knock out the entire MX system. This realization, it is said, will prevent the Russians from attempting risky military ventures that would threaten American interests.

One weak link in this reasoning, as some defense analysts have noted, is the assumption that the Soviets will have a limited number of warheads. Why build a costly and cumbersome system like the racetrack, they ask, if it depends for success on Soviet self-restraint? What will happen if the Soviets ignore the SALT treaty and accelerate the production of warheads?

The answer given by the Defense Department's Under Secretary for Research and Engineering, William Perry, is that the United States can build more shelters, and it can build each one for less than it costs the Soviets to build a new warhead. In testimony given last September, Perry said the MX racetrack could be doubled in size from 4,600 shelters to 9,200, or boosted if necessary to 13,500. A study done by the Congressional Budget Office estimated that if the worst-case projections were played out for Soviet weapons production, and if the U.S. adhered to the logic of the racetrack, the Air Force might need to build 23,000 shelters. The cost could jump from the present estimate of $33 billion in today's dollars to $55 billion or more.

A tripling of the scale is not likely to occur, even if there were no physical constraints, because a massive breakdown of arms control agreements would bring about other short-term defense remedies. But some expansion of the racetrack may be necessary. Under Secretary of the Air Force Antonia Chayes confirmed this possibility in hearings on 23 January before the House interior subcommittee on public lands. How large an expansion will depend on the Russians' behavior. Thus the design problems of the racetrack and the health of American-Soviet arms agreements will directly affect the people of the Southwest.

Nevadans will bear most of the burden, for 65 to 70 percent of the missile's road loops will be built in their state. Although the state motto pledges "all for our country," some Nevadans are saying that 25 percent may be enough. Nevada's only U.S. Representative, James Santini (D), asked Congress to stipulate that no more than 25 percent of the MX system would be built in one state. His amendment failed last year, but Santini continues to badger the Pentagon for promises to limit its use of water and for detailed information about the scope of the project. As he put it in his own elusive metaphor, "getting a handle on the impact [of the MX] is like punching Jello."

Billed as mankind's largest capital construction project, the racetrack scheme could turn out to be exactly that, times two. The open-ended quality of the project troubles Santini, as does its indeterminacy. Recently he emphasized his worries by citing some fluctuations in Air Force estimates. An early impact statement predicted that the MX project would consume 25 billion gallons of water during its lifetime. The new estimate is that it will use 121 billion gallons. Last October, the plan called for 2 million tons of cement. Now the Air Force thinks it will need 2.7 million tons. In September, the weight of the missile transporter was put at 670,000 pounds. Now it will weigh 1 million pounds (an increase of nearly 50 percent in 4 months). "Every time I blink my eyes," Santini said, "the project gets bigger, costs more, requires more materials and manpower and takes more public land."

The last is a sore point in Nevada, where 87 percent of the land is already owned by the federal government. Nevadans think that in addition to being denied ownership, they may be denied the use of their land. This is an unreasonable fear, the Air Force says, for it will not need to seal off more than 25 square miles of land in the 37,000-square-mile area where the missiles will be based. But during construction, it may be necessary to withdraw 300 square miles.

The MX racetrack will be a quarter the length of the federal interstate highway system.

People suspect a much larger area than this will be disrupted in the building of the racetrack's 2,000 miles of railway and 10,000 miles of roads. (To grasp the awesome proportions of this network, consider that the entire federal interstate highway system is about 42,000 miles long, just four times the racetrack's minimum dimensions.)

(Continued on page 965)

Hazardous Wastes Cause International Stink

Third World citizens are frequently the unintended beneficiaries of product safety regulation within the United States. When the Consumer Product Safety Commission banned children's sleepwear treated with the carcinogen Tris, for example, manufacturers instantly made it available at cut-rate prices in Puerto Rico and elsewhere. When the Occupational Safety and Health Administration (OSHA) clamped down on exposure to asbestos, several asbestos manufacturers moved their plants to Mexican border towns.

Now, the Environmental Protection Agency (EPA) is about to impose substantial restrictions on the dumping of hazardous wastes, and the industry is apparently preparing to dump the wastes overseas. The State Department has uncovered plans by at least one firm to ship to the African nation of Sierra Leone, and has gathered information that the countries of Haiti, Chile, Liberia, Senegal, and Nigeria may also have been approached as potential waste sites. The Sierra Leone president has been personally negotiating with a Colorado hazardous wastes firm, which promised $25 million a year in payment for the privilege.

Officials of the State Department, fearing that exports of waste might prove highly embarrassing, met last week with agents of the Colorado firm in an attempt to learn more about its plans and possibly to dissuade it from going ahead. Simultaneously, the department cabled its embassies in African, Latin American, and European capitals, seeking evidence of any other waste export plans.

"On the technical side, turning toxic wastes over to people of questionable technical qualifications could present serious health problems in any of these countries," reads an internal State Department memo on the topic. "Second, the political ramifications could be very serious, although there may be countries which do not currently object to such a disposal plan. . . . There is great opportunity for corruption and for long-term political damage to American interests if such programs are allowed to proliferate."

