

ing up to the fact that you do not always have to believe what the commission says."

A second source of motivation for most technology assessment supporters is the conviction, shared by many who argued for the U.S. OTA, that the social and environmental consequences of a new technology should be discussed prior to its introduction more fully than can be done with a simple environmental impact statement.

---

***"OTA has published two fat reports [on SDI]; we have had absolutely nothing," says Lloyd.***

In Germany, for example, much of the pressure for a new parliamentary office has come from members of the Federal Parliament belonging to the radical environmentalist party, the Greens. "Our position is that all new developments in technology should be shown to be acceptable before they are introduced into society" says Green member of Parliament Joachim Müller.

In the Netherlands, this idea has been incorporated into the new legislation as an emphasis on what Pieter Tindemans, of the government's Department of Science Policy, describes as "constructive technology assessment."

"We want to see if we can start from social needs and criteria and ask what technology might be developed to meet them," says Tindemans. "In our opinion, that is the way technology assessment has to go; we should not focus just on assessing technology after the event."

Not surprisingly, there is considerable overlap between the subjects being proposed for study among the different European countries; indeed, Tindemans admits that it is "difficult to find new topics."

Near the top of the list is the question of energy choices. Although in several countries (such as the Netherlands and West Germany) social conflicts around energy questions have focused on nuclear power, this has not been the only source of controversy.

The Austrian government's new support for technology assessment, for example, is said to have been partly a reaction to violent confrontations that took place last summer between environmentalist groups and the police over plans to flood a major wildlife reserve near Vienna as part of a new hydroelectric scheme.

"Ecological issues are really on the politi-

cal agenda here now, just as they were in the United States at the beginning of the 1970's," says Austrian sociologist Helga Nowotny. "The government seems to feel that the time has come to institutionalize this kind of conflict."

Other topics for study tend to fall into two groups. One contains those issues, such as the environmental impact of genetically engineered microorganisms or the moral issues raised by in vitro fertilization, where almost all European governments are coming under pressure to regulate the use of a new technology. The other—for which there appears to be more support in Europe than in the United States—is made up of subjects where governments feel that they have a responsibility to cushion the social side effects of rapid technological change.

In several cases, the new initiatives have required breaking traditional political molds. "There are few precedents for this type of thing in France," admits Philippe Bassinet, chairman of the new parliamentary office in Paris which is overseen by a joint committee of National Assembly Deputies and Senators.

Inevitably, compromises have had to be made. Unlike the case of the OTA, for example, the contents of the reports of the French office remain the direct responsibility of members of the committee (which may also decide whether the report is published or not).

Compromise has also been necessary in the Netherlands, where initial proposals that the technology assessment committee should be made up entirely of individuals nominated by the government was rejected as insufficiently objective, and a new bill was written giving the Academy of Sciences a leading role.

In contrast, British Prime Minister Margaret Thatcher firmly set herself against compromise last year when she rejected a suggestion from Lloyd that the British Parliament should create an OTA. Although Thatcher used economic arguments—the need to keep down public spending—to justify her decision, Lloyd suggests that political factors were also at work.

"Mrs. Thatcher sees this as an extension of the power of the House of Commons. The government's opposition is the type of reaction you would expect from any institution which feels that its decisions are going to be assessed more closely than they now are," he says.

Indeed, the British government has recently moved provocatively in the opposite direction, rejecting demands from the socialist opposition that a public inquiry be carried out into the social and environmental implications of the different projects that

were submitted as candidates for the Channel Tunnel (see page 540). Announcing this decision to the House of Commons, Transport Minister Nicholas Ridley said that the delays caused by such an inquiry would inevitably lead to the "death" of the whole idea.

Faced with such political realities, many supporters of technology assessment fear that, despite current manifestations of enthusiasm, its impact may remain marginal. "The general tendency is not to allow these institutions to become too effective," says Nowotny. "The really touchy political issues may well not be affected." Similar concerns were, however, initially raised about OTA. But, with recent studies of SDI and the future of nuclear power, OTA has certainly been in the thick of touchy political issues. ■ DAVID DICKSON

---

### *Briefing:*

## **EPA Proposes Ban on Asbestos**

In a move that has enormous financial and public health implications, the Environmental Protection Agency has proposed a ban on all future production of asbestos products. Under the plan, the manufacture of construction materials with asbestos would be halted immediately and all remaining asbestos products would be phased out in 10 years.

The agency calculates that the resulting reduction in public exposure to asbestos over the next 15 years would ultimately prevent at least 1900 cancer deaths, primarily among would-be asbestos workers. Asbestos causes lung cancer and mesothelioma.

The proposed regulation carries a hefty price tag, however. Over 15 years, consumers will pay \$1.8 billion more for products made with substitutes for asbestos, which averages out to \$10 for an individual consumer, according to the agency. Manufacturers of asbestos products would lose \$210 million, but EPA says much of the industry's equipment can be converted to produce other products. The ban would also eliminate the import of asbestos. This would mainly affect Canada, whose asbestos exports to the United States amount to \$50 million a year.

