



ROYAL COMMISSION  
ON  
ENVIRONMENTAL  
POLLUTION

CHAIRMAN: SIR BRIAN FLOWERS

FIFTH REPORT

AIR POLLUTION CONTROL:  
AN INTEGRATED APPROACH

*Presented to Parliament by Command of Her Majesty  
January 1976*

LONDON  
HER MAJESTY'S STATIONERY OFFICE  
£1.75p net

Cmnd. 6371.



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ROYAL COMMISSION  
ON  
ENVIRONMENTAL POLLUTION

**FIFTH REPORT**

*To the Queen's Most Excellent Majesty*

**MAY IT PLEASE YOUR MAJESTY**

We, the undersigned Commissioners, having been appointed "to advise on matters, both national and international, concerning the pollution of the environment; on the adequacy of research in this field; and the future possibilities of danger to the environment";

And to enquire into any such matters referred to us by one of Your Majesty's Secretaries of State or by one of Your Majesty's Ministers, or any other such matters on which we ourselves shall deem it expedient to advise:

**HUMBLY SUBMIT TO YOUR MAJESTY THE FOLLOWING REPORT.**

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"Experience is never limited, and it is never complete; it is an immense sensibility, a kind of huge spider-web of the finest silken threads suspended in the chamber of consciousness, and catching every air-borne particle in its tissue."

Henry James. *"The Art of Fiction"*

## FOREWORD

1. We were invited by the Secretary of State for the Environment on 12 June 1974 to undertake a study with the following terms of reference:

“To review the efficacy of the methods of control of air pollution from domestic and industrial sources, to consider the relationship between the relevant authorities and to make recommendations”.

The study was announced by the Secretary of State in the House of Commons on 17 June 1974 during the debate on the Second Reading of the Control of Pollution Bill.

2. There had been no comprehensive review of arrangements for controlling domestic and industrial air pollution since 1954. A review appeared the more necessary because there had recently been considerable public criticism of Her Majesty's Alkali and Clean Air Inspectorate (generally known simply as the Alkali Inspectorate), and of the division of functions between this Inspectorate and local authorities. In undertaking the task we were conscious of the much wider terms of reference which define our general role on matters of environmental pollution. The Secretary of State accepted that we should be free to consider broader issues if this should appear to us to be necessary in the course of the review.

3. At the Secretary of State's request, we invited six people, nominated by him and having special knowledge of the problems involved, to be associated with us for the review. Of these associates four have joined us in signing this Report. We greatly regret that one of our associates, Mrs. P. Sheard, was forced to withdraw half-way through the study because of ill-health. At the start of our study another associate, Mr. P. Jacques, was appointed to the Health and Safety Commission and since that time he has not participated in our work.

4. The Secretary of State asked us to report quickly, if possible within a year, because of the then impending transfer of the Alkali Inspectorate from the Department of the Environment to the Health and Safety Executive under the terms of the Health and Safety at Work etc. Bill. The Bill, which received Royal Assent in July 1974, provided for the Alkali Inspectorate to be brought together with the Factory, Mines and Quarries, Explosives and Nuclear Installations Inspectorates and with the Agriculture Safety Inspectors, in accordance with the recommendations of the report of the Committee on Safety and Health at Work chaired by Lord Robens.\*

5. We were concerned that this transfer, involving a basic change in the position of the Alkali Inspectorate, would prejudice the adoption of changes which we might recommend. We urged that it should not be implemented, at least until our review had been completed. The Secretary of State for the

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\* Cmnd. 5034: HMSO 1972.

## *Foreword*

Environment replied that to delay the transfer would cause serious administrative problems, but he gave us an assurance that we should be free to recommend alternative arrangements. He told us that the Secretary of State for Employment had undertaken that the Alkali Inspectorate would not be integrated into the Health and Safety Executive organisation in such a way that it would be difficult to disentangle later if other arrangements were decided to be preferable.

6. We accepted the need to report as quickly as possible in order to minimise the period of uncertainty following the transfer of the Alkali Inspectorate to the Health and Safety Executive which took place on 1 January 1975. This constraint on time has meant that our study has not been as detailed as we should otherwise have wished; in particular, we regret the lack of opportunity to examine at first hand the arrangements in some other countries. We have in some areas, therefore, only sketched the broad outline of the changes we should like to see, leaving it to others to interpret our recommendations in more detail.

### **Scope of the review**

7. In this Report we discuss the arrangements for controlling domestic and industrial air pollution primarily in relation to the existing system in England and Wales. We have also considered the Scottish system, but this is essentially similar and we have referred to it specifically only where there are differences between the two systems. We have not considered the arrangements in Northern Ireland, where the legislation is significantly different, but see no reason in principle why our recommendations could not also be adapted to conditions there.

8. Air pollution arising from motor vehicles was excluded from our terms of reference since the mechanisms for controlling its emission are quite different. In environmental terms such a separation is artificial. In the end, the pollution of the atmosphere must be looked at as a whole, and arrangements for monitoring and for assessing the effects of pollutants are required whatever their source. We have, therefore, kept pollution from vehicles in mind where this was appropriate during our study.

### **Methods of study**

9. We invited evidence from various organisations with a special interest in the subject of our study, and also from the general public; a list of those who submitted evidence is given at Appendix 2. We also visited 12 areas of Great Britain to examine a selection of air pollution problems, and to discuss the system of control with the Alkali Inspectorate, local authorities, industry and local amenity associations and pressure groups; details of our visits are given at Appendix 3.

10. We should like to express our gratitude to all those who submitted evidence or assisted in our visits. Their help was extremely valuable, and we greatly appreciated their time and trouble.

## **GENERAL SUMMARY OF THE REPORT**

11. The following summary broadly describes the scope of our study and our principal conclusions and recommendations. A more detailed chapter by chapter summary of the content of the Report is given in Chapter XII together with a list of recommendations with references.

### **A new national pollution inspectorate**

12. The control of industrial air pollution is at present shared between a central body, the Alkali Inspectorate (in Scotland, the Industrial Pollution Inspectorate), and local authorities. Between them they deal with problems covering a wide range of difficulty and technical complexity. The solution of the more difficult problems calls for a control authority which is in a position to deal nationally with industry on major proposals for pollution abatement and which has a high degree of technical competence in relation to pollution control technology and the industrial processes involved. The expertise required can only realistically be provided and maintained through a national control body.

13. However, pollution of the air cannot be looked at in isolation from pollution of land or water. The reduction of emissions to the atmosphere can lead to an increase in wastes to be disposed of on land or discharged to water, and vice versa. If the optimum environmental solutions are to be found the controlling authority must be able to look comprehensively at all forms of pollution arising from industrial processes where difficult control problems exist.

14. We therefore recommend that the Alkali Inspectorate be subsumed into a new central inspectorate (which we have called Her Majesty's Pollution Inspectorate or HMPI) which would be responsible for dealing with all pollution problems arising from these industrial processes. HMPI, like the Alkali Inspectorate, would operate on the basis of best practicable means, so extending the application of this principle to liquid effluents and waste arisings (especially toxic waste) from industry. HMPI's aim would be to achieve the "best practicable environmental option" taking account of the total pollution from a process and the technical possibilities for dealing with it. HMPI would complement the existing local, waste disposal and water authorities. It would not conflict with the present role of the waste disposal authorities, who handle the disposal of waste without the power to question its production. HMPI would collaborate with water authorities in seeking to reduce the discharge of effluents to water but would not trespass on the responsibilities of these authorities for determining consent conditions for discharges and aims for water quality. We recommend that a similar new inspectorate be established in Scotland, based on the Industrial Pollution Inspectorate.

### **The central Inspectorate and the Health and Safety Commission**

15. The Alkali Inspectorate at present form part of the Health and Safety Executive which is responsible to the Health and Safety Commission. Both

## *General summary of the report*

the Commission and Executive are overwhelmingly concerned with conditions inside and immediately outside the place of work. We have reached the firm conclusion that it is wrong in principle that they should control an Inspectorate whose sole concern should be with the external environment as a whole. This would be even more true of HMPI which would have wider environmental responsibilities. We therefore recommend that the Alkali Inspectorate should be restored forthwith to direct control by the Department of the Environment pending the setting up of HMPI.

### **Best practicable means**

16. The basis of control by the Alkali Inspectorate is the criterion of best practicable means for the abatement of emissions. The criterion has been subject to much criticism and we have considered this approach to control in some detail. While we are unhappy about some ways in which the system has worked in practice, we are satisfied that the best practicable means approach to control is inherently superior to control by nationally-fixed and rigid emission standards. The realities of pollution control require a continuing balance to be struck between the costs and benefits of pollution abatement for industry and society. The best practicable means formula provides flexibility to take account of local circumstances.

17. There are, however, some defects in the system by which best practicable means are decided for an industry; for one thing, the system has sometimes appeared imprecise and inaccessible to the outsider. The judgment of costs and benefits which is implied in the determination of best practicable means requires not only technical assessment but assessment of financial, economic and scientific factors and of local circumstances. The relevant expertise must be available to the control authority and, in particular, the best practicable means for an industry should in future be determined through a more formal machinery which enables the views of amenity groups, the scientific community, local authorities and the general public to be taken into account as well as those of the industry. At the plant level, we propose that the main elements of the agreed best practicable means for each works be recorded in a local "consents" register, and that there should be a procedure for public involvement in significant changes.

### **Enforcement powers**

18. We are satisfied that the Alkali Inspectorate's general policy of cooperation rather than confrontation with industry works to the general benefit of pollution abatement, and that prosecution should remain a last resort. Where prosecution is necessary, however, it will be made more effective under the consent procedure which we recommend for registered works. We propose that there should be periodic renewal of consents for each works; renewal could be refused where the pollution control arrangements are inadequate and in these circumstances it would be illegal for a works to continue to operate.

### **Powers of local authorities**

19. Responsibility for the control of air pollution from domestic sources and from the less complex industrial plants should remain with local authorities;

the sharing of responsibility for controlling industrial emissions between a national inspectorate and local authorities should thus continue. However, we propose greater powers for local authorities and more flexible arrangements for the transfer of industrial processes between central and local control. These would be provided through comprehensive new legislation which we recommend; in particular the legislation would extend the application of the best practicable means principle to all industrial emissions, whether from combustion or non-combustion processes.

20. There should be close collaboration between the central and local authorities in dealing with air pollution. There is excellent cooperation between the Alkali Inspectorate and local authorities in some areas and we wish to see this encouraged and extended. We recommend consideration of a procedure which would allow some Environmental Health Officers of local authorities to act as the Alkali Inspectorate's (or HMPI's) deputies in ensuring compliance with consents. All Environmental Health Officers should have unambiguous right to enter works under central control to establish the facts when they have reason to believe that consent conditions are being breached. The central inspectorate should provide regular reports to local authorities on air pollution from centrally-controlled works in their areas.

#### **Secrecy and accountability**

21. There has in the past been much unnecessary secrecy about air pollution and its control. The Control of Pollution Act will, when implemented, go a long way towards remedying this situation. However, we have made some further recommendations designed to make the system more publicly accountable and and more comprehensible to the public.

#### **Air quality guidelines**

22. The only way to control the quality of the air we breathe is indirectly, by limiting emissions. We are satisfied that the enforcement of rigid air quality standards would be generally impracticable and unnecessary. However, we believe the time has come to focus attention more explicitly and openly on air quality, and we recommend a system of air quality guidelines for major pollutants. These guidelines would not be legally enforceable, but would provide objectives against which local and national air pollution control policies could be judged by all concerned.

#### **Planning and air pollution**

23. In many localities troubled by air pollution the problem originates in bad planning. We have visited several areas where houses and schools have been sited too near industry, and where industrial expansion has been permitted in areas where housing is already dense. We recommend that planning authorities should pay greater attention to air pollution, and that in some circumstances consultation with the central inspectorate about the pollution implications of planning proposals should be made mandatory. Local authorities should incorporate air quality guidelines in their structure plans.

*General summary of the report*

**Domestic smoke control**

24. Smoke from domestic sources is still a major atmospheric pollutant, though much progress has been made in those areas where local authorities have created smoke control areas. We attach great importance to the extension of smoke control to all areas that need it and recommend that new guidelines should be set by Government to assist local authorities in determining how resources can best be used for this purpose.

## CHAPTER I

# AIR POLLUTION: AN INTRODUCTION TO THE PROBLEMS

### The effects of air pollution and the need for control

25. Pollution occurs when, as a result of man's activities, enough of a substance is present in the environment to have harmful effects. Many substances which can become pollutants are present naturally in the environment in lesser amounts, and may be beneficial or even essential to it. For example, sulphur dioxide, normally regarded as one of the most widespread pollutants, occurs naturally in the atmosphere at low concentrations and may help to correct sulphur deficiency in some soils. Sulphur dioxide only becomes a pollutant at much higher concentrations, such as are caused by the burning of fuels with a high sulphur content.

26. The most important reason for controlling air pollution is because it can damage human health and even shorten human life. In the London smog of December 1952 the combined effect of smoke and sulphur dioxide caused some 4,000 people, most of whom were already suffering from respiratory or cardiac diseases, to die earlier than they might otherwise have done. The effects of pollutants on health are rarely so apparent; they are more usually long-term in nature, and difficult to evaluate. For example, particular groups of the population—the very young, or the old, or people with respiratory diseases—may be especially vulnerable. Continuing scientific assessment of the health hazards caused by pollutants, and the research and monitoring which makes this possible, are clearly essential features of any pollution control system.

27. Air pollution also damages the economy. Pollutants may harm agriculture; for example, fluoride emissions from an aluminium smelter or a brickworks may be taken up by vegetation and weaken the bones of cattle grazing in nearby fields. Again, sulphur dioxide may significantly reduce crop yields. We commented in our Fourth Report\* on the need for better understanding of these effects. Air pollutants can also disfigure and damage the stonework and metal in buildings, leading to substantial costs for cleaning and repair.

28. It is exceedingly difficult to assess the overall economic damage caused by air pollution, as there are considerable gaps in our knowledge about the effects of pollutants and many assumptions have to be made to express these effects in economic terms. Some estimates, however, have been made. In 1954, the Beaver Committee† estimated the annual total cost at £250 million, and in 1970 a government research unit‡ put the figure at around £400 million. These estimates give some idea of the magnitudes involved.

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\* Cmnd. 5780 : HMSO 1974, paragraph 44.

† Final Report of the Committee on Air Pollution; Cmnd. 9322: HMSO 1954.

‡ An economic and technical appraisal of air pollution in the United Kingdom; Programmes Analysis Unit: HMSO 1972.



29. There is also the effect on amenity. Loss of amenity can be purely visual: many people object to a cloud of orange fume from a steel works or to a plume of steam from a power station even where there are no direct effects on health or vegetation. Similarly, others object to an unpleasant smell, or to dust settling on their houses, gardens and cars. Amenity in this context is not a luxury, and its loss can be overwhelmingly important to people who live near an offending factory. In practice, it is difficult to differentiate between the amenity effects of air pollution and its economic or health effects. Loss of amenity can cause financial loss by reducing the value of people's houses, and it can affect the health of people who are emotionally upset by it. The disamenity of air pollution in a depressed area can positively hinder its recovery, since new industry is unlikely to be attracted to a dirty region.

30. There are thus good reasons for controlling air pollution. How far should we go in reducing it? Some pollution is inevitable in an industrial society. It would be impracticable to attempt to eliminate all polluting emissions (though there are some people who it appears would prefer to breathe pure air in a state of industrial bankruptcy). The extent to which pollution should be controlled was fully considered in the Commission's First Report.\* It may readily be stated in economic language: pollution should be abated to the point where the extra benefit to society from further abatement just equals the extra cost to society of this abatement. It is, however, a great deal less easy to assess whether this point has been reached in practice, for many of the costs and benefits involved are inherently unquantifiable. Such a statement of aims is of little value to the controlling authority, which can only use its informed judgement in weighing the benefits of further pollution abatement, in terms of improved amenity or reduced risks to health or to the environment, against the implications for industry and society.

### **General considerations on industrial emissions**

31. One obvious factor which has to be considered is what is technically achievable. An industrial plant that creates troublesome air pollution may already be using all the technical means currently available to reduce emissions. In such a situation the only solution would be to close the works. This situation is not hypothetical; for example, some animal waste processing plants have recently been closed by the Courts because the smell they caused could not be eliminated. An industrial nation cannot afford the luxury of closing down industrial works without unassailably good reasons.

32. Even where the technical means exist to reduce emissions from existing plants the cost may be high. There are some old works where pollution is inherent in the basic design, and where reduction of emissions to acceptable levels would require complete replacement of the plant by one of modern design. Again, in the reduction of pollution further investment often brings diminishing returns. In many industries a substantial fraction of polluting substances (say 95 per cent or more) is already being extracted from emissions; the removal of the remainder would be disproportionately costly. This is not to say

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\* Cmnd. 4585: HMSO 1971.

that very expensive measures for pollution abatement may not be justified, but the implications may be considerable and there should be machinery to ensure that they are carefully assessed. This applies particularly where the national or international competitiveness of an industry could be adversely affected, or where the closure of a particular works might cause unemployment.

33. We have referred above to possible national implications of pollution reduction. Some plants are essential to society as a whole but the effects of their emissions are usually most apparent locally and conflicts between national and local interests are thus involved in many decisions on pollution control. The production of smokeless fuel illustrates this in a particularly direct way. The use of such fuel has enabled smoke levels to be greatly reduced in many cities and towns but its manufacture can create severe local pollution. How much local discomfort can be tolerated in order that pollution in many far-off cities may be lessened? Another example is provided by the processing of animal wastes which we have referred to above. Control decisions often require the balancing of national and local requirements and the machinery should provide for this. We consider this further in Chapter VII.

34. Another point that has to be borne in mind is that solving one pollution problem may create another. For example, dust that would otherwise be emitted to the air may be removed by the use of water sprays. The resulting liquid or slurry has itself to be disposed of, possibly leading to a worse pollution problem than if the dust had been widely dispersed through a tall chimney. Again, the washing of flue gases may reduce the emission of sulphur oxides from power stations, but the process cools the plume and so inhibits dispersion. In this case the reduction of widespread emissions is obtained at the expense of higher ground-level concentrations near the station, possibly in a more harmful state. Another possibility is that solving an air pollution problem may create noise, as where large fans have to be used to extract and filter the air from a large workshop. Such fans may use a great deal of power whose generation at the power station could create as much dust as the fans extract at the factory. The examples stress the need to look comprehensively at all forms of pollution arising from a particular process. We discuss this aspect further in Chapter IX.

#### **Emissions to air and air quality**

35. Throughout our enquiries we have kept clearly in mind a fundamental conceptual distinction between the control of emissions to air and the control of air quality. Much confusion is caused by a failure clearly and consistently to recognise this distinction, which is one of cause and effect. The purpose of air pollution control is the achievement of an acceptable level of air quality.

36. The control of air pollution obviously must be directed at the source of emissions, because once pollutants are released to the atmosphere they cannot be re-collected for treatment. However, the direct effects of air pollution on man and his environment, which must form the basis for assessing the acceptability of air quality, depend on ground level concentrations of pollutants rather than on emissions. For example, the main concern of a housewife living near a factory whose chimney emits smoke and grit is not with what goes up the chimney but with what comes down on her washing.

## *Chapter I*

37. It should be added that ground level concentrations are not the whole story. We cannot ignore the possibility of more indirect and long-term effects on man and the environment which might arise through the action of pollutants in the earth's upper atmosphere. For example, the ozone layer which protects us from the sun's ultraviolet radiation may be being damaged by the release of fluorocarbons, and the increase of atmospheric carbon dioxide levels arising from the burning of fossil fuel may cause global climatic change. Such matters do not lie directly within the scope of those authorities whose organisation and methods of working are our primary concern. Nevertheless (as we noted in our Fourth Report), the Government must respond to problems of this kind and such considerations may affect the policies of the controlling authorities.

38. There is, of course, a link between emissions and ground level concentrations, but it may be exceedingly complex. A power station will usually emit a large amount of sulphur dioxide, but this will be widely dispersed from a high chimney and have very little effect on ground level concentrations of sulphur dioxide nearby, though it will cause small increases in concentration many miles away. The dispersal of pollutants and hence their ground level concentrations depend on many factors such as wind and other climatic conditions, and topographical features like the shapes of hills and buildings. Mathematical modelling techniques are now being developed to gain an understanding of the relationship between total emissions and ground level concentrations in particular regions; we describe some of this work in paragraph 340. We have been encouraged to believe that such studies will make it possible to predict the pollution levels from a proposed industrial development with sufficient reliability to provide a useful aid in regional planning. We are also aware that the possibility of attaining acceptable air quality will be affected by land use planning. The siting of houses near a polluting works, for example, could create an intractable pollution problem. We return to planning issues in Chapter XI.

39. A logical approach in dealing with air pollution would be to specify an acceptable ground level concentration for each pollutant, and so to control emissions that these levels are nowhere and at no time exceeded. There are, however, formidable difficulties in this approach. The ground level concentrations caused by a particular pollution source vary greatly in response to meteorological and topographical conditions; an extensive and costly monitoring system would be required if the detection of excessive pollution levels was to be adequately ensured. Moreover, such a degree of control implies the ability to trace the precise source or sources of excessive pollution measured at a particular point. Even where this could be done there would be great difficulties in taking corrective action. It would usually be necessary to decide how the required reduction of emissions should be apportioned between several sources; in some situations this might call for the shut-down of a plant. Bearing in mind the difficulties in defining acceptable levels for many common pollutants, a control system involving these complexities, even if practicable, would scarcely be justified. Such a system would in some circumstances require extreme action which would not be justified on any overall assessment of costs and benefits to society.

40. Despite the difficulties involved in relating ground level concentrations of pollutants to emissions, especially on a short-term basis, any emission control system must have regard to air quality. Control systems differ in the extent to which air quality aims are explicitly defined. In some countries, such as the USA, Japan and the German Democratic Republic, air quality standards are specified and provide the framework for control. In the UK, while ground level concentrations are taken into account in the control of emissions, air quality aims have not hitherto been precisely formulated. We consider in paragraphs 167–178 whether air quality considerations should now be more explicitly recognised.

#### **A definition of the aim of air pollution control**

41. In this Chapter we have discussed briefly some general considerations of air pollution control. At the start of our study we decided that it would be useful to formulate a definition of what the aim of control should be. We invited comments on a first draft and have taken these into account in the following definition:

“The aim of air pollution control should be to reduce and when necessary eliminate hazards to human health and safety, taking into account both the magnitude and the certainty of the risks, including the susceptibilities of critical groups, and the resulting costs to the community; to reduce damage to amenity, property and plant and animal life to a minimum compatible with the wider public interest (which will take into account such factors as economics, employment and trade); and to prevent irreversible damage to the natural environment”.

This definition is simply a development of the statement of the aim of pollution control given in paragraph 30 to cover more specifically the factors that need to be taken into account in assessing the costs and benefits to society. In this Report we attempt to assess present practices with this definition in mind and to suggest ways in which the aim could be better met.

## CHAPTER II

### THE HISTORICAL BACKGROUND

42. Pollution of the air by smoke must have been a problem ever since mankind first began using fire for heating, cooking and metal working. As early as 1306 a Royal Proclamation prohibited London's artificers from using sea-coal in their furnaces: one offender was executed. Less drastic remedies were not suggested until the late sixteenth and early seventeenth centuries, when there were experiments with smokeless fuels, including Welsh anthracite. In 1661 John Evelyn presented to Charles II a treatise entitled "Fumifugium or, The Inconvenience of the Aer, and Smoake of London Dissipated". Evelyn attributed all manner of evils to smoke pollution, including a shortened expectation of life for Londoners, and suggested the novel solution of removing all coal-burning industry a few miles from the capital and establishing a green belt around the city. Evelyn's ideas were ignored for nearly three centuries, and as London grew its smoke pollution got worse.

43. Up to the early nineteenth century initiatives to deal with smoke pollution were mostly local and sporadic. In 1819 Parliament set up a Select Committee to examine the problem: a precursor of a series of committees and abortive Bills. In 1853 and 1856 Smoke Abatement Acts were enacted covering the whole metropolis of London, and despite their limitations achieved some success in the following years. The first real attempt to control smoke came in 1875, when a Public Health Act was passed containing a smoke abatement section from which much of our modern legislation has developed. Since then both public awareness and official achievement have progressed slowly but steadily. In 1935 the first completely smokeless housing estates were recorded, and in 1936 the Public Health Act included several sections dealing with smoke nuisance. In 1946 private legislation for the first time enabled a local authority to establish a smokeless zone and in 1951 the first smokeless zone was established.

44. In December 1952 a severe fog developed in London and persisted for four days. A temperature inversion and the lack of wind ensured that the fog stayed where it was, mixing with the smoke and sulphur dioxide from domestic chimneys to form "smog".\* Visibility was soon almost nil and London almost came to a standstill. The most serious effect did not become apparent until later, when it was found that there had been about 4,000 deaths more than would normally be expected taking into account all factors except the smog.

45. As a direct consequence of the smog, a Committee chaired by Sir Hugh Beaver was set up by the Government

"To examine the nature, causes and effects of air pollution and the efficacy of present preventive measures; to consider what further preventive measures are practicable; and to make recommendations."

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\* The smog which occurred in London should be distinguished from "photochemical smog", which occurs when oxides of nitrogen and hydrocarbons (principally from vehicle exhausts) react together with oxygen in the air in the presence of strong sunlight. This type of smog has been particularly prevalent in Los Angeles, but there is evidence to show that similar phenomena have also occurred from time to time in London and other parts of this country.

In their final report\* in 1954 the Committee recommended that there should be a "continuous programme urgently and insistently carried out" to reduce the total smoke in all heavily populated areas by something of the order of 80 per cent. After some delays the Committee's chief recommendations that local authorities should have powers to set up smoke control areas, that emissions of dark smoke should be prohibited and that emissions of grit and dust should be minimised were enacted in the Clean Air Act 1956.

46. The Clean Air Act was chiefly concerned with the products of combustion: smoke, grit and dust. The history of industrial, non-combustion air pollution control has in the United Kingdom been largely separate from that of smoke. Its origins go back nearly a century before the Clean Air Act.

47. Air pollution from non-combustion processes was not regarded as a problem until the Industrial Revolution. Alkali works, mostly producing sodium carbonate from salt, were commercially viable from the 1820s, but the process produced large volumes of hydrogen chloride gas and an unpleasant smell. In 1836 a "packed tower" was patented (a process which was the ancestor of the present gas scrubbers), but these towers still allowed up to half the gases to escape. In 1862 a Royal Commission was set up to examine the problem.

48. Until 1862, Parliament and local authorities had attempted to deal with such nuisances simply by banning them, without making any constructive suggestions on how to abate them. The result, all too often, was that the nuisances continued unabated. But the Royal Commission, and the Alkali Act of 1863 which implemented their recommendations, took a new approach. The Commission recommended that if at least 95 per cent of the hydrochloric acid gas evolved from alkali works were arrested, the remainder, after adequate dilution, could be allowed to pass into the air. The Alkali Act required that works within its ambit should use the "best practicable means" to reduce to the minimum the discharge of noxious or offensive gases.

49. A new Inspectorate, the Alkali Inspectorate, was set up to implement the Act. From the first, this Inspectorate co-operated with industry to find solutions to their emission problems. Gradually, as new problems became apparent, the Inspectorate's remit was widened and the legislation was extended. It was consolidated in the Alkali etc. Works Regulation Act 1906 which remains the basis of legislation to this day.

50. When the Beaver Committee examined the problems of air pollution in 1953, the Alkali Inspectorate and their methods had been in operation for 90 years and had already achieved a great deal. Not only did the Beaver Committee endorse the principle that the best practicable means should be used for controlling pollution, but they also recommended that:

"in the case of certain industrial processes in which the prevention of dark smoke, grit or harmful gases presents special technical difficulties, responsibility for ensuring that the best practicable means of prevention are used at all times should be vested in the Alkali Inspectorate, and the provisions of the Alkali Acts should be extended accordingly."

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\* Report of the Committee on Air Pollution; Cmnd. 9322, HMSO 1954.

## *Chapter II*

51. This recommendation was implemented by the Alkali etc. Works Orders of 1958, which extended the list of processes coming under the Alkali Act to include iron and steel, copper, aluminium, electricity, producer gas, gas and coke, ceramic, lime, sulphate reduction, caustic soda and chemical incineration works and extending the list of gases controlled to include acetylene, compounds of ammonia and fumes containing aluminium, iron and chlorine and their compounds. As a result the number of works controlled under the Act in England and Wales increased from 872 at the end of 1957 to 2,160 at the end of 1958; in Scotland where the extension was not fully effective until 1959, there were 71 works at the end of 1957 and 325 at the end of 1959.

52. The dichotomy between central control for the more difficult industrial air pollution problems and local control for emissions from other industrial and from domestic sources, which evolved in the nineteenth century and was endorsed in 1954 by the Beaver Committee, remains to this day. We consider these arrangements in more detail in the following chapters.

## CHAPTER III

### DOMESTIC SMOKE CONTROL

53. Smoke in conjunction with sulphur dioxide (SO<sub>2</sub>) is damaging to health. In 1952, at the time of the great smog in London, about 43 per cent of the smoke and 18 per cent of the SO<sub>2</sub> in the air in the UK came from the chimneys of houses. These domestic emissions provided the main constituents of the smog. Today, the total amount of smoke in the air has been reduced by some 80 per cent, but industrial emissions have been so far reduced that over 90 per cent of the smoke (but a much smaller proportion of the SO<sub>2</sub>) emissions still come from houses. The effect of domestic pollution is even greater than these figures suggest. Domestic smoke, emitted slowly and at a low level, causes high local concentrations whereas emissions from industry are normally widely dispersed through tall chimneys. Domestic emissions therefore still constitute a major air pollution problem.

#### **The law on smoke control**

54. Smoke from domestic chimneys is controlled under the Clean Air Acts 1956 and 1968, which give local authorities (district and London borough councils in England and Wales, district and islands councils in Scotland) powers to make smoke control orders. These have the effect of creating smoke control areas (sometimes called smokeless zones) in which it is an offence to emit smoke from any chimney unless the premises concerned have been exempted. (Works coming under the jurisdiction of the Alkali Inspectorate are not subject to smoke control orders and other industrial plants which cannot avoid emitting smoke are normally exempted, with or without conditions, from orders.)

55. Anyone affected by a proposed smoke control order has a statutory right to object to the relevant Secretary of State and to have his objection heard. In practice few objections are made and fewer upheld, so that orders are normally confirmed with no significant modifications. Once orders are confirmed any fireplaces which burn smoky fuel within the area have to be replaced or modified for smokeless burning. The householder, who decides which form of fuel to use (solid smokeless fuel, gas, electricity or oil) normally has 70 per cent of the reasonable cost of conversion refunded by the local authority. Four-sevenths of the grant is refunded to local authorities by the Government.

#### **Progress and effects**

56. The following table gives an indication of the coverage of smoke control orders in England and Wales. The "Target Figure" refers to targets for the amount of smoke control coverage considered necessary in their areas by local authorities themselves.



TABLE 1

## Premises ('000s) covered by Smoke Control Orders

(a) ENGLAND

<i>Region</i>	15 Sept 1975	<i>% of Target Figure so far achieved</i>
Northern .. .. .	424	43
Yorks & Humberside .. .. .	1,023	61
North West .. .. .	1,357	63
West Midlands .. .. .	626	39
East Midlands .. .. .	374	37
South East .. .. .	482	39
South West .. .. .	95	33
East Anglia .. .. .	22	12
Greater London .. .. .	2,805	93
Total (England) .. .. .	7,208	59
(b) WALES .. .. .	10	30
Total (England & Wales) .. .. .	7,218	59

Precisely comparable figures have not been compiled for Scotland where re-organisation was more recent. The latest figures available for Scotland show that some 600,000 premises now come within smoke control areas.

57. Where smoke control has been introduced the improvement in the quality of the air has been dramatic: for instance it has been estimated that in London, now well over 90 per cent covered by smoke control, winter visibility has increased threefold and sunshine in December in central London has on average increased by 70 per cent since 1958.\* The most important effect has been the reduction in acute effects on health. We have already mentioned that the smoke, sulphur dioxide and other pollutants associated with the London fog of December 1952 were considered to be responsible for precipitating the deaths of some 4,000 people. In an episode exactly ten years later, in December 1962, when there were similar meteorological conditions, concentrations of sulphur dioxide were as high as in 1952, but there was much less smoke. It was estimated that the number of deaths during and immediately after the 1962 fog was about 750 more than expected. This considerable reduction in deaths was probably largely due to decreases in smoke concentrations. A relatively minor episode of high SO<sub>2</sub> pollution in December 1972 did not lead to any appreciable increase in deaths.

58. Smoke control has not been the only reason for reductions in smoke concentrations; social changes have also had a considerable effect. Many people are no longer content to suffer the inconvenience of burning coal in old-fashioned grates and stoves. When they replace them, they increasingly opt for the "convenience" fuels, especially gas and electricity, which are also smokeless. Decreasing differentials in the price of fuels have also played a part.

