Ethical Consideration in Radiological Protection

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Elements of Ethical Consideration

Dose & Effect



Risk & Benefits



Protection Approach

Different individuals

Different practices

Soundness **Uncertainty Variability**

Inference

Precautionary principle

Health care Job Compensation **Happiness**

Size of risk/benefit Distribution of risk/benefit Collective vs. individual

Pragmatism

Acceptability

Risk perception

Ethical background

Virtue, Individual right, Freedom, Dignity, Justice, **Equity, Fairness, Prudence, Integrity**

Consequentialism

Utilitarian

Egalitarian

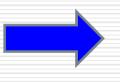
Prioritarian

Deontology

Teleology

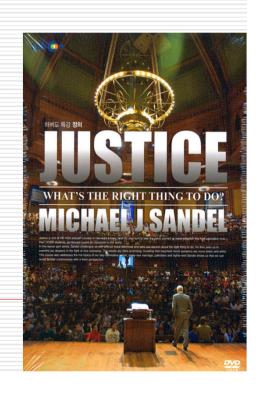
Stream of Thought

Utilitarian Collective value



Justice Individual Right

- Trivial risk is not necessary Acceptable risk, and vice versa
- Acceptability may differ after who imposes the risk
- Stakeholders' voice in judgment



Protection System Elements involving Judgment

Appraise Health Effect

Set Dosimetric System

Set Protection Objectives

Frame Protection Principles

Scope Protection Task

Provide Numerical Guides

Nominal risk LNT model, DDREF

Equivalent dose/Effective dose Reference person

Appropriate level of protection without unduly limiting desirable activities

Justification Optimization Dose/risk limitation

Exclusion/Exemption Separation of exposure situations/types

Limits/Constraints/Reference levels Representative individuals

What should be considered in line with contemporary ethical thought?

What in the system of RP can be ethically challenged?

Issues first, Answers later

Health Effects

- Sufficient knowledge?
- LNT model
 - Prudent enough?
- Nominal risk approach: sound?
 - Genetic susceptibility
 - Smoker/non-smoker(Rn risk)
 - Conceptus/children
- □ DDREF: Still needed?

Dosimetry

- Macrodosimetry(mean absorbed dose)
- Radiation weighting factors
 - W_R of low energy beta: sound?
- Tissue weighting factors
- □ Reference person: higher percentile?
 - Physiology
 - Nutrition data
- Operational quantities: conservative?

Objective of Protection

- The proviso 'without unduly limiting desirable activities' is needed?
- What is 'appropriate' ?
 - Do we need a quantitative risk objective?
- Commission vs. Omission
 - Is moral reprehensibility different?

Principles

- Justification
 - Who does justify?
 - On what ground?
- Optimization
 - Optimize what? How?
 - Indirect cost? E.g. ethical cost
- □ Dose/Risk Limitation
 - Who decide 'acceptable' ?
 - Size of acceptable risk?

Scope & Approach

- Exclusion
 - Natural vs. Artificial ?
- Exemption
 - Utilitarian approach?
- Different approach is reasonable?
 - Natural vs. Artificial
 - Creating exposure (practice) vs. Reducing exposure (intervention)

Separate Approach

- Exposure situations
 - Prudent enough?
- Exposure types
- Exposed persons
 - How well respect right of individuals?
 - Informed consent
 - □ Full free consent?
 - □ Consent from members of the public?

Numerical Guidance

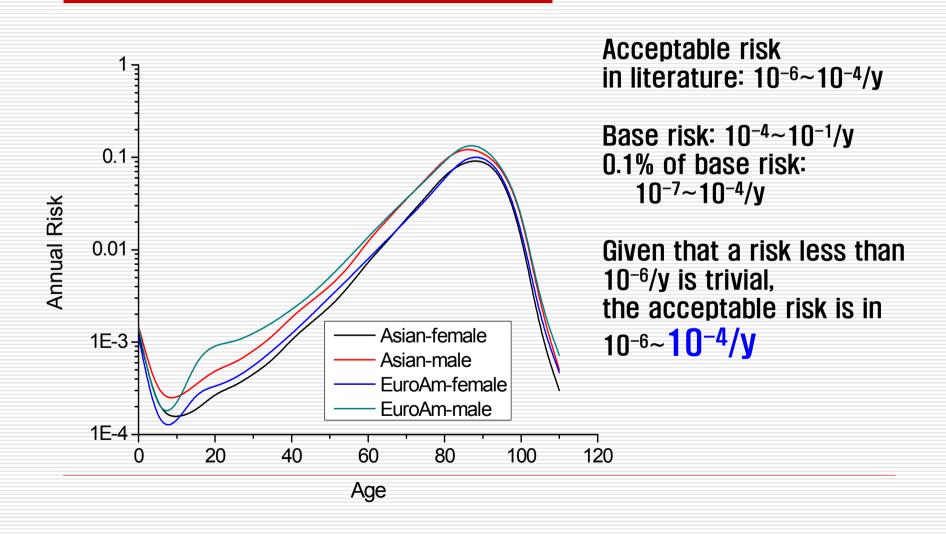
- What is a special (emergency) exposure?
- □ Consensus on the limits?
- □ Adequate protection of minors?
- What is the activity criteria for foodstuffs?

Others

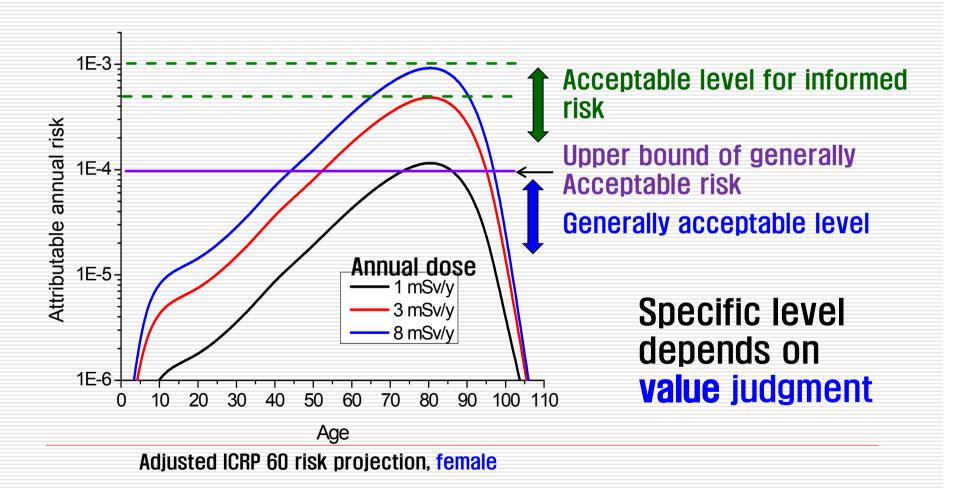
- Any other areas involving ethical decision?
- Lessons learned from Fukushima?
- Opportunity of individual control over risk?

On Acceptable Risk

Acceptable risk



Acceptable risk vs. Attributable risk



Informed Consent

- □ Conditions of free IC
 - Disclosure
 - Understanding
 - Voluntariness
 - Competence
- □ IC of Public
 - Neither practical nor possible
 - Implied IC can be considered? Or what?

