

# **Water pollution incidents in England and Wales 1999**



**ENVIRONMENT  
AGENCY**

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Cover: Farm slurry incident, Midlands Region.

# **Water pollution incidents in England and Wales 1999**

Report of the Environment Agency

ENVIRONMENT AGENCY



074003



## Executive summary

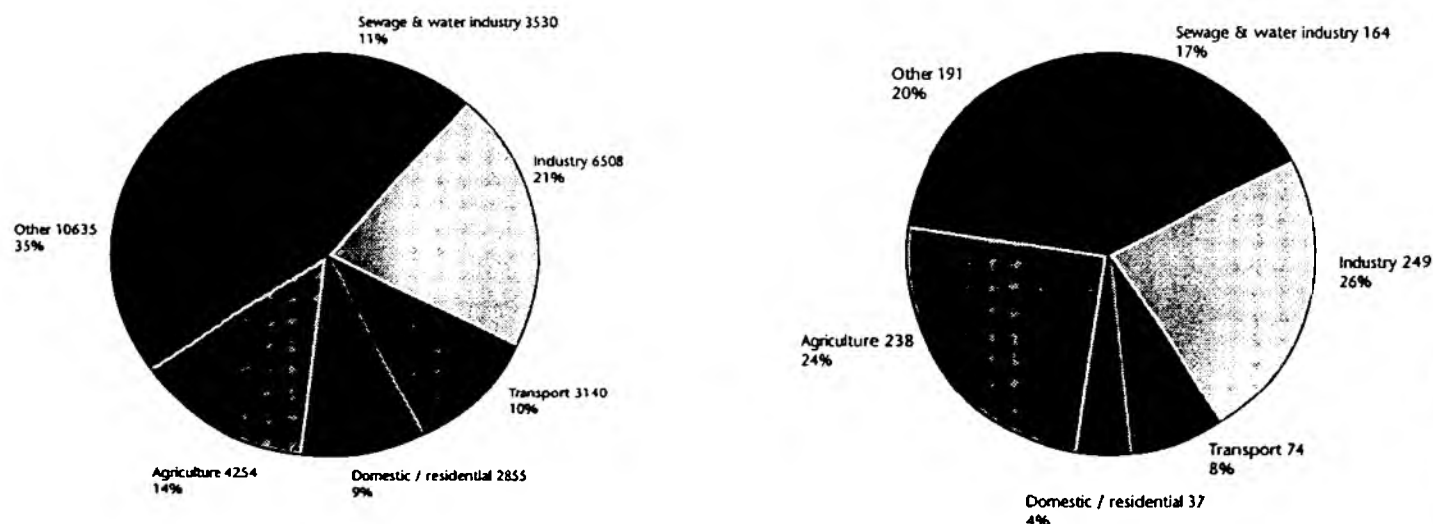
The Environment Agency responded to 36,623 reports of environmental pollution in 1999. 14,374 were substantiated as having an impact on the water environment, a decrease of about 20% compared with 1998 data. There were 227 successful prosecutions for water pollution in 1999, (out of a total of 230). In addition, 113 cautions were issued and a total of over £1.1 million recovered in costs.

Following a sharp rise in 1997 in the most harmful (Category 1) incidents, a decrease for the second year in succession means we are at the lowest level since records began. There has also been an overall decrease in the number of incidents that had an impact on the water environment (Category 1-3) for the fifth successive year. These reductions mask significant geographical variation.

A number of factors may have influenced the figures. Significantly in 1999, above average rainfall affected a large proportion of the country. This may have resulted in fewer reports of incidents due to a masking effect caused by greater river flow. High rainfall may also account for the increase in the number of organic pollution incidents from agriculture. Under such conditions, farmers typically encounter problems with storage of increased volumes of animal slurry and lower availability of land for disposal due to water-logging. As a result of these wet conditions, a corresponding increase in sewage related incidents would have been expected. In fact, a decrease of 23% was recorded. It is probable that this decrease reflects the significant investment in sewage treatment and sewerage systems in recent years.

Pollution incidents are categorised in the report by source and type of pollution. Of all the substantiated incidents (Category 1-4), industry (21%) has now displaced sewage (11%) as the largest identified source. In a large proportion of cases, (35%), the source was attributed to "other". This includes a substantial number of cases where the source could not be traced. Within the industrial sector, the construction industry was the most frequently identified source of water pollution, with little change from 1998 figures. The Agency is working collaboratively with the industry to address this.

Figure A Distribution of substantiated incidents by source, 1999



All incidents total 30,922

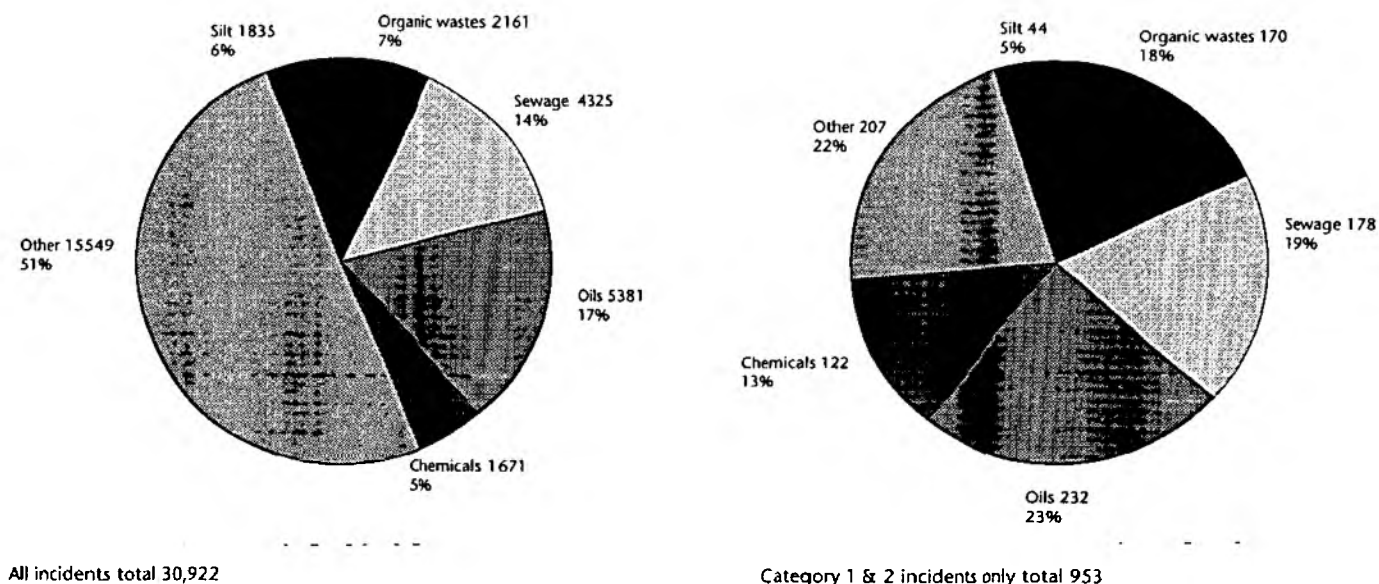
Category 1 & 2 incidents only total 953

Dairy farming is the largest source of agricultural pollution. Arable replaces beef production as the second largest agricultural source. Pollution from domestic and residential sources accounted for 9% of all incidents. Inert suspended solids accounted for 6% of the total number of water pollution incidents. Of the organic wastes, the most frequently identified sources were dirty water, yard washings and cattle slurry. Organic chemicals and dyes were the most commonly recorded chemical pollutants.

Oils and fuels, (17%), remain the most significant type of pollutant identified separately. Diesel oil is still the most commonly identified oil. Although the number of major incidents involving oil and fuel has fallen, it is still much higher than 1996 figures. The proposed Government Regulations for the storage of oil should address this issue. They will also support the current voluntary measures to reduce oil pollution.

In 1999, the Agency introduced a new computerised system to record all types of pollution incidents and a Common Incidents Classification System to facilitate consistent categorisation of incidents across all environmental media. Both of these initiatives had been planned for some time, but the impetus to install them at this time arose from the need to have all systems Year 2000 compliant. This report has been structured to facilitate comparison of water pollution incidents with previous data. However, it should be noted that the data used to compile the report has been drawn from the common incidents classification system, which captures the data in a different format to that in previous years. As a result some caution must be exercised in the comparison with previous years. Work on an incident report to cover all media is to be progressed in future years.

Figure B Distribution of substantiated incidents by type, 1999



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# 1. Introduction

## 1.1 Background

This report covers the calendar year 1999 and records water pollution incidents that occurred in England and Wales. It also includes details of court cases heard in 1999. Details of some of the other, more serious incidents from previous years, which could not be reported earlier because of legal constraints, are included. The layout of the report and the presentation of the data are based on those used in earlier reports.

## 1.2 Water Company Investment

During 1999 the Agency undertook a significant amount of work to identify environmental priorities which could be addressed within the investment programme of the water companies. Although much of this programme will focus on discharges from treatment plants, significant investments in reducing sewer overflows and similar discharges will reduce the number of water pollution incidents in the long term.

## 1.3 New legislation

### 1.3.1 Works Notices

New regulatory powers strengthening the Agency's pollution prevention role came into force on 29 April 1999. These introduced anti-pollution Works Notices, which can be served on a site owner or operator where there is a risk that water pollution may occur, or where it has already happened. These are wide powers which will allow the Agency to act before pollution occurs. They also ensure that those who pollute the water environment can be made to bear the full costs of clean up.

Most of the emphasis during 1999 was on training staff in the implementation of the new legislation. Consistency of approach in assessing the risk of pollution of controlled waters and in keeping records of the decisions made prior to a notice being served were key issues. See Section 3.1 for further details.

### 1.3.2 Groundwater Regulations

The Groundwater Regulations (1998) complete the transposition of the Groundwater Directive into UK legislation. The Regulations require prior authorisation for deliberate discharges or disposals to land of a range of chemicals (List 1 and List 2 substances, similar to Black and Grey List substances in use for surface water). A number of previously unregulated activities, such as disposal of sheep dip onto land, now require formal authorisation. For further details see Section 3.2.

### 1.3.3 Other regulations

The Department of Environment, Transport and the Regions has consulted on further regulatory powers including the Oil Storage Regulations and the Building Regulations for England. The National Assembly for Wales will be carrying out a separate consultation exercise in Wales. The proposed Oil Storage Regulations, would ensure that all newly installed oil storage tanks on industrial, commercial and institutional premises are of an adequate standard and properly banded. Similar provisions are under discussion for inclusion in the Building Regulations dealing with the installation of all oil-fired equipment and associated oil storage, which are expected to be implemented in 2001. The need for these regulations is emphasised by the slow progress in reducing pollution involving oil, compared with other types of pollution.

## 1.4 Developments in 1999

### 1.4.1 Data recording systems

There was a great deal of activity within the Agency during 1999 to ensure that all of its computer systems were Year 2000 Compliant. As part of this, a temporary incident recording system was introduced early in the year. For the first time the Agency had a common, pollution incidents computer database used by all Regions. The opportunity was taken to provide a multi-functional system that could take into account the Agency's full range of activities. This meant that data on air pollution incidents, fly tipping of wastes and water pollution incidents could be stored on the same system. To facilitate this, a Common Incident Classification System (CICS), was brought into use by the Agency on 1 January 1999. Using this system, an incident requiring major action by the Agency that resulted in containment of the pollutant, would be recorded as having a low environmental impact, but a high impact on Agency resources. Under the previous scheme, such an incident would have been recorded as a Category 1 (Major) incident on the basis of the potential for pollution and the resources needed to contain it. Appendix A gives details of the new system and Appendix B the previous scheme.

The new CICS introduced a fourth category for incidents, where there was no environmental impact for a particular medium. Because the system records incidents across all media, any incident will be categorised for its impact on air, land and water. As a consequence there are a far greater number of incidents in total.

The new National Incident Recording System (NIRS) replaced eight regional systems, simplifying the task of amalgamating data to provide a national picture. However, in

designing a system for all the Agency functions, some changes were necessary to the data structure. In particular, this has affected the recording of pollutant source and type, with a three level system for each that is not directly comparable with the categories used for the production of previous reports. We have therefore endeavoured to map the sources and types of pollution now recorded into the categories used for previous reports. In some cases this has enabled the provision of improved detail but there are some areas where caution must be exercised in making a direct comparison between reports. Where this is the case, the data have been annotated in the text.

For the purpose of this report, incidents are reported on a river catchment basis. In the case of Environment Agency Wales this differs from the national boundary. Therefore all references to incidents in the Environment Agency Wales in this report are on a catchment basis.

#### **1.4.2 Current and future developments**

The National Incident Recording System introduced in 1999 was an interim solution to accommodate Year 2000 requirements and was based on an existing system used in one of the Agency's regions. A thorough review of the Agency's needs for incident recording and reporting has been undertaken and a new system with significant enhancements is under development for introduction in 2001. One major improvement will be the integration of the incoming call recording system with the incident system.



## 2. Pollution incident management

This section includes examples of the type of water pollution incidents dealt with. These demonstrate the actions needed to investigate an environmental incident and to control and minimise its impact. On average about 100 environmental incidents were reported each day in 1999 and although the majority were minor, they all required investigation. In some cases the source of pollution was easy to identify, but there were many cases where the pollution only occurred under certain conditions, or it had to be traced through surface water sewers. In these cases lengthy investigations were often required.

### 2.1 Major incidents

There were 90 major and 863 significant incidents in England and Wales in 1999. In all cases Agency Environmental Protection staff assessed the incident and, where appropriate, endeavoured to arrive on site within published target times (two hours during office hours and four hours at other times for Category 1 incidents). Once the pollution was confirmed, Agency officers acted to minimise the impact of the pollution, warn those who may be affected, such as downstream water users, trace the source and collect evidence for any resulting legal action. Photographs showing some of these incidents are on pages 21 to 24.

#### 2.1.1 Agricultural

##### *Fertilizer Pollution Incident – Anglian Region*

The storage of liquid fertilizers, which are highly corrosive and have the potential to cause severe environmental damage, has been a cause of concern for the Agency. This became a reality following a report of dead fish in the Bury Brook, near Bury, Cambridgeshire, received by the Agency on the 18 March 1999. Agency staff traced the fish kill more than 4km upstream and recorded high levels of ammonia in the brook. A farmer contacted the office the same day to report an overnight loss of approximately 16,000 litres of liquid fertiliser from an unbunded tank on the farm. The ditch from the farm was blocked, to prevent further release of fertiliser to the brook, and aerators were deployed in watercourses up to 12km downstream to assist in the breakdown of ammonia and the avoidance of further fish deaths. A total of 1,023 dead fish were recorded as a result of this incident.

