

Laboratory accidents

Inquiry into lab's bone cancers

THE Institut Pasteur in Paris has set up an external commission of inquiry to investigate the occurrence of three cases of bone cancer among workers in the same laboratory at the institute. Two of those affected have died in the past few months, and some colleagues suspect that the cluster of cases may be linked with work on oncogenic viruses being carried out in the laboratory. The outcome of the inquiry will be awaited anxiously by those elsewhere whose research involves mammalian oncogenes.

The Pasteur laboratory is called the genetic toxicology laboratory, and is largely concerned with the molecular biology of oncogenic viruses and of oncogenes. One of those who has died, Dr Françoise Kelly (aged 50), had worked in the laboratory for four years. A close friend of Dr Kelly's says that, before her death, she had come to believe that there should be an investigation of the hazards of the research on which she had been engaged.

Most recently, Kelly had been working on a project to effect the transformation of mouse embryo carcinoma (teratoma) cells by the transfer of genes derived from viruses known to be oncogenic in certain circumstances, simian virus 40 (SV40) and adenovirus in particular.

Specifically, Kelly was attempting to endow the mouse cells with a synthetic gene consisting of the "early T" gene of SV40, the DNA coding for a protein produced early in the viral life-cycle, linked with the promoter region of an early gene from adenovirus.

According to a spokesman at the Pasteur Institute, the experimental manipulations were carried under a hood which, while drawing air from the surrounding experimental area, filtered it through active charcoal. The spokesman added that the procedures followed in the genetic toxicology laboratory were "much more careful" than those common in mo-

lecular biology laboratories because members of the same staff were also used to dealing with a stream of potential industrial and environmental mutagens and carcinogens.

Little is known about the mutagens and carcinogens handled in the laboratory, apparently because much of the work is confidential to the commercial companies and other interests by whom it has been commissioned. According to an institute report in 1981, it signs secrecy agreements with clients who commission testing. It is, however known that the laboratory has worked on derivatives of the benzo and naphtho-nitrofurans, known to be powerful mutagens.

The possibility that the cluster of three bone cancers may be linked with the programme of testing for mutagenicity and carcinogenicity is contradicted by the usual length of the latency period for cancers induced by chemicals.

The second researcher to die, aged under 40, had worked in a laboratory across a corridor from Dr Kelly, but only for a period of six months in 1979-80, before the project to transform mouse embryonic cells had been begun. The third bone cancer patient, who is at present ill, is also under 40, and had worked in the same room as Dr Kelly although on a series of genetic manipulations of *E. coli*. There is no sign of damage to the technicians and the two students who had been assisting Dr Kelly with her last project.

These circumstances lend support to the suggestion by the director of the Pasteur

Institute, Raymond Dedonder, that the occurrence of the three cancer cases is probably a statistical coincidence. Dedonder put this view at a private meeting with Pasteur staff earlier this year. And while it seems that one of the bone cancers is a primary osteosarcoma, it appears that Dr Kelly's bone cancer was metastatic, and that the character of the primary cancer has not, in her case, been determined.

The case that the cluster may be statistical in origin is further supported by what is known of the movements of those involved. During the past ten years, between 200 and 400 people have worked in the Pasteur laboratories in which the three cases of bone cancer have now been recognized. Senior members of the Pasteur Institute also point to the occurrence of a similar cluster of cancer cases (brain cancers, characterized as glioblastomas) at a laboratory at Orsay over a period of twelve years; surprisingly, this has been shown to be consistent with chance.

Arguments such as these appear to have dampened most fears at the Pasteur itself, but there remains some concern that the external committee of inquiry set up by Dedonder last month may be inclined to cloud the issues. The commission includes Professor Jean Bernard, who is president of the French national ethical committee which considers issues raised by the new biology, and Professor Maurice Tubiana, director of the Parisian cancer hospital at Villejuif, both respected figures in French medicine. But the commission also includes three members chosen by the Pasteur's safety committee, a long-standing thorn in the flesh of the French nuclear industry.

Robert Walgate

Foreign students in science and engineering

Of all technical disciplines, engineering has the highest proportion of foreign students in each of the five countries above. The proportion ranges from 28 per cent in West Germany to 21 per cent in Japan. Japan also has the lowest percentage of foreign students in natural sciences (3 per

cent), compared with 18 per cent in the United States. For France in the histogram there are no data available for engineering, and agriculture and natural sciences are combined. From International Science and Technology Data Update 1986, National Science Foundation, Washington, DC. □

Chernobyl fallout: corrigendum

In the letter "Initial observations of fallout from the reactor incident at Chernobyl" by L. Devell *et al.* (*Nature* 321, 192-193; 1986), the inventory figures in the first column of Table 2 are low by a factor of 2.92. The correct column should read:

| Nuclide | Inventory (10^{17} Bq) |
|-------------------|---------------------------|
| ^{137}Cs | 1.52 |
| ^{131}I | 29 |
| ^{103}Ru | 41 |
| ^{141}Ce | 53 |
| ^{132}Te | 41 |
| ^{239}Np | 543 |

