but this was resolved by NASA engineers. Ironically, while the problems with HEAO 2 were being worked on, gyroscope problems also developed in its successor HEAO 3, which was intended merely for a six-month mission.

In this case, a command sent to HEAO 3 caused it inadvertently to start drifting from its proper position, leading its control computers to switch the satellite into a "safe" mode. However, this problem is again said by NASA engineers to have been solved.

The HEAO satellites are not the only space activities encountering technical problems. Thus NASA officials are now carrying out an in-depth review of the space telescope programme and are concerned about the possible combined effects of cost overruns and schedule slips.

The critical design review of the telescope has been put back from this summer until January 1981, partly because of the need to redesign the wide-field planetary camera to save weight. In addition, the fine-polishing of the primary mirrors for the telescope is behind schedule; and various contractors for the space telescope project, due to be launched from the space shuttle in early 1984, are complaining that they have been allocated insufficient manpower and funds to keep the programme on schedule.

NASA is soon expected to announce the results of a competition for the location of the Space Telescope Institute, which will collect and analyse data from the telescope. The three main contenders are Johns Hopkins University in Baltimore, Princeton University and the Fermi National Accelerator near Chicago. Two groups — Associated Universities Inc. and Universities Space Research Association — have drawn up separate plans for locating the institute at Princeton. The Baltimore site is being proposed by the Association of Universities for Research in Astronomy and Fermilab by the Universities Research Association Inc., which already operates the laboratory's accelerator for the Department of Energy.

David Dickson

Radiation safety

X-ray survey

A plea for more effective steps to reduce the radiological dose to the gonads of patients from X-ray diagnosis has been put out by the National Radiological Protection Board (NRPB). The board is especially concerned about young adults, and says that if they were protected as well as children usually are, then the genetically significant dose to the British population from diagnostic radiology could be reduced by 40–50 per cent.

The NRPB set out to investigate whether the lessons from a similar study in 1957 under Lord Adrian had been learnt. That study concluded that the dose to the gonads of individuals could be reduced by the use of better radiological techniques, such as narrower beam widths. It also found that gonad dose from the same types of examination varied considerably, sometimes by as much as a factor of three or four between different parts of the United Kingdom.

The new study has found that the genetically significant dose — the average gonad dose per head of population weighted for child expectancy data — has remained approximately the same over the past 20 years despite a 50 per cent increase in the annual number of radiological examinations, suggesting that techniques have indeed improved. But it has also found that local variations in dose for the same examinations are as great as they were in 1957, suggesting that the use of gonad protection varies from place to place.

With this said, the NRPB is not alarmed. The "genetically significant dose" in Britain is still considerably less than in most other industrialized countries and could be responsible for a total of 100 genetic defects a year compared with a rate of 20,000 cases of genetic birth damage each year. Nevertheless, according to one of the reports, a reduction of only 10 per cent in the contribution to the genetically significant dose from diagnostic radiology would be the equivalent of the present contribution from nuclear power. As techniques for reducing the radiological contribution are easily available and relatively inexpensive compared with those needed to achieve a similar reduction from nuclear power, the NRPB says they should be implemented.

The study, based on data about radiological investigations in 1977, measured the gonadal dose in a sample of patients undergoing different types of examinations. The genetically significant dose is inferred from child expectancy data.

A breakdown of examinations into type reveals that most have increased in frequency whereas a few have decreased. A substantial factor in keeping the genetically significant dose down to its 1957 level is the large reduction in the number of obstetric radiological examinations. Their contribution to the genetically significant dose has fallen from 4.5 mrad in 1957 to 0.6 mrad now.

Although the NRPB study claims that there is probably room for further reductions of the genetically significant dose, it has few practical suggestions as to how this might be done. Nor does the NRPB fully understand the large differences of gonadal doses for the same examination in different parts of the country. It also acknowledges that gonad shields cannot be used in all cases, especially where they would obscure organs to be investigated. The plan is to discuss the findings with radiologists later in the year in the hope of finding ways to reduce the genetically significant dose.

