Science and values in radiation protection – Regulator's remarks

Dana Drábová

State Office for Nuclear Safety,
Prague, Czech Republic

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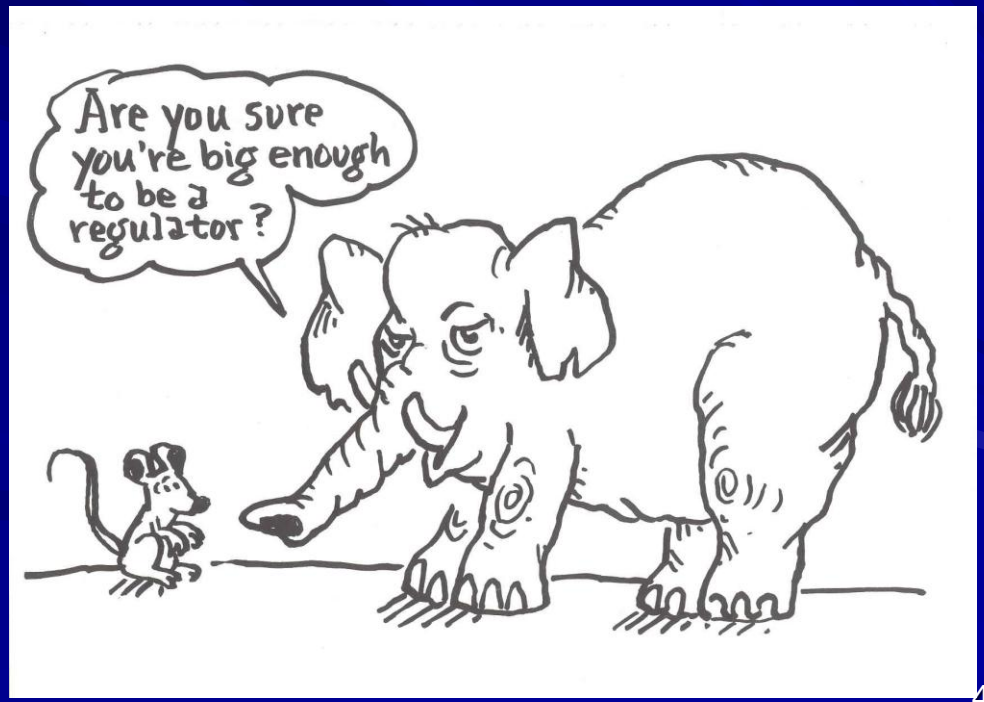
What is regulation

