Chernobyl's Cloud: A Lighter Shade of Gray

A study of the Chernobyl disaster finds much anxiety but no major impact on the health of the surrounding population

Vienna—REPORTS THAT THE CHERNOBYL nuclear accident caused widespread illness are false, according to radiation experts who gathered here last week for the first comprehensive international evaluation of the consequences of the reactor explosion. Scientists attending the meeting—held at the headquarters of the International Atomic Energy Agency—dismissed rumors that fetal and genetic anomalies had significantly increased. Indeed, they found levels of radiation exposure generally lower than those calculated by Soviet experts. Their report also faulted the overcautious protective measures taken by the Soviet government and concluded that many people suffered unnecessary stress because of the confusing way that the government released information about the accident and the need for evacuation.

Despite the criticism, many Soviet scientists and administrators at the conference said they were pleased to learn that the impact on public health would not be as severe as some had predicted. Radiologist Angelina Guskova of the Moscow Institute of Biophysics commented, "I am happy for my country that the doses received are lower than we surmised. Now the hard problem will be to educate the public about it, as [the public] attributes all changes in health in the region to the radiation from Chernobyl."

The independent review, called the International Chernobyl Project, began in 1990 in response to a request for help from the Soviet Union. About 200 scientists and medical experts from 25 countries focused their research on a group of 825,000 people living in contaminated areas of the Ukraine (31% of the group), Byelorussia (45%), and the Russian Federation (24%). The study deliberately left out people who had lived in the 30-kilometer radius forbidden zone around the Chernobyl reactor and the 200,000 people from all over the Soviet Union who may have received high doses of radiation while cleaning up the accident.

The aim was not to undertake a complete independent survey. Instead, explains Itsuzo Shigematsu, director of the Radiation Effects Research Foundation in Hiroshima and leader of the project, international experts tried to assess the Soviet research by examining analytical methods, checking the calibration of instruments, and carrying out only limited sampling on their own.

The project's most important task was to investigate the actual and potential health impact of the disaster for people still living in the region. Lacking baseline data, international teams of field researchers set up a comparative study between six uncontaminated villages and seven contaminated villages, including a total of 1356 people.

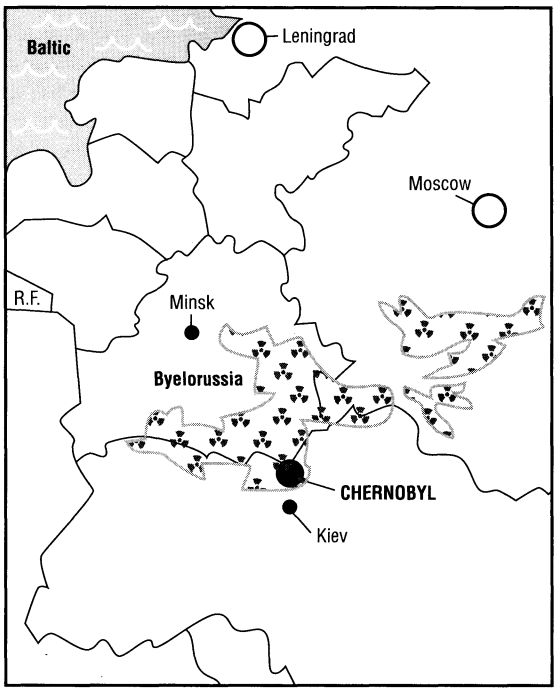
Team leader Fred A. Mettler from the University of New Mexico said the analysis would provide a "methodological example" for future Soviet work. Many of the earlier medical studies, says Mettler, "were poorly done, with no control groups.... In our report, we spelled out the methodology in nauseating detail to show how a study ought to be done when you have the opportunity to do everything you can."

The teams did not find any health disorders that could be directly attributed to radiation exposure. But they found high levels of stress and anxiety in both the contaminated and the control villages. The report noted that these results were "wholly disproportionate to the biological significance of the radioactive contamination," suggesting that they may have been in part produced by the confusing way the government handled public information on the accident and its aftermath.

Given the small size of their sample, the medical field teams could draw statistically significant conclusions only about common disorders. For more unusual diseases, they had to resort to data from the official Soviet registers. These are problematic, says Mettler, because they lump different kinds of diseases together and list them according to geographical and administrative boundaries, rather than contaminated and noncontaminated areas.

The analysts found no evidence of a statistically significant increase in fetal and genetic abnormalities, or in leukemia and thyroid cancer. Because the baseline incidence of malignancies is already high, it will be hard, if not impossible, to detect statistically significant increases in the future, even with optimal registration, says Mettler. But he believes it will be worthwhile to monitor limited high-risk population groups, such as children who have accumulated high doses of radioactive iodine in their thyroids. "There are going to be children with thyroid cancer, and they are very curable. It would a mistake to miss those," says Mettler.

The report found that environmental contamination maps and estimates provided by the Soviets were generally accurate, with the exception of measures of strontium levels, which were overestimated. Radioactivity in drinking water and food was well below levels hazardous to health—in many cases, even below detection limits. Dose estimates for people in the affected areas are a factor of two to three times lower than those prepared by Soviet experts, according to the report. The differences were not caused by inaccurate measurements, but by the deliberate conservatism built into the Soviets' calculations, the report says.



Winds from Chernobyl. *Shaded regions have contamination levels of 1–5 curie of radiation per square kilometer.*

The report reserves its strongest criticism for the protective measures taken by the Soviet government, especially the relocation of people living in contaminated areas. Although the government's early response was "broadly reasonable," longer term measures were often unnecessarily strict.

