Briefing

Himalayan Spy Device Said to Pose No Radiation Risk

The threat of escaped radiation posed by a U.S. plutonium-powered spy device that was lost in the Himalayas in 1965 is "negligibly small in magnitude and should not be a matter for alarm," according to a committee of scientists appointed by the Indian government to look into the affair.

Fears of radioactive contamination had been raised in April 1978 when Prime Minister Morarji R. Desai of India confirmed for the first time that an India-United States intelligence team had lost the device in a snow storm. The American-made device, which weighed 38 pounds and had a power pack containing 3.8 pounds of plutonium 238, was to record atomic explosions and rocket operations in China. At the time, in the mid-1960's, India had just fought a war with China, and both India and the United States were deeply suspicious of the Chinese, who had exploded an atomic device in Sinkiang Province in October 1964.

The spy device was to have been placed atop 25,645-foot Nanda Devi, one of India's highest peaks, but a blizzard forced members of the intelligence team to retreat. They left the device 2000 feet short of the summit, and when they returned the following spring, they found it had been buried or swept away by an avalanche. Ground and helicopter searches made in warmer weather during the next 3 years failed to find any trace of the device.

The loss was kept secret until April 1978, when a report in *Outside*, a publication of the American magazine *Rolling Stone*, claimed that a Central Intelligence Agency mountaineering team had abandoned the device. A storm of protest was immediately raised in New Delhi, not only for ecological and political reasons, but also because there was fear that radioactive runoff would pollute the sacred Ganges River. The United States Ambassador, Robert F. Goheen, was summoned to the foreign ministry and asked "to ascertain the truth as early as possible." Soon afterward, however, Indian Prime Minister Desai admitted that his government had been fully consulted on the mission at the time, and that it had been undertaken after joint consultations between the two governments "at the highest level." He also said that a similar device had been successfully installed in a neighboring mountain in 1967, presumably also to spy on China, but was removed a year later. At the time of these disclosures, Desai ordered a nine-member committee to study possible radiation hazards posed by the lost device.

That report, presented to both Houses of the Indian Parliament on 18 May by Desai, suggested that there should be continuing monitoring for radioactivity and that efforts to recover the device should be pursued. It noted, however, "that whether the device has fallen on glacier ice or is buried under rock, it may result at most in local contamination of soil and is not likely to present any significant contamination problems for water and air."

Science Museums Panned for Pushing Industry Line

Near the end of the "Electricity and Our Future" exhibit at the Chicago Museum of Science and Industry stands a question and answer machine that makes sure visitors have paid attention and learned their lessons. With flashing lights and illuminated signs, it offers to "Test Your Energy IQ." Attaining the title of "Energy Genius" is a snap. One simply answers that nuclear power plants are "non-polluting," have caused "no injury to the public," are "more safe than conventional plants," and can "generate energy at a lower cost than coal or oil." Variations on this pronuclear theme are found all over the "Electricity and Our Future" exhibit—at the expense of other energy sources. Geothermal power is dubbed as "polluting." Wind power is "not economical." And solar power is "still costly." According to glittering panels and a dozen shiny display units, the only promising alternative to fossil fuels is nuclear fission.

The exhibit, if you haven't guessed by now, is sponsored by Commonwealth Edison, a Chicago utility that operates seven nuclear power plants, is constructing six others, and has two more on the drawing board. And not everyone is happy that a public museum is pushing an industry line. "The utility's intent is clear," says Howard Learner, a Harvard law student who recently completed a 6-month study of science museums for the Washington-based Center for Science in the Public Interest (CSPI). "Besieged by adverse publicity over the dangers and high costs of its nuclear power plants, Commonwealth Edison is out to present a lavish tribute to the untarnished glories of nuclear power, rather than a legitimate educational program concerning electricity and energy." It's not right, says Learner in CSPI's recently released *White Paper on Science Museums*. In 1978 the Chicago museum received some $2.2 million in taxpayer support. With that kind of backing, says Learner, it should deliver more than industry fluff on energy.

The problem is not limited to a particular exhibit or to Chicago, according to the *White Paper*. It sharply criticizes science museums in Boston, Los Angeles, and Detroit for their "blind acceptance of corporate donations." At the California Museum of Science and Industry in Los Angeles, for instance, an exhibit tells visitors about great progress in cleaning up air pollution in Los Angeles County. It was donated by General Motors. Even the Smithsonian, the federally supported museum complex in Washington, does not escape criticism. Several displays, such as cars donated by the STP Corporation and an illuminated map donated by AT & T were criticized as having to do more with advertising than with education.

Tight budgets were pointed to by the report as one reason that science museums were such easy marks for industry-sponsored exhibits. Rather than scorning corporate support, however, the *White Paper* says that museums should encourage corporations to give general donations (which are tax deductible for up to 5 percent of pre-tax profits) rather than supporting specific exhibits.