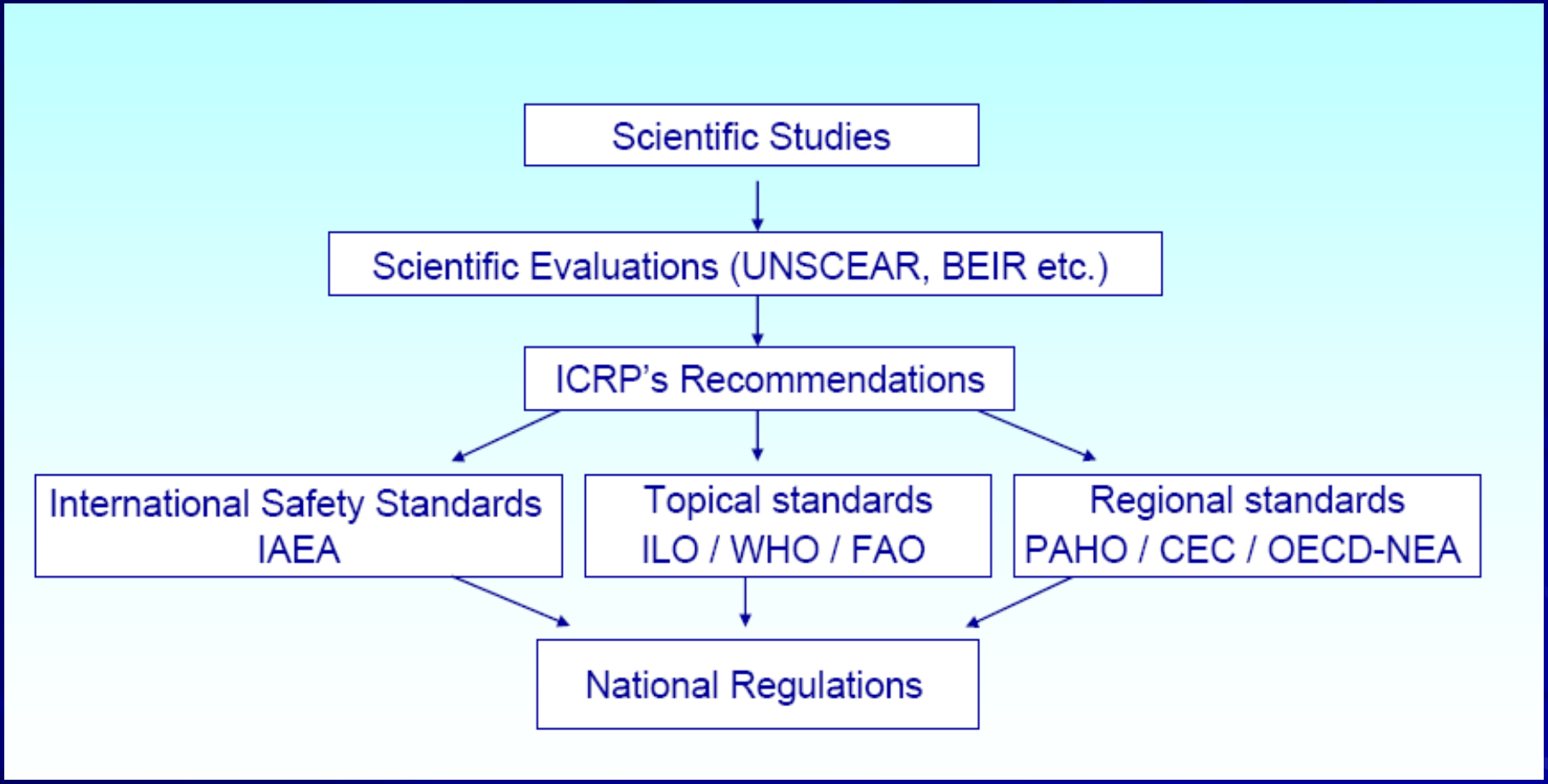
- **Regulation** refers to the diverse set of instruments by which governments set requirements on enterprises and citizens. Regulations include laws, formal and informal orders and subordinate rules issued by all levels of government, and rules issued by non-governmental or self-regulatory bodies to whom governments have delegated regulatory powers. Regulations fall into three categories:
- ***Economic regulations*** intervene directly in market decisions such as pricing, competition, market entry, or exit..
- ***Social regulations*** protect public interests such as health, safety, the environment, and social cohesion. The economic effects of social regulations may be secondary concerns or even unexpected, but can be substantial.
- ***Administrative regulations*** are paperwork and administrative formalities -- so-called "red tape" -- through which governments collect information and intervene in individual economic decisions. They can have substantial impacts on private sector performance.

Basic mission of radiation protection regulatory authority

Effective protection of the public health and safety, security, and of the environment against undue risk from radiation without unduly limiting the beneficial practices giving rise to radiation exposure.



From Science to Radiation Protection Regulations



The regulatory requirements are always anchored in the national legislation, because they imply the exercise of authority in the case a utility/person fails to live up to the requirements.

The interface between science and regulatory decision making

- Science:
  - Research and development
  - Technical and research support
  - Monitoring and data collection
  - Review and interpretation of technical investigation
  - Assessment and health and environmental risks

The interface between science and regulatory decision making

- Regulatory decision making
  - Decision about the acceptability of risks and tradeoffs between the costs and benefits of interventions to prevent and reduce unacceptable risks
  - The use of science to make judgments about the formulation and implementation of policy (e.g. quantitative risk assessment)
  - Development of policy specifically for science (setting priorities for research directions and funding)

Different roles for scientist and regulators

- In contrast to the scientist the regulator must go beyond consideration of the scientific facts supporting the decision process. The challenge of regulating risks involves balancing science, values and economics.
- Other factors such as legislative mandates and political considerations can also play a major role in shaping regulatory decisions.

Categories of information essential to regulator:

- Science
  - Public health and ecological risks
  - Technical feasibility of risk management options
- Law
  - Legislative mandates
  - Regulatory options
- Economics
  - Costs and benefits
  - Economic feasibility of risk management options

Categories of information essential to regulator:

- Public values
  - Public sensitivity of risk
  - Credibility of risk management options
- Communication
  - Public and stakeholder involvement
  - Communication strategy for risk management options
- Politics
  - Political importance of risk
  - Political acceptability of risk management options

Sensible regulation IS about:

- Ensuring that workers and the public are properly protected
- Providing overall benefit to society by balancing benefits and risks, with a focus on reducing real risks – both those which arise more often and those with serious consequences
- Enabling innovation and learning not stifling them
- Ensuring that those who create risks manage them responsibly and understand that failure to manage real risk is likely to lead to robust action

Sensible regulation IS NOT about:

- Creating a totally risk free society
- Generating useless paperwork mountains
- Scaring people by exaggerating or publicising trivial risks

The Regulators' Challenge

- "Regulators, under unprecedented pressure, face a range of demands, often contradictory in nature:
  - be less intrusive - but more effective;
  - be kinder and gentler - but don't let the bastards get away with anything;
  - focus your efforts - but be consistent;
  - process things quicker - and be more careful next time;
  - deal with important issues - but do not stray outside your statutory authority;
  - be more responsive to the regulated community - but do not get captured by industry."

