Sweden debates gene-splicing

FOR the first time, recombinant DNA research is being publicly debated in Sweden. Some voices are calling for broad understanding and judgement of the ethical, economic and political issues involved, while others are more concerned with the security aspects of a proposed P3 laboratory at Uppsala. At the same time, the Ministry of Education is setting up a one-man commitee to see if existing Swedish laws are sufficient for the regulation of such research, or whether new legislation may be needed.

It sounds as though the country has suddenly woken up to find recombinant DNA research sitting on its doorstep. Not so. The previous government was approached about the issues as long ago as 1973, but did not respond. In 1975 Uppsala biologists applied for a P3 laboratory. In the spring of 1976 an eleven-man "Committee Concerning Research with Recombinant DNA" was set up under the auspices of the Natural Science Research Council, the Medical Research Council and the Swedish Cancer Society to ensure that such research was carried out in safety for both laboratory personnel and the public at large. The committee has decided that Sweden's risk classification system should be a combination of the British Williams' guidelines and the United States' NIH guidelines, adopting the stricter elements of each. Although the committee's mandate only covers state-supported research on recombinant DNA—and it must approve all proposals for such research before they can begin—private industry has voluntarily agreed to follow the same procedure with its proposals.

According to the committee's chairman, Professor Peter Reichard of the Karolinska Institute, recombination of DNA within the same species (which requires only P1 facilities) is being done at the Karolinska Institute and the University of Uppsala, but so far no-one is doing any research needing P3 facilities. That part of the Uppsala group's work which has needed such a laboratory has been done so far at the Pasteur Institute in Paris. Private industry has not yet submitted any proposals to the committee.

Professor Lennart Philipson, who leads the Uppsala group, says he is tired of the controversy aroused by his proposed P3 laboratory. He complains that society's confidence in scientists is waning, and hopes that it will increase with public awareness of what the research involves. His new research programme, in which he will try to develop *Bacillus Subtilis* as an alternative host for recombinant DNA, will not need P3 facilities before 1979. The plans for converting part of an existing building into the new laboratory should be finished before Christmas. Critics of the scheme are demanding that they should be approved not only by the DNA committee, as was the original intention, but also by the local health authorities.

Wendy Barnaby

Meteosat, the European Space Agency's meteorological satellite, eventually reached geostationary orbit above the Gulf of Guinea on 7 December, after a series of false starts on the Cape Canaveral launch-pad. The picture above is the first taken by the satellite at visible wavelengths, showing cloud cover above Africa and the Atlantic on 9 December 1977.

Geography affects oil spill damage

THERE have been two significant oil spills in Scandinavian waters this year: April's Ekofisk blow-out, and leakage from the Russian tanker "Tsesis" which grounded on an unmarked rock in the Stockholm archipelago in October. Although the Bravo blow-out dumped at least six times as much oil into the water as the "Tsesis" did, preliminary research suggests that marine life in the North Sea has not suffered as much as that in the archipelago. According to a Swedish expert, the reason for this is the different geographical factors involved in the two spills.

Preliminary findings published by the Institute of Marine Research at Bergen, Norway, describe the acute effects of the Bravo blow-out on fish and plankton as "small". An estimated 2,000 to 3,000 tons of oil at a temperature of more than 75 °C spurted daily out of an open production pipe 20 m above the sea surface, shot another 30 m into the air (where some of it was dispersed and evaporated) and then rained down onto the sea. The pipe was capped after seven-and-a-half days. It was assumed that 40% of the oil had evaporated by then, leaving some 9,000 to 13,000 tons on the water. As its viscosity was low, it spread quickly; only 800 to 1,000 tons were recoverable by mechanical means. Chemical dispersants were assumed to increase the damage the oil would do to marine life, so they were applied very sparingly.

A week after the spill, the oil became granulated and later formed tar balls which, in June and July, were drifting over an area of 55,000 km^2 in concentrations averaging 2.5 mg m^{-2} sea surface: a level considered to be heavy pollution. Close to the Bravo platform, oil-in-water emulsion under relatively freshly spilled oil was found to be in concentrations of up to about 300 mg/litre water: but further away, it was below levels which have caused acute sublethal effects on the more sensitive stages of fish development in laboratory tests.

At the time of the spill, biological development was in its early spring stage. In a few square nautical miles around and east of the platform, the degree of photosynthesis of the phytoplankton was significantly reduced: but otherwise its development seemed normal. There were few fish, fish eggs and yolk sacs in the area at the time of the spill and for a short time afterwards, and the number and distribution of fish seemed to be unaffected by the oil.

The institute sees several factors accounting for the lack of acute effects. The escaping oil was hot, and this, combined with the action of the wind and the fact that the oil spread quickly over the surface, meant that most of the volatile and toxic compounds were evaporated. What hydrocarbons remained in the sea were diluted by unstable water conditions. Excepting the area close to the platform, the resulting hydrocarbon concentrations in the water column were low.

When the "Tsesis" ran aground in the Stockholm archipelago on 26 October, between 1,500 and 2,000 tons of the 19,000 tons of medium-grade fuel oil she was carrying spilled out into the water. The coast guard managed to contain some of the oil with booms, but winds and currents carried a large part of it to an island and part of the mainland nearby. As the wind blew steadily in the same direction for a couple of weeks after the accident, the oil stayed banked up against the shores, emulsifying down to a depth of 2 to 5 metres.

According to preliminary results from tests carried out jointly by the University of Stockholm's Askoe