

EA-Water Quality WAT

Box 8



## WATER QUALITY FAC

“Our objective is to maintain and improve the quality of natural waters in the whole of the



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# the environment agency

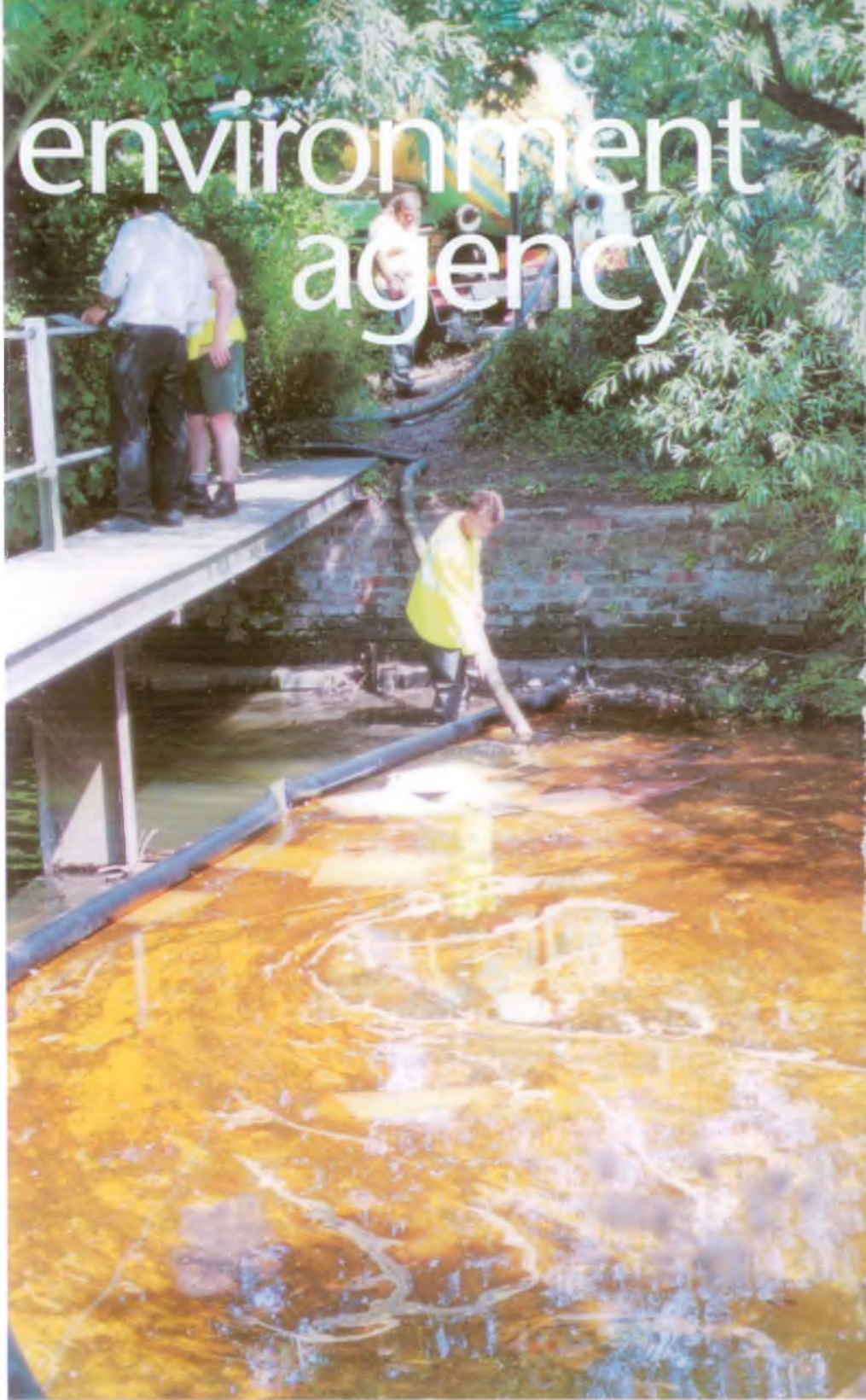
The Environment Agency for England and Wales is one of the most powerful environmental regulators in the world. It provides a comprehensive approach to the protection and management of the environment, emphasising prevention, education and vigorous enforcement wherever necessary. The Agency's creation on the 1st April 1996 was a major step, merging the expertise of the National Rivers Authority, Her Majesty's Inspectorate of Pollution, the Waste Regulation Authorities and several smaller units from the Department of the Environment.