Judy Redfearn

DNA guidelines

More relaxation

Washington

The National Institutes of Health (NIH) are expected shortly to reduce the burden of recombinant DNA regulations on research workers. This follows the recommendation of the institute's Recombinant DNA Advisory Committee (RAC) that details of virtually all experiments covered by the current safety guidelines need no longer be submitted to NIH for review.

At the same time, RAC has decided that NIH should limit their attempts to oversee recombinant DNA activities carried out in the private sector. In particular, the committee has proposed a procedure for checking on the biological aspects of large-scale experiments, but is suggesting that it should now restrict itself to general comments on the physical aspects of the fermentation and containment technology rather than reviewing each proposal submitted.

RAC has not gone as far as some would like. At a meeting in Bethesda, Maryland, last week, it decided to defer action on a proposal that clearance from local institutional biosafety committees (IBCs) should no longer be required before a research worker carries out an experiment in containment conditions specified in the guidelines.

The proposals for a procedural change in the guidelines were put to RAC by Dr Maxine Singer, head of the National Cancer Institute's biochemistry laboratory and a prominent participant in the 1973 Gordon conference which first drew attention to the need for caution in recombinant DNA research.

Dr Singer told the committee that many scientists felt that there was unnecessary delay in waiting for the Memoranda of Understanding and Agreement, required by NIH, to be approved by IBCs before research was allowed to begin. Also, there was impatience with the requirement for central review of experiments where the safety procedures to be followed were relatively straightforward.

On the latter point, committee members readily accepted Dr Singer's proposal that central registration be eliminated. Such registration is already no longer required for the bulk of recombinant DNA experiments, those carried out with the disabled K12 strain of the bacterium *Escherichia coli*. The new proposal would chiefly affect experiments being conducted in P2 and P3 physical containment conditions; the status of experiments now requiring the NIH director's explicit approval would not be altered.

More controversial was the proposal to remove the requirement for prior review of experiments by IBCs. Debate on this was coloured by a report presented to the committee on the performance of 19 IBCs

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studied in the state of California. This revealed, among other things, considerable differences in the rate at which IBCs accepted or rejected proposals for experiments in particular containment conditions, raising questions about the consistency with which research workers are interpreting the guidelines.

The report was prepared by Dr Dianna Dutton of Stanford University School of Medicine, under a grant from the National Science Foundation. She pointed out that IBCs established by private companies in particular had a high acceptance rate of proposals, and also claimed that the fact that none of the IBCs contacted publicized their regular meetings, even though attendance was unrestricted, reflected an apparent reluctance to involve the public in IBC decision-making.

A nationwide study of IBCs is now being planned by NIH, and will be discussed at a meeting of IBC chairmen in November. In the light of this proposed review, and the result of the Stanford study, RAC agreed that consideration of the elimination of pre-review of experiments should be deferred "until the frequency of principal investigator error in selecting containment levels is determined".

In another step designed to lessen the burden of regulation — this time primarily on the private sector — the committee agreed that its review of proposals for large-scale experiments should be focused chiefly on aspects of biological safety.

This decision was the culmination of a lengthy debate over how far NIH should go in regulating recombinant DNA research in the private sector. As there is no legislation, private companies are at present unregulated, although all companies involved have agreed to observe the NIH guidelines voluntarily.

A major stumbling block to this has been disagreement over procedures for evaluating experiments involving more than 10 litres of culture, at present requiring special permission from the director of NIH regardless of the genetic material being used. Some committee members have argued that RAC lacks the technical expertise to evaluate the safety of large-scale fermentation techniques, others that regulation in this area is the responsibility of the Department of Labor's Occupational Safety and Health Administration (OSHA).

Dr Eula Bingham, however, the head of OSHA, has now written to NIH saying that although her agency can act on complaints from workers or on suspicion of a potential hazard, it lacks the statutory powers to require the certification of facilities where no hazard is suspected.