By banning asbestos products, the agency will break the "life cycle" of asbestos and prevent additional risk of exposure, says EPA administrator Lee Thomas. Mining, manufacturing, and disposal of asbestos "inevitably leads to air contamination," he said,

arguing that "There is no level of exposure without risk." The proposal is subject to public comment and is expected to take effect in a year. No other country has proposed such a sweeping ban on asbestos.

According to the proposal, EPA would immediately halt the use of asbestos in roofing, floor tiles, cement piping, and clothing, which account for the major portion of asbestos production. Substances such as fiberglass and other synthetic materials can be substituted for asbestos in these products.

Other products, for which there are no asbestos substitutes available or for which manufacturers need more time to retool, would be phased out over 10 years. These products include primarily brake and clutch linings. According to John Moore, assistant administrator at EPA for pesticides and toxic substances, there are reasonable substitutes for asbestos brake and clutch linings in passenger cars, but the industry needs more time to retool. For heavier vehicles and machinery, good substitutes are still being developed.

A ban on asbestos has been controversial within the Reagan Administration. EPA made a similar proposal 2 years ago, but backed off after the Office of Management and Budget (OMB) raised objections and said that two other government agencies should regulate asbestos. Several federal legislators took OMB to task, including John Dingell (D-MI), chairman of the House Energy and Commerce Committee. Thomas said that OMB has now approved the proposed regulation.

Representatives of the asbestos industry



**Lee Thomas**

*EPA administrator says, "There is no level of exposure [to asbestos] without risk."*

immediately protested the EPA proposal, saying that their products could be safely used. But Lester Breslow, a professor of public health at the University of California at Los Angeles who chaired a 1982 committee on asbestos and cancer risk at the National Academy of Sciences, said that, in his opinion, "It's appropriate for EPA to take action. It's quite clear that we're exposed to quantities of asbestos in ambient air that are excessive."

Between 1900 and 1980, 30 million tons of asbestos were used in the United States. In 1984 alone, 240,000 tons were used domestically. EPA estimates that exposure to asbestos causes 3,000 to 12,000 cancer cases annually, almost all of which are fatal. About 65,000 people in the United States currently suffer from asbestosis. ■

**MARJORIE SUN**

## **Smelter Pollution Provides Chance for Acid Rain Study**

A new giant copper smelter in Mexico close to the U.S. border is in the process of starting up. The plant, which is located at Nacozari de García, has no pollution controls in place as yet, much to the dismay of several Western states that are upwind.

Mexico pledged last year to install equipment and says it will do so with revenue generated from the plant. The smelter began testing its equipment in January and is expected to be operating at full capacity in 6 to 8 months.

The United States and Mexico have been negotiating the installation of pollution controls on the plant. Officials at the Environmental Protection Agency report that progress is being made. According to David Howekamp, director of air management at EPA's regional office in San Francisco, Mexico has solicited bids for pollution controls and is expected to award the contract in March. Howekamp said that Mexico has asked the World Bank for financial assistance.

While the start-up of the plant without pollution controls has raised concerns among western states, it also provides a rare opportunity to conduct transport studies of sulfur emissions, according to Michael Oppenheimer, a scientist at the Environmental Defense Fund.

Tracking emissions in the United States is difficult because there are too many sources to monitor on the East Coast. As a result, researchers have been trying to develop computer models to study the fate of emis-

sions. In September, Oppenheimer and colleagues reported in *Science*\* that smelter emissions from the Southwest were linked to acid rain hundreds of miles away. Oppenheimer asserts that the impending start-up of the Nacozari de García plant offers a chance to confirm his study and to gather a wealth of empirical data to compare with computer models.

Members of the Senate Environment and Public Works Committee have urged EPA to take advantage of the circumstances. In an 18 December letter to EPA administrator Lee Thomas, 12 senators said that this "is an absolutely invaluable opportunity to add enormously to our store of knowledge on the critical questions of transport and transformation of sulfur dioxide."

Howekamp of EPA said, however, that enough monitors are already in place in Arizona to measure emissions. "We don't have anything [additional] planned right now." ■ **MARJORIE SUN**

\*M. Oppenheimer, C. B. Epstein, R. E. Yuhnke, *Science* 229, 859 (1985)

## **Who Should Have Rights to a Patient's Cells?**

The commercial promise of biotechnology and an unusual lawsuit are generating continued discussion about the rights of patients and the responsibilities of researchers. The issues were taken up most recently at a meeting on 17 January of leading medical ethicists, lawyers, and researchers that was sponsored by the Office of Technology Assessment.

In 1984, the University of California was sued by a patient, John Moore, who asserts that researchers at the Los Angeles campus took advantage of him by developing a cell line from his tissue without his permission. The case is still in litigation (*Science*, 16 November 1984, p. 813).

In 1982, in another case, a professor at the University of California at San Diego and a postdoctoral fellow there became embroiled over rightful ownership of a cell line developed from tissue derived from the postdoc's mother. After lengthy negotiations, a relatively amicable agreement was reached (*Science*, 22 April 1983, p. 393).

The lawsuit and the San Diego case prompted participants at the OTA meeting to ponder a thicket of ethical and legal issues. By the end of the day, they had raised many questions but reached few conclusions. Participants included LeRoy Walters, a bioethicist at Georgetown University; Pa-