The farmer pleaded guilty at Huntingdon Magistrates Court on the 1 September to an offence under Section 85 of the Water Resources Act 1991, and was fined £4,500, with costs of £1,184.

##### *Slurry Pollution Averted – Anglian Region*

On 11 June 1999 the Environment Agency was notified by a

farmer at Weybread, in Suffolk, of the loss of approximately 500,000 litres of slurry from a dairy farm. This was the result of a catastrophic failure of the pipe feeding an above ground slurry store. The farm was located on a hill and the effluent entered a nearby tributary of the River Waveney within minutes.

Having reported the incident immediately to the Environment Agency, the farmer contacted neighbours for assistance. Together, they constructed a number of temporary dams in the tributary to contain the spillage in a 1/2 km stretch. This polluted water was then removed by tanker throughout the night and into the following morning. As soon as the effluent had been cleared the dams were removed.

In this case, the prompt action of the farmer and his neighbours, working with the Environment Agency, limited the effect of the incident and prevented severe damage to the River Waveney.

##### *Farm slurry - North West Region*

On 4 November 1999, an incident at a farm in Tewitfield, near Carnforth, Lancashire resulted in the loss of an estimated 68 cubic metres of slurry, some of which entered a beck upstream of a fish farm. It is believed that an intruder opened a sluice gate on a slurry store. The slurry entered a sump, overflowed across the farmyard and into a surface water drain discharging to the beck. A major effort was made by the farmer to contain and remove the slurry. However, sufficient slurry entered the stream to cause the death of some fish in the stream and a number of fish at the fish farm. The situation would have been much worse had the farmer not invested in a dirty water handling system in recent years. The farmer was cautioned and has now installed locks on slurry store valves to reduce the risk of similar incidents in the future.

##### *Sheep dip incident - North West Region*

On 20 April 1999 a member of the public contacted the Agency because he was concerned about the lack of invertebrate life in Burblethwaite Beck at Wigton, Cumbria. A biological survey identified that 2km of the beck were affected and traced the problem to Norman Farm, Wigton. As part of a sheep-dip campaign undertaken in 1998, the farmer was advised by the Agency not to use his dipping facility, because it was unsatisfactory and posed a threat to the watercourse. Although he had undertaken some of the actions requested by the Agency in 1998, they were not all implemented. As a consequence, within a year he had used the dipper and the incident had occurred. Run-off from the draining off pen was identified as the likely cause of pollution. Following the incident the farmer filled in the

dipper and is now using a combination of pour-on and injectable treatments for his flock. He was subsequently convicted of causing water pollution in October 1999 and fined £3,000 as well as being ordered to pay £1,000 in costs.

Two other incidents involving sheep dip in the same area, were investigated by the Agency, one involving the death of native crayfish over a 1½ km length, could not be traced to a source. As a consequence, pollution prevention visits were made to all the farms in the catchment to offer advice on sheep dip structures and practices.

### 2.1.3 Industrial

#### *Sodium cyanide storage loss – North East Region*

On Wednesday 21 July 1999 the Agency was notified of a storage tank leak at Tees Storage Company Ltd, Seal Sands Stockton, Teesside. The tank contained over 750 tonnes of sodium cyanide as a 30% solution (300,000 mg/l). An estimated 12.3 tonnes of sodium cyanide was lost from the base of the tank into the ground. Some of this material found its way into the on-site effluent system and into the Tees Estuary. An almost identical leak to ground occurred in 1998 when approximately 55 tonnes of the same product was lost to ground. Although the tank was bunded, the containment system had only a perimeter wall, without an impermeable base. The tanks were built in the late 1960's and early 1970's to standards that were accepted at the time. There are many such systems in use throughout the country, where any chemicals spilled inevitably soak into the ground and can enter a below ground drainage system. As a result, there is a high risk of pollution occurring in the event of a spill, unless additional control measures are implemented.

In this case, the company has estimated that it would cost £15 million to bring their containment facilities up to modern standards. The company has outlined to the Agency plans to manage their facility in such a way to minimise the likelihood of future losses of product. Repairs to the affected tank cost £250,000 and the company were subsequently fined £5,000 for causing pollution, with £20,000 costs.

#### *Ammonia spill – Thames Region*

An operation to decommission a refrigeration plant in Alton, Hampshire resulted in a devastating pollution incident affecting 13km of the River Wey in March 1999. Following a report of dead fish in the River Wey north of Alton, the investigating officer found large numbers of dead fish. The pollution was traced to a tributary, the Caker Stream, where a white deposit and a strong smell of ammonia became apparent. This was followed to a surface water outfall serving an industrial area, where refrigeration

equipment at a former ice cream factory was being decommissioned. Ammonia from the plant was being bubbled into a water bath, with a hose running into it and the overflow to the surface water drain. It is estimated that 1.5 tonnes of Ammonia were discharged. The effluent had a pH of 11 and the white deposit seen in the stream was due to the precipitation of calcium and magnesium salts as a result of the extreme change in pH.

Over 6,000 fish, mostly trout, were killed in this well-stocked and popular fishing river, along with thousands of smaller fish, invertebrates and amphibians. In the subsequent prosecution, both Preston Engineering Ltd of Grimsby and the director, Mr Preston, were convicted of causing the pollution and fined £9,000 and £3,000 respectively.

#### *Detergent discharge - Wales*

An incident which clearly demonstrated how important it is for businesses to be totally aware of the consequences of their actions, and the devastating effects their products can have on the environment if not handled properly, occurred in the River Tawe in South Wales on 13 August 1999. The Agency received a number of complaints that there was foam in the river and dead fish had been seen near the Ynyscedwen Industrial Estate. Detailed investigations led environment protection officers to the premises of Sterishield Systems Ltd where it was found that a member of staff had washed out a drum containing a powerful, industrial strength, detergent on the external yard. The material had entered yard drains, which discharged to the nearby river. There was nothing Agency officers could do to combat the effects of the detergent in the river except to monitor the impact of the pollution. More than 7,000 fish, consisting of mainly salmon and trout, died. It was estimated that about 99% of the fish population were killed up to 1 km downstream from the point of entry of the pollution.

All companies should have an inventory of the material they hold on their sites and information on the hazards of these materials. They should also have their handling procedures regularly audited to prevent pollution. The company has now undertaken pollution prevention measures recommended by the Agency to minimise the risk of any further incident. However, this incident, which could have been prevented, caused serious environmental harm and resulted in fines of £12,750 and costs of £20,497 when the case came before Ystradgynlais Magistrates Court.

#### *Vandalism of oil storage tank – North West Region.*

In what was probably the last pollution incident in 1999, vandals damaged an oil tank on an industrial estate in Colne, East Lancashire on 31 December. As a result approximately

1,500 litres of heating oil escaped into the nearby Swinden Clough, covering the stream with oil between 75–100mm thick and leaving a thin film of oil on the Colne Water.

Although the tank was bunded, the feeder pipe between the tank and the factory's heating system was vulnerable. The vandals had fractured this pipe, causing oil to spill onto the surrounding ground and yard areas before entering the surface water drainage system. A formal caution was served on the owner of the site, who has since begun to manufacture metal cages to protect vulnerable tanks and pipework from attack by vandals. These have proven particularly successful with other occupiers on the industrial estate.

#### 2.1.4 Sewage treatment and water

By the nature of their operations, water companies have the potential to cause serious pollution. It is therefore vital that they operate systems that are fail-safe and respond appropriately when incidents do occur. Great reliance is placed on automation and remote alarm systems. However, the consequences of the failure of these systems can be serious.

##### *Trade effluent discharge from water treatment works - Wales*

Following a complaint from a member of the public on 11 August 1999, a discharge of trade effluent from the Rosebush/Preseli Water Treatment Works, in Pembrokeshire, into the Afon Syfynwy upstream of Llys y Fran reservoir, was identified as the cause of the deaths of thousands of fish. Investigations undertaken by Agency Environment Protection Officers indicated that a stretch of river approximately 3.1 km in length was affected by the discharge and approximately 6,800 fish, mainly brown trout, had died. The trade effluent discharge, and downstream samples, had high levels of Aluminium and a low pH, and sewage fungus was observed below the discharge point. There was no evidence of any impact in the reservoir itself, but the Agency immediately advised downstream water interests of the incident on a precautionary basis. These interests included the Hyder Group, which manages the Llys y Fran Fishery and abstracts water at Canaston Bridge. Further investigation revealed that, as part of a construction contract involving the sealing of an Alum storage tank, dewatering was being carried out, with the effluent being pumped to the site waste water treatment plant. This effluent contained a high concentration of Aluminum and was acidic. An automatic monitoring system on the trade effluent discharge from the site had failed to indicate any problem, as the detection probe was badly fouled.

The incident highlighted the need to ensure that automatic

monitoring systems are properly maintained. It also emphasised the need to ensure that risks are assessed and suitable precautions are put in place before any construction activity is undertaken. The water treatment works is owned by Dwr Cymru Cyf/Welsh Water Plc and operated by Hyder (Operations) Ltd. Both companies were subsequently charged. Dwr Cymru Cyf/Welsh Water Plc were fined £2,000 for discharging trade effluent contrary to section 85(6) of the Water Resources Act 1991. Hyder Utilities (Operations) Ltd were fined a total of £2,500 on two counts, under section 85(1) of the Water Resources Act 1991, and section 4 of the Salmon and Freshwater Fisheries Act 1975. Hyder Utilities also had to pay costs of £13,021

#### 2.1.5 Transport

##### *Petrol and diesel spill – Anglian region*

On 10 August 1999 a fuel tanker overturned on the A17 at Walpole Cross-Keys, resulting in the loss of approximately 11,000 litres of petrol and 5,000 litres of diesel to ground and a dry ditch. Approximately 13,000 litres were pumped from the ditch and a culvert, and all contaminated material was removed and disposed of at licensed facilities. The incident attracted considerable media attention. The co-ordinated efforts of all parties involved, including the Agency and the Emergency Services, minimised the environmental impact of this incident.

##### *Air accident – Thames Region*

Following the loss of a Korean Airlines Boeing 747 shortly after take-off from Stansted airport on 22 December 1999, Agency staff were involved in an extensive operation to monitor and contain the resulting pollution. Four crew members died when the aircraft crashed into a field bordered by a lake, a stream and ditches a mile from the airport. The major concern for the Agency was the effect of the 30 tonnes of aviation kerosene and various chemicals on the aircraft entering these watercourses or seeping into the soil. The incident was further complicated by the presence of depleted Uranium, used as ballast in the tail of the aircraft, which had to be located and properly dealt with. Debris was spread over an area in excess of 200 metres by 50 metres, including part of the lake and a Site of Special Scientific Interest. Most of the fuel was burned in the accident. Although there was little impact on the surrounding streams, the remediation of the field, much of which involved the removal of debris by hand, took 9 months.

##### *Cream spill – Southern Region*

On 3 September, at 2:15am, an Express Dairies road tanker carrying 27,000 litres of fresh cream crashed through the

central reservation of the M27 where it crosses the River Meon - one of Hampshire's famous chalk streams. On arrival at the scene the Agency's Environmental Protection Officer found that the normally crystal clear water had turned milky white. Dairy products cause severe de-oxygenation in water and there was a severe threat to the fish stocks in the river. Hampshire fire and rescue service attended the incident and worked with the Agency's Officer to contain the spill where it had entered a motorway drainage channel. Agency Environment Protection staff deployed aeration equipment in the river in an attempt to offset the de-oxygenating effect of the cream, whilst Agency fisheries staff adjusted sluices to flush the plume downstream. Although a reduction in oxygen levels was detectable within the plume of polluted water, as it moved downstream, the prompt action by all concerned minimised the effect and there was no evidence of any fish having died.

#### **2.1.6 Other incidents**

##### *Domestic oil spill - Southern Region*

A major cleanup operation has been implemented following the loss of approximately 2,000 litres of heating oil from a domestic oil storage tank in Wingham, Kent. The oil was lost when a recently installed tank was punctured. The site is very close to Southern Water's Wingham abstraction borehole for which there is no readily available alternative supply. Although prompt action was taken to excavate the soil beneath the tank, the fissured nature of the chalk in the area resulted in very fast movement of the oil to the water table. Because of the need for rapid action, the Agency instigated emergency measures to investigate the impact of the spill. An exploratory borehole confirmed that the oil had reached the groundwater at a depth of 19 metres. Further boreholes were sunk to help to understand the underlying geology and oil movement before a remediation scheme could be put in place. A large borehole has been drilled to recover the oil and continued pumping has limited its spread. However, it is not yet known how long this will have to continue. In excess of £160,000 has been spent by the Agency to date in this "clean up" activity.

##### *Minewater pollution - North East Region*

A report was received by the Agency on 18 May 1999 that Saltburn Gill had turned a bright orange colour. Investigations identified a serious breakout of contaminated minewater from old ironstone mines in the area.

The discharge has continued into 2000, with the levels of dissolved iron within the minewater reaching over 1000mg/l. As iron within the minewater reacts with oxygen in the air and surface water, the iron oxides are precipitated out, giving the characteristic orange colour to the beck and

settling on the stream bed, suffocating virtually all life. There is now no significant life in a 2.5km stretch of the stream from the discharge point to the sea at Saltburn

Saltburn Gill converges with Skelton Beck approximately 50m before it crosses the beach to the sea at Saltburn. The serious discoloration of the beck may be having an impact on the tourist trade at this popular seaside town and also may impact upon the quality of the bathing water at the designated bathing beach.

As the mines closed some time ago it is not possible for the Agency to act against an owner because Section 89(3) of the Water Resources Act (1991) specifically excludes legal action when minewater is involved. However, the Agency is continuing to monitor the discharge and a Saltburn Gill Action Group has been formed, incorporating residents, councillors and other interested parties. Possible remediation options are being considered with advice from consultants, although the inaccessible location within a heavily wooded area will make collection and treatment very difficult.

## 3 Pollution prevention

### 3.1 Works notices: new powers to protect water quality

New powers to prevent and remedy water pollution were granted to the Agency under the Environment Act 1995 and came fully into force on the 29 April 1999. Anti-pollution Works Notices, as they are known, allow the Agency to act before water pollution has occurred and, in those cases where pollution has already happened, ensure that the polluter, rather than the Agency, takes the appropriate steps to remedy the affects of the pollution.

