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10 DOWNING STREET
LONDON SW1A 2AA

From the Private Secretary 15 December 1988

Dear Andrew

ENVIRONMENT COMMITTEE REPORT ON AIR POLLUTION: APPOINTMENTS

The Prime Minister has seen a copy of Lord Caithness's letter of 13 December to the Secretary of State for Energy with a draft of the White Paper. She has noted this without comment.

I am sending a copy of this letter to Jenny McCusker (Department of Transport), David Murphy (Department of Energy), Jeremy Godfrey (Department of Trade and Industry), Stephen Lambert (Ministry of Agriculture, Fisheries and Food), Peter Swift (Department of Education and Science), Lyn Parker (Foreign and Commonwealth Office), Jonathan Taylor (HM Treasury), Simon Judge (Paymaster General's Office), Uriel Jamieson (Scottish Office), Keith Davies (Welsh Office). Nick Denton (Lord President's Office), Martin Donnelly (Northern Ireland Office), Flora Goldhill (Department of Health), Trevor Woolley (Cabinet Office) and Bernard Ingham.

Yours Dominic

(D. C. B. MORRIS)

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Minister for Housing
Environment and Countryside

Prime Minister 2

Although low-key, this brings together usefully the steps the Government has taken recently - taken as a whole it is quite an impressive list.

13 December 1988

Dear Cecil

ENVIRONMENT COMMITTEE REPORT ON AIR POLLUTION: DRAFT GOVERNMENT RESPONSE

In Nicholas Ridley's absence I attach a copy of our draft response to the Environment Committee which we hope to publish before Christmas.

Although most of the Committee's recommendations focussed on questions which are mainly of concern to this Department, some also concern other Departments and the text has been the subject of discussions by officials. I think that it breaks little, if any, fresh ground and its main purpose is to discharge our formal obligation to respond to the Committee. It is fairly low-key and is not intended to form part of our current publicity initiative on environmental issues.

It is, however, a convenient statement of our current policy and it summarises a number of developments which have occurred since the Report was published. This is especially true of the sections on CFCs (on which the Committee made a number of recommendations) and on climate change both of which have been fast moving subjects.

Nicholas Ridley suggested in August to colleagues most closely concerned that the response should issue as a White Paper. There was no dissent. In order to meet our publication deadline, I should be grateful if you and colleagues could confirm you are content no later than lunch-time on Friday 16 December.

I am copying this letter to the Prime Minister, Paul Channon, David Young, John MacGregor, Kenneth Baker, Geoffrey Howe, Nigel Lawson, Peter Brooke, Malcolm Rifkind, Peter Walker, John Wakeham, Tom King, Kenneth Clarke, Sir Robin Butler and Mr B Ingham.

Yours ever
Malcolm

THE EARL OF CAITHNESS

The Rt Hon Cecil Parkinson MP

AQ6-788 - 6RH3 Draft of 12:XII

DRAFT GOVERNMENT REPLY TO THE FIRST REPORT FROM THE ENVIRONMENT COMMITTEE, SESSION 1987/88

I. Introduction

1.1 The Government welcomes the Environment Committee's Report on air pollution. The Committee addressed an area of rapid change. Some of its recommendations focussed on policies which were developing very quickly. It made constructive and helpful proposals in key areas and many of its recommendations foreshadowed developments in policy which have taken place since publication of the Report in June. This response gives a consolidated account of recent developments as well as dealing with the Committee's particular concerns.

1.2 In the first place, among the more notable developments in the main areas examined by the Committee was the agreement, at the Environment Council in June, of the EC Large Combustion Plants Directive which had been under discussion since 1983. The Committee recognised the importance of this Directive for the abatement of acid rain in Europe, and this agreement represents a major step forward. On 1 November in Sofia, Bulgaria, the UK signed with 24 nations the Protocol to the 1979 UNECE Convention on Long-Range Transboundary Air Pollution, concerning the control of emissions of nitrogen oxides (the NOx Protocol). At the Environment Council in November, agreement was reached on the final part of the Vehicles Emission Directive, the second stage of reductions in emissions from small cars. The standards agreed represent important reductions on current levels for the emissions of CO, hydrocarbons and NOx, but safeguard the development of the lean burn engine with its potential for not only reducing pollution but also fuel consumption and the emission of carbon dioxide.

1.3 The Government welcomes the particular attention that the Committee has paid to measures to protect the ozone layer. In October the Government, on the basis of the second report of the Stratospheric Ozone Review Group, called for agreement on tougher measures for the reduction of CFCs by at least 85% as soon as possible and subsequently announced its intention of hosting a major international conference on the ozone layer in March 1989. In 1990 the Government is also to host the second meeting of the Parties to the Montreal Protocol, which is expected to take decisions on strengthening the Protocol. It

remains seized of the vital importance of working towards international solutions to global problems such as this whilst, at the same time, exploring sound and complementary policies which can be pursued domestically. The Government shares the Committee's concern about the prospect of man-made changes in the world's climate. Since the Committee reported, the WMO and UNEP have established a 30 nation Inter-Governmental Panel on Climate Change to report in 18 months. This is an important international initiative in which the UK is playing a major part, including the chairing of one of the three working groups which were set up.

1.4 The Committee recognised that since their 1983-4 Inquiry, significant progress had been made in the field of air pollution. The period since the Committee reported has shown similar rapid developments. But these developments have been consistent with the overall policy which the Government described in 1984 in responding to the Environment Committee's Fourth Report. Its policy remains "that action against pollution shall rest on the best scientific evidence, the best technical and economic analysis, and the best possible assessment of priorities". The steps which the Government has taken to tackle the problems of air pollution are evidence of its continued determination to nurture and safeguard the environment and protect the balance of nature.

1.5 This response to the Select Committee begins with a brief description of the issues surrounding each of the four main subject areas which it considered. This is intended to set in context the responses which follow on the Committee's individual recommendations.

II. Acid Rain

2.1 The Committee acknowledged substantial improvements in air quality in the United Kingdom in recent years, but feared that these improvements might not be sustained in all respects because of increasing emissions from road traffic (paragraph 23). It also noted that, since its last report, further research had shown that "acid rain" was not solely a long-range, trans-boundary phenomenon but that acid depositions were in some measure affecting the local environment in the UK. It discussed the effects of acid rain on buildings, lakes, rivers and freshwater life, trees and other plant life and further steps which might be taken to reduce acidic emissions.

2.2 Acid deposition is a complex matter. It may involve a number of pollutants including gaseous SO2, NOx and ozone on the one hand and wet deposited sulphuric and nitric acids, sulphates, nitrate and ammonium compounds on the other.

