US expected to exempt most recombinant DNA experiments from federal regulation

Eighty-five per cent of US recombinant DNA experiments will be exempted from controls, if the recommendations of a national committee are accepted. **David Dickson** reports

A large proportion of current experiments using recombinant DNA techniques is expected to become exempt from federal regulations covering such research, following a recommendation which a national advisory committee agreed last week to make to the director of the National Institutes of Health.

In a split decision, the NIH's recombinant DNA Advisory Committee agreed that all experiments using the 'disabled' K12 strain of the bacterium *Escherichia coli* be exempted from the guidelines, except for those which are known to present a particular type of hazard.

The decision has been taken after pressure from scientists, many of whom have argued that the results of recent research fail to support earlier speculations over the hazards of recombinant DNA research. Critics, however, still argue that such a decision is premature, and that there is inadequate knowledge of the risks involved to justify taking such a significant step at this stage.

In its recommendation, the RAC suggests that the experiments exempted from the guidelines should still be carried out under P1 containment conditions, the lowest of four levels of physical containment established in the guidelines which were first published by the NIH in 1976. It also recommends that the experiments should be notified to local institutional biohazard committees, which all institutions carrying out recombinant DNA research on federal funds are required to set up.

However under the committee's recommendations, which are expected to be accepted with little alteration by Dr Donald Fredrickson, director of NIH, there will be no need to obtain prior approval for the experiments from the local committee. Nor will it be necessary to inform the NIH's own Office of Recombinant DNA Activities (ORDA), as all research workers are required to do at present.

Members of the advisory committee voted by ten votes to four, with one abstention, in favour of the exemptions. In general, the scientific members of the committee, many of whom are actively involved in recombinant DNA research or related fields, voted in favour of the exemptions — while those appointed as 'public interest' representatives on the committee voted against them.

During the debate on the proposal, it was said that about 85% of current recombinant DNA experiments were conducted using the *E. coli* K12 strain. The proposed exemptions would not apply to experiments currently prohibited under the guidelines, such as those involving the transfer of genetic material from known toxins, or to experiments involving more than 10 litres of culture — for which special permission is required.

Some members of the committee argued that no decision should taken before the committee had had time to examine the implications of the risk assessment scheme which has been developed by Dr Sidney Brenner of the Medical Research Council laboratory in Cambridge, England. This approach is now being used as a basis for decision-making by Britain's Genetic Manipulation Advisory Group. However other committee members argued that Dr Brenner's concerns were adequately covered by the NIH guidelines. And it was also decided that it was not necessary to wait until Dr Brenner could appear personally before the committee before recommending exemption for the *E. coli* K12 experiments.

During the committee's two-day meeting in Bethesda, approval was given to a set of procedures which have been drawn up by the director of NIH under which private companies can voluntarily register their experiments with ORDA.

Dr Fredrickson told the committee that he was confident that commercially sensitive information could be adequately protected, a factor that had previously made companies reluctant to divulge details of their proposed experiments. He also said that before leaving the Department of Health, Education and Welfare, ex-secretary Mr Joseph Califano had indicated that he was opposed to new legislation covering the private sector.

In a subsequent closed session, the committee gave its approval to large-scale experiments involving more than ten litres of culture submitted by the pharmaceutical company Eli Lilly and the west coast research company Genentech. The two companies are currently collaborating on efforts to produce sufficient quantities of human insulin to begin clinical trials.

The committee also agreed on a set of procedures, based on proposals of a small working group, on how it should conduct its business. Against the advice of the NIH's legal counsel, Mr Richard Riseberg, the committee decided that members having a 'personal stake' in the outcome of a particular line of research should not necessarily be excluded from discussions realted to that research.

Mr Riseberg informed the committee that it might be contravening federal law if, as an advisory committee, members took part in such discussions. Some committee members, however, pointed to the difficulty of determining what 'personal stake' meant in the context of scientific research — and the committee decided to strike out the provision. □

US to harmonise remote sensing

The United States has agreed to initiate efforts to "harmonise and rationalise" international activities in the field of remote sensing — the mapping of natural resources from satellites. Such efforts should, according to the US, have two main goals: ensuring the compatibility between the remote sensing systems now being developed by different industrialised countries, and stimulating the full use of remote sensing data by the developing countries.

The decision to take this initiative was announced during the first week of the United Nations Conference on Science and Technology for Development held in Vienna last month, by Father Theodore Hesburgh, head of the US delegation to UNCSTD. Addressing the plenary session of the conference, Father Hesburgh said that the US proposed bringing together the operators of remote sensing satellites, as well as the users, to develop an international system.

"We believe that satellites should be operated so that all can have easy access to the data and so that information can be collected without unnecessary duplication and for maximum mutual benefit", Father Hesburgh said.

"The objective is to ensure developing countries improve their access to information for the use and management of forests, rangelands, water supplies, soil preservation, and the indentifiction of new mineral and water resources."

The Administration has been under pressure from Congress for some time to decide what steps to take following the experience gained with the series of Landsat experimental satellites. Landsat A was launched in 1972, and operated successfully for five years, and its successor Landsat B was launched in 1976. The last of four satellites, Landsat D, is due to be launched in 1981.

Despite the exceptionally high quality of the Landsat images, analysis of them had had mixed success. In some areas, such as the survey of water or mineral resources,

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the satellites have produced a large yield of high quality information. In others, initial goals have proved to be over-optimistic. In particular, it has proved far more difficult than predicted to use satellites for assessing agricultural yields — for example because of problems in distinguishing between different types of crops — and more research is now being done in this area.

