

# Ethical Issues and Societal Expectations

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From the time high-level radioactive waste was created, I believe it is fair to state, nuclear pioneers recognized that they had an ethical obligation to manage the material in unprecedented ways. And although technical solutions for the management of the waste would prove to be far more problematic and more costly to implement than ever imagined, this obligation has not only endured, but has become more explicit and multidimensional. So much so, that it now subsumed under a more general rubric of “societal expectations.”

The background document distributed in advance of this workshop contains five essays—authored by Kjell Andersson, Andrew Blowers, Carl Reinhold Bråkenhielm, Francois Dermange, and Patricia Fleming—that are relevant to the question of ethical issues and societal expectations, the topic of my to talk.<sup>1</sup> I commend each of the five papers to you. Rather than trying to summarize them, I would like to take them as a starting point and to share some of my own thoughts and observations.

As a concept, “societal expectations” suffers from the same limitations as “public interest.” It is hard to define and thus very hard to measure. Within a given pluralistic society, there are many, often contradictory, expectations. Consequently, acceptable conflict management mechanisms need to be developed and exercised. Finally, societal expectations may vary considerably from country to country. Given the “fuzziness” of the concept, gaining a historical perspective might be helpful in understanding whether we are dealing with transient and ephemeral ideas or objectives that a stable and enduring.

## AN HISTORICAL PERSPECTIVE

To do that, I want to dust off a document written more than 30 years ago, *Proposed Goals for Radioactive Waste Management*.<sup>2</sup> The study was requested by the Commissioners of the U.S. Nuclear Regulatory Commission. A seven-person Task Group, made up mostly of outsiders, was composed of individuals with backgrounds in philosophy, social science, public policy, nuclear engineering, radiation effects, geology, and law. The Task Group met over the course of more than one year, interviewed more than two dozen specialists, and held two meetings with stakeholders. Comments were sought on the draft document; however, the Commission never adopted the proposed goals.

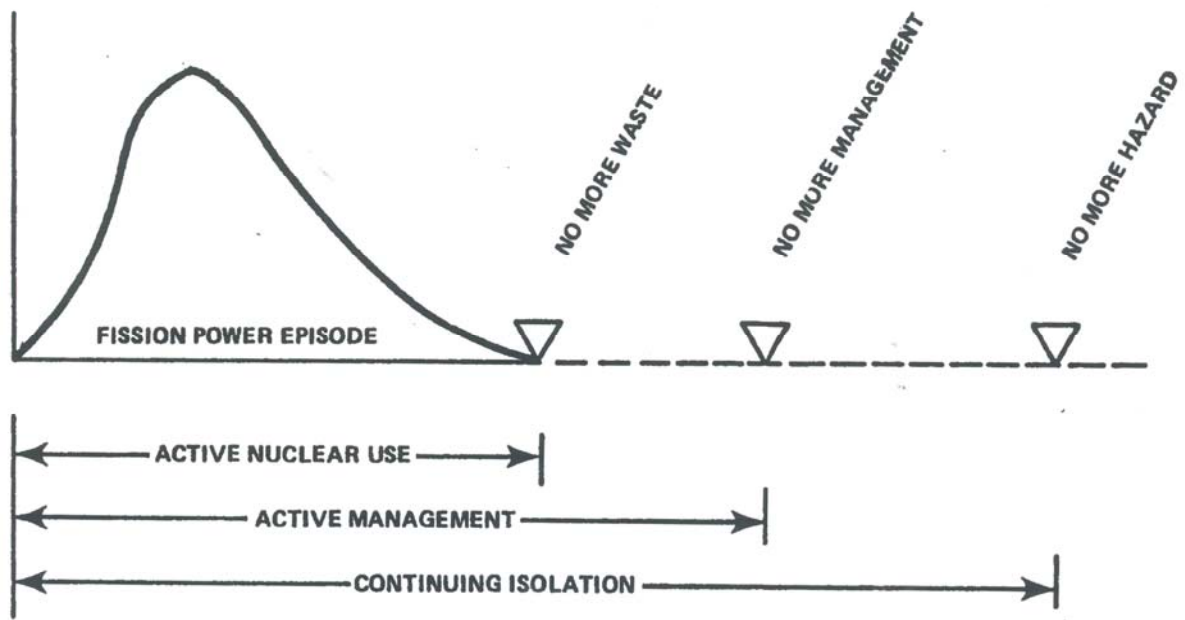
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\* The views presented here do not represent the views of the U.S. Nuclear Waste Technical Review Board, an independent federal agency charged with evaluating the technical and scientific validity of the U.S. Department of Energy’s program to dispose of high-level radioactive waste and spent nuclear fuel.

