

machinery to below 84 dB(A) if possible. The commission has no estimate of the cost of its proposal.

On this occasion, Britain's Health and Safety Commission seems to be a step ahead of the European Commission, whose directive is still some way off. But the signs are that Europe will go for a limit of 85 dB(A). **Judy Redfearn**

Bulgarian astrophysics

Cosmic celebrations

The "Interkosmos-Bulgaria-1300" satellite, Bulgaria's cosmic celebration of 1,300 years of statehood, was launched last Friday (7 August) to the surprise of the Bulgarian public, who had expected it would form the climax of the celebrations in October.

The designation of the satellite was equally unexpected — although the original plan was for a single celebratory satellite, analogous to the Polish Interkosmos-Kopernik-500 in 1972, it was announced earlier this year that there would be two satellites, one containing Bulgarian experiments only and the other a mixed Soviet and Bulgarian payload. However, only in the Moscow radio coverage of last Friday's launch was it made clear that the mixed payload was already in orbit — aboard the Priroda-Meteor satellite launched on 10 July.

In the Bulgarian celebrations, the timing has proved unfortunate, since the head of the jubilee committee, Lyudmila Zhivkova (the daughter of First Secretary Todor Zhivkov) died suddenly on 20 July.

Scientifically, however, the satellite is operating well, and has done much to offset Bulgarian disappointment that the Interkosmos manned programme did not allow them a second chance of a cosmonaut aboard a Salyut craft. By way of consolation, Georgi Ivanov, whose Soyuz transporter failed to achieve a link-up with Salyut, was invited to attend the launch and spoke warmly of Soviet-Bulgarian cooperation.

Although the experiments on the satellite (a modified "Meteor" meteorological probe) are said to have been produced "with the assistance of Soviet scientists", the twelve experiments comprising the 350-kg payload are of Bulgarian design, and concentrate on those branches of space physics of particular interest to the Bulgarian space team, including plasma, high energy charged particle studies, atmospheric luminescence and magnetosphere studies. According to Dr Kiril Serafimov, chairman of the Bulgarian Space Research Council, a special study will be made of ionosphere troughs and equatorial anomalies in the magnetosphere, which it is hoped will provide valuable data for such applied fields as radio-wave propagation, the mechanism of rare meteorological anomalies and the radiation balance of the Earth. **Vera Rich**

Carcinogenicity testing

Well, yes and no

Washington

Semantic juggling has allowed US health officials to escape the embarrassment of discovering two reports on the widely-used chemical dimethyl terephthalate (DMT) which are virtually identical but contain directly conflicting conclusions about its carcinogenicity.

Re-examination of the test data has raised a dilemma for scientists with the Department of Health and Human Services' National Toxicology Program (NTP) that is frequently faced by regulatory agencies: how to present policy-makers with the results of ambiguous animal tests.

The solution proposed by NTP's peer review committee is to describe data on increased cancer rates in male mice as being "statistically significant" but "biologically equivocal".

DMT is widely used to provide flexibility in plastic products from food wrapping to bottles. The source of the confusion is a technical report on its potential carcinogenicity prepared in the 1970s for the now-defunct Clearinghouse on Environmental Carcinogens of the National Cancer Institute (NCI).

The tests were carried out by a private contractor, Hazleton Laboratories. They revealed no evidence of increased cancer rates among male and female rats, or among female mice exposed to low or high doses of DMT. However, a 27 per cent incidence of lung tumours was found among male mice receiving the high doses, considerably higher than the 4 per cent incidence in a group of matched controls. On the basis of these data, which were approved by an NCI peer review group, a report was published describing DMT as a carcinogen in male mice.

Soon afterwards, however, the report was challenged by scientists working with Hercules Incorporated, a major manufacturer of DMT. They claimed that the relatively low incidence of lung tumours among the matched controls was out of line with results from other control groups. NCI scientists reassessed the Hazleton data, this time using for comparison not the matched control group, but pooled results from three other control groups associated with different experiments which had spent overlapping periods of time in the same room. The latter groups revealed a lung tumour incidence of between 10 and 18 per cent over a two-year period, much closer to the 27 per cent of the exposed group.