Works Notices are wide-ranging in their application and can be served in situations where, in the opinion of the Agency, there is an unacceptable risk of water pollution occurring. To date the Agency has served twenty three Works Notices to prevent water pollution, most of which have involved the recipients in modest capital outlay to reduce the risk of water pollution. In a few cases no expenditure was necessary and the Works Notices related only to changing certain high risk, potentially polluting activities.

In the first year of implementation the Agency recognised that training of its staff on the new legislation was a high priority. It embarked upon, and completed, a substantial programme in which all environmental protection field staff received training in the serving of Works Notices. The assessment of what constitutes unacceptable risk is important and this issue was addressed within the training. Standard forms are used to assess the risk that a facility or activity may pose to the water environment. Although the use of these forms is not required by the legislation, it is considered to be good practice. It also ensures that there is an audit trail of the decision making process and that the same criteria are considered when assessing the risk to the water environment, thereby aiding a consistent approach.

Initially, the Agency has concentrated on the use of Works Notices to prevent water pollution, but they can also be served during a pollution incident to ensure that the polluter takes the necessary steps to clean up the environment and bears the costs of this remedial action. This is entirely consistent with the Polluter Pays Principle and the Agency is currently considering ways of streamlining its procedures so that notices can be served quickly during pollution incidents.

Works Notices can be used to protect groundwater from pollution and can be used during a pollution incident such as a spillage or leakage that may threaten the quality of groundwater.

They can also be used to clean up groundwater that was contaminated many years ago. However, the issue of using a Works Notice to clean up historic pollution is a complex

one and the Agency recognises that such long-standing problems cannot be solved overnight. In certain circumstances, Works Notices may be the best option for cleaning up historically polluted groundwater. If this is the case, the Agency will consult fully with all interested parties. It will also assess the applicability of using other notices, such as those that can be served under the Part IIA Contaminated Land legislation and the Groundwater Regulations.

In all cases, the Agency's policy is to seek agreement on voluntary action. However, where this is not forthcoming, Works Notices provide a powerful legislative tool to ensure that polluters or potential polluters bears the full costs of their actions.

### 3.2 Groundwater Regulations

The Groundwater Regulations (1998) complete the transposition of the Groundwater Directive into UK legislation. The Regulations require prior authorisation for deliberate discharges or disposals to land of a range of chemicals (List 1 and List 2 substances, similar to Black and Grey List substances in use for surface water). A number of previously unregulated activities, such as disposal of sheep dip onto land, now require formal authorisation.

Since the Regulations were introduced in January 1999, the Agency has focused attention on disposals of agricultural chemicals, which are seen to be the highest environmental risk area. Over 12,000 applications for authorisations for disposal of listed substances, mainly sheep dip and pesticides, were received in 1999. By March 2000, risk assessments had been carried out on 90% of these applications and they had either been authorised with appropriate conditions or, where the risk to groundwater was unacceptable, refused. To ensure that other Agency duties, such as the Habitats Directive, were taken into account, the risks to surface water and conservation areas were also considered during the risk assessment.

In 2000/2001 campaigns will be launched to identify non-authorised disposal (of which there are estimated to be several thousands) and to ensure that risk assessments are carried out and the disposal authorised where appropriate. Compliance inspections of the authorised sites will also commence to ensure that the conditions of the authorisations are met.

The Regulations make provision for pollution prevention in relation to activities where there may be accidental loss of Listed substances, and work started in 2000. This will take the form of inspections at industrial and commercial sites and campaigns aimed at reducing the risks of groundwater

pollution from accidental losses of solvents, hydrocarbons and sheep dip.

The Regulations also allow Ministers to approve codes of practice for activities with the potential for groundwater pollution, and work on a number of such codes of practice is being carried out by the DETR with assistance from the Agency. Codes of practice can be made statutory and give practical advice to those engaged in activities falling within the scope of the regulations. Where it is essential for the protection of groundwater, notices controlling or prohibiting an activity may be served by the Agency.

### **3.3 Sheep dip**

Previous reports have highlighted the Agency's concern over pollution from sheep dip chemicals and in particular the impact of synthetic pyrethroid (SP) dip and the use of sub-standard dipping installations. The practice of disposing of used dip solution into soakaways has been of particular concern for a number of years and is now controlled under the Groundwater Regulations (1998). The Agency has made a major effort to educate and inform sheep dip users of the environmental risks associated with these chemicals. The reduced number of pollution incidents indicate that this has had some effect. It has also endeavoured to inform farmers who need an authorisation for the continued disposal of used sheep dip on their farms of the impact of the new regulations on their activities.

### **3.4 The construction industry**

For some years the Agency has made a significant effort to work with the construction industry to improve its environmental performance. A number of national initiatives have been undertaken, often working with the Construction Industry Research and Information Association (CIRIA). In 1999 the Agency contributed to CIRIA projects on environmental management, on the management of water on construction sites and to the revision of an Environmental Handbook for the industry. A training pack based on the successful Site Guide to Environmental Performance was also produced with Agency support. In March, the Agency's Chief Executive, Ed Gallagher, addressed a major industry conference on the environment in Birmingham. In addition, Agency staff worked with individual companies, providing advice and training at site and company level. Examples of two of these initiatives are given below.

#### *Transco agreement - North West Region*

During 1998 a major gas pipeline project in the North West resulted in a number of pollution incidents. Unfortunately, prior to this there had been no contact between the contractor and the local environmental protection staff. When a further section of pipeline, from Mawdesley to Warrington was proposed, the client, Transco worked with Agency staff to include suitable pollution prevention measures in the tender document. In order to try to prevent further incidents, and to improve relations between parties who until then had only met reactively at the scene of pollution incidents, staff from the Region's Central area organised an environmental awareness seminar. Twenty-six members of the management teams for Transco and contractor (McAlpine Preussag JV) attended. Topics covered included land drainage, ecology, groundwater regulations, contaminated land and abstraction licences. A pollution prevention case study was discussed and general advice given by local Environmental Protection Officers. The event was brought to a close by a Duty of Care quiz and a waste minimisation presentation. The feedback from the event was very positive, resulting in McAlpine appointing an environmental auditor and continued liaison between all parties.

#### *Channel Tunnel Rail Link – Southern Region*

The largest civil engineering project in the UK is the construction of the Channel Tunnel Rail Link (CTRL). The work is being carried out under the terms of an Act of Parliament that introduced a special procedure for the granting of Environment Agency consents with a shortened time scale for processing. Given the size and complexity of the project and the special consenting procedure, an Agency project officer was appointed. The first phase of construction involved millions of tonnes of earthworks, with a large potential for pollution. Agency staff processed a large number of CTRL consents, undertook an enhanced programme of site inspections and provided environmental awareness training to all the main contractor teams. Although there were a number of recorded pollution incidents early in the project there was a significant reduction in the number of incidents (despite periods of prolonged rainfall) following an Agency meeting with Union Rail Executives. This meeting generated major press interest and has had the additional spin off of a significant publicity campaign to help reduce pollution from the construction industry.



### 3.5 Other initiatives

#### 3.5.1 Oil pollution

Once again, this report emphasises the significance of oil as a pollutant of controlled waters. The Agency has continued to work in partnership with the petroleum industry, through the Oil and Water Steering Group, chaired by the Institute of Petroleum, to reduce the number and severity of these incidents. Although the Oil Care Campaign, launched in January 1995, made good progress initially, there has been little significant improvement over the last four years. As a consequence, there is support from the industry for the introduction of regulations to set minimum standards for oil storage. It is expected that these will be progressed in 2000.

In order to boost the effectiveness of the Oil Care Campaign, a bid was made for landfill tax funding by the National Household Hazardous Wastes Forum (NHHWF), with support from the Environment Agency, and funding from the British Lubricants Federation and UK Petroleum Industry Association. The Hanson Environment Fund agreed to the bid late in 1999 and a full time campaign co-ordinator was appointed early in 2000. The campaign will continue to cover all aspects of oil pollution, but there will be a particular emphasis on waste engine oil produced in DIY car servicing in the first year. The co-ordinator will be advised by a steering group based on the NHHWF oil working group, which has representatives from the oil industry, the retail sector, local authorities and regulators.

#### 3.5.2 Solvents

Solvents can be a significant cause of water pollution, particularly affecting groundwaters. A joint initiative between ETBPP (Environmental Technology Best Practice Programme – now called Envirowise) and the Agency's Thames Region to promote best practice in solvent management was organised in 1999. A series of local seminars promoting the efficient use of solvents, the minimisation of waste and safe disposal, were held for the furniture manufacturing and metal finishing sectors. The companies attending received relevant ETBPP and Agency publications and advice on solvent tracking, good housekeeping measures, alternative technologies, relevant legislation and pollution prevention. As a result of the seminars, several companies subsequently requested the free half-day waste minimisation visit offered by ETBPP.

#### 3.5.3 Agricultural

The impact of poor soil management on the environment has been of increasing concern for the Agency in recent years. Where possible, the Agency has worked in partnerships to promote good soil management and to

reduce environmental degradation. An example of this approach is given here.

#### *Partnership with the Maize Growers Association*

Forage maize has become a popular crop among dairy farmers because it provides an economic feed for cows. However, there are a number of environmental problems associated with the increased use of this crop. These include:

- soil compaction and increased runoff (caused by harvesting maize late in the year)
- maize being used as dumping ground for large amounts of farmyard manure or slurry
- pollution from atrazine (which is used as a herbicide on maize)

The Maize Growers Association (MGA) approached the Agency to form a partnership to raise awareness about the environment risks associated with maize. The Agency recognised the scope for an effective partnership because this is a case where good environmental practice also makes good business sense.

At the start of the campaign, a booklet on profitable maize growing and safeguarding the environment was produced jointly. MAFF helped write the booklet, and with Agency funding it was sent to all maize growers who were registered with MAFF. The MGA have pioneered a number of ways to reduce runoff and their work on undersowing maize with grass has received widespread publicity in the farming press and at farming events. The Agency is currently sponsoring an R&D project with MAFF looking at techniques to reduce soil erosion from maize. This work has shown that simple measures to correct soil compaction, such as chisel ploughing, can result in dramatic reductions in runoff. A series of demonstration events on this are planned for 2000.

#### 3.5.4 Sustainable urban drainage

The impact of diffuse pollution in urban areas is of increasing concern. Despite major investment programmes to improve the quality of sewage effluent and reduce the number of storm sewage discharges, there is increasing evidence that water quality in urban areas will fail to achieve the relevant objectives as a result of diffuse pollution. The problem arises because conventional surface water drainage systems are designed solely to remove rainwater as rapidly as possible from impermeable surfaces such as roofs, car parks and roads. The result is increased flood risk, poor water quality, impoverished flora and fauna, reduced recharge to underground aquifers and impaired amenity for local residents.

There are alternative techniques which endeavour to address flooding, amenity and water quality equally. These are known as Sustainable Urban Drainage Systems (SUDS). The techniques, which have been widely used abroad, include porous paving in car parks, soakaways for roof water (where ground conditions are suitable) and various wetland and pond systems. Although SUDS have been gaining acceptance in new developments in the UK, the lack of any design manual has been a significant barrier. A CIRIA project, drawing together a wide range of experts and interested parties, has worked to produce such guidance. This was published as two separate volumes in 2000, one for Scotland and Northern Ireland and one for England and Wales. The project will also identify the key remaining barriers to the widespread use of SUDS. The Agency has taken an active part in this project, working closely with the Scottish Environmental Protection Agency (SEPA) which has pioneered these techniques in Scotland.

Although there are still many barriers to the acceptance and implementation of these techniques, there are an increasing number of sites where they have been adopted successfully. The Agency is working with SEPA and the Urban Design Alliance (which draws together seven key professional organisations) to produce a video which explains SUDS and their benefits. The Agency is also undertaking research to investigate the benefits of SUDS and to study how they may be used in existing developments.

### 3.5.5 Liaison with fire services

The Agency's excellent working relationship with the Fire Service continues. A significant development has been the signing of a "Technical protocol" between the Local Government Association (LGA) and Environment Agency on Fire Service issues. The benefits to the environment, the Agency and the Fire Services are clearly highlighted by the number of major incidents, especially road accidents, where the impact on the environment are significantly reduced or prevented. Agency staff continued to assist the National Fire College in developing training courses and through direct involvement in lectures and exercises. The Agency also worked with the Oxfordshire Fire Service to produce a national training video entitled "In partnership towards a safer environment". This provides practical information on how environment protection equipment, in particular the "grab pack" that is supplied to the Fire Services by the Agency, can be used effectively. The grab pack contains simple pollution prevention equipment.

The handling of low hazard substances such as beverages and food spilled in road accidents has been a particular problem for some time. The Environment Agency sought views on the development of a marking system to cover the bulk transport of low-hazard or non hazardous products with a high

pollution potential. There was wide support for voluntary schemes from within the emergency services and from industry. However, regulations or a new scheme were not considered appropriate. It was therefore agreed that the best way forward would be to base the initiative on the 'Black & White' Marking Scheme. This is a voluntary system, originally developed by the Chemical Industries Association, which is widely used by the manufacturing and process industries for the marking of low hazard chemicals transported in bulk. A working group with representatives from the Environment Agency and the Public Emergency Services is consulting with hauliers and appropriate industry sectors to ensure that a practical system that will be widely used and understood is developed.

One example of the sort of collaboration being undertaken was the provision of partnership funding for a dedicated Environment Protection Unit for Oxfordshire Fire Service. The unit is equipped with specialist pollution alleviation equipment to deal with larger incidents and those involving chemicals. This supplements the "Grab packs" already carried on front line fire tenders. The unit will serve the whole of Oxfordshire and will also be available to be called on by neighbouring counties.

### 3.5.6 Publications

The three environmental regulators in the UK, the Environment Agency, Scottish Environment Protection Agency (SEPA) and the Northern Ireland Environment and Heritage Service, work closely on pollution prevention issues. The series of Pollution Prevention Guidance notes (PPG's) published by the Agencies was expanded in 1999 with the addition of a new title dealing with construction activities on structures over and adjacent to water (PPG23). The guidance note dealing with measures for the control of fire-water (PPG18), was completed in March 1999. Work on three new guidance documents, covering: Pollution incident planning, Stables, kennels and catteries and Hospitals is well advanced, with publication due in early 2000. A further new guidance note on drum storage is also in preparation. All the Pollution Prevention Guidance notes may be found on the Agency's web site ([www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)) under "guidance for industry". Bilingual Welsh/English versions will be found on [www.environment-agency.wales.gov.uk](http://www.environment-agency.wales.gov.uk).

