

relative probabilities of various accident sequences, and the beginning of an effort to provide absolute probabilities." The panel concluded that much greater use could be made of the RSS methodology in identifying critical safety hazards and hence in readjusting regulatory priorities. For instance, it said that whereas the RSS had identified human error (among other things) as an important contributor to overall risk, this was not yet adequately reflected in the priorities of the NRC's research and regulatory groups.

But the panel cautioned against trying to apply the RSS methodology where adequate data are lacking, and, in briefing the NRC on its findings on 7 September, Lewis and the other panel members indicated that to attempt to redo the RSS now would be a bad idea.

The panel characterized the RSS as sorely lacking in "scrutability," by which it meant that to try to follow any of the particular fault-tree/event-tree analyses from beginning to end tends to be a baffling and frustrating experience. This inscrutability had interfered with peer review of the RSS and lessened confidence in it by the technical community, the panel indicated.

But the panel suggested that controversy surrounding nuclear power is such that peer review of an AEC or NRC report on reactor safety would have been a troubled process at best. "... [In] the area of reactor safety, a peer comment has come to mean anything written by anybody asserting anything about anything," the panel said. In addition, part of the NRC staff was said to have drifted into a stance which can at best be described as defensive, and at worst as a "seige mentality."

The only dissent voiced by a member of the Lewis panel had to do with a section of the panel's report addressing an accusation by the Union of Concerned Scientists (UCS) that the RSS was intellectually dishonest. It discussed in some detail a specific complaint by the UCS that the Rasmussen study group had "suppressed" or omitted from its report an entire section on quality control showing "either the unreliability of reactor safety systems or the indeterminacy of that question."

The panel found the accusation to be without merit. But von Hippel dissociated himself from this part of the report because, as he explained to *Science*, he felt that if the panel was going to go into the question of intellectual honesty at all, its finding in this respect should deal with the RSS as a whole. Von Hippel said there were a number of things about the executive summary and main

body of the study that troubled him.

For instance, he said, there was the fact that, despite criticism on this point from peer reviewers, graphs in the final report's executive summary still failed to note that the few deaths shown for reactor accidents did not include the hundred times larger number of cancer deaths which had also been calculated in the study. (The panel itself characterized the summary as a "poor description" of the report and as lending itself to misuse.)

Nevertheless, von Hippel did go along with other panel members in accepting a summary prepared by Lewis which commended the RSS as a "conscientious and honest effort" to apply fault-tree/event-tree analysis to reactor safety. Von Hippel told *Science* that he suggested using a term such as "monumental effort" in-

stead, but, when Lewis insisted on his choice of words, "I went along with it because I did not want to be put in the position of saying the report was dishonest."

All five members of the NRC were present to hear Lewis and other panel members discuss their findings and recommendations, and, to all appearances, their report was well received. The kind of uncritical acceptance the Rasmussen study once enjoyed may be a thing of the past. Certainly it would be awkward for any of the commissioners to do as Marcus Rowden (a former NRC chairman) did in a speech 2 years ago and confidently state that "the risks from potential nuclear accidents would be comparable to those from meteorites."

—LUTHER J. CARTER

## Califano Reviews New DNA Rules

Significant changes in the administrative parts of the NIH's revised recombinant DNA guidelines may be made as a result of a hearing held on 15 September by HEW general counsel Peter Libassi.

The revised guidelines have already been publicly reviewed by NIH director Donald Fredrickson (*Science*, 6 January), but a second review was ordered by HEW Secretary Joseph Califano. Libassi said Califano had asked that special attention be paid to the procedures for administering and revising the guidelines, to the mechanism for creating exemptions, and to the membership of the NIH and local committees that supervise the research.

The hearing took place at a juncture when the steam finally seemed to have escaped from Congress's effort to legislate, leaving the initiative with the Administration. A sign of the Administration's strength was a letter sent on 12 September by Califano to Senator Edward Kennedy, in reply to a suggestion that Section 361 of the Public Health Service Act be invoked as the basis for regulating recombinant DNA. Regulation under Section 361 is now the least preferred of the NIH's options, and Califano told Kennedy he did not intend to use it. Since Congress now seems unlikely to pass a bill, the way is clear for a continuation of the NIH's semivoluntary approach, an outcome that few would have predicted a year ago.

The witnesses before Libassi fell into two main groups. Scientific representatives, such as Harlyn Halvorson of the American Society for Microbiology and W. J. Whelan of the International Council of Scientific Unions, stated that the proposed revisions were amply justified by new assessments of the risk. Representatives of public interest groups, such as Leslie Dach of the Environmental Defense Fund and Pam Lippe of Friends of the Earth, focused on the regulatory aspects of the revised guidelines. "EDF is concerned that the poor quality of the drafting of the guidelines will result in confusion and compliance failure," Dach said.

The regulatory quality of the guidelines is also criticized in the long-awaited report by Senator Adlai Stevenson's science and space subcommittee. A perceptive analysis of the various issues, the report endorses the main thrust of the guidelines. Yet, it says, "The NIH's lack of experience in regulation is indicated by the ambiguity of the guidelines' procedural provisions, by the guidelines' failure to establish clearly the responsibilities of institutions, institutional biohazards committees and investigators, and by the absence of any mention of procedures to investigate and correct violations."

Although the report was referring to the existing guidelines, its chief author, committee staff member Steven Merrill, says the revised version is little better. Stevenson is likely to offer Califano suggestions for improvement, such as clarifying the responsibilities of institutional committees and specifying who should do what in the case of violations.—N.W.