A revised version of the technical report was subsequently issued through the National Technical Information Service (this time without peer review) which stated in the summary that the new data indicated that DMT was not a carcinogen.

Several research libraries, however, still

have copies of the first version on their shelves. And the apparent discrepancy between the two reports was brought to the attention of NTP, which has taken on the responsibilities of the NCI clearinghouse, three months ago.

Re-examination of the data revealed that the tests appeared to have been properly conducted, even though the incidence of tumours in the matched controls seemed inordinately low. "We view the incidences of total lung tumours in the matched male controls with some suspicion" reported Dr John Moore, deputy director of NTP.

A report on the NTP staff review was brought before the peer review panel of the programme's board of scientific counsellors last month. Discussion soon focused on whether, in revising the original report, the NCI staff had been correct in ignoring the matched control data and

One more journal

A new scientific journal is to be launched at the beginning of 1982 by the European Molecular Biology Organisation (EMBO). One of the objectives of *The EMBO Journal* is to redress the balance between Europe and the United States where, it is argued, the predominant and preeminent position won by American journals in the publication of molecular biology has put European molecular biologists at a disadvantage.

The new journal, which has been in the air for the past three years, was finally agreed after a ballot of the 500 members of the organization held in January. The journal will resemble *Proceedings of the National Academy of Sciences of the United States of America* in that it will publish papers communicated by any of its members, each of whom will be rationed to a maximum of five papers a year by non-members of the organization.

A statement by the publishers of the new journal, IRL Press Limited of Oxford, England, says that EMBO members will be expected to take responsibility for the "scientific standard" of the papers they communicate. One of the obvious difficulties will stem from the heterogeneity of the membership, which is elected, and the differing interpretation of what molecular biology consists of in various European countries.

The editor of *The EMBO Journal* will be Dr John Tooze, executive secretary of EMBO and also, at present, the editor of *Trends in Biochemical Sciences*. One feature of the new journal is said to be speed of publication — the publishers have undertaken to print manuscripts accepted by the editor within twelve weeks of their receipt. A pilot issue of the journal is to be made available in September.

basing their reassessment on the three other control groups; or whether all four groups should have been pooled into a single set of controls.

Various members of the committee expressed unease with the statistician's technique of ignoring so-called "outsider" data points which did not appear consistent with the other data being evaluated — but which, according to the biologists, there might be no particularly good scientific reason to disregard.

Members of the NTP peer review committee agreed to recommend the aggregate data as the basis of the evaluation about carcinogenicity. But it left the problem of deciding how to describe evidence that was in Dr Moore's words, "something between equivocal and positive".

The proposed solution was an appendix to the second version of the technical report, which will give details of the new analysis and point out that, statistically, the raised incidence of lung tumours in mice exposed to DMT is "highly significant". But the appendix will add that the results are also biologically equivocal — in other words the data do not provide clear evidence on whether DMT is a carcinogen.

The next step rests with the Food and Drug Administration's Bureau of Foods. Previously the bureau's cancer assessment committee had decided, on the strength of the NCI report, that no action was needed against DMT. With the new interpretation from NTP, the committee will have to reassess its position.

Meanwhile the NTP's board of scientific counsellors is meeting soon to discuss whether a more rigorous system of classification, possibly based on procedures developed by the International Agency for Research on Cancer in France, should be adopted in the United States. The DMT episode will encourage their efforts in this direction.

David Dickson

Alternative energy

Enter the Nibe

Brussels

By 1995, about 15 per cent of Denmark's electricity requirements will be met by wind power — if the Danish Ministry of Environment goes through with its plan to plant 3,000 windmills across the country. The plan is being seriously considered and has now been passed to the relevant regional and local authorities for their views.