"Sustainable urban drainage – an introduction", was revised in March 1999, providing basic information on the drainage techniques which can be used and their environmental benefits. The Agency leaflet on solvent pollution was been republished jointly with SEPA, and the "Follow the oil care code" and "Oil care in the home" leaflets were redesigned and republished jointly with the Northern Ireland Environment and Heritage Service. A full list of pollution

prevention publications, along with details of how they may be obtained, appears in Appendix C.

### **3.5.7 Pollution prevention initiatives within the Agency**

The Agency's Pollution Prevention Manual, which contains a wide range of background material on managing pollution incidents and undertaking pollution prevention work, as well as detailed pollution prevention guidance for external use, was revised in 1999. Two versions are now available. The first is a full version, based on the original, in two A4 ring binders for reference use at offices. The other is a weatherproofed, rugged A5 volume containing basic pollution prevention information, including an extended range of pollution prevention guidance notes, designed for use in the field.

### **3.5.8 Working with water companies - Yorkshire Wolds aquifer protection project**

An innovative project to protect the major chalk aquifer of the Yorkshire Wolds, in the East Riding of Yorkshire, was initiated in 1999. The area is predominantly farmland, and the greatest risk to the aquifer is provided by the farms located along the Chalk, and in particular those within Groundwater Protection Zones (GPZs) of the Public Supply Boreholes.

A partnership project was established by staff in the Agency's North East Region Ridings Area, working with the Agricultural Development Advisory Service (ADAS) and Yorkshire Water Services PLC. With partnership funding, a consultant was employed to undertake a programmed investigation into the risk posed by farms on the aquifer. The study consists of three phases: risk assessment of farms located in Groundwater Protection Zones; provision of Farm Waste Management Plans (FWMP) to farms identified as in need; and follow-up work on potential risks identified by the risk assessments.

A total of 142 farms were subjected to the risk assessment, taking into account factors such as fertilizer use, oil storage and livestock numbers. Of these, 23 were identified as high risk to the groundwater, 47 were a medium risk and 44 a low risk. In addition, 25 'farms' were classified as not applicable, while 3 farms were not determined. Visits were made to 90 working farms over a six month period. A pre-survey letter was sent to all the farms identified within the GPZs and they were then contacted to arrange a suitable time for a visit. The consultant working on behalf of the Agency was provided with a letter of introduction to prevent misunderstandings.

According to a farm's compliance with the requirements over storage, a determination was made of the need for follow-up work by the Agency. Farmers were also asked whether they would be interested in implementing a FWMP provided by ADAS. A total of 87 farms required some form of further action from the 142 surveyed and 48 requested a FWMP.

As a result of the visits, the potential for oil contamination was recognised as the major concern, with 79% of oil tanks on the farms not up to the standards of the Silage, Slurry and Fuel Oil Regulations 1991. Other problems included slurry and dirty water storage, with 55% of the storage facilities found to be inadequate, and liquid feed storage, which although used on only six farms, was found to be compliant on just one.

### **3.5.9 Safeguard our Solent Project**

In July 1999 Southern Region (in collaboration with Hampshire County Council, British Marine Industries Federation and Navigate with Nature) with land fill tax funding from Onyx Environmental Trust, launched the £20,000 "Safeguard our Solent" project. In order to help protect the Solent, environmentally friendly waste reception facilities were installed at Warsash Harbour on the Hamble River. The facilities include a sewage pump-out, provision for waste oil and used batteries and bins for recycleable materials. The River Hamble was chosen as it has a strong boating community in an important and sensitive Special Area of Conservation. The project aims to demonstrate best practice and to encourage the installation of similar facilities at other harbours and marinas. A further waste reception facility has been installed at Yarmouth on the Isle of Wight, bringing the total to four for the Solent area.

## 4 Analysis of incidents

### 4.1 Introduction

In most cases, pollution incident investigations are the result of a report from a member of the public. An increasing number of calls are received from the fire services, notifying the Agency of incidents such as major fires and road traffic accidents that may require advice and assistance from Agency staff. Because of this, the types of pollution reported are predominantly those with the greatest visual impact, such as oil, silt and dyes. If a pollutant is not visible, if no fish are killed, or if pollution occurs regularly, it is unlikely to be reported. For example, pollution from sheep dip is often only identified as a result of biological surveys, because it cannot be seen and rarely kills fish.

A person seeing pollution needs to know who to contact. Although a great deal of effort has been made to simplify and publicise the mechanism for reporting pollution, it is inevitable that some people will not know what to do if they see pollution and will not report it. As a result, the extent of episodic pollution in England and Wales is probably underestimated in this report.

The assessment of the severity of an incident is not always straightforward, due to the great diversity in polluting materials and the nature of pollution incidents. Delays in incident reporting by the public, or finding that the polluting discharge has stopped before the arrival of Agency staff, may make incident substantiation very difficult or impossible. It is important that the public reports incidents as quickly as possible to enable the Agency to stop the pollution and catch the polluter.

Although this report contains details of the types and sources of pollution, it does not evaluate the causes of pollution. In many cases it is not possible to trace the source or identify the cause. Where such information is available there is usually a number of contributing factors, without any one of which pollution would not have occurred.

### 4.2 All reported incidents

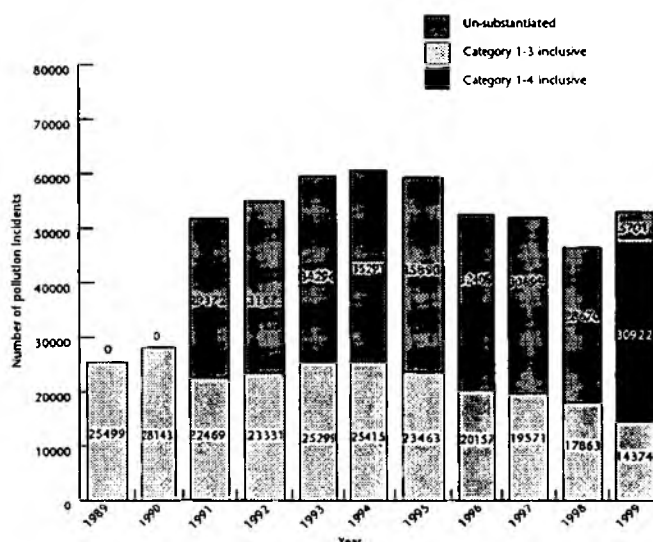
In the following analysis, percentages have been rounded up or down to the nearest whole number.

During 1999, 36,623 environmental incidents were reported to the Environment Agency, including those involving air and waste. Each report was investigated and every effort made to substantiate and identify the cause and nature of the incident. In 1999, 30,922 incidents (84% of those reported) were substantiated, that is, there was evidence that an incident had occurred. In 1999 a new, multi-functional incident classification was introduced.

Under this system there were 5,701 unsubstantiated incidents where water pollution was reported and 16,548 Category 4 incidents where no water pollution occurred. Of the substantiated incidents, 90 were classified as Category 1 (for definition of incident categories, see Appendix A).

Prior to and including 1990, only data for reported incidents were available. To maintain continuity, Figure 1 shows reported incidents from 1989 to 1999 in England and Wales, with the proportion due to Category 4 incidents identified. Unless otherwise stated, the remainder of the report is based on substantiated (Category 1-4) incidents.

**Figure 1** Total number of reported pollution incidents in England and Wales, 1989-99



### 4.3 Regional distribution

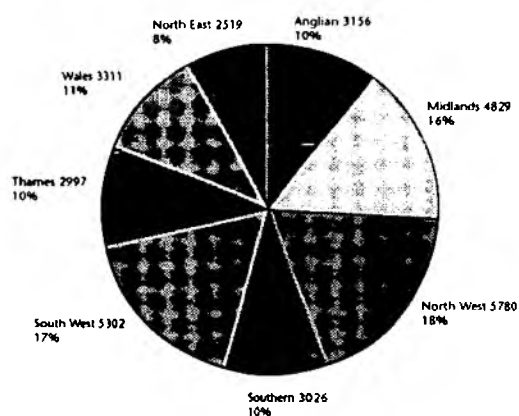
The regional distribution of incidents for 1999 includes Categories 1-4. There is less variation in the proportion of incidents dealt with by each region this year, with North West Region having the highest proportion at 18% (12% in 1998) and North East (8%) replacing Southern with the least. The climate, topography, population and local economic activity has a strong influence on the number and, in particular, the type of incidents in each region. Because of the inclusion of Category 4 incidents, overall numbers are greater. However, the proportion of incidents in Midlands has shown a sharp decline and in North West and Southern a noticeable increase. If Category 1-3 incidents only are considered, the number of incidents appear to have declined by 20%, from 17,863 in 1998 to 14,374 in 1999.

Table 1 shows a regional breakdown by incident category, and includes figures for unsubstantiated incidents.

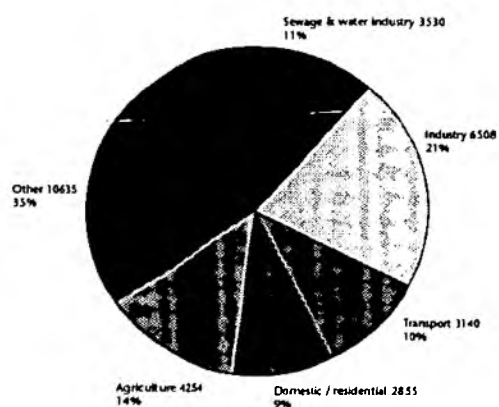
**Table 1** Total number of reported pollution incidents in 1999  
by incident category

Region	Substantiated			Total Category 1-3	Category 4	Total	Unsubstantiated
	Category 1	Category 2	Category 3				
Anglian	2	91	1,633	1,726	1,430	3,156	683
Midlands	11	104	2,689	2,804	2,025	4,829	1,736
North East	20	113	1,535	1,668	852	2,520	524
North West	17	123	1,688	1,828	3,952	5,780	494
Southern	10	110	1,197	1,317	1,709	3,026	277
South West	8	125	2,330	2,463	2,839	5,302	737
Thames	6	88	1,114	1,208	1,789	2,997	536
Wales	16	109	1,235	1,360	1,952	3,312	714
<b>TOTAL</b>	<b>90</b>	<b>863</b>	<b>13,421</b>	<b>14,374</b>	<b>16,548</b>	<b>30,922</b>	<b>5,701</b>

**Figure 2a** Total number of substantiated pollution incidents by Agency region, 1999 - 30,922

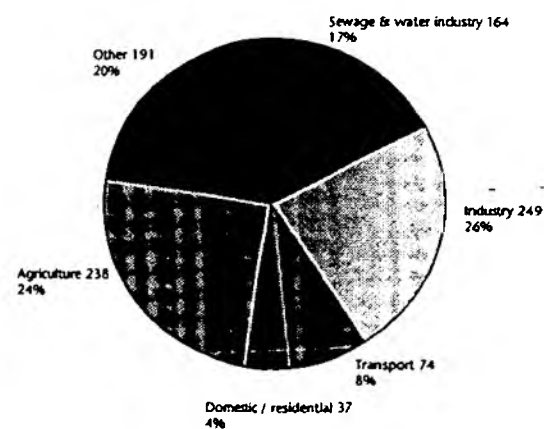
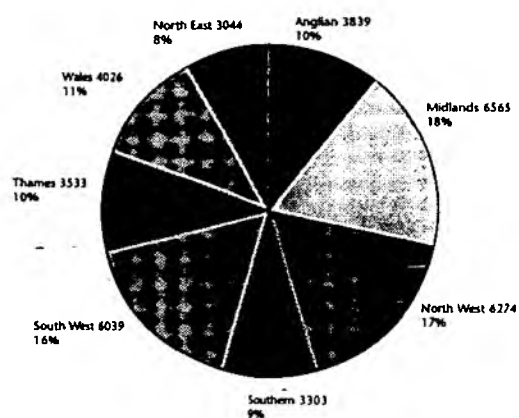


**Figures 3a and 3b** Distribution of substantiated pollution incidents by source, 1999



All incidents Total 30,922

**Figure 2b** Total number of reported pollution incidents by Agency region, 1999 - 36,623



Category 1 and 2 incidents Total 953

#### 4.4 Distribution by source of pollution

Where possible, Agency staff identify and record both the source of any pollution and the type of pollutant (Figure 3 and Table 2). The source of pollution is reported in six categories: agriculture, industrial, sewage and water industry, transport, domestic and residential and "other". "Other" sources include hospitals, crown-owned sites, and incidents where the source was not traced.

##### 4.4.1 Historical trends

The trend in pollution incidents by source since 1992 is shown in Figure 4. It shows that there was an overall reduction in the number of substantiated incidents in recent years, with the exception of transport incidents, which remained almost constant. The data for 1999 shows increases due to the inclusion of Category 4 incidents from all sources except for the sewage and water industry. Data for domestic and residential sources were not collected separately prior to 1995.