The Regulatory Craft, Malcolm Sparrow (2000)

Evolving Role of Regulator

- Approaches to regulation must be continuously assessed due to dynamic context
- Boundaries of activity between licensee and regulator needs adjusting
- Practical approaches must allow licensee and regulatory body achieve their respective objectives

Changes in Regulatory Approach

- Regulatory approach influenced by many parameters
- Impetus for changes in regulatory approach due to dynamics of various inputs
- Appropriateness of current method and amount of regulatory inspection and oversight is examined
- An ideal world would rely on licensee self-regulation

Regulatory Oversight Shifting to Processes

- In the past: inspection and review of technical solutions
- Today: outspoken strategy to move towards inspection and review of licensee own work processes for ensuring safety
- Risk informed regulation: allocation of resources for regulatory activities governed by their importance to safety

Shift to „Soft Issues“

- As important as technical issues, not as readily solvable
  - Safety management
  - Social, human factors
  - Communication issues
- Prescriptive × goal setting legislation

Regulatory approach can affect

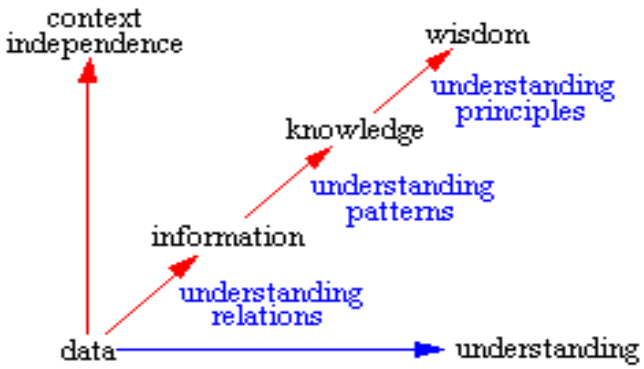
- Whether the licensee or regulator takes primary responsibility for safety
- How clear requirements and expectations are to licensees
- Significance of safety issues identified
- Expertise needed by regulators and licensees
- Resources used by regulators and licensees
- Flexibility given to licensees
- Public credibility

Regulators' challenge in knowledge-intensive society

- Knowledge management has always been at the core of regulatory bodies tasks – inseparable from strategy, planning, consultation, and implementation – but regulatory bodies are now at risk of falling behind the practices of leading-edge companies in this field. This has important consequences for the competitiveness of public organizations within a country or internationally.
- Recruitment is also affected as job seekers increasingly value jobs that continually improve their knowledge, providing them with future career opportunities.

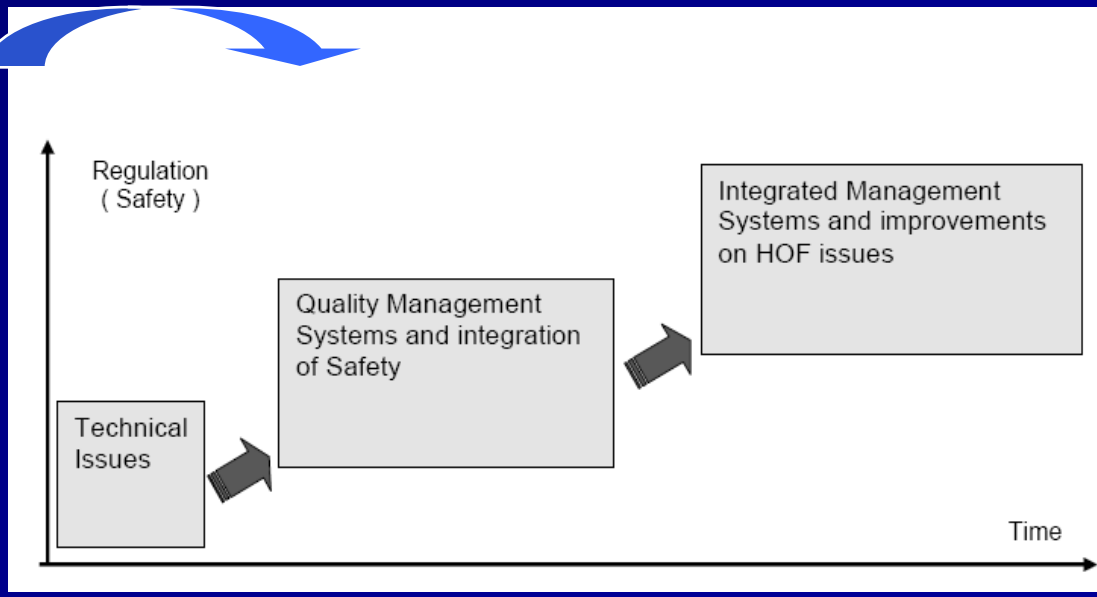
Regulators' challenge in knowledge-intensive society

