

Hanford nuclear radiation doses assessed

- "Serious" exposure for 13,000 residents
- Thyroid disease study under way

Boston

MORE than 13,000 people living near the Hanford Nuclear Reservation in south-eastern Washington state received "significant" doses of radiation as a result of secret emissions from the facility in the 1940s, according to a study* released last week by an independent panel of researchers supported by the US Department of Energy. The study is the first comprehensive attempt to reconstruct the amount of radiation received by people living near Hanford, which is used to produce nuclear weapons, and calculates levels of exposure greater than those so far seen near any other nuclear facility in the United States.

The data released last week represent the completion of the first phase of a five-year, \$15-million study. The initial phase focused solely on the largest known releases of radioactivity from the facility: air emissions which occurred between 1944 and 1947 and discharges into the Columbia River between 1964 and 1966. From the air-borne incidents alone, according to the study, approximately five per cent of the 270,000 residents living in the vicinity of the plant during and after the Second World War may have accumulated doses of radiation in excess of 33 rads over a three-year period and a small number of infants and children could have accumulated doses of radiation to their thyroid glands as high as 2,900 rads in the same period. The current level of airborne radiation considered safe by the US government for civilians living near nuclear weapons plants is 0.025 rads per year and workers in nuclear power plants in the United States are limited to 5 rads exposure per year to their entire body.

James Watkins, Secretary of the Department of Energy, described the levels of exposure received by Hanford residents as "serious" in a press conference called before the report was released to the public. Members of the study's research panel emphasize that they have not attempted to predict the effects of radiation exposure on health. John Till, the panel's chair and president of a private radiological assessment firm, stated upon the report's release that the Phase I study "does not, nor was it designed to, link dose estimates with health effects. Our job," Till stressed, "is to estimate doses

people may have received." Phase I of the "dose reconstruction" study sought to find the most dramatic releases of radiation in the facility's 50-year history and to calculate the doses people may have received using a computer model that incorporates variables such as weather, geography, and a variety of 'pathways' through which radiation may have reached the population. Future phases of the project will seek to apply the model to a larger geographic area over a greater time span and to include an increasing number of radionuclides. Estimates of the residents' accumulated radiation exposure are thus likely to grow, at least to some extent, by the end of the fourth and final phase of the study in 1994.

At the same time, a separate epidemiological study is under way, sponsored by the Atlanta-based Centers for Disease Control, to determine the incidence of thyroid disease among the affected population. Till and other panel members said that they felt "strongly" that the radiation doses found so far justify research on health effects. Kenneth Kopecky, a biostatistician at the Fred Hutchinson Cancer Research Center in Seattle, Washington, who is affiliated with both studies, said that results from the CDC-funded 'Hanford Thyroid Disease Study' can be expected by 1993.

Both studies were begun after more than 19,000 pages of secret documents were released by the Department of Energy in 1986. The documents reveal that more than 400,000 curies of radioisotopes were released secretly into the atmosphere between 1944 and 1947.

The releases, far greater than any known to have occurred since, took place during the reprocessing of uranium, when radioactive fuel rods were dissolved in acid to extract plutonium for use in nuclear weapons. Although the process continued at Hanford for decades, changes in the technology used and in the filtration systems employed prevented further releases of similar magnitude.

Over the past two years, the panel led by Till has analysed the publicly released documents as well as another 20,000 pages of material, some of which are still classified. The study concluded that airborne releases of radioactive iodine 131 were likely to have been most dangerous for residents. Although iodine 131 decays to harmless levels within a few months, it would have been consumed by residents in milk from cows that grazed on contam-

inated grasses in the vicinity of Hanford.

The panel also estimated radiation doses received by residents who drank water and ate fish from the Columbia river, into which eight of Hanford's nine nuclear fuel production reactors discharged radioactive cooling water, and found them to be far lower than those received from airborne radioisotopes. The highest estimated exposure was 1.7 rads for phosphorus-32 accumulating in the gastrointestinal tract. But future phases of the study are expected to document higher levels of exposure as a more diverse set of radionuclides and a longer span of time are considered.

Predictably, the findings have caused uproar among Hanford residents. Some are calling for a public acknowledgement of wrongdoing from the Department of Energy and for medical compensation and assistance for those affected.

Although the project is sponsored by the Energy Department, its researchers were selected independently by the deans of four northwestern universities and its findings have yet to be officially sanctioned. A special disclaimer accompanying the report states that the information presented does not "necessarily reflect" the views of the US government or any agency thereof. Apart from Secretary Watkins preemptive comments, Department of Energy officials say that the agency will provide no immediate reaction to the findings.

Seth Shulman

BRITISH UNIVERSITIES

Council chief resigns

London

SIR Peter Swinnerton-Dyer is to resign as chief executive of the Universities Funding Council (UFC) at the end of March 1991. In a letter circulated to UFC staff, Swinnerton-Dyer, who is nearing retirement age, explains that he does not wish to move from London to Bristol, where the UFC will move its offices next year.

The resignation had been expected by some observers. Swinnerton-Dyer, chairman of the University Grants Committee until it evolved into the UFC in 1989, is seen as a less-than-enthusiastic supporter of some of the UFC's current plans. In line with government policy, the UFC intends to shift university funding away from the central provision of grants towards a system of fees. Lord Chilver, chairman of UFC, has said that the planned expansion of the university sector will be accompanied by a decline in the proportion of funds supplied through UFC. Peter Aldous



*Phase I of the Hanford Environmental Dose Reconstruction Project, July 1990, Pacific Northwest Laboratory, Richland, Washington 99352.