Figure 4 Trends in the number of pollution incidents by source, 1992-1999

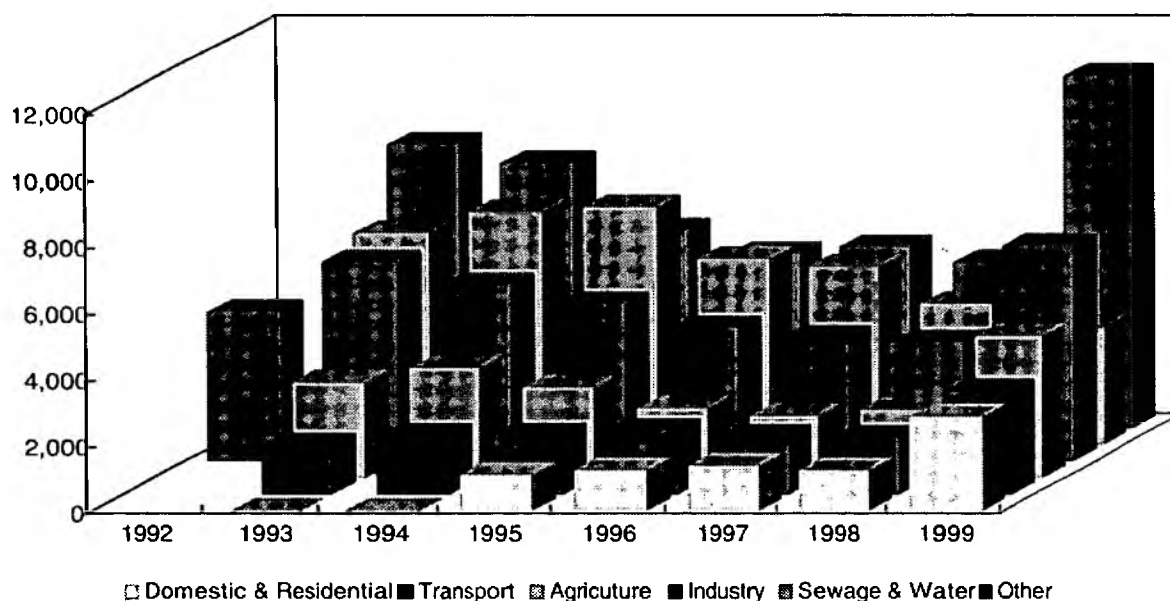
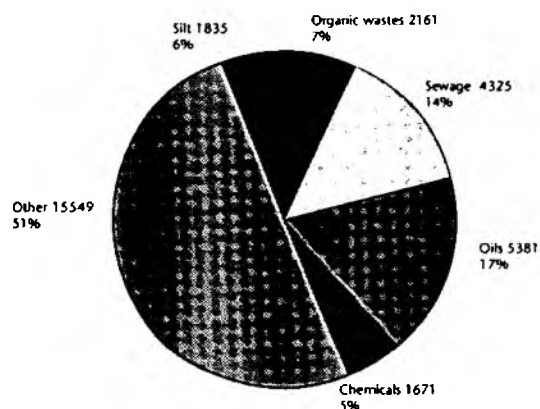


Table 2 Total number of substantiated pollution incidents by source, 1999

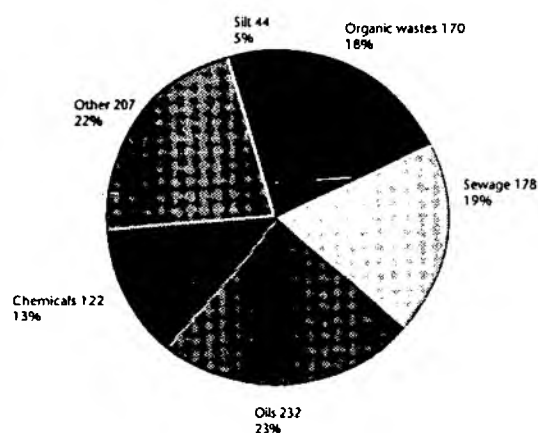
Region	Agricultural	Industrial	Sewage & water	Transport	Domestic/residential	Other source	Total	Percentage of total incidents
Anglian	340	463	371	389	397	1,195	3,158	10%
Midlands	601	1,149	651	659	336	1,433	4,829	16%
North East	247	413	653	213	148	846	2,520	8%
North West	756	1,453	356	561	322	2,332	5,780	19%
Southern	430	583	269	390	524	830	3,026	10%
South West	1,167	971	603	512	616	1,433	5,302	17%
Thames	167	441	325	273	285	1,506	2,997	10%
Wales	546	1,035	302	143	227	1,059	3,312	11%
<b>TOTAL</b>	<b>4,254</b>	<b>6,508</b>	<b>3,530</b>	<b>3,140</b>	<b>2,855</b>	<b>10,635</b>	<b>30,922</b>	
Percentage	14%	21%	11%	10%	9%	34%		



Figures 5a and 5b Distribution of substantiated pollution incidents by type, 1999



All incidents Total 30,922



Category 1 and 2 incidents Total 953

## 4.5 Distribution by type of pollutant

Pollutant types were also split into six categories: fuels and oils, sewage, chemicals, organic wastes, silt and "other" types. "Other" types include pollutants that do not fit into the other five categories, for example vehicle washings, natural causes, litter and incidents where the pollutant was not identified.

The largest number of pollution incidents by type were fuels and oils (17%), followed by sewage (14%). In the "other" type category there were 50% of incidents. The regional breakdown of pollutant types is shown in Table 3.

### 4.5.1 Historical trends

Since 1992 there has been an overall reduction in the number of substantiated incidents in each type category. However the number of incidents recorded as "other" type has increased sharply in the last year, largely as a result of the transition period for the incident recording system.

## 4.6 Category 1 incidents

Of the total of 14,374 Category 1-3 substantiated incidents in 1999, 90 were classified as Category 1 (Major). This compares to 128 in 1998 and continues the trend of reduction in Category 1 incidents.

Tables 4 and 5 show the number of Category 1 incidents in 1999 by source and type. Figure 3b shows the proportion of Category 1 and 2 incidents from the six sources. Agricultural and industrial sources caused the largest number of these incidents, at 24%, and the largest number classified by type were due to oils (232%).

Table 3 Total number of substantiated pollution incidents in 1999 by type of pollutant

Region	Organic wastes	Fuels & oils	Sewage	Chemicals	Silt	Other types	Total	Percentage of total incidents
Anglian	127	696	550	218	113	1,452	3,156	10%
Midlands	462	1,180	569	237	230	2,151	4,829	16%
North East	138	505	661	200	113	903	2,520	8%
North West	275	632	500	296	323	3,754	5,780	19%
Southern	133	610	466	154	112	1,551	3,026	10%
South West	685	839	827	207	317	2,427	5,302	17%
Thames	77	606	414	200	430	1,270	2,997	10%
Wales	264	313	338	159	197	2,041	3,312	11%
<b>TOTAL</b>	<b>2,161</b>	<b>5,381</b>	<b>4,325</b>	<b>1,671</b>	<b>1,835</b>			
<b>Percentage</b>	<b>7%</b>	<b>17%</b>	<b>14%</b>	<b>5%</b>	<b>6%</b>	<b>50%</b>		

#### 4.6.1 Historical trends

There has been a significant fall in the number of Category 1 incidents since 1992. The most notable decline has been in sewage and water discharges.

**Table 4** *Total number of Category 1 (Major) substantiated pollution incidents by source, 1999*

Region	Agriculture	Industrial	Sewage	Transport & water	Domestic/residential	Other	Total	Percentage
Anglian	1	0	1	0	0	0	2	2%
Midlands	4	3	2	0	0	2	11	12%
North East	2	5	4	3	0	6	20	22%
North West	6	4	3	2	0	2	17	19%
Southern	1	2	2	3	1	1	10	11%
South West	6	0	0	0	0	2	8	9%
Thames	3	0	1	1	0	1	6	7%
Wales	6	6	2	0	0	2	16	18%
<b>TOTAL</b>	<b>29</b>	<b>20</b>	<b>15</b>	<b>9</b>	<b>1</b>	<b>16</b>	<b>90</b>	
Percentage	32%	22%	17%	10%	1%	18%		

**Table 5** *Total number of Category 1 (major) substantiated pollution incidents by pollutant type in 1999*

Region	Organic wastes	Fuels & oils	Sewage	Chemicals	Silt	Other types	Total	Percentage
Anglian	0	0	1	1	0	0	2	2%
Midlands	4	3	1	0	0	3	11	12%
North East	1	2	5	7	1	4	20	22%
North West	2	2	5	2	0	6	17	19%
Southern	0	4	1	3	0	2	10	11%
South West	5	2	0	1	0	0	8	9%
Thames	1	1	1	1	0	2	6	7%
Wales	2	2	0	5	0	7	16	18%
<b>TOTAL</b>	<b>15</b>	<b>16</b>	<b>14</b>	<b>20</b>	<b>1</b>	<b>24</b>	<b>90</b>	
Percentage	17%	18%	16%	22%	1%	27%		





Farm oil storage tank bunded as a result of the Yorkshire Wolds initiative, North East Region  
See Section 3.5.8



Liquid fertilizer tank with course of spillage shown by scorched vegetation, Anglian Region.  
See Section 2.1.1





Sewage discharge, Washington, Sunderland, North East Region



Sewage deposits, Oxclose Burn, Washington, North East Region  
See Section 7.6.2





Fuel tanker incident, Anglian Region  
See Section 2.1.5



Impact of dairy farm slurry spill, Anglian Region  
See Section 2.1.1



Impact of mine water discharge, near  
Saltburn, North East Region  
See Section 2.1.6





## 5 Analysis of incidents by source

### 5.1 Agricultural pollution incidents

#### 5.1.1 Total incidents

In 1999 a total of 4,254 substantiated pollution incidents (including 2,102 Category 4) arose from agricultural sources, accounting for 14% of all incidents (11% in 1998).

#### 5.1.2 Sources of agricultural pollution

The distribution of agricultural incidents by source is shown in Figure 5. As in previous years, the largest number came from dairy farming (25%). Pollution from arable farming (11%) has increased significantly and is now the second most important source.

#### 5.1.3 Historical trends

Table 6 shows the number of pollution incidents in each region from 1993 to 1999. There was a significant increase

in agricultural incidents in 1999, from 2,050 in 1998 to 4,254, as a result of the inclusion of Category 4 incidents. The underlying trend may be obtained by considering only Category 1-3 (2,152), which shows a slight increase (4%). This may be related to the very wet weather causing dirty water and slurry systems to be overwhelmed and a greater number of incidents involving soil erosion and the run-off of silt from arable land.

Four regions (Southern, South West, Thames and Wales) recorded more Category 1-3 agricultural incidents than in 1998, with decreases in the remaining regions.

#### 5.1.4 Category 1 and 2 incidents

The number of Category 1 incidents is greater than in 1998, but within the range that has occurred over the last six years, which is a significant improvement over the period up to 1993.

A breakdown of Category 1 and 2 incidents is shown in Figure 6.

Figure 5 Substantiated agricultural pollution incidents by source, where classified, 1999

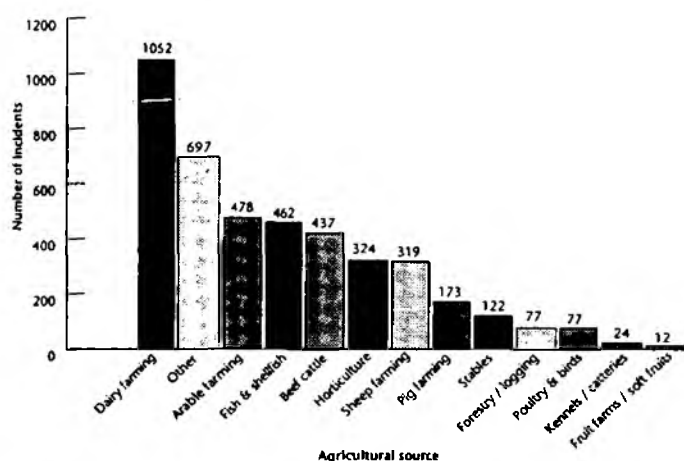


Figure 6 Substantiated Category 1 and 2 agricultural pollution incidents by source, 1999

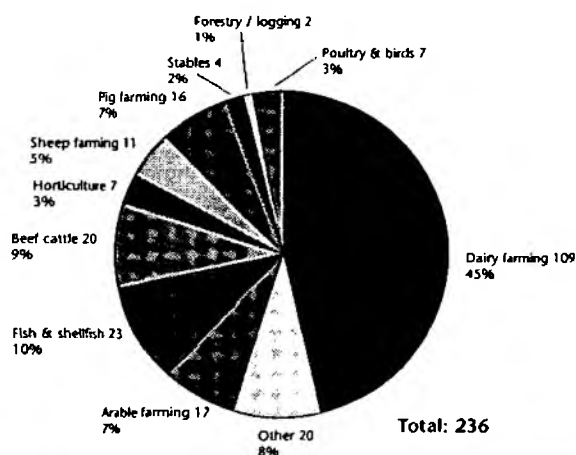


Table 6 Total agricultural pollution incidents by region, 1993-99

	1993		1994		1995		1996		1997		1998		1999	
	Sub	Cat 1	Sub	Cat 1	Sub	Cat 1	Sub	Cat 1	Sub	Cat 1	Sub	Cat 1	Sub*	Cat 1
Anglian	356	0	326	1	212	1	200	2	193	1	189	0	340	1
Midlands	391	15	409	8	371	2	410	7	407	6	418	2	601	4
North East	148	7	396	5	220	7	166	0	170	4	190	5	247	2
North West	403	11	403	8	312	6	275	8	255	12	321	4	756	6
Southern	68	0	126	2	123	3	95	2	101	3	115	2	430	1
South West	943	24	1,025	9	975	6	583	6	407	6	483	4	1,167	6
Thames	132	2	100	1	115	0	93	1	89	1	70	2	167	3
Wales	442	4	544	2	392	7	289	2	262	2	264	3	546	6
<b>TOTAL</b>	<b>2,883</b>	<b>63</b>	<b>3,329</b>	<b>36</b>	<b>2,720</b>	<b>32</b>	<b>2,111</b>	<b>28</b>	<b>1,884</b>	<b>35</b>	<b>2,050</b>	<b>22</b>	<b>4,254</b>	<b>29</b>

Cat 1- NRA and Environment Agency Category 1

Sub = Substantiated

\* included Category 4

## 5.2 Industrial pollution incidents

### 5.2.1 Total incidents

A total of 6,508 pollution incidents from industrial sources were substantiated in 1999, 21% of the total (20% in 1998).

### 5.2.2 Sources of industrial pollution

Figure 7 shows the main sources of industrial pollution incidents in 1999. Landfill and waste incidents have displaced the construction industry as the most frequently identified source. However, the figure for landfill and waste includes 2,001 Category 4 incidents. The construction industry had 609 Category 1-3 incidents, just 2.5% less than 1998. Overall the construction industry contributed 17% of industrial incidents as it did in 1998. The chemical industry accounted for 13% (6% in 1998) and mining 5%. The food industry showed a significant decrease from 10% in 1998 to 5%.