- Governments no longer have a monopoly on knowledge in their own field as information about policies and service delivery has become more directly available to citizens, lobby groups, users, etc.
- To keep citizens' confidence regulators are also required to increase the knowledge basis of their activities and to keep track and integrate new knowledge as it is increasingly rapidly produced.



A collection of data is not information.
A collection of information is not knowledge.
A collection of knowledge is not wisdom.
A collection of wisdom is not truth.

With progression of regulatory approaches over time we need more and more to understand not only relations and patterns but first of all principles. This can be achieved by knowledge sharing and management on international scale



Regulators' challenge in knowledge-intensive society

- Regulators, like most other organizations in the nuclear field, face the challenge of capturing and managing its nuclear knowledge due to the ageing workforce
- A generation shift is coming - many people who are well aware of WHAT is said in safety legislation, standards and recommendation are less conscious of WHY it is said
- For addressing this challenge we need tools for transferring data into information, information into knowledge and knowledge into wisdom

RP regulator and the public

Recent experience of SUJB shows some controversial aspects of offering information on licensee safety performance to the public. We must have in mind that:

- The expectations of the public are very high
- The public wants to be protected by a perfect regulator
- The public will not forgive any weakness of the regulator

RP regulator and the public

On the other hand, to build up "sustainable" trust of the public we must try to explain that:

- The persons of the regulator staff are good and motivated but not perfect
- The regulator surveillance and inspection programme cannot cover 100%
- Incidents and accidents cannot be totally avoided, but occurrence probability can be reduced
- Scientific knowledge is limited by several uncertainties

RP regulator and the public

Do not try to be loved by the public

Do not look for easy success by playing attractive roles like:

- **Little David winning against Goliath**
- **The severest among all regulators**

Expert and Public Discourse:

- Lay people and experts are:
  1. Speaking different languages.
  2. Solving different problems.
  3. Disagree about what is feasible.
  4. See the facts differently.

The Role of Trust:

- Trust is imperative for effective risk communication to take place.
  - Trust has been shown to reduce social uncertainty and complexity and influence risk perception and the acceptance of risks.
  - Distrust has been associated with technological stigma, and the social amplification of risk that often follows major public policy failings.
- Five Components of Trust (Renn and Levine, 1991).:
  - Perceived Competence
  - Objectivity
  - Fairness
  - Consistency
  - Faith.
- Trust is context specific because it is based on similarity and agreement.

The Role of Trust (2):

- Focus on:
  - The importance of the issue at stake.
  - High moral importance vs. low moral importance.
  - Concentrate on local relationships and interactions.
- Successful stakeholder engagement:
  - Should only be interpreted within the context of pre-existing social relations.
  - Create an awareness of shared values and agreement.
    - Common goals, overlaps of interest.
- Trust is easy to destroy and extremely difficult to rebuild, with the most common of trust-damaging incidents being caused by companies or governments.

What Does This Mean for Radiation Protection?

- The public do not believe they are in control of the decisions about acceptable risks.
- Public opinion polls as road maps.
- Establish relevance.
- Identify shared values and agreement.
- Set an example.

Concluding remarks

- It is obvious that the current challenges of RP regulation will merge more and more into the area of the management and development of the processes of the effective control under the conditions given by the actual situation and needs. The possibilities of the society and interests of different stakeholders will continue to play an important role.
- It would be desirable that the RP will be settled and kept on the reasonable and effective level in the long term with clearly defined principles and rules. And it is necessary to prevent its absorption by itself and its problems, so that the regulated practices will not be gradually pushed aside on the second level of its interest.

Tasks for near future

- knowledge management, competent staff, technical support
- effectiveness and efficiency of regulation
- safety management, safety culture
- education and research
- trust building

Coming together is a beginning,
keeping together is a progress,
and working together is a success.