2.3 Growing understanding of the role of SO2 and NOx in acidification underlay the Government's decision to authorise in principle a £1 billion programme for the CEGB to retrofit three 2000 MW power stations with flue gas desulphurisation equipment, to fit low-NOx burners to 12 major coal fired power stations, and to require all new coal fired power stations to be fitted with acid gas emission control technology. Further emission reductions were envisaged in the Large Combustion Plants Directive which was still under negotiation in the EC when the Committee's report was published. The Committee recognised the force of the difficulties which had prevented the UK from agreeing to the proposals tabled at the March Environment Council. At the following Council on 16 June the UK was successful in securing workable monitoring and measurement requirements for emissions from new plants and a satisfactory regime for high sulphur indigenous coal and was able to agree a formula for the lower threshold for application of the new plant standards. On this basis, the Government was able to agree to the Directive. Meeting its requirements will add considerably to the cost of the existing programme, which is already the second most expensive in Europe.

2.4 On the basis of 1980 levels, the Directive as agreed requires reductions in total UK emissions of SO2 from existing large combustion plants of 20% by 1993, 40% by 1998 and 60% by 2003. NOx emissions will be reduced on the same basis by 15% by 1993 and 30% by 1998. The Government welcomes this major step forward which will produce environmental gains in many areas, including the UK, which are sensitive to acid depositions.

2.5 Growing understanding of the role of nitrogen oxides in the damage done by air pollution has contributed to the UK's decision to support the NOx Protocol to the UN/ECE Convention on Long-Range Transboundary Air Pollution. This commits the UK to restricting its total NOx emissions to their 1987 levels by 1994, requires the application of national emission standards for major new emission sources and commits the signatories to negotiating further steps for the reduction of national emissions from 1996. Such reductions will be based on scientifically established maximum deposition loads - the so-called critical loads approach.

2.6 The Protocol is important because it tackles transboundary pollution on a comprehensive scale (25 countries from Eastern and Western Europe and North America are signatories). Its commitment to further work based on critical loads is particularly significant. The Government agrees with the Committee's view that the development of the critical loads approach is a crucial part of the proper consideration which nature conservation requirements should be given in the development of emission reduction strategies. It considers that the critical loads approach will enable improvements to be directed where they will be most beneficial and will allow a more cost-effective use of resources than the pursuit of further arbitrary percentage reductions in emissions.

2.7 Motor vehicles are an important and currently rising source of emissions of NOx as well as other important pollutants. The emissions standards are to be tightened by some 40% compared with current regulations following the Government's decision to introduce the tighter exhaust standards decided within the European Community and the agreement reached recently on small cars will provide a further improvement.

III. Unleaded Petrol

3.1 The Government has been taking steps to reduce the emissions of lead into the air from petrol engines since the early 1970s. In 1981 it decided to reduce the maximum amount of lead allowed in petrol from 0.4 to 0.15 grams per litre. This was the lowest level that could be achieved without damaging certain engines. The measure took effect from 31 December 1985 and halved the measured concentration of lead in urban air in the UK.

3.2 However, lead from petrol still accounts for 80% of what remains. The UK played a major role in securing agreement in 1985 on the future introduction of unleaded petrol within the European Community. Under the Unleaded Petrol Directive of 20 March 1985, Member States have agreed to take the necessary steps to ensure the availability and balanced distribution of unleaded petrol within their territories from 1 October 1989. In the UK, the Government has been working together with other interested organisations towards the earliest possible compliance with these requirements.

3.3 In the March 1988 Budget, the Chancellor of the Exchequer increased the duty differential between leaded and unleaded petrol, introduced in the previous Budget, to 10.6p per gallon. As a result, unleaded petrol has been on sale at about 6p per gallon less than the price of 4-star and about 1-2p per gallon less than that of 2-star.

3.4 Since DOE's evidence to the Committee, there has been a five-fold increase in the number of petrol stations selling unleaded petrol. By the end of 1988, unleaded petrol will be on sale at about 3000 petrol stations (about 15% of the total) spread throughout the country. It is estimated that about one in four refuellings are now taking place at petrol stations where unleaded petrol is available. The availability of unleaded petrol can no longer be said to be a major barrier to its widespread use.

3.5 Uptake of unleaded petrol is now about ten times higher then at the time of the Budget. This is a significant increase. However, this is still only about 1.5% of total petrol consumption, although consumption continues to rise. More than half the cars on the road, and 80% of new cars, could run on unleaded petrol. Most of these need some adjustment, but this is usually minor and inexpensive. Some manufacturers and dealers are now offering to carry out the necessary adjustment free of charge.

3.6 A further EC Directive of 3 December 1987 (the Luxembourg package) allows member states to set dates by which all new cars must be able to run on unleaded petrol. The Government has adopted the earliest dates allowed under the Directive. The Government is also encouraging motor manufacturers to release cars in a form able to run on unleaded petrol without adjustment in advance of these dates. The current task is to accomplish the change-over to unleaded petrol as smoothly and rapidly as possible, and the Government will continue to play its part fully.

IV. CHLOROFLUOROCARBONS AND THE OZONE LAYER

4.1 In contrast to the problems of long-range transboundary air pollution, where much useful progress has been made on a regional basis, the threat to the stratospheric ozone layer from emissions of chlorofluorocarbons (CFCs) and halons is a truly global environmental issue requiring concerted international action to tackle it. Moreover, both CFCs and halons are "greenhouse" gases which contribute to the risk of global warming and to consequent climate changes.

4.2 The adoption of two international agreements on the ozone layer within little more than 2 years is itself a major achievement. The UK played an active part in negotiation of both the framework Vienna Convention for the Protection of the Ozone Layer, agreed in 1985, and of the Montreal Protocol on Substances that Deplete the Ozone Layer, agreed in 1987. The efficacy and strength of the European Community working together en bloc was clearly demonstrated in the negotiation of both instruments. The Convention, covering such matters as co-operation in research, systematic observations and information exchange, came into force on 22 September 1988 after 20 countries had ratified it. The UK itself was one of the first countries to ratify the Convention - and the first EC member state to do so.

4.3 The Committee described the Montreal Protocol as "a significant step in the right direction". The Government agrees that the adoption of global measures to limit the production and consumption of two groups of widely used chemicals - CFCs and halons - is an achievement in international environmental policy-making.

4.4 The EC Environment Council on 16 June 1988 agreed in principle a Decision - formally adopted by the Council on 14 October 1988 - on ratification of the Protocol by the EC and by all the member states before 31 December 1988. The EC, UK and most other member states ratified it on 16 December 1988. With the ratifications that have already taken place this will enable the Protocol to enter into force on 1 January 1989, as planned. In the UK itself the Parliamentary procedures for ratification were completed in February 1988. All the dependent territories were included in the UK's ratification of the Protocol.

4.5 The Environment Council on 16 June also agreed in principle a Regulation (also formally adopted on 14 October) to implement the Protocol within the Community. Like the Protocol, it will come into force on 1 January 1989. The Regulation lays down Community-wide rules for implementation of the Protocol with controls on production and consumption directly applicable to producing and importing companies. A notable feature is that - like the Protocol itself - consumption is regulated by control of the overall supply of CFCs and halons (through EC sales of Community -produced substances and through imports) rather than through control of specific uses.

