Acid rain

Allies for UK Government

THREE British reports on acid rain in the past two weeks, in what newspapers call the "silly season", might seem a neat way to bury an issue. But that might not have been the intention of the Watt Committee on Energy, the House of Lords Select Committee on the European Communities or the Royal Society (see below). All emphasize the scientific complexity of the problem and none offers a quick palliative.

And yet, the Department of Energy is so delighted with the independent Watt Committee report that it has offered to pay its acid rain working party, under the chairmanship of environmental scientist Professor Kenneth Mellanby, to spend another six months expanding its review of policy options.

The reasons for government glee may not be far to seek. Britain is a large net exporter of sulphur dioxide, the long-range component of acid rain, and is under pressure from European partners to retrofit expensive sulphur scrubbers to its 20

major coal-fired power stations. But the Watt Committee working party has armed the government with some strong arguments to resist that pressure. Similarly, the House of Lords committee offers reasoned resistance to the proposed EEC directives.

The Watt Committee argues, for example, that the liming of exposed lakes may be the most effective means of control for acidified lakes, and may cost only "a few per cent" of measures to retrofit power stations.

The Watt Committee also points out that NO_x and hydrocarbon emissions, which in photochemical reactions produce ozone and oxidize sulphur dioxide to sulphur trioxide, greatly increasing sulphur solubility, may play a controlling role in producing acid rain. Thus whereas a decrease in NO_x and hydrocarbon emissions might have a proportional effect on acid rain, a decrease in sulphur dioxide emissions might not be so effective. Moreover, NO and HC are, on the whole, emitted and deposited locally.

And apart from all that, the committee also says that countries complaining of net import of sulphur dioxide could more effectively reduce acid precipitation by reducing their own outputs which, being local, have more effect. Thus, says the report, to reduce sulphur deposition in Norway by one ton, Britain would have to reduce its output by 46 tons; but Norway would have to reduce its emissions by only two tons. Thus it would seem advantageous for Britain to pay complainants to clean up their own doorsteps, while continuing to emit sulphur dioxide unhindered.

However, the Watt Committee working party, in other sections of its report, emphasizes that there is so much uncertainty that it is simply unclear what strategy would be best to solve an admitted environmental problem. "In Britain, when we know what is the cause of a problem, we do have a good record of cleaning it up", said Mellanby. He was just afraid that millions of pounds will be spent on sulphur dioxide control to little effect, diverting funds from more effective projects.

Meanwhile the House of Lords slammed into the proposed EEC legislation, which would aim to reduce large power station emissions of sulphur dioxide by 60 per cent, particulates by 40 per cent and nitrogen dioxide by 40 per cent, by 1995. Just to achieve the target for sulphur dioxide would cost the British electricity industry £1,990 million in capital and £350 million in running costs, the committee estimates. But the European Commission has underestimated these costs by a factor of five, and "substantially overestimated" the value of the benefits "mainly due to a misunderstanding of the causes of alleged damage by pollutants". Desulphurization

would also cause environmental damage: four million tons of calcium carbonate would have to be excavated each year and 7.5 million tons of wet calcium sulphate disposed of, only some of it reliably.

The report also criticizes the Commission for misinterpreting the recent US National Academy of Sciences report on acid rain — which in part reviewed European data (from the European Monitoring and Evaluation Project, EMAP, which involves over 106 stations). This data, as the NAS report demonstrated, showed no evidence of a linear relation between sulphur dioxide and NO_x emissions. Yet the commission focused on the single US source of data, the Hubbard Brook site, which evidence has been strongly criticized. The House of Lords says bluntly: "the Committee are disturbed that the Commission has weakened confidence in its directive by misrepresenting the evidence on such a critically important issue".

Nevertheless, the House of Lords argues that some control measures should be taken — it recommends the long-term introduction of pressurized fluidized-bed combustors, which are more energy efficient and less polluting, and also suggest that "immediate steps" be taken to fit two power stations with flue gas desulphurization. (The EEC regulation would imply the same be done to 12 stations.) The result would be a 30 per cent reduction in sulphur dioxide by the year 2000, according to the Central Electricity Generating Board.

Robert Walgate

The three reports are: *Acid Rain*, The Watt Committee on Energy, Report No. 14; *Air Pollution*, 22nd report of the House of Lords Select Committee on the European Communities; *The Current Status of Research on Acidification of Surface Waters*, by B J Mason, The Royal Society.

Mason's own view

SIR John Mason, according to some observers, has committed a slight *faux pas* in releasing his personal review of the status of "acidification of surface water research" (published by the Royal Society). Sir John is programme director of the tripartite Royal Society / Norwegian Academy/Swedish Academy research project, and he may have embarrassed his partners who wish to remain objective — and uninfluenced by British views.

However, Sir John makes it clear that his report is personal, just one paper submitted for discussion at an early management meeting of the tripartite study, and not a preliminary report of the study itself. Politically, his most important (preliminary) conclusion may be that the rate of production of sulphuric acid, and probably nitric acid, in rain "is not proportional to the emission or atmospheric concentration of the precursor gases sulphur dioxide and NO_x , but is limited by the availability of oxidants such as HO , H_2O_2 and O_3 ". This is the question that the House of Lords committee studying acid rain (see above) consider could be a decisive factor in a political decision to reduce emissions.

As for the tripartite study itself, Sir John said last week that he is touring research groups "flying round in a small plane" identifying gaps in research and attempting to match facilities and people. He expected the £5 million research programme to be announced in December, and there is agreement that a few big, site-specific, international studies should be made. "I don't want penny packets", he said.

Robert Walgate

Student benefits

THE Department of Education and Science has announced a series of improvements in the financial support British students may expect in the coming year. These include an increase in the employer contribution a student may receive before the state-backed maintenance grant is cut. Students may now receive a total of £1,600 from all sources — £1,900 for National Engineering Scholarship Students. (The current student lodging grant is £2,100 a year for London and £1,435 for elsewhere.) The government hopes that these concessions will encourage students to pursue careers in industries vital to the economy.

Other students to benefit are those studying outside Britain and those undergoing teacher training while employed as full-time teachers. There are also to be increases for students' dependants.

The National Union of Students, welcoming any change that will leave its members better off, says that it will continue to push for an adequate student grant across the board. **Marcus Chown**