Figure 7 Substantiated industrial pollution incidents by source, where classified, 1999

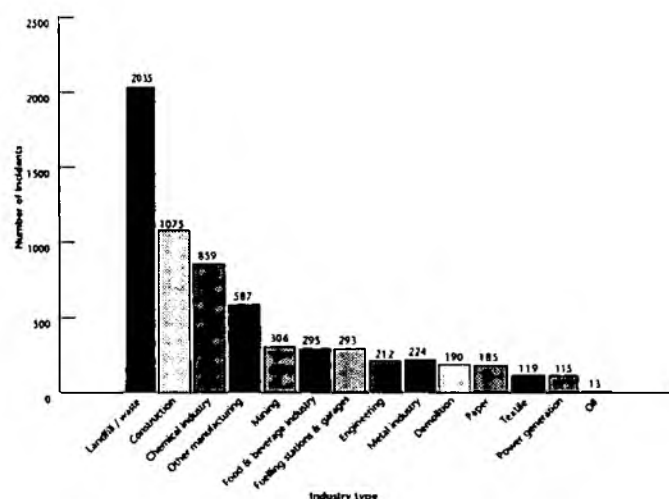


Table 7 Total industrial pollution incidents by region, 1993-99

Region	1993	1994	1995	1996	1997	1998	1999
Anglian	601	635	399	405	383	371	463
Midlands	727	769	749	833	814	807	1,149
North East	1,092	745	539	424	465	398	413
North West	1,335	821	948	648	506	533	1,453
Southern	203	262	239	212	138	199	583
South West	767	663	711	504	501	459	971
Thames	397	388	330	372	324	369	441
Wales	880	1,026	848	627	592	464	1,035
<b>TOTAL</b>	<b>6,002</b>	<b>5,309</b>	<b>4,763</b>	<b>4,025</b>	<b>3,723</b>	<b>3,600</b>	<b>6,508</b>

### 5.2.3 Historical trends

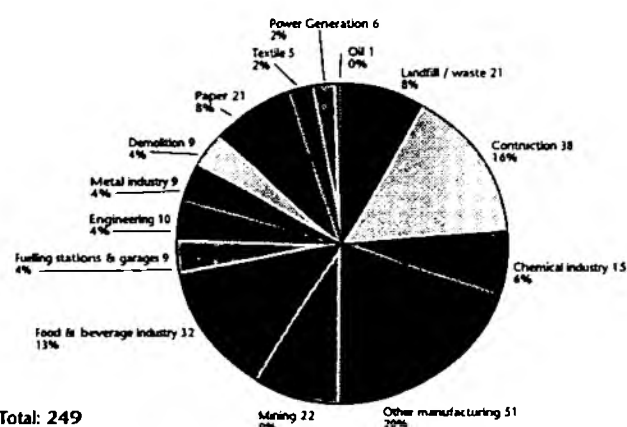
The total number of substantiated industrial pollution incidents in 1998 was the lowest since 1991. The figures for 1999 are significantly higher, due to the inclusion of Category 4 incidents.

### 5.2.4 Category 1 and 2 incidents

Of the 953 Category 1 and 2 incidents, 249 (26%) arose from industrial sources.

A breakdown of Category 1 and 2 industrial pollution incidents is shown in Figure 8. The construction industry was the most frequently identified source (16%), followed by the food industry (13%)

Figure 8 Substantiated Category 1 and 2 industrial pollution incidents, 1999



## 5.3 Sewage and water industry related pollution incidents

### 5.3.1 Total incidents

There were 3,530 substantiated sewage and water industry related pollution incidents (including 737 Category 4) in 1999, 11% of the total (24% in 1998).

### 5.3.2 Sources of sewage and water industry related incidents

Figure 9 shows the sources of sewage and water industry related incidents in 1999. As in 1998, the biggest source of

pollution was discharges from the foul sewer from the Water Service Companies (23%). Combined sewer outfalls (CSOs) caused 18% of incidents.

### 5.3.3 Historical trends

Table 8 gives the figures for the regional distribution of sewage and water related pollution incidents from 1993 to 1999. Even taking into account Category 4 incidents there has been a significant decrease (17%). If Categories 1-3 only are considered, the decrease is 34%. The 1999 figure is the lowest since records began. The biggest decreases compared to 1998 were recorded in Wales (40%) and Midlands (34%).

Figure 9 Substantiated sewage and water industry related pollution incidents by source, where classified, 1999

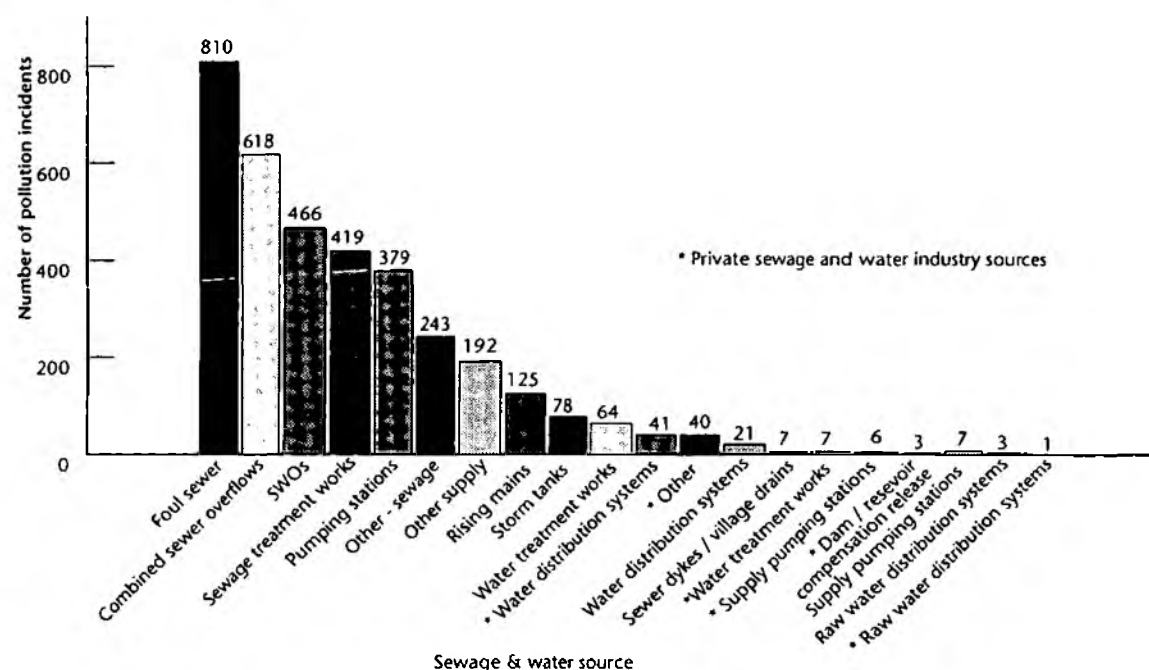


Table 8 Total substantiated sewage and water industry related incidents by region 1993-99

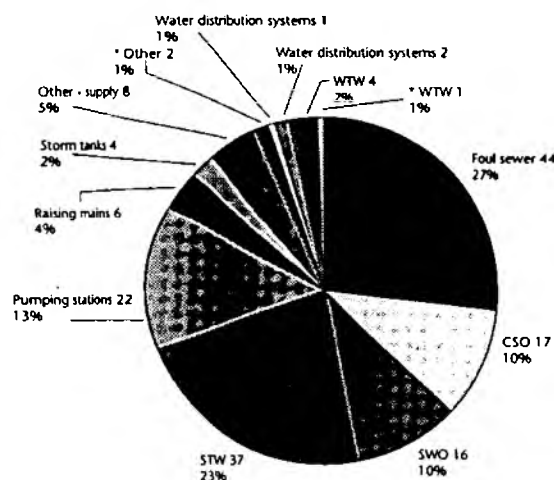
Region	1993	1994	1995	1996	1997	1998	1999
Anglian	586	714	557	461	555	473	371
Midlands	1,327	1,337	1,175	1,219	1,229	986	651
North-East	726	1,032	1,013	722	876	645	653
North West	1,066	1,028	1,223	801	482	342	356
Southern	227	393	328	298	294	244	269
South West	1,124	1,209	1,469	889	789	628	603
Thames	421	414	487	471	436	437	325
Wales	898	892	905	738	704	498	302
<b>TOTAL</b>	<b>6,375</b>	<b>7,019</b>	<b>7,157</b>	<b>5,599</b>	<b>5,365</b>	<b>4,253</b>	<b>3,530</b>

### 5.3.4 Category 1 and 2 incidents

Of the total number of sewage and water related incidents, 164 (5%) were classified as Category 1 and 2. This represents 17% of all Category 1 and 2 incidents. Most of these occurred in North East and South West Regions (36 and 30 incidents respectively).

The sources of Category 1 and 2 sewage and water related incidents are shown in Figure 10.

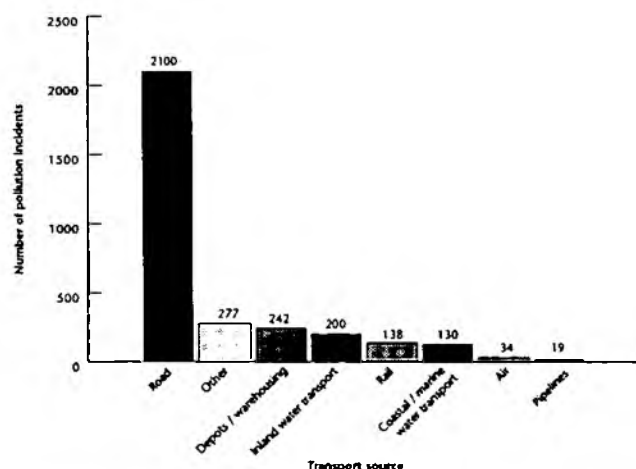
Figure 10 Substantiated Category 1 and 2 sewage and water related incidents, 1999



Total 164

\* private sewage and water industry sources

Figure 11 Substantiated transport related pollution incidents by source, 1999



### 5.4.1 Total incidents

In 1999, transport related incidents (3,140 including 1,794 Category 4) represented 10% of the total number of substantiated incidents (as in 1998).

### 5.4.2 Sources of transport related incidents

The distribution of transport incidents by source is shown in Figure 11. Of the total number of transport related pollution incidents, the overwhelming majority originated from roads (67%), mainly as a result of road traffic accidents. Ships and boats were involved in 11% and rail transport 4%.

### 5.4.3 Historical trends

The changing number of transport incidents from 1993 to 1999 is shown in Table 9. A new category, depots and warehouses, have been separately identified in the report this year, and coastal and inland waterway transport have been separated. The highest number of transport incidents was once again recorded in the Midlands (21%), emphasizing the importance of the road networks in the region.

Table 9 Total substantiated transport pollution incidents by region, 1993-99

Region	1993	1994	1995	1996	1997	1998	1999
Anglian	99	394	216	361	323	305	389
Midlands	202	214	283	450	508	507	659
North East	146	166	129	167	169	161	213
North West	66	122	221	158	107	141	561
Southern	173	120	174	152	145	150	390
South West	403	355	337	253	230	199	512
Thames	192	195	217	201	164	164	273
Wales	217	217	211	173	120	100	143
<b>TOTAL</b>	<b>1,498</b>	<b>1,783</b>	<b>1,788</b>	<b>1,915</b>	<b>1,766</b>	<b>1,727</b>	<b>3,140</b>

#### 5.4.4 Category 1 and 2 incidents

74 (2%) of transport incidents were classified in Categories 1 and 2 in 1999, 8% of all Category 1 & 2 incidents. Of these, 45 were from road transport, six from ships and boats, and two from rail accidents. Depots and warehouses accounted for 3 Category 1 and 12 Category 2 incidents.

### 5.5 Domestic and residential pollution incidents

#### 5.5.1 Total incidents

Domestic and residential pollution incidents were reported as a separate source for the first time in the 1998 report. In 1999, domestic and residential pollution related incidents (2,855 including 1,571 in Category 4) accounted for 9% (7% in 1998) of all incidents (see Figure 12).

#### 5.5.2 Sources of domestic and residential pollution incidents

The numbers of incidents from 1995 to 1999 are presented in Table 10. Separate records are not available prior to 1995. There was one Category 1 incident, in Southern Region (see Section 2.1.6 for details).

Table 10 *Total substantiated domestic and residential pollution incidents by region, 1995-99*

Region	1995	1996	1997	1998	1999
Anglian	186	267	294	255	397
Midlands	120	140	151	151	336
North East	89	142	138	115	148
North West	168	129	156	170	322
Southern	144	175	220	190	524
South West	159	180	222	199	616
Thames	223	207	198	176	285
Wales*	0	18	0	0	227
<b>TOTAL</b>	<b>1,089</b>	<b>1,258</b>	<b>1,379</b>	<b>1,256</b>	<b>2,855</b>

\*Environment Agency Wales recorded incidents in "other/not known" category.

### 5.6 "Other" sources of pollution

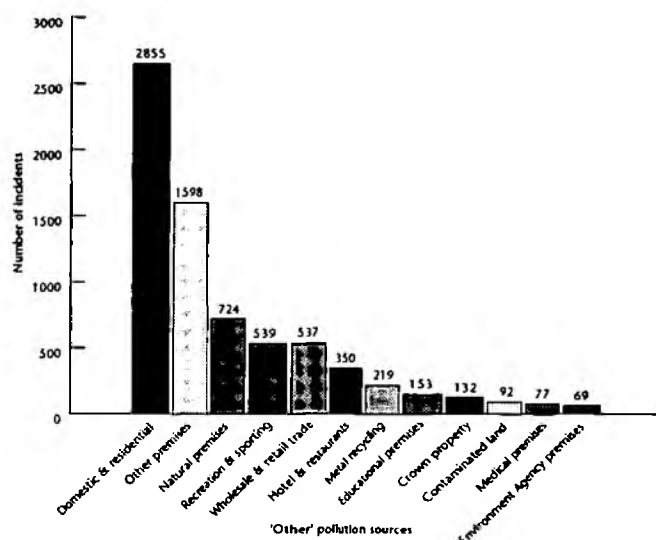
#### 5.6.1 Total incidents

A total of 10,635 pollution incidents from "other" sources were substantiated in 1999, 34% of the total. This category includes incidents where the source did not fall into one of the five main categories, those where the source was not found and a proportion of Category 3 and 4 incidents.

#### 5.6.2 "Other" sources of pollution

Of the "other" sources, 60% were incidents where the source could not be traced, representing 20% of all incidents. Restaurants and public houses accounted for 3%, and schools and other educational establishments 1.5%. These sources are shown in Figure 12.

Figure 12 *Substantiated domestic and residential and "other" sources of pollution incidents, where classified, 1999*



#### 5.6.3 Historical trends

The number of domestic and residential and "other" source pollution incidents rose in 1999, mainly as a result of the changes in the way incidents were recorded. The increase occurred across all regions. Incidents from domestic and residential properties are separately categorised from 1995 in Table 11, hence the significant decrease in numbers of "other" incidents in that year.

#### 5.6.4 Category 1 and 2 incidents

Of the 10,635 "other" source pollution incidents, 216 were classified as Categories 1 and 2 – 2%.



