

scheduled to be launched in 1982. Development of the instrument called a "thematic mapper", and intended to provide direct information on crop differentiation, is so much delayed that Landsat D may have to be launched without it.

The delays in both technical plans and administrative arrangements have created inevitable frustrations. Those who have already experienced the benefits of remote sensing technology are keen to exploit it as rapidly as possible, and are already hinting that they may look to other countries — such as France and Japan — as an alternative source of remote sensing services. Moreover, some members of Congress claim that the delays reflect a general lack of imagination in the White House about the US space effort.

NOAA is at present working out the details of the transition plan in preparation for its submission as part of the 1982 budget request early next year. It seems more likely to include only limited private involvement — perhaps restricted to processing and marketing the data produced by federally operated satellites.

David Dickson

Lords committee

Dumping ahead

The House of Lords Select Committee on Science and Technology embarked on its summer break last week with the promise of a new inquiry in October into the disposal of hazardous waste. The inquiry will be the committee's second quick investigation — the report of the first, on electric vehicles, is due to be published at the beginning of September. A longer investigation of forestry in the United Kingdom will continue until the end of the year.

The suggestion of an inquiry into hazardous waste disposal came from Basildon District Council in Essex, where a large proportion of Britain's toxic industrial waste is dumped. When the House of Commons Select Committee on the Environment declined to take the matter up because of other commitments, the Lords committee stepped in, believing the topic to fit well into its remit of investigating areas of science and technology of public concern.

The worry of Basildon District and Essex County Councils is that there is no coherent national policy for hazardous waste disposal, largely because the relevant section of Part II of the 1974 Control of Pollution Act has never been implemented. The councils also believe that Essex has become a main centre for hazardous waste disposal by historical accident rather than for good practical reasons.

The government has laid down guidelines for dealing with the disposal of hazardous waste but no regulations as to who should be responsible for arranging disposal. The 1974 Act says that local authorities should take that responsibility and should inform



Dumping at Pitsea

the Secretary of State for the Environment of the arrangements they have made. The Act empowers the Department of the Environment to bring these and other provisions (affecting water quality, for example) into force when it chooses. So far it has chosen not to do so, allegedly on the grounds of cost. Redland Purle, Britain's largest waste disposal company, owns the country's largest dump at Pitsea in Essex. The council has power to monitor the sites and has taken measures to restrict the quantities dumped, but it would take other local authorities to take some of the load.

The Lords committee will no doubt be looking at the institutional arrangements for coping with hazardous waste. It also intends to investigate the basis for some of the technical arrangements, for example the criteria used for choosing suitable sites and deciding what can be dumped where. The Select Committee hopes the inquiry can come to grips with new methods of disposal and suggest how more use could be quickly made of them.

Judy Redfearn

Energy alternatives

German plans

A West German commission on "future nuclear energy politics", set up two years ago by the Bundestag to resolve the nuclear question, has reached its eagerly awaited conclusions. They are equivocal.

West Germany should shelve a final "decision" on nuclear power until 1990, says the commission. But in the meantime the country should build as many reactors as it needs, provided it makes due effort on the development of coal, conservation and renewable sources.

The all-party parliamentary commission, consisting of seven members of the Bundestag and eight technical experts from industry, environmental groups and the trades unions, considers that it will be impossible to judge — for ten years — whether nuclear energy should be expanded in Germany. The growth rate of electricity consumption, the effectiveness of conservation measures and the impact of renewable energy are too uncertain to make commitments to any particular source.

The commission does however spell out its demands for immediate and increased government powers to enforce energy conservation — the abolition of mileage rates for business cars, an energy tax, more bicycle paths and tighter controls on insulation standards in new homes and factories. The commission also asks for an "energy service" to provide, free of charge, an infrared survey of buildings to show where the heat leaks out. These and other measures have been described by the Christian Democratic Union, the main opposition party, as introducing "a totalitarian energy conservation state".

Elsewhere, the recommendations have been seen as vague and offering all things to all men — especially with the recommendation that reactors should be built if energy demand requires them. The major nuclear construction company in Germany, Kraftwerk-Union, has argued that it will be running out of work in 1983 — it has lost its contract for four reactors in Iran, and there is doubt as to whether Brazil will take up its full option for eight. Thus some suggest that a construction programme of one or two reactors a year over the next decade, a programme similar in its scale to the British, is quite consistent with the commission's view.

At the same time, the report has been interpreted by environmentalists as recommending a further delay in the country's nuclear development. (Germany now has five power reactors above 500 MW electric; in total 15 reactors produce about 9 GW.) It is not surprising that the commission has been represented in the German press as a man wearing two badges, one saying "nuclear no thanks" and the other "nuclear power — yes please".

The forthcoming October general

election may have played some part in the commission's equivocation: there has been an understanding among the parties that nuclear power should not be an election issue. The debate on the report was eclipsed the same day by another on Chancellor Schmidt's visit to Moscow.

The commission also recommended that it should reconstitute itself after the election, to complete its task. It was set up in December 1978 after a lengthy debate on the future of the Kalkar 300 MW prototype fast breeder, now under construction. It was decided then to construct Kalkar, but not to charge it with plutonium until expert advice had been received on Germany's need for a "plutonium economy". The nuclear energy futures commission was set up to provide that advice, but (beginning work in 1979) it decided that there was not time before the election for such a broad investigation. Hence the fast breeder is not mentioned in the commission's recommendations.