4.6 A major element of the package of measures agreed in principle by EC Environment Ministers on 16 June was a political resolution which stressed, inter alia, the importance of further voluntary measures to reduce the use of CFCs and halons to the maximum possible extent and of reductions in particular uses not being offset by increases in other uses or in other member states. The Commission is holding discussions with European industry on voluntary agreements to take this forward.

4.7 The Montreal Protocol represented international consensus on action to control emissions of ozone layer depleting substances in the light of scientific understanding at the time. Since Montreal the science has developed rapidly. These developments have been reviewed by the Government's independent scientific advisers, the Stratospheric Ozone Review Group (SORG). In their second report published in October the Group said that it is now virtually certain that the depletion of the ozone layer over the Antarctic is caused by CFCs which are also implicated in ozone depletion over other parts of the globe, including the UK. After examining the Group's report the Government accepted the firm evidence that as an essential step to prevent further depletion of the ozone layer chlorine in the stratosphere must be stabilised. The Government therefore believes that worldwide CFC emissions must be reduced by at least 85% by the turn of the century. To achieve this it is clear that the Montreal Protocol must be significantly strengthened. The UK is urging other EC member states to adopt the British position on the further international action that is needed.

4.8 The first priority, shared with the UK's partners in the EC, has been to ensure that the Protocol enters into force at the beginning of next year as planned and with widest possible participation. The Government has been seeking through diplomatic and industrial channels to encourage countries to join the Protocol, particularly developing countries, such as China, South Korea, and India. It is most important that the efforts of the Parties to reduce production and consumption of CFCs and halons should not be offset by increases elsewhere. The dissemination of information on alternative products and processes is essential and the Government considers that the political conference on "Saving the Ozone Layer" being held in London next March, in which the Prime Minister will participate, will have an important role to play here.

4.9 The Protocol itself includes provision for regular reviews of the control measures - beginning in 1990 and every 4 years thereafter - in the light of available scientific, environmental, technical and economic information. The

Government is pleased that participants at the important meetings held under the aegis of the United Nations Environment Programme (UNEP) in The Hague in October 1988 agreed to accelerate the review process by starting work now rather than waiting until the first meeting of the Parties in April 1989. British scientists and technical experts will play an active part in this work. Following a UK initiative in February 1988 there has been most encouraging progress on co-operation in stratospheric ozone research between EC and EFTA countries. This is discussed more fully in the response to the Committee's recommendation 13 below.

4.10 There has also been progress on the industrial front. There is no doubt that the Protocol has given great stimulus to the search for ways of reducing dependence of CFCs and halons. These include not only work on development of new substitute chemicals but also replacement of CFCs by existing substances where suitable (e.g. use of hydrocarbons as aerosol propellants and foam-blowing agents) and using existing alternative technologies or products (e.g. pulp or cardboard packaging) as well as by reducing unnecessary or wasteful use of CFCs and halons, by better housekeeping, and by recovery and recycling. As the Committee noted, the two UK producers - ICI and Rio Tinto Zinc (ISC Chemicals Division) - have stepped up their research and development work on potential new substitutes and are participating with other international producing companies in joint programmes of toxicity testing to speed the process of commercial development of the most promising substitutes. The Government is encouraging the producers to bring new substitutes onto the market as quickly as possible, having regard to the time needed for toxicity testing. The Government welcomes the announcement by ICI in November 1988 of plans for full-scale production of an ozone-friendly substitute refrigerant. It has also been encouraging the users of CFCs and halons to reduce their use of the Montreal substances as far and as fast as possible. DOE and DTI have regular meetings with the users and producers of CFCs and halons on the steps which they are taking to reduce use of these substances to the maximum possible extent.

4.11 The Committee contrasted the approach in the UK with that in Sweden. They said that they detected "a distinct difference of attitude between the positive approach to the problem in Sweden and the more relaxed attitude in the UK". As noted in response to the Committee's recommendation 21 it is not Government policy to ban specific uses of CFCs - or at all - but rather, within the overall framework of the controls laid down in the Protocol and in the EC implementing Regulation, to encourage a voluntary i.e. self-regulatory approach to reductions in use, an approach underlined by the emphatic political resolution of the EC

Environment Council. The Government has welcomed the announcement by the UK aerosol industry that it expects to phase out non-essential use of CFCs in aerosols by the end of 1989. As aerosols currently comprise over 60% of the UK CFC market - an estimate by British industry available neither to the Government nor to the Committee during the course of its inquiry - this voluntary action by the aerosol industry will enable the UK to meet the Montreal target for a 50% reduction in CFC consumption by 1989 - 10 years ahead of the date required by the Protocol. But all sectors must take and are taking positive steps to reduce their use of CFCs and halons.

V. The Greenhouse Effect

5.1 Since publication of the Committee's report, domestic and international interest in the greenhouse effect has intensified. In its response to the Brundtland Commission report, the Government identified climate change as possibly the greatest challenge to sustainable development. A number of international initiatives have explored the possibility of man-made climate change and the UK has played an important part.

5.2 The greenhouse effect is a natural phenomenon without which the global average surface temperature would be about 33°C colder. Concern focusses on the current rate of increase in atmospheric concentrations of greenhouse gases and the possible effects this may have on the world's climate. The increase in carbon dioxide, the major greenhouse gas, arises largely from the combustion of fossil fuels and deforestation. CFCs are the second most important group of greenhouse gases and it has been estimated that they could contribute a quarter of the global warming forecast by the middle of the next century if production were to continue to increase. Molecule for molecule they are 10,000 times more effective than carbon dioxide. Methane is also an important greenhouse gas. Its concentration has doubled since pre-industrial levels and is rising rapidly.

5.3 The Government's policy on climate change was made clear at the Conference hosted by the Canadian Government in Toronto in June on "The Changing Atmosphere". It stated then that in view of the uncertainty which surrounds almost every aspect of the greenhouse effect, the first priority must be to improve scientific understanding by co-ordinated international research so that long-term policies can be based on firm foundations. The UK is playing a significant part in this research particularly through the Meteorological

Office 's global climate modelling programme. However, even before the science has been fully established, a number of measures can already be endorsed by current understanding.

5.4 The Government has already urged the wide ratification and strengthening of the Montreal Protocol on CFCs (which will mitigate the greenhouse effect as well as help to reduce ozone depletion), and, in an international context, the proper pricing of fuels to encourage energy efficiency and better land use practice to control, in particular, deforestation.

5.5 The UK is playing a full part in the Inter-governmental Panel on Climate Change (IPCC) set up by the World Meteorological Organisation and the United Nations Environment Programme. The Director General of the UK Meteorological Office leads one of the three IPCC working groups. The UK was the first EC country to co-sponsor the recent United Nations resolution on global climate change calling for a review of knowledge about global warming, its possible effects and possible response strategies. It is playing a full part in other international fora including EC, OECD and IEA.

VI. The Committee's Recommendations

6.1 This section contains the Government's response to the Committee's specific recommendations. It includes cross-references to the relevant paragraphs of the Report as well as to the summary of recommendations.

