complaint has been that Rappaport has lobbied privately on Capital Hill for more money for some SERI programs than called for in the DOE budget.

But Rappaport told *Science* that he was "yanked out [of his job] without notice" and was never advised that his performance as director had been found seriously wanting. "Nobody has informed me what the problems were," he said. "I've only been told I've done an excellent job."

In Rappaport's view, MRI is a small organization without political clout, and McKelvey was in no position to protect him from those at DOE who wanted him out. "Basically, he was told to change directors," Rappaport said, adding that a larger and more powerful organization such as Union Carbide, the contractor that runs the Oak Ridge National Laboratory, could have resisted such demands.

McKelvey, giving his version of what happened through a spokesman, says Rappaport's interpretation of what happened is wrong. He does give Rappaport credit for organizing SERI and building its staff, but says, as does Deutch's spokesman, that Rappaport had been told on a number of occasions during the past several months that the problems at SERI were being viewed with concern.

As for the suggestion that he caved in under pressure from on high, McKelvey says that the decision to replace Rappaport came several weeks ago at the culmination of discussions between him and DOE officials about what kind of person should be leading SERI. According to McKelvey, once it was agreed that an activist was needed in the job, it was he himself who was the first to say, "It sounds like we are talking about Denis Hayes."

Hayes' appointment was effective immediately. "I don't know yet what has to be done," Hayes told *Science* shortly before he left Washington for Colorado. "I do know there is sagging morale, a lack of esprit de corps, and an uneven quality of work."

He added that he had been promised "unlimited discretion" to hire and fire, do such reorganizing as may be necessary, and run the institute generally. His understanding is that DOE, which has been said to keep SERI on a frustratingly short tether (*Science*, 23 March), will leave the management of the institute to him and judge him on the basis of the results achieved. The overall quality of the present staff is high, he says, adding: "I'm not going out there with an unsheathed hatchet."

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U.S. Rubber Shrub May Have Hidden Thorn

A scruffy-looking desert plant with steel-gray branches and leaves, the guayule bush (*Parthenium argentatum*) appears to be a weed. But not to Congress, which last November decided to sink $35 million into the development of the shrub (*Science*, 27 October). Guayule, after all, has a remarkable talent. It makes rubber.

It may also make life miserable for the workers who end up harvesting it, according to scientists at the Academy of Natural Sciences (ANS) in Philadelphia. To be a commercial success, guayule must be hybridized to increase its total yield, stature, and disease resistance—a task that scientists at the U.S. Department of Agriculture have already started on. Two scientists at ANS, however, say that careless hybridization of guayule with any of the plant's relatives is likely to introduce plant toxins that cause a severe skin rash in humans. Near-epidemics of the rash have been reported in some parts of India where a guayule relative was introduced several years ago.

"The problem," says ANS botanist James Mears, "is that people have been looking only at the rubber these plants can produce, not at their potentially toxic side effects when hybridized." Different species of *Parthenium*, says Mears, have different attractions for plant breeders. Guayule plants produce up to 22 percent of their weight in rubber and inhabit very arid regions where there are few predators. Relatives of guayule grow in more hospitable areas, turn only about 2 percent of their total weight into rubber, and produce complex terpenes that deter feeding by microbes, insects, and animals. Some of these terpenes also inhibit the growth of plant tumors.

In seeking the best combination of disease resistance and rubber production, some hybridizers have overlooked the fact that terpenes can also be harmful to humans. Others say that such potential harm will not create a problem because guayule can be harvested mechanically, in contrast in *Hevea* rubber trees in the tropics, which are one of the most labor-intensive crops in the world. This reliance on machines is especially favored by the tire giants, such as Goodyear, which are already planting trial stands of guayule.

Mears sees problems, however. The U.S. Bureau of Indian Affairs, for instance, thinks guayule can promise Indians in the southwest an economic base for their poverty-stricken reservations. And the United States and Mexico have an agreement to share the results of guayule research. Some of the guayule, says Mears, is bound to be harvested by hand. "This is one of the rare cases in which evidence of a hazard in hybridization exists before a plant has been commercially developed. It would be a shame to overlook the danger."

No Move for Weapons Labs

The University of California board of regents on 20 July voted down the motion of one of its members, California Governor Edmund G. Brown, Jr., calling for termination of the university's management of the Lawrence Livermore Laboratory (LLL) in California, and the Los Alamos Scientific Laboratory (LASL) in New Mexico. The vote was 15 to 7. The two labs are the nation's only nuclear weapons design facilities.

The outcome was not unexpected. The board, most of whose members were appointed by former Governor Ronald Reagan, is regarded as conservative on such issues. In addition, the university has managed LASL since its inception in 1943 and LLL since 1951. The university receives an annual fee of $3.8 million to run the facilities; the budgets of the laboratories total about $600 million annually.

The board's vote was its first ever on the question of the university management of the weapons labs. It came in the wake of increasing criticism by faculty, students, and outside activists during the past decade over the university's role in weapons research. To settle the issue, Brown last 18 May asked that all weapons-related research be removed from LLL and that the university sever all ties with LASL (*Science*, 29 June). The day before the regents voted on the issue, four California congressmen released a statement urging the regents to sever ties with both facilities. A petition

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signed by 15 percent of the university's nine-campus, 6000-member faculty also called for severance.

