HSE confident it can cope

THE UK Health and Safety Executive (HSE) is confident that it is adequately staffed to inspect all UK laboratories doing genetic engineering experiments.

In reply to questions by the House of Commons Select Committee on Science and Technology last week, the HSE said that its three specialist inspectors for microbiological research could cope with inspecting the UK's seven Category Three and two Category Four laboratories. The time lag between notification of a laboratory's intent to conduct Category Three or Four experiments and inspection had never exceeded six weeks.

Laboratories conducting Category One and Two experiments do not need to be inspected before work can commence. The HSE felt that because the inspection of these laboratories does not require such specialist knowledge, regional inspectors of medical laboratories could cope with them. So far, about 200 experiments in 50 centres have been notified to the Genetic Manipulation Advisory Group (GMAG). Since last July the HSE and GMAG have jointly inspected 14 of the centres.

GMAG has recently had a change of membership. Seven new members, J. Chamberlain, Sir Frederick Dainton, J. Ingle, M. Kogan, C. M. Puxon, P. M. B. Walker and P. Wildy together with a new chairman Sir William Henderson started work in January. Under its new chairmanship, GMAG may be taking a more positive attitude to work with recombinant DNA. Sir William has few fears about the potential scale-up of the processes in industry. He told the select committee at a previous meeting that "the hazards of scale-up are very much less than has been anticipated". He believes that 4,500 litres of reagent in clean, sealed stainless steel flasks are probably safer than the intermediate stage: "the danger is when you move from the bench to the 5 or 10 litre scale, when you don't have adequate procedures."

GMAG is setting up a subcommittee on scale-up, and Sir William is playing close attention to its membership. He feels it should have a strong representation of chemical engineers who have experience of risk assessment in industry.

Dr Ken Duncan of the HSE shares Sir William's lack of fear about the dangers of scale-up to industrial processes when this happens, he says, the HSE will be able to call on its chemical engineers, currently engaged in other activities within the HSE, for advice. Duncan, however, does not foresee unusual problems with scale-up. □

UK tightens up on lab safety

MANY OF the recommendations of the Shooter report, which called for tighter laboratory safety regulations following the smallpox outbreak at Birmingham University, are now to be implemented by the Government. The move follows the unofficial "leaking" of the report by Clive Jenkins, general secretary of the Association of Scientific, Technical and Managerial Staffs. The Government's decision reveals that it no longer considers the country's voluntary safeguards for handling viruses in laboratories as adequate.

Social Services Secretary David Ennals told the House of Commons last week that several changes were to be made. These include:

- Regulations compelling laboratories to give notice of their proposed work.
- An official licensing system to replace the present voluntary method of approving category A pathogen laboratories.
- Accepting the recommendation that category A laboratories should be inspected annually.
- Setting-up a review of the Dangerous Pathogens Advisory Group, the body responsible for approving these laboratories, to find ways of broadening its membership to include wider union and public interest.

No new legislation will be introduced to carry out these measures, which will be implemented as part of the Health and Safety at Work Act. Mr Ennals said public fears following the smallpox outbreak that killed medical photographer Janet Parker last September should not be allowed to cause panic. If overprotective measures were introduced, there could be great damage to the ability to carry out effective diagnosis or research.

Mr Ennals also revealed that a re-inspection of existing category A pathogen laboratories—which handle smallpox, rabies, lassa fever and other dangerous viruses—is now being carried out by the Health and Safety Executive. "In some cases it has become clear that improvements in safety procedures are necessary and immediate action has been taken", he said.

Details of these cases of "immediate action" were revealed by the HSE last week and consisted of stopping work with category A pathogens at two laboratories. The first, the public health laboratory at Colindale, North London, the only centre for rabies diagnosis in Britain, was visited on January 18 by HSE inspectors and a request for an end to dangerous virus work was issued.