A. Acid Rain

Air Pollution Research (Recommendation 1)

6.2 We recommend that the Government should re-examine all its environmental research programmes, and re-instate them wherever possible. (para 22)

6.3 The Government agrees with the Committee on the importance of good science in helping to establish the cause and effect of environmental problems and the response to such problems. The steady expansion of the DOE Air Pollution Research Programme over the last six years, reflects the Government's determination to base decisions in this, as in all environmental areas, on the best available scientific foundation. The value of the programme in real terms has more than doubled since 1982/83 and now stands at some £4.7m per annum.

6.4 The commissioning and funding of environmental research both within the Government's own programme and within the basic science programmes of the Research Councils is kept under continual review and relative priorities assessed. Some of the additional resources for science announced in the 1988 Autumn Statement will further benefit research relating to the environment.

6.5 In air pollution research the Government accepts that priorities will need to be kept under review. Over the next three to five years global issues, and in particular the question of global changes in the ozone layer and the global climate, are likely to command increasing attention, with the Government collaborating closely with its European partners and with other nations in international approaches to these problems.

Damage to Buildings (Recommendation 2)

6.6 We are pleased to be able to record that there has clearly been considerable progress since 1984 in monitoring the effects of air pollution on buildings and building materials. SO_2 in the atmosphere has decreased, but the ambient levels of other pollutants, such as NO_x are rising. It is important that research into their effects, both separately and in combination, be intensified and we so recommend. (para 32)

6.7 The Government accepts that research into the effects of air pollution should be intensified. As the Committee points out, there has been considerable progress in understanding the building materials and historic buildings that are at risk and in recognising the effects of past exposure to pollution. Nevertheless, uncertainty still remains about the importance of current levels of pollution. The Government has initiated a National Materials Exposure Programme (covering 29 sites in the UK), four sites of which contribute to the United Nations Economic Commission for Europe's Co-operative Programme on Effects on Materials. Both these programmes are designed to evaluate the quantitative impact of present day air pollution on a range of materials, including the individual and synergistic effects of sulphur and nitrogen oxides. Results from the first year's exposure programmes are now being analysed. The first full evaluation is scheduled for 1991/92.

6.8 Laboratory and closed chamber studies, initiated by the Building Research Establishment (BRE), including some new extra mural contracts, will also increase understanding and have already established a basis for further studies.

6.9 In view of the possible impact of the greenhouse effect and stratospheric ozone depletion on buildings and materials, BRE intends to begin a programme on climate change, since the techniques used to monitor pollutants which may have an adverse effect on the climate are similar to those mentioned above.

The Cup Full of Stresses Theory (Recommendation 3)

6.10 We note that the Forestry Commission stands alone in its refusal to accept a nexus between air pollution and tree damage. The health of Britain's trees gives us cause for concern, and whilst research must continue apace the maximum efforts must be made now to eliminate the emissions from fossil fuel combustion into the atmosphere. (para 54)

6.11 The DOE and the Forestry Commission in consultation with other interested organisations have since 1985 been concerned to ensure that appropriate surveys of tree health are undertaken. Both DOE and the Commission share the Committee's concern over the picture of tree health in Britain revealed by the annual surveys carried out by the Forestry Commission.

6.12 So far as the relationship between air pollution and tree health is concerned, it is not correct to state that "the Forestry Commission stands alone in its refusal to accept a nexus between air pollution and tree damage". As shown in its evidence to the Committee, the Commission accepts this connection for many situations found in continental Europe and elsewhere. However, so far as trees in Britain are concerned, the position of the Forestry Commission is similar to that recently arrived at by the Terrestrial Effects Review Group set up by DOE. In its report published on 15 September 1988, the Review Group recorded its concern over the increasing crown density thinning of some tree species as revealed by the surveys but noted that there was as yet no direct proof of pollution related forest decline in Britain. The Commission agrees, as the Review Group notes, that pollution levels in some parts of the country might be expected to cause stress. The Government accordingly accepts the Committee's recommendation that research should continue. In particular, tree surveys and exposure studies, especially on mature trees, will be maintained. In addition, as recommended by the Terrestrial Effects Review Group, attempts will be made to develop more specific diagnostic tests for pollution damage.

6.13 Whilst the link between air pollution and the current health of UK trees remains unclear, there is good evidence of the effect of air pollution, particularly acid rain on other ecosystems. On this basis the Government agrees with the Committee that efforts must be made to reduce the emissions from fossil fuel combustion and has taken action accordingly.

Ammonia (Recommendation 4)

6.14 We further recommend that research be undertaken now into the effects of air pollution on all forms of flowering plants and other species in the ecosystems such as insects and also into the effects of ammonia and its derivatives in the atmosphere. (para 57)

6.15 The Government accepts the desirability of more research into the effects of air pollution on flowering plants and associated insect life. The Committee's recommendation is paralleled by one from the Terrestrial Effects Review Group that research on natural vegetation be extended. DOE supported the pioneering studies on ombrotrophic mires by Dr John Lee at the University of Manchester which have done much to raise interest in this area. Ways are being considered in which studies of further systems might be included in the research programme, but the vast number of new natural systems that could be studied means that potential topics will need careful selection for relevance and importance. It may, for example, be more appropriate to concentrate on changes, such as soil and water acidification, which dictate the health of the ecosystems depending on them. The effects of nitrogen deposition on nitrogen-poor soils and ecosystems are being studied within the UN/ECE working group on effects of air pollution and this forum is likely to be the most efficient way forward, pooling, as it does, information on the most sensitive systems throughout the ECE region.

6.16 The Government agrees that a clearer picture is needed of the sources of ammonia in the atmosphere and the impact it has on living systems. The work of Dr Helen ApSimon on the UK ammonia emission inventory and by Warren Spring Laboratory on the ammonia content of rain, referred to by the Committee, were undertaken as part of DOE's Research Programme. Further advanced measurements of gaseous ammonia are being undertaken for the Department. Part of the remit of the UK scientist who was seconded to the UNECE European Monitoring and Evaluation programme (EMEP) in 1987 was to ensure that the emissions and chemical effects of ammonia were built into the new EMEP transboundary pollution model for nitrogen oxides. The effects of ammonia on trees and other natural ecosystems continue to be studied within DOE's programme and in the international co-operative study programmes of the United Nations Economic Commission for Europe.

The Critical Load Approach (Recommendation 5)

6.17 The Nature Conservancy Council stated in evidence that nature conservation requirements should be given proper consideration in the development of emission reduction strategies. We agree with their judgement. The development of the critical loads approach is a crucial part of this consideration. (para 65)

6.18 The Government shares the Committee's view of the importance of the approach based on critical loads, and considers it to be the logical, practical extension of its basic principle of basing decisions on the best available scientific evidence. It believes that the international action now well underway to define critical loads, to which the UK is making a strong contribution, is the most appropriate and efficient way forward. For this reason it welcomes the commitment in the NO_x Protocol to begin negotiating on further steps to reduce national annual emissions of nitrogen oxides based on critical loads as well as other relevant data. The Stockholm conference referred to in the Committee's report was organised within the ECE co-operative programme framework. The examples of tentative critical loads quoted by the Committee from that conference include natural vegetation systems and indicate that the Committee's concerns will be taken care of by this approach.

