



ENVIRONMENT
AGENCY

Managing Chemicals for a Better Environment

The Environment Agency's Strategy

CONSULTATION DOCUMENT

28 June 2002

CONTENTS

| | |
|---------------------------------------------------------------------------------------------------------------|-----------|
| EXECUTIVE SUMMARY | 3 |
| THE CONSULTATION PROCESS | 5 |
| SETTING THE SCENE | 7 |
| 1.1 Why should we be concerned about chemicals? | 7 |
| 1.2 What is already being done to manage chemicals? | 7 |
| 1.3 The Agency's role in chemicals management | 8 |
| 1.4 Why do we need a strategy? | 9 |
| THE AGENCY'S CHEMICALS MANAGEMENT STRATEGY | 12 |
| 2.1 Introduction | 12 |
| 2.2 Managing issues | 13 |
| 2.3 Identifying chemical issues | 15 |
| 2.4 Setting priorities | 17 |
| 2.5 Assessing the risks and deciding what to do | 17 |
| 2.6 Key tools to be implemented under the strategy | 19 |
| 2.7 What type of chemicals could be priorities for the Agency? | 25 |
| 2.8 Selecting priority chemicals | 27 |
| 2.9 Working with others and building partnerships | 32 |
| 2.10 Communicating effectively | 36 |
| 2.11 Measuring our success | 38 |
| Appendices | |
| Appendix 1 - Our objectives for 2007 | 39 |
| Appendix 2 - Agency prioritisation of Chemicals | 40 |
| Appendix 3 - Approach taken to identify substances potentially meeting UK Chemical stakeholder forum criteria | 42 |
| Appendix 4 - The Agency's Strategy on endocrine-disrupting substances Major achievements since 2000 | 43 |
| Appendix 5 - Draft template for developing future pollution reduction programmes | 48 |
| Appendix 6 - Glossary | 50 |
| Appendix 7 - Acronyms and Abbreviations | 53 |
| Appendix 8 Feedback Form | 54 |

EXECUTIVE SUMMARY

This is the Environment Agency's Chemicals Management Strategy consultation document. It outlines our objectives, activities and actions up until 2007. These are summarised in Appendix 1.

The Agency's Chemicals Management Strategy focuses on chemicals that may directly affect the environment or human health through environmental exposure.

The Government's UK Chemicals Strategy¹ focuses on commercial production and the use of industrial chemicals. The starting point for the Agency's Chemicals Management Strategy, however, is the potential for affecting the environment of England and Wales. This is regardless of the stage at which a substance enters the environment or the chemical regime governing its use. This reflects the diverse contribution the Agency makes to the management of many chemicals. This contribution spans aspects of production, marketing, use, transport, disposal, and accidental and deliberate releases throughout a chemical's lifecycle. Our strategy will complement and support delivery of UK Government policy objectives and policies on chemicals management.

A key aim of the strategy is to focus our management activities on those chemicals, and at the point in their lifecycle, where we can act directly or indirectly to contribute most effectively to environmental improvement.

Pollution Reduction Programmes have been identified as a key tool to help us address high-priority pollutants. They will set out the Agency's role, actions and targets. They aim to be particularly helpful on complex issues where our activities need to be co-ordinated nationally and in partnership with other organisations.

We recognise that we must take into account the range of environmental values, perceptions, attitudes and behaviours in society before making decisions. We must also consider the costs to society (business and individuals), and try to quantify the environmental benefits (and costs, if any) of our actions.

Our future management of chemicals will be underpinned by an increased understanding of our environment and how chemicals affect it. We will promote research and improved monitoring approaches, set environmental targets and develop new approaches to support chemicals management.

¹ *Sustainable production and use of chemicals – A strategic approach*, DETR, December 1999.

Summary of the issues for consultation

We especially welcome your comments on five key areas, summarised below:

Key area 1: Our approach to assessing priorities and the key tools

- 1a. How well do you think our suggested approach to assessing priorities and determining actions will help us improve environmental protection?
- 2a. How important do you think our key tools (Position Statements, Pollution Reduction Programmes, a framework for setting targets and biological effects measures) are in developing a more focused and coordinated approach to chemicals?
- 2b. Are there any significant gaps in our suggested approach where you would like to suggest alternative solutions?

Key area 2: Our research priorities

- 3a. Have we identified the right research priorities?
- 3b. If not, where should our chemicals research be targeted?

Key area 3: Our approach to specific chemical issues

- 4a. What priority should the Agency give to endocrine disruption and effects of complex effluents in the environment?
- 4b. How do you envisage biological effects measures being used in future?
- 4c. Which groups of chemicals should be priorities for further investigation and control?
- 5a. Which substances should be priorities for Agency Position Statements?
- 5b. Which substances should be priorities for Agency Pollution Reduction Programmes?

Key area 4: Our partnership activities

- 6a. What role should the Agency take in building partnerships to address chemical issues?
- 6b. Which partnership activities are the most important for the Agency to pursue?
- 7a. Which chemical policy initiatives should be a priority for the Agency?

Key area 5: Our approach to communication

- 8a. Which of the communication initiatives identified are the most important parts of the strategy?
- 8b. Are there other communication approaches you would like us to consider?

THE CONSULTATION PROCESS

This consultation document sets out the Agency's Chemicals Management Strategy and our objectives, activities and actions up until 2007.

We value the views of our consultees, and consider them essential if we are to achieve the greatest environmental benefit. To implement the Strategy we will need to work closely with policy makers and other regulators, industry and public and Non Government Organisations (NGOs). As part of our consultation, we are organising a workshop for summer 2002 with a range of stakeholders to explore the issues raised in this document. We would particularly welcome your views on the questions we have raised. A response form to help us analyse your views is provided in Appendix 8.

HOW TO RESPOND

We have announced a 12-week consultation period for our proposals via a press release, letters and e-mail.

We need to receive your response by **30 September 2002**. It can be sent by email, fax, or post:

- by e-mail (in Word or Rich Text format) to emma.passmore@environment-agency.gov.uk
- or by fax to: 0117 914 2929;
- or by post to:
Emma Passmore
Environment Agency
Rio House
Waterside Drive
Aztec West
Almondsbury
BRISTOL
BS32 4UD

In your response please:

- explain who you are and, where relevant, who you represent, and include your name and address;
- order your comments under the same headings as the consultation paper;
- if you have additional comments, please include wherever possible the reference to the issue you are addressing;
- include a summary of your comments if they are more than three pages long;
- inform us if you want your comments to be treated as confidential. (Responses may be made public unless consultees request confidentiality. All responses will be included in any statistical or other summary of the results).

If you would like to discuss any aspect of this consultation, or would like further copies of the document, please phone Emma Passmore on 0117 915 6288 or email emma.passmore@environment-agency.gov.uk

This consultation document and response form can be obtained from the following link at our website. www.environment-agency.gov.uk/yourenv/consultations

Next steps

We will acknowledge contributions and produce a summary of them all, together with our response, on our website. We will develop our Chemicals Strategy in the light of the responses.

Code of practice on written consultation

This consultation paper has been produced in accordance with the Cabinet Office code of practice on written consultation.

The consultation criteria are:

1. Timing of consultation should be built into the planning process for a policy (or legislation) or service from the start. This should give it the best prospect of improving the proposals concerned and ensure that sufficient time is left for consultation at each stage.
2. It should be clear who is being consulted, about what questions, against what timescale and why.
3. A consultation document should be as simple and concise as possible. It should include a summary - two pages at most - of the main questions it seeks views on. It should make it as easy as possible for readers to respond, make contact or complain.
4. Documents should be made widely available. The fullest use should be made of electronic means, although not to the exclusion of others. It should be effectively drawn to the attention of all interested groups and individuals.
5. Sufficient time should be allowed for considered responses from all interested groups. Twelve weeks should be the standard minimum period for a consultation.
6. Responses should be carefully and open-mindedly analysed. Results should be made widely available - with an account of the views expressed- and reasons for decisions finally taken.
7. Departments should monitor and evaluate consultations. Consultation co-ordinators should be appointed to ensure lessons are disseminated.

If you have a complaint about the consultation process, please contact the Environment Agency's consultation co-ordinator, Robin Chatterjee, either by email (robin.chatterjee@environment-agency.gov.uk) or by phone (01454 624081).

SETTING THE SCENE

1.1 Why should we be concerned about chemicals?

Chemicals bring major benefits to society. They provide health and consumer products, boost food production and bring trade and employment opportunities. However, some chemicals are intrinsically hazardous. They may represent a risk to human health and the environment if the potential for exposure to them is not properly managed.

Chemicals management is complex. Chemicals can enter the environment through accidental or deliberate release. Release may occur during: manufacture, use, transport, disposal or recycling. Chemicals may also be formed unintentionally as by-products or breakdown products. There are now many chemicals available with a variety of uses, pathways, transformations and exposure routes through the environment.

Managing chemicals is made more difficult as a result of:

- incomplete information on how chemicals are used and their hazardous properties;
- single or repeated exposure to complex chemical discharges and the difficulties in assessing the associated risks;
- the uncertainty surrounding the effects of chemicals on human health and the environment;
- the movement of chemicals across national and international political and administrative boundaries;
- the range of organisations involved in different aspects of chemicals management.

1.2 What is already being done to manage chemicals?

The regulatory framework managing chemicals in England and Wales is very comprehensive. However, it has evolved in a piecemeal way in response to different issues and European legislative requirements. As a consequence, many organisations are involved in managing environmental and human exposure to chemicals. Such organisations have different roles depending on the type of chemical and stage in a chemical's lifecycle.

The UK Chemicals Strategy provides a useful summary of the legislative framework for the production and use of chemicals in the UK (see www.defra.gov.uk).

Legislation to assess and control chemicals is applied at all stages of the chemical lifecycle and not all chemicals are subject to the same regulatory regime. There are controls on chemicals: before they come to market; during manufacture, marketing and use; during transportation; and the release of waste chemicals to air, land and water environments. There are specific legislative requirements for pesticides, medicines, veterinary medicines, biocides, cosmetics, radiochemicals, offshore chemicals and food additives.

There have been significant advances in legislation controlling chemicals over the past 20 years. However there are still gaps. One major issue is the large number of substances in use that have not been adequately assessed. It is estimated that 90 per cent or more of industrial chemicals in current use (about 30,000 substances 'existing' on the market before 1981) have not been assessed under new legislation. The

European Commission is developing an EU chemical strategy to address these deficiencies. The strategy proposes a single new procedure (called REACH) for assessing existing and new substances. This will place more responsibility on producers and downstream users. Such producers and users will generate and register data, and undertake initial assessments of chemicals. Regulators will concentrate on evaluating the most hazardous substances and authorising specific uses.

The UK Government published its strategy on *The Sustainable Production and Use of Chemicals* in 1999. It focuses on the marketing and use of chemicals where such activity may be harming human health or the environment. It is not within the remit of the strategy to consider the risks posed by chemicals released into the environment as waste emissions (for example, discharges to rivers via sewage works, to the air via factory stacks, or to landfill sites as solid waste). Groups of chemicals subject to a 'positive approval procedure' (for example, pesticides, biocides, veterinary medicines and human pharmaceuticals) are outside the strategy's scope.

Like the EU strategy, the UK one aims to single out approaches to identify and take swift action on substances posing unacceptable risks. A UK 'Chemicals Stakeholder Forum', supported by an Advisory Committee on Hazardous Substances, has been established under the strategy. Part of this group's role is to identify substances of most concern and advise Government on voluntary risk-management approaches. The Agency sits as observers on both these groups.

1.3 The Agency's role in chemicals management

The Agency supports the development of international, EU, and Government chemicals policies. The Agency has specific roles in different regulatory regimes. Our roles vary not only for the type of chemical (for example, industrial, pesticide) and the lifecycle stage of a chemical (for example, production, in use, during disposal), but also with regard to the way in which a chemical enters the environment (for example, industrial emission, domestic waste).

Our duties and powers include responsibility to:

- report on the State of the Environment for England and Wales;
- act as part of the UK competent authority for notification of new substances and to undertake environmental risk assessments on 'existing' substances;
- ensure operators control releases of chemicals to all environmental media from major industrial sources;
- assess the presence and effect of chemicals in, and on, the water environment from all sources;
- exercise our powers to meet water quality objectives;
- determine operational requirements for landfill sites for hazardous and non-hazardous wastes;
- administer the consignment system for Special waste;
- act as the enforcement authority for contaminated land designated as special sites and advise local authorities on other determined sites;

- prevent pollution by working with industry and Government to reduce chemical impacts on the environment where we have no direct regulatory powers;
- report on emissions for regulated processes through the Pollution Inventory.

In some areas our powers are strong (for example, regulating point-source emissions from major industry). In others they are weak and we may have only a minor role to play (for example, restrictions on marketing and use) see Table 1.

1.4 Why do we need a strategy?

The Agency needs to take a more strategic approach to help prioritise and focus our efforts to deliver environmental improvements. Our *Vision for the Environment* and the specific commitments on chemicals management outlined in our (*Making it Happen*) Corporate Strategy document are available from our website: www.environment-agency.gov.uk.

Our strategy will complement current UK and EU strategies. These focus on the early stages of a chemical's lifecycle (marketing and use) for a more limited range of substances. Our Chemicals Management Strategy will span the full lifecycle and range of substances that may enter the environment. Much of our effort is expended on controlling point source releases of chemicals. A strategy, however will help us decide when action at other points in a chemical's lifecycle may be more effective. This will help us to prioritise our time, skills and resources.

