



NUCLEAR SAFETY AND MODERN SOCIETY



The effects of science and technology on human society are rapidly becoming complex and profound, and increased concern is being expressed in many quarters. On the one hand, there is much pressure to direct more and more scientific and technological attention to the solution of social problems. On the other hand, there is a rising tide of feeling that science and technology are villains responsible for poisoning the air, spoiling the landscape, and generally dehumanizing everything. Pure scientists tend to deplore both of these trends as potential threats to their domain. [For an excellent exposition and some proposed solutions, see the AAAS presidential address by D. K. Price, "Purists and Politicians," *Science*, 163, 3862, 25 (January 3, 1969).]

The nuclear industry may well take encouragement from the demand for more attention to social problems. Nuclear technology has much to contribute to human welfare, while rapid expansion of the industry seems almost guaranteed by the economic facts of life.

Meanwhile, the nuclear industry may have real cause for concern about the rise of anti-science and anti-technology feeling. Many who charge that technology is a threat to humane values are using extreme views of nuclear hazards as a prime example of their thesis. Yet the industry must find a realistic middle ground somewhere between the extremes of ultra-conservative safety limits and a disregard for public welfare.

We have made some important progress. We are learning to distinguish between "hazard" and "safety," and we have become less obsessed with the ultimate potential for damage. We are abandoning the concept of "maximum credible accident" as irrelevant to reality. We are paying less attention to spectacular computations of energy release as a function of reactivity input or ramp rate; the reactivity of a system is not an independent variable, but is determined by other factors, and may well be a minor consideration in an actual plant malfunction. More important, we are making realistic attempts to study nuclear safety as a problem in quantitative reliability analysis.

These trends are all good. They will help us to understand the problem better, they will serve to keep costs down, and they will reassure some of the critics. But this may not be enough.

Patching up the public image by mass-media manipulation is not the answer. Public acceptance must be earned honestly. Let us take the initiative in demonstrating not only that we understand and respect humane values, but also that we give them full weight in our judgments. This may require some self-education and some reexamination of our basic assumptions. For example, we might listen to our humanistic critics more respectfully; they have much of value to teach us. Also, if we could abandon our precious assumption that all applications of modern technology are automatically beneficial, our critics would listen to us more respectfully. Among other benefits, realism in nuclear safety might become more respectable and more generally understood.

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