

German lab ordered to tighten monitoring

Munich. One of Germany's three former national nuclear research laboratories has come under fire from the Öko Institute, a leading environmental research organization, for failing to keep adequate track of some of its nuclear materials.

An unpublished report from the institute — a long-standing critic of nuclear energy — says that the GKSS (Forschungszentrum Geesthacht), near Hamburg, cannot be ruled out as the cause of a recent cluster of childhood leukaemias in its vicinity.

In addition, a tightening of the laboratory's monitoring and administrative procedures has been ordered by the energy ministry of Schleswig-Holstein, the *Land* (state) in which GKSS is located and which is run by the Social Democratic Party.

The report was commissioned by the *Land* last year. Although it has not yet been officially published, its allegations of lax supervision were leaked to the press last week, and have stirred up the German public's traditional sensitivity to nuclear issues.

The Krümmel nuclear power plant, adjacent to GKSS, was initially suspected as the cause of the nine cases of leukaemia in neighbouring villages since 1989. But a report two years ago from the institute found no evidence of either increases in waste output from the plant, or leaks of radiation, which could account for the cluster.

It was after this that the latest report on GKSS, covering the period 1982 to 1993,

was commissioned. The authors say that they found no direct evidence that leaks from GKSS might have been responsible for the leukaemia cases. But they say that they did find serious deficiencies in the centre's monitoring of its nuclear activities, making it impossible to draw firm conclusions on a possible relationship between GKSS and the cancer cluster.

GKSS was set up in 1956 as one of three national research centres in Germany concerned with the development of nuclear power. Despite a radical change in its orientation towards environmental research in the past few years (see *Nature* 370, 7; 1994), the centre still works with several sources of nuclear material.

One is an active research reactor, used for creating a variety of radioactive isotopes. According to the Öko Institute's report, this has always been well monitored, and can be ruled out as a possible cause of the cluster. In contrast, it says, the fate of some of the isotopes themselves, which are distributed to research institutes all over northern Germany, has not been so strictly monitored.

Tens of thousands of probes, containing elements such as thorium-232, plutonium-238, strontium-90 and radium-226, were produced during the 12 years covered by the report. Records of 63 of these are missing.

GKSS also acts as an interim store for several hundred containers of nuclear waste from hospitals, universities and

research institutes in northern Germany.

The report criticizes the lack of regular checks on the integrity of the containers, and the absence of alpha- and beta-radiation detecting equipment in neighbouring villages. It says such equipment should have been installed to provide regular checks on the exposure of the local population.

According to one of the report's co-authors, Christian Küppers, a physician, "levels of radiation relevant to leukaemia could have escaped" if there had been any fire in, or leak from, any of the containers.

Andreas Fleck, an official of the ministry of health, which is responsible for the nuclear storage site, admits that the containers are not examined regularly. But he insists that any serious radiation incident would have been detected by equipment in the depot housing the containers.

GKSS itself is declining to comment on the allegations of poor record-keeping until the Öko Institute's report is published. But officials of Schleswig-Holstein's ministry of energy say that, in response to the report, they plan to request immediate improvements in GKSS's administrative and organizational activities.

Such improvements include reliable monthly documentation of all the centre's activities involving nuclear material, installation of equipment at the research reactor to provide direct and accurate measurements of alpha-radiation. **Quirin Schiermeier**

Oxford and Cambridge still dominate UK citations list

London. Oxford and Cambridge Universities continue to dominate the rankings of British universities in a new survey of science citations. But there is a difference in emphasis between the two: Cambridge has the highest number of citations for papers in physical and chemical fields, while Oxford takes the lead in biological subjects.

The study, by the Institute of Scientific Information (ISI) in Philadelphia, covers scientific papers published and cited between 1991 and 1995 in ISI-indexed journals. Winning topics for Cambridge are physics, chemistry, materials science, engineering, geosciences, astrophysics and maths.

Oxford claims second place for citation numbers in all these subjects, and first place for immunology, microbiology, biology and biochemistry, molecular biology, ecology/environmental science and economics/business. Cambridge comes either second or third in five of these areas.

The Oxbridge domination is "not unexpected", according to an article in the January issue of the ISI's newsletter, *Science Watch*, because the citation ranking favours large institutions that produce many papers.

Other strong performers were University

Field	1	2	3
Physics	Cambridge (14,801)	Oxford (10,567)	Imperial Coll. (7,877)
Chemistry	Cambridge (13,881)	Oxford (7,908)	Imperial Coll. (4,813)
Materials science	Cambridge (1,753)	Oxford (973)	Imperial Coll. (846)
Engineering	Cambridge (2,357)	Oxford (2,088)	Imperial Coll. (2,008)
Geosciences	Cambridge (2,993)	Oxford (2,292)	Edinburgh (1,558)
Astrophysics	Cambridge (8,669)	Oxford (3,875)	Leicester (2,392)
Computer science	Edinburgh (154)	Imperial Coll. (98)	York (93)
Mathematics	Cambridge (794)	Oxford (634)	Imperial Coll. (467)
Ecology/environmental	Oxford (1,314)	Imperial Coll. (1,299)	Lancaster (864)
Agricultural sciences	Reading (847)	East Anglia (617)	Aberdeen (588)
Plant and animal sciences	East Anglia (3,570)	Oxford (2,212)	Bristol (2,209)
Clinical medicine	Univ. Coll. London (20,195)	Oxford (19,040)	King's Coll. London (12,897)
Immunology	Oxford (7,524)	Univ. Coll. London (3,590)	Cambridge (3,188)
Microbiology	Oxford (3,594)	Cambridge (2,554)	East Anglia (2,157)
Biology and Biochemistry	Oxford (20,088)	Univ. Coll. London (14,530)	Cambridge (13,746)
Molecular Biology	Oxford (19,924)	Cambridge (14,269)	Univ. Coll. London (13,834)
Neuroscience	Univ. Coll. London (10,635)	Oxford (8,376)	King's Coll. London (6,499)
Pharmacology	King's Coll. London (2,440)	Univ. Coll. London (2,251)	Cambridge (1,986)

College, London, with first places in neuroscience and clinical medicine, and King's College, London, which heads the list in pharmacology and psychology/psychiatry. Imperial College, London, achieved second or third rankings in seven fields, principally the physical and mathematical sciences.

But a separate ranking of British universi-

ties by citations per paper, where departmental size makes less impact, produced a different picture. Here the top score went to molecular biology at the University of Dundee, with an average of 17.74 citations per paper. The University of Durham came top in astrophysics, and the Open University in geosciences. **Claire O'Brien**