Table 1 The Agency's role in controlling chemicals

| Chemical control point | Type of chemical | The Agency's role |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> Chemicals already on the market | <ul style="list-style-type: none"> Existing substances² (industrial chemicals) | <ul style="list-style-type: none"> Part of Competent UK Authority to assess hazards and risks to the environment from existing substances under the Existing Substances Regulation; Health and Safety Executive (HSE) assesses human health risks; the Department of the Environment, Food and Rural affairs (DEFRA) and HSE responsible for UK proposals for risk management UK national contact point for Organisation for Economic Cooperation and Development (OECD) Screening Information Data Set (SIDS) hazard assessment programme, including sponsorship of substances under the International Council of Chemical Associations (ICCA) initiative Technical input into the prioritisation of substances under the Convention for the Protection of the Marine Environment of the North-East Atlantic Convention (ratified by all of the Contracting Parties to the Oslo or Paris Conventions (OSPAR)). |
| <ul style="list-style-type: none"> Pre-marketing | <ul style="list-style-type: none"> New substances³ (industrial chemicals) | <ul style="list-style-type: none"> Part of Competent UK Authority to assess environmental information in notification dossiers, and produce environmental hazard and risk assessments [HSE has overall responsibility for notification system] |
| <ul style="list-style-type: none"> Pre-production | <ul style="list-style-type: none"> Pesticides Biocides Veterinary medicines | <ul style="list-style-type: none"> Consultee within the approvals process [competent bodies are Pesticide Safety Directorate in DEFRA; HSE (Biocides); Veterinary Medicines Directorate] |
| <ul style="list-style-type: none"> Supply | <ul style="list-style-type: none"> Industrial chemicals and pesticides Household products | <ul style="list-style-type: none"> Part of Competent UK Authority to propose and negotiate environmental hazard classifications at EU and OECD level (this has knock-on consequences for other legislation) [HSE and the Department of Trade and Industry] |
| <ul style="list-style-type: none"> Process controls | <ul style="list-style-type: none"> Prescribed /dangerous substances | <ul style="list-style-type: none"> Ensure Best Available Techniques Not Entailing Excessive Cost (BATNEEC) and Best Available Technology (BAT) is applied to releases from activities regulated by the Agency under Integrated Pollution Control regulations (IPC) and Integrated Pollution, Prevention and Control regulations (IPPC). Influence water industry asset management planning to improve sewage treatment works processes to meet environmental targets |
| <ul style="list-style-type: none"> Emission controls | <ul style="list-style-type: none"> All chemicals Prescribed substances | <ul style="list-style-type: none"> Consent the discharge of wastewater to controlled waters Develop and use Environmental Standards and guidelines for consents and authorisations Pollution prevention. <ul style="list-style-type: none"> For example major campaigns such as the Oil Care campaign and Prevention or limit the introduction of dangerous substances to groundwater Provide best practice guidance on preventing pollution from pesticides Use standards and guidelines within authorisations to prevent harm to humans Determine the conditions for trade effluent licensing on referral from sewerage undertakers |

² Existing substances: substances listed in the European Inventory of Existing Commercial Chemical Substances (EINECS)

³ New substances: substances not listed on EINECS.

| Chemical control point | Type of chemical | The Agency's role |
|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> Prevention of accidents | <ul style="list-style-type: none"> Hazardous substances | <ul style="list-style-type: none"> Joint competent authority for Control of Major Accident Hazard Regulations 1999 (COMAH) [with Health & Safety Executive (HSE)] Consultee for planning consents to allow storage of hazardous substances within certain installations |
| <ul style="list-style-type: none"> Waste management, licensing and disposal | <ul style="list-style-type: none"> All chemicals | <ul style="list-style-type: none"> Authorise disposal of sewage sludge to land Promote the minimization, recycling and processing of waste Permit and inspect treatment, storage and disposal installations Determine operational requirements for landfill sites for hazardous and non-hazardous wastes Provide advice and administer consignment system for Special Waste |
| <ul style="list-style-type: none"> Waste shipments | <ul style="list-style-type: none"> All chemicals | <ul style="list-style-type: none"> Administer scheme for transfrontier shipments of wastes |
| <ul style="list-style-type: none"> After release or emission | <ul style="list-style-type: none"> All chemicals The effects of chemicals | <ul style="list-style-type: none"> Pollution Incident Response to minimize the impact of incidents on human health, the environment and property. Pollution Inventory to show annual emissions from industrial activities we regulate Monitoring the State of the Environment |
| <ul style="list-style-type: none"> Remediation of historical pollution | <ul style="list-style-type: none"> Chemical mixtures | <ul style="list-style-type: none"> Advice to local authorities identifying contaminated sites Assess and regulate major contaminated sites |

THE AGENCY'S CHEMICALS MANAGEMENT STRATEGY

2.1 Introduction

Scope and constraints

The Agency's chemicals management strategy focuses on chemicals that may directly affect the environment or human health due to environmental exposure.

The strategy does not seek to address exposure to chemicals in the workplace, home or via drinking water. Natural biological toxicants and chemicals that cause indirect effects (for example, greenhouse gases and nutrients) are also not considered.

National policy is established by UK Government. The Agency's strategy will complement and fully support delivery of Government objectives and policies on chemicals management.

Activities identified as part of the strategy must be funded out of a more efficient approach to chemicals management by the Agency. Activities that will provide most environmental improvement will be given priority.

Aims

The strategy will assist the Agency to deliver an improved environment by:

1. Identifying chemicals and chemical issues of most concern for the environment in England and Wales;
2. Focusing our management activities where they can contribute to environmental outcomes;
3. Effective communication, working in partnership and influencing others to achieve environmental benefit.

Principles

Three broad principles are adopted throughout the strategy to help us achieve our aims:

1. Management of chemicals to achieve levels in the environment that will not adversely affect human health and the environment;
2. The progressive reduction of emissions and losses of hazardous substances to the environment where economically and technically feasible;
3. The need for sustainable production and use of chemicals.

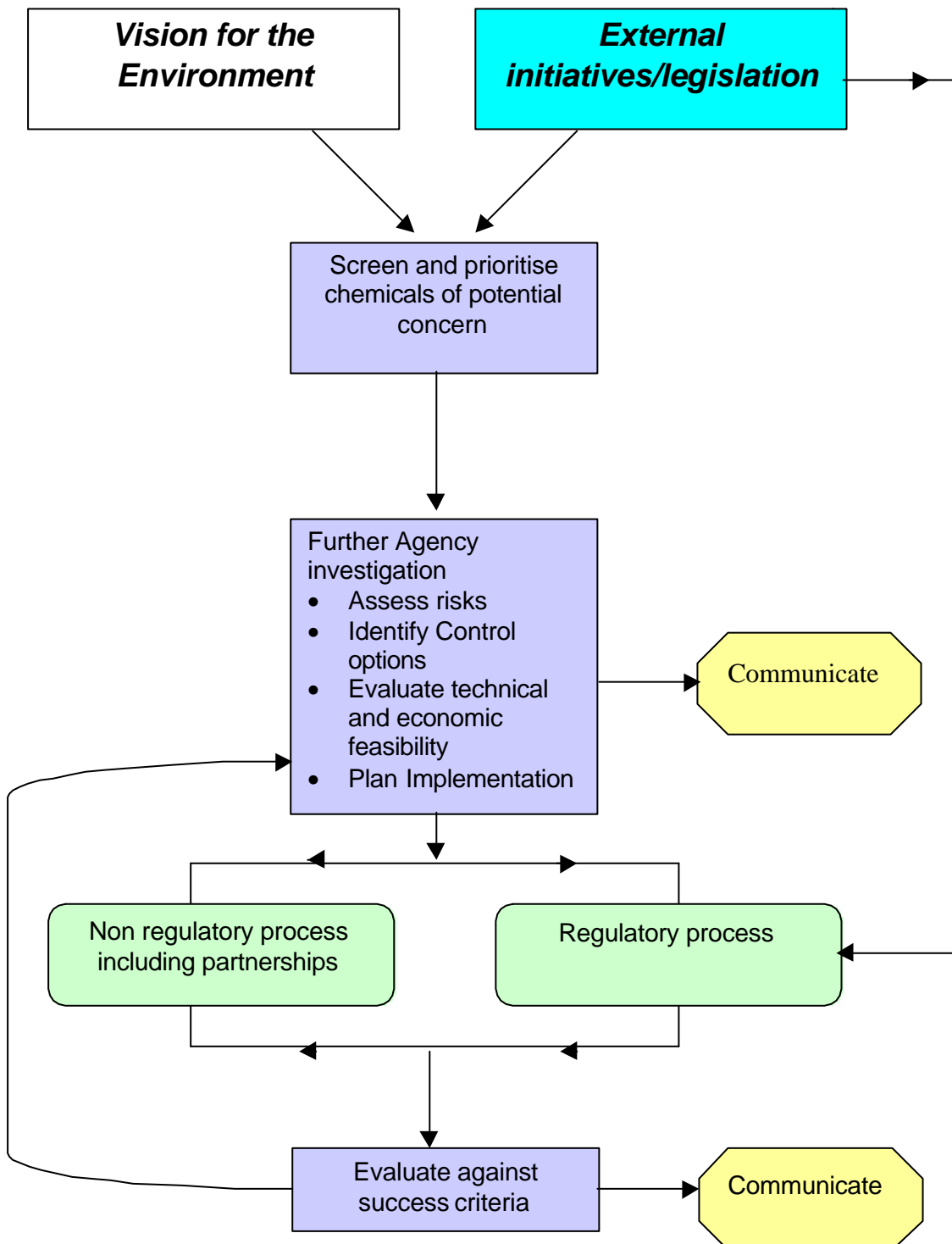
2.2 Managing issues

We will manage chemicals by:

- identifying concerns about them, their impacts, pathways and sources;
- ensuring that issues raised as a concern are considered systematically, and in an integrated way;
- assessing our priorities both in terms of the chemicals of concern and the actions we take to control and manage them;
- evaluating the success of our actions and those of others, and modifying our approach as required.

We will work in partnership, communicate with the public, and underpin the process with good science. We will take account of society's aspirations, and community responses to environmental degradation and improvements. The likely costs and benefits to society will also be taken into account in our decision-making process.

The extent to which we will need to undertake actions will vary depending on our ability to use information generated by others. In many cases, assessments will already have been undertaken and sometimes risk management options will have been agreed. Our role here is to turn these into actions appropriate to the level of concern for the environment in England and Wales. Figure 1 illustrates the sequence of our actions.

Figure 1: The Agency's role in controlling chemicals


2.3 Identifying chemical issues

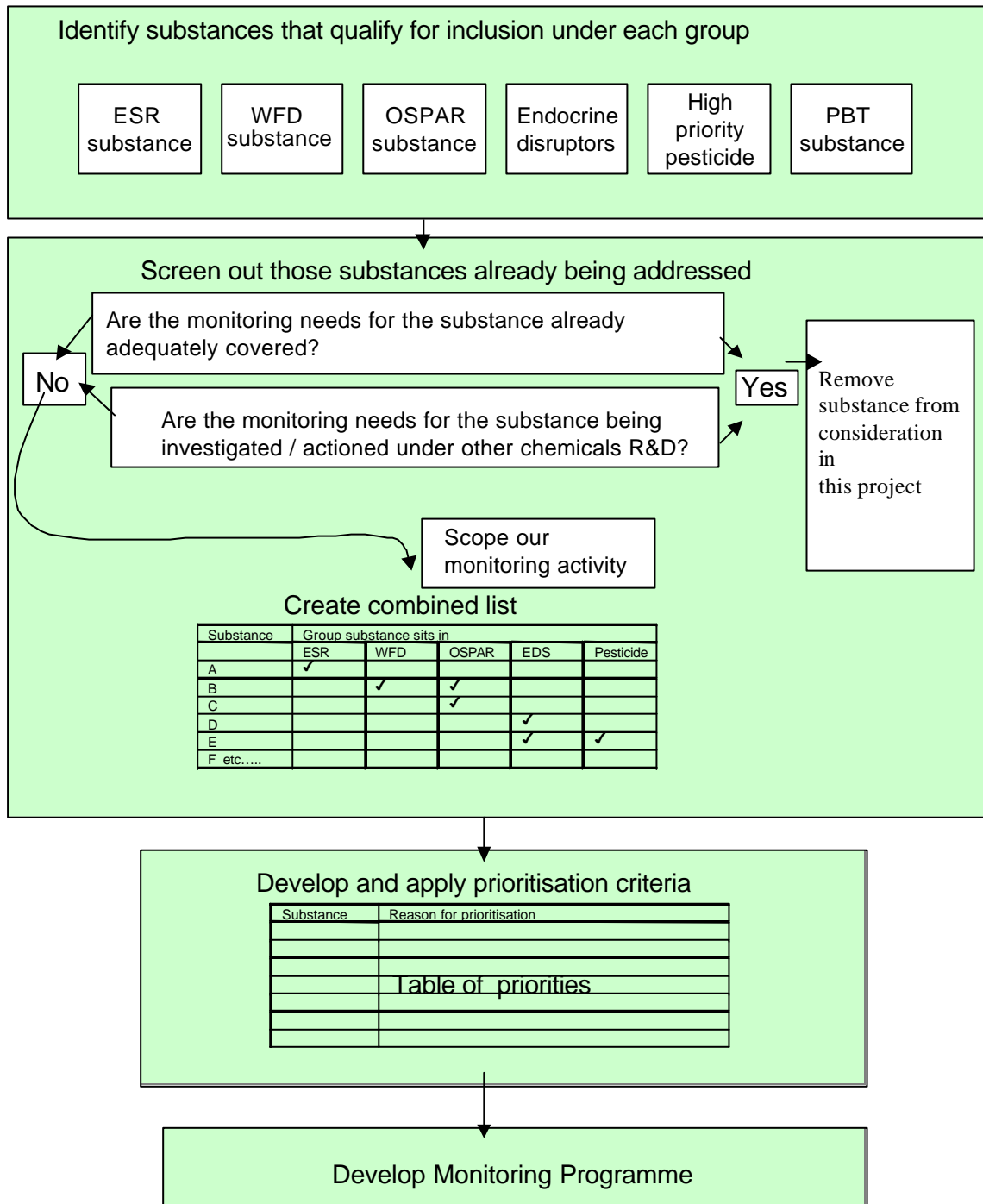
There are four main sources of information that the Agency can access to identify emerging issues:

- signals from monitoring the environment;
- observations of environmental impacts;
- intelligence on the hazards and risks of chemicals that indicates they may be of concern;
- international and national obligations placed on the Agency.