Denmark is more dependent on imported energy than most other industrialized countries, having to provide 95 per cent of primary energy from outside sources. The only domestic form of primary energy is natural gas under the North Sea, and this will not start flowing until 1984. So research into renewable energy sources has been given high priority.

Even before the last government plan, a 1979 law provided government subsidies of up to 30 per cent of the cost of small

domestic windmills. These have to be of an approved type, and the electricity utility companies are prepared to buy any surplus electricity from the owner.

The new plan is altogether more ambitious. The 630 kW three-blade rotor mills, called Nibe wind turbines, were developed under the 1977–80 wind energy research programme which cost Dkr 39 million (\$7.2 million). The Nibe windmills are raised on a 41-metre concrete tower and the span across the turbine blades is about 40 metres. The mills will operate in wind speeds of between 21 and 90 kilometres per hour. The research programme has evidently ironed out most of the major technical problems, leaving the economic and environmental issues to be debated.

Denmark is a small, densely populated country, so the choice of suitable sites is severely limited. The windmills cannot be placed in areas where they would interfere with recreational, agricultural or other economic interests. If it were possible to find coastal sites for all 3,000 mills, electricity production would be 25 per cent greater than if they were all inland.

Somewhat surprisingly, there is evidence to show a relationship between electricity demand and high winds in Denmark. Apparently heating requirements are greater the stronger the wind blows and, conveniently, this would be countered by more power from the windmills.

But before the windmill ideas take off, it will be necessary to bring down the unit cost of construction — or the other sources of electricity will have become prohibitively expensive. Present cost of wind-generated electricity is \$2,000 per kW of installed power.

As with nuclear power stations, however, there may be objections from local residents. Anyone living near one of these Nibe wind turbines would have to put up with noise, interference with radio and television, and landscape eyesores. But Danish public opinion is likely to favour wind power and Denmark seems likely to be the first country to launch a major commercial wind power programme.

Jasper Becker

India in space

Apple limps on

New Delhi

Although still operating on power from only one of its two solar panels, India's "Apple" experimental telecommunications satellite has now been successfully placed into geostationary orbit 36,000 kilometres above Sumatra in Indonesia. Apple's solid-fuelled apogee boost motor was fired on 22 June to achieve near-geosynchronous orbit but one of the solar panels failed to respond to radio commands and did not open. Despite this the satellite was stabilized and two other major manoeuvres were performed to correct an eastward drift and increase the orbital height. On 16 July Apple reached its intended orbit, with its antenna pointing towards Nagpur in central India.

The experiments in telecommunications techniques began on 22 July, and the bulk of the programme should be completed in spite of the reduction in the satellite's useful life from two years to one and the 160 watts of power available instead of the planned 280 watts. After the earlier anxiety, scientists at Apple Mission Control Centre in Sriharikota are buoyant at having manoeuvred the spacecraft successfully.

Good news was long overdue for the Indian space programme, for only 9 days after its launch aboard India's own SLV-3 launcher on 31 May, the remote sensing satellite Rohini II had burned up in the atmosphere — far short of its expected lifetime of 90 days. Rohini I was also ill-fated, crashing into the Bay of Bengal in August 1980 only a few days after launch.

Meanwhile, provided it is still functioning, Apple is to be used to broadcast nationwide an address from Prime Minister Indira Gandhi on Independence Day, 15 August. Only a few metropolitan centres will be able to pick up signals, but it marks a beginning to the plan to bring communications up to date throughout the Indian subcontinent.

Sunil Saraf

Saturn seen by Voyager 2 as the spacecraft approaches its encounter with the planet on 26 August, en route to Uranus (1986) and Neptune (1989). In the light of the results of the Voyager 1 encounter last November, the experimental programme of Voyager 2 has been considerably revised. Next week's *Nature* is a special Saturn issue containing new results from Voyager 1 and a description of the Voyager 2 mission by Dr Edward Stone, the Voyager mission's director.

The issue will also contain the usual features, including a report on the total synthesis of an interferon gene.

