dreams of plasma physicists and engineers who are striving to develop an economic power reactor fueled by the fusion of two hydrogen isotopes, deuterium and tritium. But it still may provide President Reagan with a way to fulfill his summit pledge calling for "the widest practicable development of international cooperation" on fusion. This smaller, cheaper venture is the "compromise" position struck by feuding officials within the Departments of Defense (DOD), Energy (DOE), and State, the National Security Council (NSC), and the President's Office of Science and Technology Policy.

The high technology employed in fusion research has caused DOD to oppose any international collaboration with the Soviet Union that entails actual construction and engineering. DOD officials worry that such close cooperation would lead to a transfer of technology to the Soviet military (*Science*, 23 May, p. 925). However, a 4-month review of this question was undertaken by an interagency working group coordinated by NSC, but it did not conclude that technology transfer problems were unmanageable, according to Administration sources.

Energy Secretary John S. Herrington reportedly does not see the technology transfer issue as an insurmountable problem either. But in a recent letter to Defense Secretary Caspar Weinberger, sources say, Herrington indicated that at this time he could not support entering into a binding commitment with the Soviets to collaborate on an actual machine. Anson Franklin, DOE's director of communications, says the secretary also has concluded that an ETR project does not fit in with the department's budget priorities—even if project costs were split among a number of participants.

The planning project that the United States is expected to unveil soon would keep the door open for a potential collaboration with the Soviets in the future. It also leaves the United States, Europeans, and Japanese free to pursue next-generation machines individually, or on a bilateral or multilateral basis without the Soviets. Prior to the Soviet overture last fall to expand cooperation in fusion research, talks were under way between the EEC, Japan, and the United States concerning collaboration on a next-generation machine like an ETR. These discussions have continued on a separate track.

It is unclear how the Japanese and Europeans will respond to the U.S. proposal to conduct a design study with the Soviets. The American plan appears quite similar to the International Tokamak Reactor (INTOR) study done under the auspices of the International Atomic Energy Agency. The Soviets have participated in INTOR since its inception in 1978. Toichi Sakata, first secretary of the Japanese Embassy in Washington, says he is not sure how interested Japanese scientists will be in carrying out another study with the Soviets. The Soviet scientists, he observes, were late in performing some tasks on INTOR, and the quality of their work was uneven.

American industry and government officials predict, however, that the Japanese and Europeans will go for the proposal because it provides all parties with a graceful way out. Stephen O. Dean, president of Fusion Power Associates, an industry trade group, notes that the Japanese and Europeans have not sought to build a machine with the Soviets. It has been the American fusion community, he says, that has recently suggested including the Soviets in the construction of a new experimental device. How Moscow will react to a proposal for an ETR planning exercise is uncertain. It clearly falls short of the ambitious reactor the Soviets pressed for in a meeting with DOE officials last spring in Geneva. ■

MARK CRAWFORD

Researcher Reprimanded For Pseudorabies Test

Saul Kit, head of the division of biochemical virology at Baylor College of Medicine in Houston, Texas, has been reprimanded by the National Institutes of Health for failing to consult institutional and federal biotechnology safety committees before conducting outdoor experiments with genetically altered animal vaccines.

In June 1984 Kit inoculated a herd of quarantined swine at the Maddox Farm in Lometa, Texas, with a pseudorabies virus vaccine constructed partly by using recombinant DNA techniques. While the Department of Agriculture (USDA) subsequently found Kit's vaccine to be safe and effective, an NIH review committee concluded that he had a duty to confer with the biosafety committees at Baylor, where he is employed, and at Texas A&M University, where two other participants in the experiment work. Institutions and affiliated researchers are subject to NIH's guidelines for research involving recombinant DNA if they receive federal research funds. Kit contends that his experiment did not fall under NIH's DNA guidelines.

James B. Wyngaarden, director of NIH, endorsed on 15 October recommendations by the review committee that Kit's research activities be closely monitored for the next 3 years. Besides the usual required approvals on research, any other project that Kit undertakes that involves animals must be reviewed by the sponsoring institution's biotechnology safety committee. Baylor, and other institutions that may be affiliated with research involving Kit, also must inform NIH's Office of Recombinant DNA Activities every 6 months on projects proposed by Kit.

The review of Kit's research activities was initiated last May by Wyngaarden in response to a 28 April letter he received from social activist Jeremy Rifkin, who heads the Foundation on Economic Trends.

Reacting to NIH's findings, Rifkin says the light sanctions imposed on Kit "make a joke of the NIH review process. It says you don't have to be held accountable to any high standard—you can get away with it." Bernard Talbot, executive secretary of the review committee and deputy director of the National Institute of Allergy and Infectious Diseases, agrees that the NIH sanctions "are mild." But he defends the actions, saying they are justified in light of the ambiguities in the NIH rules identified by the committee.

Kit first constructed two separate plasmids containing DNA fragments of pseudorabies viruses. He then infected a live rabbit cell with one plasmid and a separate, live pseudorabies virus strain. After recombination of viral DNA in the cell, the derivative pseudorabies strain was inserted into another cell along with the second engineered plasmid. The end result was a deletion of genetic material that made the virus less virulent, and suitable as an animal vaccine.

Kit has argued that this end product does not constitute a "recombinant DNA molecule," an engineered structure covered by NIH guidelines that mandate review of experiments employing this technology. While criticizing Kit, the NIH committee said that the language in NIH's guidelines is vague on this point and should be clarified. At issue is whether the insertion of a recombinant DNA molecule into a living cell means the end product falls within NIH's recombinant DNA classification when no foreign DNA has been introduced.