Table 11 Substantiated "other" sources of pollution, by region, 1993-99

Region	1993	1994	1995	1996	1997	1998	1999
Anglian	983	750	586	723	663	570	1,196
Midlands	2,229	2,166	1,561	1,253	1,302	1,192	1,433
North East	1,530	904	586	522	586	484	846
North West	786	1,158	845	807	654	694	2,332
Southern	684	415	227	257	276	240	830
South West	892	1,088	907	633	698	635	1,433
Thames	929	909	600	615	706	603	1,506
Wales	508	585	634*	458*	569*	559*	1,059
<b>TOTAL</b>	<b>8,541**</b>	<b>7,975**</b>	<b>5,946</b>	<b>6,508</b>	<b>5,454</b>	<b>4,977</b>	<b>10,635</b>

\* Environment Agency Wales recorded domestic/residential incidents in "other/not known".

\*\*Includes incidents from domestic and residential source.



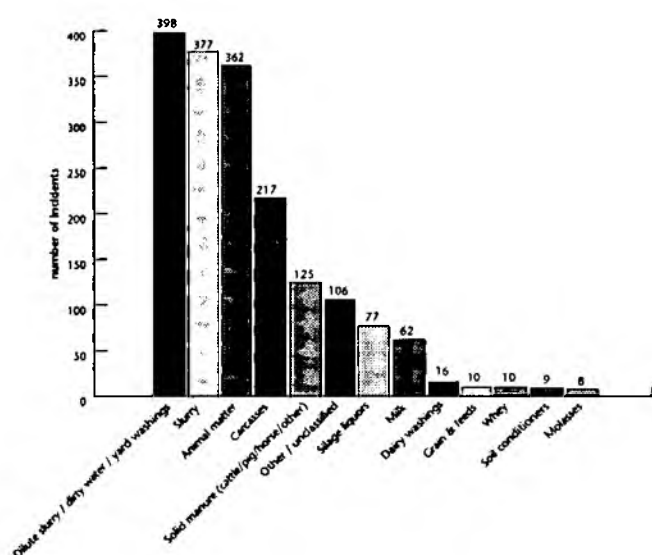
## 6 Analysis of incidents by type

### 6.1 Organic wastes

#### 6.1.1 Total incidents

There were 2,161 substantiated pollution incidents attributed to organic wastes in 1999, 7% of the total (11% in 1998).

Figure 13 Substantiated organic waste pollution incidents by type, 1999



#### 6.1.2 Type of organic waste pollution

The distribution of organic waste pollution incidents is shown in Figure 13. Note that, for Midlands Region, this only includes Category 1 and 2 data. The three most significant were yard washings (including dirty water and dilute slurry) with 18%, cattle slurry (17%) and animal carcasses (10%). Silage liquor accounted for 4% of all incidents.

#### 6.1.3 Historical trends

Table 12 shows the regional numbers of organic waste incidents in the years 1993 to 1999. Despite the inclusion of Category 4 data, several regions show a decrease from the number of incidents reported in 1998.

#### 6.1.4 Category 1 and 2 incidents

Of the 2,161 organic waste incidents, 170 (8%) were classified as Category 1 or 2. This represents 18% of the total number of Category 1 and 2 incidents.

### 6.2 Fuels and oils

#### 6.2.1 Total incidents

There were 5,381 substantiated fuel and oil pollution incidents in 1999 (including 1,610 Category 4 incidents), representing 17% of the total (30% in 1998).

#### 6.2.2 Type of fuel and oil pollution

Figure 14 shows the distribution of fuel and oil pollution incidents by type (with the exception of Midlands Category 3 and 4 data). Of these, diesel (DERV) was again the most common pollutant type, responsible for 23% of incidents. Domestic fuel oil (6%) and industrial fuel oil (5%) accounted for a significant proportion of incidents where the oil type could be identified.

#### 6.2.3 Historical trends

Table 13 shows the numbers of fuel and oil pollution incidents between 1993 and 1999. There was a slight increase in the number of incidents involving fuels and oils (2%), with notable increases in Southern (38%) and South West (21%) Regions.

Table 12 Total substantiated organic waste pollution incidents by region 1993-99

Region	1993	1994	1995	1996	1997	1998	1999
Anglian	329	311	201	189	193	184	127
Midlands	381	368	419	436	445	453	462
North East	320	291	183	150	155	170	138
North West	398	479	408	341	241	289	275
Southern	101	102	84	66	51	85	133
South West	848	938	899	549	425	484	685
Thames	102	92	75	86	71	65	77
Wales	477	584	430	312	276	294	264
<b>TOTAL</b>	<b>2,956</b>	<b>3,165</b>	<b>2,699</b>	<b>2,129</b>	<b>1,857</b>	<b>2,024</b>	<b>2,161</b>

Table 13 Total fuel and oil pollution incidents by region, 1993-99

Region	1993	1994	1995	1996	1997	1998	1999
Anglian	961	1,023	734	763	761	716	696
Midlands	1,493	1,519	1,197	1,258	1,337	1,291	1,180
North East	597	705	668	562	579	516	505
North West	806	895	828	588	564	614	632
Southern	469	488	470	443	424	443	610
South West	661	865	909	768	739	692	839
Thames	896	896	780	817	715	668	606
Wales	490	517	439	388	423	368	313
<b>TOTAL</b>	<b>6,373</b>	<b>6,908</b>	<b>6,025</b>	<b>5,587</b>	<b>5,542</b>	<b>5,308</b>	<b>5,381</b>

Figure 14 Substantiated fuel and oil pollution incidents by type, 1999

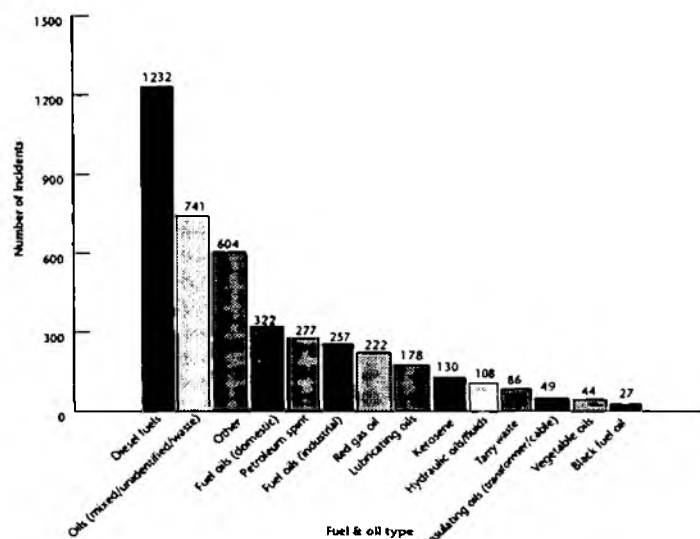
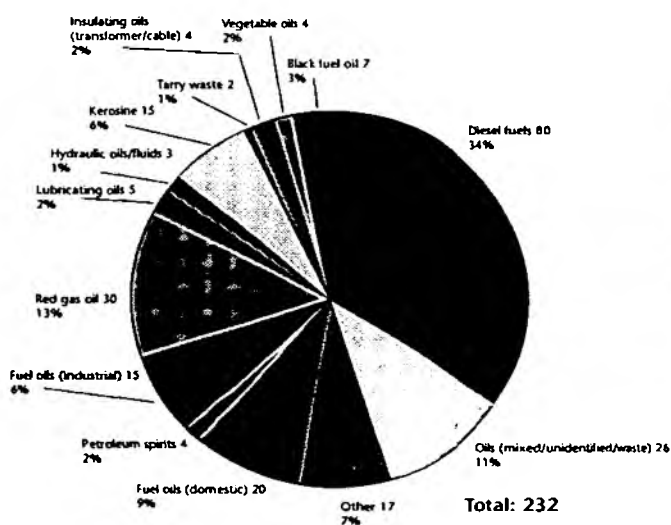


Figure 15 Substantiated Category 1 and 2 fuel and oil pollution incidents by type, 1999



## 6.2.4 Category 1 and 2 incidents

Category 1 and 2 incidents involving fuels and oils accounted for 2% of the total number of substantiated fuels and oils incidents in 1999. Fuels and oils were involved in 232 Category 1 and 2 incidents (24% of the total). The largest number of incidents occurred in the Southern Region and Midlands Regions (both 38 incidents). Details of Category 1 and 2 incidents are shown in Figure 15.

## 6.3 Chemicals

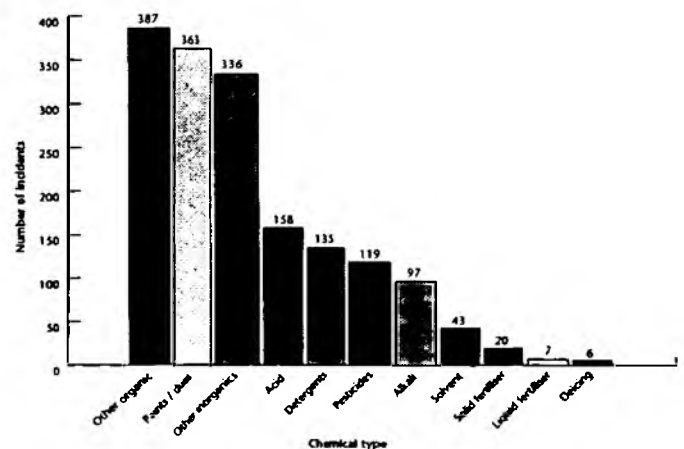
### 6.3.1 Total incidents

In 1999 there were 1,671 substantiated chemical pollution incidents, representing 5% of all incidents. It was 9% in 1998.

### 6.3.2 Types of chemical pollutants

The distribution of chemical pollutants by type is shown in Figure 16. Pollution from unclassified organic chemicals was

Figure 16 Substantiated chemical pollution incidents by type, 1999



**Table 14** *Total substantiated chemical pollution incidents by region, 1993-99*

Region	1993	1994	1995	1996	1997	1998	1999
Anglian	198	301	201	239	183	196	218
Midland	281	299	317	446	430	408	237
North East	410	251	140	199	234	181	200
North West	568	383	359	308	228	185	296
Southern	100	129	108	102	89	79	154
South West	145	209	302	193	175	162	207
Thames	172	178	174	153	144	113	200
Wales	165	134	124	197	97	81	159
<b>TOTAL</b>	<b>2,039</b>	<b>1,884</b>	<b>1,725</b>	<b>1,837</b>	<b>1,580</b>	<b>1,405</b>	<b>1,671</b>

the largest identified type (23%), with dyes and paints accounting for 22%. Other major types were unclassified inorganics (20%), inorganic acids (9%) and detergents (8%).

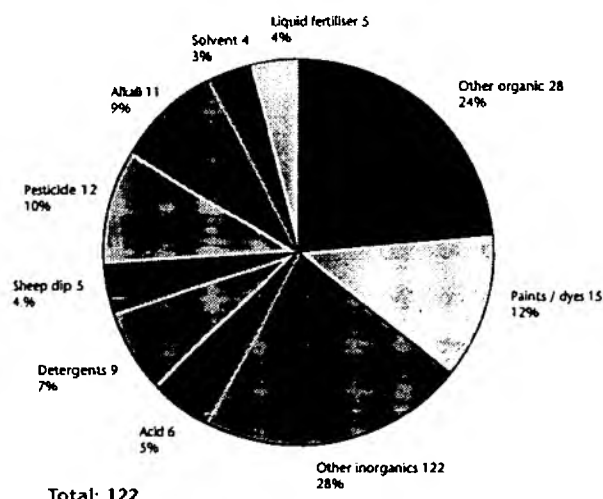
### 6.3.3 Historical trends

Table 14 shows the regional distribution of chemical incidents from 1993 to 1999. The increase between 1998 and 1999 is due to the inclusion of Category 4 incidents.

### 6.3.4 Category 1 and 2 incidents

Of the chemical incidents, 122 (4%) were classified as Category 1 and 2. Details of these are shown in Figure 17. These incidents represented 13% of the national total of Category 1 and 2 incidents.

**Figure 17** *Substantiated Category 1 and 2 chemical pollution incidents by type, 1999*



## 6.4 Sewage

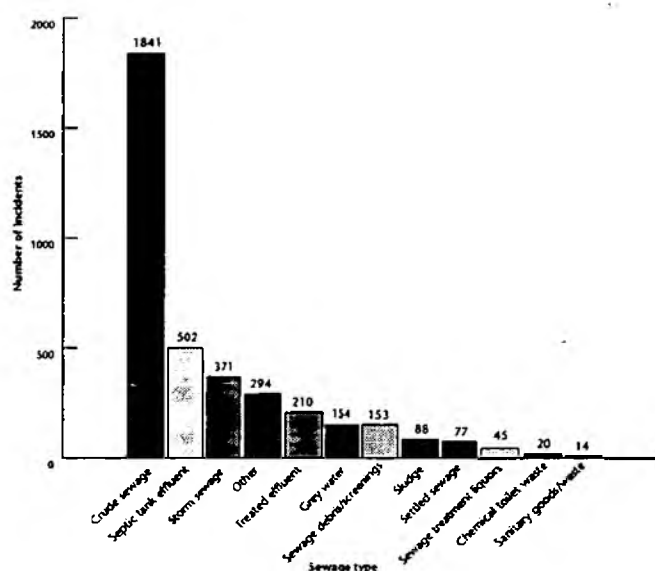
### 6.4.1 Total Incidents

In 1999 there were 4,325 substantiated sewage incidents, representing 14% of the total (24% in 1998).

### 6.4.2 Types of sewage pollution

Figure 18 shows the distribution of substantiated sewage pollution incidents in 1999. Crude sewage was the most common type of pollutant, accounting for 45% of incidents. Other significant types were septic tank effluent (12%), storm sewage (9%) and treated effluent (5%). Sewage debris was responsible for 4% of incidents.