Combustion Technology (Recommendation 6)

6.19 We welcome the CEGB's conversion to the views expressed in the 1984 Report regarding the need to limit SO_2 emissions. The choice of the process by which this is to be accomplished must be a matter for the Board's technical judgement but the environmental impact should be a major factor in that choice. (para 75)

6.20 The Government agrees that environmental impact should be a major factor in the choice of means to abate SO_2 emissions. The supply of limestone and disposal of by-products, in particular gypsum, will need to be handled sensitively. However, the scale likely to apply inthe UK means that these are not insuperable problems. Her Majesty's Inspectorate of Pollution (HMIP) have played a part in assessing and commenting on the Environmental Assessment Statement prepared by the CEGB for the first FGD retrofit. HMIP's role in the cross-media aspects of future FGD proposals would be further strengthened under the proposed legislation for integrated pollution control on which a consultation paper was issued in July 1988.

The EC Draft Directive on Large Combustion Plants (Recommendation 7)

6.21 We are impressed by the force of the Government's arguments. It is a fact that other European Countries import more coal than we do, and we are aware of the difficulties for our coal industry if we moved in the same direction. Lord Caithness told us that he wanted a Directive which was "effective, fair and capable of being implemented". We are satisfied that the draft Directive, as currently proposed, is none of these and needs to be modified accordingly. (para 84)

6.22 The Government welcomes the Committee's recognition of the problems posed by the proposals as they stood at the time of the March Council of Environment Ministers. It was helpful that these comments were available before the 16 June Environment Council. At that meeting and at the subsequent Environment Council on 28 June, agreement in principle was reached on the Directive.

6.23 Under the agreement, the UK has accepted the following reduction targets on 1980 levels for emissions from existing large plants:

	1993	1998	2003
SO_2	20%	40%	60%
NOx	15%	30%	

The text provides suitable safeguards in the event of major difficulties in achieving the targets.

6.24 Agreement was also reached on standards for new large combustion plants. Following further discussions with industry, the Government was able to agree to a 50 Megawatt lower threshold for application of the new plant standards. A workable compromise has been achieved on the monitoring and measurement requirements for emissions from new plants. The agreement also provided a satisfactory regime for the UK's high sulphur indigenous coal.

6.25 The Government is now considering detailed arrangements for implementing the Directive in UK law and ensuring that all its requirements are met.

The Thirty Per Cent Club (Recommendation 8)

6.26 We recommend that the programme of FGD should be accelerated sufficiently to enable the UK to join the 30 per cent Club. (para 91)

6.27 The Government is unable to agree that the FGD programme could be accelerated sufficiently to enable it to sign the protocol to the Convention on Long-Range Transboundary Air Pollution calling for reductions in national SO_2 emissions by 30% on 1980 levels by 1993 ("the 30% club"). Drax will be the first existing UK power station to be equipped with FGD. Both it and at least one other major station would need to be retrofitted by 1993 if the 30% Club target (a 30% reduction on 1980 levels of SO_2 emissions by 1993) were to be achieved. The FGD plant at Drax is due to be commissioned in 3 stages, linked to 3 pairs of 660 MW generating sets in 1993, 1994 and 1995 . FGD equipment at a further, as yet unidentified station, is due to be commissioned in 1996, bringing the total by then to 6,000 MW of FGD capacity. There is unfortunately no prospect of advancing the commissioning date for all this plant to 1993. Even when planning permission has been obtained installation of FGD is a complex engineering exercise, which requires careful planning to minimize shutdown of generating capacity and the risk of disruption to secure supplies of electricity to consumers.

6.28 With the programme to retrofit three CEGB power stations with FGD - and the significant further action to reduce emissions which will be necessary as a result of the commitments entered into in the EC Large Combustion Plants Directive, the UK will in due course significantly surpass the targets of the "30 per cent Club", although not over the same timescale. The Government remains of the view that the "30 per cent Club" formula is arbitrary. UK emissions of SO_2 have fallen by about 40% since 1970. This shows that the base and target dates selected have no particular logic; they happen to be very difficult for the UK while convenient for a number of other countries.

B. Lead in Petrol

The Luxembourg Package (Recommendation 9)

Sales and Fiscal Incentives (Recommendation 10)

7.1 We greatly welcome and firmly endorse the commitment by the Government to unleaded petrol. (para 93)

7.2 We welcome the fact that the Government has reduced the rate of tax on unleaded compared with leaded petrol. (para 100)

7.3 The Government welcomes the Committee's endorsement of its firm commitment to the introduction of unleaded petrol. The change in the duty differential between leaded and unleaded petrol announced in the March 1988 Budget has led to a rapid increase in the number of petrol stations selling unleaded petrol and in the demand for the new fuel.

Advice for Motorists (Recommendations 11 and 12)

7.4 We recommend that Britain should move quickly to a position where all new cars for sale in the UK should be manufactured able to run on unleaded petrol without subsequent adjustment. (para 101)

7.5 The Government accepts the Committee's recommendation. Amendments to the Type Approvals and Construction and Use Regulations were laid before Parliament on 9 September and came into force on 1 October 1988 to implement the unleaded petrol aspects of the Luxembourg package. The regulations require all new car models to be able to run on unleaded petrol without adjustment from 1 October 1989 and all new cars to be able to do so from 1 October 1990, the earliest dates allowed under the Directive. The Government is looking for ways of advancing these dates as much as possible by voluntary means.

7.6 However, given that sales figures are still very low, the situation must be monitored closely. The fact that unleaded petrol is currently available at relatively few outlets militates strongly against its use; however, this situation is changing and there will be many more outlets by 1989. We recommend that if the current price differential does not result in a marked increase in sales of unleaded petrol, the Government should institute a further public information campaign on television and in the national press regarding the environmental and financial benefits of unleaded petrol, and consider further increasing the differential in its next Budget. (para 102)

7.7 Despite increases in both availability of and demand for unleaded petrol, the Government agrees that sales are still low and it will continue to monitor the situation closely to see if further action is necessary.

7.8 Government action so far has included:

i. establishing the Unleaded Petrol Group, now chaired by the Parliamentary Under-Secretary of State for the Environment, to co-ordinate many aspects of the transition to unleaded petrol, including public awareness issues;

ii. providing a grant to the Campaign for Lead-Free Air (CLEAR) to organise national and regional campaigns to increase the public's awareness about the new fuel and to run an information service. Ministers participate personally in CLEAR's Unleaded Petrol Weeks. The second National Week took place at the end of October;

iii. preparing and distributing a leaflet giving general information about unleaded petrol, a list and chart of cars which can run on unleaded fuel, and a list of outlets. All are available in a DOE information pack;

iv. emphasis on the ability of new cars to run on unleaded fuel in the Department of Transport's 'New Car Fuel Consumption' guide;

v. issue of a guidance note on the labelling of cars and motor-cycles using unleaded petrol;

vi. distributing a poster to car servicing centres, which urges motorists to consider having their cars adjusted to run on unleaded petrol.