## Thames Region

England and Wales are divided into eight Environment Agency regions. Thames Region is responsible for the protection of a 13,000 square km area of great diversity. The Region extends from Cirencester in the west to Southend in the east and from Luton in the north to the Surrey Downs in the south. Because this area contains a fifth of the nation's population, development pressures and demands on natural resources, particularly water, are greater than elsewhere in England and Wales. Thames Region is subdivided into three areas (West, North East and South East) which are the first point of contact for local issues.

Water Quality, the subject of this leaflet, is one of our key responsibilities. The others - Flood Defence, Water Resources, Conservation, Fisheries, Navigation, Recreation, Waste Regulation and Integrated Pollution Control - are covered in separate leaflets. In reality, we can't treat these responsibilities separately. Whatever we do must be done in the context of the whole catchment.

This means that the work of one specialist department is best carried out in collaboration with all the others. (So it's a good idea to read all the leaflets, and not just this one. In that way you'll get a better understanding of what we are trying to do ).



This collaboration extends well outside the Environment Agency. In Water Quality, for instance, we work closely with a wide variety of people and organisations who have a particular interest in improved water quality. They include the water companies (of course), industrial and trade associations and individual companies of all types and sizes.

But the most important collaboration is with individual members of the public.

Newspapers, magazines, TV and radio keep people informed about the water environment. Local groups can highlight any threats. Only public opinion can ensure that the water environment continues to be given the care and attention it needs.

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## Testing the water

Every year, we carry out thousands of tests of the water in our rivers in all parts of the Region. In some cases we use special meters which can give an instant read-out of water quality. We also take samples for analysis at our chemical laboratory. Some of the samples are biological, most are chemical.

Using these samples we can make periodic assessments which give a reliable means of knowing whether the quality of water in the rivers is getting better or worse. In other words, whether we are succeeding or failing. This is the **General Quality Assessment or GQA Scheme**.

In order to provide a complete picture of the quality of our rivers and canals throughout England and Wales, different aspects of the water environment must be looked at. We call these different aspects 'windows' because each gives us a different view of the overall health of a river. Currently we have two windows: a **Chemistry Window** and a **Biology Window**.

We can give a length of a river a **GQA Grade** for its chemical quality and another **GQA Grade** for its biological quality. These grades can be summarised as follows:

**A - Very Good   B - Good   C - Fairly Good  
D - Fair            E - Poor        F - Bad**

Two more windows are being developed: a **Nutrient Window** to account for the amount of simple chemical substances present in the water that are used by plants, and an **Aesthetics Window** which will look at how the public see water quality.

## Automatic testing Stations

Some of the chemical sampling is done automatically. We have over 40 automatic stations. They take samples of the water several times a day, analyse them, and pass the information to the computer at our Reading head office. If dangerous levels of pollutant are recorded, an alarm is triggered. Emergency action can then be taken.



*"The quicker the pollutant is spotted and identified, the easier it is to manage."*

## Instant action

The quicker the pollutant is spotted and identified, the easier it is to manage. So in addition to all the regular sampling, automatic or otherwise, our pollution inspectors have special meters to test samples on the spot. They do this during routine monitoring, and when called to emergencies. They can then act immediately to counter the pollution, trace it to its source and prevent further pollutants escaping.

## Testing the Thames

On the tidal Thames we operate a survey boat, called the Thames Guardian, which makes regular checks on water quality. The Thames guardian has its own on board laboratory - so our scientists can test the samples immediately. The boat can also trawl the river bed to catch fish and other organisms. These specimens can provide a great deal of information about conditions in the rivers.

## Action after accidents

If an accident does happen, and there is a risk of pollutants being released, our first aim is to prevent it entering a watercourse. If we are too late for that, then we minimise its effect by warning everyone, especially downstream abstractors and other river users of the danger. Where appropriate, we lay booms of absorbent material to trap floating pollutants like oil, or pump in oxygen where levels are low.



*"We much prefer to prevent accidents happening rather than take action after they have happened."*

## Enter...the law!

We much prefer to prevent accidents happening than to take action after they have happened. But if accidents do happen there is no excuse in law. Polluters who say: "It was just bad luck", "Circumstances beyond our control", "We only tested the system yesterday" are wasting their breath. Causing pollution is a criminal offence - whatever the reason for it. So in addition to paying the clean-up costs, the polluter could be given further legal penalties, which may involve more than a money payment.

