cording to the latest official figures, 31 people have died from burns and radiation sickness.

Outside the plant site, radiation levels began to increase sharply several hours after the accident. The report notes that immediately after the accident, winds carried radioactive debris past Pripyat, the nearest large town, but as the winds dropped, fallout increased. By 7:00 am on 27 April, radiation levels in the area of the town closest to the plant increased to 180–600 millirems per hour, up to 50,000 times the background level, and they continued to increase until about 5:00 pm, when they reached 720–1000 millirems per hour. At 2:00 pm evacuation of the town's 45,000 people was begun. Within a few days, a total of 135,000 people living within a 30-kilometer radius of the plant were evacuated.

The report is not sanguine about how soon people may be returned to their homes. It notes that radiation levels are likely to change as debris is blown around, and states that repopulation will not be considered until the entire 30-kilometer zone has been stabilized. This will require entombing the reactor itself in a concrete case, decontaminating the reactor site, and scraping up some heavily contaminated soils in the region. This could take as many as 4 years.

The report estimates that the Pripyat evacuees received 1.5–5.0 rads of gamma radiation and 10–20 rads of beta radiation to the skin, and perhaps a maximum of 30 rads to the thyroid gland resulting from ingestion of iodine-131. These doses may increase natural cancer morbidity among the evacuees by some 2%, the report estimates.

Outside the 30-kilometer zone, radiation exposure was of course much lower, but because millions of people were affected, the anticipated number of excess cancers could be very large. As a rough estimate, the report calculates that exposure to relatively short-lived radionuclides from the Chernobyl accident will increase cancer mortality by about 0.05% in western Russia. That would translate to some 5000 additional deaths over 70 years.

The most serious long-term threat to health and the environment may come from radioactive cesium, which has a half-life of 30 years. On the basis of "preliminary, purely speculative estimates," the report suggests that exposure to cesium-137 could increase the death rate from cancer in western Russia by a maximum of 0.4% over the next 70 years. That would result in almost 40,000 excess deaths.

These calculations are likely to be the subject of intense debate at the Vienna meeting. ■ COLIN NORMAN

Briefing:

Earthquake Research Center Siting Triggers California Tremors

A National Science Foundation decision to make the State University of New York (SUNY) at Buffalo the location for an earthquake engineering research center has caused a California backlash. Partisans of a rival proposal from the University of California at Berkeley are contemplating a challenge to the award.

Not only do the critics claim that Buffalo is far from the seismic action in the United States, but they charge that NSF departed from its stated criteria in awarding the center, and question the composition of the review panel that made the choice, pointing out that only one of seven members of the peer review panel is professionally identified with earthquake engineering.

The center will conduct research to improve basic knowledge about earthquake engineering practice and earthquake hazard mitigation. The center is to receive up to $25 million in NSF funds over 5 years. Other institutions associated with the Buffalo proposal are City College of New York, Columbia, Lamont-Doherty Geological Observatory, Cornell, Lehigh, Princeton, and Rensselaer Polytechnic Institute.

The SUNY Buffalo and Berkeley proposals were the only two seriously considered in the final stage of the competition. California Institute of Technology, Stanford, and the University of Southern California are parties to the Berkeley proposal. A requirement that federal funds be matched equally by state and private funds over the 5-year period was apparently a strong factor in narrowing the field.

Buffalo was guaranteed matching funds of $5 million for the first year by New York state's Urban Development Corporation. Funding support for the Berkeley proposal was provided by a combination of $3 million voted by the state legislature and more than $1 million earmarked by the universities involved. Although the first-year financing by the California group fell short of matching the maximum $5 million offered by NSF, sources in the foundation say that funding was only one of more than 15 requirements and not a decisive factor.

In announcing the award, NSF director Erich Bloch noted that the new center had been created through a foundation decision that a national center for earthquake engineering research was desirable. This sets the new center apart from a group of NSF engineering research centers whose research focus has been determined by choices among competing proposals.

The California reaction has included inquiries about the award to NSF from members of the California congressional delegation and discussions among researchers in the universities endorsing the Berkeley proposal about what course to take. There is sentiment among some of the Californians to press for a review and reversal of the award. The routes available include a request for a General Accounting Office investigation of the award or a review by a committee named by the NSF director.

At this point, Berkeley engineering professor Joseph Penzies, principal investigator for the Berkeley proposal, says the the only decision has been that he write to NSF requesting a detailed explanation of the choice and a clarification of what the critics see as major issues in the selection process.

The Californians would like to know if rumors are true that the foundation in selecting the winning proposal put heavy emphasis on the center's reaching out to researchers on a broad geographic basis. If so, the critics argue, the original NSF announcement did not place a premium on breadth. The Berkeley proposal would mainly involve researchers in California.

Buffalo dean of engineering George Lee said his impression is that NSF did not spell out the criteria restrictively, but welcomed imaginative proposals. He says Buffalo and the universities allied with it took a "consortium approach," aiming to create a center concerned with broad issues of earthquake engineering research and inviting all researchers capable of contributing to participate. Lee says that Buffalo will serve as administrative center for the enterprise, but research is expected to be distributed among the cooperating institutions. Of five faculty members designated as principal investigators, two are at Buffalo and one each at Columbia, Lamont-Doherty, and Cornell.

The makeup of the peer review panel is also at issue. The critics say that only one of the members of the panel has a background in earthquake engineering research and none were from the Far West. An NSF source says that the panel's composition reflects the effort to muster reviewers that were both highly qualified technically and had no conflict of interest on the center.

As for the matter of center's location, the NSF news release announcing the award noted that, "Although many people think of earthquakes as primarily a West Coast problem, they are, in fact, a national problem. Thirty-nine of the 50 states are subject to moderate to major earthquakes each year, making them a prime concern to planners." ■ JOHN WALSH