7.9 The Government will also be distributing a leaflet about unleaded petrol to all vehicle owners with vehicle licence reminders. Further initiatives are under consideration.

C. Chlorofluorocarbons and the Ozone Layer

Global depletion of ozone (Recommendation 13)

8.1 We recommend that the DOE should take a strong lead in co-ordinating European research into ozone layer depletion and monitoring and that appropriate Government funds be made available for this purpose. (para 111)

8.2 The Government accepts (and indeed anticipated) the Committee's recommendation. Following an initiative by the UK at the meeting of EC/EFTA Ministers in Nordwijk on 25 October 1987, DOE called a number of meetings of EC/EFTA research programme managers and of scientists active in the field to discuss how stratospheric ozone research in Europe should be coordinated. Terms of reference for a task force to coordinate research were agreed in October by a prominent group of EC/EFTA scientists. The task force will consist of a small

permanent coordinating unit to be set up in the UK in the spring of 1989 and an advisory panel of scientific experts. The task force will be funded by the UK and EC, and UK has reserved about £70,000 for running the EC/EFTA coordinating unit.

Are CFCs responsible for the depletion of the ozone layer? (Recommendation 14)

8.3 We recommend that the DOE increase its support to the CFC manufacturers' research programme into the environmental effects of ozone depletion, as well as academic and other independent research. (para 114)

8.4 DOE will continue to support the CFC manufacturers' research programme through scientific coordination and interpretation of results. There is every opportunity for such support to increase as a scientific consensus on the role of CFCs in ozone layer depletion strengthens and attention moves towards a more detailed investigation of possible impacts. The Government must, of course, have its own independent programme to inform policy decisions. DOE has increased spending on ozone layer research in the financial year 1988/89 with contracts to universities, Government laboratories and private industry.

The risks to human health (Recommendation 15)

8.5 We recommend that the Government should commission research along similar lines to that of the US Environmental Protection Agency to review the health effects of various levels of ozone depletion for the UK. (para 115)

8.6 DOE is currently discussing with the Department of Health the extent to which the direct health effect of changes in atmospheric penetrance by ultra-violet radiation over the UK might be predicted and placed in the context of general effects. While ground level ultra violet radiation reduces with higher latitude, the characteristics of the populations in northern latitudes are those associated with increased susceptibility to the effects of ultra violet. The establishing of dose response relationships is confounded by the poor exposure data that are available and the heterogeneity of the populations which have been studied to date. The Department of Health will continue to review the possibilities for a specific UK study and in the interim will keep under review the data available from other countries, taking into account the important differences when extrapolating to the UK

Effects on Plants and Animals (Recommendation 16)

8.7 We again recommend that similar research to that by the EPA (which has undertaken detailed cost analyses in order to estimate the damage in various sectors of the US economy) should be funded by the Government with respect to effects in the United Kingdom. (para 116)

8.8 The Committee have themselves identified the difficulty of predicting effects on plants and animals. DOE is currently investigating the most appropriate way of reviewing past work in this potentially vast field to identify areas that would benefit from further directed research.

The adequacy of the Protocol (Recommendation 17)

8.9 We recommend that the Government should urge the EC to seek to re-negotiate the terms of the Montreal Protocol, at its first review in 1990, in the following ways:

(i) "developing countries" should be clearly defined;

(ii) the effect of the provision which allowed a 10 per cent increase in production to accommodate industrial rationalisation should be reviewed;

(iii) restrictions should be imposed on the production of Halon 1301 to encourage increased use of Halon 1211;

(iv) HCFC 22 should be brought within the Protocol's control measures; and

(v) the import of products produced with CFCs from non-Parties to the Protocol should be banned. (Para 125)

8.10 (i) There are a number of references to developing countries in the Protocol. In particular, any Party that is a developing country and whose annual level of consumption of the substances controlled by the Protocol is less than 0.3 kilograms per head may delay its compliance with the controls on production and consumption by 10 years, provided that the 0.3 kg ceiling is not exceeded. The Protocol itself does not define the term "developing country" and there is no single officially recognised list of such countries in the United Nations. There are, however, a number of classifications and lists used by the UN for different purposes, which serve as a guide to which countries may be considered to be developing countries. Nevertheless, the Government agrees with the Committee that it would be helpful to clarify the countries to which the Protocol's

concessions to developing countries applied. This issue has been discussed by an ad hoc working group of legal and technical experts, in which the UK has participated, held under the aegis of the United Nations Environment Programme (UNEP). At its second meeting in The Hague in October the Working Group recommended that for the time being developing countries should be taken to be the members of the Group of 77 plus Albania, China, Mongolia and Namibia. The issue will be considered further by the Parties to the Protocol.

(ii) The Parties have the flexibility to exceed in clearly defined circumstances the prescribed production levels by up to 10% (in the case of the control on halons and at the first two CFC control stages) and by up to 15% at the third stage of controls on CFCs. This flexibility is purely for the purposes of meeting the basic domestic needs of the developing countries to which the concession outlined in (i) above applies and for the purposes of industrial rationalisation between Parties. The term "industrial rationalisation" is defined in the Protocol as "the transfer of all or a portion of the calculated level of production of one Party to another for the purpose of achieving economic efficiencies or responding to anticipated shortfalls in supply as a result of plant closures". The net effect on global production of use of the 10% flexibility for such rationalisation should be nil since the increase in production in the receiving country should at least be offset by a decrease in the country from which production is transfered. The Committee expressed a particular concern that the production flexibility for industrial rationalisation could enable major producing countries to shift their production to developing countries which are Parties to the Protocol. It is unlikely that such Parties would wish to invest in new production capacity, especially given the incentive of the Protocol to develop alternative substances and processes. As noted above, increases in one Party for industrial rationalisation will be offset by decreases in another. Developing country Parties subject to the 10 year period of grace will not be able to export to non-Parties. Therefore unless the substances are used in the country itself (having regard to the 0.3kg per head per year ceiling) they could be exported only to other Parties and offset by lower production and/or lower imports from elsewhere. Nevertheless, the Parties will be able to consider the operation of the provision - and the definition of industrial rationalisation - in the light of experience and, if necessary, agree to make changes to the Protocol. As the controls will

not come into effect before the year beginning 1 July 1989 the Parties will probably not be in a position to judge the effect of the provision as early as the first review meeting due to take place in 1990.