The NIH review committee, however, noted "that historically such [gene] deletion derivatives have indeed been considered recombinant DNA molecules." In its report to Wyngaarden, the NIH committee observed that a majority of members on the biosafety committees at Baylor and Texas A&M concluded that Kit's vaccine virus constituted a recombinant DNA molecule.

Both schools' biosafety committees also concluded that a deliberate release into the

environment occurred as a result of Kit's field experiment. The NIH committee, too, found that a "minimal release" of the Kit virus had occurred as the result of nasal excretion in the treated swine. But the committee again said there are ambiguities in the definition of "deliberate release in the environment" and in what is considered a "contained" experiment. ■ MARK CRAWFORD

USDA Research Rules Killed; NIH Panel to Rewrite Standards

The Department of Agriculture's (USDA) proposed rules governing the conduct of biotechnology research are being abandoned. The decision was made by Orville Bentley, assistant secretary for science and education, in response to complaints by the research community. The rules were part of the Reagan Administration's coordinated strategy for regulating biotechnology research and products. They were included in a larger package of guidelines issued by the Office of Science and Technology Policy and other federal agencies on 26 June.

The Biotechnology Science Coordinating Committee (BSCC), a federal interagency policy panel, formally endorsed Bentley's decision on 20 October. The "USDA Guidelines for Biotechnology Research" were modeled after the National Institutes of Health's rules for research involving recombinant DNA molecules. The department sought to build on upon these rules to tackle agriculture issues related to containment of organisms and deliberate release experiments that NIH had not dealt with adequately to date.

But USDA's definitions, terms, and applications were not always procedurally and scientifically consistent with NIH regulations, which researchers have relied on for years. For example, Administration officials say they received complaints about USDA's proposed addition of containment levels for organisms beyond that required by NIH. Others complained that definitions related to greenhouse containment were unclear. Department officials told *Science* that they knew some definitions were incomplete when the guidelines were published. The decision to drop the proposed rules was first made by the department a month ago.

Bentley says USDA's decision to rely on NIH is aimed at eliminating any confusion. William Carlson, a department administrator who had a lead role in assembling the research rules, says that the department had wanted to use NIH's rules all along. A legal opinion from USDA's general counsel, however, spurred officials at Agriculture to draft separate rules that expanded upon the "NIH Guidelines for Research Involving Recombinant DNA Molecules."

The action does not affect a separate set of regulations issued simultaneously by the Animal and Plant Health Inspection Service (APHIS), USDA's regulatory arm. These rules govern the introduction of organisms and products altered or produced through genetic engineering that are recognized or potential plant pests (*Federal Register*, 26 June, p. 23352).

Bentley says the processing of research proposals also will be unaffected by this "clarification action." Existing NIH guidelines will be used in conjunction with established department criteria in evaluating experiments. When updated guidelines are finally adopted—probably a year from now—USDA will administer them.

Officials say it may take 6 months for a working group of the NIH's Recombinant DNA Advisory Committee to update rules to address agricultural research issues related to containment and deliberate release into the environment. The working group is expected to include representatives from USDA's science and regulatory divisions, NIH, NSF, the Food and Drug Administration, and the Environmental Protection Agency. USDA officials say much of the work they have done to date on the agriculture research regulations can be used by the NIH panel. ■ MARK CRAWFORD

Biotechnology Report Clears House Science Committee Hurdles

After feuding over alleged errors and the tone, Democratic and Republican members of the House Science and Technology Committee have approved a report on biotechnology, *Issues in Federal Regulation: From Research to Release*. Based on hearings conducted between December 1985 and June 1986 by the subcommittee on investigations and oversight, the report focuses on weaknesses in federal regulation of biotechnology.

The report cites an urgent need to clearly define what constitutes containment of a genetically altered organism and deliberate release into the environment. NIH's current biotechnology rules, the committee says, are inadequate to address the needs of agriculture. Regulatory uncertainties already are producing problems, the report says. The committee points to the pseudorabies experiment conducted by Saul Kit of the Baylor College of Medicine and the ice-minus test done by Advanced Genetic Sciences (*Science*, 20 June, p. 1495) as examples. It recommends that the Biotechnology Science Coordinating Committee, a policy setting forum for federal agencies, attempt to resolve these issues within 6 months.

The science committee recommendations call for the General Accounting Office to evaluate whether institutional biosafety committees at universities and other institutions are capable of monitoring research activities that may entail environmental releases of altered organisms. The report also calls on the BSCC to identify gaps in the knowledge base on the effects of releasing biotechnology products into the environment. Federal agencies also are urged to cooperate with industry and universities to develop risk assessment techniques for biotechnology experiments.

The Association of Biotechnology Companies (ABC) and the Industrial Biotechnology Association (IBA) got wind of a portion of the report's contents prior to the committee's 7 October meeting. They feared the report would help social activist Jeremy Rifkin in his legal challenge of biotechnology guidelines published by the Office of Science and Technology Policy in June. ABC and IBA subsequently asked science committee members to hold up approval of the report.

Committee Chairman Don Fuqua (D–FL) on 7 October postponed action after Representative Ron Packard (R–CA) warned that the Republican minority would vote against it. "The tone of the report is not positive," said Packard. Usually, the science committee's reports are passed with unanimous approval. After the inclusion of additional laudatory language about the importance of the domestic biotechnology industry and the threat that excessive regulation poses to American competitiveness overseas, the report won unanimous approval on 15 October. ■ MARK CRAWFORD

Comings and Goings

Lewis M. Branscomb, former IBM chief scientist and vice president and National Science Board chairman, has moved to Harvard as professor of public policy and director of the Kennedy School of Government's science, technology, and public policy program. In the director's post, he succeeds **Harvey Brooks**, who as an emeritus professor will continue to be active in the program.