Critics of the CSPI *White Paper* say the idea is nothing but a pipe dream. They note, for instance, that in the past, corporations have never given

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that type of obligation-free donation. Why should they start now? Some also critique the often contentious tone of the *White Paper*. The report, for example, hits the Smithsonian's National Air and Space Museum as "a temple to the glories of aviation and the inventiveness of the aerospace industry." But what else could it be? "The museum," says Lawrence Taylor, coordinator for public information at the Smithsonian, "is filled with actual airplanes, rockets, satellites, and other aerospace hardware that has been donated to the Smithsonian. What's so criminal about that?" At the Chicago Museum of Science and Industry, the director, Victor Danilov, calls the CSPI report "a very naïve and impractical view of the real world. It is geared to show that we're in cahoots with big business and that it is a bad relationship. But it's just the opposite. If it were not for business and industry, you wouldn't have so many science museums in this country."

Yet even at the Chicago museum, which has more industry-sponsored exhibits than any other U.S. museum, the corporate line is not necessarily the last word. In March, for instance, more than 200 demonstrators picketed and leafletted in front of the museum, demanding that the pronuclear "Electricity and Our Future" exhibit be given the boot. And now the CSPI *White Paper* has added fuel to the fire. The complaints have apparently made their mark. The exhibit is going to be revised, Danilov recently told *Science*, "to present a more comprehensive story."

Rubber Bible Turns 60

The bible of laboratory scientists is going into its 60th edition this July. At 2500 pages and 6.5 pounds, the *CRC Handbook of Chemistry and Physics* is no small collection of tables, physical constants, and esoteric facts. It has simplified life for generations of scientists. For all its substance and renown, however, there has always been an air of mystery about the book. What does the CRC stand for? A look at the fine print on the back side of the title page only deepens the mystery. Why is an organization known as the Chemical Rubber Company turning out a scientific reference work? A call to CRC Press on the occasion of the book's 60th anniversary produced a surprising, if not earthshaking, story. In short, what is now a scientific bible started out as a huckster's come-on.

Around the turn of the century, an engineering student at the Case School of Applied Science (now part of Case Western Reserve University) started a part-time enterprise to help finance his college education. Arthur Friedman made rubber-coated aprons for chemistry classes and called his one-man effort the Chemical Rubber Company. Starting in the late summer, he would make the aprons in a small hot loft and peddle them to high-school teachers around Cleveland, Ohio, in time for the start of their fall classes. Business boomed, but not enough for the upstart entrepreneur. By the time he graduated from Case in 1907 with a degree in mechanical engineering, Friedman was giving away, with group orders of aprons, a small booklet that contained handy formulas, logarithms, and a periodic table for the use of chemistry students. "We don't know the exact conditions," says Earl Starkoff, general manager at CRC Press, "but we think that if a high school ordered something like 10 aprons, then the person placing the order would get a booklet for free."

Demand for the booklet grew, and Friedman kept going back to his old professors at Case for more tables and formulas. By 1913, he brought out a copyrighted, hardbound edition of 116 pages—still as a come-on to be given away with large orders of aprons. But not for long. Sales took off, and Friedman saw the light. Starting in 1914, the *Handbook of Chemistry and Physics* was sold on its own. Things have been booming ever since. Though the last rubber-coated apron was squeezed out in 1943, the *CRC Handbook* continues to prosper, the 1978 edition going out to more than 100,000 scientists and libraries. "It reached international distribution in the early 1920's," recalls Bernard Starkoff, president of CRC Press and son-in-law to the late Arthur Friedman. "Whole generations of scientists over in England grew up calling it the rubber bible. It is still called the rubber bible over there."

William J. Broad

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cally are contributing to interregional pollution problems that are truly alarming.

The pollution from the heavily industrialized Ohio River basin alone is enough to constitute a serious national problem. With its scores of large coal-burning power plants (not to mention countless industrial boilers), this basin is generating hazy, polluted air masses that are regularly being transported, depending on the wind, northeastward across Pennsylvania and New York into New England, northwestward across Illinois into Wisconsin and Minnesota, or due north into Ontario.

Accordingly, groups such as the Environmental Defense Fund (EDF) are now beginning to see the interregional transport of SO_2 and sulfate—and the lax regulation of existing power plants—as a key issue in air pollution control. Costle and other officials at EPA also are expressing concern. "If I could get a good legal handle on it, I would like to tighten up standards for existing plants," Costle told *Science* recently.

But there is reason to question whether such a handle is lacking. Some middle-level officials at EPA, frustrated at the failure to deal more effectively with the massive discharge of SO_2 from existing plants, say that it probably is not, although they concede that Congress has not made it easy for the agency to cope with the problem.

Congress first made a sharp distinction between existing and new power plants in writing the Clean Air Act of 1970. A specific requirement for scrubbers was not imposed then for any plants, but new plants were to limit their emissions to 1.2 pounds of SO_2 per million Btu. For existing plants, there was, and is, no flat, across-the-board ceiling on emissions.

Instead, control of their emissions was left largely to the states, which were directed to prepare state implementation plans (SIP's) based on two kinds of ambient air standards to be promulgated by EPA, primary standards intended to prevent harm to human health, and secondary standards intended to reduce harm to the environment.

The SIP's work this way. If, for instance, an SO_2 level of 365 micrograms per cubic meter (averaged over 24 hours) is considered the maximum allowable from the standpoint of protecting public health—this is, in fact, EPA's primary ambient air standard for SO_2—then stack emissions which cause concentrations greater than that are not supposed to be permitted. Pollutant dispersal and