(iii) As the Committee noted, the ozone depletion potential (ODP) of halon 1301 is, at 10.0 far higher than those of any of the other controlled substances. This compares with an ODP of 3.0 for halon 1211. The Government does not agree that "restrictions" - presumably over and above those already in the Protocol -should be imposed on halon 1301 to encourage "increased use" of halon 1211, if the Committee have different treatment of the two substances in mind. This is independent of the general issue of the stringency of the Protocol measures. Whilst there is some scope for using halon 1211 instead of halon 1301 the former is not suitable for all uses of the latter. The Protocol itself encourages a shift from halon 1301 to halon 1211 because substances are weighted according to their ODPs. This means that for every kilotonne of halon 1301 more than three times as much halon 1211 can be produced or used. The Government is keen nevertheless that use of halons should be kept to a minimum and is encouraging industry to eliminate unnecessary or wasteful uses in particular.

(iv) HCFC 22 was excluded from the Protocol because it has a very low ozone depletion potential - a twentieth of CFC 11, for example - and as a substitute for CFC 12 (particularly in refrigeration) was seen as part of the solution not the problem. HCFC 22 cannot be regarded as environmentally benign since it does contain chlorine which reaches the stratosphere and attacks the ozone layer. It is also a greenhouse gas. Nevertheless, the Government recognises that HCFC 22 has an important part to play especially in helping the refrigeration industry to reduce its dependence on more damaging CFCs currently controlled by the Protocol, at least in the short to medium term. The Parties will need to consider the inclusion of additional substances in the Protocol in the light of the regular scientific and technical assessments provided for. In the meantime, the Government's view is that HCFC 22 should be regarded only as an interim solution and that where non-chlorine containing alternatives to the Montreal substances are currently available (eg pentane for foam-blowing) these should be used in preference to HCFC 22.

(v) The Protocol provides for bulk imports of CFCs and halons from non-Parties to be banned as an incentive to joining the Protocol. Participants in the Montreal Conference did, however, agree that this left two potential loopholes by way of imports of products containing CFCs and halons (such as aerosol cans, refrigerators, fire extinguishers) and of products made with but not containing substances (such as electronic goods). The Protocol therefore provides for the Parties both to draw up a list of products containing the controlled substances with a view to banning imports and to study the feasibility of banning or restricting the import of products made with these substances. The administrative, logistical and enforcement difficulties of such controls should not be underestimated. The Government is continuing to encourage countries which have not yet signed the Protocol to do so and the major conference it is hosting next March will have an important role to play here. The Parties will nevertheless wish to keep the situation under review. The Government welcomes the declaration of the EC CFC producers that they will refrain from exporting to non-parties technology for the production of CFCs covered by the Protocol.

Enforcement of the Protocol (Recommendation 18)

8.11 We recommend that the Government should, after the 1990 review, seek to renegotiate the EC regulation so that each EC Member State is required individually to fulfil the requirements of the Protocol. (para 126)

8.12 The Government does not accept this recommendation. As the Committee noted, the Protocol enables EC member states to agree jointly to fulfil their obligations regarding consumption of CFCs and halons and the Regulation agreed to implement the Protocol in the Community takes advantage of this provision. Consumption is defined in the Protocol as production plus imports minus exports. The EC must be treated as a bloc for consumption purposes as control of trade between member states is contrary to the Treaty of Rome. By 1992 the EC will be a single market. Thus joint fulfilment by EC member states of the consumption obligations in the Protocol is essential. The right of any member state to take more stringent measures compatible with the Treaty of Rome is explicitly recognised in a recital to the Regulation. The political resolution agreed by Ministers at the Environment Council on 16 June 1988 (and formally adopted by the Council on 14 October 1988) stressed how important it was that reductions in use of CFCs and halons over and above those required by the Protocol should not be

offset by increases in other uses or in other parts of the Community. The Council therefore asked the European Commission to evaluate annually the impact of such reductions and report regularly to the Council, with appropriate proposals when necessary.

Is the Protocol sufficient in the light of the latest scientific evidence? (Recommendation 19)

8.13 We recommend that the NERC be provided with funding to provide UK representation on the panels of experts with a view to calling, at the first review of the Protocol, for a reduction in consumption of CFCs to 15 per cent of 1986 levels. (para 128)

8.14 In the light of the firm scientific advice about the depletion of the ozone layer and the role of CFCs, in the UK Stratospheric Ozone Review Group's second report, published in October, the Government accepts the need for emissions of CFCs to be reduced and has called for worldwide reductions of at least 85% by the end of the century and for the Protocol to be strengthened accordingly. This accords with the Committee's recommendation and also that on the Report of the Montreal Protocol by the House of Lords Select Committee on the European Communities[1]. The Government has commended the Review Group's report to other EC member states and is urging them to adopt the British position as the EC's stance in the first review of the Protocol. It is hosting a major international conference in March 1989 to underline the importance of a worldwide commitment to reducing CFCs and to show how these can be achieved. It hopes that the tougher measures it is demanding will be agreed at the second meeting of the Parties which it is to host in April 1990.

8.15 The Government is pleased that British scientists - all members of the Review Group - have been invited to participate in the work of the international scientific panel which will provide the scientific input to the review of the Protocol. The first meeting of the steering group for the scientific review was held in London on 30 November 1988. The UK will contribute $50,000 towards the review.

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[1] H.L.Paper 94

Aerosols (Recommendations 20 and 21)

8.16 We feel that the public will only become sufficiently aware of the dangers by the immediate adoption of a mandatory "ozone friendly" labelling scheme, and we so recommend.

8.17 The Government recognises that the labelling of aerosol cans to indicate that they do not contain CFCs helps the consumer. However, it does not consider that it is necessary or desirable to make such labelling mandatory. A mandatory system could be bureaucratic and open to abuse and evasion. The UK aerosol industry is already recommending that aerosols not containing CFCs should be labelled accordingly and some firms have already done so. In addition, the Government has suggested to the aerosol industry that they consider a logo with other user industries in the UK and Europe and they have responded positively. The Environment Council on 16 June invited the Commission to seek voluntary agreement with industry on a Community label for CFC-free products and the Commission is currently discussing this with the European aerosol industry.

8.18 We recommend that if, in the judgement of the Government, progress in phasing out the use of CFCs in aerosols is not rapid enough, then consideration should be given to banning the use of CFCs in the manufacture of aerosols in the UK for all except medical uses. (para 136)

8.19 It is not Government policy to seek to control specific uses of CFCs. The market will determine how available CFCs are used as supplies diminish and prices rise. As the Committee acknowledge, the voluntary i.e self regulatory approach has brought good results in the aerosol sector. The UK aerosol industry has announced that it expects to phase-out non-essential use of CFCs in aerosols by the end of 1989. The Government welcomes this move in response to environmental and consumer concerns. It will continue to monitor progress in reducing use of CFCs both by the aerosol industry and by other user industries.

Recovery/Recycling during Foam Production (Recommendation 22)

8.20 We recommend that CFCs should be treated as "noxious or offensive gases" within the terms of the Act and that HMIP should proceed to require the installation of such emission abatement equipment. (para 139)

8.21 Compounds of chlorine and of fluorine are already included in the list of noxious and offensive gases scheduled under the Health and Safety at Work Act but before HMIP could set requirements on emission levels they would have to be satisfied that practicable and reliable abatement technology was available. Despite encouraging developments the Government does not consider that this position has been reached.

