Gene Rules: Violation and Revisions

Research using recombinant DNA in a Harvard Medical School research laboratory has been halted by the National Institutes of Health. The laboratory had not complied with NIH procedures requiring researchers to submit a memorandum describing how the proposed research will conform to the recombinant DNA guidelines. This action of NIH is the first case of an ongoing recombinant DNA experiment being ordered to stop. The San Francisco researchers who used a recombinant DNA system a few months before it was certified (SN: 10/1/77, p. 212), have been asked by NIH officials to provide further information.

The NIH order to Harvard Medical School was prompted by a Freedom of Information request from Leslie Dach of the Environmental Defense Fund. Dach asked for documents on the research of Charles A. Thomas after Dach heard allegations of unsafe research practices in that laboratory. When NIH officials examined the file, they found no Memorandum of Understanding and Agreement (MUA). They have since received such a document from Thomas, but are withholding approval "pending clarification of prior compliance" with the guidelines. The laboratory may continue research not using recombinant DNA.

Representatives of NIH visited Harvard Medical School twice this month and plan to return again. They learned that Thomas had submitted a statement in November 1976 to the Harvard Medical School committee that oversees recombinant DNA research. That document was never forwarded to NIH. Bernard Talbot, Special Assistant for Intramural Affairs at NIH, told SCIENCE NEWS that they were told the document was not sent because the committee and Thomas disagreed as to whether the laboratory was equipped to do moderate risk (P3) experiments. "We don't know why they did not submit the MUA for P2 [low risk] experiments," Talbot says. There is no evidence that Thomas did any moderate-risk experiments since the guidelines went into effect. So far there has been no investigation of whether any safety rules were broken in that laboratory.

Dach told reporters of the NIH action at a public meeting to review proposed changes in the recombinant DNA research guidelines. Donald S. Fredrickson, director of NIH, and a group of academics and laypersons chosen to advise him, heard comments from invited and volunteer witnesses. The proposed revisions, drafted by the group responsible for the original guidelines (SN: 7/3/76, p. 3), are printed in the Sept. 27 FEDERAL REGISTER.

The revisions would lessen restrictions on many experiments, while spelling out more clearly the requirements for others. The introduction states, "everything we have learned tends to diminish our estimate of the risk associated with recombinant DNA in *E. coli* K-12 [an enfeebled strain of the gut bacteria most widely used in laboratories]. Nevertheless the revised Guidelines continue to be deliberately restrictive, with the intent of erring on the side of caution."

At the two-day public meeting, even the introductory statement quoted above brought at least one response. Pleading for fewer restrictions to research, Bernard Davis of Harvard Medical School said, "The ideal aim is not 'to err on the side of caution,' but to be reasonable. Don't err."

The most outspoken scientist was James D. Watson of Cold Spring Harbor Laboratory. Watson was one of the signers of the original letter that called attention to the possibility of hazards from recombinant DNA experiments. "Scientifically I was a nut," said the Nobel prize winner. "There is no evidence at all that recombinant DNA poses the slightest danger." When questioned by a member of the advisory group, Watson said he saw no need to regulate even those experiments now prohibited by the guidelines.

Representatives from the Environmental Defense Fund, Sierra Club and Science for the People argued that the guidelines should not become less restrictive. In response to the argument that no hazard has appeared in the several years of research with recombinant DNA, Jonathan King of Massachusetts Institute of Technology insisted that an increase in illness among laboratory workers could go unnoticed because nobody has kept enough records to establish a baseline. He charged that any threat was directly to the workers and agreed with others that there was little chance of widespread novel epidemic.

Several speakers criticized the procedures used to revise the guidelines. They charged that members of the public were involved too little and too late. Furthermore, much of the information that convinced the committee to recommend relaxed restrictions either is so recent it has not been published or is the outcome of unadvertised scientific meetings. Thus this data is not available to the public and has not been subjected to the usual scientific review procedures.

Exemption of about a third of the current recombinant DNA experiments from guideline requirements is one of the changes proposed. The advisory committee suggested that the rules cover only "novel recombinant DNA." The director of NIH would compile a list of "non-novel exchangers," organisms thought to exchange chromosomal DNA in nature. Some respondents applauded this change, saying it would allow NIH to concentrate on the higher risk experiments. Others feared that disease-causing organisms could be created even among the non-novel exchangers or that reasonable criteria for non-novelty would be difficult to devise.

Another important change in the guidelines would permit the director of NIH to allow experiments currently prohibited, such as the transfer of genes for biosynthesis of potent toxins. Almost all the witnesses favored such a policy because it would allow "worst case" experiments, intended to evaluate whether organisms containing recombinant DNA could actually be harmful. A recurring theme of the meeting was the demand for more meaningful "risk assessment." Worst case experiments, which are currently being performed in Europe, have been stopped in this country, because there is no high-risk (P4) physical containment facility operating.

Fredrickson is expected to reach a decision about the revisions in February. □

Nuclear plant blasts thought due to welder

The apparent cause of two small explosions at Northeast Utilities' Millstone 1 nuclear-power plant have been disturbing to both utilities and reactor vendors. At 9:30 a.m. Dec. 13, an explosion in a stack-gas delay line began admitting mildly radioactive gas into a room at the base of the stack. There the gas accumulated until it exploded at about 1 p.m., injuring a nearby worker slightly. By Friday the worker was home planning to return to work after the holidays, and the company was confident it could correct damage and have a report approved by the Nuclear Regulatory Commission in time to resume full-power operation by Christmas.

Hydrogen-oxygen recombination in the stack-gas delay line was first postulated as the cause of the initial explosion, a postulate disquieting to reactor vendors because it indicated a technical fault in controlling the stack's chemistry. But discovery of a weld mark on a stack-gas flow monitor in the turbine room raised the possibility that human error, not technology, was at fault — a postulate disturbing to utilities. That postulate was further supported by a welder who said he might have hit the monitor while working on an air line less than a foot away at the time of the explosion. Various utilities estimate that similar stack-gas explosions have occurred a total of anywhere from 14 to 40 times among the approximately 65 operating U.S. reactors. □