The result is that Germany remains without a strong federal lead on nuclear power. It will remain so until the majority of the ruling coalition — only ten in the present Bundestag — cannot be threatened by the strong minority in the coalition which will always vote against nuclear development.

The election is thus critical for nuclear energy, despite the parties' intention to keep it out of the limelight. A number of decisions await a nuclear majority, not the least of them the location of intermediate storage facilities for spent fuel. The CDU Prime Minister of West Saxony, Herr Albrecht, where the Gorleben salt-dome offers a potential long-term geological store, is hoping to give hospitality to the waste after the election. Other current battles (against environmentalist opposition) such as that to increase the density of spent fuel storage, by a factor of four, on reactor sites, by inserting cadmium sheets between the rods to absorb neutrons, may be more easily won if a federal government is returned which can give a more definite "yes" to nuclear power.

Robert Walgate

Pesticide safety

No numbers

Washington

Stepping out of line with the fashionable wisdom — at least among congressional legislators — a little-noticed report from the National Academy of Sciences has come out with some harsh words about the dangers of squeezing data on the health effects of agricultural pesticides into a neat cost-benefit mould.

The report was prepared by a committee of the academy's Environmental Studies

Board as a follow-up to earlier studies by the Environmental Protection Agency (EPA). In general it supports the agency's concern that environmental regulations should be as explicit, and as well quantified, possible.

It also points out, however, that in attempting to produce legally defensible decisions, agency administrators often underplay the uncertainties and qualifications that surround scientific assessments of risks and benefits, particularly of human morbidity and mortality data. Here, the report says, quantification is carried to "unwarranted extremes".

According to the committee, present understanding of cancer development "does not permit us to draw reliable numerical inferences from the kind of laboratory data normally available about the effects of pesticides and other compounds on the development of cancers in humans".

There is therefore a danger, it says, not only of overestimating risk by the use of too conservative assumptions, but also of underestimating it by neglecting potentially important factors. "We say the error can go either way" said committee chairman Professor Robert Dorfmann of Harvard University's department of economics.

The committee therefore recommends that the EPA abandons its attempts to produce numerical estimates of the impact of pesticide use on human health except where reliable epidemiological data are available. Instead, it proposes the use of "a carcinogenic activity indicator" as a measure of relative carcinogenicity of chemical compounds. This would be based on the results of laboratory bioassays.

In addition, to underscore the uncertainties in risk evaluation, two figures are proposed for every risk estimate. One would be a measure of "most probable" risk, conveying the analyst's best judgement of the level that would be realized in assumed conditions. The other would be a "maximum plausible" estimate taken as the upper limit of a 90 per cent confidence interval.

The EPA has made no official comment on the report. The agency is involved in reviewing its procedures for weighing the risks and benefits of pesticides in the light of recent administrative changes.

Its review could be influenced by an unintended consequence of the new report. As part of its analysis, the committee carried out a detailed review of chlorobenzilate, using its recommended procedures to produce its own assessment of the risks and benefits. Comparing its evaluation with that obtained by the EPA in 1976, it concluded that not only had worst-case estimates of exposures used to assess health risks been highly improbable, but also that the economic benefits of using the pesticide — particularly the costs of not using it — had been wildly overestimated.

When a draft version of the report was circulated last year, these discrepancies were seized on by the Environmental Defense Fund (EDF) to challenge the EPA's decision to allow limited use of the pesticide. However, an administrative court in Washington has since ruled that the EDF had no legal standing to take part in EPA's rule-making procedure. Nevertheless, this could have significant impact on rule-making in the agency, since in the past many of the restrictions on pesticide use have followed challenges from the EDF and other similar environmentalist groups.

David Dickson

Russian plate tectonics

Drift of change

"Plate tectonics" and "continental drift" have been dirty words to orthodox Soviet geophysics for many years — orthodoxy being, in this case, laid down not by Party doctrine but by the personal views of Academician Belousov, the acknowledged head of the Soviet geophysical establishment. Rather than let themselves be shut off from the international scientific community, as were the Soviet biologists in Lysenko's day, Soviet geophysicists have become adept in inventing semantic variants such as "ocean-floor movement" under which they can discuss the proscribed ideas.

These strategies have been used, for the most part, strictly within the academic community, and it was only on extremely rare occasions that any mention was made of such concepts in the general press. (One such was the announcement that owing to crustal movements the BAM Baikal-Amur Mainline railway, would be when completed, 50 cm longer than originally planned.)

Now, however, an official of the Soviet Academy of Science's Institute of Archaeology has given what amounts to a press conference on continental drift — though without mentioning any controversial terms. Describing a new map of the lithosphere under the world ocean's prepared by the Institute, the official explained to a TASS correspondent that "the lithosphere is thinnest in the centre of the oceans where median oceanic ridges pass" and that "it is precisely in those areas that the lithosphere is formed."

Information on the thickness and structure of the lithosphere under the oceans is therefore "important for solving many theoretical problems", in particular, for understanding the process of formation of our planet".

Vera Rich