Needs of Ethical Consideration in the System of Radiological Protection

Group 2
Background

- Given: Value judgments based on ethics are incorporated, explicitly or implicitly, in many parts of the system of RP

- Environment of RP changes
  - Major radiological events (e.g. A-bomb, Chernobyl accident, Fukushima accident)
  - Stream of thought on Value
  - Revolution in communication (Internet, SNS)
Stream of Thought

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

- Identify ethical values in the system of RP and any ethical issues in front of RP
- What could be ethically challenged?
- What are needed from ethical viewpoint?
Approach

- Identify ethical elements in RP system
  - Judgment, modeling
- Project current or potential issues/questions/challenges on the ethics domain
- What do we need improvement?
- Issues first, Answers later
Elements of Ethical Consideration

Dose & Effect → Risk & Benefits → Protection Approach

Soundness, Uncertainty, Variability → Health care, Job, Compensation, Happiness → Different individuals, Different practices, Pragmatism

Inference → Size of risk/benefit, Distribution of risk/benefit, Collective vs. individual → Acceptability

Precautionary principle → Risk perception

Virtue, Individual right, Freedom, Dignity, Justice, Equity, Fairness, Prudence, Integrity → Consequentialism

Utilitarian, Egalitarian, Prioritarian, Deontology, Teleology
Protection System Elements involving Judgment

- Appraise Health Effect: Nominal risk, LNT model, DDREF
- Set Dosimetric System: Equivalent dose/Effective dose, Reference person
- Set Protection Objectives: Appropriate level of protection without unduly limiting desirable activities
- Frame Protection Principles: Justification, Optimization, Dose/risk limitation
- Scope Protection Task: Exclusion/Exemption, Separation of exposure situations/types
- Provide Numerical Guides: Limits/Constraints/Reference levels, Representative individuals
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 objective?

☐ Commission vs. Omission
  ■ Is moral reprehensibility different?
Principles

☐ Justification
  - Who does justify?
  - On what ground?

☐ Optimization
  - Optimize what? How?
  - Indirect cost? E.g. Psychological cost

☐ Dose/Risk Limitation
  - Who decide ‘acceptable’?
  - Size of acceptable risk?
Scope & Approach

- Exclusion
  - Normal background?

- Exemption
  - Is it not utilitarian thinking?

- Different approach is reasonable?
  - Natural vs. Artificial
  - Creating exposure (practice) vs. Reducing exposure (intervention)
Simplification/Separate Approach

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

- Consensus on the limits?
- Adequate protection of minors?
- How a person becomes an emergency worker?
- What about the activity criteria for foodstuffs?
Others

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

- Ethical considerations have been incorporated well in the System of RD
  - From utilitarian to deontological ethic

- However need critical review to examine if individual right to happiness (or justice) is respected enough, particularly for the minors
Results 2

- ICRP should provide more friendly the rationale behind the judgments important in RP
  - Justification of using nominal risk
  - Basis of dose limits
  - Basis of selecting reference person, representative individual

- The term *members of the public* should be defined more rigorously
  - Need to distinguish from informed individuals with certain benefit in return
Results 3

- Should dose limits be continuously based on the concept of acceptable risk? Any alternatives?
  - How to get consensus on acceptable risk?

- How to deal with potential exposure (risk to be exposed)?
  - Issue on the range of EPZ
Results 3

- Proactive communication strategy should be sought
  - One-way flow of information is not respected in the era of SNS
  - ICRP should come close to social issues (low-dose effect, activity in foodstuff, drinking water, commodity)
  - Speak what the public want to hear
Thanks