



**Nuclear safety  
regulation in a  
changing environment**



# Specification-standard (Prescriptive) Legislation

Lays down relatively precisely what has to be done (or to be avoided) to fulfil legal responsibilities



# The Traditional Empirical Approach

- Prescriptive statutory regulation of the industry.
- Periodic modifications to reflect changes in technology and community expectations.



# The Traditional Empirical Approach

**Relatively high standards of safety**

**at the cost of**

**High degree of systematic official supervision.**

Detailed law requiring continual extension and elaboration



# **Performance-standard (Enabling) Legislation**

**Lays out the responsibilities and/or the desired outcome, but does not attempt to stipulate how "reasonable care" is to be exercised**



# **Licensee must exercise "Reasonable Care" to provide:**

**safe components and systems**

**safe system of work**

**competent staff and adequate supervision**



## "Reasonable" Care

licensee must take to reasonable limits the possible precautions against foreseeable consequences

what is reasonable in a particular case depends on the circumstances of that case



# "Reasonable" Care

- **what is foreseeable?**
- **what is the degree of likelihood or probability of harm?**
- **what is the severity of the harmful consequence?**
- **what is the technical feasibility, availability, cost and inconvenience associated**

# Legal Sanctions

- **”Advice” -- formal and informal**
- **Improvement orders**
- **Prohibition orders (Shutdowns)**
- **Citations or on-the-spot fines**
- **Prosecutions**
- **Loss of licence or permit to operate**



# Lessons for Regulatory Authorities

- Criticism of performance-based legislation from those who miss the security of knowing exactly what is required to ensure bare compliance with the strict letter of the law
- More progressive operators treat legislation as a basic guide to minimum standards
- Excellence in the safety culture field as a corporate philosophy or "article of faith" -- A safe operation is an efficient operation



# •Lessons for Regulatory Authorities

- In framing new legislation, regulatory authorities must take account of both progressive and enlightened operators and their more reactionary counterparts
- Need to provide a framework of law which gives the progressives the flexibility they need while constraining the worst excesses of the reactionaries
- **Rational mix of enabling and prescriptive legislation**

# Lessons for Regulatory Authorities

- Regulatory authorities have an overview of the utilities
- Collection, collation and analysis of information on problem identification and risk control
- Dissemination of findings



# The legislative equation for engineers, scientists and technologists

$$\mathbf{T + C = K}$$

**Where**

**T = trust**

**C = control and**

**K is a constant**