## The PPP (Polluter Pays Principle)

The 'Polluter pays principle' is now well established. It means that the Environment Agency is empowered to recover the costs of controlling pollution from those who caused it. These costs are incurred in:

- Issuing and enforcing discharge consents.
- Monitoring the nature of effluents and their effect when they enter the water environment.
- Carrying out work to prevent pollution.
- Dealing with pollution incidents and restoring rivers, streams, ditches and ponds to their previous condition.

The total amount recovered after any one pollution incident can be considerable.

## Getting better - could be better still

The evidence is that our rivers are improving. In spite of the increase in population and in industry and agriculture, some 90% of surface water in Thames Region is of good or fair quality. Moreover, although more pollution incidents are reported, the number of major incidents is decreasing. However, complacency is not justified. Improvements will become harder to achieve. The risk of a fall in quality standards is always with us. Vigilance and a constant upgrading in technology and procedures continue to be imperative.



“ A little pollutant can do a large amount of harm.”

### Little - and large

A little pollutant can do a large amount of harm. For instance: pesticides can kill fish at levels well below one part in a billion; one litre of solvent can contaminate 100,000,000 litres of drinking water (enough to fill 50 olympic size pools); five litres of oil, the result of one oil change for a medium size car, can cover half a hectare of water - well over an acre.

### Prevention is best

We are always ready to advise people on the best way of handling possible pollutants and of reducing their impact to a acceptable level.

That is our first and most significant role.

We can offer a wide range of help - from simple common sense (“don't pour waste oil down a drain”) to highly technical guidance.

Sometimes, we have to recommend radical changes - to buildings, equipment or systems. Sometimes inexpensive modifications will do the trick. Very often, all that is needed is a change of attitude among those concerned and a determination to take all the obvious precautions.

We are particularly pleased to be called in at the planning stage of a new development. And we welcome a call from anyone with a pollution problem. We will do all we can to help solve it - and we usually can.



### Read and watch

We produce a very wide range of pollution prevention literature, nearly all of it aimed at individual industries or dealing with specific forms of pollution. We also produce a number of videos promoting pollution prevention.

Our intention is that people should know how to cope with the particular pollution they are likely to be responsible for - and that no-one should be able to say 'I wasn't told'.

### 'Consent'

We have legal powers over what precisely can be discharged into the water environment. Any such discharge needs a consent. This is a legally binding document specifying the amount and chemical composition of the effluent that can be released.

We check the terms of the consent are met, and have the right to enter premises to do our checking.

But our policy is co-operation. We want to work with everyone - water companies, agriculture, industry and the public - to control pollution.



### Improving standards by setting standards

All rivers in the Region will be given targets for water quality to establish a defined level of protection for aquatic life. These targets are set on a consistent basis across England and Wales and allow us to plan the maintenance and improvement of river quality.

We currently define these standards as the **River Ecosystem** scheme and the quality of water in rivers is classed on the following scale.

**RE1:** Water of very good quality suitable for all fish species

**RE2:** Water of good quality suitable for all fish species

**RE3:** Water of fair quality suitable for high class coarse fish populations

**RE4:** Water of fair quality suitable for coarse fish populations

**RE5:** Water of poor quality which is likely to limit coarse fish populations

We set specific RE Classes as objectives for each river, which will almost certainly differ along it's length - the Thames at Teddington cannot be expected to have the same RE Class as the Thames much further upstream at Lechlade.

*"We also receive valuable guidance from the Thames Regional Environment Protection Advisory Committee. Membership is drawn from a wide range of local and national bodies. Meetings of this committee are open to the public."*

#### Some of our external 'partners'

- Industrial and Trade Associations - such as the Confederation of British Industry and the National Farmers Union. These Associations help us to keep their members informed of water quality policies and to encourage working practices that reduce pollution.
- English Nature, the statutory advisor to the Government on nature conservation in England.
- Countryside Commission, the statutory advisor to the government on the conservation of landscape and access to the countryside.
- Royal Society for Nature Conservation and other voluntary groups.
- Angling clubs and other water recreation groups. Their support is indispensable. They are in a unique position to give early warning of pollution.

Note: We regulate some of the activities of the water companies operating in our Region - primarily Thames Water. We control their abstractions\* from rivers and underground aquifers and discharges from their sewage treatment works. At all times, we must protect water supplies from pollution.

\*Abstraction is the term used to describe the act of taking water in quantity from natural sources. Abstraction is usually by pumping, sometimes by gravity.

**"Mankind has always used rivers as an easy way of disposing of waste."**

#### Water for life

Without water, there can be no life. But the quality of the water is critical. The more polluted it is, the less its ability to support life. If it is grossly polluted, it can actually take life.