We monitor the environment in accordance with our regulatory role. We seek to ensure compliance with legislation and to measure the effectiveness of regulatory controls on emissions. However, together with other organisations, we are also responsible for monitoring the state of the environment in England and Wales to evaluate the overall success of environmental management.

We need to develop a more strategic approach to monitoring the environment with other organisations to determine when action is required to protect the environment. This requires a combination of investigative monitoring of specific chemicals and indicators of impacts, as well as general surveillance of chemicals and biota to identify trends. This approach has been developed for pesticides by the Pesticides in the Environment Working Group (PEWG 2000), which the Agency chairs, but is equally applicable to other substances. This approach would be beneficial because of our lack of understanding of the complex interactions between toxic chemicals and ecosystems. This is well illustrated by the impacts of some endocrine-disrupting substances (for example, tributyltin (TBT) and oestrogens). These were discovered by assessing results of surveillance monitoring and not predicted by hazard assessment. The Agency is reviewing a range of priority chemicals to determine where additional monitoring may be beneficial (Figure 2 overleaf). We will consult relevant stakeholders on our approach and priorities in 2003. We have set ourselves specific screening and monitoring targets under this strategy:

| Agency objectives | Success criteria to 2007 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Development of a more strategic approach to environmental monitoring | <ul style="list-style-type: none"> • Monitoring needs to support decision taking on priority chemicals reviewed (2002/3) • Publish approach and consult with relevant stakeholders (2003) • Implement initial programme (2003) |
| Establish screening criteria making use of those agreed by other organisations and supplement this with our knowledge of the environment in England and Wales | <ul style="list-style-type: none"> • Initial system in place (2002) |

Figure 2: Methodology to prioritise substances for additional monitoring


| Key | Substance identified under |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ESR | Existing Substance - Defined as those listed in the European Inventory of Existing Commercial Chemicals (EINECS) between January 1971 and September 1981 - a total of over 100,000. All other chemicals are 'new chemicals'. |
| WFD | The Water Framework Directive 2000/60/EC (WFD) |
| OSPAR | List of Chemicals from Convention for the Protection of the Marine Environment of the North-East Atlantic Convention (ratified by all of the Contracting Parties to the Oslo or Paris Conventions (OSPAR)). |
| PBT | Persistent Bioaccumulative and Toxic |

2.4 Setting priorities

The information collated from different sources needs to be screened to identify which substances require further action by the Agency or others. Chemicals can be allocated to the following broad categories:

- Priority for coordinated action – high risk because of knowledge of hazard and exposure or from environmental impact data. Agency investigations, and subsequently actions, should be nationally coordinated (for example, through Pollution Reduction Programmes or technical guidance).
- Priority for further assessment – initial screen indicates potential concern, but further assessment required to determine significance for England and Wales. An Agency Position Statement may be applicable to inform stakeholders of Agency actions. (Agency Position Statements are described in full in section 2.6)
- Additional data and/or monitoring required – on properties, use or environmental levels and impacts – before significance can be determined. An Agency Position Statement may be applicable if there is public concern.
- Maintain a watching brief – currently low risk identified from both knowledge of hazard and potential for exposure or environmental data. No further assessment or additional activity by the Agency currently required.

The criteria the Agency use to screen chemicals will include: legal obligations, hazard, potential risks, known impacts, known concern for England and Wales, and whether the Agency has any scope for action. The current criteria and approach is set out in detail in Appendix 2.

2.5 Assessing the risks and deciding what to do

Before the options for control can be evaluated, we need to understand the properties of a chemical, how it can enter the environment, where it will go and what it will affect.

Many well-established techniques exist to assess the risks of chemicals and appraise options for control. Formalised environmental risk assessments are already undertaken for chemicals under a number of regulatory regimes. These include approvals for positively approved chemicals (for example, pesticides, biocides, veterinary medicines) and existing industrial chemicals prioritised for European or international assessment.

Where the Agency prioritises a substance for further assessment, we will propose it for assessment or accelerated review through existing procedures. Or we will seek to influence other organisations if responsibility for the substance lies outside the Agency's control.

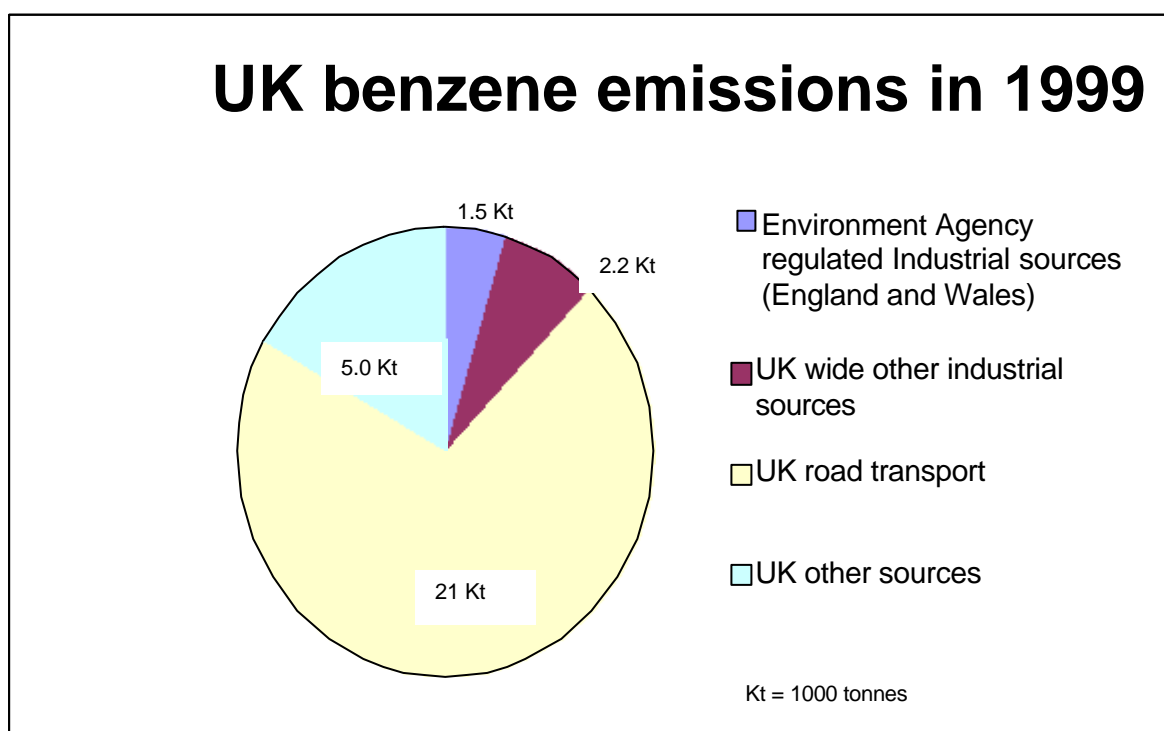
Despite initiatives to streamline detailed risk assessments, these processes can still take an extended period of time. The extent of risk assessment or option appraisal

necessary depends on the specific chemical involved. It should be possible to fast track substances with unacceptable risks so that rapid action can be taken. Some substances, such as those that are highly persistent, bioaccumulative and toxic, may be so hazardous as to warrant action before there is certainty about exposure.

Tailored risk assessments will be used to see whether the Agency, or others, should take early action to reduce potential risks. An example is the national assessment of long-chain chlorinated paraffins that the Agency is undertaking, with the agreement of DEFRA. These have been identified as potential substitutes for short and medium-chain chlorinated paraffins, which already have identified risks.

Where risk assessments identify local problems that we can address, we will take action. However, where any action taken by us alone is unlikely to reduce environmental levels sufficiently, we will seek progress through appropriate fora, such as the UK Chemical Stakeholder Forum or regulatory fora. Such an instance might involve diffuse or multiple small-point releases of chemicals that could be dealt with only by a national or international coordinated risk-management strategy. Diffuse inputs, including those from small businesses and domestic, transport and agricultural sources, are not directly controlled by the Agency. As controls on point sources are improved, inputs from diffuse sources take on increasing environmental significance. Because chemicals are released from many sources (only some of which the Agency regulates – illustrated for benzene in Figure 3), we must work in partnership to achieve our *Vision for the Environment*. The strategy proposes a range of new tools to assist in this.

Figure 3: The relative importance of different air emissions for benzene in the UK (1999) – Sources National Atmospheric Emissions Inventory and Pollution Inventory.



Consultation Question 1 :

1a. How well do you think our suggested approach to assessing priorities and determining actions will help us improve environmental protection?

2.6 Key tools to be implemented under the strategy

The strategy proposes the following as key tools to assist us in focusing our chemicals management effort to deliver environmental benefits. These include:

- Position Statements
- Pollution Reduction Programmes
- Environmental and human health standards
- Biological effects measures
- Science base

Position Statements

Position Statements will communicate our understanding of a chemical or chemical issue, our role, what we intend to do and what we believe needs to be done by others.

They will be living documents, which will develop along with our understanding of an issue. They will be expressed in everyday language, and will be published on the Agency's website www.environment-agency.co.uk. They will also be raised at existing relevant fora (an example is the UK Chemical Stakeholder Forum).

The Agency has set itself the objective under this strategy to:

| Agency objectives | Success criteria to 2007 |
|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Develop Position Statements to communicate Agency decisions on chemicals | Agency position on all priority substances identified by management process on internet (2007) <ul style="list-style-type: none"> • Specifically we will have positions on: <ul style="list-style-type: none"> 10 key substances by 2003 30 key substances by 2005 50 key substances by 2007 |

Pollution Reduction Programmes

Where we have identified the need for action by the Agency, we will determine whether a local approach will be effective or if there is significant added value from a nationally coordinated approach. A draft template outlining the key aspects is provided in Appendix 5.

Where a nationally coordinated approach is needed, we will seek to develop Pollution Reduction Programmes. We will evaluate current knowledge of the pathways of a chemical through the environment and the risks arising from potential environmental exposure. The range of options and the technical and economic feasibility of addressing the sources, environmental pathways and receptors at risk will be

evaluated. The agreed Pollution Reduction Programme will describe our role in controlling a substance, the measures we can take and what they can achieve in context with the alternatives. They will set out targets and milestones by which progress will be measured.

We will seek to develop these programmes with Government and other stakeholders to provide a coordinated approach to the problem.

Where EU risk assessments and risk-management options have been developed, these will be used for developing management actions specific to England and Wales.

Pollution Reduction Programmes are already required for surface waters under the Dangerous Substances Directive (76/464/EEC). When developing Pollution Reduction Programmes, the Agency will take account of these requirements. The existing Integrated Pollution Control (IPC) system plays an important role in formulating these programmes, as does the Integrated Pollution Prevention and Control (IPPC) system, which is gradually replacing IPC between now and 2007. New or revised systems emerging from recent Directives, such as the Water Framework Directive, the Large Combustion Plant Directive and the National Emissions Ceiling Directive, will also feature prominently.

Examples of substances where Pollution Reduction Programmes may be particularly beneficial include those:

- with high potential for wide environmental impact;
- where management responses and the consequent costs to regulators, users and the public may be complex and high, and where there is added value in taking a nationally coordinated approach;
- that are persistent, bioaccumulative and/or toxic or of equivalent concern where overall load reductions are required;
- that we have an important role in controlling but where our role needs to be placed in context and partnerships developed;
- with a high profile, where staff and stakeholders need to be informed of actions being taken;
- requiring consideration of different environmental media, human and environmental health;
- where new approaches need to be developed (for example, known endocrine disrupters).

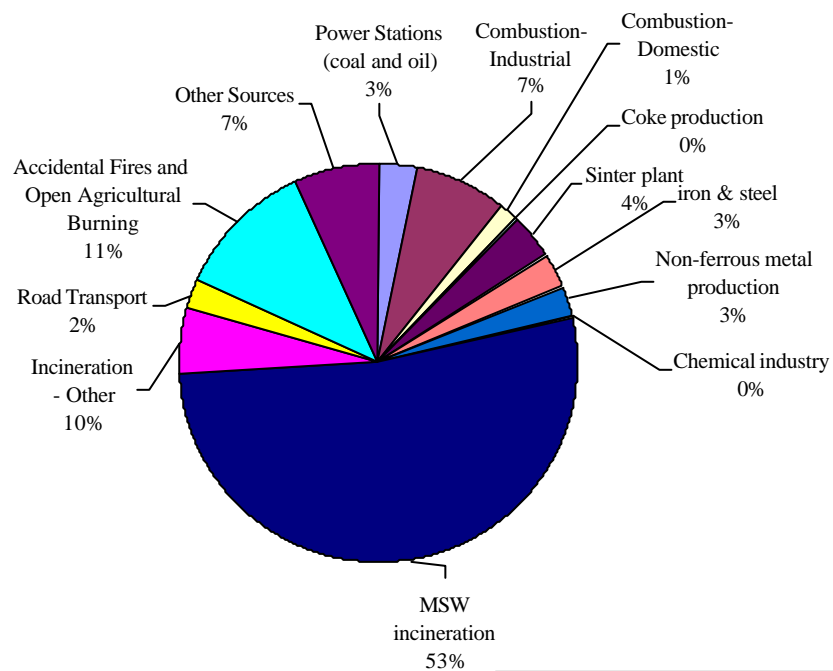
Dioxins (figure 4) and tributyltin are two examples of priority chemicals where Pollution Reduction Programmes are fundamental to the delivery of Government and Agency policy objectives.