Enough information has been gained so far, however, to convince the US that remote sensing can provide useful information to developing countries in fields from water resource engineering (such as building dams or irrigation systems) to mineral prospecting. The US Agency for International Development (AID) has already carried out research projects and training in more than 30 countries, demonstrating how Landsat data can be used by local planners and policy-makers.

Speaking in Vienna last week after Father Hesburgh's address, Mr Tom Pickering, director of the State Department's Bureau of Oceans and the Environment, said that in announcing its new initiative, the US had two main goals, both of which were intended to held developing countries make better use of remote sensing data.

The first goal is to bring together the various countries now planning their own satellite systems to ensure the maximum possible complementarity and compatibility. The aim, for example, would be to ensure not only the minimum of overlap and duplication, but also that wherever possible a developing country receiving station could use the same equipment for receiving data from different satellites.

The second goal is to bring together, possibly on a regional basis, those who intended to use satellite data to obtain information about their own resources, and how these might best be managed. "Our hope is that through discussion with users we can define together the sort of data that can be most effective in answering their needs, and in discovering about their own territories the type of things that they would like to discover," Mr Pickering said.

The Administration's decision was welcomed by Senator Adlai Stevenson Jr, chairman of the Senate's Science and Space Subcommittee, who has long been a critic of the current Administration's lack of plans for an operational Earth-monitoring satellite system, advocating this as one of the most important areas in which US technology can help developing countries.

Describing the wide potential applications of remote sensing, Mr Stevenson said that the US "was concerned that these technologies will follow many national courses and that, if some cooperative steps are not taken soon, it may be too late to at least develop complementary technologies. By complementary we mean not only the physical systems, but also in their operation, so that satellites can be used in a way that avoid redundancies and maximises knowledge of the resources of the world."

Backing up the proposal made in Father Hesburgh's speech, AID mounted an exhibition in Vienna demonstrating the type of data that can be derived from Landsat and other satellites, and the way in which it might be used. The exhibition was to have been entitled "remote sensing: an appropriate technology for economic development" — until advocates in AID of a less capital-intensive approach to Third World needs objected, and the word "appropriate" was dropped from the title.

David Dickson

Interference with data from Titan

Vital data on the surface temperature of Saturn's giant moon Titan may have been lost as the result of radio interference during the transmission of the data from the Pioneer 11 spacecraft to the National Aeronautics and Space Administration's Ames Research Center in California last week. In place NASA has a series of dollar signs, printed by the computer receiving the data as an indication that it was unintelligible.

At first it was thought that all the relevant data, which came from readings made by an infrared radiometer aboard the spacecraft and would provide important clues about the planet's atmosphere, had been lost. However subsequent investigation showed that the data had been received — but in a highly garbled form. NASA scientists are now trying to unscramble what they can; they are confident that some of the information can be retrieved, but remain uncertain about its quality.

"The data was ratty, make no mistake about that. But it's there, and it may all be there, all 20 minutes of it, ground up in some scrambled data that was fouled in the communication link between Madrid (one of the three receiving stations for Pioneer transmissions) and California," mission chief scientist Dr John Wolfe said last Thursday.

Late last week, the precise cause of the radio interference was still uncertain. Initially it was stated that the interference had been caused by a Soviet satellite in Earth orbit, Cosmos 1124, which NASA

"It's the Titans! They say if we want to take pictures we can pay for them!"

officials had forgotton to ask Soviet scientists to switch off during the period in which the Pioneer data was being transmitted.

On Wednesday, the space agency issued a statement identifying the satellite as the cause of the problem. The statement continued: "NASA officials indicate that they have no doubt that the Soviets would have avoided the conflict on Monday, if they had been asked. However the impact of the potential interference was not recognised in time to make an additional request to the Soviets."

By the next day, however, NASA had changed its mind about the cause of the interference. Rather than the Soviet satellite, they now blamed the combined effect of a solar storm and low quality land transmissions between Spain and California — an explanation which had been put forward at the very beginning, but rejected when the Cosmos satellite's involvement had become known. □

Bulgaria plans to save energy

During the next Five Year Plan (1981-1985), all Bulgarian "energy consuming enterprises" will become subscribers to *Promishlena Energetika* (Industrial Energy), an organisation established this summer and described by Energy Minister Nikola Todoriev as "a scientific production combine". The main purpose of *Promishlena Energetika* is the saving of all forms of energy across the economy; its activities range from the reconstruction and modernisation of existing inatallations to an extensive research and development programme.

What precise form this research would take, the Minister did not specify. He was addressing a symposium on "Fuel and Energy saving and new energy resources" held in conjunction with the annual Plovdiv trade fair. Scientific seminars at the Fair were introduced some ten years ago, and, according to Penko Penkov, Chairman of the Bulgarian Chamber of Commerce, are the response of the organisers to the information explosion.

"Rapid technical progress makes us organise sceintific and technical symposia", said Penkov, "in order to give experts from many countries a chance to keep up with the latest developments". This year, there were no less than twelve day or half-day seminars on subjects ranging from ergonomics, geodesy, and the stimulation of scientific creativity to textile and leather technology and the bacteriology of yoghourt. The three day energy symposium, however, with its massive foreign participation and the full

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