

Two high-court rulings could affect nuclear power's future

A pair of challenges to the nuclear-power industry have been settled by the Supreme Court. While neither decision will have an immediate effect on power-plant licensing or operation, it is expected both will recast the boundaries outlining the ongoing nuclear debate.

The ruling handed down April 19 clearly pleased the nuclear industry. In a unanimous decision, the Court held that the Nuclear Regulatory Commission need not address psychological impacts on neighboring residents that might result from authorizing the restart of Metropolitan Edison Co.'s Three Mile Island-1 reactor. The plant had been shut down for refueling in March 1979 when a catastrophic accident crippled its sister plant—unit-2.

People Against Nuclear Energy (PANE), an association of Harrisburg (Pa.) area residents, opposes operation of both TMI reactors. In suits against NRC and Met Ed, PANE contended that as a result of the TMI-2 accident, many residents now fear unit-1 might fail also. And this fear might harm the mental health of area residents, PANE claimed, if the undamaged unit-1 reactor were allowed to restart. Citing the National Environmental Policy Act (NEPA), PANE charged that NRC was required by law to prepare an environmental-impact statement assessing this risk of mental illness before it could consider

reauthorizing operation of TMI-1. An appeals court upheld that contention last year (SN: 1/25/82, p. 55).

In overturning this ruling, the Supreme Court said, "Our understanding of the congressional concerns that led to the enactment of NEPA suggests" an "environmental effect" should involve a "reasonably close causal relationship between a change in the physical environment and the effect at issue." And "risk of an accident is not an effect on the physical environment," the Court said, because "risk is, by definition, unrealized in the physical world." Linking TMI-1's operation to mental illness would require some "necessary middle link," the Court said, lengthening any "causal chain beyond the reach of NEPA."

More pivotal to the nuclear industry's future is a Supreme Court decision delivered April 20. At issue was whether the state of California could ban nuclear-plant construction until the federal government had approved a means for permanently disposing of high-level radioactive wastes.

The high court dismissed claims advanced by the industry and Reagan administration that the California statute attempted to usurp NRC's regulatory power over reactor licensing, that it conflicted with federal decisionmaking for emerging waste-disposal policy, and that it at-

tempted to thwart the federal government's promotion of nuclear power (as set forth in the Atomic Energy Act). The ban was ostensibly motivated by economics, the Court said. And it affirmed the economics of power production as a province of state regulators. It also noted California had not set out to develop its own waste-disposal standards. Most important, the Court said Congress never intended that nuclear power be promoted at any cost: it was merely to be an option—one any state could ignore.

As the federal government has not yet established a long-term nuclear-waste-management strategy, opponents of nuclear power see this second ruling as a way to halt and potentially dismantle the industry. Carl Goldstein, vice president of the Atomic Industrial Forum (a trade association), disagrees. He says the decision affects only the California statute. Owing to technical differences in the laws, "We don't even believe that it necessarily validates other moratoriums," he told SCIENCE NEWS, referring to seven states that have linked state approval of future nuclear plants to resolution of the waste issue.

For now, there are no plants directly affected by the ruling because California's law exempted plants now under construction. —J. Raloff

Preventing fraud in research

Universities should seek better methods for preventing, detecting and dealing with fraud in scientific research, says a report from a leading academic association. In particular, institutions should have procedures in place for promptly investigating allegations of fraud, the report urges. Furthermore, laboratory directors must assume "absolute responsibility for the validity of all communicated information" from their laboratories.

These recommendations are among the "guidelines for integrity of research" in a report released last week by the Association of American Universities (AAU). Robert M. Rosenzweig, AAU president, says the report is a response to widely publicized recent cases of alleged or exposed scientific fraud. According to Rosenzweig, this is the first time that an AAU committee has examined the issue.

The report defines four categories of fraud: falsification of data, plagiarism, abuse of confidentiality and deliberate violations of regulations. It notes that the academic community tolerates, more than it should, abuses like inadequate citation so that individuals do not receive proper credit for their work. Peer review processes, in which researchers freely discuss their ideas in research proposals submitted to potential sponsors, provide unfortunate opportunities for the theft of research ideas.

The report suggests that "identification in advance of those susceptible to dishonest behavior is desirable." However, it concedes that because "it is difficult, if not impossible, to detect in advance those most susceptible, major attention should be directed toward establishing the best environment."

Such an environment comes out of encouraging intellectual honesty, emphasizing quality rather than quantity of research while discouraging "success at any cost," and assigning credit appropriately, the report states.

—J. Peterson

Viral switch for autoimmunity

Some autoimmune diseases may be triggered by a virus, studies have suggested. And now, newly released research results suggest how a virus sets such diseases into motion: by incorporating cell proteins into its own.

Robert S. Fujinami of the Scripps Clinic and Research Foundation in La Jolla, Calif., and colleagues found that antibodies against a measles virus protein and antibodies against a herpes virus protein also reacted against a particular protein present in cells located in the white matter of the brain and spinal cord. This finding, they write in the April PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES (No. 8), suggests that the viral proteins and human protein share amino acid sequences and that this sharing results from the incorporation by viral proteins of the human protein during measles virus or herpes virus replication within white cells. The finding, they believe, might also explain how a virus triggers autoimmune disease. First a virus replicates with a person's cells and incorporates cell proteins into its own. Then the immune system attacks not just the virus but cell proteins, and disease results.

Fujinami and his co-workers will now try to determine whether this chain of events causes multiple sclerosis. Multiple sclerosis is characterized by the destruction of myelin sheaths surrounding nerves in the brain and spinal cord. Past research has suggested that this destruction results from immune system insults precipitated by a measles virus. So the Scripps researchers will see whether antibodies against a measles virus protein react against oligodendrocytes—those cells that make the myelin. If they succeed, their evidence would suggest that multiple sclerosis is due to a measles virus incorporating oligodendrocyte protein into its own and thus triggering an immune attack against oligodendrocytes as well as virus.

J.A. Treichel