\* Statistical review of progress and effects of smoke control in London: RM422: Revised edition 1974. Greater London Council.

59. Progress in smoke control has varied enormously from place to place. When the Beaver Committee produced their interim report\* in 1953 they published a map showing the areas they considered to be "black" where the need for amelioration was most urgent. The Government drew up a list of those local authorities whose areas were wholly or partly "black" on the basis of the Beaver map. In England there were 294 such areas, and by the time of local government re-organisation in 1974 all but 14 of the local authorities concerned had made at least some smoke control orders, the majority were somewhere on the way towards total coverage and over 40 had completed their programmes. At that time over 5.5 million premises (i.e. 72 per cent of all premises in black areas) had been covered by smoke control orders: overall figures of progress however conceal considerable variations between individual local authorities.

60. The distinction between "black" and "white" areas was always an administrative rather than a legal one, the whole of an old borough was normally categorised as black or white, and the list of black areas was never updated after Beaver. When local government was re-organised into large areas the list became valueless: so many of the new authorities included old "black" areas as well as large rural areas where smoke control would be pointless. The distinction was therefore abolished, leaving it to local authorities to decide where smoke control is needed without central guidance.

#### **Improvements to the system**

61. We have considered whether the system for making and implementing smoke control orders laid down in the statutes needs any changes to make it more efficient. On the whole it seems to work well: there have been remarkably few criticisms in evidence to us. One point which has been suggested to us is that the procedure for confirming smoke control orders, particularly where an objection has been made, is too long. An objection and subsequent public hearing can easily delay the confirmation of an order by six months, involving inconvenience for the majority of householders who cannot get on with their plans for conversion of their fireplaces until the order is confirmed. It may also involve financial penalties for the local authority through disruption of their programme. We have considered, in the light of this, whether there is any need to retain the right to object to orders given the small number of objections and the small proportion which have given rise to modifications or orders. We have concluded that the disadvantages are not sufficient to warrant this infringement of the right of the citizen to object to something that involves alterations to his home.

62. Nevertheless the procedure should, where possible, be speeded up. We recommend that the Departments should deal with all but the most exceptional cases through the written representations procedure, and that local authorities should do their best to forestall objections by explaining carefully to all those affected why smoke control is necessary and what it entails.

63. Smoke control has had the overall effect of reducing emissions of sulphur dioxide as well as of smoke: sulphur dioxide from domestic sources decreased

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\* Interim Report of the Committee on Air Pollution: Cmnd. 9011: HMSO 1953.

### *Chapter III*

by about 45 per cent in the last 10 years. Nevertheless, there are still many areas where smokeless but fairly high sulphur fuels are burned and where smoke control has had little appreciable effect on ground level concentrations of sulphur dioxide. The reduction of sulphur dioxide is not a stated aim of the smoke control provisions of the Clean Air Acts and high sulphur content is not specifically given as a reason for the Government to refuse to authorise fuels as smokeless. In the early days of smoke control, fuels which were adequately smokeless were authorised without specific consideration of their sulphur content, but more recently some fuels have been rejected because of their high sulphur content. We regard this as a very sensible development as low level emissions of sulphur dioxide in urban areas should be reduced as far as practicable and we recommend that it should become established policy.

64. Generally, careful thought needs to be given to the differing sulphur contents of fuels used in different circumstances. Desulphurising fuel is expensive and in some cases technically very difficult and, in practical terms, fuels with a naturally high concentration of sulphur will continue to have to be burnt somewhere. From the point of view of ground level concentrations of sulphur dioxide in urban areas it would seem preferable for high sulphur fuels to be burnt in suitably sited industrial furnaces, for instance at power stations, where combustion is efficient and any necessarily arising pollution can be widely dispersed through tall chimneys so that the resulting contributions to ground-level concentrations are low. However, even these low contributions can sometimes give rise to problems at a distance. We are aware of the concern being expressed in Scandinavia about the possible effects there of sulphur dioxide originating in other parts of Europe, including the UK. We welcome the study being carried out by the Organisation for Economic Co-operation and Development on the transport and deposition of sulphurous pollutants. We hope that the results of this study, together with an assessment of the significance of the effects of such transported pollution, will enable clearer priorities to be established between the competing interests of health and amenity in regions with substantial emissions and of increased acidity in areas with already acid soil such as in Scandinavia. Certainly we are not in a position to make any firm recommendations in the present state of knowledge.

#### **Some constraints on progress**

65. Smoke control is technically easy to achieve and the chief barrier to further progress is financial. A local authority has to pay 30 per cent of the approved cost of fireplace conversions; it must also meet the staff costs involved in implementation, which can amount to a similar sum. We have not considered the financial arrangements relating to smoke control in detail but we are satisfied that the sharing of costs between central government, local government and the householder is right in principle. Much as we should like to see smoke control extended to those areas where it is still needed, we see no scope for encouraging this by changes in the financing arrangements.

66. Another barrier to progress in some areas has been the National Coal Board's arrangements for allowing concessionary coal to miners. The total

amounts concerned are considerable: the annual tonnage of concessionary coal used in the year ending March 1975 was just over 2 million tons. This represented about 19 per cent of the total coal used in the domestic UK market. Some local authorities in mining areas have been reluctant to introduce smoke control because miners were not satisfied with the arrangements to replace the coal concession with solid smokeless fuel. The system was that miners were allowed the cash equivalent of the average concessionary coal entitlement to buy solid smokeless fuel. Since solid smokeless fuel is generally more expensive per ton than coal, this system had the disadvantage that the weight obtainable was less than the coal concession, although smokeless fuel has, of course, a higher calorific value than coal. The quantity of the smokeless fuels obtainable would also vary with the changes in relative prices of smokeless fuel and coal. However, there have been recent changes in the Coal Board's policy on concessionary coal\* which we hope will remove any resistance to the adoption of smoke control in mining areas.

67. Another possible disincentive lies in the notion that smoke drifts so far downwind that a single local authority in the middle of a large polluted region would be wasting its time if it imposed smoke control. In fact, this does not seem to be the case. A study being carried out by Warren Spring Laboratory for the Department of the Environment has shown that there is a high correlation between smoke control and low smoke concentrations in built up areas. In many districts, particularly in the great conurbations of northern England, smoke control is still very much a patchwork affair and there are many gaps between smoke control areas which show high concentrations of smoke.

#### **A new framework for smoke control**

68. Many local authorities have been reluctant to introduce smoke control even in areas where it would be manifestly desirable. This is partly for the reasons we have outlined above: it is probably also because at least some local authorities do not believe that smoke pollution is a genuine problem, or not one which is sufficiently important to justify diversion of funds from other ends. We cannot help but think that some authorities have failed to attach sufficient weight to the improvement in living conditions which smoke control can bring about. We have considered whether to recommend that the Secretary of State should use his powers under the Clean Air Acts to require smoke control to be introduced in particular areas where the need is greatest but we have concluded that it is right in principle that the decisions should rest with local authorities in the light of their judgments of local needs and priorities.

69. We attach great importance to smoke control which, perhaps more than any other single step, can transform the quality of the environment in badly affected areas, but it is important that resources should be wisely used. It is unnecessary and wasteful to introduce smoke control in small towns or in rural

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\* The coal concession was of the order of 7½ tons per miner per year. Since 1973, the cash sums made available in lieu of coal have been varied in accordance with changes in the price of smokeless fuel rather than that of coal. Since May 1975 miners have been allowed 5 tons a year of Sunbrite, or the cash equivalent in alternative smokeless fuels, which represents an increase in the amount of smokeless fuel allowable.

### Chapter III

areas, including the rural outskirts of cities or large towns, where smoke or sulphur dioxide pollution is not a problem. In particular it should be borne in mind that smoke control prohibits the use of wood in domestic fireplaces. Wood is not only a cheap fuel in many rural areas: it often has to be burnt anyway and if it cannot be burnt in fireplaces will be burnt in the open, thus increasing total pollution. Full coverage of a local authority area by smoke control should not, therefore, be seen as an end in itself; resources should be concentrated where the need is greatest.

70. We have considered whether sufficient guidance is available to assist local authorities in deciding whether smoke control should be introduced into a particular area. The "black" areas of the Beaver Committee represented an attempt to provide this guidance but the classification was inevitably rough and ready: areas which would benefit by smoke control were excluded and areas that would not benefit were included. Local authorities whose areas were not regarded as needing smoke control had little or no incentive for even investigating the possibility of smoke control, and in other areas there was dispute on whether the classification was justified.

71. Partly because of the crudeness of the distinctions, many of the old "white" areas are now dirtier than many of the old "black" ones. For instance, "white" towns without smoke control which have winter mean concentrations of smoke greater than 80 microgrammes per cubic metre\* include Barnard Castle, Barrow in Furness, Carlisle, Chester, Grimsby, Kendal, Leek, Macclesfield, Morpeth, Northallerton, Ripon, Scarborough and Whitby, while "black" towns with smoke control whose mean concentrations are lower than this figure include Bristol, Coventry and Leicester as well as almost all of London and substantial proportions of many other large urban areas.

72. It is clear that decisions on whether smoke control is justified in particular areas can only be taken in the light of knowledge of the local circumstances. Nevertheless, we do not consider that local authorities can take the sometimes difficult decisions on where smoke control is needed without further guidance. We recommend, therefore, that the Government should draw up guidelines for this purpose. These would need to take account of many factors. The amount of smokey fuel burnt in an area provides a rough guide to the amount of smoke emitted and is one factor in assessing whether smoke control is likely to be needed. Other factors include population density, topography and climate. The guidelines should also refer to sulphur dioxide concentrations.

73. The energy savings which smoke control can bring about need also to be borne in mind and should be referred to in advice accompanying the guidelines. The savings result not only from the use of more efficient fuels but also from old open fires being replaced by much more efficient modern appliances.

74. As far as possible decisions on smoke control should rest on measurement and scientific assessment of the factors involved. It might be desirable to

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\* Provided that a fairly similar level of sulphur dioxide prevails, this concentration is roughly equivalent to the level at which, according to a World Health Organisation committee, the condition of those with pulmonary disease is worsened.

undertake monitoring for this purpose which would not be justified on a permanent basis. We recommend, therefore, that the Government should consider whether it would be useful to lend or hire monitoring equipment to local authorities to help them come to decisions. When in doubt, local authorities should be encouraged, as they are now, to seek the advice of Warren Spring Laboratory and the Meteorological Office.

### **Conclusion**

75. The objective of the Beaver Committee's recommendations was that by the end of 10 to 15 years the total smoke in all heavily populated areas would be reduced by about 80 per cent. It is not possible to quantify to what extent that target has, after 20 years, been met but the figures of smoke concentrations in paragraph 53 and of progress towards local authorities' own targets in paragraph 56 show that while a great deal has been achieved there is still a long way to go. The guidelines which we recommend should help local authorities to make faster progress with smoke control than they might otherwise do by enabling them to identify and concentrate resources on the areas of greatest need.

## CHAPTER IV

# INDUSTRIAL AIR POLLUTION CONTROL: THE PRESENT SYSTEM

### **Introduction**

76. In Chapter II we outlined the origins of the present system for controlling industrial air pollution and the relevant legislation. We now describe this system in more detail. There is, as we have already noted, a basic division between central and local control. In England and Wales the Alkali Inspectorate are responsible for the control of emissions from certain specified processes which create difficult pollution problems; in Scotland this function is the responsibility of HM Industrial Pollution Inspectorate. The control of emissions from all other industrial processes is the responsibility of local authorities.

77. We referred in the Foreword to this Report to the transfer of the Alkali Inspectorate to the Health and Safety Executive on 1 January 1975. During our enquiry there had been no significant changes in the organisation and methods of working of the Inspectorate; essentially we are describing them as they were before the transfer. The legislative position is more complicated. The Health and Safety at Work etc. Act 1974 is largely an enabling Act: most of the detailed powers for all the Inspectorates are still in the original Acts which will gradually be repealed and replaced by Health and Safety Regulations. Some of the Inspectorate's powers under the Alkali Act have been repealed and replaced by new Regulations; others remain in the Alkali Act. A few have been repealed and not yet fully replaced. However, for convenience in presentation we have generally referred to the Alkali Act as if it was still wholly in operation.

### **The Alkali Inspectorate**

78. The Alkali Inspectorate is a small and specialised body. There are 42 Inspectors, of whom the Chief Inspector, three Deputy Chief Inspectors and four other Inspectors who act as their assistants are based at headquarters. The other Inspectors are divided between 15 area offices in England and Wales. Each area has a District Alkali Inspector and usually one or more Inspectors to help him. There are also four two-man grit and dust testing teams and a small back-up staff at headquarters, but District Inspectors have no general supporting staff apart from part-time typists. At the end of 1975 the recruitment of six more Inspectors and two more two-man testing teams was in hand.

79. The necessary qualifications for an Alkali Inspector are an honours degree in chemistry, chemical engineering or a related field and a minimum of five years' industrial experience. About one quarter of Inspectors have higher degrees. Training is mostly on the job and the responsibility of immediate superiors.

80. The Alkali Inspectorate's remit is to control pollution to the outside air from processes which are scheduled under the Act. Processes can be added to and subtracted from the list by order. At the end of 1974 there were 3,159 processes registered at 2,147 works. All registered works\* in the UK consume between them some 75 per cent of fuel used there. Often a large works will include several registered and non-registered processes, the latter coming under local authority control. A few exceptional works operate registrable processes only intermittently: for instance, chicken feather processing is registrable because hydrogen sulphide is produced but many animal waste works deal with chicken feathers only occasionally and thus come under the control of the Alkali Inspectorate at these times only.

81. It is common to use the terms "scheduled" and "registered" of works or processes interchangeably, and generally this causes no confusion. The first term refers to the schedule to the Alkali Act which lists the types of processes that are required to be registered, and the second refers to the register of particular works which include such processes. Thus, when we refer to scheduled works we are concerned with a class of works. The terms "scheduling" and "descheduling" mean adding or removing types of process from the schedule†. In Chapter VII we also use these terms for individual works.

#### **"Best practicable means"**

82. The Alkali Inspectorate have wide powers over the works they control. Under the Health and Safety at Work etc. Act, registered works are under a duty:

"to use the best practicable means for preventing the emission into the atmosphere from the premises of noxious or offensive substances and for rendering harmless and inoffensive such substances as may be so emitted".

Although the law does not appear to say so explicitly, "best practicable means" is generally interpreted as "best practicable means to the satisfaction of the Alkali Inspectorate". The concept of "best practicable means" is fundamental to the work of the Inspectorate and needs to be clearly understood. For convenience we use the abbreviation "bpm".

83. "Bpm" is only fairly sketchily described in the Alkali Act and in the Health and Safety Act, but other legislation, including the Clean Air Act 1956 and the Control of Pollution Act 1974, defines it more fully. The Control of Pollution Act (referring to noise) states that:—

"'practicable' means reasonably practicable having regard among other things to local conditions and circumstances, to the current state of technical knowledge and to the financial implications. The means to be employed include the design, installation, maintenance and manner and periods of operation of plant and machinery, and the design, construction and maintenance of buildings. . . ."

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\* Strictly speaking it is the process and not the works as a whole which is registrable, though it is usual and convenient to use the term "registered works".

† Strictly, only 61 of the 62 registered processes are scheduled since one, the original alkali process, is covered in the body of the Act and not in the schedule.



## *Chapter IV*

This essentially describes the interpretation of bpm by the Alkali Inspectorate: a full discussion of the Inspectorate's interpretation of this phrase is given in the Chief Inspector's Annual Report for 1973\*.

84. In theory at any rate, it might be possible for a control authority to dissociate itself entirely from the technical implications its ordinances impose on industry, and to content itself with specifying emission limits and ensuring by inspection that these limits were not exceeded. The limits imposed would no doubt be arrived at by reference to environmental aims though, as we discussed in Chapter I, the link between emissions and air quality is usually exceedingly complex. In practice, however, any control authority has to take some account of the implications of its emission limits for industry and society as a whole in terms of their cost and technical feasibility.

85. The Alkali Inspectorate go very much further. The essence of their approach lies not in standing back from industry, but on the contrary in being intimately involved with it. The Inspectorate collaborate closely with industry in seeking solutions to pollution problems. The solutions which they eventually impose can be both tougher and more practicable as a result of this involvement; the technical expertise of the Inspectorate is both essential to, and fostered by, this collaboration. Moreover, because of their understanding of the industrial processes involved and of the possibilities for pollution abatement the Alkali Inspectorate are able to advise industry during the design stage for new plants, so that pollution control requirements are taken into account from the outset. In this they are supported by an important power, given by section 9(5) of the Alkali Act, under which their "prior approval" is necessary before a new plant can be operated.

86. As we describe below, the Inspectorate do set certain general emission standards, but there is flexibility in adapting these standards to local circumstances. In determining their pollution control requirements the Inspectorate take account of air quality considerations; this must be so since they are required by the Act to ensure that any substances emitted are rendered harmless and inoffensive. An example of this is the specification of chimney heights in order to achieve the dispersion of pollutants and hence acceptable ground level concentrations. But air quality aims are implicit rather than explicit in the Inspectorate's work. The emphasis is on controlling emissions; on the development of means for their further reduction; and on achieving progressive improvements by pressing industry for the adoption of these means at a rate depending on an assessment of the costs and benefits to industry and society.

### **The operation of best practicable means**

87. The best practicable means for each type of process and to some extent for each individual works are specified in detail by the Alkali Inspectorate. As an example, the notes on bpm for lead works are reproduced in Appendix 4. The bpm will include emission limits where these can be specified; for example, where there is a single source such as a chimney and the emissions from it can be directly measured. Air pollution may, however, come from many other

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\* 110th Annual Report on Alkali, etc. Works 1973: HMSO 1974: pages 8-15.

sources: by emissions through the roof of a works, for example, or by wind-blown dust from material stored in the open. Best practicable means as laid down by the Alkali Inspectorate will therefore specify not only chimney emissions but plant design and operating and maintenance practices so far as these are relevant to air pollution; they will also include general instructions on "good housekeeping", and may also specify requirements for monitoring and recording emissions.

88. The first stage for determining bpm is the inclusion of an industrial process in the list for which the Alkali Inspectorate is responsible. Under the Alkali Act the Chief Inspector put his proposals for a change in the schedule to the Secretary of State for the Environment.\* If, after a public inquiry, the Secretary of State agreed that the process should be scheduled he made an order to that effect. The last addition to the schedule for England and Wales was made in 1971 when acrylates, di-isocyanates and mineral works were included and some other works re-defined: air and rotary furnaces in the steel industry, whose control problems had been solved, were removed from the list at the same time.

89. Once a class of works is scheduled, the Inspectorate, in consultation with the trade association and sometimes with individual works, discuss the air pollution problems caused by the process and what can be done about them. Research may be needed and this can take a long time: it took twelve years before a joint working party of the Inspectorate and industry found the complete solution to the problem of dark smoke from blue brick kilns. The Inspectorate do not carry out research into air pollution control problems themselves, though they occasionally sponsor it; research is normally carried out by the industry concerned with the Inspectorate making suggestions and generally holding a watching brief. This is, of course, in line with the "polluter pays" concept.

90. Eventually the Chief Inspector is in a position to produce "Notes on Best Practicable Means" and to set emission standards. These "presumptive standards" specify emission levels that are considered to be currently achievable having regard to the technology available, the nature and effects of the pollutants concerned and the costs to industry. The standards define bpm for a type of process so far as measurable emissions are concerned. They are determined after discussion with the industry, usually with the trade association. Where necessary the Inspectorate consult other bodies such as research institutes and they take account of experience and practice in other countries. Although standards are arrived at in close consultation with industry, we have seen no reason to suppose that they are lax. Indeed, several of the industries we visited expressed the view that the standards were so close to the best that could be achieved with current technology that the margin for error or minor breakdown was very narrow. The standards are tightened as developments in process and pollution control technology make this feasible. Presumptive emission standards apply to emissions from the majority of registered processes. Standards can vary within a class of works depending on the type of process, raw materials used and throughput; and one standard, e.g. for grit, dust or fume, can be applied

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\* As we mentioned in paragraph 77, parts of the Alkali Act 1906 have been repealed by the Health and Safety Act 1974 and not yet replaced. The exact content of the replacement regulations has not been decided.

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to many different classes of process. There are some processes where presumptive standards cannot be set because there is no well-defined source, such as a chimney, where measurements can be taken: in others the measurable source may be only a part of the overall pollution potential. It is thus possible for a plant to meet presumptive emission standards but fail to meet other requirements of bpm.

91. The bpm for a type of process, determined in this way, will apply immediately to new plant. We have already noted the Alkali Inspectorate's important power of "prior approval"; the District Inspector works closely with the firm concerned during the design stage and is able to ensure that the requirements are met. Indeed, he has discretion to impose tighter (but not laxer) requirements than the general bpm would call for if this is justified by particular local conditions.

92. New standards are not usually applied immediately to existing plant. Industry cannot be expected to re-equip their plant with the latest control equipment too frequently, particularly when this forms an integral part of process design. Existing equipment must be allowed a reasonable economic life. For this reason the Alkali Inspectorate normally allow plant or equipment which is already complying with the limits in force at the time it was installed to continue for the rest of its economic life without being upgraded or renewed to meet new standards. They calculate the economic life of plant to be about 10 years from the time of installation. When a new class of works is scheduled limits are worked out which all newly-registered works will normally be expected to meet within a few years.

93. In principle the Alkali Inspectorate's method of control, based on the use of bpm, seeks to achieve the balance of costs and benefits in reducing air pollution which is implied in the definition of aims we have given in Chapter I. Best practicable means does not necessarily mean "all technically possible means". In some cases, for example, such a requirement would be so costly to meet that it would put a firm out of business. This might sometimes be justified, but it is a step that it would be foolish to take without considering the wider consequences. The bpm system is flexible in enabling local conditions to be taken into account and in responding to advances that are made possible by developments in technology. This flexibility, however, places more emphasis on the difficult judgements that have to be made in weighing the often intangible costs and benefits of pollution abatement. We consider this aspect further in paragraphs 201 to 208.

### **Other aspects of the Alkali Inspectorate's work**

94. We have so far dealt with the Inspectorate's work in determining the requirements for pollution control. It is of course a basic part of their duties to ensure that these requirements are complied with. As a matter of policy they visit all registered works at least twice a year; big or troublesome works are visited much more often. Some visits have to be pre-arranged in order to ensure that the staff at the plant with whom the District Inspector will need to discuss pollution problems are available; others are unannounced. Visits outside normal working hours are infrequent.

95. While the Alkali Inspectorate specify any monitoring of emissions that they consider to be necessary for control it is usual for the monitoring to be done by industry, the results being made available to the Inspectorate for checking. It is sometimes alleged that industry may "fiddle the figures", but we doubt whether there is much truth in this. An Inspector's knowledge of a process backed by information from complaints about pollution incidents should enable him to detect inconsistencies. The Inspectorate also make their own measurements, if necessary with assistance from the grit and dust testing teams.

96. We have noted the extent of the Inspectorate's involvement with industry; their policy is one of co-operation rather than confrontation and the Inspectorate are accordingly reluctant to prosecute a firm except where flagrant breaches of the agreed bpm have occurred. Where the Inspectorate consider that there has been a contravention of the Act they send an "infraction letter" to the firm formally notifying them of this and calling for an explanation and, where appropriate, for an account of the action they propose to prevent recurrence. The Inspectorate decide in the light of this reply whether to proceed to prosecution; this is done in about 10 per cent of cases formally notified as infractions. We consider prosecution policy further in paragraphs 227 to 234.

#### **The Industrial Pollution Inspectorate**

97. The Industrial Pollution Inspectorate for Scotland are a similar but much smaller body. There are nine inspectors, all based in Edinburgh. At the end of 1974 they were responsible for 416 scheduled processes at 325 works, most of these being in the central belt of Scotland.

98. The Industrial Pollution Inspectorate now work, as do the Alkali Inspectorate, under the Health and Safety Act but they have not been transferred to the Health and Safety Executive. They have remained within the Scottish Development Department but work under an agency agreement to the Executive. The reason for this is implicit in their title; they are concerned with water pollution and wastes disposal as well as with air pollution. The Inspectorate enforce the Alkali Act as subsumed by the Health and Safety Act but they also act as advisers within the Scottish Office on other forms of pollution. It was impracticable to split up the functions of this small organisation.

99. The Industrial Pollution Inspectorate maintain close contact with the Alkali Inspectorate and their methods of working are very similar. Their list of registrable processes is not quite the same; neither, to take account of Scottish differences, are all presumptive standards.

#### **Local authorities**

100. The Alkali and Industrial Pollution Inspectorates are small, closely knit bodies having a single clearly defined aim. Local authorities are responsible for controlling air pollution from all non-registrable processes and from domestic premises. However, this is only one of a wide range of responsibilities relating to environmental health, which include hygiene in foodshops, pest control, housing and the control of noise: all pollution control probably accounts for about a

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tenth of all environmental health work. There are now 459 of these authorities: the district councils in England and Wales (including the London borough councils and the City of London) and the islands and district councils in Scotland. They control emissions from some 300,000 industrial premises of which probably about 30–50,000 may cause significant air pollution.

101. Most of these local authorities employ qualified Environmental Health Officers who were previously known as public health or sanitary inspectors. In England and Wales there were in 1975 about 4,800 Environmental Health Officers and vacancies for about 1,200. The organisation of environmental health departments varies between local authorities: in most cases individual officers deal with a wide range of duties but some authorities have established air pollution units with Environmental Health Officers specialising in this work.

102. We discussed the training of Environmental Health Officers in our Fourth Report (Chapter IV). These officers hold the Diploma of the Environmental Health Officers Education Board (previously the Public Health Inspectors Education Board) or of the Royal Sanitary Association of Scotland. The courses leading to these diplomas have minimum entry qualifications which include 2 GCE "A" levels or two SCE Higher grade passes: there are also some degree courses in public health. Environmental Health Officers wishing to specialise in air pollution control normally also take the Royal Society of Health Diploma in air pollution control. Most environmental health departments employ some technical assistants and a few also employ specialists in other disciplines.

103. The powers of local authorities to deal with air pollution are provided by the Clean Air Acts 1956 and 1968. The Clean Air Acts apply to pollution from combustion processes; powers exist under the Public Health Act 1936 (in Scotland, the Public Health (Scotland) Act 1897) to deal with other forms of air pollution as "statutory nuisances".

### **The Clean Air Acts: industrial provisions**

104. The Clean Air Acts refer specifically only to smoke, grit, dust and fume arising from combustion. "Grit" is defined as particles above 76 microns in diameter. "Dust" and "fume" are not defined in the legislation but "dust" is generally taken to mean particles between 76 and 1 micron in diameter and "fume" to mean particles less than 1 micron in diameter. In the statutory provisions for smoke the terms "dark smoke" and "black smoke" are used: these are defined with reference to the Ringelmann chart which provides a method of assessing the shade of a smoke emission against a standard.

105. There is a series of provisions in the Acts for the control of smoke from industrial premises. One is that all new furnaces above a certain size must be "so far as practicable" smokeless when burning the fuel for which they were designed. What is "practicable" is, subject to the definition in the Act, for the local authority and if necessary the Courts to decide; it appears that the interpretation of this requirement has caused little difficulty in practice. Another provision is that dark smoke must not be emitted from any chimney, subject to exemptions made in regulations. The exemptions relate to circumstances in

which dark smoke emission may be unavoidable, for example when a furnace is started up from cold, and the regulations specify the allowed duration of such emissions. The 1956 Act itself gives statutory defences for such circumstances as the unavoidable use of unsuitable fuel or plant breakdown. Industrial plant in a smoke control area must also be smokeless unless exempted. The 1968 Act extends the dark smoke provisions to all emissions from industrial or trade premises whether or not they come from chimneys, though some types of bonfire, such as those on demolition sites, are excluded by regulations.

106. For registered works the Alkali Inspectorate dictate the height of chimneys as part of bpm: this determines the extent of dispersion, and hence dilution, of the pollutants emitted and is the chief means by which unavoidable emissions are "rendered harmless and inoffensive". Local authorities also have the power and the responsibility to control chimney heights in specified circumstances in order to ensure adequate dispersion; for instance when a new furnace is built or the combustion space of an existing one is increased. The system is akin to that for planning permission in that a firm must apply for chimney height approval and the local authority must decide the application within a certain period. Approval can be conditional and there is a right of appeal to the Secretary of State. To assist local authorities in this work the then Ministry of Housing and Local Government issued a technical memorandum on chimney heights\* which was largely prepared by the Alkali Inspectorate. This is one example of the way in which the Inspectorate's technical knowledge is made available to help to bring about a consistent approach to air pollution control in areas which are not their direct concern.

107. Local authorities have a lesser control over the heights of chimneys used in non-combustion processes. Here they are able to consider chimney heights in relation to clean air requirements only where these need to be approved under the Building Regulations. This rather limited power constitutes the only form of prior approval which local authorities have over non-combustion processes, apart from the normal planning and Building Regulations procedures.

108. The third major control which the Clean Air Acts provide over industry relates to grit and dust: the legislation could be extended to cover fume but has not been so far. The basic principle is that the best practicable means should be used to minimise grit and dust. In fact, maximum levels of grit and dust emissions from certain furnaces of different sizes are specified in detail in regulations, but these will not apply to existing furnaces until 1978. New furnaces which are not exempted by the regulations must have grit and dust arrestment equipment installed to the satisfaction of the local authority. Local authorities also have power under the Acts to monitor emissions and ground level concentrations, and to require firms to monitor their emissions of grit and dust.

109. The government departments concerned (the Department of the Environment, the Scottish Development Department and the Welsh Office) are at present considering further regulations to extend controls over grit and dust. These would take account of the report of the Second Working Party on Grit and Dust;

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\* Chimney Heights: the 1956 Clean Air Act Memorandum. Second edition: HMSO 1967.

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this body included Alkali and Industrial Pollution Inspectors, Environmental Health Officers and experts from industry among its members. The powers of local authorities under the Clean Air Acts are fairly heavily circumscribed by regulations based largely on studies by working parties of this kind but no authorities have said to us that they see this as a restriction. The establishment of common standards by regulations is indeed likely to help local authorities in their dealings with industry.

### **The Public Health Acts**

110. Not all air pollution comes from combustion processes and, apart from the provision on chimney heights mentioned in paragraph 107, control of non-combustion emissions by local authorities is dependent on Part III of the Public Health Act 1936 and on the Public Health (Scotland) Act 1897. These Acts are broadly similar in content and we describe the position in terms of the 1936 Act (which was extended by the Public Health Act 1961 and the Public Health (Recurring Nuisances) Act 1969).

111. The powers to deal with pollution rest on the concept of "nuisance". Local authorities have a duty to inspect their areas from time to time for "statutory nuisances", which include premises in an obnoxious state, or which emit smells or dust which are "prejudicial to health or a nuisance". Where a nuisance exists the local authority may serve a notice on those responsible demanding abatement or prohibiting recurrence. If this is not complied with the local authority may take proceedings in the Magistrates' Court: the court may make a nuisance order requiring the abatement of the nuisance or the prevention of its recurrence, and may also impose a fine. The use of the best practicable means of preventing the nuisance is a valid defence.

112. If the local authority consider summary proceedings to be inadequate they can institute proceedings in the High Court; here the use of best practicable means is not a defence. Failure to comply with a High Court order could lead to the offender's imprisonment for contempt of court. It could also result, and indeed has resulted, in the closure of works unable to eliminate a nuisance. We discuss the use of these powers in paragraphs 361-364.

113. Under these powers action to deal with air pollution cannot be taken until after a nuisance has been caused. In contrast, one of the main strengths of the Alkali and Clean Air Acts is that they provide for approval by the controlling authority before a new plant can be operated, and require consideration to be given to pollution abatement from the outset.

114. Local authorities have rather more control over those processes which are statutorily defined as "offensive trades", including blood and bone boilers, fat melters and extractors. Other trades can be declared offensive by order and these have included fish meal manufacturing, slaughtering and manure manufacturing. The air pollution they cause is normally smell, but there are of course other potential public health problems. Someone wishing to operate an offensive trade must get the consent of the local authority: in England and Wales the consent may be for a limited period. Smell from an offensive trade may also be controlled by byelaws. In Scotland, the best practicable means are available

as a defence in the Sheriff Court only when offensive trades are involved: similarly proceedings may be taken in the Court of Session only in offensive trade cases.

#### **Local authority control over specified registered works**

115. The Clean Air Acts allow local authorities to apply to the Secretary of State for specific registered works to come under their control. These works remain on the central register but their emissions of smoke, grit and dust are removed from the Alkali Inspectorate's control. The local authority controls them only under the lesser powers of the Clean Air and Public Health Acts, and not under the Alkali Act. Only Birmingham, Leeds, Liverpool, Manchester and Sheffield have some works in their areas transferred to them in this way: none has been transferred in Wales or Scotland.