The Agency has set itself a specific target under this strategy, for the production of these Pollution Reduction Programmes.

| Agency objectives | Success criteria to 2007 |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Develop and implement Pollution Reduction Programmes for selected key substances | <ul style="list-style-type: none"> • Identify priority chemicals for PRP development (2002) • Develop and implement twelve PRPs by 2007 |

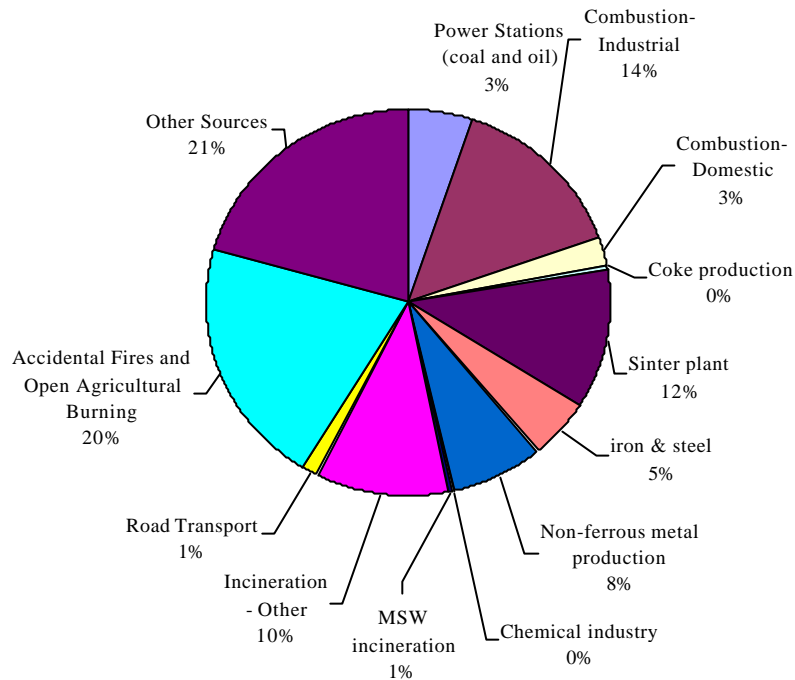
Tributyltin (TBT) has been recognised as one of the most damaging and widespread pollutants in the marine environment. However, there are more failures of this environmental quality standard than any other in England and Wales. Its main use is as an antifoulant on boats. This has been banned on small boats since 1987 and there has been some environmental improvement as a result. It will be banned on larger boats from 2003. However, it is also a wood preservative; an antifungal agent in textiles and industrial water systems, wood pulp and paper mill systems, and breweries. It is reportedly used as an

Figure 4a: UK Atmospheric emissions of dioxins -1990
 – Source National Atmospheric Emissions Inventory



UK atmospheric emissions of dioxins 1990
 (Total 1142g I-TEQ)

Figure 4b: UK Atmospheric emissions of dioxins –1999
– Source National Atmospheric Emissions Inventory.



UK atmospheric emissions of dioxins 1999
(Total 345g I-TEQ)

Environmental and human health standards

The Agency's Chemicals Management Strategy identifies the need for a strategic framework within which standards and targets can be developed to ensure that the most relevant control measures are applied. This will depend on what the main sources of a chemical are, how it enters the environment, where it goes and what it affects. For example, do we need health-based air quality standards or environmental standards for the aquatic environment?

Meaningful environmental targets are essential if we are to measure progress toward environmental improvement. These can be biological (for example, biodiversity) or chemical (for example, environmental quality standards). A clear framework would also facilitate consultation with partners and other jointly responsible agencies on priorities and target levels.

Currently standards are not established in a systematic way for the most relevant points in a chemical's pathway through the environment to ensure effective controls. For example, the Agency sets environmental assessment levels to evaluate emissions from installations regulated under IPC and IPPC; environmental quality standards for the aquatic environment and contaminated land remediation criteria. Such targets are used to determine appropriate licence conditions or to initiate risk management, but are not themselves statutory limits. Whereas Environmental Quality Standards set by UK Government are statutory.

Recommendations for health-based Air Quality Standards are developed for the Government via the Expert Panel for Air Quality Standards (EPAQS). Determining tolerable intakes of chemicals for human consumption (where consumers may be exposed via the foodchain) is the responsibility of the Food Standards Agency and Department of Health. These are important tools to assist with protecting human health, but have been established for relatively few chemicals (for example, there are only about 30 national, EU or World Health Organisation health based air quality standards or guidelines). The Agency has requested the development of health based air quality standards for a range of substances by EPAQS and will compile data to support their development.

We have set ourselves the following objectives under the strategy:

| Agency objectives | Success criteria to 2007 |
|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Development of appropriate Environmental standards/targets | <ul style="list-style-type: none"> • Strategic framework for standard setting (2003) • Develop environment assessment levels for priority substances (100 by 2007) |

Biological effects measures

Chemicals are often released, and exist in the environment, as mixtures. These can be complex, and assessing the risks of individual substances is not always adequate. Combined effects of chemicals within complex mixtures may be the cause where biological quality is lower than would be expected based on our understanding of the chemical quality of the environment. In such cases, biological effects measures can help determine the cause. The Agency has developed biological effect measures to assess the combined short-term effects of chemicals in mixtures. Applying these measures to the assessment and control of complex effluents is termed Direct Toxicity Assessment (DTA). This will be implemented where it can add most value under the Chemicals Management Strategy (see Effects of Complex Chemical Discharges (section 2.8)). We will develop biological effect measures to address other toxic issues in line with best available scientific knowledge (for example, effects to the terrestrial environment, long-term effects and endocrine disruption).

The Agency aims to review its position on biological effect measures and has set itself the following objective under this strategy:

| Agency objectives | Success criteria to 2007 |
|-------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Develop biological effect measures to complement a chemical specific approach | Agency position on use of biological effects measures reviewed (2004) |

Consultation Question 2 :

- 2a. How important do you think our key tools (Position Statements, Pollution Reduction Programmes, a framework for setting targets and biological effects measures) are in developing a more focused and coordinated approach to chemicals?
- 2b. Are there any significant gaps in our suggested approach where you would like to suggest alternative solutions?

Science base

We will continue to improve our understanding of chemicals, their pathways through the environment and their effects, by developing our expertise and through research programmes. This will link into the Agency Science Strategy that is being developed. This will fulfil Government advice that, “Agencies should ensure that their procedures can anticipate as early as possible those issues for which scientific advice or research will be needed, particularly those which are particularly sensitive”.

Structured research will address information gaps on chemicals that are necessary for decision-taking. Other research will be critical to the longer-term development of our approach to chemicals. Priorities for long-term research include improving our fundamental understanding of chemicals' behaviour and their effects in the environment. We also need to develop new tools to aid assessment (such as structure activity relationships, fate models, biological effects measures and genomics). Finally, we need to determine our role in green chemistry (for example, finding techniques to aid decisions on the substitution of hazardous chemicals). The Agency has set itself the following objectives under this strategy:

| Agency objectives | Success criteria to 2007 |
|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Explain how the Agency will contribute to Green chemistry initiatives | <ul style="list-style-type: none"> • Paper on Agency role in Green Chemistry initiatives (2003) |
| Develop a programme of research to underpin the Agency's chemical management strategy | <ul style="list-style-type: none"> • Stakeholder workshop to obtain views on research priorities (2002) • Publish priority research areas (2003) |

Consultation Question 3:

- 3a. Have we identified the right research priorities?
 3b. If not, where should our chemicals research be targeted?

2.7 What type of chemicals could be priorities for the Agency?

Three main properties of chemicals assist us in predicting their potential to cause harm once they have entered the environment: toxicity, persistence and bioaccumulation. The Agency has set itself the following objectives under this strategy:

| Agency objective | Success criteria to 2007 |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Develop and communicate Agency approaches to address certain high priority groups of substances | <ul style="list-style-type: none"> • Publish an update on the actions progressed under the Agency's Endocrine Strategy (2002, 2004, 2006) • Issue Agency policy statement on Health (2002) • Paper on Agency's approach to controlling persistent, bioaccumulative and toxic (PBT) chemicals and human carcinogens, mutagens and reproductive toxicants (CMR) (2003) |

Toxic chemicals

Short-term, acute toxic effects exhibited by chemicals that degrade rapidly in the environment tend to be localised if they enter the environment from point sources. Dispersive use, such as the application of insecticides, can cause widespread effects.

Information on toxicity and degradation rates can be identified from basic data sets where these are available; however, more often there is a lack of data. In these instances risks can be predicted relatively easily and can often be addressed by local controls. However, complex mixtures may vary in composition and have enhanced toxicity and are less easily addressed by controls on individual chemicals. Some substances, such as metals, are naturally present in the environment. They may be beneficial or harmless at levels organisms normally experience or could be toxic only in certain forms. Local factors, such as concentration and the form the metal is in, determine the risks of these substances.

Long-term or chronic effects are most likely to be realised if a chemical is continuously or frequently released, or if it persists in the environment. These effects include sub-lethal ones that may compromise reproductive success, thus affecting populations even if individual survival is not obviously impaired. Such data sets are less common and more expensive to generate. It is more difficult to predict these properties and long-term toxic mechanisms are still not well understood. However, when data is available risk assessment is possible based on agreed procedures.

Persistent chemicals

Persistent chemicals that are also toxic may represent a greater risk to the environment than toxic substances that rapidly degrade. This is because they can cause chronic effects and they are more likely to become widely distributed and to accumulate in the environment. However, not all persistent chemicals are harmful. Many are used in chemical products because of their durability. Some metals and inorganic chemicals cannot easily be assessed in terms of persistence.

Bioaccumulative chemicals

Some chemicals bioaccumulate to such an extent that they can be concentrated by passing up the food chain. They can reach much higher concentrations in top predators such as birds, mammals and humans. Such chemicals are usually persistent. Most accumulate in fats and this can be predicted from chemical properties. However, some can also be metabolised and excreted and may not accumulate while others may accumulate in organs such as the liver. Models are not currently able to predict these accurately and experimental data must be used. Conventional risk-assessment techniques are not good predictors of acceptable levels in the environment for these chemicals.

Persistent, bioaccumulative and toxic chemicals

Substances that are persistent, bioaccumulative and toxic are termed PBTs and are high priorities for control. A small sub-set of these substances is Persistent Organic Pollutants (POPs). These are of global concern because, as well as having PBT characteristics, they are capable of long-range transport in the environment (for example, dioxins and polychlorinated biphenyls or PCBs).

Very Persistent and Very Bioaccumulative (VPVB) substances are characterised by a particular high persistency plus a high tendency to bioaccumulate, but not necessarily proven to be toxic.

Experience with well-known PBT substances, such as PCBs, has shown that once widespread environmental contamination has occurred, leading to adverse effects on human health or wildlife, the consequences are difficult to reverse. Due to their persistency, exposure of humans and the environment will continue even after risk-management measures have been implemented. Such substances are likely to accumulate in soils and sediments and may be difficult to remediate. Early identification and management is therefore a high priority.

Human carcinogens, mutagens and reproductive toxicants (CMR)

Human carcinogens, mutagens and reproductive toxicants (CMR) are chemicals that can cause cancers and birth defects. These are recognised as high-priority pollutants.

The highest category (Class 1 and 2) carcinogens and mutagens are already tightly controlled by legislation. They cannot generally be sold to the public, either as a substance or in a product. There are exceptions, for example benzene. The UK Chemicals Stakeholder Forum criteria for substances of highest concern includes category 1 and 2 CMRs, but also category 3 mutagens.

2.8 Selecting priority chemicals

We have already identified two priority chemical issues as a result of environmental signals; these are endocrine disrupters in rivers and complex effluent discharges. We have also identified groups of chemicals, which require further investigation, and individual chemicals that are initial candidates for the development of Pollution Reduction Programmes.

Endocrine disrupters:

The Agency published its strategy on endocrine disrupters in 2000. We believed that there were potentially serious threats to the health of wildlife following exposure to endocrine (hormone) disrupting chemicals. The focus of our concern was oestrogenic (feminising) effects in male fish. This appeared to arise following exposure to sewage effluents in rivers in England. Research identified natural and synthetic steroids and alkylphenols as key oestrogenic components of sewage effluent.

The strategy has four main elements:

- taking cost-effective action to reduce the risk;
- targeted monitoring to evaluate the concentration of these substances;
- further research to address areas of scientific uncertainty;
- raising awareness and providing information.

Actions include ensuring that industry authorisations are met and emission reductions achieved for key substances, such as dioxins, tributyltin and alkylphenols. Identifying high-risk areas for certain pesticides and implementing pollution-reduction programmes. Developing targets for steroids, identifying high-risk areas and improvements required for sewage treatment processes.

In March 2002, we reported progress against the targets in the strategy (Appendix 4). While significant reductions in emissions for dioxins, alkylphenols and TBT have been achieved, all have been prioritised for further pollution-reduction programmes. We have reviewed high-risk areas for the pesticides and a monitoring programme is being designed to assess these. The Agency has been progressing three priority research areas to address steroids:

- the causes and consequences of oestrogenic effects in fish;
- the hazardous properties of steroid oestrogens;
- the fate of steroid oestrogens in the freshwater aquatic environment.

Our research confirms that some fish populations are at risk of exposure to steroid oestrogens in rivers that receive sewage effluents. Where this occurs in sufficient quantities, these substances will feminise male fish (both their early-life stage development and throughout their life). This compromises their ability to reproduce. These harmful effects have implications for the sustainability of fish populations. And, because fish are considered a sensitive indicator, also for the wider environment. We intend to undertake further collaborative research to refine the risk assessment, confirm areas most at risk and develop appropriate risk management options with stakeholders.

We are also evaluating priorities that emerge from the EU strategy on Endocrine Disrupting Substances to identify priorities for the English and Welsh environment.

Effects of complex effluent:

A number of complex effluents are still acutely toxic to aquatic life despite achieving their current chemical specific licence conditions. A larger number could be chronically toxic to aquatic life through mechanisms such as endocrine disruption. The Agency will need to develop new approaches to assess and control these.

An effective way to deal with this issue is to use whole sample biological effect measures for effluent assessment and control (the Direct Toxicity Assessment (DTA) approach). This provides complementary information to that arising from a chemical-specific approach. It enables the effects of "unknown substances", including breakdown products, present in complex mixtures to be assessed and interactions between substances to be taken into account. The Agency commissioned a substantial programme of R&D, culminating in a DTA Demonstration Programme, in partnership with water and manufacturing industries. In line with the recommendations of the programme, we will now implement this approach to improve and protect water quality. This will be in catchments with existing well-defined water-quality problems linked to toxicity from point-source discharges. This will commence in 2002 with the Tees estuary. We will use DTA to improve the environmental impact assessment of direct releases to receiving waters from certain IPC/IPPC licenced processes at greatest risk of causing environmental damage. We will require process operators to provide data as a part of their licence review or new application. In discussion with industrial sectors, we will identify industrial releases to water for which this methodology is applicable. We will also review existing licences containing toxicity- based conditions to ensure they reflect good practice.