The order was made in the form of a Crown notice, which is not legally enforceable as one Government body cannot prosecute another, although the HSE has recently called Mr Ennals to remove Crown immunity for such laboratories. However, the director of Colindale, Dr Eric Mitchell, said a new purpose-built virus laboratoriy was to be opened there in a few weeks—after it had been inspected by the HSE, DPAG and the Home Office.

The other laboratory, at the Lister Institution in Elstree, Hertfordshire, has been asked to improve safety precautions in the production of rabies vaccines. The laboratory was closed by the institution last June, and the HSE has instructed that it must not re-open without its approval.

Robin McKie

Switzerland to consider revised guidelines

Two months ago Mrs Shirley Williams, Secretary of State for Education and Science speaking on the television programme *Weekend World*, said that she would like to see the establishment of some form of international guidelines to regulate research on recombinant DNA. Commenting on the different guidelines already in operation in the United States, Britain and the European Community, Mrs Williams singled out Switzerland as one country operating outside these formal rules. There was a need, she said, to induce it to come within some form of "containment barrier".

Switzerland is of course the home of the large multinational pharmaceutical companies F. Hoffmann–La Roche, Sandoz and Ciba-Geigy. Roche and Ciba are both aware of the commercial possibilities of genetic engineering—and both have a finger in the pie. Roche sponsors the Basle Institute for Immunology and Ciba the Friedrich Miescher Institute, also in Basle. Both institutes have begun recombinant DNA research which is, as yet of a fundamental, rather than an applied nature.

But all recombinant DNA research in Switzerland whether commercially, privately or publicly sponsored is subject to certain controls. The controlling agency is a commission set up by the Swiss Academy of Medical Sciences in 1975. In an open letter dated April 1978, the commission set out its control policy. It was the commission's view that the U.S. National Institutes of Health (NIH) guidelines should operate in Switzerland and it recom-

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mended this to all practitioners in the field. The commission also made it clear that the responsibility for the safety of this work lies with the principal investigator.

Professor Werner Arber of the Biozentrum at the University of Basle, and one of the 1978 Nobel Laureates in Medicine is a member of the commission. Commenting on the responsibility of the investigator, he told *Nature* that: "It is perhaps important to say that the Swiss Law of Epidemics foresees that any work with pathogens and their products has to be carried out with the maximum of care, and our commission interprets this formulation in such a way that recombinant DNA [research] done in our country has also to be done with a maximum of care".

The commission compiles an annual register of all work done in genetic engineering. In 1978 there were some 31 projects in the field under 18 principal investigators, eight of whom were based in Basle. The projects are divided into two groups according to their source of DNA for recombination. Category 'a' experiments are those using cellular DNA and using *E. coli* as host; and category 'b' includes those using DNA from plasmids, bacteriophage and viruses and again using *E. coli* as the host. Twenty-two of the projects are in category 'a' and include work with embryological tissue from primates, other mammals, birds and cold blooded vertebrates. Eight of the 'a' category are listed as using 'inferior eukaryotes' as a source of DNA. In category 'b' the recombination work is listed as involving plant viruses, 99% pure organelle DNA from eukaryotes (but not primates) and plasmids or phage DNA from hosts, the genes of which are interchangeable with *E. coli*.

Of the 18 principal investigators 15 are based in universities, with the remaining three privately sponsored.

It is the European Science Foundation (ESF) which is trying to harmonise the guidelines and working conditions in recombinant DNA research in Europe. Arber represents the Swiss Commission at the ESF meetings and appreciates the effort the Foundation is making to find the common ground. However, Arber says that the Swiss Commission has still not reached a firm decision on the guidelines it will adopt in the future. In the next few months the commission will meet again to consider the revised NIH guidelines (which lift restrictions on some categories of recombinant DNA research, but which for the first time extend the controls to cover industry), those of the UK Genetic Manipulation Advisory Group, and the guidelines proposed for France and Germany.