#### **The Clean Air Councils**

116. Under the Clean Air Act 1956 two advisory councils were set up to advise the Government on air pollution matters. The Clean Air Council deals with England and Wales and advises the Secretaries of State for the Environment and for Wales. The Clean Air Council for Scotland advises the Secretary of State for Scotland. The Clean Air Council is chaired by the Secretary of State for the Environment whereas the Clean Air Council for Scotland has an independent chairman. The Councils are appointed by the Secretaries of State for the purposes of:

- (a) keeping under review the progress made in abating the pollution of the air in England and Wales; and
- (b) obtaining the advice of persons having special knowledge, experience or responsibility in regard to prevention of pollution of the air.

117. The Clean Air Council has recently re-examined its purpose and organisation and set up a series of committees. We hope that the new organisation will enable the Council to fulfil its potentially important role, but as the new system has had no time in which to prove itself we have not felt able to consider it in any detail. We do, however, see advantages in an advisory body of this kind having an independent chairman and we urge that further thought should be given to this point. If the recommendations for organisational changes we make in Chapter IX are accepted we foresee a need to reassess the roles of both Councils in relation to the new structure.



## CHAPTER V

### INDUSTRIAL AIR POLLUTION: THE SYSTEM IN PRACTICE AND ITS ACHIEVEMENTS

#### The Alkali Inspectorate

118. Though the Alkali Inspectorate are ultimately responsible to Parliament through the Secretaries of State for the Environment and for Wales—and now through the Health and Safety Commission as well—they have operated from their inception in 1863 with a remarkable degree of autonomy. Through the decisions reached with major industries about the nature and timing of measures to reduce airborne emissions the Inspectorate have effectively determined the pace of advance without explicit reference either to local interests or to any generally formulated national policy objectives. We do not doubt that the pressures for improvement which the Inspectorate exert on industry are influenced by outside factors, for example by advances in scientific understanding of the effects of pollutants, by developments in government thinking on environmental questions at home and abroad and by the extent of complaints about pollution from those communities particularly affected. But the decisions are those of the Inspectorate alone. It is only in the past few years that their activities have become a subject of public interest, and one of the main questions to which we have addressed ourselves has been whether methods of working which have evolved over the past century take adequate account of changes in public attitudes.

119. We have remarked on the close involvement with industry of the Alkali Inspectorate, who approach their work in the spirit of co-operation with industry in solving the technical problems of emission control. This is not to say that the interests of industry and the Inspectorate are the same. Pollution control increases costs for industry and conflicts of interest are bound to arise, though it must not be assumed that the incentive to reduce pollution lies wholly with the Inspectorate. Industry cannot afford to be indifferent to the climate of opinion on environmental pollution, especially among the communities in which it resides. The large companies particularly tend to be jealous of their public image and to employ specialist staff who will champion the cause of pollution abatement within their organisations. Smaller firms may be pressed to take action by their trade associations, especially where other member firms have installed equipment and are concerned to bring about uniformity of practice.

120. The Alkali Inspectorate's method in seeking to reconcile conflicts between their aims for environmental improvements and industry's willingness to meet the resulting costs is one of discussion and persuasion rather than confrontation. An unyielding, adversary approach would imply a quite different relationship between the Inspectorate and industry. One cannot have it both ways; either we have, as now, an authority which because of its

close relationship with industry and consequent understanding of the problems is able to assess the technical possibilities for improvement in detail and press for their adoption; or an authority which sees its job as one of imposing demands on industry and which, because of the sense of opposition this approach would create, could not obtain the same co-operation by industry in assessing the problems and devising solutions. The Inspectorate firmly believe that if they were to adopt a policy of confrontation the result would be reduction in the rate of progress in controlling emissions.

121. Inevitably, however, many people are suspicious of the Inspectorate's relationship with industry and believe that a more aggressive attitude is necessary if pollution problems are to be attacked with sufficient vigour. It is commonly remarked by critics that this relationship is "cosy". The industries we have visited in the course of our study have assured us, on the other hand, that the Inspectorate are hard bargainers in negotiations and we have seen no reason to doubt that this is generally true. What is clear is that a system operating on the basis of co-operation with industry has a particular need to satisfy the public, and especially communities seriously affected by pollution, that it has been sufficiently firm in pressing for improvement.

122. There is no doubt that great advances have been made in the reduction of emissions from registered industries and we give some illustrations of this later in this chapter. There has, nevertheless, been much criticism of the Inspectorate in recent years from the local and national press, from local and national environmental pressure groups, from local authorities and from MPs and political parties. We believe that in part these criticisms stem from real deficiencies in the system, and that to a considerable extent they have their origins in the fact that the Inspectorate have not sufficiently adapted to changes in society's attitude to pollution and to public accountability.

123. When the Alkali Inspectorate were set up relations with the general public were hardly relevant. The Alkali Act had its origins in the blighting effect on surrounding farms and estates of the acid emissions from alkali works. At that time the populace had no great expectations of environmental improvement and were no doubt thankful for anything that was done to reduce pollution. The Inspectorate had little occasion for contact with anyone outside industry except infrequently with local authorities and this situation persisted with only gradual change for nearly a century. The last decade or so has seen a great increase in public concern with the environment. People no longer accept pollution as an inevitable by-product of industrial society; they expect to be told what is going on and to have something done about emissions which they regard as unacceptable. Moreover, somewhat ironically, people's standards seem to rise as pollution lessens so that, from the enforcing authorities' viewpoint, expectations are always running ahead of what can be done. In particular, people living in smoke control areas are very conscious of the improved quality of the atmosphere and correspondingly sensitive to pollution from industry.

124. The Alkali Inspectorate do not seem to have adjusted to these changes, and to the public whose interests they serve they sometimes appear remote and autocratic. There has been some clumsiness and insensitivity in the Inspectorate's

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public pronouncements and an air of irritation with those who presume to question the rightness of their decisions. Our enquiries have convinced us that many individual inspectors are conscious of the need for good public relations and do a great deal to this end by talking to local people, to amenity societies and to local authorities and the media. On the other hand, we have heard it argued by some Inspectors that public relations are not their job because this responsibility has not been laid specifically on the Inspectorate by Act of Parliament. We regard this argument as nonsense; almost every job in the public service ought to involve explaining and justifying policies and performance to the public and this applies the more so to pollution control which directly affects the air that we all breathe. Again, some Inspectors have pointed out to us that if they did all that could be done on public relations there would hardly be time left in which to control pollution. We accept that given the present size of the Inspectorate there is truth in this. It would ill-serve the public if in the interests of good relations the Inspectorate were to neglect the surveillance of works or the contacts with industry on pollution problems on which future progress depends. We think that the Inspectorate have been run too cheaply to enable proper attention to be given to public relations. Our recommendations on the staffing of the Inspectorate are in Chapter IX.

125. Lack of public confidence in the Inspectorate based on the view that their interests are too closely identified with those of industry has not been helped by the Inspectorate's refusal to release to the public emission data supplied by industry as part of the control procedure (see paragraph 95). The Alkali Act placed no requirement of secrecy on this data, though the Health and Safety Act makes it an offence for an Inspector to reveal data provided by industry, except with industry's consent or in specified circumstances which are irrelevant to the protection of the environment. Nevertheless it has been the Inspectorate's long-standing policy to regard such information as the property of the firms concerned, and to refuse its release to the public on the grounds that this would jeopardise their relations with industry. We have argued in previous Reports our firm opposition to secrecy about pollution data except in those exceedingly rare cases where their release would disclose genuine trade secrets. We believe, therefore, that the Inspectorate's policy on the release of information, even though it is now backed up by legislation, is misguided.

126. Despite this, the Inspectorate have done an increasing amount to encourage local authorities to ask for emission data and industry to give it both to them and to local groups. They have sponsored liaison committees, on which are generally represented the Inspectorate themselves, the works management, local authorities and local people, around several of the most contentious of registered works. These liaison committees have done a great deal to improve understanding of each others' problems by both the works and local people and have often led to improvements in control of pollution incidents by the establishing of a single channel for complaints. The Working Party of the Clean Air Council, chaired by Rear Admiral P. G. Sharp (the Sharp Committee)\*, which

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\* Information about Industrial Emissions to Atmosphere. Report by a Working Party of the Clean Air Council. HMSO 1973.

examined the problem of information on industrial emissions recommended that these liaison committees should be multiplied and formalised into local "Indemat" committees with representatives of industry, local authorities and other "responsible" groups. These would arrange the release of appropriately interpreted emission data to the public. The recommendations, which were supported by the Alkali Inspectorate, were enacted with some modifications in the Control of Pollution Act 1974.

127. We ourselves see the advantages of arranging for emission data to be adequately explained and set in context, though we believe that the Alkali Inspectorate's concern that the release of such "raw" data might cause public anxiety is often overstated. We are dealing with an increasingly educated public, one which increasingly wishes to form its own judgement on the basis of the facts and which increasingly resents official supposition that it is incapable of doing so. We comment further on the question of the availability of emission data in Chapters VI and VII of this report.

128. It is not only emission data which some people feel the Alkali Inspectorate ought to release. There has also been considerable criticism because of their failure to release information on planned improvements or planned closure of polluting plant, and in particular of their apparent willingness to allow obsolescent polluting plant to continue operating. The Inspectorate not only feel that announcements on both improvements and closures, which can properly be regarded as commercial secrets, should be made by the firm concerned: they also feel that if they reveal plans which have been discussed with them in confidence ultimately control will suffer because they will not be given such information again. The most difficult instance of this dilemma is when the Inspectorate have been told that a certain polluting plant is due for closure and they consider that in the circumstances insistence on further measures to control pollution would not be justified. They feel that they can neither announce the closure themselves nor explain to a justifiably indignant public why nothing has been done. We make recommendations in Chapter VII which should generally ease this situation by encouraging the interchange of information but in the long run the Alkali Inspectorate can only encourage firms to announce their plans in good time.

129. Another factor which affects the way in which the public sees the Inspectorate is its small size. This means that Inspectors generally cover large geographical areas; a District Alkali Inspector with his assistant is responsible for controlling registered processes in an area of between 1,200 and 8,500 square miles. Individual district offices are manned only when the Inspectors and their part-time secretarial staff happen to be there, although most Inspectors have fixed times when they are normally in their offices and always have a telephone answering machine connected when they are out. These provisions are inadequate. A housewife whose washing has been suddenly dirtied because of a breakdown of pollution control equipment at a nearby plant is unlikely to know the Inspector's routine, and may well be disconcerted and irritated by a request to leave a message on the machine. Nor do we think it reasonable that members of an Inspectorate which may have to react quickly to pollution incidents should

be out of touch with local authorities, industry and government until they check their answering machines at the end of the day. In Scotland, where all the Inspectors work from one office, distances to remote works are greater but there is the compensating advantage that the office is always manned in working hours.

130. There is another barrier to public communication which is perhaps worthy of mention; that of terminology. We have already noted the importance of the concept of best practicable means to the Alkali Inspectorate's work. To industry and the Inspectorate "best practicable means" may have a precise meaning for any particular works but the general public is unlikely to be aware of these connotations. A community which is assured that the best practicable means are being observed at an obviously polluting works might regard the term as no more than a verbal formula devised by officialdom to disguise inaction. In dealings with the public the emphasis should be on the agreed standards and procedures rather than on the concept of best practicable means on which these precise arrangements ultimately rely. Again, in the Inspectorate's full title the term "Alkali" is an anachronism and the term "Clean Air" is confusing. A more understandable and relevant name is long overdue. In Chapter XI we suggest a title for a new Inspectorate which we propose should supersede the Alkali Inspectorate and have widened responsibilities.

#### **Local authorities**

131. Although our study was concerned equally with the Alkali Inspectorate and with local authorities we have received more evidence on the work of the former than of the latter. This was partly because the Alkali Inspectorate have been the subject of greater public criticism and because the works they deal with are by their nature more contentious. Because of this emphasis we thought it right to visit more registered than non-registered works. However, during all our visits to both types of works we held discussions with members and officers of the local authorities concerned, and we have been able to obtain a good understanding of their work in this field.

132. Since the reorganisation of local government in April 1974 air pollution control in England and Wales has been the responsibility of the new district councils and of the London borough councils. We are conscious that we have been examining, outside London, a new system which has hardly had time to settle down; this applies even more in Scotland where the new district and islands councils only took office in May 1975. However, the legislation and the powers and responsibilities it confers remain as we have described in Chapter IV. Moreover, the offices and staff of the new authorities frequently overlap with the old ones, and in our enquiries we have been able to assume a certain continuity.

133. There is great variation in the occurrence and extent of air pollution in different local authority areas, and there is a similar variation in the expertise available to deal with it. Many local authorities—the more rural of district councils, for example—have no serious air pollution problems and so

would not expect to employ staff with any specialist expertise in this area. Others have formed a branch of their environmental health departments dealing exclusively with air, or with air and noise, and these specialist branches are likely to be largely staffed by Environmental Health Officers with the Royal Society of Health Diploma in air pollution control. From the point of view of expertise specialisation is clearly preferable, though it may have disadvantages through requiring larger control areas so that a specialist Environmental Health Officer may be physically remote from potential air pollution trouble spots.

134. Naturally it is easier to obtain an overall picture of the work of a central Inspectorate responsible for a limited range of industry than of the work of many local authorities dealing with a much larger number of non-registered works. However, the differing levels of competence of local authority officers have been very evident to us from the visits we have made. No doubt it is generally true that local authorities facing more difficult pollution problems have better qualified staff but this is certainly not always so. We have been struck, too, by the range in understanding and concern of elected members with regard to air pollution matters. In some places we have seen energetic and well-informed environmental health committees, alive to their responsibilities and providing support and policy guidance for technically able and enterprising Environmental Health Officers. In some other districts the opposite has been apparent, with evidence of confusion about responsibilities and powers and bitter public complaint about emissions from non-registered works. There are differences, too, in the approach to control. Some authorities tend to operate like the Alkali Inspectorate in seeking to understand the air pollution problems of industry and co-operate in their solution, while others see their role as that of detecting and prosecuting offenders.

135. Local authority control, whatever its quality, is open to local pressures in a way that control by the Alkali Inspectorate is not. This does not necessarily lead to improvements: local pressures to attract and retain industry so as to improve local employment prospects and rate revenue may be such that any industry, no matter how polluting, is welcomed, and that steps to control pollution are not taken if there is any risk that the industry might move elsewhere. Equally, we have found some evidence of the opposite view, whereby local authorities are keen to clean up existing pollution in order to attract new, cleaner industry to their areas. Attitudes vary, and this is a matter where public opinion can have a substantial influence on the pattern of control.

136. We are clear that the quality of local control is—and is perhaps likely to remain—patchy. We believe, nevertheless, that there is likely to be gradual improvement as the new local authorities become more firmly established. The availability of appropriately qualified staff is clearly a limiting factor. In our Fourth Report we commented on the recruitment problems for Environmental Health Officers. We are glad to learn that an increasing number of degree courses are now being instituted. It will be some time, however, before the large number of vacancies can be filled, especially in the present economic climate.

### **Relationships between the Alkali Inspectorate and local authorities**

137. A matter which has concerned us a great deal, for we believe it to be central to our enquiry, is the relationship between the Alkali Inspectorate and local authorities in the control of air pollution. Under the letter of the law the Inspectorate and local authorities have nothing to do with each other. Each has a defined sphere of activity and there is no overlap of responsibility; this, no doubt, is as it should be, for a firm could not be expected to have to meet the requirements of two bodies with respect to a given emission. Nevertheless, in practice the two are closely involved with each other. Centrally, the Alkali Inspectorate are the Secretary of State's technical advisers on industrial air pollution control and so the source of much of the advice that is sent to local authorities in circulars, memoranda and regulations. The Alkali Inspectorate also meet the Environmental Health Officers Association annually for an informal discussion of common problems. Locally, local authorities are bound to be concerned about the control of emissions from registered processes even though they are not directly responsible for them. When members of the public are distressed by pollution arising from an incident at a registered works, it is to the local authority that they generally complain and from whom they expect action.

138. There is, therefore, a real need for co-operation between local authorities and the Inspectorate, whose roles are in some way complementary. Local authorities through their Environmental Health Officers offer greater numbers, local knowledge, accessibility to the public and, generally, the ability to respond quickly to complaints; the Alkali Inspectors their specialist expertise. In a few of the areas we have visited, of which the most notable example was the new Bristol City Council, we have seen working relationships which, if reproduced throughout the country, might make this aspect of our study superfluous. In other areas the position is very different, with evidence of resentment by Environmental Health Officers of the Inspectorate's role, of remoteness by Alkali Inspectors, or of failure by members of local authorities to appreciate the benefits of co-operation. As an example of the extent to which co-operation may languish we know of one area where there is a particularly contentious registered works and where a protest group had been badgering the local authority for action for two years before they were told of the existence and ultimate responsibility of the Alkali Inspectorate.

139. The scope for co-operation is considerable. Alkali Inspectors are often in a position, even if unofficially, to assist local authorities with problems arising at non-registered works. Environmental Health Officers can greatly assist Alkali Inspectors by the prompt handling of complaints from the public about registered works; by informing the firm and the Inspector concerned as quickly as possible and, if the complaint seems sufficiently serious, by visiting the works themselves. We note that some Environmental Health Officers maintain that they have no power to enter these works. Others argue that sections 91, 92, and 287 of the Public Health Act 1936 allow them to enter and examine any process thought to be causing a nuisance or potential nuisance,

registered or not. Our reading of the law is the same, but as there appears to be some doubt we suggest that it should be tested in the Courts or otherwise clarified.

140. It is part of the Alkali Inspector's routine to visit all local authorities whose areas contain registered works at least twice yearly, but such formal arrangements are of course no guarantee of adequate day-to-day co-operation. Good relationships depend in the last resort on personalities but they may be encouraged by analysis and clarification of what the respective roles and powers of local authorities and the Inspectorate are and ought to be. A system which relies upon casual friendships rather than rational professional relationships is unlikely to be uniformly effective. We make recommendations for improvements here in Chapter VII.

#### **Achievements of the present system**

141. We had hoped to be able to make some comparison of the effectiveness of the system of control of air pollution in the UK with that in other countries but we have been surprised to find that the necessary information is not readily available. Some comparative studies have been carried out of methods of working in different countries and of standards where these apply. However, it appears that no study has been made of the effectiveness of these different approaches in terms of actual reductions of emissions or of ground-level concentrations. We recommend that the Department of the Environment should initiate such a study, possibly through an international organisation such as the Organisation for Economic Co-operation and Development.

142. The present system for controlling air pollution has certainly achieved a great deal, particularly during the last 20 years. Emissions of smoke from industrial processes in the UK have gone down by a remarkable 96 per cent over the period 1956-1973. Smoke from domestic fires still accounts for 94 per cent of all smoke emitted. Emissions of sulphur dioxide, which is, by volume, the other main pollutant have risen slightly during the same period, but concentrations at ground level have gone down by 45 per cent in urban areas in the last 10 years.\* Ground level concentrations in some rural areas have however increased in the same period.

143. The total emission of pollutants from several industries has gone down in recent years despite increases in production. It is perhaps worth documenting the toughening of emission standards and estimated reductions in actual emissions from a few industries. The following examples are all of registered works since, so far as we are aware, comparable figures for non-registrable works have not been centrally collated. All three examples were first registered in 1958.

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\* Source: Unpublished data made available by Warren Spring Laboratory.



**TABLE 2**  
**Emission limits**  
 (grain per cubic foot of total particulates)\*

	<i>Prior to scheduling</i>	1958	1974
Cement works ..	No effective control	0.5	0.1-0.2 depending on size of plant
Coal fired power stations	Industry's self-imposed limit of 0.4	0.2	0.05
Sinter plant (iron and steel production)	No specified limit	0.2 for new works	0.05 for new works 0.2 for existing works

**TABLE 3**  
**Total particulate emissions and emissions per 1,000 tonnes of production or coal burnt**

	1958		1974	
	<i>Total (tonnes)</i>	<i>Per 1,000 tonnes</i>	<i>Total (tonnes)</i>	<i>Per 1,000 tonnes</i>
Cement works ..	160,000	16	25,000	1.5
Coal fired powers stations	1,000,000	23	170,000	3
Sinter plant ..	130,000	15	35,000	1.75

Data supplied by the Alkali Inspectorate.

144. Another measure of achievement is the expenditure by industry on air pollution control. The only estimate available for registered industry was made in 1968 and figures were published in the Chief Inspector's annual report † for that year:

**TABLE 4**  
**Cost of air pollution control for scheduled processes 1958-1968**

*Figures in £s*

<i>Works</i>	<i>Capital</i>	<i>Research and Development</i>	<i>10-Year Working Costs</i>	<i>Latest Year's Working Costs</i>
1. Electricity .. ..	75,731,000	856,000	126,691,000	15,300,000
2. Cement .. ..	6,216,000	301,000	6,442,000	1,000,000
3. Petroleum .. ..	6,822,000	536,000	11,667,000	1,788,000
4. Gas .. ..	2,839,000	—	4,474,000	350,000
5. Coke Ovens .. ..	2,909,000	242,000	6,126,000	710,000
6. Lime .. ..	976,000	4,000	707,000	118,000
7. Ceramics .. ..	2,090,000	163,000	3,011,000	382,000
8. Iron and Steel .. ..	26,430,000	1,235,000	93,351,000	10,364,000
9. Non-Ferrous Metals	5,762,000	656,000	16,449,000	2,262,000
10. Chemical .. ..	20,527,000	952,000	55,516,000	6,782,000
Totals .. ..	150,302,000	4,945,000	324,434,000	39,056,000

\* 1 grain per cubic foot is equal to 2.3 grammes per cubic metre.

† 106th Annual Report on Alkali, etc. Works: HMSO 1969.

At the time these figures were collected for registered industry, the Chief Inspector's best guess was that non-registered industry spent a roughly similar amount on air pollution control. He commented that the total industrial and domestic expenditure on smoke control over that 10 year period came to nearly £70 million, or about 0.2 per cent of the then Gross National Product.

145. It would be interesting to compare the effectiveness of Alkali Inspectorate and local authority control of industrial emissions but no such comparison seems to be possible. For one thing, there is a lack of data on the reduction of emissions by non-registered industry. A yardstick which might be suggested is the level of complaints about emissions. Here again, however, no information is available nationally about non-registered works, and even if it were the comparison would be of dubious value. The plants controlled by the Alkali Inspectorate are those which create the most difficult air pollution problems and hence will be the ones most likely to give rise to complaint.

146. An important advantage that the Alkali Inspectorate have is that they are able to tackle the pollution problems of an industry nationally. An example is provided by mineral works, first scheduled in England and Wales in 1971. In his annual report\* for that year the Chief Inspector explained why:

“An important reason for scheduling works is because the inspectorate is called upon increasingly to assist local authorities with nuisances caused by a particular class of industry. The stage is reached where it becomes apparent that the problem needs to be attacked on a national scale, either to find solutions or to apply known solutions in a systematic manner to the whole industry, so that no works gains a commercial advantage over its rivals by not complying. Such is the case with Mineral Works as defined in the 1971 Order, where the problem is one of control of grit and dust emissions.”

At the end of 1974 there were 801 mineral works registered in England and Wales; in Scotland, where mineral works were registered in 1972, there were at the end of 1974 150 works registered. Mineral works thus constitute a substantial proportion of all registered works. They are unlike other registered works not only in their number but also in that they tend to be in rural areas where local authorities may be inexperienced in air pollution; some are in National Parks and other areas of great landscape value. We are not able to assess how much complaint there was about these works before scheduling but now about one in eight works is the subject of complaint.

147. Since scheduling the best practicable means for control have been formulated and the requirements published. These apply immediately to all new works and equipment and for the majority of existing works a programme of improvement has been arranged by the District Inspectors concerned so that the requirements will be fully implemented by the end of 1978. Some works which have special problems of control and which give rise to no complaints have been allowed a somewhat lower standard.

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\* 108th Report Alkali, etc. Works 1971. HMSO 1972, page 2.

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148. We visited one mineral works and discussed the pollution problems caused by such works with local authorities and others concerned on our visit to Derbyshire. Clearly there are still acute local problems, but we formed the view that as a result of the Alkali Inspectorate's involvement with the industry a coherent programme for improvement was under way which could not have been achieved by local authorities acting separately. Indeed, at the request of some local authorities concerned the Inspectorate had made recommendations for improvements some three years prior to registration, but few of these had been acted on when they assumed responsibility for control. The example is relevant to the general question of central or local control which we consider in the next chapter.

## CHAPTER VI

### MAIN ELEMENTS OF A FUTURE CONTROL SYSTEM

149. There are some basic issues which need to be considered in deciding what changes should be made in the system for controlling industrial air pollution. We discuss these in this chapter.

#### Central or local control

150. So far as pollution control is concerned, the division of responsibility between central and local authorities is unique to air. In relation to inland and estuarial waters for example, responsibility for the control of polluting discharges, whether industrial effluent or sewage, rests with the recently created water authorities and, in Scotland, with the river purification authorities. It is, of course, true that central government controls and influences the activities of these authorities in many ways, not least by legislation and in relation to their capital expenditure programmes. Nevertheless, there is no centrally organised body able to deal directly with industry on the more intractable problems of industrial liquid effluents in a way analogous to the work of the Alkali Inspectorate on air pollution. All industrial effluent problems, whether difficult or straightforward, are dealt with by the water and river purification authorities. A similar situation exists with regard to the problem of solid waste disposal where responsibility rests with county councils in England, district councils in Wales and district and islands councils in Scotland.

151. We have therefore considered the reasons and justification for this division between central and local responsibility for dealing with air pollution. Is this to be seen as an historical accident, or are there good grounds for maintaining a system in which emissions from the more technologically difficult processes are dealt with separately and are controlled by a central body? The question prompts another: if air pollution does justify such control is it unique in this or would there be a case for instituting a similar combination of central and local responsibility for other forms of pollution where difficult processes are involved? We return to this point in Chapter IX.

152. Certainly some of the bodies that have contributed evidence to our study, in particular some of the local authority associations, have argued that responsibility for the control of emissions from all industry should rest with local authorities. In some cases they have envisaged that the Alkali Inspectorate would be abolished; in other cases, that the Inspectorate would be retained in a purely advisory role.

153. We have given a great deal of thought to this proposition, and we have had it very much in mind in our discussions with local authorities and industry. Our firm conclusion is that there are strong grounds for preserving a central,

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controlling body for emissions to air from certain industries. This is a crucial and sensitive area of our study and we therefore discuss this issue in some detail.

154. Air pollution tends to generate immediate public concern. People are rightly sensitive about what is in the air they breathe and they cannot ignore persistent and unpleasant smells or frequent deposits of grit and dust on their homes. This awareness leads to considerable public pressure on local authorities in those areas where air pollution is a serious problem. In such areas the pollution often arises from registered industries since, by definition, these present the greatest difficulties of control. It is readily understandable that some local authorities should wish to assume responsibility for control so that they would have powers to act directly in response to public complaints.

155. However, other aspects must be considered. We have noted that the reduction of industrial emissions may lead to very substantial costs. Many old works create air pollution problems which can ultimately be resolved only by basic redesign or closure. Thus, the abatement of air pollution, especially from such basic industries as metal working, electricity and minerals whose operation is vital to the economy, may raise issues of national significance. The development of investment and research programmes to deal with pollution from these industries will often call for negotiation between industry and a responsible authority at national level. This requirement indicates the need for a central body. Such a body will need to have a high degree of technical competence in relation to the industrial processes involved if it is to deal authoritatively with industry in securing the acceptance of costly abatement measures. It should also be competent in other areas, for example in assessing the implications of pollution abatement for the finances of the industries concerned and for the local and national economy, and in assessing the nature and severity of the effects of pollution in the localities particularly affected. We return to these points later; our present concern is with the question of technical expertise.

156. All the evidence we have received and our many discussions with members of the Alkali Inspectorate (and the Industrial Pollution Inspectorate in Scotland), local authorities and industry leaves us in no doubt that these Inspectorates have the technical competence for this central role. The Inspectorates are expert bodies with great experience of industrial processes, of the air pollution problems that arise from these processes and of techniques for dealing with them. They are in a position to keep in close touch with developments in pollution abatement technology and to bring this knowledge to bear on industry to ensure progressive improvements. It would be folly if any changes we were to recommend in the arrangements for controlling air pollution were to lead to the weakening or dissipation of the technical expertise that resides in the Inspectorates.

157. The Alkali Inspectorate should therefore retain responsibility for negotiating with registered industries on pollution abatement. It could be argued, however, that this would not prevent the transfer of responsibility for controlling emissions to local authorities. At first sight it might appear feasible, and even sensible, for the Inspectorate to determine the emission

requirements to be applied to particular works or classes of works, but for local authorities to be responsible for ensuring compliance with them. Such an arrangement might appear to utilise the particular skills of the Inspectorate most efficiently while giving effective powers to those bodies, the local authorities, to which the public generally turn for action when pollution incidents occur.

158. In our view this approach would be neither feasible nor desirable. The technical competence on which the Inspectorate's authority rests is maintained by the day-by-day experience of industrial pollution problems which results from their control responsibilities. The loss of this control function and the adoption of a purely advisory role would gradually but inevitably erode the Inspectorate's authority. Moreover, this technical competence is necessary for effective control, which cannot be reduced simply to ensuring the observance of certain specified emission levels. To identify and evaluate the causes of unacceptable emissions requires of the controlling authority a technical understanding of the processes involved—as is necessary, for example, to distinguish between occasional accidental failures which can be tolerated and design or operational weaknesses which must be remedied.

159. We are clear that in most cases officers of local authorities do not have the technical knowledge and experience required to exercise control of this kind where technologically difficult processes are involved. In the many discussions we have had with Environmental Health Officers during our visits, these officers have often conceded that they would not consider themselves equipped to take responsibility for control of the more difficult industries. We have, indeed, been struck by the contrast between the views of the men doing the job and evidence submitted to us by some local authority associations in which they urged that the responsibilities of the Alkali Inspectorate should be transferred to local authorities.

160. We conclude that there are very strong grounds for preserving the present division of responsibility between a central government body (with appropriate arrangements for Wales and Scotland) and local authorities. We consider that the best prospect for a continuing reduction of difficult industrial emissions lies in the constant interaction between these industries and an informed, national control authority. A national authority is needed to deal with the technically difficult problems with which local authorities generally cannot cope. We have no doubt that the general transfer of the Alkali Inspectorate's control responsibilities to local authorities would be undesirable.

161. These views are based on consideration of the position as a whole. We recognise that some local authorities may already have staff with the technical qualifications and experience that would enable them to assume responsibility for controlling emissions from some registered industries; and that, as a consequence of local government reorganisation and the formation of larger authorities, this trend may be expected to continue. We recognise, too, the force of the argument that so far as possible there should be local control of matters which cause local concern. These factors suggest the need for flexibility in allocating responsibility for control between the Inspectorate and local authorities, and we discuss this question further in paragraphs 193–197. However,

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we consider that for as far ahead as it is sensible to try to look the central inspectorate will be needed, and that any transfer of responsibilities to local authorities should be subordinate to the preservation of the technical competence of this Inspectorate.

162. The central inspectorate should, however, work closely with local authorities, partly because they are dealing with matters of local concern and local factors must be taken into account in their decisions, and partly because co-operation will help local authorities to build up technical expertise and understanding of the problems. The relationships between the Alkali Inspectorate and local authorities are not close enough at present, and in the next chapter we consider ways in which they might be improved.

### **The approach to control: best practicable means (bpm)**

163. In Chapter IV we described how the concept of bpm is applied by the Alkali Inspectorate to the control of industrial emissions. The system includes emission standards where these can be specified but is essentially flexible in operation, allowing account to be taken of local circumstances in deciding the requirements to be imposed on particular works.

164. We have considered whether any change is necessary in this system of control. In paragraph 84 we outlined an alternative approach in which emission standards would be rigidly specified and enforced. In such a system the elements of control would be more clearly defined; the operation of the system could be more readily comprehended and might appear more positive. The intent of the controlling authority to reduce emissions would be more obvious to the public since, for the reasons discussed below, the exercise of control of this kind would inevitably tend to engender open conflict between the controlling authority and industry. We do not believe, however, that this system would be more effective in reducing pollution.

165. There are formidable difficulties with a system of this kind. By definition the system can take no account of varying circumstances in different areas. The standards set must either be less stringent than they should be in some situations in order to allow for difficult cases, or too stringent for many emitters to attain. In the latter case confrontation with industry is bound to arise. Some conflict of interest is inevitable in any effective system of control. The problem with a system of rigid standards is that their consequences in local and national terms are often not apparent until after they have been imposed, and it may then be clear that the benefits of reduced pollution are outweighed by the costs to society. The situation arises where either the standards have to be upheld even though they imply a disbenefit for society, or they are relaxed with resulting confusion and damage to the authority of the controlling body. Confrontation which leads to either course is scarcely worthwhile.

166. We have reached the firm conclusion that the bpm system should be continued; indeed, so convinced are we of the merits of this approach to air pollution control that in a later chapter of this Report we recommend the extension of this system to the control of industrial pollution of other forms.