We will promote increased use and understanding of biological effects measures and the benefits they can bring to environmental protection. We will continue to develop new, cost-effective methods in collaboration with other regulators and stakeholders to help in predicting the chemical (and other) causes of environmental problems. We will also seek out opportunities for using these methods to help protect the environment. We will ensure that these methods and their use meet with statutory requirements and government guidelines.

The Agency has set itself specific targets for Direct Toxicity Assessment under this strategy.

| Agency objectives | Success criteria to 2007 |
|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Direct Toxicity Assessment will be used to improve the assessment and control of complex effluents. | <ul style="list-style-type: none"> • Identify receiving waters with acute toxicity problems (2002) • Apply the DTA approach to these receiving waters (2002-2005) • Use the DTA approach to generate data on high-risk discharges under IPPC (2002-2007) to harmonise with IPPC implementation • 85 per cent reduction in the number of point - source discharges causing acute effects by 2007 |

Consultation Question 4:

- 4a. What priority should the Agency give to endocrine disruption and the effects of complex effluents in the environment?
- 4b. How do you envisage biological effects measures being used in future?
- 4c. Which groups of chemicals should be priorities for further investigation and control?

We are reviewing our priorities for positively approved substances to identify which groups and individual substances may be of most concern:

Biocides:

Following registration of active substances under the Biocidal Products Directive, we will clarify product groups that are most likely to cause environmental damage (for example, anti-foulants, timber-treatment products, cooling water biocides, rodenticides) and prioritise our involvement. We are developing guidance on the use of timber-treatment products in aquatic environments (such as treated timbers in flood defence and navigation structures).

Human pharmaceuticals:

Pharmaceuticals were identified as a priority for further assessment because of public concern about reports of medicines in effluents and rivers, and lack of knowledge about environmental exposure and effects. We have completed an initial phase of research to screen the top 500 pharmaceuticals used in the UK, based on usage and environmental effects. Predictive models were an important component of this because of the lack of effects data for many of these substances. From these, we have selected a range of substances spanning different drug and use types for a targeted environmental monitoring programme. The results of this research will be available in autumn 2002. Following this, we will publish our results and identify any further actions necessary. The Agency has commented on the European Medicines Evaluation Agency proposals for environmental-risk assessment (www.eudra.org/emea) and has urged industry to pursue its initiative to take-back unused pharmaceuticals.

Veterinary medicines:

An initial phase of research has been completed to identify a relative ranking of substances and use patterns of most concern to the Agency. The next phase of research will refine this assessment to confirm priorities. We will publish our priorities and any further actions necessary following completion of this research in 2003. We will continue to act as a consultee in the approvals process. We will provide technical input into the development of international guidance for phase two environmental- impact assessments for veterinary medicines.

Pesticides

We will continue to influence policy through our input to the Pesticides Forum and act as a consultee for approvals and lead the Pesticide in the Environment Working Group. In 2002, we have completed a review of pesticides to identify priorities for surveillance and targeted monitoring. We have already assessed our monitoring programmes for pesticides, which are potential endocrine disruptors, using predictive models. We are designing a targeted monitoring programme to confirm any high-risk areas, before deciding whether Pollution Reduction Programmes are required. Next we will screen the remaining high-use pesticides in England and Wales and will publish our priorities in 2003. We will review our sheep dip strategy (for example, for Cypermethrin, Flumethrin, Diazinon) in 2003.

In addition to prioritising individual chemicals, we will identify priority groups of chemicals with common properties that may be of concern. We will also identify further action required. These groups often have similar chemical properties by design because they are intended for a specific purpose. Examples are flame retardants, which are designed to be stable at very high temperatures and which therefore also tend to persist in the environment. We have selected the following priority groups for investigation.

Brominated flame retardants

The Agency has undertaken environmental risk assessments for penta-, octa- and decabromodiphenyl ethers. There are EU proposals to ban the penta product and a risk-management strategy has been initiated on the octa and deca products by the UK Government. The Agency is conducting environmental risk assessments on brominated and phosphate flame retardants and is monitoring those being undertaken by other countries. We will act on risks identified for processes under our control.

The Agency has undertaken an initial review to identify other priority flame retardants. More than 300 substances have been used as flame retardants at some time, of which about 150 are brominated (and around 70 of these are still in commercial use). Industry has been approached to address data-gaps to aid further prioritisation. We will communicate the findings of the review and any further actions we believe are necessary later in 2002.

Chlorinated paraffins

The Agency undertook EU environmental risk assessments for short- and medium-chain chlorinated paraffins and risk-management strategies are being developed. We initiated a national risk assessment of long-chain chlorinated paraffins, as these are potential substitutes. The results will be communicated to the EU and UK Stakeholder Forum. We have been working with industry to develop codes of practice in this area. We have initiated research to develop a risk-profiling technique to assist with comparative assessment, using substances contained in lubricants and metal working fluids as an example. Results of this research will be available in 2003.

Plastic additives

A number of substances identified as priorities for assessment in international programmes are used as additives for plastics (including the brominated flame retardants). We will also be evaluating this chemical group to develop a risk-profiling technique.

Perfluorinated chemicals

Perfluorooctanyl sulphonate (PFOS) is a breakdown product of substances used as surfactants in fire-fighting foams and fabric protectors. Research in the US indicated that it was very persistent in the environment, and has a tendency to accumulate in human and animal tissues. It could therefore potentially pose a threat to human health and the environment over the long term. As a result the manufacturer, 3M, announced a voluntary phase-out of this, and related substances, in their products where possible. The risks of PFOS and related substances are now being assessed by the OECD to decide if further action is required at an international level. Meanwhile, the Agency initiated a review of perfluorinated substances. It is currently evaluating this, before communicating its position and any further actions it believes are necessary later in 2002. We have also initiated a review of our guidance on fire-fighting foams for the fire service and other users. Revised guidance will be available in 2003.

The Agency has been undertaking a screening exercise to identify substances that should be priorities for us to investigate and potentially take action on (Appendix 3). Part of this exercise included screening about 2,000 high-production volume substances in the EU's International Uniform Chemical Information Database (IUCLID) against the UK Chemicals Stakeholder Forum criteria for persistence, toxicity, bioaccumulation and toxicity. Then we had to determine the potential for environmental exposure for the most hazardous. This involves both the review of data, and predictive modelling where data gaps exist. The results will help us prioritise which substances to investigate further with industry, where we need to develop a position or take action, either alone or with others. A number of these substances fall within groups already identified as priorities by the Agency, for example, flame retardants, plastic additives, lubricants and fuel additives. As a first priority, we will try to verify the level of concern about these substances with industry and other stakeholders. We are communicating our findings to the UK Chemicals Stakeholder Forum to assist them in prioritising their activities. By the end of 2002, we will have confirmed which substances meet the Chemicals Stakeholder Forum criteria.

The following substances have been identified using the screening process outlined in Appendix 2 as initial candidates for the development of Pollution Reduction Programmes. These are priority pollutants because of their risk to the environment or human health, where the Agency has a significant role, but where co-ordination with other organisations is required:

- **2,4 D** – a widely used herbicide. There continue to be numerous failures to meet environmental quality standards in our rivers and monitoring shows that concentrations are increasing. There is a need for better stewardship of products containing this herbicide.
- **Alkylphenols** (pending further environmental monitoring) widely used industrial chemicals. There is a need to reduce risks to aquatic organisms from the additive toxic effects of these substances and their breakdown products. Some of these substances are potent endocrine disruptors. EU marketing and use restrictions of Nonylphenol are recommended for certain uses. Nonylphenol and Octylphenol are priority substances under the Water Framework Directive.
- **Chromium VI compounds** – widely used in industrial processes. An EU risk assessment identifies a risk to the environment and man via the environment for some uses. Further controls on industrial effluents require investigation. EU consideration of risk management initiatives has begun and would need to be taken into account during the development of a Pollution Reduction Programme.
- **Copper and Zinc** – widely used in industrial processes and in the home. An EU risk assessment of Zinc is in progress. There continue to be numerous failures to meet environmental quality standards in our rivers. Further evaluation of sources and options to reduce inputs is required.
- **Dioxins** – recognised persistent organic pollutants requiring control under the Stockholm Convention. Industrial emissions under Agency control contribute less than 25% of UK release to atmosphere. There is need to evaluate options for further reductions in emissions of these substances.
- **Nitrogen and Sulphur Oxides (NO_x and SO_x)** – NO_x is predominantly released from road vehicles; SO_x is predominantly released from combustion processes. Both gases can pose a threat to human health from inhalation and there are some failures of air quality standards. Further controls are necessary to reduce emissions

- **Poly Aromatic Hydrocarbons (PAHs)** – a mixed group of combustion by-products, industrial chemicals and naturally occurring substances. Some are highly toxic, persistent and bioaccumulate in organisms. There is a need to improve our understanding of their occurrence and usage and to introduce controls where necessary.
- **Tributyltin** – historically widely used an antifoulant. A highly toxic and persistent chemical responsible for ecological damage in the marine environment. Use as an antifoulant is being progressively reduced but there continues to be numerous failures to meet environmental quality standards and further investigation of other sources and control options is required.
- **Bisphenol A** – environmental risks for some uses have been identified in an EU risk assessment. A Pollution Reduction Programme may be warranted if Agency controls are required following risk management recommendations being prepared under the Existing Substances Regulation.

Specific congeners within the following groups of substances are priorities for action. We are considering whether Pollution Reduction Programmes will add value to help coordinate actions and measure their success. We will take action on emissions directly under our control where appropriate, but have a different role as there is diffuse entry into the environment requiring use restrictions:

- Brominated diphenyl ethers
- Chlorinated paraffins

Other substances may be candidates for Pollution Reduction Programmes because, although risk assessments indicate they do not pose an immediate threat to the English and Welsh environment or human health, further coordinated reductions are required. Examples may include priority hazardous substances identified under the Water Framework Directive, substances in groundwater causing drinking water standard failures and other international targets.

Consultation Question 5:

- 5a. Which substances should be priorities for Agency Position Statements?
- 5b. Which substances should be priorities for Agency Pollution Reduction Programmes?

2.9 Working with others and building partnerships

Much of the Agency's resource is focused on controlling chemicals at the point of entry into the environment.

Our Chemicals Management Strategy will be used to target resources to where they will provide the greatest environmental benefit. It will often be more effective to work with others because we cannot achieve our desired environmental outcome alone.

Although our focus is on England and Wales, we also support international organisations (for example, EU, OECD or OSPAR chemicals programmes) and initiatives where this can progress our priorities.

We will continue to support the UK Government on environmental standards, monitoring, and programmes and measures being developed under the Water Framework Directive, as well as proposals for the EU Chemicals Strategy and have set this as a specific objective under this strategy.

The Agency will strengthen its input into negotiating international risk- management options, that are led by the UK Government.

The Agency has strong on-going dialogue with all major trade associations, which includes regular bilateral meetings where regulatory and voluntary initiatives are discussed. We will set up specific liaison mechanisms with industry to help tackle the implementation of new legislation. For example, we have set up a task force with the Chemical industries Association and Specialised Organic Chemicals Sector Association SOCSA to tackle specific implementation issues arising from the introduction of Integrated Pollution Prevention and Control and have initiated liaison with the Association of the British Pharmaceutical Industry on the implementation of the EC Solvents Emissions Directive. Our proposed Chemical Management Strategy will feed into strategies which are being developed for different industry sectors to inform our staff on regulatory priorities and what we intend to achieve. These will be discussed with the relevant trade associations as they are developed.

Pollution Reduction Plans will not be successfully implemented unless partnerships are built and input sought at an early stage in their development from all those with a role in their implementation. We must work together to identify new issues, gain information to support risk -screening and assessment, develop and implement cost-effective risk -reduction measures, and evaluate our success. Not all chemical problems are priorities nationally. Where localised management is more appropriate, the Agency will develop and implement proposals through local partnerships.

Producer responsibility is a vital component of chemicals management and the Agency will work with and support voluntary industry initiatives on responsible care, product stewardship and information generation on substances. We will support the UK Chemicals Stakeholder Forum and the Advisory Committee on Hazardous Substances. We will provide information to the Forum on the substances of most concern, particularly where our action alone would be ineffective, to facilitate early risk-management action. We will work with industry when they develop voluntary risk management initiatives for the Forum and when further risk management is required for emissions under our control. Where hazard data are generated and evaluated as part of the International Council of Chemical Associations (ICCA) voluntary initiative we co-ordinate UK sponsorship into the Organisation for Economic Cooperation and Development (OECD) chemicals programme to produce internationally accepted hazard reviews. We played a central role in the negotiations over the potential introduction of a pesticide tax and the alternative approach put forward by the Crop Protection Association for a voluntary package of measures. By doing so we have ensured that the voluntary measures agreed to by Government will

provide maximal benefits to the environment provided widescale adoption by farmers takes place.

| Agency objectives | Success criteria to 2007 |
|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Provide support to the UK Chemicals Stakeholder Forum and the Advisory Committee on Hazardous Substances. | Identify an initial set of High Production Volume (HPV) substances which meet Chemical Stakeholder Forum criteria (2002), to assist the Forum in identifying substances which it would consider for risk management. Provide information, as appropriate, to support decision taking on substances considered by the Forum. |

About one-third of European chemicals' production is from Small and Medium Sized Enterprises (SMEs) (36,000 in the EU) and many more use chemicals in their business. In partnership with the HSE we will develop a one-stop health, safety and environment information system (Chemicals Essentials) for use by SMEs when considering chemical use in the workplace. This will be provided via the Internet and will assist companies in undertaking simple risk assessments to ensure compliance with legislation and reduce the risks to worker health and the environment. The Agency has set itself a specific objective under this strategy for Small and Medium size enterprises (SME's):

| Agency objectives | Success criteria to 2007 |
|--------------------------------------------------------------------|----------------------------------------------------------------------------|
| Provide user-friendly guidance to SMEs on chemical risk assessment | Chemicals essentials developed as a tool and available on internet by 2005 |

The Agency places great importance on developing research partnerships with other organisations for example, Government, industry research groups, research councils and institutes, and universities. We will build partnerships through collaboration and will improve access by publishing our findings.