0036/8075/80/0229-0962$00.50/0

When the EPA shipped the last stocks of Kepone to England and West Germany for incineration, a great outcry resulted in both places.

The difficulty, says one State Department official, is that "we have no way to get a legal handle on this." The Resource Conservation and Recovery Act, which EPA is preparing to implement now, does not extend to hazardous waste exports. Yet the new regulations, which are expected to cost the industry at least $750 million, make it virtually certain that additional firms will attempt to ship the problem outside the United States.

Donald King, director of environment and health at the State Department, says he would like the industry to have to get export permits, a requirement that could be accomplished through an executive order. "Although there are existing proposals to control the export of hazardous products generally, we want to move forward on the issue of wastes independently."

A more general proposal is now circulating in draft form among an 18-agency federal task force. The draft, which was written by the White House Council on Environmental Quality and the Consumer Affairs office, requires that manufacturers notify both the federal government and the foreign country before they ship overseas products that are banned in the United States. The Commerce Department could impose a ban on the export if it posed a severe threat to the citizens or environment of the importing nation, its neighbors, or the United States. At present, Commerce Department officials favor only the notification provisions. But the policy has the support of other agencies, and White House officials predict its eventual adoption.

Science Groups Consider a Soviet Boycott

The major American scientific societies are cautiously beginning to confront the professional and ethical issues surrounding a curtailment of scientific exchanges with the Soviet Union, in retribution for the internal exile of Soviet scientist Andrei Sakharov. Representatives of 50 societies and associations gathered on 8 February under the auspices of the AAAS in Washington to consider what, if anything, ought to be done in the way of protest. The majority favored a cutback in official contacts but maintenance of ties to individual Soviet scientists, some of whom are presumed to be sympathetic to Western ideas.

Suggestions ranged from a serious restriction, counseled by an official of the Association of Computing Machinery, to the maintenance of the status quo, offered by a representative of the National Association of Social Workers. William J. LeVeque, of the American Mathematical Society, said his group was being pressured by members to end its English translations of

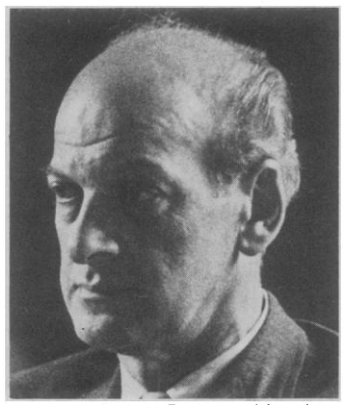

Photo by Finnigan and Associates

Philip Handler

the *Matematicheskii Sbornik*. Someone from the American Physical Society countered that that was "cutting off one's nose to spite one's face." This dichotomy is perhaps explained by the benefits that each group's scientists draw from the exchange.

Few of the groups represented at the meeting have done anything as yet, with the singular exception of the National Academy of Sciences. NAS president Philip Handler told the conference that "we will defer all bilateral seminars and the like, while permitting the activities of individual scientists to proceed. I know nothing to do but keep talking, to stay in contact no matter how much we detest what they do, and tell them what it is we dislike—to slap their wrists but not their faces, to make clear there are penalties."

Frank Press, the President's science adviser, Edward Hurwitz, an official with the State Department, and Handler all stated firmly that whatever moves were being carried out or were contemplated now would last only as long as the Soviet's ill behavior. Press spoke of preserving the budget for exchanges even though most exchanges had been canceled; Hurwitz noted that "we have made it clear that we are not dismantling the whole structure of cooperation."

The most clear guidance seemed to be offered by Handler. "Several scientists on their way to Russia have asked me what I would do if I were in their place," he said. "I confessed I would not go."

EPA Receives First Prod on Toxic Substances

The Environmental Protection Agency has been ordered by a federal judge to decide immediately whether it will require animal testing of some highly toxic and widely used chemical compounds. The decision, which was sought by the Natural Resources Defense Council, is the first to take the agency to task for its cautious implementation of the Toxic Substances Control Act, passed in 1976. The law requires the agency to decide within a year whether it intends to force testing of high-priority chemicals, such as toluene (a gasoline additive and solvent in consumer products), xylene (a solvent), and ethylene oxide (a common industrial chemical).

The judge ruled more than 2 years after the deadline had passed. Both the Chemical Manufacturers Association and the American Petroleum Institute had intervened on the agency's behalf.

The ruling points up the difficulty of implementing a regulation with congressionally written deadlines. EPA says it wanted to develop guidelines for the testing before it decided if the testing might be needed; the law itself gives the agency longer to develop the guidelines than it does to order the tests.

At present, the agency plans to publish its guidelines this summer. Their absence might explain the paucity of long-term testing data submitted by the industry under a requirement for newly invented chemicals. EPA officials are complaining about the industry submissions, and recently proposed that all unpublished studies on toxic chemicals be sent in posthaste.

R. Jeffrey Smith