The bpm system is consistent with the realities of pollution control. In principle it provides a flexible and sensitive means of achieving the balance of costs and benefits which should be the aim of control. We are aware, however, that precisely because of its flexibility the bpm concept can be misused. At its best the term connotes a rigorous analysis of the objectives and consequences of air pollution control. At its worst the term can be used as a catchword to conceal the absence of any such analysis. With the use of bpm should go a recognition of the need to justify the decisions reached.

### **Air quality**

167. We have noted that in determining their bpm requirements the Alkali Inspectorate consider the ground level concentrations of pollutants caused by industrial emissions. Air quality considerations thus form a factor in their control of emissions. We have reached the view, however, that there is now a need to focus attention openly and specifically on air quality.

168. We do not think that air quality *standards* would be a sensible way of achieving this. We mean by standards, specified pollutant concentrations (however defined and measured) which the control system should not allow to be exceeded. To work on this basis would involve all the complexities which we discussed in paragraphs 38 and 39. Such a system would not only be impracticable at present, it would also not be justified by current knowledge of the effects of pollutants and of the social costs they cause.

169. We propose the establishment of air quality *guidelines*. These would not have legal force and would not be designed directly to control emissions. The worst difficulty of standards—that of reducing emissions immediately when they were exceeded irrespective of the realities of the situation—would thus be avoided. The principal purpose of guidelines would be to provide a framework for the rational consideration of air quality, and especially to assist in regional planning and in the formulation of long term aims for pollution reduction.

170. At what level should such guidelines be fixed? It is exceedingly difficult in the present state of knowledge to determine where thresholds of damage by particular pollutants may lie, or indeed whether such thresholds exist at all. When human health is at issue there are problems in deciding whether guidelines should be pitched at a level where no damage at all is done to the health of even the most susceptible, or whether some low level of risk can be tolerated. When it comes to damage to property or amenity there is a point beyond which the costs of reducing air pollution outweigh the benefits. As it is not generally possible to quantify such benefits, value judgments have to be taken in deciding what levels should be set.

171. Another difficulty with air quality guidelines lies in the need to monitor them. Monitoring systems would need to be more relevant and probably more sophisticated than they are now. Concentrations, particularly of smoke, vary sharply over small distances and periods of time. Various questions have to be considered; for example, how many monitoring stations are required, over what period concentrations should be averaged and in what form the guidelines should be expressed. Moreover, some pollutants have a combined



effect which is much more serious than that of each by itself and cannot sensibly be considered apart. The classic example is smoke and sulphur dioxide. Together, they can affect health at concentrations which used to be common in British cities. However, now that in many urban areas smoke has reached low levels the acceptable levels of SO<sub>2</sub>, less damaging by itself, are probably much higher.

172. We realise that air quality guidelines may tend to be treated as standards, in that concentrations below the guideline level might be regarded as safe and those above as hazardous. There is a risk, therefore, of reducing the incentive to prevent pollution rising in areas where it is below the guidelines, or of prompting precipitate and unjustified action where the guidelines are exceeded.

173. In view of the difficulties involved we recognise that any air quality guidelines set would be open to criticism. However, we have visited sites where the air quality was manifestly unacceptable and where any reasonably set guideline would have been significantly exceeded. We consider that the time has come to make an attempt to set guidelines, as this would at least serve to draw attention to such situations. Doubtless it will be possible to improve the first attempt after a few years' experience.

174. We cannot ourselves set guidelines; this is a specialised job which only the Government, backed by scientific advice, has the resources to undertake. We are aware that some local authorities, particularly the Greater London Council, are considering establishing their own guidelines but we think it unlikely that even the biggest authorities have the necessary expertise to do the job. The lead should come from the Government. In the following paragraphs we propose an approach which we consider would minimise some of the difficulties we have discussed above.

175. We have considered whether the Government should be asked to set several levels for each pollutant, perhaps varying with types of area or population concentrations and with short-, medium- and long-term aims. We have concluded that such a proliferation of figures would be unnecessary and confusing and would give a wholly spurious air of exactitude. Nevertheless the same guidelines are not necessarily suitable in all places. We consider that the best solution is a guideline consisting of a band rather than a single figure; the concept is illustrated in the diagram opposite. The upper level defining the band would correspond to the highest tolerable level. If this level were consistently or significantly exceeded there would be grounds for concern and for action to reduce the pollutant concentration within a reasonable time-scale. The lower level would represent concentrations about which concern would not normally be reasonable and below which there would generally be no justification for pressing for a reduction in emissions.

176. We consider that air quality guideline bands should be established for suspended particulates (smoke), sulphur oxides, nitrogen oxides, lead and carbon monoxide, and possibly some other pollutants. We believe that such guidelines would give the public, the controlling authorities, industry and government a valuable indication as to whether or not the air at a particular time and place should be considered unacceptably polluted.

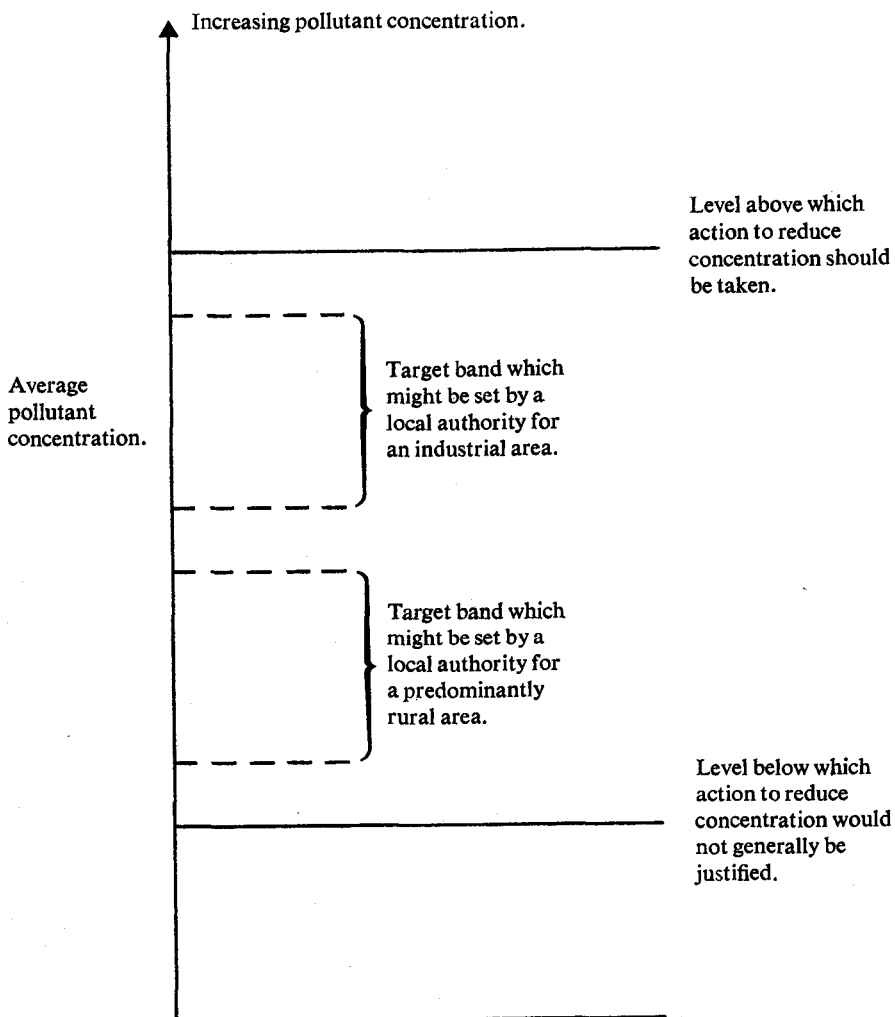


Diagram illustrating use of proposed air quality guidelines.

177. We envisage that local authorities would adopt a range of target levels as eventual aims for different localities within their areas. The levels would need to take into account particular local circumstances such as existing pollution levels, topographical and meteorological conditions and whether urban or rural situations were involved. The target levels would generally fall within the guideline band; the long-term aim would no doubt be to get comfortably below the upper guideline level but there would often be great practical difficulty and little justification for attempting to reach the lower level. The target levels chosen by a local authority would thus define a narrower range

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within the span of the guideline. This is also shown in the diagram. We would expect local authorities to consult the Alkali Inspectorate, central government, their neighbouring authorities and possibly, where appropriate, the relevant counties or regional authorities before deciding on particular levels.

178. A target set by a local authority can be used for two main purposes. The most important is in development control: that is, in seeking to ensure that new industrial development does not give rise to an unacceptable increase in air pollution and that new housing is not built in an area where pollution is already unacceptably high. This we discuss further in Chapter XI. The other main purpose is the planned reduction of high pollution levels. A local authority with excessive levels of a particular pollutant might sometimes be able to trace that pollutant to a single source. Far more probably the pollutant will come from many sources and it will not be possible to isolate one "culprit". Sometimes the solution will be obvious: if there are high levels of smoke or sulphur dioxide from domestic sources, the remedy is clear. Often it will be less obvious and detailed study may be needed to identify the sources and to establish the prospects for planned reduction of pollution levels.

### **The European Economic Community and air pollution control**

179. The Treaty of Rome does not refer in any detail to the environment but it was agreed at a meeting of Heads of State in 1972 that the European Community should have an environmental programme. This led to a Programme of Action on the Environment which was adopted in late 1973. The first part of the programme was to draw up sets of relationships, known as "criteria", between the doses and effects of pollutants primarily on man but also on other targets.

180. Once dose/effect relationships have been established, the Commission of the European Communities' next step will be to ask member states to agree on environmental quality objectives or standards. These are sets of requirements for an environment, in terms of pollution levels, that must not be exceeded after a given date: "standards" are legally enforceable, "objectives" are not. The first set of quality objectives, on the quality of surface water used for abstraction for drinking, was adopted in November 1974.

181. The Commission has also begun to draw up environmental quality standards for some pollutants. A draft directive on air quality standards for lead has been forwarded to the Council and we understand that the Commission is preparing directives on air quality standards for SO<sub>2</sub> and particulates, CO<sub>2</sub> and the oxides of nitrogen. Such quality standards, if adopted, will prescribe pollutant concentrations which should not be exceeded, and specify dates by which limits should be imposed. The Commission has also put forward proposals for product standards (for example, limiting the amount of lead in petrol or of sulphur in certain oils) and for emission standards. Neither of these are linked to particular levels of environmental quality, but they provide one means of moving towards quality objectives.

182. We have discussed the programme with Commission officials and we have doubts about some aspects of it. It seems to be generally progressing too

quickly without allowing sufficient time for basic research or even for assimilation of the results of existing research and discussion with experts. Moreover, the environment programme is seen from the basic viewpoint of non-tariff barriers to trade: in other words, so as to ensure fair competition throughout the Community identical emission standards will be imposed. We believe that this is misguided, because emission standards should be closely linked both to what the environment can reasonably be expected to bear and to the use to which that environment is likely to be put. Local circumstances are therefore important. It would be a wasteful use of resources to insist that, say, smoke from a cluster of cottages or a remote industrial plant in the Scottish Highlands or the French Alps should be as stringently controlled as in Birmingham or Cologne. We think that the imposition of uniform emission standards should be resisted.

183. We are also opposed to the imposition of air quality standards. While we welcome the intent to improve air quality, for the reasons we have already given we do not think that the achievement of this aim by imposing rigid, statutory limits is either wise or practicable. We believe that such limits would be unenforceable in practice and would bring the law into disrepute. However, we would strongly support the introduction of a system of air quality guidelines as described here. A firm approach is imperative if pollution problems are to be tackled and solved with the necessary vigour, but attention to the nature of these problems is essential.

#### **Air pollution control and the public**

184. In several places in this Report we discuss aspects of the relationships between the public (including the scientific community, environmental groups and the press), the controlling authorities and industry on air pollution and its control. We raise the subject in this chapter to stress the importance we attach to it as a factor in the control system and also to draw together the various references to it in the Report.

185. One aspect is the availability of information<sup>†</sup> about air pollution. The public should have a right to know what is in the air they breathe. The Commission's Second Report\* argued against secrecy about industrial wastes of all forms and their discharge to the environment. As a result a number of provisions were included in the Control of Pollution Act to remove existing barriers to the release of information and to ensure that where practicable information on the permitted and actual discharges should be made available to the public. Thus existing provisions, when implemented, should largely serve to make the basic information available. There is, however, other information about air pollution and its control which should be generally available. The air quality guidelines we propose in paragraphs 167-178 should lead to better informed public discussion about air pollution. In the next chapter we propose that information about the control requirements imposed on industry and on particular works (the agreed best practicable means) which is not covered by the Control of Pollution Act should be readily available to the public.

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\* Cmnd. 4894: HMSO 1972.

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186. Another aspect is the question of public participation in the decisions relating to the control of air pollution, and the extent of accountability of the controlling authorities, particularly the central inspectorate, to the public. We have commented on the difficulty of control decisions, which involve the weighing of the costs and benefits of pollution abatement. Public attitudes are necessarily involved in this and increased openness on the facts of control would be useful in two ways. It would improve relations between the public, controlling authorities and industry by increasing public understanding of the problems and of the difficult decisions which have to be made; and informed public discussion would assist the authorities in making these decisions by clarifying views on the costs and benefits involved. In the next chapter we make a number of recommendations intended to make the machinery of control more open to public understanding and influence and to make the central inspectorate more accountable locally for their decisions.

## CHAPTER VII

### ARRANGEMENTS FOR AIR POLLUTION CONTROL

187. In the last chapter we concluded that control over air pollution from industry should continue to be shared between a central agency and local authorities and that both should in future pay more explicit attention to air quality. We now discuss the detailed arrangements we wish to see for co-operation between them and for the legislation they should operate.

#### **Scheduling and descheduling**

188. The present division of responsibilities between the Alkali Inspectorate and local authorities is laid down in orders made under the Alkali Act. Classes of works are scheduled or descheduled as a whole: there is no scope for individual works to be scheduled, though individual registered works can be handed over to local authorities for control under the Public Health and Clean Air Acts. The substantive provisions for scheduling and descheduling, which involved a public inquiry, have been repealed under the Health and Safety Act and not yet replaced.

189. We think that the arrangements for scheduling and descheduling classes of works under the Alkali Act were insufficiently flexible and should not be re-enacted without substantial changes. Ad hoc public inquiries are cumbersome, and may not always provide the most appropriate mechanism for consultation in this case. The views of interested parties should be able to influence official thinking on questions of scheduling and descheduling during their formative stages.

190. There should also be power for individual works to be scheduled, for two reasons. One is that there may be particular problems at one plant, perhaps a plant on a much bigger scale than others of its kind, which warrant control by the central inspectorate. The other is that there have been problems in legally defining classes of works, so that the Alkali Inspectorate have been unable to assume control of a particular type of large plant without also taking on a multitude of small works which do not justify central control. To deal with this there might also be merit in allowing the definition of classes of works to refer to the size of a plant, for instance by reference to throughput.

191. We recommend that, as at present, the Secretary of State for the Environment should be responsible for decisions on the scheduling and descheduling both of classes of works and of individual works. Decisions should be taken after consultation with all concerned and should be conveyed by order, or by letter where they relate to individual works. There should be scope for a public inquiry if this is thought advisable but an inquiry should not be a normal or necessary part of the procedure.

192. Proposals for scheduling or descheduling would normally originate from the central inspectorate, from local authorities or their associations or

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from industry. In considering such proposals the Secretary of State should always consult these bodies, as well as trade associations, amenity interests, local pressure groups known to be interested, and the scientific community. It would be for the Secretary of State to decide whether to take written evidence only or whether to hold a hearing, and if so whether it should be held in public.

193. Clearly many factors need to be taken into account in decisions on scheduling or descheduling. Generally we think that responsibility for control should rest with local authorities where they have the necessary technical competence and where emission problems have been largely resolved. Control should be retained by the Alkali Inspectorate where there is need for continuing technological development to reduce pollution or where control presents special difficulties. As we stated in paragraph 161 it should be an overriding requirement to maintain the technical competence of the Inspectorate. The proposals we make in Chapter IX for a new Inspectorate with an extended remit also would require scheduling or descheduling decisions on a wider basis.

194. We envisage a flexible system. A particular type of works might start off under local authority control; be transferred to central control if new production techniques, an increasing scale of operations or new scientific awareness of environmental hazards made a co-ordinated, national approach desirable; and be handed back to local authorities when these problems had been resolved. There can be no once-for-all division between local and central control, and the precise dividing line will need to be continually adjusted in the light of technological developments and local competence.

195. We think that the Secretary of State should give early consideration to the existing division of responsibilities between the Alkali Inspectorate and local authorities in the light of the principles we have outlined above. We suspect that there is scope for the Inspectorate to shed some of their work; for instance, the technical problems of reducing pollution from mineral works may soon be resolved to the point where many works could be returned to local authority control. There may also already be a need for the Inspectorate to take over some types of works at present under local authority control; one possibility is animal waste treatment works.

196. Once a particular works or class of works is scheduled (or descheduled) its status should in the interests of stability not be open for reconsideration within a minimum of, say, three years. After such a period, which could vary according to circumstance, any interested party should be able to ask for the decision to be reconsidered.

197. As we pointed out in paragraph 80, many factories operate both registered and non-registered processes so that both the Alkali Inspectorate and local authorities are involved in control at the same works. This can be confusing not only for the firm concerned but also for people living in the neighbourhood who may not know who to complain to about emissions. We have considered whether this problem could be solved by one or other of the controlling authorities taking charge of all processes on a single site. This

would be impracticable: an industrial site which includes technologically complex polluting plant requiring the Alkali Inspectorate's expertise may well also include a central heating boiler where that expertise is unnecessary. The desirability of unified control should however be borne in mind in decisions on scheduling and descheduling. Any confusion arising from the involvement of two controlling authorities in a single works can best be avoided by good relations between them: joint inspections may well be helpful.

### **The means of control**

198. As we discussed in Chapters IV and V, the legislation under which the Alkali Inspectorate and local authorities operate is substantially different; several statutes of varying antiquity are involved and local authorities have much less effective control over industry, particularly those industries where non-combustion processes are involved, than have the Inspectorate. Powers to control emissions from non-combustion processes rest on the nuisance provisions of the Public Health Acts. Action can be taken by a local authority only after a nuisance has occurred, and there is no provision for a local authority to require the adoption of the "best practicable means" to minimise emissions before a new plant can start up.

199. We can see no good reason for these different legislative provisions for the control of emissions of different kinds. Moreover, these legislative differences appear to us to be inimical to the flexibility in control arrangements that we should like to see. The system has developed piecemeal as the need for action to deal with different aspects of air pollution was appreciated. The time has now come for new, comprehensive legislation to be enacted, appropriate to a flexible division of control between central and local government, and providing for the same basis of control whether industrial air pollutants originate from combustion or non-combustion processes.

200. There should in particular be a general requirement, applying to all industrial discharges to air, that the best practicable means should be taken to prevent the emission of polluting substances and to render them harmless where discharged. "Best practicable means" should be defined as having regard to the available technology for emission control, the financial implications for the firm and its employees, local conditions and national circumstances. There should in addition be powers to limit the rate of discharge of a specified pollutant and, in the ultimate, to ban its release. Control should also be extended to include fume (see paragraph 108).

### **The Alkali Inspectorate and bpm**

201. Two levels can perhaps usefully be distinguished in the Alkali Inspectorate's application of the bpm concept. At one level there is the need to negotiate with an industry to arrive at a programme embodying agreed aims for air pollution abatement. An example of this would be negotiation with the steel industry to reach agreement on a programme for the introduction of roof collection systems further to reduce emissions from electric arc furnaces. At another level there is the need to define bpm for a particular works taking due



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account of local circumstances. For example, it might be accepted as a general aim for a certain industry that higher standards of emission performance should apply from a specified future date. However, if a particular works was due to close soon after this date it might be reasonable, depending upon the time involved, local circumstances and other factors, that the works should be exempted from the higher standards.

202. The determination of a programme for pollution abatement throughout an industry or of best practicable means for a particular works involve similar and complex considerations. In spite of this complexity, they are at present assessed by the Alkali Inspectorate alone in negotiation with industry. The Inspectorate are expert in the technology of pollution control, but they have neither accounting expertise to enable them to assess a company's financial situation nor economic expertise to enable them to consider the economic costs and benefits to the nation. And although they do take into account the employment effects of their decisions they have no formal qualifications to do so. Moreover, there is no formal machinery through which the views of local people, amenity associations and the scientific community about pollution from industry can influence the Inspectorate's negotiations. We consider that these are significant weaknesses in the present system.

203. This is not to say that the agreements reached between the Inspectorate and industry about abatement measures have been unsound. The Inspectorate have become knowledgeable in areas where they lack formal qualifications, and they cannot be unaware of public concern over emissions from particular industries. Nevertheless, it is in our view important that in the Inspectorate's dealings with industry the appropriate professional competence should be available, and should be seen to be available. It is equally important that procedures should be introduced to enable local authorities and other interested parties to play a part in the determination of abatement programmes and of bpm. It is no longer acceptable that decisions on emissions which directly affect the daily lives of many people should be taken by a small, specialist body consulting only with industry; greater participation is needed, not least so that the assumptions and problems on which the decisions depend are more widely understood.

204. The provision of professional, including economic and financial, expertise for the Inspectorate can best be dealt with in the context of more general changes in central organisation which we consider in Chapter IX. The arrangements which should be made to bring about greater participation are more difficult to decide. In the following paragraph we have outlined one approach, conscious that it may not be the best, in order to indicate the sort of arrangements we envisage. We recommend, however, that the precise machinery to be introduced should be considered further by the Department of the Environment in consultation with other interested parties.

205. When significant changes in bpm are under consideration for a particular industry the Inspectorate should announce the fact and should invite representations from industry, local authorities, the scientific community, amenity groups

and other interested parties. The announcement should include a statement of the issues involved in terms that could be understood by the non-expert, and should set a time limit by which comments would need to be submitted. The Inspectorate should make their own decisions on how best to receive such representations; in some cases, a written approach would be adequate, while in others a meeting would be more appropriate. The final decision on bpm should be taken by the Alkali Inspectorate after this consultation but the decision and the main reason for reaching it should be announced publicly.

206. National bpm are likely to include maximum emission limits but bpm can involve any aspect of plant operation or design which affects emission performance. Other aspects of plant design that should be embodied in the national definition of bpm relate to the reliability of pollution control machinery, the provision of standby equipment and the availability of spare parts.

207. National emission limits on the lines determined above would immediately provide a basis for the design of new works, but modified limits would need to apply to particular existing works over agreed periods of time to take account of the costs and time involved in modifying plant and of other local circumstances. The determination of bpm for a particular works is very largely a matter for the District Inspector concerned, although he may call on advice from his headquarters. In any event, negotiations with a works about bpm, and in particular on the nature and timing of future improvements in emission control, are usually conducted at present by the Alkali Inspectorate without formal consultation with other local interests.

208. We consider that at this local level too, some machinery for consultation is needed. We do not wish to change the arrangement under which detailed negotiations with a works are generally conducted by the Alkali Inspectorate alone. As now, the final responsibility for deciding bpm in conjunction with industry and for approving equipment before operations can start should rest with the central inspectorate. However, we think that agreement should not be reached on any substantial item (e.g. the timing for the introduction of plant or practices intended to affect a significant reduction in emissions) without prior consultation with other interests. We envisage that a procedure similar to the one we have described above should be carried out at local level. There should be prior notification to, and if necessary discussion with, local authorities and other relevant bodies—perhaps a local university or polytechnic, and local amenity groups or residents' associations. It might be desirable to provide for the possibility of special investigation involving senior Alkali Inspectors (augmented as necessary by financial, medical, ecological or other expertise), local authority representatives and works management in cases where there is initially great disagreement between the Inspectorate and local authority on action that needs to be taken. Again, just as national bpm would continue to be published nationally by the Inspectorate, the main components of agreed bpm for each registered works should be available to the public. Agreed bpm for a works should normally include arrangements for monitoring emissions.

### **Bpm and local authorities**

209. The advantages of the "best practicable means" approach and prior approval of equipment as used for registered processes should be extended to those processes that are controlled by local authorities, and especially to those which cause, or may cause, significant air pollution. Local authorities should have guidance on the best practicable means of controlling the more difficult processes. Some guidance of this sort has already been issued, for instance in the Ministry of Housing and Local Government's Memoranda on Chimney Heights\* and on Cold Blast Cupolas†. More such guidance is needed, not least so that requirements do not vary widely in similar circumstances. It should also be borne in mind that although local conditions may sometimes justify more stringent requirements than those that apply elsewhere, the viability of established industry has to be taken into account.

210. We therefore recommend that for the more technologically difficult non-registered processes guidance should be issued by the Government: this would amount in effect to a central definition of bpm, including emission limits where appropriate, and should be determined by the same method as that we suggested for registered works and embodied in a memorandum of guidance or in regulations. There should be some flexibility in either case, as, by definition, the bpm applied at a particular works should take account of local circumstances; therefore the centrally determined bpm would provide only a guide. It would be for local authorities, in negotiation with industry, to agree the emission limits, equipment and operating practices constituting bpm for a particular works. There should be a central appeal procedure to resolve those cases where local authorities and industry are unable to reach agreement. Similarly, where local authorities have taken over control of individual registered works, they should normally follow the Alkali Inspectorate's criteria. If a local authority's demands are more stringent than those of the Alkali Inspectorate for similar works it should be possible for the works to appeal. We suggest that both types of appeal should be to an independent tribunal reporting to the Secretary of State rather than to the Alkali Inspectorate.

211. It is unlikely to be possible, or even desirable, for central guidance to be issued on all non-registered industry. For those industries where guidance is not given, bpm would be determined locally through negotiation between the local authority and individual works. For some of these processes, even though they are by definition minor sources of pollution, there might be a case for collaboration between local authorities in deciding the best way of tackling problems.

### **The registration of works**

212. At present, the Alkali Inspectorate have the powers of prior approval and annual re-registration of works: local authorities have limited powers of prior approval for combustion processes and none for non-combustion processes, except under planning control and Building Regulations.

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\* HMSO 1967 (2nd Edition).

† HMSO 1968.

213. We consider that there should be changes in the way registration is carried out. The process of annual re-registration of works as it operated up to the beginning of 1975 was, at least in England and Wales, a pure formality. Works were re-registered as a matter of course and the sanction of withholding registration has never been used. In Scotland, the Industrial Pollution Inspectorate have successfully threatened an operator with the withholding of registration unless there were substantial improvements.

214. Applications for registration or re-registration of works should be submitted through the local authority, who would be obliged to pass them on to the Alkali Inspectorate. As is the situation now, any new registrable works would need the prior approval of the Inspectorate before it could start operations.

215. The Alkali Inspectorate should not simply register a works and issue a certificate to that effect. They should issue a document, which we refer to as a "consent", with conditions defining the bpm for the works. The consent would be renewable after a period of, say, two or three years stated in the consent. More stringent requirements should not be imposed within this period so as to allow reasonable stability for industry. It would be possible to refuse to renew a consent, and if the conditions were repeatedly infringed it could be withdrawn. So as to protect Inspectors from unreasonable local pressure to withdraw a consent and thus close a works down there should be conditions attached to the power: possibly that the withdrawal or refusal to renew had to be authorised by the Secretary of State and that the power could only be used if a significant risk to human health, crops or livestock was involved. Any prosecution would be not for failure to use bpm but for infringement of the consent conditions. Local authorities should keep on a publicly accessible register copies both of consents and of the results of monitoring carried out under the terms of those consents.

216. This would have several advantages over the present system. A conditional consent would mean that all concerned, including the local authority, industry and the public, would know where they stood. Prosecution for infringement of consent conditions rather than for failure to use bpm would have the advantage of clarity and should make prosecution easier. We have heard of a case where a certain registered works emitted dark smoke for a considerable period in contravention of the agreed bpm. The emission was witnessed by two Environmental Health Officers who were prepared to give evidence in a prosecution. But because it could not be demonstrated what had caused the emission of dark smoke and thus that bpm had not been used, the prosecution could not be pursued. A conditional consent would mean that this situation could not arise: one condition would relate specifically to the emission of dark smoke.

217. Some provision would have to be made to deal with situations where, because pollution control equipment has broken down or for other reasons, a decision has to be taken whether to accept increased pollution temporarily or whether a plant should be closed down or operated at a reduced capacity.

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The District Inspector should have authority to amend or waive the consent conditions for a limited period where he considered this to be justified. The circumstances and the action taken should be reported to the Chief Inspector and to the local authority.

218. It is clearly unnecessary to adopt such a consent procedure for all non-registered industry, but we think that local authorities should be able to issue consents to works which create significant air pollution problems. These would generally be those works for which we would expect central advice to be provided. There should be a right of appeal by industry to the Secretary of State on the need for the consent procedure to be applied, and on the conditions imposed where these went beyond the centrally issued guidelines. Again, copies of the consents should be kept on a publicly-accessible register.

### **Enforcement**

219. It is clear to us that the Alkali Inspectorate consider that their essential role is to work out, in consultation with industry, what can best be done to control pollution and then impose conditions on design, maintenance and operation of the plant. While they spend much time inspecting works to make sure that conditions are observed this is a secondary objective.

220. In the course of our study we visited many works where emissions were causing concern to local people. In these cases we sought an answer to the question: do the emissions from this works create difficulties because the levels of performance and operation (the agreed bpm for the works) are not being observed, or are these levels not good enough to avoid complaints? The question is important, for it determines the action that should be taken. If the first is true the fault lies with the works and with the control machinery; if the second, the fault (if there is one) lies in an insufficiently strict definition of bpm for the works.

221. It is, however, remarkably difficult to answer this apparently straightforward question. In part this reflects the complexity of many large industrial processes which makes it very difficult to ascertain whether at any particular time agreed emission levels are being observed. In part it reflects the capacity of the atmosphere to disperse pollutants which is such that in a typical industrial area it may be impossible to trace the source of a particular emission. We believe, however, that in part the problem is due to inadequate monitoring (both by instruments and by visual inspection) of the day-to-day performance of industry.

222. The way in which a plant is operated may make a great difference to the air pollution it causes. Detecting malpractices which lead to unnecessary emissions, and which call for more effective supervision by works management, may well require closer observation than it is generally possible for an Alkali Inspector to provide. We have previously remarked on the smallness of the Inspectorate which limits the number of visits they can make to individual works. The thought that particular works might be able to achieve a better emission performance than they generally do was prompted during some of

our visits. It was often asserted by local people that pollution was conspicuously lower than usual because of our presence in the district. Whatever the truth of these assertions we are certainly aware that in several instances firms we have visited made a point of cleaning up or even instituting improvements in preparations for our visit. We were not there to inspect the firms concerned, and these changes did not affect our enquiries. It is to be hoped, however, that any benefits that resulted from our visits will be lasting.

223. Local people who were troubled by industrial emissions frequently alleged to us that these were worse at night or at weekends; that it was the practice of the works concerned to get rid of their pollution when the controlling authorities were not available. We have no doubt that in many cases these allegations are unsound; atmospheric conditions at night may well cause heavier deposits, and people are likely to be more sensitive to pollution during their weekend leisure time than during their working week. The well-known rarity of nocturnal visitations from the controlling authorities, however, is bound to lead to public misunderstanding at the very least: it may encourage firms and their employees to reduce their standards at times when they are virtually certain they can get away with it. We accordingly recommend that both Alkali Inspectors and Environmental Health Officers should in future pay more visits outside normal working hours and should make suitable arrangements for monitoring at these times.

224. We think that some increase in strength of the central Inspectorate is needed; this matter is considered further in paragraphs 298-299. However, it is not our view that the weaknesses in control arrangements we have suggested above can be overcome entirely by this means. The adequate inspection of troublesome emissions, if this was to be done solely by the Alkali Inspectorate, would call for an increase in their numbers, and for changes in the balance of their work, which would ultimately be detrimental to their role as a specialist body. The best answer, we believe, is to be found in effective co-operation between the Inspectorate and local authorities.

225. Local authority officers have powers under existing legislation to enter registered works where they have grounds to think that a statutory nuisance has been caused, though as we noted previously (paragraph 139) there appears to be uncertainty about these powers in some local authorities. In any case the powers should go further; Environmental Health Officers should have a clear statutory right to enter registered works where they have reasonable grounds to suppose that the consent conditions for the works are not being observed. They would have no powers to require a works to take any action over specific emissions. We envisage that they would establish the facts about a particular emission and report their findings to the District Alkali Inspector as well as to the firm concerned, and, of course, to their own employers. In this way the local knowledge of Environmental Health Officers and the fact that they are generally in a position to observe industrial emissions on a day-to-day basis would be allied with the Alkali Inspectorate's expertise to bring about more effective supervision of emission performance.