We will work with others to improve public access to information on chemicals (for example, presence of chemicals in consumer products, impacts of chemicals on human health).

Consultation question 6:

- 6a. What role should the Agency take in building partnerships to address chemical issues?
- 6b. Which partnership activities are the most important for the Agency to pursue?

The Agency has identified the following chemical policy initiatives as priorities up until 2007:

EU Chemicals Strategy

Contribute technical expertise to develop a system that will deliver better environmental protection.

UK Stakeholder Forum priority substances

Assist Forum and Advisory Committee on Hazardous Substances to identify and evaluate priority substances.

Water Framework Directive priority substances

Contribute technical expertise to develop a system that will deliver better environmental protection. In particular, expert input to identify new priorities, develop environmental quality standards and risk-management approaches. Implement agreed risk management within a Pollution Reduction Programme framework.

OECD Chemicals Programme

Coordinate UK sponsorship of hazard data-sets and assessments arising from the ICCA initiative. The aim is for the UK to sponsor 40-50 substances. The pilot scheme is designed to help industry develop assessments to the required content and standard. We will encourage data generation for chemicals of potential concern and will monitor the outcome of other assessments to identify potential priorities for England and Wales.

We have set ourselves a specific objective for the OECD Chemicals Programme:

| Agency objectives | Success criteria to 2007 |
|-----------------------------------------------------------------------|--------------------------------------------------------|
| Co-ordinate UK input of substances arising out of the ICCA initiative | 40-50 substances sponsored into OECD programme by 2005 |

Consultation question 7:

7a. Which chemical policy initiatives should be a priority for the Agency?

2.10 Communicating effectively

Since 1999 we have been providing information to a wide variety of audiences in an easily accessible way to show annual emissions from industrial activities we regulate. This is called the Pollution Inventory (PI).

The objectives of the Pollution Inventory are to help the:

- Public to find out about pollution from industry in their local area;
- Environment Agency to regulate industry effectively and protect the environment;
- Agency and Government to meet national and international environmental reporting commitments.

The Agency's Pollution Inventory was launched in May 1999 by Michael Meacher and now includes three years of reported annual mass emissions. Each specified industrial process must report on its annual releases every year and the Environment Agency then publishes this information on the "What's in Your Backyard?" section of the website. Since its successful launch, the Pollution Inventory has received acclaim from a wide variety of stakeholders ranging from industrial trade associations to environmental lobbying organisations.

The Agency's Pollution Inventory has been developed in consultation with external stakeholders through the Pollution Inventory Advisory group which includes representatives from Government, Industry and environmental non-government organisations. This consultation and co-operation has been very successful in ensuring the development of the Pollution Inventory has been supported from all sides.

The Pollution Inventory data can be scrutinised to identify key pollutants in different industry sectors or geographical regions. In combination with data from the National Atmospheric Emissions Inventory the relative significance of Environment Agency regulated emissions can be put into perspective on a national basis.

There is considerable weight of evidence to support the view that pollution inventories around the world are drivers for pollution reduction simply by pushing industrial emissions up the social and political agenda through public access to information.

We will continue to be innovative, as we have done with the Pollution Inventory, in providing information to as wide an audience as possible. We will develop:

- a web page on our internet site to report progress on activities undertaken under the strategy.
- Position Statements to communicate our role and other actions necessary to address chemical issues. Position Statements will initially be developed to explain our actions on priority chemicals and for the ones about which we are most often asked.

- the Pollution Inventory, with the Pollution Inventory Advisory Group, to improve the relevance of substances included and provide more information about their hazards. In the longer term, we aim to provide information on health and environmental impacts to place sources in better context.
- environmental outcome indicators for Pollution Reduction Programmes and other major initiatives that will best communicate the results of our actions.
- direct stakeholder dialogue on specific topics through targeted workshops and other events.

Good internal communication is also essential to enable us to provide efficient and effective chemicals management. We will review and improve chemical information, training and tools provided to our operational staff. We have set ourselves the following specific communication targets:

| Agency objectives | Success criteria to 2007 |
|--------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chemical Strategy link on Agency web site in place | Chemical Strategy link available commencing 2003 |
| Develop Position Statements to support Agency decisions on chemicals | <ul style="list-style-type: none"> • Agency position on all priority substances identified by management process on internet (2007) • Specifically we will have positions on: <ul style="list-style-type: none"> 10 key substances by 2003 30 key substances by 2005 50 key substances by 2007 |
| Environmental standards/targets effectively communicated to stakeholders | <ul style="list-style-type: none"> • Issue Agency policy statement on Health (2002) • Strategic framework for standard setting (2003) • Develop environment assessment levels for priority substances (100 by 2007) • All standards used by Agency available on internet by 2005 |

Consultation Question 8:

8a. Which of the communication initiatives identified are the most important parts of the strategy?

8b. Are there other communication approaches you would like us to consider?

2.11 Measuring our success

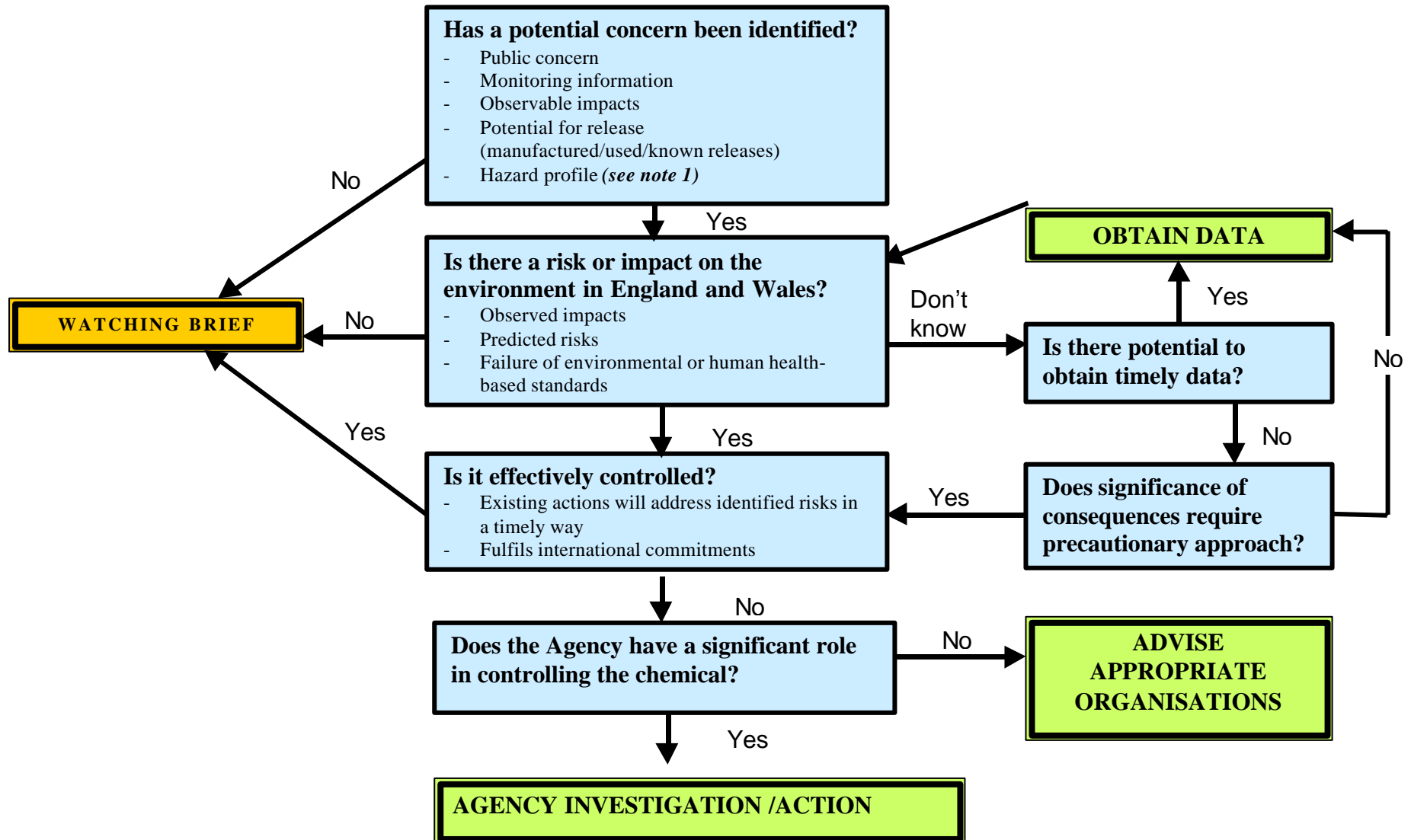
Success criteria and reporting will routinely be considered at the outset of any new programmes we initiate. For example, by developing Pollution Reduction Programmes, we wish to improve the basis for choosing risk-reduction measures, to provide a context for Agency actions, make our decisions more transparent and establish clear targets and outcomes. Pollution Reduction Programmes must therefore state clear management targets, the outcomes expected and how and when they will be evaluated.

In Appendix 1 we clearly set out our objectives, activities and success criteria for the strategy up until 2007. We will report progress against these on our website.

The strategy is designed to enable us to re-evaluate priorities as new issues arise. Any changes in our objectives and actions will be reported on our website

APPENDIX 1 – OUR OBJECTIVES FOR 2007

| Agency objectives | Success criteria to 2007 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Development of a more strategic approach to environmental monitoring | <ul style="list-style-type: none"> Monitoring needs to support decision taking on priority chemicals reviewed (2002/3) Publish approach and consult with relevant stakeholders (2003) Implement initial programme (2003) |
| Establish screening criteria making use of those agreed by other organisations and supplement this with our knowledge of the environment in England and Wales | <ul style="list-style-type: none"> Initial system in place (2002) |
| Develop Position Statements to communicate Agency decisions on chemicals | Agency position on all priority substances identified by management process on internet (2007) <ul style="list-style-type: none"> Specifically we will have positions on: <ul style="list-style-type: none"> 10 key substances by 2003 30 key substances by 2005 50 key substances by 2007 |
| Develop and implement Pollution Reduction Programmes for selected key substances | <ul style="list-style-type: none"> Identify priority chemicals for PRP development (2002) Develop and implement twelve PRPs by 2007 |
| Development of appropriate Environmental standards/targets | <ul style="list-style-type: none"> Strategic framework for standard setting (2003) Develop environment assessment levels for priority substances (100 by 2007) |
| Develop biological effect measures to complement a chemical specific approach | <ul style="list-style-type: none"> Agency position on use of biological effects measures reviewed (2004) |
| Explain how the Agency will contribute to Green chemistry initiatives | <ul style="list-style-type: none"> Paper on Agency role in Green Chemistry initiatives (2003) |
| Develop a programme of research to underpin the Agency's chemical management strategy | <ul style="list-style-type: none"> Stakeholder workshop to obtain views on research priorities (2002) Publish priority research areas (2003) |
| Develop and communicate Agency approaches to address certain high priority groups of substances | <ul style="list-style-type: none"> Publish an update on the actions progressed under the Agency's Endocrine Strategy (2002, 2004, 2006) Issue Agency policy statement on Health (2002) Paper on Agency's approach to controlling persistent, bioaccumulative and toxic (PBT) chemicals and human carcinogens, mutagens and reproductive toxicants (CMR) (2003) |
| Direct Toxicity Assessment will be used to improve the assessment and control of complex effluents. | <ul style="list-style-type: none"> Identify receiving waters with acute toxicity problems (2002) Apply the DTA approach to these receiving waters (2002-2005) Use the DTA approach to generate data on high-risk discharges under IPPC (2002-2007) to harmonise with IPPC implementation 85 per cent reduction in the number of point -source discharges causing acute effects by 2007 |
| Provide support to the UK Chemicals Stakeholder Forum and the Advisory Committee on Hazardous Substances. | Identify an initial set of High Production Volume (HPV) substances which meet Chemical Stakeholder Forum criteria (2002), to assist the Forum in identifying substances which it would consider for risk management. Provide information, as appropriate, to support decision taking on substances considered by the Forum. |
| Provide user-friendly guidance to SMEs on chemical risk assessment | Chemicals essentials developed as a tool and available on internet by 2005 |
| Co-ordinate UK input of substances arising out of the ICCA initiative | 40-50 substances sponsored into OECD programme by 2005 |
| Chemical Strategy link on Agency web site in place | Chemical Strategy link available commencing 2003 |
| Develop Position Statements to support Agency decisions on chemicals | Agency position on all priority substances identified by management process on internet (2007) |
| Environmental standards/targets effectively communicated to stakeholders | <ul style="list-style-type: none"> Issue Agency policy statement on Health (2002) Strategic framework for standard setting (2003) Develop environment assessment levels for priority substances (100 by 2007) All standards used by Agency available on internet by 2005 |

APPENDIX 2 - AGENCY SCREENING AND PRIORITISATION OF CHEMICALS (see Figure 1 Main Text)


APPENDIX 2 NOTES - AGENCY PRIORITISATION OF CHEMICALS

Note 1. Hazard Profile

Persistent, Bioaccumulative and toxic (UK Stakeholder Forum criteria)

| | |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tier 1 (Highest concern) | Persistence: half-life > 2 months in water half-life > 6 months in sediment and soil Bioaccumulative : log Kow >5 unless experimental BCF <5000 Aquatic toxicity : Acute : EC 50 < 1 mg/l Chronic: NOEC (EC10) < 0.1 mg/l CMR: Cat 1 & 2 and Category 3 mutagens or chronic toxicity data (with reference to thresholds & provisions in EC Directive 67/548/EEC) |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| | |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tier 2 (High concern) | Bioaccumulative: log Kow > 4 unless experimental BCF < 500 P & T as for highest concern Persistence: readily biodegradable Bioaccumulative: log Kow > 4 unless experimental BCF < 500 Aquatic toxicity: Acute : EC50 <10 mg/l <p style="text-align: center;">Very Persistent, Very Bioaccumulative (VPVB)</p> Persistence: half-life > 2 months in water Bioaccumulative: log Kow > 5 unless experimental BCF < 5000 |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Very High Toxicity (Agency criteria)

| |
|----------------------------------------------------------|
| Acute aquatic and terrestrial toxicity: < 0.01 mg/l LC50 |
|----------------------------------------------------------|