Run on Risk and Benefit

It is by all standards one of the "in" policy topics of the moment, but even so, the crush of people was larger than expected. Room had initially been set aside for 100 participants, 150 at most. But when the opening day rolled around, some 250 paid registrants showed up—and there would have been more, but not a few applicants had been turned down.

The cause of the commotion was a 2-day forum on risk/benefit analysis. Sponsored by AAAS and held in conjunction with hearings of the House and Senate science committees, the sessions on Capitol Hill gave legislators, bureaucrats, and scientists a chance to hash over the role of RBA in congressional decisions based on science and technology. Industry also showed up in force, including representatives of Exxon, U.S. Steel, duPont, Monsanto, and Merck. Faced with increasingly stringent government regulations, many companies use RBA to make their case. The diet soda people, for instance, argue that the benefits of fat reduction far outweigh the slight risk that saccharin will cause cancer.

Many participants said that there should be a broader understanding of risk/benefit trade-offs in government. "Analyses of federal regulation fail to make a complete accounting of the costs of not regulating, which are paid for by the government," said Senator Paul E. Tsongas (D–Mass.). "Federal regulations also can save industry huge amounts of money in product liability suits, workmen's compensation, cleanup costs and legal suits." For instance, Tsongas said that a $200,000 investment in pollution control equipment would have saved one company $12 million in settlements and saved the government $8 billion in river cleanup.

Not a few speakers at the sessions waxed skeptical. Daniel Callahan, director of the Hastings Center, spoke of the "inherent uncertainty" in the field. The only solid scientific data on most risks, he said, come only after long experience—such as with birth control pills. And even when hard data are at hand, it is often impossible "to gain a social consensus on what counts as an acceptable risk."

The forum was billed as looking at the trade-offs between risks and benefits in both "science and technology policy decisions"—much to the distress of one speaker. "I trust and hope that neither congress nor the courts will ever undertake to assess science," said Howard T. Markey, Chief Judge of the Court of Customs and Patent Appeals. "Knowledge never hurts. It is the use of knowledge, what we call technology, that can heal or harm. In the hands of a Carnegie, a furnace makes steel. In the hands of a Hitler, it burns corpses."

A Blow for the Whales

"We rammed her good and proper," said Paul Watson, 28, leader of an expedition aboard the *Sea Shepard*, a 210-foot trawler owned by a U.S. conservation group known as the Fund for Animals. "I hope the owners of all other pirate whaling ships will take note," he said. "I'll do the same to them."

The object of Watson's wrath was the *Sierra*, a ship that conservationists say is controlled by Japanese business interests, though it flys a Cypriot flag and is owned by a Liechtenstein-based company. The ship ignores the agreements and the strict quotas of the International Whaling Commission (IWC). It hunts indiscriminately and kills in a rather cruel manner. While most whalers use explosive-tipped harpoons, the *Sierra* shoots barbed metal ones that do less damage to the meat but prolong a whale's death. The last agonies of a whale often attract other cetaceans who try to comfort their kin. Around the *Sierra*, they often end up harpooned as well.

To help stop the slaughter, the 789-ton *Sea Shepard*, its bow packed with 100-tons of cement, set off in search of the 683-ton *Sierra*. The pirate whaler was sighted 180 miles off the coast of Portugal, and the conservationist's ship shadowed it to the Portuguese port of Oporto, where it was expected to unload its cargo. Outside the harbor last 16 July, *Sea Shepard* rammed the *Sierra* just forward of amidships, tearing a 6-foot gash in its hull and flooding a compartment loaded with whale meat. The *Sierra* limped into port and, according to Craig Van Note, vice president of a consortium of nine conservation groups known as Monitor, should be out of service for several months. The *Sea Shepard* suffered a battered bow. "None of us condone violence," says Van Note. "But something had to be done."

It is ironic, but the problem of pirates may get worse because of recent victories by conservationists who want to put a complete stop to the killing of whales. At its annual meeting in July, the IWC decreed that for 10 years the Indian Ocean is to be a sanctuary for all species of whales. Moreover, the commission called for a worldwide ban on the hunting of whales (except the still numerous minkes) by factory ships. The vote was 18 to 2, Japan and the Soviet Union voting no. The result? During the upcoming whaling season, IWC members can only pursue whales other than the minke in small boats that pull out from shore when whales are sighted. At least 6000 sperm whales are expected to be saved next year because of the ban. World quotas were also lowered at the meeting, the catch for 1980 being limited to some 16,000 whales, compared to 20,000 in 1979 and more than 46,000 in 1973.

All this looks fine on paper, but on the open seas it adds up to a cash incentive for the outlaw whalers, who are eager to sell their catch at the highest price to whale-hungry markets, for the most part Japanese. "The unregulated whalers are quickly expanding their operations," says Van Note. "Since 1976, they have established four whaling ships in Taiwan, one in Chile, another ship has joined the *Sierra*, and two more pirate whalers are being converted."

William J. Broad