Committee member Dr Sheldon Krimsky of Tufts University proposed that, in the light of OSHA's reply, a subcommittee of RAC should be set up with representatives of other federal agencies to comment on proposed containment procedures for large-scale experiments. He pointed out that although the pre-review of industrial technology might be a radical departure for regulatory agencies in general, it was within the spirit of the scientific and public concern which had originally led to the development of NIH guidelines.

Other committee members, however, were not convinced. Having earlier passed a motion agreeing to procedures for evaluating the biological classification of proposed large-scale experiments — and therefore the level of physical containment that would be required — they amended Dr Krimsky's proposal suggesting a new subcommittee primarily to advise on the proper procedures and design of such operations. The proposed subcommittee would review the effectiveness of local IBCs, including industrial IBCs, but it would not have to approve specific containment procedures for particular experiments; and its creation has still to be approved by the director of NIH.

David Dickson

Biotechnology

UK company gells

Britain's new biotechnology company, Celltech, is beginning to take shape. Sir Michael Stoker, foreign secretary of the Royal Society and former director of the Imperial Cancer Research Fund, has been appointed chairman of the board of directors and it is thought that Norman Carey of G. D. Searle Limited is in line for the scientific directorship. Most of the other members of the board have also been appointed. Offers of senior posts have been made, although it is not yet clear how many of them will be taken up. A full statement is promised later in the month.

Since the National Enterprise Board's announcement in July (*Nature*, 24 July, page 321) that it was to provide 40–50 per cent of the initial £12 million to set up the company, the managing director, Mr G. Fairtlough, has been looking for a site for administrative offices and a laboratory as well as appointing his board and senior posts. The most likely site, as was rumoured earlier, is Cambridge, although other possible sites are also being considered. The plan now is to buy existing offices and laboratories near to each other, which could be adapted easily to the company's needs.

The timing of the start of the company's operations will depend to a large extent on the suitability of the laboratories it acquires, but Mr Fairtlough is hopeful that operations could begin early next year. An older building needing extensive alterations would obviously delay the start.

As soon as the senior post have been filled, Fairtlough plans to start looking for candidates for other posts. The company hopes to build up a staff of 75–100 over the next two years. Initial products will be for medical diagnosis, but the company hopes to expand into other fields later and to cooperate with larger pharmaceutical companies on production of items beyond its scope.

Judy Redfearn

Going and coming

Sir William Henderson, chairman of the Genetic Manipulation Advisory Group (GMAG), responsible for the administration of the UK guidelines on recombinant DNA, will be giving up as chairman at, or soon after, the end of 1980. His original appointment, at the end of 1978, was for a term of two years, but it is understood that he is prepared to stay on for a month or so if his successor cannot take over at the beginning of the year.

In the past few months, there has been some confusion among GMAG members about the future chairmanship of the committee, which has apparently not yet been decided.

GMAG is also in the throes of a debate about its own future. At its next meeting, GMAG will debate a proposal by one of its members that the group should recommend its own demise. The proposal is likely to be resisted by the government departments and agencies concerned, at least until the Dangerous Pathogens Advisory Group (in limbo since the smallpox accident at the University of Birmingham two years ago) is reconstituted.

It has also become known in the past week that the search committee of the European Molecular Biology Organization (EMBO) has nominated as the next director-general of EMBO Dr L. Philipson of the Department of Microbiology of the Biomedium Centre at Uppsala. If appointed by the EMBO council, Dr Philipson will succeed Sir John Kendrew, whose term of office ends next year.

French universities

Trouble behind

Paris

French universities are still recovering from a series of attacks and retreats by the government which have left the universities strictly on the defensive.

In July, the minister for the universities, Mme Saunier-Seïté, vetoed the granting by the universities of the long-standing "engineer PhD", the Docteur-Ingénieur, and cancelled 200 first degree (deuxième cycle) and 600 postgraduate (troisième cycle) courses which were due for reapproval by her ministry.

Last month, the Prime Minister, M. Raymond Barre, intervened in the resulting row, but his action was more cosmetic than real. He restored the freedom to create Docteur-Ingénieurs at 25 of France's 78 universities, and approved a further 22

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