Very Persistent + High Toxicity (Agency criteria)

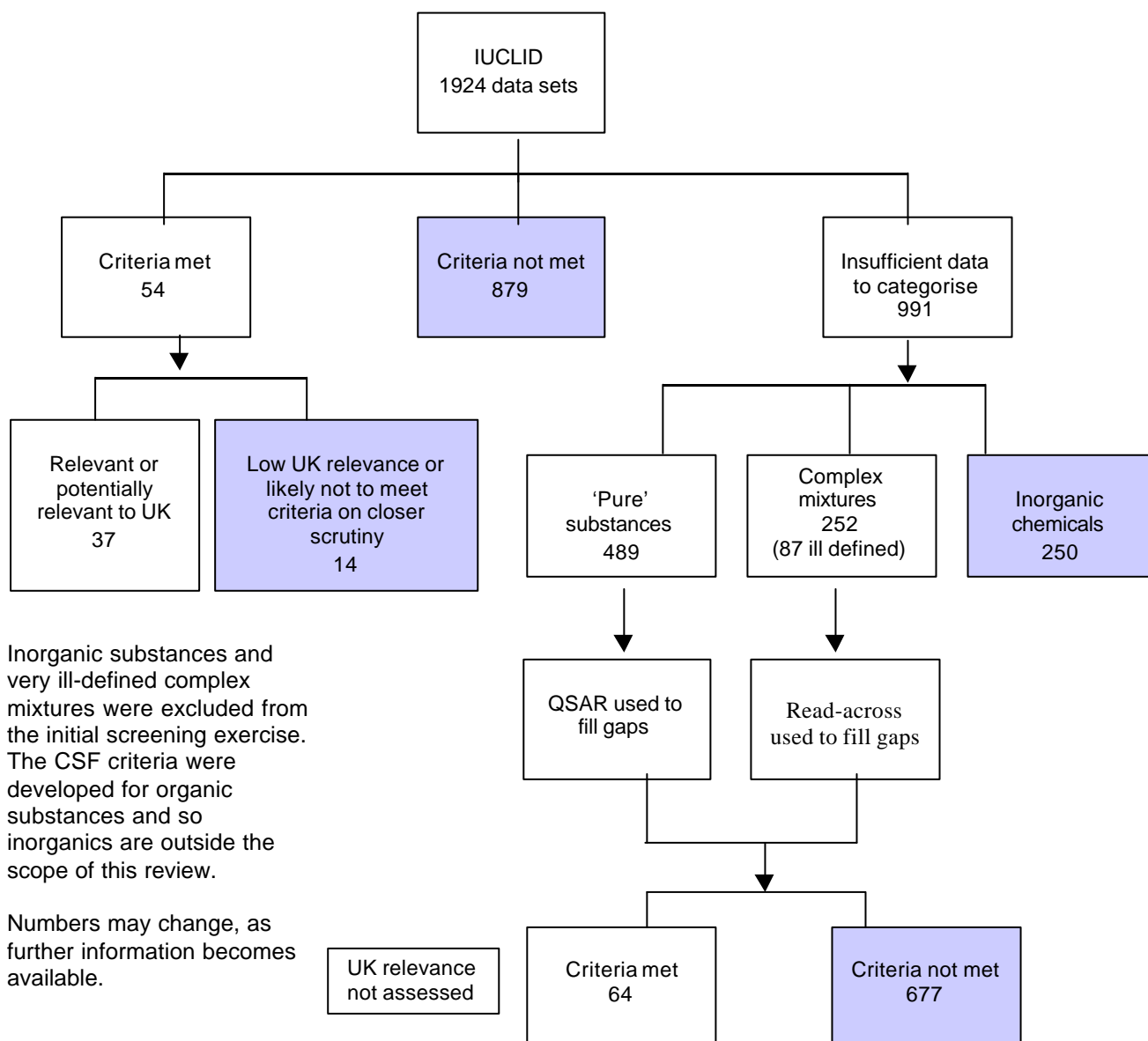
| |
|-----------------------------------------------------------------|
| Half-life : > 60 days in water; acute toxicity: < 0.1 mg/l LC50 |
|-----------------------------------------------------------------|

Bioaccumulative + High Toxicity (Agency criteria)

| |
|-------------------------------------------------------------|
| Log Kow > 4 unless BCF < 500; acute toxicity: < 1 mg/l LC50 |
|-------------------------------------------------------------|

APPENDIX 3 – APPROACH TAKEN TO IDENTIFY SUBSTANCES POTENTIALLY MEETING UK CHEMICAL STAKEHOLDER FORUM CRITERIA

We have carried out a screening-level review of high production volume industrial chemicals to identify those that meet the UK Chemicals Stakeholder Forum criteria for high persistence, bioaccumulation and toxicity, and those where environmental exposure may occur in the UK (figure below). Where such substances have a use relevant to the UK, we will enter into discussions with the manufacturing and user industries to confirm the properties and use pattern, and (where necessary) reduce environmental emissions from processes under our control. An initial list has been drawn up of 37 substances meeting the Forum’s criteria and with potential for exposure in the UK and a further 64 which are predicted to meet the criteria but whose potential for environmental exposure has not yet been assessed. The 37 substances include a number of plastic additives (including flame retardants), lubricant and fuel additives, and rubber chemicals. The figure below gives details of the numbers of substances involved in this initial screen.



APPENDIX 4 - THE AGENCY'S STRATEGY ON ENDOCRINE-DISRUPTING SUBSTANCES - MAJOR ACHIEVEMENTS SINCE 2000

Our strategy

In March 2000, the Agency launched its strategy to address endocrine-disrupting substances in the environment. We believed there were potential threats to the health of fish populations following findings that exposure to these chemicals in sewage effluents was linked to feminising effects in male fish. There was no evidence to suggest that the presence of these chemicals in the environment represented any increased risk to human health and the strategy does not consider human health.

The four main elements of the strategy are:

- taking cost-effective action to reduce the risk of potential endocrine-disrupting substances causing harm to the environment;
- carrying out targeted monitoring to evaluate the concentrations of these substances in the environment;
- addressing areas of scientific uncertainty;
- raising awareness and providing information.

The strategy set out a range of research needs and actions on chemicals identified as potential endocrine disruptors. Our progress against the tasks and targets set within the strategy is detailed in Table 1.

Endocrine disruption in wildlife has been seen in many EU countries, Japan and the United States. The UK research programmes, involving academia, Government and industry, have been groundbreaking. They have influenced both policy and action at international levels.

Since launching our strategy, the EU Endocrine Disruptors Strategy has indicated more than 500 potential endocrine disruptors, many of which are being addressed under current UK and EU legislation. Twelve have been identified that are not covered by current initiatives. These are priorities for further investigation. They include the three steroid oestrogens that the Agency has been researching as a priority. The EC has commissioned research to collect information on these substances. We have identified carbendazim and 2,4-D as substances listed in the EU strategy that merit further investigation and possible Pollution Reduction Programme.

Progress since 2000

Research into the causes and consequences of oestrogenic (feminising) effects in fish has now confirmed:

- certain sewage effluents can cause permanent changes in the sexual organs of male fish;
- these effects have now been observed in a range of coarse fish;

- young fish are particularly vulnerable, but some effects worsen with age and exposure;
- male fish with more than moderate changes in their sexual organs are less able to reproduce – with potentially serious implications for fish populations;
- changes in the sexual characteristics of male fish were observed at the 10 river catchments studied.

The Agency is also assessing risks posed by priority oestrogenic substances. The substances of concern are steroid hormones excreted from women naturally or as a result of taking the contraceptive pill. The research enables us to conclude that:

- steroids may be more potent than previously suspected, less than 1 nanogram per litre of the most potent steroid, 17α -ethinyloestradiol (the pill), can cause effects in fish;
- certain different endocrine-disrupting substances act in similar ways and, when mixed together, can cause effects at lower concentrations than when present individually;
- although relatively short-lived substances in the environment, steroids may continue to affect fish some distance downstream from a sewage treatment works.

Preliminary risk assessments indicate that about 100 sewage treatment works may discharge steroids at concentrations that could cause reproductive effects on fish. Further work is now required to improve our confidence in these preliminary predictions.

What does this mean for fish populations in England and Wales?

Generally, fisheries in England and Wales are good and improving, reflecting the considerable improvements to water quality following investment in sewage treatment over the past 20 years. However, we believe that some fish populations are at risk from oestrogenic effects following exposure to oestrogens substances in sewage effluent.

What is the Agency going to do?

The Agency is responsible for protecting the environment by controlling pollution. It has specific duties for protecting fish.

There is now sufficient evidence of fish being harmed to develop a risk-management strategy for oestrogens in sewage effluent. This strategy is likely to require changes in sewage-treatment practices, requiring development of new technology for some sewage-treatment plants. This has to be carefully targeted, properly costed and funded.

Over the next two years (2002-2003), we will confirm which sewage treatment works should be considered high risk. We will continue our research into setting relevant targets (chemical and biological) to protect the environment.

We believe that the water industry should now start to investigate treatment technologies for the removal of priority oestrogens.

The Agency calls for an initial study on the feasibility of risk-management options in 2003-4, followed by detailed studies on the implementation of these in 2005-2007.

We propose that these should be undertaken through *collaborative programmes*, between the Agency, water industry and other relevant stakeholders, to develop:

- a common approach to assess effluents and identify priority sewage treatment works
- an evaluation of the effectiveness and costs and benefits of treatment options.

The programmes will focus on a number of high-risk sites. They will establish how effluents can be managed to reduce the risk to acceptable levels.

The detailed studies may require investment in pilot-scale treatment technologies. These may need to be funded through water-bill charges. We need to be confident that potentially substantial investment in treatment options by the water industry will work, and that the resulting environmental benefits will justify the costs.

TABLE 1: Progress on actions identified in the Agency's endocrine -disrupters strategy

| Substance | | Risks identified | Actions |
|--------------|----------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Steroids | | Sewage-treatment works screened, about 100 potential high-risk sites identified | <ul style="list-style-type: none"> • Steroid predicted no-effect concentrations (PNECs) evaluated • Fate study completed, risk assessment under way • Fishery survey in 2002 to confirm potential high-risk areas |
| Alkylphenols | | Significant reductions in Nonylphenol from IPC sites | <ul style="list-style-type: none"> • Risks from priority IPC sites evaluated • Improvements issued to reduce emissions • Environmental Quality Standards (EQS) for Alkylphenol ethoxylates (APEs) developed • Revised monitoring strategy being developed for APEs • Priority for Pollution Reduction Programme pending further monitoring data |
| Pesticides | | | |
| | Atrazine | No catchments predicted to exceed EQS due to agricultural use | <ul style="list-style-type: none"> • EU review of use ongoing under Reg 3600/92 |
| | Simazine | No catchments predicted to exceed EQS due to | <ul style="list-style-type: none"> • EU review of use ongoing under Reg 3600/92 |

| Substance | | Risks identified | Actions |
|-------------|------------------|---------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | agricultural use | |
| | Dichlorvos | Potential source from home use. | <ul style="list-style-type: none"> • EU review of use ongoing under Reg 3600/92 • Pesticide Safety Directorate review |
| | Endosulphan | 1 EQS failure in 2000 | <ul style="list-style-type: none"> • Approval revoked in 2001 |
| | Trifluralin | No EQS failures reported. Six catchments predicted to have potential to exceed EQS and 36 catchments at high risk | <ul style="list-style-type: none"> • Revised monitoring strategy being developed • Potential candidate for Pollution Reduction Programme |
| | Dimeton-s-methyl | No EQS failures reported | <ul style="list-style-type: none"> • Approvals revoked |
| | Dimethoate | No EQS failures reported. No catchments predicted to be at high risk | <ul style="list-style-type: none"> • Approvals suspended in 2001 • Pesticide Safety Directorate review in progress |
| | Linuron | No catchments predicted to be at high risk due to agricultural use | <ul style="list-style-type: none"> • EU review of use ongoing under Reg 3600/92 |
| | Permethrin | No sites predicted to exceed EQS due to horticultural use EQS breaches from point- sources emission from textile industry | <ul style="list-style-type: none"> • EU review of use ongoing under Reg 3600/92 • Strategy to reduce emissions from textile industry in place |
| | Lindane | EQS failures at 4 sites in 2000 No sites predicted to exceed EQS due to agricultural use | <ul style="list-style-type: none"> • Approvals for all uses revoked in 2002 under Decision 2000/801/EC |
| Tributyltin | | Widespread EQS failures due to historical pollution and diffuse sources, but also industrial point sources | <ul style="list-style-type: none"> • A ban on use on all ships has now been agreed • Pollution Reduction Plan for other sources and releases being developed. |
| DDT, Drins | | | <ul style="list-style-type: none"> • Banned, decreasing in environment |
| PCBs | | Banned and being phased out. As dioxin emissions reduce PCBs are becoming a relatively more important contaminant in diet | <ul style="list-style-type: none"> • Further actions to be considered as part of UK strategy on Dioxins and PCBs |
| Dioxins | | Atmospheric | <ul style="list-style-type: none"> • Investigation to establish what |

Appendix 4

| Substance | | Risks identified | Actions |
|------------------|--|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | emissions under Agency control are now less than 25per cent of UK total | further reductions are feasible from Agency- controlled processes in 2002. Further actions to be considered as part of UK strategy on Dioxins and PCBs |

APPENDIX 5 - DRAFT TEMPLATE FOR DEVELOPING FUTURE POLLUTION REDUCTION PROGRAMMES

A Pollution Reduction Programme will be a brief document focusing on the agreed targets and actions for reducing pollution from Chemical X following an options appraisal exercise (including consideration of technical and economic feasibility). Text will explain the reasoning behind the targets and actions.

