homes, farms

- **Negative:**

  hospitals, prisons

Strategy: acknowledge

5. Dread

- **Minor:**

  previous positive experiences

- **Major:**

  previous negative experiences

Strategy: acknowledge

6. Catastrophic

- **Chronic:**

  one or two complaints

- **Catastrophic:**

  mass psychogenic illness

  Strategy: use the same time frame

7. Unknowable

- **Well known, understood:**
  common microbial pathogens
- **Uncertain:**
  mycotoxins

Strategy: research

8. Outside control

- **Individual controls:**
  home heating and ventilation
- **Outside control:**
  office heating and ventilation

Strategy: empower

9. Unfair

- **Less powerful groups:**
  clerical staff
- **More powerful groups:**
  CEO's, Deans, etc.

  Strategy: study distribution

10. Immoral

- **Moral:**
  church
- **Immoral:**
  slum landlords

Strategy: examine ethical models

11. Suspicious source

- **Credible sources:**
  T.V. stations, some scientists
- **Suspicious sources:**
  government, industry

Strategy: enlist credible sources

12. Unresponsive process

- **Responsive process:**
  established mechanisms
- **Unresponsive process:**
  ignoring complaints

  Strategy: training

13. Vulnerable populations

- **Powerful populations:**
  wealthy populations
- **Vulnerable populations:**
  children

Strategy: acknowledge and address

14. Delayed effects

- **Acute**:

  heat, cold

- **Delayed:**

  sensitized responses

Strategy: prepare contingencies

15. Affects future generations

- **Short term:**

  acute toxins

- **Long term:**

  asbestos, mutagens

Strategy: educate

16. Identifiable victims

- **Anonymous:**
  unidentified victims
- **Identifiable:**
  identified victims

Strategy: search for victims

17. Not preventable

- **Preventable:**

  # of people allowed in buildings

- **Not preventable:**

  unknown agents

Strategy: stress risk reduction

18. Few benefits

- **Benefits:**

  production, research, teaching

- **Few benefits:**

  storage, unsuitable in other ways

Strategy: Cost-Benefit Analysis

19. Media attention

- **Positive attention:**
  HVAC systems
- **Negative attention:**
  suspected outbreaks

Strategy: study other outrage factors

20. Opportunity for collective action

- **Individual:**

  small facilities

- **Collective:**

  large complexes

Strategy: minimize collective opportunities

Implications for Environmental Health Professionals:

- **When hazards are high, cultivate outrage.**
- **When hazards are low, reduce outrage.**
- **Provide training throughout the organization.**

Decision Models:

- Optimist's model
- Pessimist's model
- Minimization of Regret model
- Expected Value model

Optimist's model:

- Room A: 2 - 8 *
- Room B: 3 - 7
- Room C: 4 - 6

- Therefore, select Room A

Pessimist's model:

- Room A: 2 - 8
- Room B: 3 - 7
- Room C: 4 - 6 *

- Therefore, select Room C

Minimization of Regret model:

	Range	Regret	
ν Room A:	**2 - 8**	**0 - 2**	
ν Room B:	**3 - 7**	**1 - 1**	*
ν Room C:	**4 - 6**	**2 - 0**	

ν Therefore, select Room B

Expected Value Model:

- Room A: 2 - 8 = 5
- Room B: 3 - 7 = 5
- Room C: 4 - 6 = 5

- Therefore, all the options are of equal value.

Ethical systems:

- Utilitarian: maximize Uy + Uz
- Egalitarian: maximize the minimum of Uy, Uz
- Elitist: maximize the maximum of Uy, Uz
- Libertarian: increase both Uy, Uz

Economic Models

- Willingness to pay
- Equitable allocations
- Human Capital
- Environmentalism

Legal Models

- Market incentives
- Regulatory standards
- Advisories
- Technological controls