

collaboration is common. The Goodman-Rutter team that achieved the first insulin cloning, for example, included at least foreign postdocs, one of them from Germany. Several months ago, in a statement released by the hospital, MGH trustee F. Sargent Cheever expressed the prevailing opinion when he said, "It has become difficult if not undesirable to set up artificial boundaries between nations," especially as far as biomedical research goes.

Nevertheless, Gore's view was ech-

oed across the Atlantic. According to Goodman and others, scientists at German institutions were "angered" to learn that Hoechst was creating a major molecular biology center in Boston rather than Frankfurt or Berlin. Ironically, company officials and German banking leaders recently were startled and somewhat concerned to learn that the multinational Hoechst is even more multinational than they realized. Kuwaitis have acquired a nearly 25 percent interest in the Frankfurt-based chemical company.

As Hoechst attorney Griesar notes, relationships between industry and academe are nothing new, but the nature and magnitude of the MGH-Hoechst agreement set it apart. The contract is being scrutinized by lawyers for other corporations and universities, as well as by faculty, who want to see if it is a model they can adopt. Goodman, for his part, enthusiastically describes the whole thing as an "experiment." You can't argue with that.

—BARBARA J. CULLITON

NRC Must Weigh Psychic Costs

Environmental law protects mental health, an appeals court finds; federal attorneys see broad implications

An opinion released on 14 May by the U.S. Appeals Court for the District of Columbia may have a "revolutionary impact" on environmental law, according to officials at the Nuclear Regulatory Commission (NRC). The opinion says that the NRC must view psychological stress among Three Mile Island residents as a form of nuclear power pollution. This interpretation, Justice Department attorneys agree, could give legal headaches not just to the NRC, but to many other federal agencies.

The ruling is a reversal of an earlier NRC action. The court found that, contrary to what the NRC believed, the agency must recognize local residents' fears as one of the environmental impacts of starting up an idle reactor at Three Mile Island in Pennsylvania. This reactor, known as TMI-1, was closed for refueling and unaffected by the accident at its twin (TMI-2) in March 1979. Nevertheless, it has been kept out of service since 1979 by a series of mechanical and legal problems.

Not the least of its problems is a lawsuit brought by a group of citizens, People Against Nuclear Energy (PANE), in an attempt to stop the NRC from allowing TMI-1 to be turned on. Among other things, PANE said that restarting the reactor would injure public health by adding to the worries of people who had lived through the accident of 1979.

In deciding what to do about TMI-1, the NRC held some hearings in Pennsylvania and asked a licensing board to make a special review of the case. The board suggested that it would be wise to listen to PANE's complaints about psy-

chological stress, but the NRC declined. The commissioners felt that neither the act that created the NRC nor the general environmental protection laws required the NRC to take note of such vaguely defined public fears. PANE's case was not based on an analysis of physical dangers, but on public perceptions of the

enjoined the NRC from acting on TMI-1 until it had considered the psychological problems raised by the lawsuit. In a revised judgment in April, the court lifted this injunction. The steam generator tubes at TMI-1 were found to be so corroded as to require months of repair work, temporarily mooting the argument



Three Mile Island

dangers. PANE rejected the notion that expert estimates of risk should outweigh popular feelings.

Commissioner Joseph Hendrie (now retired) explained that, since the NRC was not going to take popular trepidations into account, it should not listen to testimony about them. To listen with no intention of heeding the testimony, he said, would be to patronize the witnesses. So the NRC turned PANE away and moved forward with plans for restarting TMI-1.

PANE's appeal made its way through the courts, and on 7 January, two of the three appeals court judges reviewing the case endorsed PANE's contention. They

over restarting the reactor. This did nothing to improve the credibility of the expert risk estimators. In any event, the court still demanded an assessment of the psychological impacts.

On 14 May, the court issued an opinion explaining its two judgments, followed by a strong dissent written by Judge Malcolm Wilkey. The majority statement was written by J. Skelly Wright, with Carl McGowan concurring.

According to the NRC and the Justice Department, the majority opinion confirmed the worst fears circulating in January (*Science*, 29 January, p. 481) about the broad application the case might have. Its breadth derives from two ele-

ments. The first is the novel finding that the National Environmental Policy Act (NEPA) covers psychological health. Apparently no high court has accepted this proposition before. Second, the majority gave a very broad definition of the kind of "federal action" that might trigger the need for an environmental impact statement. In essence the court said that any federal regulatory function may be construed as a federal action under NEPA. Once an initial impact statement has been filed, however, there is no need to file a supplemental one unless (i) there is a substantial change in policy affecting the environment, or (ii) significant new information or new circumstances bearing on the environment come to light.