The following sections should be included:

Purpose

Purpose of document and why a Pollution Reduction Programme is being developed. Brief introduction to the chemical and reasons for concern. This section should include: a summary of current and likely future legislation at national and international levels, and any local requirements where appropriate; summary of standards.

Sources and environmental pathways and exposure

Summary of the main sources. Description of physio-chemical properties, routes of entry into the environment, main pathways and final fate. Where known, the relative importance of environmental exposure versus other routes.

Indication of the main releases to air, water and soil, where possible quantifying the proportion releases make to the whole. Indication of: confidence in the data and conclusions drawn; trends/achievements; scope for Agency control.

State of the Environment

Information on the concentrations in air, water, sediment and soil in relation to standards. A summary of 'where we are now': trends in releases and status.

Reduction targets

Summary of requirements and targets made in national and international legislation. Local requirements where appropriate. This should include time-scales (that is, when the required reduction is to be achieved). Assessment of requirements and targets against the current situation to identify what can realistically be achieved by further action. Summary of agreed targets for the Pollution Reduction Programme.

Actions to achieve targets

Actions already in place, or changes in use/ behaviour that may effect release levels or status that will influence the releases. An indication of whether targets will be achieved through these actions.

An evaluation of the proportion of releases coming under Agency control that we can take action on. Describe actions to be taken, by whom and by when. Should give an indication of the proportion of releases not under Agency control and where we will need to work with others (indirect action). Summarise any agreed actions and targets.

Monitoring and reporting

Progress to be monitored in terms of the actions completed, but also the success in reducing releases and improving environmental status using defined success criteria.

Description of how progress towards the targets will be monitored, by whom and when, highlighting the success criteria that will be used and how this will be communicated.

APPENDIX 6 - GLOSSARY

| Term | Definition | Source |
|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Bioaccumulation | The uptake of chemicals from the environment, and their concentration and retention by organisms, for example, in fatty tissues. | DETR CS |
| Biocide | Any agent that controls harmful organisms. | DETR CS |
| Carcinogenicity | A property of a chemical that causes cancer. | DETR CS |
| Direct Toxicity Assessment (DTA) | The use of whole effluent ecotoxicity testing to help assess and control complex industrial and sewage-treatment works' effluents in the UK. | |
| Ecosystem | Living organisms, their physical environment and their inter-relationships within a particular part of the environment. | DETR CS |
| Ecotoxic | Harmful to ecosystems and/or the organisms within them. | DETR CS |
| Endocrine disrupter | Chemical that interferes with the working of the endocrine (hormone) system. | DETR CS |
| Existing chemicals | Defined as those listed in the European Inventory of Existing Commercial Chemicals (EINECS) between January 1971 and September 1981 - a total of over 100,000. All other chemicals are 'new chemicals'. | DETR CS |
| Hazard assessment | Assesses a chemical's potential to harm humans or the environment. This is an intrinsic property of a chemical. It does not address the likelihood of harm (risk), which depends on exposure, including the way the chemical is used or is likely to reach the environment. The hazard assessment is therefore only the first step towards an assessment of risk. Under the OECD Screening Information Data Set (SIDS) programme, a hazard assessment involves six internationally agreed basic tests for screening high production volume chemicals for toxicity. The tests are for acute toxicity, chronic toxicity, developmental/reproductive toxicity, mutagenicity, ecotoxicity and environmental fate. | DETR CS |
| Hazard profile | Data on physical and chemical characteristics, acute and chronic toxicity, bioaccumulation, persistence and mobility in environmental media and other properties required for a hazard assessment of a chemical. Together with information on exposure, the hazard profile is used to assess risk. | DETR CS |
| Hazardous chemical/chemical | There are many definitions. OSPAR defines hazardous chemicals as those that are toxic, persistent and liable to bioaccumulate or which give rise to an equivalent level of concern. In this strategy, chemicals of concern for which a risk -management strategy is required are those that are likely to cause serious or irreversible damage to the environment, in accordance with the precautionary principle. The Stakeholder Forum will advise the Government on setting criteria to enable rapid identification of such chemicals. | DETR CS |
| High production volume (HPV) | The OECD defines an HPV chemical as one that is produced or imported into any single country in quantities of 1,000 tonnes per year or more. The US Environmental Protection Agency terms HPV chemicals as those produced or used in quantities of over one million lb. per year, that is, about 444 tonnes. | DETR CS |
| International Council of Chemical Associations (ICCA) | A body of trade associations representing chemical manufacturers worldwide. It provides a forum for regular meetings of executives from member associations. ICCA has announced a voluntary programme of accelerated testing and hazard assessments of | DETR CS |

| Term | Definition | Source |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| | about 1,000 high- priority chemicals, to be completed by the end of 2004. | |
| Log Kow | Octonol-water partition coefficient. Chemical predictor of bioaccumulation. | Agency |
| Mutagenicity | A property of a chemical that causes mutation of the genetic material of an organism exposed to it. | DETR CS |
| New chemicals | Defined as those not listed in the European Inventory of Existing Commercial Chemical Chemicals (EINECS) between January 1971 and September 1981. Those on that list are the so-called 'existing chemicals'. | DETR CS |
| OSPAR | The Convention for the Protection of the Marine Environment of the North East Atlantic (the OSPAR Convention), to which the UK is a party, agreed a strategy to "prevent pollution of the maritime area by continuously reducing discharges, emissions and losses of hazardous chemicals with the ultimate aim of achieving concentrations in the marine environment near background values for naturally occurring chemicals and close to zero for man-made synthetic chemicals." | DETR CS |
| Persistence | The ability of a chemical to remain unchanged in the environment. Persistent chemicals can become distributed worldwide, particularly in the marine environment or in the atmosphere. | DETR CS |
| Pesticides | An agent used to control pests and diseases, including insecticides, herbicides and fungicides. | DETR CS |
| Precautionary principle | The precautionary principle is an approach to risk management that can be applied in circumstances of scientific uncertainty, reflecting a perceived need to take action in the face of a potentially serious risk without waiting for results of scientific research. The 1992 Rio Declaration on Environment and Development says: "In order to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation." | DETR CS |
| Proportionality principle | The concept that control measures or response should generally be proportional to the risk. | DETR CS |
| Risk | The likelihood of the hazardous properties of a chemical causing harm to people or the environment. Risk depends on exposure, including the way the chemical is used or is likely to reach the environment. | DETR CS |
| Risk assessment | The determination of the emissions, pathways and rates of movement of a chemical and its transformation or degradation in order to estimate the concentration/doses to which people or parts of the environment may be exposed. Scientists compare the hazard profile and the exposure assessment to characterise the risk; they build in uncertainty factors to allow for uncertainty in predictions or exposures and for effects on different species. When assessing risks for humans, scientists include uncertainty factors to take account of extrapolating information from tests on laboratory animals and variation in the human population. Detailed risk assessments have been carried out on relatively few chemicals. In this strategy, we distinguish between two types of risk assessment. The European chemicals industry association CEFIC has announced that it will carry out basic risk | DETR CS |

| Term | Definition | Source |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| | assessments for those chemicals where the hazard assessment indicates potential concern. Where necessary, detailed targeted risk assessments will focus on the uses of the chemicals and on those parts of the environment of concern. | |
| Stakeholder | In this strategy, taken to mean those that have an interest in the production and use of chemicals and the effect they have on the environment and human health via environmental exposure. Participants in the Stakeholder Forum include individual companies producing, importing and using chemicals, the scientific community, environmental and conservation organisations, trade associations, consumer protection organisations and trade unions. | DETR CS |
| Success Criteria | Quantitative or qualitative measures used to assess progress towards a stated goal. | This document |
| Sustainable development | Defined in the 1992 Rio Declaration on Environment and Development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". The Government's sustainable development key objectives are social progress that recognises the needs of everyone, effective protection of the environment, prudent use of natural resources, and maintenance of high and stable levels of economic growth and employment. In the context of this strategy, sustainable development means encouraging a continuing reduction in the risks presented by chemicals to the environment while maintaining economic competitiveness. It aims to achieve the early phase-out of those chemicals identified as representing an unacceptable risk to human health or the environment. | DETR CS |
| Sustainable production and use of chemicals | A Government consultation paper published in July 1998 and strategy issued in 1999. Included the establishment of a UK Chemicals Stakeholder Forum. | DETR CS |
| Teratogenicity | A property of a chemical causing abnormalities in the embryo or foetus when administered to the mother or maternal organism. | DETR CS |
| Toxicity | Harmfulness to living organisms. Toxicity is the capacity of a chemical to cause toxic effects to organisms or their progeny, such as reduction in survival, growth and reproduction, carcinogenicity, mutagenicity, teratogenicity, and endocrine disruption (see separate entries for these). | DETR CS |

Source:

DETR CS = Department of the Environment, Transport and the Regions *Sustainable Production and Use of Chemicals A Strategic Approach The Government's Chemicals Strategy*

Recommendations from the Direct Toxicity Assessment (DTA) Demonstration Programme Steering Group to the Regulators

APPENDIX 7 – ACRONYMS AND ABBREVIATIONS

Acronym

| | |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| APE | Alkylphenol ethoxylate |
| BAT | Best Available Technology |
| BATNEEC | Best Available Techniques Not Entailing Excessive Cost |
| BCF | Bioconcentration Factor |
| CMR | Human carcinogens, mutagens and reproductive toxicants |
| COMAH | Control of Major Accident Hazard Regulations 1999 |
| DEFRA | Department for Environment, Food and Rural Affairs |
| DTA | Direct Toxicity Assessment |
| DTI | Department for Trade and Industry |
| EC | Effects Concentration |
| EINECS | European Inventory of Existing Commercial Chemical Chemicals |
| EPAQS | Expert Panel for Air Quality Standards |
| EQS | Environmental Quality Standards |
| ESR | Existing Substance - Defined as those listed in the European Inventory of Existing Commercial Chemical Chemicals (EINECS) between January 1971 and September 1981 - a total of over 100,000. All other chemicals are 'new chemicals'. |
| HPV | High production volume |
| HSE | Health and Safety Executive |
| ICCA | International Council of Chemical Associations |
| IPC | Integrated Pollution Control regulations |
| IPPC | Integrated Pollution, Prevention and Control regulations |
| I-TEQ | International toxic equivalents |
| IUCLID | International Union Chemical Information Database |
| log Kow | Octanol-Water partition co-efficient |
| NOEC | No Observed Effect Concentration |
| OECD | Organisation for Economic Co-operation and Development |
| OSPAR | Oslo or Paris Conventions |
| PBT | Persistent Bioaccumulative and Toxic |
| PCBs | polychlorinated biphenyls |
| PEC | Predicted Environmental Concentration |
| PEWG | Pesticides in the Environment Working Group |
| PFOS | Perfluorooctanyl sulphonate |
| PI | Pollution Inventory |
| PNEC | predicted no-effect concentration |
| POPs | Persistent Organic Pollutants |
| R&D | Research and Development |
| SIDs | Screening Information Data Set |
| SMEs | Small and Medium Sized Enterprises |
| TBT | Tributyltin |
| VPVB | Very Persistent and Very Bioaccumulative |
| WFD | The Water Framework Directive 2000/60/EC |

APPENDIX 8 – CONSULTATION FEEDBACK FORM

This form has been designed to provide easy feedback on the questions posed in this document. We welcome your comments on the Agency's Chemicals Management Strategy and our objectives, activities and actions up until 2007.

We value the views of our consultees, and consider them essential if we are to achieve the greatest environmental benefit. We would particularly welcome your views on the questions we have raised. Please ensure you-

- explain who you are and, where relevant, who you represent, and include your name and address;
- order your comments under the same headings as the consultation paper;
- if you have additional comments, please include wherever possible the reference to the issue you are addressing;
- include a summary of your comments if they are more than three pages long; inform us if you want your comments to be treated as confidential. (Responses may be made public unless consultees request confidentiality. All responses will be included in any statistical or other summary of the results).

Please send your completed response to the address, e-mail or fax below **by 30 September 2002**.

Name:

Company:

Address:

Telephone:

Fax:

Email:

Do you wish your response to be treated in confidence? [tick box if Yes]

(Responses may be made public unless consultees request confidentiality. All responses will be included in any statistical or other summary of the results).

Key area 1: Our approach to assessing priorities and the key tools

1a. How well do you think our suggested approach to assessing priorities and determining actions will help us improve environmental protection?

Your comments:

2a. How important do you think our key tools (Position Statements, Pollution Reduction Programmes, a framework for setting targets and biological effects measures) are in developing a more focused and coordinated approach to chemicals?

Your comments:

2b. Are there any significant gaps in our suggested approach where you would like to suggest alternative solutions?

Your comments:

Key area 2: Our research priorities

3a. Have we identified the right research priorities?

Your comments:

3b. If not, where should our chemicals research be targeted?

Your comments:

Key area 3: Our approach to specific chemical issues

4a. What priority should the Agency give to endocrine disruption and effects of complex effluents in the environment?

Your comments:

4b. How do you envisage biological effects measures being used in future?

Your comments:

4c. Which groups of chemicals should be priorities for further investigation and control?

Your comments:

5a. Which substances should be priorities for Agency Position Statements?

Your comments:

5b. Which substances should be priorities for Agency Pollution Reduction Programmes?

Your comments:

Key area 4: Our partnership activities

6a. What role should the Agency take in building partnerships to address chemical issues?

Your comments:

6b. Which partnership activities are the most important for the Agency to pursue?

Your comments:

7a. Which chemical policy initiatives should be a priority for the Agency?

Your comments:

Key area 5: Our approach to communication

8a. Which of the communication initiatives identified are the most important parts of the strategy?

Your comments:

8b. Are there other communication approaches you would like us to consider?

Your comments:

*Please use this space for any **additional comments**, please include wherever possible the reference to the issue you are addressing.*

*Please include a **summary of your main points** if your comments are more than three pages long.*

Please send your completed response to the address, e-mail or fax below **by 30 September 2002.**

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