8.22 Recovery and recycling of CFCs emitted during production of flexible foam is still in its infancy. As noted by the Committee, a pilot activated carbon unit has been installed in Denmark and a full scale unit was installed in the Netherlands in 1987. With the assistance of a grant from DTI a large-scale activated carbon adsorption unit has been installed in a polyurethane foam factory at Glossop in the UK. These developments are being monitored and evaluated closely by the industry to establish their technical and economic viability. The company concerned expects to recover over 90% of CFC 11 used in the foam manufacture when the plant is fully operational. These are encouraging developments which HMIP, DOE and DTI are following closely in discussion with the British Rubber Manufacturers' Association (BRMA).

8.23 BRMA have advised that the achievement of 40% recovery by the Dutch plant has necessitated operating at air ventilation rates which may not be acceptable in the UK because of possible increased isocyanate concentrations in the workplace. BRMA have also observed that recovery rates of the order of 40% are possible only on plants producing slabstock foam; BRMA are studying plants producing moulded foam but do not expect that substantial recovery will be possible. The move towards production of Combustion Modified High Resilience foams may have implications for the rate of CFC recovery but it is too early to judge what effect this may have. In the Government's view further work is needed on the technical and economic aspects of carbon adsorption before it can be regarded as best practicable technology. Clearly, diminishing supplies and higher prices of CFCs will affect the economic viability of the process and make it a more attractive economic proposition.

8.24 HMIP will continue to monitor developments in close association with BRMA, with a particular focus on the unit at the foam plant at Glossop and with a view to deciding on the practicability of establishing emission limits and performance specifications of equipment to abate CFC emissions.

Leakage (Recommendation 23)

8.25 The British Refrigeration Association is in the process of establishing an updated Code of Good Practice regarding manufacture, design, installation and maintenance procedures for adoption as a European Standard. We recommend that the DOE give urgent support to this initiative. (para 140)

8.26 The Government is aware that the steps being taken by the UK refrigeration industry to reduce use of the CFCs controlled by the Protocol include the revision - in cooperation with other European refrigeration industry organisations - of the existing EC Code of Good Practice for the reduction of emissions of CFCs 11 and 12 in refrigeration and air conditioning applications published in 1984. DOE and DTI have strongly encouraged this work and the intention is to submit the revised code to the Committee on European Normalisation (CEN) with a view to its being adopted as a European Standard. Both Departments are encouraging similar work by other industries in respect of their codes of practice.

Recovery and Recycling of CFCs used as Refrigerants (Recommendation 24)

8.27 We recommend that the DOE should hold urgent consultations with both the CFC and refrigeration manufacturers to devise collection and recycling schemes for redundant appliances and consider what powers are needed to ensure that CFCs are not allowed to escape into the atmosphere from this source. (para 141)

8.28 The Government agrees that careful consideration needs to be given to recovery and recycling or destruction of CFCs in appliances, such as refrigerators and freezers, which have reached the end of their useful life. In its view this should address not only CFCs used as refrigerants - about which the Committee was concerned - but also CFCs trapped in the polyurethane foam used for insulation.

8.29 The amount of CFC used in the insulation of domestic appliances, is some four times the amount of CFCs used as refrigerant. Although the quantities of CFCs used for both purposes is relatively small[2], domestic appliances have a lifetime of some 10-15 years[3] so that a significant quantity of CFCs is already banked and will be for many years after the introduction of any new substitutes. It has been estimated that there are some 10-20 times annual production of appliances containing CFC 11 or 12 already in private households, which will reach scrapping age in the next few years[4].

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[2] Refrigerant and insulation required for domestic appliances 0.75% and 2.9% respectively of EC CFC 11/12 consumption. Source: International Journal of Refrigeration July 1988

[3] Industry estimate

[4] Source: as 2

8.30 DOE and DTI are discussing the question of recovery and recycling/destruction of CFCs in redundant appliances with representatives of the domestic, commercial and industrial refrigeration and air-conditioning industry, the polyurethane foam industry and with the CFC producers. It is clear that a number of technical, economic and logistical problems will have to be overcome to devise satisfactory comprehensive schemes to deal with the careful collection of appliances to avoid CFCs escaping in transit, recovery and subsequent recycling or destruction. Account will need to be taken of the very large number of appliances involved and the number of waste disposal sites; the need for suitable facilities for the removal of refrigerants and insulation, their storage and, where appropriate, incineration; the cost of providing such facilities; and the economics and logistics of returning refrigerant to be decontaminated and recycled.

8.31 In "Proposals to protect the ozone layer"[5] the National Swedish Environmental Protection Board took the view that "it is not reasonable at present to build-up a general system for recovering refrigerants from domestic refrigerators prior to scrapping, bearing in mind the costs and the relatively small quantities that would be involved". The Government is nevertheless encouraged that the European domestic refrigeration industry (CECED) is preparing guidelines on the collection of appliances, removal of refrigerant and the separation and incineration of polyurethane foam insulation. We understand that a pilot scheme is being devised in Cologne and that the UK industry is keeping in close touch with developments.

8.32 In the light of discussions with industry the Government plans to develop advice on these matters.

D. The "Greenhouse Effect"

The Greenhouse Effect - Future developments (Recommendation 25)

9.1 We recommend that additional funding be provided for research on the greenhouse effect. We are particularly concerned that Britain take a strong role in encouraging international research and co-operation on global warming effects. (para 156)

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[5] Report 3410 published in December 1987

9.2 Like the Committee, the Government recognises that current estimates of the potential magnitude and impact of climate change are subject to large uncertainties. Although, as the Committee points out, the greenhouse effect has long been recognised, improving the calculation of even the most basic parameter of change, global average temperature increase, involves mathematical models of great complexity and the most powerful computers on which to run them. It is not therefore surprising that scientific predictions still lack precision.

9.3 The Meteorological Office is one of, at present, four major world centres for climate modelling. A significant improvement in the models may not be attainable for 5-10 years. It will require better modelling of physical processes, such as cloud feedback mechanisms and ocean atmosphere interactions. This work is necessary to reduce the uncertainty of our current global climate change estimates.

9.4 Notwithstanding the scientific uncertainties the Government agrees with the Committee that it is important to have a better understanding of the possible impact of future climate change. The DOE Research Programme is being expanded to include the assessment of potential effects based on possible future scenarios which span the current range of uncertainty in prediction.

9.5 The Government accepts the Committee's recommendation that it should take a strong international role. It will continue to do so through the UNEP, WMO, ICSU, OECD and IEA and in consultation with the European Community. It actively participates in the Inter-governmental Panel on Climate Change established recently by UNEP/WMO in response to increasing concern over possible man-made climate change. Three working groups have been established to assess available scientific information on climate change, the environmental and socio-economic impacts and possible response strategies. The Government welcomes the recognition of the Meteorological Office's expertise by the appointment of its Director General as chairman of the Panel's working group on the assessment of scientific information.