Fish, plants, wildfowl, livestock, and wild animals are all at risk. So are the micro-organisms on which the whole river ecology depends. And so too are people...those who

live or work on or near the water, and those who use it for recreation. So are all of us, when pollution threatens the purity of the water we drink.

#### "Chuck it in the river"

Mankind has always used rivers as a easy way of disposing of waste. Rivers are obliging. They can cope with a great deal of waste simply by breaking it down into harmless materials by natural processes. But they cannot cope with limitless amounts.

#### No pollution?

In an ideal world, all pollution would be completely neutralised before it entered the water environment. And the industrial and farming processes that now produce pollution would be superseded by those that didn't.

Such a happy state is unlikely to arrive. Our only realistic aim is to ensure that the amount of pollutant discharged - the 'pollution load' - does not exceed the natural capacity of the environment.

#### At work (and at home)

Pollution can come from natural sources - from decaying plant life or from natural impurities in the soil - but not normally in sufficient quantity to cause problems.

Most pollution is, directly or indirectly, man-made. It is made in factories, farms, quarries, mines, refineries, transport depots, filling stations, car-parks - and, not least, in our homes.

Approximately 12 million people live within the Thames Catchment area. The sewage they produce must be treated to acceptable standards before it can be returned to the environment. It usually is, unless heavy rains causes the sewers to overflow - or if a wrong connection is made in the drainage system and foul water from, say, a washing machine, bypasses the sewage works.

Industry and agriculture produce waste in great quantities - which all must be treated. The damage caused when accidents happen is correspondingly great.

#### Different forms, different damage

Man-made pollution comes in various forms, each of which causes its own type of damage.

Untreated sewage or farm slurry can increase



biochemical oxygen demand (BOD). As a result, dissolved oxygen, vital for water life, is depleted, fish die, and the river smells.

Ammonia, nitrates, oil, pesticides, solvents, cyanide, heavy metal compounds, and silt are all common pollutants.

- Ammonia kills fish and other water organisms.
- Nitrates can produce excessive blue-green algae which take oxygen from the water and can themselves become dangerously toxic.
- Oil in small quantities can form a film on the surface of the water, reducing the uptake of oxygen and making it difficult for fish to breathe. In large quantities it can kill birds and plants.
- Pesticides and solvents can poison groundwater.
- Cyanide and heavy metal compounds can cause severe environmental damage.
- Silt prevents light penetrating the water. It also blankets the river bed and the animals and plants that live there. It coats and suffocates fish eggs and damages the gills of fish.
- 'Heat' is also a pollutant. Water used in a power station is passed through cooling towers and then into a river where it can raise the water temperature. A few degrees difference in temperature can damage a river's natural ecology.

## Public Register

We are required by law to keep a Public Register of information on water quality. You can come and inspect it at our Reading Office between 9:30 in the morning and 4:30 in the afternoon. Alternatively, you can write to us and we'll send you any particular extracts from the register that interests you.

The Register includes: details of water quality classifications and objectives; applications for 'consents' to discharge water, whether the consents were granted; and - what is most important - whether the requirements of the

consent are being met. It also gives sample data on effluents, and describes any action taken on the basis of the data. Please note that a charge may be made for information.

## What you can do about pollution

We rely on you and other members of the public to help in the fight against pollution. You need only follow a few simple and practical rules:

- Don't pour oil, petrol or garden chemicals down the drain, into the gutter, or onto your garden.

- Don't throw any kind of rubbish into rivers, streams or ditches.
- Ask our advice if you need to dispose of any potential pollutant.

And if you see any sign of pollution in any kind of watercourse, please ring us immediately. The number to call free - at any hour of the day or night is: **0800 80 70 60**

The environment is the responsibility of everyone, including us - and most definitely including you.

## MANAGEMENT AND CONTACTS:

The Environment Agency delivers a service to its customers, with the emphasis on authority and accountability at the most local level possible. It aims to be cost-effective and efficient and to offer the best service and value for money.

Head Office is responsible for overall policy and relationships with national bodies including Government.

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For general enquiries please call your local Environment Agency office. If you are unsure who to contact, or which is your local office, please call our general enquiry line.

ENVIRONMENT AGENCY  
GENERAL ENQUIRY LINE  
**0645 333 111**

The 24-hour emergency hotline number for reporting all environmental incidents relating to air, land and water.

ENVIRONMENT AGENCY  
EMERGENCY HOTLINE  
**0800 80 70 60**



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## NATIONAL LIBRARY & INFORMATION SERVICE

### THAMES REGION

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