The majority found that the NRC took an "unpersuasive" stance in arguing that psychological impacts, no matter how severe, are beyond the scope of environmental law. This "ignores the simple fact that effects on psychological health are effects on the health of human beings," the judges wrote. "We conclude that in the context of NEPA, health encompasses psychological health."

The court insisted, however, that there is a difference between true psychological stress of the kind found near Three Mile Island, and the commonplace

"socioeconomic anxieties" that are not to be included under NEPA. Common dissatisfactions arise, the court noted, when a federal housing project for the poor is located in a middle-income neighborhood. The court did not explain how to distinguish low-grade anxiety from real stress, except to say that true stress definitely includes "post-traumatic anxieties, accompanied by physical effects and caused by fears of recurring catastrophe." The latter were found at Three Mile Island.

In conclusion, the court asked the NRC to review data on the psychological impact of restarting TMI-1 and then to decide whether there is anything significant enough to warrant the writing of a new impact statement. If the NRC decides not to write a new statement, the court wants to know its reasons. Finally, if a new statement is written, the court wants the NRC to include a discussion of the socioeconomic impacts of restarting the TMI-1 reactor.

Judge Wilkey found all of this "extraordinary . . . unwarranted, unprecedented, and inconsistent with relevant decisions in this and other circuits." He argued with italic emphasis that the court's action will "institutionalize a fear of taking risks at all," leading to economic paralysis:

Instead of being required to assess *the risk* of a proposed activity in determining whether the activity should go forward, the agency is now required to assess *how people perceive and react to the risk*. . . . To the extent any consistent standard can be derived from the majority's analysis, what appears is a *standard which will depend largely on how much fear is worked up, from whatever source, rather than how serious the danger actually is*.

Wilkey also found the majority "calculus" in assuming that fears associated with nuclear power are more significant than fears associated with a public housing or prison construction project. "The assertion that mere 'anxieties' about nearby matters other than nuclear power are not effects on psychological health is entirely unsupported and, I submit, obviously unsupportable," he wrote.

Neither the NRC nor the utility will comment publicly on the strategy they intend to follow in responding to the court's judgment. Metropolitan Edison, owner of TMI-1, has indicated that it will file an appeal of some sort. Meanwhile, it has filed a motion with the NRC urging the agency to rush its study of psychological stress to completion by June. The litigants have 45 days from the judgment to file for a full appeals court review, and 90 days to file for certiorare before the Supreme Court.—ELIOT MARSHALL

The Mysterious Chinese Luggage Incident

Was it a random search and seizure or something else?

On 6 May, five Chinese scholars and students awaiting the takeoff of a flight from New York to Beijing were summoned from their seats and informed that U.S. customs agents had decided to confiscate suspicious-looking items in their luggage. The students had been studying engineering at the University of Michigan and Michigan State University, and the items included articles from scientific journals, classroom notebooks, thesis and lecture materials, slides, innocuous computer software, and tapes of rock music.

Although the material has now been returned, the incident has created a stir at the universities involved and among groups that foster academic cooperation between the United States and the People's Republic of China. The Chinese have made an official diplomatic protest,

primarily because the luggage of some visiting Chinese diplomats was inadvertently included with that of the students and subjected to the search. Although the U.S. State Department has made an apology and considers the matter closed, the events leading to the search remain obscured by a tangle of conflicting evidence and disingenuous bureaucratic statements.

No one, in fact, really wants to say much about it, other than the Chinese government and several faculty members that supervised the students. They agree that none of the Chinese was studying anything classified, directly related to military technology, or threatening to U.S. security—the major targets of restrictions on U.S. exports. One was studying soil dynamics; another was studying solid-state circuitry; a third,

electromagnetics; and a fourth, computer simulations. "As far as we know, everything was public information," says Li Jia Zhao, an educational official at the Chinese embassy in Washington, D.C. George Haddad, chairman of the electrical engineering department at the University of Michigan, where two of the students are just beginning their thesis work, says that he can see no reason for the search. Robert Howe, chairman of the university's department of aerospace engineering, where a Chinese scholar was at work, says that the government's action was "absolutely unbelievable. I can't imagine how they could be suspect. Anything discussed was available in the open literature." Howe says that although he himself had served on Defense Department panels, little work connected with the military is actu-