226. We should, however, like to go even further in some cases. Certain Environmental Health Officers who have the necessary technical understanding

of the processes and the pollution control problems at particular works could be formally nominated as agents of the Alkali Inspectorate in relation to those works. These nominated Environmental Health Officers would be empowered within limits to act as Alkali Inspectors; they could, for example, discuss particular pollution incidents with the works management and they would have the delegated authority of the District Inspector in requiring action to be taken. The nomination of an Environmental Health Officer could be proposed by either the local authority or the Alkali Inspectorate but would need the agreement of both. We think that such an arrangement could benefit local authorities by enabling some of their officers to gain improved knowledge of the control of pollution from specialised industrial processes, and that it might be seen as a first step towards the eventual descheduling of particular works and their transfer to local authority control. The arrangement could also benefit the Alkali Inspectorate by making local assistance available and we accordingly envisage that the work of Environmental Health Officers as formal agents would be partly funded by the Alkali Inspectorate. However, we have not discussed this proposal with the authorities concerned and we recognise that it may present difficulties in practice. In particular the Environmental Health Officers concerned would in effect serve two masters, the Alkali Inspectorate and their local authorities. In the great majority of cases we believe that the aims of the central and the local authorities would be the same but we recognise that if they were not the Environmental Health Officer would be put in a difficult position. In that event the Alkali Inspectorate would have no option but to withdraw, or refuse to accord, delegated powers. In our view, an arrangement of this sort, whereby some local authority officers would act as agents of the central authority, would go a long way towards increasing co-operation and removing misunderstanding between the central and local air pollution agencies. We recommend that the Department of the Environment should discuss the proposal with the appropriate authorities.

### **Prosecution**

227. Collaboration between the Alkali Inspectorate and local authorities is the more important where the emissions from registered industries cause much local concern, and particularly where the possibility of prosecution needs to be considered. It is the Alkali Inspectorate's general policy to issue infraction letters where emissions are judged to have contravened the Alkali Act, and normally to prosecute only as a last resort after repeated or serious infractions. The present system of control has achieved great advances in the reduction of emissions and we are satisfied that much of this progress may be attributed to the policy of persuasion and co-operation with industry that the Inspectorate have adopted. An aggressive policy of confrontation, involving prosecution for every lapse, would destroy this basis of co-operation; it would harden attitudes and dispose industry to resist the imposition of costly programmes for pollution abatement. We accept that such a policy would be counter-productive. It would also be inappropriate. Industry generally is aware of its responsibilities in pollution control. If a firm has installed control equipment to the satisfaction of the Alkali Inspectorate and is striving by all reasonable means to maintain its emissions at an acceptable level, there is little to be gained by prosecution

in the event of a pollution incident arising from, say, an unforeseeable breakdown of equipment. On the other hand, the acceptance by industry of abatement measures does not necessarily mean that agreed practices for minimising emissions will always be observed at the works. For example, excessive emissions might arise from a process involving manual operations because of inadequate management supervision. There is a danger that infrequent inspections by the controlling authority, together with a known reluctance to prosecute, will encourage some works to be careless in their attitudes to the day-by-day control of emissions.

228. It should be noted, too, that prosecution is not the only sanction. Industry, and especially large industry, is concerned about its public image on environmental matters. Public opinion, expressed through complaints by local authorities, Parliamentary Questions and so forth can be an effective sanction. Nevertheless, we are clear that where infractions by a firm are frequent or severe prosecution should follow automatically. We do not think that such a reasonable but firm attitude to prosecution would harm the Alkali Inspectorate's co-operative relationship with industry; it is illogical to accept the measures required to reduce pollution but to deny the need for firm enforcement.

229. We also recommend that where an infraction letter is issued to a firm the fact should be made public, so that after a period of time the effectiveness of this policy may be gauged. However, it should be noted that a low ratio of prosecution to infractions is not of itself an indication of lack of zeal on the part of the Inspectorate; it may on the contrary indicate their success in preventing a recurrence of any infraction.

230. We would hope that the involvement of Environmental Health Officers with registered works on the lines we have described above would assist the Alkali Inspectorate in detecting those malpractices which lead to excessive emissions. Local authorities should have the right to make representations to the Alkali Inspectorate, publicly or in confidence, about the performance of particular works and the need for legal action. The figures of infractions and prosecutions under the Alkali Act from 1970 to 1974 are as follows:

**TABLE 5**  
**Alkali Act (England and Wales)**

<i>Year</i>	<i>Infractions</i>	<i>Prosecutions</i>	<i>Case Withdrawn</i>	<i>Prosecutions as a % of infractions</i>	<i>Successful Prosecutions</i>
1970	25	2	—	8	2
1971	38	3	1	8	2
1972	58	3	—	5	3
1973	59	5	3	9	4
1974	57	2	4	7	2

(Source: Annual reports on Alkali, etc. Works).

(Note: Infractions and prosecutions are listed in the year in which they occurred, although a prosecution may relate to an infraction which took place in the previous year.)



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We understand that more prosecutions would have been carried through but for the technical inadequacies of the Alkali Act. The replacement of the Act by more modern legislation, and particularly by the system of consents we advocate, should make prosecution easier and thus more effective.

231. Comprehensive figures of contraventions of the Clean Air Acts by non-registered works and subsequent prosecutions are not centrally compiled, but many local authorities in England and Wales report these to the Environmental Health Officers' Association. The figures for the last five years, together with the percentage of authorities reporting them, are as follows:—

TABLE 6  
Clean Air Acts (England and Wales)

Year	Local authorities who reported figures as % of all relevant local authorities	Contraventions	Prosecutions	Prosecutions as % of Contraventions	Successful Prosecutions
1970	58	2,417	88	4	81
1971	56	2,527	133	5	123
1972	54	2,928	94	3	84
1973	40	2,452	60	3	52
1974	75	2,656	50	2	43

(Source: Annual Environmental Health reports).

232. These figures are obviously not directly comparable with those for prosecutions under the Alkali Act; the self-selected sample of local authorities may not be representative and there is no means of comparing the seriousness or the effect of an "infraction" with that of a "contravention". Nevertheless, the figures show that local authorities prosecute in an even smaller proportion of cases than do the Alkali Inspectorate, despite their more modern legislation. Probably this is sensible: not only may "contraventions" be fairly unimportant but persuasion is the best weapon for local authorities as well as for the Alkali Inspectorate. Again, severe or repeated contraventions should automatically lead to prosecution.

233. We would hope that the Alkali Inspectorate will co-operate in enforcement against non-registered works as much as local authorities against registered ones. Alkali Inspectors should always be prepared to give Environmental Health Officers the benefit of their experience, and even if necessary to give technical evidence in court.

234. The effect of prosecution by both the Alkali Inspectorate and local authorities is reduced by the low level of penalties involved. Offences under the Public Health and Clean Air Acts can be tried only summarily with a maximum

fine for the more serious offences of £100. (This will be raised to £400 when the relevant part of the Control of Pollution Act comes into force early in 1976.) Actual fines are lower: in recent years they appear to have been in the region of £30. This is not much of a deterrent. Since the Health and Safety at Work etc. Act came into force at the beginning of 1975, offences under the Alkali Act have been triable both summarily, where the maximum fine is £400, and on indictment where the maximum penalty is an unlimited fine and two years' imprisonment. It is too soon to judge whether the increase in the maxima has made any difference to fines imposed but in the five years up to the end of 1974, when the maximum fine for Alkali Act offences was £100, the average fine was about £50. The maximum fine for £100 was imposed several times: on one occasion when this was done the fine was reduced on appeal to £25.\* On another recent occasion a fine of £5 was imposed.† These too, are hardly deterrents.

### **Information and the public**

235. We said in Chapter VI that we believe the public should have the right to know the state of the air they breathe and the amounts of pollution emitted by both registered and non-registered industry. In paragraph 125 we remarked that the Health and Safety at Work etc. Act 1974 effectively prevents the Alkali Inspectorate from making public details of emissions from registered works except with the works' consent; there is no such bar on local authorities releasing information on non-registered works. While we deplore this retrogressive step we are pleased to note that the provisions of the Control of Pollution Act 1974 remove its worst effects. The effective embargo on the Alkali Inspectorate making emission data public is not removed but local authorities are given the right to demand from registered industry all the information on emission data that is made available to the Inspectorate. Any local authority making use of these powers must consult from time to time with local interests, including both industrial and amenity groups, about the way in which the data are collected, edited and published. All the data must also go onto a publicly accessible register. There are some safeguards for industry, which can appeal to the Secretary of State against demands for information the release of which could prejudice the interests of the State or a trade secret or which would be excessively expensive to prepare. These provisions are due to come into force in the spring of 1976.

236. It is reasonable that local authorities, who should have general oversight of the air in their areas, should be responsible for obtaining, collating, editing and publishing the information. But these powers do not go far enough. The controlling authorities should also be able to collect and release such information themselves and we recommend that the existing bar on the Alkali Inspectorate doing so should be removed. As we recommended in paragraphs 215 and 218, the consents issued for all works, scheduled or non-scheduled, should also be kept by the local authority concerned on a publicly available register; preferably on the same register as the emission data.

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\* 111th Annual Report on Alkali, etc. Works 1974 page 19.

† 109th Annual Report on Alkali, etc. Works 1972 page 44.

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### **Complaints procedure**

237. Information of this kind is valuable but inevitably it takes some time to collect and collate and cannot be available immediately. But people living near a works and affected by it want to know what is happening immediately something goes wrong and to be able to have justified complaints dealt with at once.

238. Complaints by the public about emissions from registered works are usually made to the local authority; after all, most people are not aware that the Alkali Inspectorate exist. Here again there is a need for close co-operation between central and local air pollution authorities. The local authority should be regarded as the normal channel for complaints, though there should be nothing to stop anyone going directly to the Alkali Inspectorate if they prefer. There should be a routine procedure for passing complaints about registered works from local authorities to the central inspectorate; such channels already exist in some areas. However, on receiving a complaint or seeing something wrong for himself an Environmental Health Officer who has not been appointed as an agent to the Inspectorate should judge whether the matter is sufficiently serious as to require immediate investigation. If it is he should attempt to contact the District Alkali Inspector at once, and if the Inspector is unable to get to the works within a reasonable time the Environmental Health Officer should go himself. Having investigated the circumstances that led to the complaint he should report them to the District Inspector. Any Environmental Health Officer who acts as the Inspectorate's agent (see paragraph 226) would of course also be able to demand remedial action when necessary, though he might wish to consult the District Inspector first.

### **Information for local authorities on registered works**

239. Communication between the Inspectorate and local authorities should by no means be all one way. The Inspectorate should keep local authorities informed about developments in their thinking about emission problems at particular works. District councils should be entitled to receive periodic written reports from the District Inspector on the performance of registered works in their areas: such reports might be annual, or more frequent for works that are causing particular difficulties. There should be occasional opportunities for councillors to question the District Inspector directly about his reports if they wish. Informal arrangements of this kind do exist but they should be general and somewhat more formal.

### **Crown exemption**

240. Several local authorities have raised with us the question of the exemption of the Crown—which in practice means government departments, military units and hospitals—from the air pollution control legislation. The Crown is not normally bound by any legislation but in many instances it has pledged itself to behave as though it were. An example is development control, where government departments consult planning authorities on virtually all new

development. Planning permission is not needed and so cannot be refused but when the planning authority dislike a proposal the Secretary of State for the Environment arbitrates.

241. The Clean Air Act 1956 provides (section 22) that a local authority which observes an emission from Crown premises in contravention of the Act should notify the relevant Minister who must then hold an inquiry. If he finds that the complaint is justified he must do something about it. This provision seems hardly ever to have been used: local authorities might care to use it more often.

242. Hospitals seem to take most advantage of Crown privilege. Of course they have particular problems in that they have infected matter to dispose of which must be burnt and, given the scarcity of resources for hospital re-building, the provision of new boilers or adequate incinerators in old hospitals may have low priority. Nevertheless it is most important that hospitals should do their best to control smoke, particularly when they are in residential areas where smoke control is proposed or operative. Although many people welcome smoke control others resent it and are only convinced of its necessity when they are told of the benefits to health of control. They find this argument unconvincing if they can see for themselves that the local hospital is producing offensive-looking smoke with impunity.

243. We have considered whether the new legislation we are proposing should bind the Crown. This has been done in some recent legislation, such as the Control of Pollution and Health and Safety at Work Acts, but we note that although the Crown is bound to obey the law in these cases the normal enforcement machinery does not apply. Although it would be helpful if the Crown were bound in this way, more is needed. We recommend that the Government should publicly pledge itself to conform to the spirit of the legislation and to consult with the relevant pollution control officers on the best means of avoiding or reducing air pollution.

### **Conclusion**

244. While we have only briefly sketched the relationships and working arrangements which we should like to see develop between local authorities and the central inspectorate, the overall aim is clear: to achieve a partnership between the two which will make the best use of the expertise and abilities of both. It is essential to preserve a single central controlling authority for registered works but it is essential, too, to recognise the duality of interest in these problems. We believe that the arrangements we have proposed would lead to a more effective, and a more open, system for controlling air pollution.

## CHAPTER VIII

### THE HEALTH AND SAFETY COMMISSION AND EXECUTIVE AND ENVIRONMENTAL POLLUTION

245. In the Foreword to this Report we referred to the recent transfer of the Alkali Inspectorate from the Department of the Environment to the Health and Safety Executive. In subsequent chapters we have been mainly concerned with the responsibilities and methods of working of the Inspectorate (including the Industrial Pollution Inspectorate in Scotland) and of local authorities, and with the relationships between them. We have made a number of recommendations for changes which we believe will improve existing procedures. In principle, these changes could be introduced whether the Alkali Inspectorate were located within the Department of the Environment or, as now, within the Health and Safety Executive, though the practicability of introducing them under the present arrangements would no doubt depend on the way in which the Inspectorate developed within the Executive. The transfer of the Inspectorate to the Health and Safety Executive raises important general questions which we consider in this chapter.

246. The Health and Safety Commission and its operating agency, the Health and Safety Executive, were set up as a direct result of the Report of the Committee on Safety and Health at Work, chaired by Lord Robens\* (the Robens Committee). That Committee had been appointed in 1970 with the following terms of reference:

“To review the provision made for the safety and health of persons in the course of their employment (other than transport workers while directly engaged on transport operations and who are covered by other provisions) and to consider whether any changes are needed in:

- (1) the scope or nature of the major relevant enactments, or
- (2) the nature and extent of voluntary action concerned with these matters, and

to consider whether any further steps are required to safeguard members of the public from hazards, other than general environmental pollution, arising in connection with activities in industrial and commercial premises and construction sites, and to make recommendations”.

247. In recommending that the Alkali Inspectorate should be included in the Authority on Health and Safety they were proposing the Robens Committee said:

“We believe that where the internal and external problems arise simultaneously from the same technical source, it is not sensible to divide the

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\* Report of the Committee on Safety and Health at Work. Cmnd. 5034. HMSO 1972.

control arrangements. Both the Factory Inspectorate and the Alkali and Clean Air Inspectorate are concerned with atmospheric contaminants arising from sources which both must inspect. For example, in February 1972 an Inquiry—linked to this Committee—was set up to look at the situation at a lead smelting plant at Avonmouth. This followed public disquiet about reports of lead poisoning amongst employees at the factory and also about the possibility of lead contamination outside the factory, a situation that illustrates the close relationship between the concerns of the Factory Inspectorate and those of the Alkali and Clean Air Inspectorate. In our view, the Alkali etc. Works Regulation Act and the Alkali and Clean Air Inspectorate should be brought within our proposed unified arrangements for safety and health at work”.\*

The Committee went on to say:

“We think that this type of problem can be distinguished from more discontinuous matters such as arrangements for the safe disposal of liquid and solid industrial wastes, where the problems arising are of a different character”.†

248. We note that the terms of reference of the Robens Committee specifically excluded consideration of questions of general environmental pollution. The Committee’s concern was with the health and safety of people at work and with the protection of members of the public from direct hazards arising from the workplace. The Committee recommended the transfer of the Alkali Inspectorate to the Health and Safety Executive because they saw advantages in this from the viewpoint of the health and safety of workers, but they did not consider the implications of this transfer for pollution control in a wider sense. Our concern is with general environmental pollution, and the implications of the transfer from this viewpoint are for us a matter of prime importance.

249. There is clearly a need for liaison between the Alkali and Factory Inspectorates where internal and external air pollution arises from the same sources. However, it is in our view an over-simplification to argue from this that common control arrangements should apply. This ignores the great differences in the nature and scope of the interests of the two Inspectorates. The Factory Inspectorate are principally concerned with the protection of workers, and of the public near the workplace, from hazards arising directly from industrial processes. These may range, for example, from bricks dropped from scaffolding to a major explosion such as that at Flixborough. Though the health hazard from air pollution within industrial works is, of course, important, it is a small part of the Factory Inspectorate’s responsibilities. The Alkali Inspectorate, on the other hand, are concerned solely with air pollution and with its effects on the population as a whole and on the wider environment.

250. The criteria employed by the two Inspectorates in assessing air pollution are different. Within a works there may be relatively high concentrations of pollutants to which workers are exposed for a limited period each day. The criteria

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\* Op cit. Paragraph 107.

† Op cit. Paragraph 108.

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for acceptable pollution levels will take account of this limited exposure and of the possibilities for monitoring effects on the health of employees. Levels of pollutants have sometimes to be accepted as concomitants of employment which would be manifestly unacceptable in the external environment. In contrast, the criteria employed by the Alkali Inspectorate must reflect continuous exposure to pollutants under conditions where the consequences cannot readily be evaluated, and they must allow for the effects on particularly susceptible groups within the general population. They must also take account of the effects of pollution on amenity as well as health, and of possible damage to crops or livestock or to any aspect of the natural environment.

251. Thus quite different considerations apply to the control of air pollution inside and outside factories. Any arrangement for control must ensure that these differences are not obscured and that consideration of the effects of pollution on the environment as a whole is not subordinated to concern for the narrower issue of safety and health within or around the workplace. The move of the Alkali Inspectorate to the Health and Safety Commission and Executive must be assessed against this requirement and we discuss this matter below. We note first, however, that common control could be taken further than this; a possible eventual step would be the amalgamation of the Alkali and Factory Inspectorates to form a single body. Indeed, the conclusions of the Robens Committee would seem to make this inevitable.

252. We would be strongly opposed to amalgamation of the Alkali and Factory Inspectorates. This would mean the loss of a body specifically and identifiably responsible for environmental problems arising from industrial emissions. Concern for the environment as a whole would inevitably become a relatively minor responsibility in an organisation largely devoted to industrial health and safety problems. This danger exists even if the Alkali Inspectorate were to be preserved as a separate body within the Health and Safety Executive; it stems from the nature of the Health and Safety Commission.

253. That the Robens Committee were primarily concerned with the workplace is reflected in the composition of the Health and Safety Commission, the policy-forming body which oversees the work of the Executive. The Commission consists of three people nominated on the advice of the Confederation of British Industry, three on the advice of the Trades Union Congress and two nominated by local authority associations. There is, statutorily, provision for a ninth member though we do not know of any intention to make a further appointment. Is a body so constituted an appropriate one to deal with matters which have wide environmental implications? It has been stated in evidence to us that the local authority representatives on the Commission will adequately represent the interests of the public at large. To say the least, this is to take a singularly narrow view of what the interests of the environment require.

254. The Health and Safety Commission is essentially an industry-oriented body; indeed, this is entirely appropriate in relation to its concern with the health and safety of people at work. But the interests of industry, and even of

workers within industry, may often be opposed to those of the external environment. In this context we emphatically reject the view that the interests of workers and the local public necessarily correspond. In the nineteenth century, when employees' houses were clustered in the shadow of a mill, local residents and workers formed the same community, and pollution abatement which threatened earnings or jobs might have been uniformly unpopular. But even in industrial areas such a situation rarely applies now. During our visit to United Carbon Black Ltd.'s factory in Swansea we were struck by the fact that hardly any workers at the plant lived in the neighbouring housing estate which had been the source of so many complaints. In matters of safety, most notably in relation to a disaster of the Flixborough kind, the interests of the workers at a plant and the public living nearby are the same; in matters of pollution they are very often different, and even opposed. We do not underestimate the importance of worker health and safety but our concern is to ensure that there is no inherent organisational bias against environmental protection.

255. The Alkali Inspectorate's proper concern is with the environment as a whole. Their policies should be evolved not as an adjunct to industrial safety but as a part of an integrated approach to the control of environmental pollution. This cannot be achieved within the Health and Safety Commission and Executive, which are quite simply inappropriate bodies for the purpose. It is true that the Health and Safety Commission is formally responsible to the Secretary of State for the Environment on air pollution matters, but this is insufficient to ensure the essential degree of interaction between policies for the control of industrial air pollution and wider environmental considerations.

256. We have considered whether the fundamental unsuitability of the Health and Safety Commission as an environmental body might be remedied by changes in its composition; whether, for example, the Commission might be enlarged to provide some representation of environmental interests. Our conclusion is that any such solution is untenable and serves merely to expose more clearly the fallacy in bringing together concerns for worker protection and the environment in a common body. The Health and Safety Commission is an industry-oriented body concerned with the safety of workers. An increase in environmental representation of one or two members among the Commission's nine would be an inadequate guarantee of environmental interests, while the more radical step of appointing half its membership on an environmental remit would be totally inappropriate in relation to the Commission's prime purpose.

257. Our firm conclusion is that the incorporation of the Alkali Inspectorate in the Health and Safety organisation is potentially damaging to the interests of the environment. The Health and Safety Commission and Executive are not constituted to deal adequately with environmental issues, and they were not set up primarily for this purpose. We believe strongly in the desirability of a unified approach to pollution problems; most pollution control rests with water and local authorities in structures that are closely linked with the Department of the Environment. It is wrong that one aspect of control, that exercised by the Alkali Inspectorate, should be dealt with any differently. Our views on this matter are strengthened by other considerations which we give in the next chapter. We there



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propose a new, unified pollution inspectorate which would apply the techniques of the Alkali Inspectorate to all difficult industrial pollution problems, whether these relate to air or water pollution or to wastes. The new inspectorate would be founded on the Alkali Inspectorate but would have a wider and more significant environmental role. The arguments we see against the inclusion of the Alkali Inspectorate within the Health and Safety Executive would apply even more strongly to the new inspectorate. Environmental policy is properly the concern of the Department of the Environment, and the expert knowledge of the inspectorate we propose would be crucial to the Department's work. It would be clearly unacceptable for the inspectorate not to be directly responsible to the Department.

258. We realise that the removal of the Alkali Inspectorate from the Health and Safety Executive would mean a second change within a short time for the staff concerned. However, we have the assurance given us by the Secretary of State for the Environment that the transfer of the Inspectorate to the Executive should not prevent later changes; and the assurance of the Health and Safety Commission that "major changes in organisation or administration will not be contemplated by the (Health and Safety) Commission until the report of the Royal Commission had been considered".\* At this stage the changes that have been made, so far as they affect the working lives of the staff, have been superficial.

259. Another possible problem arises from the legislative position. Parts of the Alkali Act have been repealed and cannot be reinstated without new legislation. Obviously if the Inspectorate were to leave the Executive it would in the long term be much more satisfactory if they worked under new legislation principally designed to deal with pollution of the environment rather than worker health and safety. We have already recommended new, unified air pollution legislation on other grounds in paragraph 199. We have been assured, however, that removal of the Alkali Inspectorate would not depend on new legislation being enacted because they, like their Scottish colleagues, could work under an agency agreement.

260. We accordingly recommend that the Alkali Inspectorate should be removed from the Health and Safety Executive forthwith and should return to the direct control of the Department of the Environment, though with the changes in organisation which we describe in the following chapter. This change will not only benefit environmental protection, but it will further the real aims of the Health and Safety legislation by freeing the Executive from the distraction of pollution of the external atmosphere and allowing them to concentrate on their vitally important task of supervising the health and safety of people at work.

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\* Evidence submitted by the Health and Safety Commission and Executive. January 1975.

## CHAPTER IX

### A UNIFIED POLLUTION INSPECTORATE

#### **Introduction**

261. As our study progressed we found increasing difficulty in limiting our thinking to the control of air pollution alone. Because of the connections that exist between different forms of industrial pollution it makes little sense to look at one aspect of control in isolation. As the Royal Commission on Environmental Pollution our overriding concern is with the total effect of pollution on the environment; we could not be limited by the terms of reference for our present study to proposing arrangements for controlling air pollution which might increase the problems of water pollution and the disposal of industrial wastes or indeed, in some cases, of noise generation or derelict land.

262. We propose in this chapter the transformation of the Alkali Inspectorate to form a new body, a unified pollution inspectorate with widened responsibilities. In our deliberations we have found it helpful to think of this body as "Her Majesty's Pollution Inspectorate" or HMPI, and for convenience we use this designation in the following discussion. Thus, in recommending that the Alkali Inspectorate should revert to direct control by the Department of the Environment, we do not intend a return to the previous system. We wish to see a more concerted approach in dealing with difficult industrial pollution problems, whatever the form in which they arise, and the creation of HMPI is essential for this purpose.

#### **The transferability of pollution**

263. The three principal forms of pollution—of air, water and land—are often very closely linked. In order to reduce atmospheric pollution, gases or dusts may be trapped in a spray of water or washed out of filters. This leaves polluted water, which if not discharged to a sewer or direct to a river or the sea can be piped into a lagoon to settle and dry out, leaving a solid waste disposal problem. The pollutant may even go full circle by blowing off the lagoon as a dust. Other examples of the possible transference of pollution include water seeping through refuse tips, smoke from the incineration of rubbish or sludge, and pollution of land where sewage sludge containing heavy metals is used as a fertiliser.

264. There are many examples to be found of practical problems arising from the transference of pollution but we will quote only a few. During an informal visit to a water authority before this study began, we were told that their problems in cleaning a particular river had been greatly exacerbated by the Alkali Inspectorate's requirements for reducing atmospheric pollution from a solid smokeless fuel plant, the resulting effluent being run off into the river. There had been no liaison between the two bodies. We noted a similar effect at a London

power station where the flue gases are washed to remove the sulphur dioxide: the calcium sulphate and sulphite effluent is disposed of in the Thames, causing deoxygenation. It may be that in both cases it was more important that the air rather than the river should be improved, but no one has been in a position to judge this. Another example is provided by a plant we visited where a choice had originally to be taken between the proposed process developed in pilot studies, which gave rise to minimum air pollution but a substantial—and expensive—solid waste problem, or one which avoided the solid waste problem but produced more air pollution. What happened here was that the Alkali Inspectorate took a “co-ordinated view” (for which they at present have no statutory authority) and decided that the second solution was the better one—so long as planned throughput was reduced and the proposed chimney height increased to preserve estimated ground level concentrations at the planned level. A fourth example comes from a plant recovering a heavy metal from a waste product. The residue is a highly combustible material containing traces of the heavy metal and if this were simply burnt there could be a risk of heavy metal fallout. We found that the Alkali Inspector concerned was making efforts to find a use for the residue which would involve neither an inflammable material being dumped nor any risk of heavy metal fallout. Strictly speaking this is not his job: but it is a job that needs doing and that seems to be no one else’s responsibility.

265. Unless an industrial pollutant can be eliminated as opposed to being transformed, it must be disposed of somewhere. It is sensible that the form and medium of disposal should be chosen to cause the least environmental damage overall and this is particularly important where a pollutant is toxic or potentially toxic. This optimisation obviously calls for co-operation between the controlling authorities and we were surprised to find from our enquiries that there appears at present to be virtually none. Most of the Alkali Inspectors and Environmental Health Officers we spoke with had no contact with their opposite numbers in water and waste disposal authorities, nor had they recognised the need for it. An argument they advanced in discussion on this matter made a virtue of this lack of contact. It was suggested that industry was likely to do more to reduce pollution overall if the controlling authorities independently pressed their requirements for improvements; co-operation in identifying priorities might strengthen industry’s hand in arguing that less urgent requirements should be deferred. We think there is little substance in this argument and we are more persuaded by one that points the other way; if all the money a company can spare on environmental improvements is taken up for improvements in one sector there will be none left for another, where pollution might be more unacceptable.

266. The ultimate source of industrial pollution is a process, which in general pollutes water and land as well as air to varying extents. We are convinced that there is a need for a more co-ordinated approach to the control of different forms of pollution from the same plant or process. At first sight this is to argue simply for more contact and co-operation between the authorities concerned. We believe, however, that the matter is deeper than this and that effective control of industrial pollution in its more difficult forms calls for more substantial changes in the present arrangements.

### **The approach to control**

267. We have already described the method of working of the Alkali Inspectorate and the impressive improvements they have brought about in reducing industrial emissions by their "best practicable means" policy and through their collaborative relations with industry. The essence of the matter is the Inspectorate's understanding of the technology of industrial processes. It is this knowledge which enables the Inspectorate to maintain effective pressure on industry for improved standards, for to be effective their requirements must be realistic in technological terms; it is this knowledge which qualifies the Inspectorate to become involved with industry in the design of new plant, thus ensuring that arrangements to control air pollution are considered as an integral part of design.

268. Our main concern is that the same technological knowledge and techniques should be brought to bear on the problems which arise in dealing with pollution in other forms. We do not think that this is so at present. To take first the question of toxic and solid wastes created by industry, even after the full implementation of the Control of Pollution Act 1974 the new waste disposal authorities will be charged only with the task of ensuring safe disposal of these wastes. It will not be within their remit to question whether the best practicable means have been adopted to eliminate or minimise the arisings of wastes from their inception, to reduce their volume or to change them to a less intractable form.

269. For industrial effluents discharged to sewers, or direct to rivers or estuaries, the position is less clear. Water authorities are responsible for deciding aims for water quality, and for setting consent conditions for discharges into watercourses consistent with these aims.\* However, although we have been prevented by the time constraints on the study from taking formal evidence on the point, we understand that it has not been the general practice for these authorities to question the industrial processes that create effluents and to apply the concept of best practicable means, backed by knowledge of the technology involved, to their prevention or reduction at source. In these circumstances the conditions imposed for effluents will reflect what a watercourse can accept rather than what industry could reasonably achieve. Where rivers are used for drinking water supplies very strict standards of water quality must obviously be observed and all but the most innocuous industrial discharges are ruled out. But where rivers or estuaries are already heavily polluted it will be more difficult to decide or justify the requirements to be imposed for the reduction of pollution, which could well be less demanding than industry could reasonably be expected to achieve on the best practicable means criterion. We emphasise here that we are not implying that water authorities fail to seek an improvement in grossly polluted waters. The point we are making is that progress in the reduction of pollution from industrial effluents is likely to be

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\* In Scotland, since the reorganisation of local government in May 1975, water supply, sewerage, sewage treatment and flood prevention are the responsibility of the regional councils and islands councils. Prevention of pollution of rivers and other waters, including control of discharges of sewage or trade effluent, is the responsibility of seven river purification boards and the three islands councils, together known as the river purification authorities.

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greater if an authority with expert knowledge of the processes involved and of the available technology for dealing with effluents at the point of arising is available to negotiate with industry.

270. Expertise of this kind, which already exists within the Alkali Inspectorate for dealing with the more difficult industrial air pollution problems, could doubtless be acquired by each of the nine English water authorities, the Welsh National Water Development Authority, and the ten Scottish river purification authorities: indeed we have been told that some of these authorities are planning to develop in this way. Wastes are another matter. There are now 139 waste disposal authorities\* in Great Britain and it is difficult to see how more than a very small proportion of them could expect to acquire staff with the necessary background and experience. In any case we do not think that the best solution would be for either water or waste disposal authorities to attempt to build up within their own organisations the technological expertise to deal with the more difficult pollution problems at source. A considerable part of the necessary knowledge of industrial processes and of pollution control technology is a common requirement, whether airborne emissions, liquid effluent or solid wastes are under consideration. To attempt to duplicate this same knowledge within so many different bodies would be to waste a scarce resource: nor would this best promote the co-ordinated approach to the more difficult problems of industrial pollution which we believe to be desirable. Moreover, technology continually develops, and an expert body that is to remain expert must keep itself informed about these developments. This can most readily be ensured within an organisation whose efforts are wholly directed towards the solution of challenging industrial pollution problems.

### **The role of the new inspectorate**

271. We therefore propose a new unified inspectorate with widened responsibilities. The essential aim of creating this body (HMPI) would be to ensure an integrated approach to difficult industrial pollution problems at source, whether these affect air, water or land. HMPI would seek the optimum environmental improvement within the concept of "best practicable means", employing the knowledge of industrial processes and many of the present techniques of the Alkali Inspectorate to reduce or modify the wastes produced, whether solid, liquid or gaseous. In effect, we have in mind an expansion of the concept of "best practicable means" into an overall "best practicable environmental option". Where choices exist as to the sector of the environment to which wastes should be discharged, HMPI would be instrumental, in consultation with other bodies involved, in deciding how different sectors should be used to minimise environmental damage overall.

272. We envisage that HMPI would be centrally administered; they would form a small, technically highly qualified body which would focus on any industrial processes and plants creating difficult pollution problems. Despite

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\* In England, the 45 county councils and the Greater London Council are responsible for waste disposal although refuse collection is the responsibility of the district and London borough councils. The 37 district councils in Wales and the 53 district and 3 islands councils in Scotland are responsible for refuse collection as well as for waste disposal.

this concentration on action "within the factory fence", because that is where the pollution arises, HMPI's fundamental concern would be with the wider environment outside the works, where the effects of pollution are primarily to be found.