One of the key mistakes officials made in selecting people for relocation was to use a radiation exposure index that fails to dis-

criminate between past and future doses. The commonly used criteria are based on an individual's lifetime radiation dose. But many people in the region would exceed threshold limits whether they move or not—since they had received close to the maximum level soon after the Chernobyl accident. Now, even exposure to natural background levels of radiation will push them over the ceiling. For people in this situation, relocation is not advisable, the report says, given that radiation levels in the region are now low.

This advice may be correct scientifically, but social and political pressures on the government are such that logic may not prevail. The relocation policy is largely a response to public anxieties, and the report recognizes that any relaxation of the current criteria for relocation would be "almost certainly counterproductive." As psychologist Terence Lee of the University of St. Andrews in Scotland explains, political changes in the Soviet Union are bringing forth many new politicians eager to champion public causes, and the effort to relocate Chernobyl "victims" is one of the most popular. It's likely to win their support for some time—whether or not relocation makes sense. ■ FELIX EIJGENRAAM

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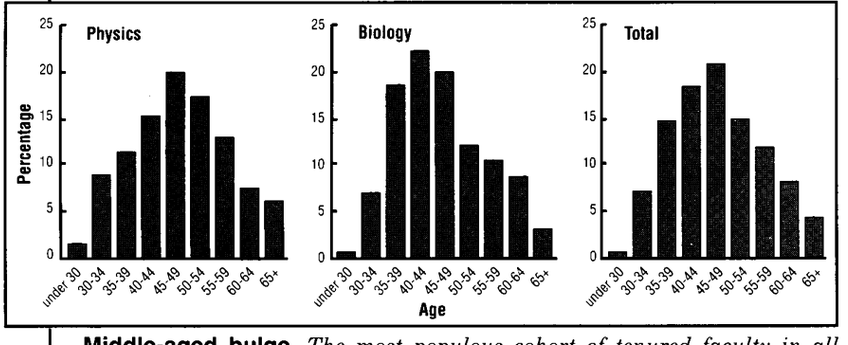
NRC Panel: Abolish Mandatory Retirement

University professors coming up to their 70th birthday should have more than a life of enforced retirement to look forward to. So says a panel of experts on college financing at the National Research Council (NRC). The report concludes that if current rules requiring tenured faculty to step down at age 70 are abolished, colleges would not find themselves so clogged with dead wood that they would be unable to hire young faculty. That was the reason most often cited for not ending the age limit. But the panel's recommendation that mandatory retirement be dropped seems likely to meet with little resistance—even from the research universities—which may be hit hardest by the aging faculty syndrome. As one lobbyist for universities said, "The last thing we need right now is to be seen defending a special privilege"—in this case, the privilege to put 70-year-olds out to pasture.

Congress asked the council for this study after doing away with mandatory retirement for most professions in 1986. But astute lobbying by college administrators persuaded several senators to add professors to a motley group—including police officers and firefighters—exempted from the law until 1994. Congress held out the possibility that it might continue to impose the age 70 retirement rule on these people, but that now seems unlikely.



Middle-aged bulge. *The most populous cohort of tenured faculty in all disciplines* (right) *is the 45 to 49 age group, heading for retirement in 2112.*

The National Research Council, meanwhile, was to examine problems that might occur if age limits were abolished for tenured faculty and then report back to Congress. Would this create a "bulge" in demographics, packing the universities with octogenarians? Would it slow the rate of turnover in the lower ranks? Would it smother intellectual ferment or delay the hiring of women and minorities?

According to the chairman of the panel, Ralph Gomory of the Alfred P. Sloan Foundation, the short answer is: Don't worry. Gomory and his colleagues surveyed 250 universities and found that most public universities and colleges wouldn't have a problem. Some of the best research universities would, however, see an increase in the average age of faculty. Already, professors at these elite schools seem to enjoy their situation so much that many remain on the payroll until they are compelled to retire. These people would probably stretch their careers even further given the chance, Gomory says. This would present a special problem for places like the University of Chicago, Harvard Medical School, and Yale University, where a large proportion of the faculty—64%, 85%, and 76%, respectively—already wait until age 70 to retire.

The Gomory committee recommends that these institutions develop special incentives to encourage early retirement. Stanford, for example, is now considering a plan that would offer part-time pay and extra health benefits during a quasi-retirement period to those who agree in advance to retire at 70. It's not clear just how much incentives such as these would cost, however.

The only note of dissent at the meeting where the NRC report was released came from Sheldon Steinbach, representing the American Council on Education. He said that, unlike the big universities, small private colleges would be devastated by the change in rules. Their budgets are so tight already that they won't be able to find the extra cash needed to create special incentives. In a weak economy, Steinbach thinks, aging faculty members will cling to their jobs. The notion that virtually all colleges will be able to coax older faculty into retirement with payoffs is simply a "pipe dream" he says.

The Gomory committee didn't see this as a significant problem, largely because past retirement patterns indicate that there will be no big change in 1994. One batch of data comes from states such as Florida and Wisconsin that have already "uncapped" the age limit, and another from a period in the late 1970s when Congress raised the mandatory retirement age from 65 to 70. "Few faculty chose to continue working past age 70" in the uncapped states, the report says. For example, at the University of Florida, since mandatory retirement ended in 1976, only 1.6% of the faculty have remained beyond 70.

To estimate what might happen to hiring patterns, the committee took past trends and projected them into a variety of scenarios, using the faculty age profiles of real universities as models. At worst, said Donald Hood of Columbia University, a few universities might expect to see the age of the faculty rise over a long period, perhaps leading to a 15% decline in available new posts. The committee concluded that even this would be manageable. ■ ELIOT MARSHALL