Alastair Hay

Catch a falling Kosmos—and send the bill to Moscow

OPERATION Morninglight—the clean-up of northern Canada, following the "unscheduled re-entry" and crash of the Soviet satellite Kosmos-954 a year ago is now over, at a cost of some $13 million. Canada is sending a bill for $6 million to the Soviet Union.

Kosmos-954, which carried a power-source fuelled with some 50 kg of enriched uranium, crashed in the area of the Great Slave Lake on 24 January 1978. The first stage of Morninglight was launched within hours—a massive air search for radiation hot-spots. Within four days, three radiation hot-spots were located, and several more within the next week.

A party of six meteorologists encamped in the Warden's Grove area, two of whom actually touched a fallen fragment, were evacuated to Edmonton for radiation tests; but they showed no signs of contamination. As for the local Chipewyan Indian population, apart from a missing pair of trappers who were feared to be camping near a hot-spot, the greatest danger seemed to be fear and bewilderment as to the nature of the search, plus the ominous appearance, in the settlement at Snowdrift, of a wolf which refused to be driven away and finally had to be shot.

The second stage of Morninglight—a ground level survey—was scheduled for July, when the snows had melted. Shortly before it was to begin, uranium prospectors reported satellite debris in northern Saskatchewan, and the search was extended beyond the Great Slave Lake area. Morninglight finally covered some 90,000 square kilometres, from which over 3,000 pieces were recovered, mostly small particles, but with a few larger fragments, one of which was said to be—"as big as a five gallon drum". One of the larger pieces was so radioactive that a special lead container had to be built by the University of Alberta. Another fragment, though, a 225 cm × 50 cm stove-pipe shaped cylinder, was sufficiently "cool" to be loaned for temporary exhibition to the National Museum of Science and Technology in Ottawa.

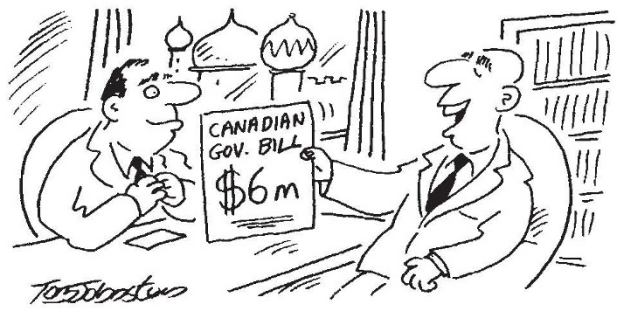
By the beginning of winter, when phase two of Morninglight ended, the Atomic Energy Board of Canada announced that the residual radiation risk in the impact area was minimal. Any remaining radioactive debris would soon decay to below natural background level, and the hazard to humans or wild life from accidentally ingested particles would be no greater than that from a medical x-ray examination. Nevertheless, as an additional precaution, the Federal Environment Department would monitor fish from the Great Slave Lake, while the Health Department would check the meat of migrating caribou herds.

Apart from these minor hazards, and the $13 million bill, what are the lasting effects of the Kosmos-954 incident? First, the setting up, on Canada's initiative, of a UN working group to study the technical aspects and safeguards for nuclear power sources in space, the first meeting of which will take place later this year. Minor spin-offs include a considerable amount of practice in the aerial and ground location of radioactive debris, and the (at least temporary) appearance on the map of the name "Cosmos Lake" to denote the base camp of the aerial search.

Canada's claim against the Soviet Union will doubtless provide international lawyers with fascinating material on compensation norms and procedures. As far as the average Canadian is concerned, there remains a profound sense of thankfulness that the impact took place in a virtually uninhabited area—and considerable apprehension of what could happen next time.

According to NASA officials, there is a 2% chance of debris from Skylab striking Canada. Moreover any such impact would occur south of latitude 50°N—a band which includes all major Canadian cities except Edmonton and Calgary. Not surprisingly, Canadians are said to find the news of the forthcoming descent of Skylab to be, at the mildest, "somewhat disturbing".

Vera Rich



"There's a fair chance that the Skylab crash will wipe out all record of this bill, comrade!"

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