273. In previous chapters of this Report we have considered, and made recommendations on, the arrangements that should be made for the control of air pollution by a central inspectorate and local authorities. HMPI would take over the present staff of the Alkali Inspectorate, and their responsibilities for the control of air pollution from registered processes. This would involve, as now, the determination of the best practicable means for controlling emissions; the setting, where appropriate, of emission standards; the prior approval of plant and operational methods; and the inspection of works to ensure compliance. HMPI would continue the role of the Alkali Inspectorate in giving advice to industry, government departments and local authorities on questions of industrial emissions, whether from registered or unregistered works. The relationships between HMPI and local authorities on air pollution matters should be as we have described in Chapter VII. However, HMPI's wider role raises questions of relationships and respective responsibilities between the new inspectorate and other authorities, especially the waste disposal and the water authorities, which we now consider.

274. Waste disposal authorities will be responsible for ensuring that all arisings of controlled waste are disposed of in an environmentally acceptable way. Under the Control of Pollution Act these authorities will have the duty to prepare long-term plans for the disposal of wastes in their areas, taking account of possibilities for reclamation and recycling. The authorities will have new powers to license tips, and while central government frames legislation and regulations and issues codes of practice and other advice, it does not have authority to inspect or enforce measures at the local level. When the Control of Pollution Act is implemented the Secretary of State will have powers to direct that special arrangements should be adopted for the disposal of specified dangerous wastes. He can also influence siting decisions by his powers of appeal or call-in under planning legislation.

275. The role that we envisage for HMPI in the waste disposal field would extend rather than change existing structures. HMPI would be concerned with industrial wastes where disposal presents difficult problems and especially where the wastes are hazardous in nature. It would be their function to take account of these wastes, and of the possibilities for eliminating, reducing or recycling them or for changing them to a less hazardous form, in assessing the total pollution arising from the processes involved and in determining the best practicable environmental option. There would need to be supporting powers for this extension of the use of the best practicable means concept by the new inspectorate. We have referred to recycling above as a possible solution to particular waste problems but we would not exclude the possibility that HMPI could play a useful part in the development of recycling in the wider context of resource conservation.

276. There would clearly be a need for liaison between HMPI and waste disposal authorities; these authorities would remain responsible for disposal,

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and information on disposal problems that they would be in a position to supply would be a necessary factor in negotiations between HMPI and industry. We believe that as experience of waste problems developed within HMPI, they would become an important source of advice to the waste disposal authorities and to industry.

277. The relationship between HMPI and water authorities is more complicated. The water authorities, formed through the re-organisation of water services in 1974, are responsible for the whole water cycle ranging from sewage disposal and flood control to the supply of tap water. So far as water pollution is concerned, the water authorities determine the quality criteria and aims for different waters according to their existing and intended uses, and set consent conditions for industrial discharges or sewage outfalls which are compatible with these criteria. We accept that the water authorities must retain their statutory responsibilities for water quality and for setting and enforcing consent conditions. These are the necessary constraints within which HMPI would need to work.

278. As with air pollution or wastes, in dealing with effluents discharged to water HMPI would bring to bear an expert knowledge of specific industrial processes. We have noted that except where drinking water supplies are involved the discharges which should be permitted must be decided on general environmental considerations. There is a need for negotiation between the controlling authority and the discharger in which an assessment of what is technologically and economically feasible is a necessary element.

279. It is this element that HMPI would supply for those industries that create difficult effluent problems. We believe that this would be the basis for close and beneficial collaboration between HMPI and water authorities. The authorities would decide water quality criteria, and the implications of these criteria for particular discharges would provide the basis for negotiation between HMPI and the industries concerned. However, the assessments that HMPI could make of the feasibility of reducing the volume or changing the nature of effluents would gradually influence these criteria. This information would be taken into account by water authorities in setting aims for higher standards and in deciding the more demanding consent conditions which these would imply. The joint work of the water authorities and HMPI would be, in effect, to require the adoption of the best practicable means to reduce water pollution by industrial effluents. In order to operate in this way HMPI would need to be provided with powers to inspect specified industrial processes and to negotiate with industry about them, and with the right to be consulted by water authorities about effluents arising from these processes.

280. We also see a role for HMPI in dealing with noise. As we said in our Fourth Report, we regard noise as a form of pollution; while it cannot be interchanged with pollution of other forms it may well be closely connected with them. For example, in some designs of flare stacks used to dispose of inflammable gases, steam is injected to achieve better combustion and so eliminate smoke, but this results in a great increase in noise. We envisage that HMPI

would be responsible for dealing with industrial noise only where it constitutes a severe problem in the external environment and where reduction of the noise presents technical difficulties. We think, however, that HMPI should advise local authorities on noise problems from industrial processes in general. There is at present no central control body concerned with noise and we believe that such a body would be of value in developing codes of practice as a basis for control.

281. HMPI would not deal with aircraft or vehicle noise, since these present problems which would lie outside their technical competence in relation to industrial processes, but there may be other forms of pollution—that from offshore oil installations, for instance—to which their remit might in future be extended.

### **The scheduling of industrial processes**

282. We have said that HMPI would deal with “difficult” pollution problems arising from industrial processes, whether these relate to pollution of air, water or land; and that HMPI would be concerned with all forms of pollution emanating from particular processes, and hence in a position to try to ensure that the “best practicable environmental option” was chosen in striving for pollution abatement. This implies an extension of the idea of scheduled processes, which has hitherto been applied only in the air pollution field, to water pollution and wastes. It also implies that processes which give rise to difficult problems for one mode of pollution are likely to create problems in other modes. This will not be true of all such processes but we believe it to be true of a sufficient number to justify the combined approach that we advocate.

283. The schedule of processes for emissions to air has been evolved over many years and now covers over 2,000 works. This would provide the starting point for a new schedule which would also include processes that cause difficult water pollution or waste problems. We do not think that this would lead to a great extension of the list, because we believe there is considerable overlap between processes which create difficult air pollution problems and those that create difficult water pollution or waste problems. Because of the need for a combined approach, HMPI would be involved with all the pollution problems arising from a scheduled process, whether or not pollution was difficult in every medium.

284. The arrangements for scheduling or descheduling and the principles which should apply should be similar to those we have recommended in paragraphs 191–197 for air pollution alone. We again envisage a flexible system. Thus, when the technical problems which led to the original scheduling of a process can be regarded as fully resolved, whether these related to air, water or land pollution, HMPI’s involvement would cease. Until that time, however, HMPI would deal with all aspects of pollution arising from the process; thus, even though a local authority could otherwise take over responsibility for controlling air pollution from a process, this responsibility would not be transferred while related problems of water or land pollution were still being dealt with by HMPI.



### **Other aspects of HMPI**

285. The creation of a new inspectorate with the functions described in the preceding paragraphs may be mistakenly seen as implying some shift of responsibilities from local to central authorities. We see, however, no contradiction with the view we have expressed earlier in this Report that wherever possible pollution control should be dealt with at local level. As we have already noted, HMPI's role on industrial wastes is one that is not—and could not be—undertaken by waste disposal authorities. For water pollution, our proposals require no change in the essential responsibilities of water authorities. Our concern is to assist these authorities in their work by bringing to bear an expertise on industrial processes and pollution control technology which we believe can realistically be assembled and maintained only on a national and central basis. This centralisation of expertise would have other important advantages. It would facilitate negotiation with industry at national level on pollution problems as a whole in the way that is at present undertaken by the Alkali Inspectorate for air pollution alone. The advice that the Alkali Inspectorate give to industry, government departments and local authorities on air pollution would similarly be extended through HMPI to cover all aspects of industrial pollution. The wide knowledge that HMPI would acquire would provide a more satisfactory basis than we consider exists at present for the formulation of national policy on these matters.

286. We think it desirable to comment on certain arguments that might be raised against the setting up of HMPI at the present time. There have been recent and major organisational changes in local government and water management. The authorities concerned in England and Wales—water authorities, counties and districts—have been in existence only since April 1974. In Scotland, local government and the river purification boards were reorganised as recently as May 1975. And the Control of Pollution Act 1974, which gives wide new powers to these authorities, has yet to be fully implemented. It might be argued that no further changes should be made in pollution control arrangements until a system so recently recast had become firmly established.

287. We would not accept this argument. HMPI would complement and assist the work of the water and waste disposal authorities and would have little impact on their organisation. Collaboration between these authorities and HMPI is, however, an essential element in our proposal. Such collaboration should be established quickly, before the new patterns of organisation become fixed.

288. Another argument which might be advanced is that now, when the country is facing great economic difficulties, is not the time to contemplate new arrangements for pollution control which would add to public expenditure. In fact the setting up of HMPI would not greatly increase expenditure on pollution control and would result in available resources being used more effectively.

289. Finally, the point might be made that liquid and solid wastes arising from an industrial process can be more readily identified and measured than

emissions to air, and that it should be possible to bring any necessary pressure to bear on industry for reduction of pollution in these forms by the instrument of charging rather than through the interposition of a specialist inspectorate. The Commission considered the question of pollution charges in their Third Report on the pollution of estuaries. The subject is complex and we have welcomed the study that has been initiated by the Department of the Environment to examine the problems of a charging system in the context of the Tees. It appears to us, however, that even if charging were eventually seen as the most effective and economic means of control, it would not avoid the need for expertise that would enable the responsible authority to set the charges at the levels required to bring about desired ends. HMPI's knowledge of the technological possibilities for dealing with pollution would still be required.

290. We believe that our proposal to create HMPI would bring about a significant advance in dealing with difficult cases of industrial pollution, but we recognise that its implementation might raise problems which we have not been able to consider with the bodies concerned. Accordingly, we recommend that the Government should immediately start consultations with these bodies on the means of implementing the arrangements we propose.

#### **HMPI and the Department of the Environment**

291. We have said that HMPI should form part of the Department of the Environment and we have outlined the responsibilities and the relationships HMPI would have with other authorities concerned with pollution. The creation of the new Inspectorate with wide responsibilities also implies organisational changes within the Department. Additional expertise will clearly be necessary at the centre in forming the nucleus of HMPI from the present Alkali Inspectorate. This requirement would largely be met by the transfer of technically qualified staff from within the Department who are already concerned with water pollution or industrial wastes.

292. It is also important that HMPI should not be too in-bred. It is likely that the majority of staff will spend most of their careers in HMPI, as Alkali Inspectors do in the Inspectorate now. Nevertheless there should be a policy to encourage interchange of staff\* for short periods between HMPI and other relevant bodies.

293. As we have previously observed, the Alkali Inspectorate enjoyed considerable autonomy within the Department of the Environment in the past; the Chief Inspector reported directly to the Permanent Secretary. This arrangement should not be reintroduced. There should be, as now, environmental policy groups responsible for water, wastes, clean air and noise, coming together in a central pollution policy body. HMPI should report to this body which would be supported by a structure of specialist committees on scientific, medical and other aspects of pollution. Government research laboratories specialising in pollution problems, in addition to their primary role, would not only contribute

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\* This would be along the lines of the Report of the Task Force, chaired by Sir Hermann Bondi, KCB, FRS, on the Interchange of Scientists (Civil Service Department, 1974).

## *Chapter IX*

to the membership of these specialists committees but might, with advantages to both sides, interchange with their colleagues providing the technical input within the Department of the Environment. In paragraphs 202-204, we commented on the need for professional advice to guide the Alkali Inspectorate in their decisions on the measures for pollution abatement which industry should be required to adopt. The same need arises for HMPI; expertise on economics and accounting and on scientific, medical and social aspects of pollution should be readily available so that it may be brought to bear in their negotiations with industry. It should be a responsibility of the central policy body to ensure that this expertise is available and that it is used.

294. We envisage that HMPI would operate with a fair degree of independence within specified policy guidelines. No doubt much of the research that HMPI would consider to be needed for the reduction of pollution would be conducted by industry or industrial research associations. We think, however, that the need could arise for HMPI to commission research, and that they should be empowered to do so. Prior to the move of the Alkali Inspectorate to the Health and Safety Executive it was the practice for the Chief Inspector to make an annual report direct to Parliament. We think that this practice should be followed by HMPI.

### **Regional organisation for HMPI and devolution**

295. We envisage a regional organisation for HMPI broadly on the lines of that of the Alkali Inspectorate. We have been unable to consider this aspect fully though we are clear that the arrangements adopted should avoid the problems of inaccessibility which we have referred to in connection with the Alkali Inspectorate. HMPI inspectors should work from regional offices with appropriate supporting services; it should generally be possible for them to use accommodation within other government establishments and to share existing services. We would expect a HMPI region to be bigger than the present Alkali Inspectorate districts. Bearing in mind HMPI's concern with water pollution and wastes, and the fact that water authorities are necessarily involved in plans for the disposal of wastes which could be a source of pollution to water supplies, we can see advantages in HMPI regions being based on those of the water authorities.

296. The arrangements made for establishing HMPI might be affected by developments in the devolution of powers, especially to Wales and to English regions. In Scotland, the Industrial Pollution Inspectorate, which is in some ways similar in concept to HMPI, already exists. The arguments for creating HMPI apply equally in Scotland and the functions and responsibilities of the present Inspectorate should be extended to this end. The agency agreement through which the Industrial Pollution Inspectorate works to the Health and Safety Executive will need to be extended until new legislation can be framed, but for the reasons advanced in the previous chapter we are clear that HMPI in Scotland should be directly responsible to the Scottish Development Department. There would obviously be a need for close liaison between the new Inspectorates in England and Scotland, but this is to ask for no more than the continuation of existing practices.

297. The advantages of a central inspectorate lie in its ability to assemble and maintain a high level of technical expertise and to negotiate nationally with industry on major issues of pollution abatement. We would therefore be strongly opposed to the creation of separate inspectorates for English regions, in response to possible future aims for devolution, which would forfeit these advantages. For the same reason we firmly believe that on pollution grounds alone the most effective arrangement would be for England and Wales to be served by the same Inspectorate. This arrangement exists at present for the Alkali Inspectorate and appears to work satisfactorily, the Inspectorate reporting to the Secretary of State for Wales on Welsh matters through the environmental pollution unit in the Welsh Office. If the proposals for devolution to a Welsh Assembly set out in the recent White Paper\* are enacted, HMPI would of course be responsible to the Assembly, not the Secretary of State.

#### **The staffing of HMPI and implementation**

298. We consider that the setting up of HMPI would call for only small increases in manpower and expenditure. In relation to air pollution alone it has long been accepted by the Department of the Environment that an increase in the size of the Alkali Inspectorate is needed and we understand that the Health and Safety Executive has also formed this opinion; we fully agree with this. Our recommendation that the Alkali Inspectorate should keep local authorities more fully informed about emission control at registered works will probably necessitate an additional increase in Alkali Inspectors though this should be offset to some extent by the arrangements whereby local authorities will act on behalf of the Alkali Inspectorate. The actual increase in staff needed could only be estimated by detailed consideration of the work schedules of Inspectors, of the time allowances that should be made for added functions and for strengthening supporting services. We would guess, however, that something approaching a doubling in size of the total staff of the Alkali Inspectorate might well be justified.

299. To this increase in staff must be added the increment consequent upon the expansion of the Alkali Inspectorate into HMPI. We judge that this increase would be relatively small and could largely be met from the transfer of existing staff within the Department of the Environment. Inspectors working in the regions would deal with a wider range of interests in their visits to individual works but the number of visits they would need to make would not be much increased if, as we suppose, the number of processes scheduled for the purposes of HMPI did not much exceed the number that would be scheduled on air pollution grounds alone. At a guess, we suggest that an increase of about one half of the present Alkali Inspectorate complement might be necessary. On this basis, the total complement of HMPI would be between 150 and 170, compared to the Alkali Inspectorate's present 70, both including ancillary staff. This appears to us a modest requirement in relation to the benefits that we believe the unified inspectorate would bring. Moreover, there should be some off-setting savings. For example, since HMPI would deal with the more difficult industrial effluent problems it should not be necessary for the water authorities to attempt to build up as great a competence in this area.

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\* Our changing democracy: Devolution to Scotland and Wales. Cmnd. 6348. HMSO. November 1975.

300. Formally, the setting up of HMPI would require new legislation but much could be done immediately. We have noted that the Alkali Inspectorate could operate within the Department of the Environment on an agency basis under the Health and Safety Act. The nucleus of HMPI could thus be established quickly, although during the transitional period before new legislation could be implemented HMPI would have no statutory rights or responsibilities for water pollution, solid wastes or noise. However, given acceptance of the principles of the proposed reorganisation by government, industry and the local, waste disposal and water authorities, much could be done towards laying foundations for HMPI. The necessary recruitment and training arrangements could be started, as could the investigation of industrial processes to facilitate eventual scheduling. HMPI inspectors could start to involve themselves in wider pollution questions, and the practice of consultation with local, waste disposal and water authorities could be initiated. Given such preliminary steps, HMPI would be a fully effective body as soon as the legislation was implemented. Similar considerations apply to the staffing and implementation of HMPI for Scotland.

## CHAPTER X

### MONITORING AND RESEARCH

#### Introduction

301. Monitoring and research are essential to the control of air pollution. The need for control, and its effectiveness, cannot be assessed without monitoring to determine pollutant levels and research to establish the effects of pollutants on man and the environment. We gave only limited consideration to these subjects in view of the time constraint on our study and two other relevant factors. First, the Central Unit on Environmental Pollution in the Department of the Environment had recently considered pollution monitoring as a whole and had published a report on "The Monitoring of the Environment in the United Kingdom"\* which made a number of recommendations for improvements in monitoring arrangements. Second, a means exists for us readily to follow up questions of air pollution research at a later stage through the Research Sub-Committee of the Royal Commission. This body meets regularly with representatives of the Department of the Environment to consider arrangements and programmes for environmental research generally, and to advise the Department. For these reasons we have confined ourselves in this chapter to commenting on a few aspects of monitoring and research.

#### Monitoring

302. Earlier in this Report we stressed the need to distinguish between emissions of pollutants and the resulting concentrations in the environment. The distinction applies to monitoring. Emissions are monitored largely for control purposes, in order to check that pollution control equipment is operating properly and that the requirements of the controlling authorities are being met. The monitoring of ambient air quality (usually the ground level concentrations of pollutants) is of wider significance. Such measurements provide the basis for control policy: for example, they may indicate areas where domestic smoke control would be desirable, and enable the environmental effectiveness of smoke control, when introduced, to be assessed: or they may provide information for medical authorities for epidemiological studies of the effects of air pollution on health. Evidently the introduction of the system of air quality guidelines we have recommended would give greater emphasis to air quality monitoring.

303. Another distinction we have drawn earlier in this Report applies also to monitoring: that between local and national aspects of air pollution. A national, coarse grid of monitoring points is needed to provide an overall picture of pollutant levels for some substances as a basis for national policies on air quality. The monitoring points need to be carefully sited to give a representative average picture, but clearly the measurements will not indicate the local variations in pollution levels due to particular concentrations of

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\* HMSO 1974.

sources, local topography and other factors. Monitoring on a finer mesh will usually be needed for local purposes. This distinction between national and local aspects is of course a general one; national policy must also take account of local effects, especially where pollution may constitute a significant health risk. It is the responsibility of central government to maintain a watch on the levels and effects of all pollutants in the light of developing scientific knowledge, and this will require the monitoring of some pollutants in the particular localities where they reach the highest concentrations.

304. We conclude these general observations by returning to a point which we stressed in our Fourth Report: that is, the need for critical appraisal of monitoring schemes. Monitoring can be expensive; without care and forethought about aims and a clear understanding of the techniques it can lead to a waste of resources.

#### **Air quality monitoring: the present system**

305. The only integrated air pollution monitoring scheme covering the whole country is the National Air Pollution Survey for smoke and sulphur dioxide. The data are collected voluntarily by many local authorities and other bodies who maintain instruments at over 1,200 sites throughout the UK. The Survey is co-ordinated, and the data are processed, by the Warren Spring Laboratory of the Department of Industry. Concentrations of smoke and sulphur dioxide are sampled continuously over consecutive 24 hour periods. Warren Spring Laboratory have recently produced for the Department of the Environment maps\* showing isopleths of these pollutants. These are in effect contours corresponding to different levels of pollutant concentration. Although the contours are approximate in some areas because of lack of data, the maps nonetheless provide a useful picture of smoke and sulphur dioxide pollution levels in the UK.

306. More limited surveys are being conducted into other types of pollutant. Warren Spring Laboratory is undertaking surveys for the Department of the Environment of carbon monoxide, oxides of nitrogen, ozone, hydrocarbons and lead at a busy roadside site in each of five major cities and of metals at 20 sites as was proposed in the Monitoring Report prepared by the Central Unit on Environmental Pollution. The Department also intend setting up a survey of particulate sulphate at 20 (probably different) sites; these surveys started in late 1975. A survey of mercury is already in operation at one site and a survey of ozone is beginning at three sites where oxides of nitrogen will also be measured.

307. Other monitoring activities by central government departments and establishments and by local authorities are described in the Monitoring Report. Many local authorities, for example, measure grit and dust deposits or the levels of other pollutants which are of particular local concern. Air quality monitoring is not solely carried out by central and local government. Industrial monitoring is usually confined to the measurement of emissions but some industries monitor the ambient air. We recommend that industry should be encouraged to make the

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\* Department of the Environment Map Library, 1975.

data available publicly. Various universities research programmes provide information about air quality, and universities sometimes carry out ad hoc surveys which involve the provision of monitoring information; this may be done as part of a research project for a firm.

308. The Monitoring Report recommended the formation of monitoring management groups, serviced by the Department of the Environment, to co-ordinate monitoring activities in each pollution sector. Management groups have been set up for air, land, freshwater and marine pollution, environmental (human) health and biological health. Overall co-ordination is the responsibility of the Central Unit on Environmental Pollution. In our Fourth Report we welcomed these developments, which should lead to a comprehensive and unified system of environmental monitoring.

### **Some comments on the system**

309. It will take time before these new arrangements for monitoring become fully effective and before their adequacy can be assessed. We are led to comment on some aspects of the system at this stage, however, in view of our recommendation on the introduction of air quality guidelines for a range of pollutants. As we noted above, this would give a greater emphasis to air quality monitoring.

310. The sites used for the National Survey have not been chosen on any systematic basis. The survey was originally set up by Medical Officers of Health for their own purposes. Each local authority decided whether, and if so where, monitoring apparatus should be installed and although the results have been centrally co-ordinated since 1914 there has never been any central direction on the sites selected, although advice has been available. The result is that there are areas in the country which probably should carry out monitoring but do not do so, or if they do, do not contribute to the Survey, while others may not have installed monitors in the most helpful places. There is a power in the Control of Pollution Act (section 83) for the Secretary of State to direct local authorities to install monitoring equipment so as to fill in the gaps in the Survey. This is due to come into force in January 1976.

311. There are thus problems in the siting of monitoring equipment. There are also problems in its use. It is difficult to measure the concentrations of some substances, and to interpret the results. For example, a considerable proportion of the measurements of sulphur dioxide concentrations made by local authorities and sent to the Warren Spring Laboratory for processing have to be rejected because they could not possibly be correct. Yet sulphur dioxide concentrations are relatively easy to measure. These problems will be increased given the more extensive monitoring which would be needed in relation to the use of air quality guidelines.

312. The results of air pollution monitoring are mainly used for local purposes and we think it is right in principle that the regular monitoring of air quality should continue to be undertaken by local authorities. As we have noted elsewhere in this Report, however, there is a wide variation in the technical resources available to local authorities; some could manage increased monitoring



responsibilities very well, but others could not. It is important, therefore, that adequate guidance is made available on the siting of monitoring points, on measurement techniques and on the interpretation of results, and that this advice is sought and heeded by local authorities. If, as we recommend, air quality guidelines are introduced, the occasion will be provided for a thorough review of present monitoring arrangements in the light of a specific formulation of national, regional and local needs.

313. We are not in a position to assess the monitoring implications of the introduction of air quality guidelines in any detail. Though more monitoring is likely to be needed, we do not think that the overall increase should be substantial. For one thing, there is scope for rationalising the present system so far as the monitoring of smoke and sulphur dioxide is concerned, and we hope that the review we have suggested above will lead to this. For another, we believe there is much scope for the use of mobile monitoring equipment or for the loan or hire of equipment by central government to local authorities, especially where it is expensive.

314. The Department of the Environment should clearly be responsible for formulating air quality guidelines and for related monitoring policy. We therefore recommend that the Department should assume formal responsibility for the National Air Pollution Survey, using the services of the Warren Spring Laboratory to co-ordinate the work as at present. The organisational arrangements made as a result of the Monitoring Report, in particular the setting up of the Air Pollution Management Group, should in principle suffice to deal with the problems which the introduction of air quality guidelines would raise. The Central Unit on Environmental Pollution has an important co-ordinating role on monitoring as on other aspects of pollution. We recommend that the Department of the Environment should consider whether the scientific advice directly available to the Unit at present is adequate for the role it should play in relation to both air quality guidelines and the new central inspectorate we have proposed.

#### **The monitoring of emissions**

315. The monitoring of pollutants at source is generally undertaken by industry. The Alkali Inspectorate normally require works to monitor their emissions, although they do make tests themselves and they are able to call on four teams of technicians who check on the performance of arrestment equipment for grit and dust. Local authorities generally follow the same practice in requiring non-registered works to monitor their emissions where these cause significant pollution.

316. We think it is right that industry should be made responsible for the regular monitoring of emissions, though we appreciate that this is open to criticism. The controlling authorities should carry out independent tests wherever there appear to be grounds for doing so. The amount of such testing has already been increased and this trend should continue. To some extent this has been recognised by the recent increase in the number of grit and dust testing teams. It will also be facilitated by the increase in manpower of the central

inspectorate which we have advocated in Chapter IX, and by the arrangements we have proposed for improved liaison between the central inspectorate and local authorities which should enable them to assist each other in monitoring work.

### **Research**

317. Sensible policies for controlling pollution must rest on understanding of its effects which can only be acquired through research. Of particular importance—and difficulty—is the assessment of the biological and other effects of pollutants in low concentrations. Another area of research we believe should be encouraged is the study and use of modelling techniques to elucidate the patterns of distribution of pollutants around their sources.

318. Research into the effects of pollution is largely carried out in government laboratories and universities. Government sponsored research is commissioned through a series of Research Requirements Committees and such a committee within the Department of the Environment deals with air pollution research which is funded from the Department's vote. The Department initiates projects itself and projects are also put forward by the air pollution research laboratories, principally the Warren Spring Laboratory and the Atomic Energy Research Establishment. These latter projects must find sponsors within the Department before the Research Requirements Committee will consider accepting them.

319. Co-ordination within Government on air pollution research is formally conducted under the aegis of the Inter-departmental Committee on Air Pollution Research. The Committee, under the chairmanship of the Director of the Warren Spring Laboratory, includes representatives from all interested departments, from bodies such as the Medical Research Council and from industry. The Committee reports to the Clean Air Council, which has also recently established a new Standing Technical Committee. This latter committee, among other things, advises the Council on any research work on clean air matters which it considers that the Department of the Environment should undertake. The Air Pollution Monitoring Management Group may also make recommendations on research, but again it will be for the Department to decide, through the Research Requirements Committee, whether to act upon them. Other bodies are also concerned with the oversight and co-ordination of pollution research. We note in particular the role of the Inter Research Councils Committee on Pollution Research in relation to work conducted in Research Council institutions or sponsored by the Councils in universities.

320. There are inherent difficulties in co-ordinating research activities as described in the last paragraph and in view of the many interests involved the arrangements made for the purpose are bound to be diffuse. Nevertheless, we are not satisfied that the present arrangements have been adequately considered as a whole, nor that they are effective. We therefore recommend that the general review which we understand the Department of the Environment are undertaking should be urgently completed.

321. Another aspect of research is work on abatement technology and techniques. Most research of this kind is undertaken by industry though often it is stimulated by the Alkali Inspectorate through their requirements for pollution

## *Chapter X*

abatement. The Inspectorate collaborate with industry in this work and sometimes commission research themselves. (We recommend in paragraph 294 that HMPI should continue to do this.) They may also help to prompt research on pollution problems arising from non-registered industry. For example, research at the Warren Spring Laboratory on offensive odours was initiated at the Inspectorate's suggestion.

322. We recommended in paragraph 210 that the Government should issue guidance to local authorities on the means of control of the more difficult emissions from non-registered works. Local authorities also need assistance from the Government in identifying areas where research into methods of control is required and in making arrangements to ensure that such research is undertaken, whether by industry or by other bodies. We recommend that the Government, with local authority associations and other bodies concerned, should consider what organisational and funding arrangements are required, bearing in mind the general principle that the polluter should pay. Local authorities, acting through their associations or possibly through more specialised organisations, should consider arrangements to ensure both that relevant problems are brought to light and that any research they consider desirable, where central government involvement is inappropriate, is undertaken.

## CHAPTER XI

### PLANNING AND POLLUTION

#### Introduction

323. We have seen many examples during our study of the connection between pollution problems and planning. In most cases where pollution causes acute local problems, polluting industry is close to houses, shops, schools or hospitals, or industry is so densely concentrated that the total pollution is unacceptable. Often these situations result from decisions taken many years ago when development control was rudimentary. It does not necessarily follow that the decisions were wrong; they were generally taken at a time when environmental expectations were equally rudimentary and then, as now, many factors apart from pollution had to be taken into account. In a small, industrialised country these situations are sometimes unavoidable. We have, however, seen cases where new housing development is still being allowed too close to polluting industry, or new polluting industry is allowed too close to houses. Here again, the decisions allowing these developments were not necessarily wrong, though they may lead to pollution problems in the future which will be difficult to resolve. Public expectations on environmental quality will no doubt continue to rise.

324. In considering this interaction between planning and pollution we had in mind that other bodies were currently studying planning and pollution issues; we had no wish to duplicate their work. We have therefore restricted ourselves to identifying areas where further examination is needed and to suggesting possible solutions.

#### The present planning system

325. The following brief outline of the present system does not attempt to be comprehensive but simply points out the most relevant features for our purpose. The system in Scotland is basically similar to that in England and Wales. The principal legislation is the Town and Country Planning Act 1971 as amended by the Local Government Act 1972 and the Town and Country Planning (Scotland) Act 1972 as amended by the Local Government (Scotland) Act 1973.

326. A clear distinction can be drawn between the two aspects of planning: that which the planning authority initiates and that to which it responds. The first includes policies, strategies for development, location of industrial and residential zones, densities, etc., while the second covers development control in which, although it is the main tool by which strategies are implemented, a planning authority essentially reacts to proposals for land use put forward by potential developers. This will be somewhat changed by the provisions in the Community Land Act (see paragraph 333). Broadly, county councils (including

the Greater London Council and islands and regional councils in Scotland) deal with the main strategies while district councils (including the London boroughs and the City of London and in Scotland the islands councils, certain regional councils and the district councils) deal with more detailed policies and with development control.

327. County councils have responsibility for drawing up structure plans which contain strategic policies and general proposals for the development and other use of the land in their areas; these plans cover in broad terms policies for such matters as housing, industry, transport and open land. These plans require approval by the Secretary of State after an "examination in public". The district councils will usually be responsible for drawing up detailed local plans in accordance with the policies defined in the structure plans, and for holding a public inquiry and adopting local plans unless they are called in by the Secretary of State.

328. In formulating their proposals both levels of local planning authority are required to take into account the need for "measures for the improvement of the physical environment". Before either structure or local plans are prepared county councils must, and district councils may, carry out a survey of their areas to examine matters relevant to their plans. The councils must publicise the results of these surveys and the matters they intend to cover in the plans. An opportunity must be given for representations to be made.

329. Most development of land which is likely to give rise to air pollution problems will require specific planning permission. "Development" means the carrying out of building, engineering, mining or other operations in, on, over or under land, or the making of any material change in the use of any buildings or land. District councils receive and decide the large majority of planning applications. In some cases, normally for developments of regional or national importance, the Secretary of State may "call in" an application and a public local inquiry is usually then held. In determining applications local authorities (or the Secretary of State) are required to have regard to the provisions of the development plan (i.e. provisions in the approved structure and local plans for the area) and to any other material considerations. The Secretary of State also decides cases on appeal against refusal of planning permission or against conditions which are attached to permission. Local planning authorities are statutorily required to publicise in various ways certain categories of applications for planning permission, including those known as "bad neighbour" development; they are also advised by departmental circulars to give applications wider publicity than they are bound to do by law.

330. Planning permission can be granted with or without conditions or refused. The refusal of planning permission or its granting with conditions can sometimes lead to financial liabilities for the planning authority. The planning authority is liable for compensation if it revokes or modifies an existing planning permission or otherwise forbids the existing use of a site. If this results in the closure of a factory, for example, compensation can be very expensive.

331. There is provision for seeking an outline rather than a full planning permission and where this is done it has to be followed by a further application for the approval of details. The purpose is that with a large project detailed design work, which may well depend on the site chosen and is likely to be expensive, need not be undertaken until agreement in principle on the use of the site has been obtained.