The Task Group recognized from the start that different goals might be applicable for different time periods. For its purposes, three periods seemed especially appropriate:

- Period of active use of commercial or military nuclear power
- Period of active management of nuclear facilities
- Period of continuing isolation of radioactive wastes when active management ceases.

Figure 1 below depicts each period.



### ***Expectations during the Active Use of Nuclear Power***

Twenty-one objectives were advanced. Many of the goals were similar, if not identical, to what are widely viewed as societal expectations today. For example,

There should be broadly based involvement of interested groups, jurisdictions, and citizens in decisions and in the planning process.

Some goals are similar but have important, if nuanced, differences. For example,

The existence of scientific, technological, and *organizational* uncertainties...shall be made explicit along with the logic and procedures used to address those uncertainties.

A few goals seem novel. For example,

Values not easily quantifiable shall be actively considered in the decision process.

Finally, several goals appear dated, that is, they seem to have faded from contemporary discussions of societal expectations. For example,

The waste management system shall be designed in such a way that its operation does not depend on the existence of the commercial nuclear power system.

### ***Expectations during the Period of Active Management of Nuclear Facilities***

The Task Group identified nine objectives. Most goals were similar, if not identical, to what are widely viewed as societal expectations today. For example,

Adequate documentation of present activities and decisions shall be provided to allow future generations with a basis for action.

One goal seems to offer a somewhat nuanced formulation.

If wastes are disposed on earth, their retrievability—assuming a technology as advanced as present—*shall not be precluded*.

One fairly novel goal was proposed.

The organizational elements of the waste management system shall not be affected by or require changes in the political system.

Finally, one goal seems dated.

The organizational elements of the waste management system shall not be self-perpetuating, nor shall they permit waste management activities to become ends in themselves, independent of the needs of society.

### ***Expectations When Active Management Ceases***

Four goals were proposed for this period. All of them are consistent with what are generally considered societal expectations today. For example,

The waste management system shall not require long-term stability of social and governmental institutions for its secure and continued operation.

The waste management system shall be capable of meeting all relevant radiation standards and criteria for both normal and accident situations throughout its operation.

## CONCLUSIONS AND OBSERVATIONS

For the most part, societal expectations in the United States appear to be quite stable over a period of more than 30 years. Relatively few goals proposed in the Nuclear Regulatory Commission document of 1978 now seem to be dated. Many of the ethical issues raised in recent years were anticipated in the document, although those ethical issues seem no closer to resolution today than they were 30 years ago.

In two areas, however, there are clear differences in emphasis between expectations articulated in the last few years and those proposed in 1978. Then the emphasis was on operational reliability of organizations and institutions. In particular, much care was taken to discuss the inherent limitations on *bureaucratic error-correction*. Nowadays, the focus is more on *bureaucratic behaviors* associated with carrying out decision-making processes. The current emphasis is on the importance of trust, transparency, and accountability.

Having begun my involvement in radioactive waste management policy-making many, many years ago, the earlier concerns with the limitations on bureaucratic error-correction still resonate with me. Indeed, at the risk of sounding like a heretic, the Nuclear Regulatory Commission document seems to provide a healthy dose of skepticism about the reliability of a step-wise decision-making process. In fact, organization theorists understand well the reasons why such a process may be more problematic than currently presumed. In the domain of radioactive waste management, error signals are notorious unclear. Strong disagreements over objectives and value trade-offs often arise. Finally, the key prerequisite for reliable error detection—*independence*—is often at odds with the key prerequisite for reliable error rectification—*interdependence*.

So where are we left? The good news is that societal expectations for post-closure and post-monitoring repository performance seem to be few. The less good news is that it is unclear just how far we have come in the last 30 years in meeting those expectations.

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<sup>1</sup> *Regulating the Long-term Safety of Geological Disposal of Radioactive Waste: Practical Issues and Challenges*, Workshop Proceedings, Paris, France, 28-30 November 2006, NEA-6423.; web notice: <http://www.oecdbookshop.org/oecd/display.asp?k=5KZLC20PXC5&lang=en>

<sup>2</sup> W, P. Bishop et al., *Proposed Goals for Radioactive Waste Management*, U.S. Nuclear Regulatory Commission, May, 1978, NUREG-0300.