332. The development control system has recently been reviewed by Mr. George Dobry QC\* at the request of the Secretaries of State for the Environment and for Wales. Their conclusions on this report were published in November 1975†.

333. Changes to the development control system are likely to stem from the Community Land Act 1975, under which most of the land for new industry of the types with which we are principally concerned will eventually have to pass through local authority ownership and will probably be leased to the industry concerned: there are provisions to ensure that local authorities do not unreasonably refuse to make land available in this way. The significant factor from our point of view is that local authorities will be able to impose conditions on industry through landlord control which may be much wider than those they can impose as planning authorities.

#### **The need for co-operation**

334. Pollution is only one of the factors which need to be taken into account in planning decisions and in many situations there will be other factors which have to be given equal or higher priority. There may be pressures on a local authority to improve housing or local employment opportunities, or an authority may wish, for example, to put derelict land into use. While this is not strictly a planning consideration, a local authority may also wish to secure the rate revenue from a major development. As always, there is the need to balance conflicting requirements.

335. Our concern is not that pollution is not always given top priority; it is that it is often dealt with inadequately, and sometimes forgotten altogether, in the planning process. In part this stems from lack of guidance and advice. Planning officers and committees are not pollution experts and they are necessarily dependent on advice on pollution matters. Such advice is not always available but even when it is, it is not always sought. We have seen evidence of lack of consultation between planning officers and those responsible for air pollution control, whether the latter are Environmental Health Officers of the local authorities concerned or of neighbouring authorities or the Alkali Inspectorate.

336. We realise that there is considerable pressure for the planning process, particularly development control, to be speeded up as much as possible but pollution is too important to be neglected in the interests of speed. Consultation to establish the pollution implications of both strategic and specific planning proposals should be a regular practice.

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\* Review of the Development Control system HMSO: 1975.

† Department of the Environment Circular 113/75 (Welsh Office Circular 203/75).

### Strategic planning

337. Pollution policies should be embodied in structure plans, and we should like to see these developed by district councils at the detailed level in "subject plans" which would explain their policies and proposals on this topic. Local authorities will need guidance from central government on the formulation of pollution policies and their incorporation into their plans. The air quality guidelines we have proposed will be major factor in this.

338. We explained in paragraph 178 the ways in which air quality guidelines would be used by local authorities in planning. We do not underestimate the problems; the difficulties of assessing the pollution pattern in an area, of establishing the sources and of preparing plans to achieve long-term aims for air quality, are considerable. Pollution, and especially air pollution, does not respect administrative boundaries and collaboration between authorities will often be needed to develop sensible policies. A wide range of technical expertise is needed.

339. For these reasons we see the need for liaison on a regional or inter-county basis to establish a team of experts who would be able to assist individual authorities in determining their pollution policies and to set these in the context of an environmental strategy for the area as a whole. To some extent local authorities have already moved along this road in setting up regional standing conferences; we welcome this development. A model of the sort of machinery we have in mind is the London and South London Regional Planning Conference of Local Authorities which provides a forum of environmental expertise under the direct control of its local authority members.

340. Policies for air quality need to be founded on comprehensive scientific study. In some areas of Great Britain this has been recognised and action taken accordingly. In the Forth Valley in Scotland, for example, the Scottish Development Department have commissioned the Department of Industry's Warren Spring Laboratory to carry out a survey to determine the current levels of smoke and sulphur dioxide and their distribution throughout the area, to assess the relative contributions from the sources and to ascertain relationships between emissions, meteorological factors and observed concentrations in order to quantify these contributions and also to predict pollution levels under various meteorological conditions for any further changes in the emission pattern. The Scottish Development Department initiated this study as a help to planning authorities so that they should know what existing pollution levels were in the area, where the pollution came from, and what effect new developments might have on those levels.

341. We were also interested to see "A Review of Atmospheric Pollution",\* a study carried out by Cheshire County Planning Department. This review is intended to present a factual report on the atmospheric environment in Cheshire which would help both development control and strategic planning. Its aim is

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\* Cheshire County Council: 1975.

to provide basic information and general guidance to help authorities in determining their future policies and actions. Encouraging developments such as this should be stimulated and assisted by a system of air quality guidelines.

### **Buffer zones**

342. One point which should be considered in strategic planning is whether planning authorities should impose limitations on future development by instituting buffer zones in which no development will be permitted around existing or proposed new industrial zones. This has been done occasionally. We are aware that the Committee of Experts on Major Hazards set up under the Health and Safety Commission is looking at the question of buffer zones in its current investigation of the measures needed to ensure the safety of the public in the vicinity of installations presenting potential major hazards.

343. We have considered whether there should be a requirement on planning authorities to establish buffer zones around specified major polluting industries to cover effects outside the remit of the Committee of Experts: our main concern here is not with safety issues but with pollution which could seriously affect amenity and possibly health or agriculture. We are well aware of the problems that buffer zones present: the major difficulty is that of sterilizing land which may well be badly needed, for example for housing. Another factor is that of the desirability of easy and quick journeys to work. We have also seen an example during our visits of a situation where local people preferred improvement to their houses which were affected by pollution from existing industry to being moved out of range of the pollution. We recommend that the Government should institute a separate study of the case for establishing buffer zones around heavily polluting industries with which the Committee is not expected to deal and should also consider whether buffer zones should in some circumstances be mandatory or whether they should always be at the discretion of the local authority.

344. We also consider it would be helpful if local authorities, aided by the proposed air quality guidelines, considered determining a total pollution capacity for a site against which applications for development could be cumulatively assessed. Developers could then be advised on how much pollution from their works would be within the capacity of the site and whether judged in that light their application was likely to be successful.

### **Development control**

345. Although the submission of an application for planning permission is formally the first stage in the development control system in practice it is likely to be preceded, where a large development is concerned, by discussions between the developer and the planning authority. The result may well be that the developer's original proposals are considerably modified to meet the planning authority's objections before being formally submitted.

346. We think it most important that the pollution control authorities should, where appropriate, be involved both in the preliminary and formal stages of development control as well as in any relevant public inquiries. The



extent to which the Alkali Inspectorate have been involved varies from area to area but generally both formal and informal arrangements for them to give advice on the pollution potential of new development, or on the effect of existing pollution on new development, are inadequate. More surprisingly, contact within the same local authority between officers responsible for planning and for environmental health, and between their respective committees, also seems to be inadequate.

347. We have considered whether there is enough central guidance on consultation and whether there should be a statutory requirement for local planning authorities to consult pollution control authorities. In those cases where both planning and pollution are the responsibility of the same local authority it would be difficult in law to do this, and it would probably be wrong in principle. We therefore urge local authorities to ensure that Environmental Health Officers are consulted on all relevant applications and that their views are given due weight. As it may be difficult for planning officers to know which applications are relevant, the simplest solution may be that adopted by one local authority we visited where copies of all planning applications are seen by the Environmental Health Officers. The irrelevant majority can be quickly eliminated and the chances of pollution considerations being missed are greatly reduced.

348. Consultation with HMPI (or, as it would be at present, with the Alkali Inspectorate) on scheduled works raises slightly different problems. By definition, scheduled processes are those most likely to lead to pollution problems where the need for consultation at the planning stage is greatest. We therefore recommend that there should be a mandatory obligation on planning authorities to consult HMPI on all applications for permission to build or alter registrable works.

349. To some extent the opposite problem, that of unsuitable development such as houses, hospitals or schools being built within polluting distance of factories, will be dealt with if the buffer zones discussed in paragraphs 342-344 are eventually adopted. But buffer zones could only be justified round a few of the worst polluting works. There will remain areas around other registered works where pollution problems, although not serious enough to justify a total ban on residential development, will need to be carefully considered before development is allowed. We recommend that HMPI should, after consultation with the local authorities concerned, designate zones round such works. Consultation with HMPI should be mandatory on all development within these zones.

350. In paragraph 328 we noted the general requirement placed on local planning authorities to take account of the need to improve the environment. We think that a more specific requirement should be laid on local authorities on pollution matters; this could be on the lines of section 11 of the Countryside Act 1968 which lays a duty on all public bodies using powers relating to land under any Act to take into account the desirability of conserving the natural beauty and amenity of the countryside.

### **Environmental impact studies**

351. Mr. Dobry's report suggests (paragraph 7.61) that when major developments of special significance are proposed the local planning authority should be able to require the developer to submit an impact study, which would include an assessment of pollution effects. A team appointed by the Department of the Environment is also studying the whole question of environmental impact analyses.

352. We agree with Mr. Dobry that there is a need for developers to provide an assessment of the effects of air, water, wastes and noise pollution of certain major developments. In making an assessment the developer will need the assistance of the local planning authorities and other bodies in providing information and, as Mr. Dobry has proposed, rules should be made to ensure this. The other bodies the developer would generally need to consult would include appropriate Environmental Health Officers, the area health authorities, HMPI and the water and waste disposal authorities. In some cases advice would need to be taken from bodies such as the Meteorological Office. The resulting assessment should be published. In this way the public will be aware of the environmental considerations involved in the application, and will be able to judge the planning authority's decision in that knowledge. They should also be given the opportunity to comment on the assessment before that decision is taken.

353. Information about the environmental effects of a development is needed even if a development is not of the kind where a full impact study would be called for. In this context we note a general problem; that authorities may be required to decide an outline application for industrial development at a time when estimates of the resulting pollution can only be approximate. In some cases detailed design might be needed before reliable estimates can be provided, and it would be a waste of resources for this to be undertaken when outline permission might be refused on other grounds.

354. The introduction of air quality guidelines and better technical guidance will assist local authorities in dealing with this problem. It is clear, however, that even if developers cannot give full information when an application is made, authorities should be able to obtain as much information as the developer can give. It has been suggested in evidence to us that general powers to require information from applicants, under Article 5(1) of the Town and Country Planning General Development Order 1973, may not adequately cover information on air pollution. We note that the Government expressed the view during discussion of the Control of Pollution Bill\* that the powers are sufficient for this purpose, but as there still seems to be some uncertainty on the point we recommend that it should be re-examined. If there is any legal doubt it should be removed; if not, local planning authorities should be made aware of the fact.

### **Public inquiries**

355. An environmental impact assessment of a proposed development is clearly of value to planning authorities. It may also have a useful role to play

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\* House of Commons Official Report 19 July 1974, vol 877, col 941.

in providing information for residents in the vicinity of the site of a proposed development, particularly in the case of a public inquiry into the application. Some degree of technical consensus is desirable, and should be publicised, before a public inquiry is opened. This would enable some of the technical issues which local objectors are not competent to evaluate to be agreed on before the inquiry, while local people would have the opportunity to call in expert advice before the inquiry on those areas still outstanding. Departmental advice\* has been issued to Scottish local authorities to ensure that as much written material as possible is circulated before an inquiry, although technical consensus has not been suggested and the material would usually be confidential to the parties to the inquiry until the inquiry opened. We welcome this step, however, since this would provide an opportunity for the parties involved to seek advice on the technical material, even though a consensus had not been reached. Similar advice has not been issued in England and Wales where experiments are being carried out to discover the most effective procedures to achieve the object of quick and better inquiries and decisions. We consider that the concept of pre-inquiry technical consensus is useful: we recommend that Government should give consideration to its further development, especially in the context of environmental impact analyses.

356. A problem of dual jurisdiction arises when the Alkali Inspectorate, who are ultimately responsible to the Secretary of State for the Environment and for Wales, give evidence at public inquiries where the issue has subsequently to be decided by the same Secretary of State. This difficulty is a common one arising, often in a more acute form, in many areas of the Secretary of State's jurisdiction. In this instance we do not consider that it is sufficiently serious to outweigh the importance of the availability of technical advice from the central inspectorate at inquiries. We therefore consider that HMPI (or at the present time the Alkali Inspectorate) should not feel inhibited by this difficulty from appearing at inquiries.

### **Planning conditions**

357. In deciding applications for industrial development and especially for registered works local planning authorities sometimes impose planning conditions designed to control air pollution from the plant, even though separate legislation exists for that purpose. This practice is misguided. The Alkali Inspectorate are legally responsible for controlling emissions from registered works and it is wrong in principle that local authorities should attempt to assume this authority by use of the planning laws. It is also confusing and potentially counter-productive in practice: conditions identical to those imposed by the pollution control authority serve no useful purpose in the short term but, because planning conditions cannot be updated, could in the long term undermine the pollution control authority's work in seeking progressive improvements in control. Planning conditions which conflict with the Inspectorate's or the local authority's own pollution control requirements can only create confusion. If the planning conditions are less stringent than the pollution control requirements then the developer is given an argument

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\* Scottish Development Department Circular 14/1975: Public Inquiry Procedures.

against those requirements. The pollution control requirements are likely to be set close to the best the plant can physically achieve: it is therefore unlikely that any more stringent requirements imposed as planning conditions could be regularly met. If the planning authority, using air quality guidelines, consider that an unacceptable amount of pollution is likely to be emitted from a proposed plant when the Alkali Inspectorate's requirements have been met their sanction should be the refusal of planning permission not the imposition of planning conditions designed to control emissions. (Similar arguments will apply to landlord control by local authorities under the Community Land Act 1975.) We note here that the Secretary of State and the Courts take a strict view of the proper scope of planning conditions and are likely to quash conditions which purport to cover matters already covered by other legislation.

### **Change of use**

358. There is no requirement on developers to obtain planning permission for a change of use of land within the same use class under the provisions of the Town and Country Planning Use Classes Order 1972, or between certain use classes under the provisions of the Town and Country Planning General Development Order 1973. A use of land may change from general to light industrial without requiring express planning permission; this could mean, for example, that a factory sited near to a works emitting a lot of dust could be changed to food production without permission, even though this is clearly undesirable. It has therefore been suggested that changes from general to light industrial use of this type should require planning permission. This would raise considerable problems of definition and impose extra work on planning authorities, but nonetheless we recommend that Government should investigate the feasibility of introducing a requirement to obtain planning permission in such cases.

359. If a factory changes its process or scale of operations within the same use class it may well produce considerable additional air pollution, without being liable to planning control. Provision in the Use Classes Order should be strengthened so that new planning permission is always required if a change of use is likely to lead to a significant increase in emissions. There may again be difficulties of definition but it is illogical to allow a situation in which, even though emissions from a changed process are reduced as far as possible by the pollution control authorities, they still increase total air pollution levels in the area above those agreed as acceptable as guidelines or in the development plan. We therefore consider that there is a legitimate planning interest here and we recommend that the Government should study the feasibility of introducing a requirement for applications to be made for planning permission in these cases.

360. There are areas where pollution is too high because polluting industry is too densely concentrated. A planning authority will in this situation wish to reduce the concentration of industry in the long term. But if it is asked for permission to extend an existing works it may not be reasonable or desirable on other grounds to refuse permission, even though granting it is more likely to consolidate that use of the site than to encourage its discontinuance. The time to deal with this problem should be when a particular firm decides to move

elsewhere or closes down. But planning permission is related to a site, not a business, and there is nothing to stop another industry within the same use class taking over the works and not merely continuing but possibly increasing the pollution. Our proposals in Chapter VII, which will allow for the prior approval of pollution control equipment in these circumstances, will help with this problem but not eliminate it. While we have not been able to go deeply into this problem we suggest that the solution might lie in planning permission for extensions being limited in time or possible even limited to the use of one person or company. The first of these can easily be done, the second only with the agreement of the person concerned: agreement is likely to be forthcoming if the alternative is refusal of planning permission.

### **Compensation**

361. A local planning authority may find itself in a situation where it wishes to close a works down. There may be various reasons for this. The pollution from the works may be causing serious annoyance even though the best practicable means are being used; new information may have come to light about the toxicity of pollutants being emitted; or the works may be emitting far more pollutants than it was expected to do at the time of its planning application. In any of these cases there are various remedies to which in England and Wales the local authority can have recourse. Under section 100 of the Public Health Act 1936 local authorities may take action in the High Court to prohibit a statutory nuisance, and they are not liable to pay compensation if the action succeeds. Similarly there is no liability for compensation if local authorities are successful in a prosecution under section 222 of the Local Government Act 1972 for the protection of the interests of the inhabitants of their area. The use of the best practicable means to prevent pollution is not, as the law now stands, a valid defence in this type of action. However, if local authorities take action under planning legislation to revoke planning permission or serve a discontinuance of use order on a works, they are normally liable for compensation. (There is no general Scottish equivalent of section 100 of the Public Health Act 1936 but section 36 of the Public Health (Scotland) Act 1897 provides for recourse to the Court of Session in cases involving offensive trades. The broad Scottish equivalent of section 222 of the Local Government Act 1972 is section 189 of the Local Government (Scotland) Act 1973.)

362. This situation, at least in England and Wales, is anomalous. It is more so when one considers that an offending works may have been originally sited away from houses or other sensitive development but the local authority have later given permission for houses to be built around it. Equally, the works may have been given planning permission to establish itself or expand in an unsuitable area even though the local authority could and should have known that it would create a nuisance. This is basically a failure of planning control rather than of pollution control and in principle should normally be corrected under planning law which provides for the payment of compensation. However, there are also cases where nuisance has arisen through no fault of the planning system in that both the offending works and the development around it were built before planning control existed. Although the planning law can still be

invoked in this situation, local authorities should have an additional power to apply as a last resort to the Courts for the closure of a works which, even though using the best practicable means to control its emissions, makes local conditions intolerable.

363. Clearly if two procedures exist, it must be up to a local authority to decide which to use in any particular instance. Nevertheless it should not be open to a local authority who are, through planning decisions, partly to blame for a nuisance to close an offending works through High Court action without paying any compensation or damages. We recommend that in considering a case brought under section 100 or similar legislation the Courts should be required to take into account the planning history and to consider whether the planning authority were in any way to blame for the situation that had arisen. If the Courts decided that closure of a works on nuisance grounds was warranted they should be able to direct that compensation should be payable to the owners in proportion to the local authority's degree of responsibility.

364. The use of section 100 to bring about the closure of a works creating a nuisance can give rise to other problems elsewhere if the works concerned is providing a service which is nationally or locally essential, such as the disposal and recycling of unpleasant forms of waste. Here the interests of the immediate neighbours conflict with those of the wider public. The Courts cannot reasonably be asked to take into account the wider public interest when considering whether a particular works creates an intolerable nuisance: it must be up to local authorities to consider carefully the wider implications of action before embarking upon it. In particular, local authorities should consult with the government department most concerned and with other local authorities, including the waste disposal authority, most likely to be affected so that they are aware both of the implications of action and of any possible alternatives such as relocation. A local authority's right to take action should not however be dependent on the agreement of the Secretary of State.

365. There is another compensation issue which we consider requires further study. This is the case where outline permission has been given for a development, but is then revoked when more detailed information is supplied at the next stage of the planning process. Although this problem is unlikely to arise if the local authority have already determined the total pollution capacity of a site as we suggested in paragraph 344, such revocation is generally subject to compensation. We recommend that this should be examined to see whether compensation is always appropriate in a case where later information indicates that the development would lead to a volume of pollutant emissions which is not only unacceptable but which could not have been predicted when the outline consent was given.

#### **General guidance to local authorities**

366. The Department of the Environment issued a draft circular in 1972 on planning and clean air which sought to give planning authorities some guidance on air pollution matters. This draft, whose issue was held up until our

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study was completed, has been commended in various submissions of evidence to us. We believe that the Scottish Development Department have been considering the issue of a similar circular. We welcome these initiatives and wish to see this work carried forward. We recommend that the Government should take immediate steps to prepare and issue guidance, taking account as necessary of the other issues we discuss in this chapter.

## **CHAPTER XII**

### **CHAPTER BY CHAPTER SUMMARY AND RECOMMENDATIONS**

#### **CHAPTER I: AIR POLLUTION: AN INTRODUCTION TO THE PROBLEMS**

367. Air pollution can affect human health and amenity, animal health, vegetation, buildings and thus the economy. Pollution control is essential to achieve an acceptable level of air quality, but there are many factors to be considered in determining how much control is necessary and desirable. A clear distinction must be drawn between air quality, determined by the ground level concentrations of pollutants which directly concern the public, and emissions whose control is the only means by which air quality can be improved.

#### **CHAPTER II: THE HISTORICAL BACKGROUND**

368. Air pollution control has a long history: the control procedures for smoke and for other air pollutants have evolved separately. Responsibility for control is shared between local authorities and the Alkali Inspectorate.

#### **CHAPTER III: DOMESTIC SMOKE CONTROL**

369. Local authorities have powers to create smoke control areas and where this has been done there have been great reductions in smoke. However, domestic smoke in combination with sulphur dioxide is still a major pollutant in many areas. The chief barrier to further progress in smoke control is financial but we see no scope for changing the financing arrangements. It is right that the initiative for introducing smoke control should rest with local authorities. Central government should give guidance to assist these authorities in deciding where smoke control is needed so that available resources are used most effectively.

#### **CHAPTER IV: INDUSTRIAL AIR POLLUTION CONTROL: THE PRESENT SYSTEM**

370. The Alkali Inspectorate and its counterpart in Scotland, the Industrial Pollution Inspectorate, are small, technically highly qualified organisations who are together responsible for the control of emissions from about 2,500 "registered works". These are the works which present the most technologically difficult air pollution problems. The Inspectorates exercise control principally by prior approval of plant and by ensuring that the "best practicable means" are used to control emissions. This system allows control requirements to be



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adapted to particular circumstances. Local authorities, who deal with air pollution from the vast majority of industrial processes and from domestic premises, have more limited powers of control. The local authority Environmental Health Officers who deal with air pollution also have a wide range of other responsibilities.

### **CHAPTER V: INDUSTRIAL AIR POLLUTION: THE SYSTEM IN PRACTICE AND ITS ACHIEVEMENTS**

371. The Alkali Inspectorate have achieved great advances in pollution abatement but have, despite this, been the subject of much public criticism. Their close collaboration with industry which has undoubtedly helped them greatly to reduce emissions has also led to the public impression that they are insufficiently tough in their demands. Failures in public relations, for which the smallness of the Inspectorate has been partly responsible, and their attitude towards the confidentiality of pollution data have also generated criticism.

372. The effectiveness of local authorities in controlling industrial air pollution is more difficult to assess, especially in view of the recent reorganisation of local government. Abilities and attitudes vary widely. Local authorities are more open than the Alkali Inspectorate to pressures from the public though this does not necessarily lead to wiser decisions on pollution abatement. There is a need for close co-operation between the Alkali Inspectorate and local authorities whose roles are in some ways complementary. Co-operation is often insufficient at present though there are places where it is very good.

### **CHAPTER VI: MAIN ELEMENTS OF A FUTURE CONTROL SYSTEM**

373. There is a need for a central expert body to deal with the more difficult industrial emission problems and to negotiate nationally with industry on measures for pollution abatement. This body must have powers of control as it would in time lose technical competence if it were merely advisory: in any case local authorities do not in general have adequate expertise to ensure compliance with control criteria for technologically difficult processes set by a central body. The Alkali Inspectorate and, in Scotland, the Industrial Pollution Inspectorate have the expertise for this central role. Control of air pollution should therefore continue to be shared between central and local government. The central body should work closely with local authorities; each can benefit from the other.

#### **Best practicable means**

374. The best practicable means approach to the control of air pollution, if properly used, is preferable to a system in which rigid emission limits are specified irrespective of local and national circumstances. It provides a flexible method of achieving the balance of costs and benefits which should be the aim of pollution control.

### **Air quality**

375. Air quality *standards*, by which term we mean statutory maxima of pollutants permitted in the ambient air, are unrealistic and unenforceable in the current state of technical knowledge. However, air quality *guidelines* should be established to help local authorities focus attention on areas where action is needed; they would also help regional planning and the formulation of long-term pollution policies. There are many difficulties in determining how to set guidelines, but these should be faced. Guidelines should be expressed as a band defined by upper and lower levels rather than as single figures.

### **European Economic Community**

376. Uniform emission standards are unnecessary, impracticable and wasteful. A better approach to control is to consider what the environment is to be used for and what it can reasonably be expected to bear in all the circumstances. The imposition of rigid, statutory air quality standards is unwise because these would be unenforceable in practice.

## **CHAPTER VII: ARRANGEMENTS FOR AIR POLLUTION CONTROL**

### **Scheduling and descheduling**

377. Arrangements for scheduling and descheduling (that is, for deciding whether the control of emissions from specific processes should be the responsibility of the Alkali Inspectorate or of local authorities) should be made more flexible. The Secretary of State should take scheduling decisions after wide consultation. The Alkali Inspectorate should have control where works cause special difficulties, or where problems are likely to continue; otherwise responsibility should generally lie with local authorities wherever they have the necessary competence.

### **Means of control**

378. The legislation has developed piecemeal, and there are differences between the provisions for control by central and local authorities which inhibit flexibility. These should be removed by new comprehensive legislation providing for regulation of combustion and non-combustion processes in the same way. The best practicable means should be used to control emissions from all industrial processes.

### **Alkali Inspectorate and best practicable means**

379. Alkali Inspectors do not themselves have expertise in disciplines such as economics and accountancy necessary for their negotiations with industry to determine best practicable means. This expertise should be made available. Formal procedures are needed to allow local authorities and other interested parties to make their views known before decisions are reached on programmes for the abatement of pollution and the determination of best practicable means for an industry or a particular works. The decisions reached on best practicable means should be published.

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### **Local authorities and best practicable means**

380. Local authorities should be able to insist on the best practicable means being used in processes under their control, subject to guidance by Government on the more technologically difficult processes. There should be certain rights of appeal against a local authority's decision on best practicable means.

### **Registration**

381. The present process of annual re-registration of works is a mere formality. In future the Alkali Inspectorate should issue "consents" with conditions defining best practicable means for works, renewable after about three years. This would make the control requirements clearer to all concerned. Renewal could be refused, or the consent could be withdrawn. Prosecution, which would be for infringement of consent conditions, would be made easier. Local authorities should have similar powers for works with significant air pollution problems. There should be certain appeal rights to the Secretary of State. Copies of consents should be made available to the public locally.

### **Enforcement**

382. Many people are concerned about what they consider to be inadequate enforcement of the Alkali Act. However, to police works effectively the Alkali Inspectorate would need so large an increase in staff that it would seriously impair the nature of their organisation. A militant prosecution policy would also be counter-productive. The answer lies in co-operation between the Alkali Inspectorate and local authorities. Selected Environmental Health Officers should become agents of the Inspectorate with limited powers and should deal with certain pollution problems on the spot.

### **Information and complaints**

383. Local people should be able to find out about the air they breathe and about what industry puts into it: most of the information will be made available under the Control of Pollution Act. Local authorities should tell the Alkali Inspectorate about complaints concerning registered works; the Inspectorate should also keep local authorities informed about pollution control at registered works.

### **Crown exemption**

384. Some Crown buildings, including hospitals, pollute the air; the Crown should pledge itself to reduce pollution from its property to levels similar to those demanded from industry.

## **CHAPTER VIII: THE HEALTH AND SAFETY COMMISSION AND EXECUTIVE AND ENVIRONMENTAL POLLUTION**

385. The Alkali Inspectorate were included in the Health and Safety Executive so that air pollution inside and outside the factory arising from the same sources in registered works could be controlled together. This decision did not take external environmental factors into account: internal and external control are based on quite different considerations.

386. The Health and Safety Commission and its Executive are industry-oriented bodies, set up to protect workers; they do not have an environmental competence, nor would it be appropriate, in view of their prime purpose, for them to acquire one. The Alkali Inspectorate should be transferred forthwith from the Health and Safety Executive to the Department of the Environment, where it can operate for the time being under an agency arrangement with the Executive. The new Inspectorate incorporating the Alkali Inspectorate which is proposed in the following chapter should also come under the Department of the Environment.

#### **CHAPTER IX: A UNIFIED POLLUTION INSPECTORATE**

387. Control of one form of pollution can lead to pollution in another medium. A new, unified pollution inspectorate, called for convenience Her Majesty's Pollution Inspectorate (HMPI), should be set up to ensure that the release of pollutants to air, water or land causes the least environmental damage overall, so achieving the "best practicable environmental option". This inspectorate should concern itself only with the industrial processes involving technologically difficult pollution problems. It should use the Alkali Inspectorate's concept of best practicable means, which can only be applied effectively by those who have a full understanding of the technology of industrial processes. Such knowledge, which at present is not employed for dealing with solid wastes or (generally) with liquid effluents, should be concentrated within one organisation to achieve the most efficient use of resources.

388. HMPI should take over the functions and staff of the Alkali Inspectorate and its task should be to limit industrial pollution in any form. Waste disposal authorities would remain responsible for disposal, and water authorities for setting water quality criteria and consent conditions. HMPI should also deal with technically difficult noise problems arising from industry which cause serious difficulties in the external environment. HMPI's work would complement that of the water and waste disposal authorities and would also contribute to the most efficient use of the scarce resources available for pollution control.

389. HMPI should be responsible to a central pollution policy body in the Department of the Environment which would have access to supporting scientific and other, especially economic, expertise.

390. Devolution proposals may affect the arrangements for establishing HMPI. The Scottish Industrial Pollution Inspectorate should be extended to form a HMPI. A common HMPI for England and Wales would be most effective, with HMPI reporting to the Secretary of State for Wales (or the Welsh Assembly) on Welsh matters.

#### **CHAPTER X: MONITORING AND RESEARCH**

391. Monitoring arrangements will need to be reorganised to meet the needs of a system of air quality guidelines. Central government should take the lead here, but local authorities should continue to have the main responsibility for monitoring ambient air quality. Central government should also review the machinery for identifying gaps in air pollution research and establishing priorities for further study.

## CHAPTER XI: PLANNING AND POLLUTION

392. Many pollution problems are exacerbated by bad planning decisions: sensitive developments such as housing or hospitals have been established too close to polluting factories and vice versa. Pollution effects must be carefully considered before planning decisions are made. Long-term pollution policies, based on air quality guidelines, need to be drawn up in consultation with the pollution control authorities and with Government. Generally, the Government should give local planning authorities more advice on the pollution implications of planning. Local authorities should seek the advice of the pollution control authorities on specific proposals: in some instances consultation with HMPI should be mandatory. Local planning authorities' sanction against a proposed development which they consider unacceptable for pollution reasons should be refusal of planning permission: they should not try to control pollution by planning conditions. The Government should examine the law and practice of action which local authorities can take to close an existing works whether under planning or other law and resolve the present inconsistencies.

### RECOMMENDATIONS

393. The following is a list of recommendations with references. Numbers in brackets refer to paragraphs.

#### **Domestic Smoke Control**

1. To speed up the procedure for making smoke control orders objections should normally be dealt with by the written representations procedure (62).
2. Local authorities should always explain to those affected the need for smoke control and what it entails (62).
3. Sulphur content should be taken into account in considering the approval of fuels for use in smoke control areas (63).
4. Decisions on where smoke control is needed should continue to be made by local authorities (68).
5. They should however be assisted by guidelines drawn up for this purpose by the Government (72).
6. The Government should consider whether to lend or hire monitoring equipment to local authorities to help them assess the need for smoke control (74).

#### **Comparative studies**

7. The Department of the Environment should initiate a study of the effectiveness of different countries' systems of air pollution control, possibly through an international organisation (141).

#### **Central or local control**

8. Control of industrial air pollution should continue to be shared between local authorities and a central inspectorate (160-161).

**The principle of control: best practicable means**

9. We are opposed to uniform, statutorily enforceable emission standards (163–166) and therefore to the standards proposed by the European Economic Community (182).

10. Control of industrial emissions should continue to be based on the principle of the “best practicable means” (166).

**Air quality guidelines**

11. More specific attention should be paid to air quality (167).

12. Statutory standards of air quality would be unenforceable and should not be adopted (168); we are therefore opposed to the European Economic Community’s proposals on such standards (183).

13. The Government should establish air quality guidelines for certain pollutants (169).

14. Guidelines should be expressed in the form of a band rather than a single figure (175).

15. Local authorities should adopt air quality targets using these guidelines (177).

**Scheduling and descheduling**

16. Decisions on the scheduling and descheduling of classes of works should continue to be taken by the Secretary of State for the Environment, who should also be able to schedule and deschedule individual works. Decisions should be taken after wide consultation (191 and 192).

17. Unless there are grounds for control by the central inspectorate, local authorities should control all those works which lie within their technical competence (193).

18. The existing division between scheduled and unscheduled processes should be examined to see whether there is already scope for change (195).

19. Once a particular works or class of works is scheduled or descheduled its status should not be reconsidered for a minimum specified period (196).

**New Legislation**

20. There should be new comprehensive legislation to cover all aspects of industrial air pollution (198 and 199). This legislation should extend the best practicable means criterion and should include power to limit the rate of or ban the discharge of a specified pollutant. “Fume” should be controlled (200).

**The determination of the best practicable means**

21. Wider participation is needed in the determination of the best practicable means (202 and 203). The Department of the Environment should consider what machinery should be introduced for this purpose. The final decision on bpm should remain with the Alkali Inspectorate (204 and 205).

## *Chapter XII*

22. Consultation along similar lines is also needed at the local level about significant changes to the bpm to be agreed for specific works (207 and 208).

23. The Government should issue advice to local authorities on the best practicable means of controlling the more difficult non-registered processes (210).

24. There should be provision for appeal where a local authority and a firm cannot agree on bpm (210).

### **Registration and consents**

25. Applications for the registration or re-registration of works should be made through local authorities to the Alkali Inspectorate. New works must continue to have the prior approval of the Inspectorate before starting operations (214).

26. Registration should take the form of a consent which would detail the conditions defining the bpm for a works (215).

27. Consents would be renewable at regular intervals, and could be withdrawn or their renewal refused at the discretion of the Secretary of State (215).

28. Prosecution would be not for failure to use bpm but for infringement of consent conditions (215).

29. The consent could be amended or waived for a limited period if the District Inspector considered that unusual circumstances justified this (217).

30. Local authorities should issue consents to the more difficult of the works they control. There should be certain rights of appeal to the Secretary of State (218).

31. Copies of consents issued by both the Alkali Inspectorate and local authorities should be kept by the local authorities concerned on publicly accessible registers, together with the results of monitoring carried out under the terms of those consents (215 and 218).

### **Enforcement**

32. The Alkali Inspectorate and local authorities should make more inspections outside office hours (223).

33. More effective inspection of registered works can be achieved by greater co-operation between the Alkali Inspectorate and local authorities. Environmental Health Officers should have a clear right to enter any works where they believe the consent conditions are being breached and to report their findings to the District Alkali Inspector (224 and 225).

34. The Department of the Environment should consider with the appropriate authorities whether Environmental Health Officers with the necessary technical expertise could be appointed as agents of the Alkali Inspectorate with specified powers (226).

### **Prosecution**

35. An aggressive prosecution policy would not be desirable but where breaches of requirements are frequent or severe, prosecution should follow automatically (227, 228 and 232).

36. When a firm have been notified of a breach of requirements the fact should be made public (229).

37. Alkali Inspectors and Environmental Health Officers should assist each other in detecting breaches and in prosecutions (230 and 233).

### **Information and complaints**

38. The controlling authorities should be able to release data on emissions to the public (236).

39. Complaints about registered works should normally be made to the local authority who should pass them on to the Alkali Inspectorate and, if necessary, inspect the offending works themselves (238).

40. Local authorities should receive periodic reports from the District Alkali Inspector on the performance of registered works in their areas. There should also be occasional opportunities for councillors to question the District Inspector (239).

### **Crown Exemption**

41. The Crown should be bound by the new legislation we propose. The Government should also publicly pledge itself to conform to the spirit of the legislation and to consult with the relevant pollution control officers on the best means of avoiding or reducing air pollution (243).

### **The Alkali Inspectorate and the Health and Safety Executive**

42. The incorporation of the Alkali Inspectorate in the Health and Safety Executive is potentially damaging to the environment (257). The Inspectorate should be removed from the Health and Safety Executive forthwith and should return to the direct control of the Department of the Environment (259).

### **A Unified Pollution Inspectorate**

43. A new unified inspectorate (Her Majesty's Pollution Inspectorate or HMPI) should be set up to ensure an integrated approach to difficult industrial pollution problems at source whether these affect air, water or land. HMPI would expand the concept of the best practicable means to ensure the adoption of the "best practicable environmental option" (271).

44. HMPI would be a small, centrally administered, technically highly qualified body whose concern would be with the environment as a whole (272).

45. HMPI should take over the existing staff and responsibilities of the Alkali Inspectorate (273).

46. HMPI would be concerned with industrial wastes which are hazardous or whose disposal presents difficult problems (275).



## *Chapter XII*

47. HMPI should consider the possibilities for eliminating, reducing or recycling wastes or changing their form (275).

48. Powers should be enacted to enable HMPI to take this role (275).

49. HMPI should liaise closely with waste disposal authorities (276).

50. Water authorities would continue to set and enforce consent conditions for the release of effluents to water (277).

51. HMPI would complement the work of water authorities by applying their technical knowledge of processes to seek the reduction of effluents in negotiation with industry (279).

52. Eventually HMPI would enable water authorities to tighten their consent conditions. Close co-operation is needed between HMPI and the water authorities. Again, HMPI will need statutory authority (279).

53. HMPI should also deal with industrial noise, but only where it constitutes a severe problem in the external environment and where its reduction presents technical difficulties. HMPI should also advise local authorities on general industrial noise problems (280).

54. HMPI's remit might in future be extended to some other forms of pollution (281).

55. HMPI should be involved with all the pollution problems arising from a scheduled process, whether or not pollution is difficult in every medium (283). Processes should be scheduled or descheduled for all pollutants at once (284).

56. Scheduling arrangements for HMPI should be based on those we recommend for the Alkali Inspectorate in paragraphs 188-197 (284).

57. The Government should immediately start consultations with all those concerned on the means of implementing HMPI (290).

58. HMPI staff should be encouraged to exchange for short periods with staff in other bodies in the pollution field (292).

59. HMPI should report to a central pollution policy body within the Department of the Environment (293).

60. This policy body should be responsible for ensuring that the necessary economic, accounting, scientific, medical and social expertise is available to HMPI (293).

61. HMPI should operate with a fair degree of independence within specified policy guidelines. They should be able to commission research and should report annually to Parliament (294).

62. HMPI Inspectors should work from regional offices staffed with appropriate supporting services: arrangements should be made to ensure that Inspectors can readily be contacted (295).

63. There would be advantage in HMPI regional boundaries being coterminous with those of water authorities (295).

64. A separate HMPI should be established for Scotland based on the existing Industrial Pollution Inspectorate (296).

65. Ideally, England and Wales should be served by a single Inspectorate reporting in Wales to the Secretary of State for Wales (or the Welsh Assembly) (297).

66. New legislation is required to implement our proposals for HMPI fully but its nucleus can be formed now from the staff of the Alkali Inspectorate who could start involving themselves in wider pollution questions at once (300).

### **Monitoring and research**

67. Industry should be encouraged to make its own monitoring data of both emissions and, where appropriate, ground level concentrations available publicly (307).

68. The regular monitoring of air quality should continue to be undertaken by local authorities, who should be advised by the Department of the Environment (312).

69. The Department of the Environment should assume formal responsibility for the National Air Pollution Survey, using the services of the Warren Spring Laboratory to co-ordinate the work as at present (314).

70. The Department of the Environment should consider whether the scientific advice directly available to the Central Unit on Environmental Pollution at present is adequate for the co-ordinating role it should play in relation to both air quality guidelines and HMPI (314).

71. Industry should continue to undertake the regular monitoring of emissions. The controlling authorities should carry out more tests themselves (316).

72. The assessment of the biological and other effects of pollutants in low concentrations and the study and use of modelling techniques to elucidate the patterns of distribution of pollutants around their sources should be encouraged (317).

73. The Department of the Environment should urgently complete their general study of the co-ordination of pollution research in consultation with other bodies concerned (320).

74. The Government, local authorities and other bodies concerned should consider what arrangements are required to ensure that any necessary research on methods of control of non-registered processes is undertaken (322).

### **Planning**

75. Pollution policies should be embodied in structure plans and developed in subject plans: local authorities will need Government guidance on this (337).

76. There should be liaison on a regional or inter-county basis to establish a team of experts to assist individual authorities in determining their pollution policies (339).

## *Chapter XII*

77. The Government should study the case for establishing "buffer zones" around heavily polluting industries. This should include consideration of whether buffer zones should always be at the discretion of the local authority or whether they should in some circumstances be mandatory (343).

78. Local authorities, aided by air quality guidelines, should consider determining the total pollution capacity for a site against which applications for development could be cumulatively assessed (344).

79. Local planning authorities should ensure that Environmental Health Officers are consulted on all relevant planning applications (347).

80. It should be mandatory for planning authorities to consult HMPI (or, at present, the Alkali Inspectorate) on all applications for permission to build or alter registrable works (348).

81. The pollution control authorities should also be involved in any informal discussions preceding a relevant planning application (346).

82. HMPI should, after consultation with the local authorities concerned, designate zones round registered works. Consultation with HMPI should be mandatory on all development with these zones (349).

83. A specific requirement should be laid on local authorities to take account of the need to conserve and improve the environment (350).

84. The proposers of certain major developments should, after consultations with the appropriate bodies, provide an assessment of the total pollution effects of those developments. Rules should be made to ensure that the developer has the assistance he needs. The assessment should be published with an opportunity for public comment before decisions are taken (352).

85. If there is any legal doubt on planning authorities' powers to acquire all the information a developer can provide, it should be removed: if not, planning authorities should be made aware of the fact (354).

86. The Government should consider the possibilities for providing for some degree of technical concensus to be reached before a public inquiry is opened. Such a concensus should be publicised (355).

87. Planning authorities should not attempt to control emissions through the imposition of planning conditions: their sanction against a development unacceptable on pollution grounds should be the refusal of planning permission (357).

88. The Government should investigate the feasibility of introducing a requirement to obtain planning permission for certain changes of the use of land where this is not now necessary (358 and 359).

89. Planning authorities should consider whether planning permission for an extension to an existing polluting works should be limited in time or possibly even limited to the use of one person or company (360).

*Chapter by chapter summary and recommendations*

90. In considering an application for an injunction brought against a polluting works the Courts should be required to consider the local planning authority's responsibility (if any) for the situation that had arisen (363).

91. Local authorities should be liable for compensation for closure of a works in proportion to their degree of such responsibility (363).

92. Local authorities should consider the wider implications of any proposed action which might result in the closure of a works before embarking upon it, and consult with the Government and other affected bodies (364).

93. The Government should consider whether compensation should be payable when outline planning permission is revoked because unforeseen changes in the developer's proposals would lead to an increase in likely pollution (365).

94. The Government should prepare and issue guidance on pollution issues to planning authorities, taking account of our recommendations (366).

## **ACKNOWLEDGMENTS**

394. We wish to express our gratitude to our Secretary, Lionel Rutterford, and to all the staff of our Secretariat on whom so much of the work involved in preparing this Report has fallen. In particular we would like to thank Mrs. Angela Moss and Miss Lindsey Oldman who were seconded to us from the Department of the Environment specifically to help with this study.

ALL OF WHICH WE HUMBLY SUBMIT FOR YOUR MAJESTY'S  
GRACIOUS CONSIDERATION

BRIAN FLOWERS (*Chairman*)

SHIRLEY ANGLESEY

EIRENE WHITE

RALPH VERNEY

RICHARD DOLL

FREDERICK WARNER

ERIC DENTON

DEREK BOWETT

TONY CHANDLER

FRANK CHAPPLE

JOHN COLLINGWOOD

TERENCE CONRAN

PATRICIA LINDOP

MURDOCH MITCHISON

RONALD NICOLL

RICHARD SOUTHWOOD

PAUL STREETEN

CLIFFORD STAIRMAND

ERIC TAYLOR

GEORGE SPEIGHT

JON TINKER

L. F. RUTTERFORD (*Secretary*)

D. J. MACVICAR (*Assistant Secretary*)

December 1975.

## APPENDIX 1

### CURRENT MEMBERS OF THE COMMISSION

#### *Chairman*

SIR BRIAN FLOWERS, MA, DSC, FINSTP, FRs  
Rector of Imperial College of Science and Technology

THE MARCHIONESS OF ANGLESEY  
Deputy Chairman of the Prince of Wales Committee  
Chairman of the Welsh Arts Council

DR. D. W. BOWETT, MA, LLB, PHD, LLD  
President of Queens' College, Cambridge

PROFESSOR T. J. CHANDLER, MSC, PHD  
Professor of Geography, University of Manchester

F. J. CHAPPLE, ESQ  
General Secretary of the Electrical, Electronic, Telecommunication and  
Plumbing Union

DR. J. G. COLLINGWOOD, BSC, CENG, FICHEME  
A director of Unilever  
Fellow of University College, London

T. O. CONRAN, ESQ  
Designer  
Chairman of Habitat

PROFESSOR E. J. DENTON, CBE, SCD, FRs  
Secretary of the Marine Biological Association of the United Kingdom and  
Director of the Plymouth Laboratory  
Honorary Professor, University of Bristol  
Fellow of University College, London

PROFESSOR SIR RICHARD DOLL, OBE, DM, MD, DSC, FRCP, FRs  
Regius Professor of Medicine, University of Oxford

PROFESSOR PATRICIA J. LINDOP, MB, PHD, DSC, MRCP  
Professor of Radiation Biology, University of London, Medical College of  
St. Bartholomew's Hospital

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**PROFESSOR J. M. MITCHISON, SCD, FRSE, FIBIOL**  
Professor of Zoology, University of Edinburgh

**PROFESSOR R. E. NICOLL, MSC, FRICS, FRTP1**  
Professor of Urban and Regional Planning, Strathclyde University

**PROFESSOR T. R. E. SOUTHWOOD, PHD, DSC, ARCS, FIBIOL**  
Professor of Zoology and Applied Entomology, University of London  
Chairman of the Division of Life Sciences and Director of Field Station,  
Imperial College of Science and Technology

**P. P. STREETEN, ESQ., MA**  
Warden of Queen Elizabeth House  
Director of the Institute of Commonwealth Studies  
Fellow of Balliol College, Oxford

**SIR RALPH VERNEY, KBE, JP**  
Forestry Commissioner  
Chairman of the Secretary of State for the Environment's Advisory Committee  
on Aggregates

**PROFESSOR SIR FREDERICK WARNER, DSC, CENG, FIMECHE, FICHEME**  
Senior Partner in Cremer and Warner (Consulting Engineers)  
Visiting Professor in Chemical Engineering, Imperial College of Science and  
Technology  
Visiting Professor in Environmental Engineering, University College, London  
Pro-Chancellor of the Open University  
Chairman, British Standards Institution  
Fellow of University College, London

**THE BARONESS WHITE, MA**  
Chairman of the Land Authority for Wales  
Member of the British Waterways Board  
Chairman of Advisory Committee on Oil Pollution of the Sea  
Member of the Waste Management Advisory Council

**ASSOCIATES INVITED TO ASSIST THE COMMISSION**

**G. E. SPEIGHT, EsQ, MBE, BSC, FRIC, FIM**  
Consultant to, formerly Manager, Environmental Pollution Control, British  
Steel Corporation

**Professor C. J. STAIRMAND, OBE, BSC, DSC, CENG, FICHEME, MINSTP.**  
Industrial Professor, Department of Chemical Engineering, Loughborough  
University  
Member of the Clean Air Council

**A. E. R. TAYLOR, ESQ, OBE, JP, BSC.**  
Chairman of the Clean Air Council for Scotland

**J. TINKER, Esq**  
Journalist  
Environment Consultant to "New Scientist"

The associates who, for reasons given in paragraph 3, did not sign the Report, were:

**P. JACQUES, Esq**  
Trades Union Congress  
Member of the Health and Safety Executive

**Mrs. P. SHEARD, CBE, JP**  
Member, South Yorkshire County Council  
Member of the Clean Air Council



## APPENDIX 2

### LIST OF THOSE WHO SUBMITTED EVIDENCE

Written submissions were made by the following: those marked \* gave oral evidence at formal Commission meetings; those marked † gave oral evidence during one or more of the Commission's visits.

#### A. Government departments and similar bodies

- \*Department of Employment
- \*Department of the Environment
- Health and Safety Commission and Executive
- †\*HM Alkali and Clean Air Inspectorate
- †\*HM Industrial Pollution Inspectorate for Scotland
- Ministry of Agriculture, Fisheries and Food
- †\*Scottish Development Department
- †\*Warren Spring Laboratory
- † Welsh Office

#### B. Local authorities

- Amber Valley District Council
- † Bristol City Council
- † Cynon Valley Borough Council
- † Derbyshire County Council
- Dudley Borough Council
- Erewash Borough Council
- † Grangemouth Burgh Council
- † Greater London Council
- † Hartlepool Borough Council
- † High Peak Borough Council
- † Langbaugh Borough Council
- † Middlesbrough Borough Council
- Mid-Suffolk District Council
- Motherwell District Council
- North East Derbyshire District Council
- North Yorkshire County Council
- Nuneaton Borough Council
- † Sheffield City Council
- South Derbyshire District Council
- South Ribble Borough Council
- † Stockton-on-Tees Borough Council
- † Swansea City Council
- † Warrington Borough Council
- † West Derbyshire District Council

## C. Other organisations

- † Anglesey Defence Action Group
- Association of County Councils
- Association of County Councils in Scotland
- \*Association of District Councils
- \*Association of Metropolitan Authorities
- † Associated Portland Cement Manufacturers Ltd
- Association of Public Analysts
- Association of Public Health Inspectors: Sea and Air Port Group
- † Bank Quay Residents' Association
- † Billiton (UK) Ltd
- British Independent Steel Producers Association
- British Non-Ferrous Metals Federation
- British Quarrying and Slag Federation Ltd
- † British Steel Corporation
- † BP Chemicals International Ltd
- † Castle Point Refineries Resistance Group
- Cement Makers' Federation
- † Central Electricity Generating Board
- Chemical Industries Association Ltd
- \*Confederation of British Industry
- \*Clean Air Council
- Clean Air Council for Scotland
- Commission for the Environment, New Zealand
- Constituent Cities of the Scottish Counties of Cities Association
- Council for the Protection of Rural England
- † Cynon Valley Anti-Pollution Association
- \*Environmental Health Officers Association (formerly the Association of Public Health Inspectors)
- Farmers' Union of Wales
- † Farmers' Union of Wales (Anglesey County Branch)
- Forestry Commission
- \*Friends of the Earth (Castle Point Branch)
- † Imperial Chemical Industries Ltd
- Institute of Petroleum
- Institution of Professional Civil Servants
- Institution of Public Health Engineers
- Joint Clean Air Committee for the North East
- † Joint Planning Board for the Peak District National Park
- Lead Development Association
- † Leigh Seafront Action Group
- † London Brick Company Ltd
- Low Temperature Coal Distillers Association
- National Coal Board
- † National Farmers' Union
- National Federation of Clay Industries
- National Institute of Public Health, Netherlands
- † National Smokeless Fuels Ltd

## Appendix 2

- \*National Society for Clean Air
- † North East Survival
- † Residents of Heol Pen-y-Rhiw, Mountain Ash
- † Rio Tinto-Zinc Corporation
- † Shell Refining and Marketing UK Ltd
- \*Social Audit Ltd
- The Star (Sheffield Newspapers Ltd)
- Thameside Joint Committee for the Abatement of Atmospheric Pollution
- Trades Union Congress
- † United Carbon Black Ltd
- Welsh Counties Committee
- Samuel Wilkinson and Sons Ltd

### D. Individuals

- Mr. A. Anscombe
- Sir Bernard Braine, MP
- †\*Dr. E. A. B. Birse, HM Chief Industrial Pollution Inspector for Scotland
- Mr. G. Burns
- † Ms. L. M. Ceen, Anglesey Constituency Committee, Plaid Cymru
- Mr. D. Cooper
- Mr. G. Cowley, County Planning Officer, Bedfordshire County Council
- † Mr. J. Farrell, Environmental Health Officer, Cheshire County Planning Department
- Professor J. F. Garner
- † Mr. C. W. Grove-White
- Mr. R. Hall
- Dr. P. T. Hinde
- Dr. J. C. R. Hunt
- † Mrs. A. Hunter
- † Rev. A. K. Jockel, Chairman, Sheffield Amenities Council and Hillsborough and District Amenities Association
- Mr. D. E. S. Middleton
- † Mr. A. G. O'Gilvie, Principal Public Health Inspector (Air Pollution), London Borough of Southwark
- Mr. A. R. Prince
- Mr. F. Reynolds, Chief Environmental Health Officer, Leeds City Council
- † Ms. M. Richardson
- † Mrs. L. C. Rutherford
- † Mrs. J. Wallis, Northfleet Housewives' Action Group
- Mr. A. Wenn, Borough Environmental Health Officer, Derby Borough Council
- Mr. A. Wilde
- Mr. D. Wyatt

### E. Oral evidence only at formal Commission meeting

Commission of the European Communities

## **APPENDIX 3**

### **DETAILS OF VISITS**

Visits were made by groups of Commissioners and Associates to the following organisations. The party was normally accompanied by both the relevant Alkali Inspectors and the relevant Environmental Health Officers. Also listed are those who gave oral evidence during the visits.

#### **ASSOCIATED PORTLAND CEMENT MANUFACTURERS LTD, NORTHFLEET WORKS**

Gravesham District Council

Local residents: Mr. Groombridge

Mrs. J. Wallis, Northfleet Housewives' Action Group

#### **FIRTH BROWN LTD, SHEFFIELD AND BRITISH STEEL CORPORATION, SPECIAL STEELS DIVISION, TINSLEY PARK WORKS, SHEFFIELD**

Sheffield City Council

Local groups: Brightside and Grimethorpe Action Group

Darnall Action Group

Pitsmoor Action Group

Sharrow Action Group

Sheffield Amenities Council and Hillsborough District Amenities Association

Walkley Action Group

Wincobank Residents' Action Group

#### **SHELL REFINING AND MARKETING UK LTD, SHELL HAVEN REFINERY, ESSEX**

Castle Point District Council

Thurrock District Council

Local groups: Canvey Island Ratepayers' Association

Castle Point Refineries Resistance Group

Leigh Seafront Action Group

Thundersley Ratepayers' Association

#### **CENTRAL ELECTRICITY GENERATING BOARD, BATTERSEA AND BANKSIDE POWER STATIONS, LONDON**

City of London

Greater London Council

London Borough Councils of Southwark and Wandsworth

Westminster City Council

Local residents: Mr. Sedgley

Mr. Jackson

*Appendix 3*

**COMMONWEALTH SMELTING LTD, AVONMOUTH, BRISTOL**

Bristol City Council

Local groups: Avonmouth Community Council  
Avonmouth Residents' Association  
Lawrence Weston Community Council

**WARREN SPRING LABORATORY, DEPARTMENT OF INDUSTRY, STEVENAGE**

**LONDON BRICK COMPANY LTD, STEWARTBY, BEDFORDSHIRE**

Bedford District Council  
Bedfordshire County Council  
Kempston Rural Parish Committee  
Stewartby Parish Council  
Wootton Parish Council

**BRITISH STEEL CORPORATION, IMPERIAL CHEMICAL INDUSTRIES LTD (AGRICULTURAL DIVISION) AND WARNER AND COMPANY LTD, TEESSIDE**

Hartlepool Borough Council  
Langbaugh Borough Council  
Middlesbrough Borough Council  
Stockton-on-Tees Borough Council  
Local residents: Mr. M. D. Tubman, Springfield Road Residents' Association  
Ms. M. Richardson, North East Survival Group  
Mrs. E. H. Wright, Yarm Road West Ratepayers' Association  
Mrs. A. Cooper, Teesmouth Field Centre

**NATIONAL SMOKELESS FUELS LTD, PHURNACITE WORKS, ABERAMAN AND UNITED CARBON BLACK LTD, PORT TENNANT**

Cynon Valley Borough Council  
Swansea City Council  
Welsh Office  
Dr. J. L. Williams, Deputy Community Physician, Cynon Valley Community Health Centre  
Local groups: Cynon Valley Anti-Pollution Association  
Residents of Heol Pen-y-Rhiw  
Port Tennant Anti-Pollution Association

**BP CHEMICALS INTERNATIONAL LTD, GRANGEMOUTH, BP REFINERY (GRANGEMOUTH) LTD, AND SOUTH OF SCOTLAND ELECTRICITY BOARD, LONGANNET POWER STATION**

Clackmannanshire County Council  
Dunfermline Burgh Council  
Falkirk Burgh Council  
Fife County Council  
Grangemouth Burgh Council  
Stirlingshire County Council  
West Lothian County Council  
Scottish Development Department  
Scottish Home and Health Department  
Dr. G. Fyfe, District Medical Officer, Falkirk District  
Dr. A. W. C. Keddie, Warren Spring Laboratory  
Local people: Mr. A. Bennett  
Lt.-Col. B. Ponsonby  
Mrs. L. C. Rutherford  
Rev. Norman Swan

**JOSEPH CROSFIELD AND SONS LTD AND LEVER BROS. LTD, WARRINGTON;  
ANGLESEY ALUMINIUM METAL LTD, PENRHOS WORKS, HOLYHEAD, ANGLESEY**

Gwynedd County Council  
Warrington Borough Council  
Ynys Môn—Isle of Anglesey Borough Council  
Mr. J. Farrell, Environmental Health Officer, Cheshire County Planning Department  
Gwynedd Area Health Authority  
Institute of Terrestrial Ecology  
Nature Conservancy Council  
Local groups: Bank Quay Residents' Association, Warrington  
The local Conservative Association  
Farmers' Union of Wales (Anglesey County Branch)  
Mr. C. W. Grove-White, Anglesey Defence Action Group  
Holyhead Town Council  
Holyhead Rural Community Council  
National Farmers' Union  
Anglesey Constituency Committee, Plaid Cymru

*Appendix 3*

**STETLEY (MFG.) LTD, MINERALS DIVISION, DOWLOW QUARRY, AND H. J.  
ENTHOVEN AND SONS LTD, DARLEY DALE, DERBYSHIRE**

**Derbyshire County Council**

**High Peak Borough Council**

**Joint Planning Board of the Peak District National Park**

**West Derbyshire District Council**

**Billiton (UK) Ltd**

**Local group: Buxton and District Civic Association**

**Local residents: Mrs. A. Brody**

**Mr. D. E. Fox**

**Mrs. A. Gregory**

**Mrs. T. J. A. Hunter**

**Mr. D. W. Udale**

**Mr. S. Welland**

## APPENDIX 4

### NOTES ON BEST PRACTICABLE MEANS FOR LEAD WORKS

#### 1. General

1.1. These notes are not claimed to be comprehensive, but they do provide a basis for negotiation between works managements and the Inspectorate. Flexibility is left to meet special local circumstances by consultation. There are likely to be matters revealed during routine inspections which will need attention to meet Sections 7(1) and 27 of the Alkali Act.

1.2. All volumes are expressed as being at STP of 60°F and 30 inches of mercury (15°C and 1 bar) and actual moisture and carbon dioxide contents.

1.3. The standards of emission described in paragraph 2 shall apply to existing and to new registered lead works. It is appreciated that a few existing works may have difficulty in operating consistently to the new standards. In those cases, schedules of improvement to meet the new standards shall be worked out by discussions between district inspectors and works managements concerned. Meantime, such works may continue to operate to the standards of emission for which they were designed and accepted by the Inspectorate.

1.4. Attention is drawn to the statutory need for "prior approval" by the inspector of any new plant which is installed or where there are significant modifications to existing plant or processes.

#### 2. Standards of Emission

2.1. Permitted limits are based on the aggregate size of works, expressed in terms of volume rate of discharge, excluding non-lead processes, and apply both to the concentration of lead and mass rate of lead (calculated as pounds per hour) in all emissions to air. In the following classes, "each emission to air" means the contribution to the chimney emission of each lead process after it has passed through the arrestment plant. When determining the class of works by its aggregate volume of emission, general workshop ventilation shall be excluded, but hooded plant preventing fumes escaping into the shop environment shall be included.

2.2. *Class I Works*—i.e. those with a volume of emission less than 7,000 cubic feet (200 cubic metres) per minute. Each emission to air shall contain not more than 0.05 grain per cubic foot (0.115 gm per cubic metre) of lead compounds, calculated as lead. Mass rate of emission for the site shall not exceed 0.6 pounds (270 grams) per hour.

2.3. *Class II Works*—i.e. those with a volume of emission between 7,000 and 140,000 cubic feet (200 and 4,000 cubic metres) per minute. Each emission to



## Appendix 4

air shall not exceed 0.01 grain per cubic foot (0.023 gm per cubic metre) of lead compounds, calculated as lead. Mass rate of emission for the site shall not exceed 6.0 pounds (2.7 kilograms) per hour.

2.4. *Class III Works*—i.e. those with a volume of emission exceeding 140,000 cubic feet (4,000 cubic metres) per minute. Each emission to air shall not exceed 0.005 grain per cubic foot (0.0115 gm per cubic metre) of lead compounds, calculated as lead. The aim shall be not to exceed a mass rate of emission of 12.0 pounds per hour (5.4 kilograms). Dispensation may be needed for some very large works where there are special technical difficulties in meeting these low levels of emission and it may be necessary to combine this with extra high chimneys to improve dispersion.

2.5. The emission of total particulates shall not exceed a concentration of 0.2 grain per cubic foot for volumes of emission up to 25,000 cubic feet per minute, reducing progressively to 0.1 grain per cubic foot for volumes up to 50,000 cubic feet per minute and for greater volumes.

2.6. When a new plant is installed at an existing lead works, the arrestment equipment for the new plant shall be designed and operated to meet the above standards based on the total works emission volume, as defined in 2.1.

2.7. When a new plant is being designed, it is important that all emissions take place from the minimum number of chimneys. Accordingly, unless there are sound technical reasons to support it, a multiplicity of discharges shall be avoided.

### 3. Chimneys

3.1. Chimney heights shall be determined after discussion between the company and the alkali inspector who uses, for his first assessment, the following relationship:—

$$H = 120\sqrt{M_h}$$

where  $H$  = effective chimney height (feet)  
 $M_h$  = permitted mass rate of emission of pollutant (lb/hr).

The chimney heights so obtained may then be adjusted to allow for local circumstance and topography and the presence of other materials of a noxious or offensive nature.

3.2. The minimum actual chimney height for any lead works shall be 100 feet.

3.3. The efflux velocity shall be decided, in consultation with the inspector, according to the circumstances.

### 4. Sampling

4.1. Sampling points and suitable access shall be provided on chimneys or ducts as agreed between works managers and inspectors.

4.2. Routine analysis of emissions, by the owners of works, shall be considered as part of the best practicable means requirements for proper control of operations and emissions.

4.3. The frequency of works testing shall be subject to agreement between works managers and the Inspectorate but shall not normally be less than once per week for each exit. The results shall be recorded and made available to the alkali inspector. Any abnormal results shall immediately be drawn to the attention of the plant management so that appropriate action can be taken to correct faults.

4.4. When suitable and reliable continuous monitoring instruments are devised, it shall be the policy of the industry to have them installed as soon as practicable.

4.5. In addition to the testing of process emissions, works are advised, where practicable, to monitor the effects of their operations on the surrounding neighbourhood by means of atmospheric sampling and the analysis of soils and dusts. This shall be agreed between works managers and inspectors and the results made available as in 4.3.

## **5. Raw Materials**

5.1. The transport of dusty raw materials in the works shall be carried out either in sealed containers or by means of adequately covered vehicles, so as to prevent dust emissions. It would be prudent for works to require delivery of raw materials in a manner which prevents their escaping into the external environment during transit and unloading.

5.2. Except for the situation given in 5.3, raw materials and furnace drosses shall be kept constantly damp, both during handling and storage, by means of suitably placed water sprays or an alternative acceptable to the alkali inspector. This may require the addition of a wetting agent to the water sprays, to achieve adequate dampening.

5.3. Where materials contain substances such as arsenides or antimonides which could emit arsine or stibine on contact with water, they shall be stored under dry conditions in clearly marked bays or containers.

5.4. Raw materials and furnace drosses shall be stored and handled under cover where practicable. For outside storage of dusty materials enclosed bays shall be provided with walls sufficiently high to prevent wind whipping.

## **6. Plant Operation**

6.1. All sources of lead emissions, such as slag and metal pouring points, shall be closely hooded and adequately draughted to arrestment plant acceptable to the alkali inspector.

## *Appendix 4*

6.2. Where an intermediate raw material (e.g. sintered ore) is moved within a works, particular care shall be taken to prevent low-level emissions. Measures taken shall include, where appropriate, adequate enclosure of conveyor belts and transfer points which should preferably be maintained under negative pressure.

6.3. Fine material removed from dry arrestment plant shall be handled with great care and either stored in a sealed container or dampened at the earliest possible opportunity.

### **7. Miscellaneous**

7.1. Efficient maintenance and provision of spares are part of the best practicable means requirement for minimising escapes of dust and fume. Weaknesses or breakdowns leading to leakages shall be dealt with promptly, and in cases of serious leakages, the process shall be shut down immediately for repair. Breakdowns and incidents increasing emissions to air shall be reported immediately to the District Alkali Inspector.

7.2. The highest standards of housekeeping shall be achieved throughout the works. Roadways can be a substantial source for the dissemination of lead dust into the environment and measures shall be taken in agreement with inspectors for minimising the risk. Such measures include regular road sweeping and wetting, with proper drainage, to prevent dust build-up.

7.3. Adequate vehicle washing facilities shall be provided and used to prevent transport of dust outside the works. Particular attention shall be paid to the cleaning of vehicle wheels.

7.4. Plant operators shall receive proper training and instructions in their duties affecting control of the process and consequent emissions to air.

7.5. Good common sense is needed on the part of inspectors and managers in order properly to maintain control of emissions with the minimum of fuss.

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*Chief Inspector.*

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