**Figure 18** *Substantiated sewage pollution incidents by type, 1999*

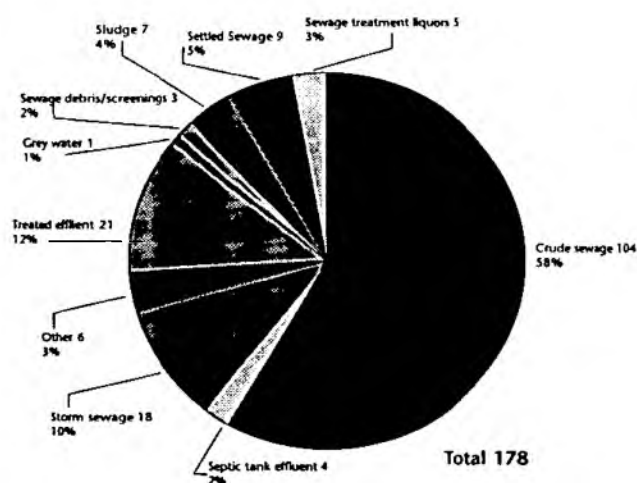


**Table 15** *Total substantiated sewage pollution incidents by region, 1993-1999*

Region	1993	1994	1995	1996	1997	1998	1999
Anglian	586	596	547	555	689	565	550
Midlands	1,327	1,320	935	991	999	830	569
North East	851	992	825	761	907	673	661
North West	1,066	894	1,103	843	594	451	500
Southern	215	322	351	346	378	295	466
South West	1,024	930	988	666	685	610	827
Thames	468	403	507	428	470	427	414
Wales	836	830	872	688	662	496	338
<b>TOTAL</b>	<b>6,373</b>	<b>6,287</b>	<b>6,128</b>	<b>5,278</b>	<b>5,384</b>	<b>4,347</b>	<b>4,325</b>

### 6.4.3 Historical trends

The regional distribution of sewage incidents is shown in Table 15. Even with the inclusion of Category 4 incidents, the number of sewage incidents was the lowest recorded since 1992. Although there is almost no change from the total for 1998, the underlying trend, based on the 3,361 Category 1-3 incidents, is significantly downwards. The number of incidents decreased in most regions, although there were increases in Southern (58%), South West (36%) and North West Regions (11%).

**Figure 19** *Category 1 & 2 sewage pollution incidents by type, 1999*

### 6.4.4 Category 1 and 2 incidents

There were 177 Category 1 and 2 sewage pollution incidents in 1999, representing 4% of Category 1 and 2 incidents. As in previous years, the greatest number involved crude sewage (104 incidents), as shown in Figure 19. The largest number (37) was recorded in the North East Region.

**Table 16** *Substantiated silt pollution incidents by region, 1995-99*

Region	1995	1996	1997	1998	1999
Anglian	61	72	49	64	113
Midlands	322	254	248	247	230
North East	63	113	106	106	113
North West	320	216	160	206	323
Southern	91	81	42	47	112
South West	98	84	252	231	317
Thames	152	139	132	126	430
Wales	299	305	255	150	197
<b>TOTAL</b>	<b>1,406</b>	<b>1,264</b>	<b>1,224</b>	<b>1,177</b>	<b>1,835</b>

### 6.5.1 Total incidents

In 1999 there were 1,835 substantiated pollution incidents due to silt, representing 6% of the total (see Figure 22). In 1998 it was 7%.

### 6.5.2 Historical trends

The number of pollution incidents from silt has fallen steadily since 1995 (see Table 16). The inclusion of Category 4 incidents has resulted in a rise in all regions, with the most significant in Thames and Southern, although the overall proportion is little changed from 1998, when silt accounted for 7%.

### 6.5.3 Category 1 incidents

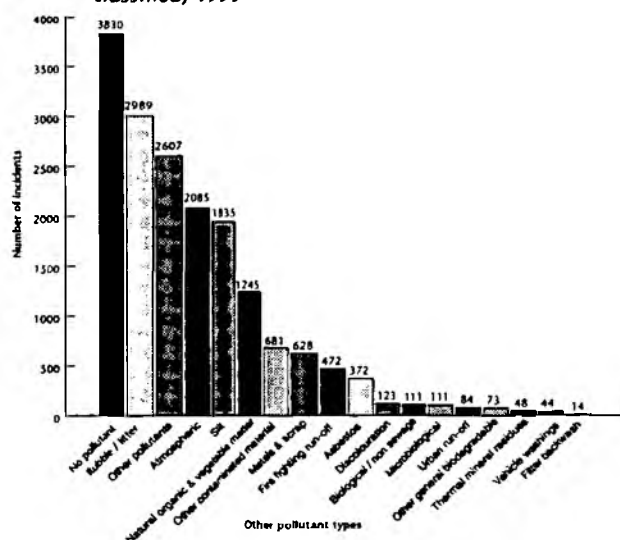
Only one Category 1 incident, in Anglian Region, was due to silt in 1998.

## 6.6 "Other" types of pollutants

### 6.6.1 Total incidents

In 1999 there were 15,549 substantiated pollution incidents due to "other" pollutant types, representing 50% of the total.

Figure 20 Substantiated "other" pollution incidents by type, where classified, 1999



### 6.6.2 Types of "other" pollutant

The "other" types category contains incidents that do not fit into any of the previously described pollution types. These include natural causes, rubble and litter, firewater and incidents where the pollutant was not identified.

### 6.6.3 Historical trends

The number of pollution incidents classified as "other" type has risen dramatically in 1999 (see Table 17). This is almost certainly a result of the inclusion of Category 4 incidents and operational difficulties arising from the introduction of the new incident recording system across the regions.

### 6.6.4 Category 1 incidents

Of the 24 Category 1 incidents where type was recorded as "other", 6 were due to natural causes.

Table 17 Substantiated "other" pollution incidents by region, 1993-99

Region	1993	1994	1995	1996	1997	1998	1999
Anglian	551	588	412	599	536	438	1,452
Midlands	1,394	1,389	1,069	920	952	832	2,151
North East	1,464	1,004	697	358	423	345	903
North West	818	881	699	522	373	456	3,754
Southern	470	275	131	151	190	189	1,550
South West	1,451	1,398	1,362	782	571	424	2,427
Thames	433	410	284	336	385	420	1,270
Wales	977	1,199	826	395	534	496	2,041
<b>TOTAL</b>	<b>7,558*</b>	<b>7,171*</b>	<b>5,480</b>	<b>4,063</b>	<b>3,984</b>	<b>3,600</b>	<b>15,549</b>

\* Include incidents caused by silt.



## 7 Legal action

### 7.1 Introduction

This section reports on the legal action relating to water pollution undertaken by the Environment Agency in 1999, under the Water Resources Act 1991. The figures do not include cases brought due to breaches of discharge consent, although specific cases where severe pollution has been caused are reported. Prosecutions are also occasionally brought under the Environmental Protection Act 1990, the Water Industries Act 1991 and the Salmon and Freshwater Fisheries Act 1975. Due to the length of time taken to bring a case to court, a large number of cases are outstanding at the end of each year. Data in Tables 18-20 relate only to incidents that occurred in 1999. To give a clearer picture, the total number of prosecutions relating to incidents in 1998 is shown in Appendix C, illustrating more fully the number of prosecutions relating to incidents in that year. In section 7.7, we report on examples of interesting prosecutions occurring in 1999 irrespective of the year of the offence.

### 7.2 Prosecution policy

A revised enforcement and prosecution policy was published by the Agency for consultation in April 1998 and adopted in November 1998. Each of the Agency's predecessor organisations had its own policy and the principal reason for the new document was to provide an integrated approach to environmental protection. The document set out five general principles that the Agency now follows:

- firm but fair regulation;
- proportionality: enforcement proportionate to the risks to the environment and the seriousness of any breach of the law;
- consistency: this is important, but many factors will be taken into account, such as environmental impact and offending history;
- transparency: it should be clear why enforcement action has been taken;
- targeting: regulatory effort should be targeted at areas presenting the greatest risk to the environment.

Where there is sufficient evidence, the Agency will normally prosecute where incidents or breaches have a significant effect on the environment. This proposal is broadly comparable to the previous policy, to prosecute Category 1 pollution incidents whenever there is adequate evidence to support the case. In considering Category 2 incidents, the circumstances surrounding the case are examined in detail, and formal cautions or warning letters are used where appropriate. Enforcement action is not always possible, either because the source cannot always be traced, because the incident was due to natural causes, or because it was the result of the actions of unknown persons.

### 7.3 Court cases

The regional distribution of prosecutions taken and convictions obtained for offences occurring in 1999 are shown in Table 18. By the end of December 1999, 230 of these prosecutions had been heard in court and more than 98% of these resulted in conviction.

### 7.4 Cautions

In addition to instigating court action against polluters, the Agency can also issue formal cautions. The purpose of a caution is to deal quickly with less severe incidents, while reducing the chances of further pollution. There is no penalty attached to a caution, but it can be produced in court in the event of a further offence. There must be evidence of the polluter's guilt, the polluter must admit the offence and must give informed consent to being cautioned before a caution can be administered. Should the polluter refuse to sign the caution, normal prosecution proceedings are instigated. The regional distribution of cautions issued in 1999 is also given in Table 16. By 1 January 2000, 113 cautions relating to cases in 1999 had been issued.

### 7.5 Penalties

Detailed information on fines for pollution offences is shown in Table 19. The maximum fine available in the Magistrates Court under Section 85(6) of the Water Resources Act, which was imposed for the first time ever in 1998, remains £20,000. In determining the level of fine, the court takes into account both the severity of the offence and the defendant's ability to pay.

The Magistrates Court can also impose a prison sentence of up to three months for pollution offences under the Water Resources Act 1991. Imprisonment remains rare, although one such sentence was handed down in 1997 in the North West Region.

### 7.6 Agency prosecutions in 1999

#### 7.6.1 Introduction

This section highlights a number of incidents where legal action was taken in 1999 and early 2000. The cases illustrate both the types of incident that the Agency deals with, and the operation of the legal process.



**Table 18** *Regional distribution of prosecutions and convictions for incidents by Agency region, 1999*

Region	Number of incidents prosecuted	Number of convictions	Number of cautions issued
Anglian	44	44	11
Midlands	27	24	8
North East	16	16	11
North West	31	31	21
Southern	32	32	5
South West	27	27	25
Thames	21	21	6
Wales	32	32	26
<b>TOTAL</b>	<b>230</b>	<b>227</b>	<b>113</b>

**Table 19** *Fines awarded on conviction for pollution incidents in 1999*

Region	Range of fines £
Anglian	0 – 15,000
Midlands	0 – 8,000
North East	500 – 12,000
North West	250 – 120,000
Southern	0 – 70,000
South West	0 – 13,500
Thames	2,000 – 15,000
Wales	0 – 10,000
<b>All regions</b>	<b>0 – 120,000</b>

### 7.6.2 Knowingly permitting pollution charge

#### *Environment Agency v Thames Water*

A major pollution incident which affected the River Cray in Dartford on 28 September 1998 resulted in Thames Water Utilities being convicted at Croydon Crown Court on 10 December 1999. The pollution occurred when a penstock on a trunk sewer flowing to the company's Long Reach Sewage Treatment Works was shut down, stopping flow in the sewer and resulting in a discharge to the river. The penstock was within a locked compound that had been broken into. Agency staff were on site within minutes of receiving the report. However, Thames Water failed to respond appropriately, and the discharge continued for over four hours, during which time it is estimated that 22,700 cubic metres of sewage were discharged. This was an unusual case as the defendant pleaded guilty of "knowingly

permitting" the discharge to the Cray and were subsequently fined £25,000, accompanied by £15,703 in costs. This is the highest individual fine at the time for a case involving sewage only.

#### *Environment Agency v Northumbrian Water*

On Christmas Eve 1998 a sewage discharge as a result of a CSO failure occurred in Washington, Sunderland. The discharge entered the Oxclose Burn, which runs through Princess Anne Park and has a high amenity value for local residents, both as a play area for local children and for exercising dogs. The discharge continued over a 5 day period and had an impact over a 1,000 metre stretch of the Burn which was contaminated with toilet tissue and sewage fungus.

Northumbrian Water appeared before Houghton le Spring Magistrates in November 1999 and entered a guilty plea to a charge brought under Section 85 of the Water Resources Act 1991. They were fined £2,000 and ordered to pay costs of £865.

### 7.6.3 Waste discharge to controlled waters

#### *Environment Agency v Itchen Marine (Towage) Ltd*

In this unusual case, Itchen Marine were summonsed for two offences, causing pollution under S85 of the Water Resources Act and for handling a waste at its yard, for which it was not licenced, in breach of S33 of the Environment Protection Act. This combined water and waste prosecution followed receipt of a complaint on 21 October 1997. The company had collected waste from an installation on Southampton Water for disposal at its licenced waste disposal site at America Wharf, Southampton. The waste was carried the 8km by barge. A set of photographs of the barge showed a significant change in the depth of the barge in the water between its departure and arrival. Based on these photographs, an expert marine engineer estimated that there had been a weight loss of between 80-100 Tonnes that could only be explained by the discharge of part of the cargo. Samples of the cargo as it was being unloaded indicated the highly polluting nature of the waste. Further investigation indicated that the company's Waste Management Licence did not include the type of waste involved, and they were therefore operating in breach of their licence.

The case was heard in Southampton Crown Court between 25 and 28 October 1999. The company was found guilty on both charges and were fined £20,000 for the pollution of controlled water, £5,000 for operating in breach of its Waste Management Licence and ordered to pay £10,000 towards the prosecutions costs of £13,250.

### 7.6.4 Chemical containment system failure

#### *Environment Agency v North West Water*

North West Water were fined £12,000 following the discharge of sodium hypochlorite from Ramsgreave Water Treatment Plant, Blackburn. Following a report of dead fish in the Showley Brook, a discharge smelling strongly of Chlorine was traced to a drain from the works. Further investigation on the site indicated that there had been a spill of sodium hypochlorite, which had entered a sump that was connected to the surface water drainage system for the site. Faulty equipment installed by a contractor had allowed the material to escape into the sump. A North West Water operative who attended the site was unaware of the drainage.

The Agency contended that the siting of the sump was inappropriate and that inadequate steps were taken to check for spillages when an alarm call was received from the site. Containment of hazardous materials and an understanding of site drainage systems are first principles in preventing and controlling pollution risks. North West Water was fined £12,000 and ordered to pay £2,188 costs for an offence of causing polluting matter to enter controlled waters contrary to Section 85(1) of the Water Resources Act 1991.

### 7.6.5 Costs of £120,000 awarded

#### *Environment Agency v Nipa Laboratories*

In a complex case involving a discharge via a foul sewer in 1995, Nipa Laboratories Limited was, on 12 May 1999, fined £12,500 and ordered to pay £120,000 towards the costs of the prosecution. The incident, which occurred in April 1995, involved the unintentional discharge of a quantity of Parachlorophenol from the company's Nook Lane premises in Oswaldtwistle, which passed through Hyndburn Sewage Treatment Works and into the River Calder. The company pleaded guilty to causing polluting matter to enter controlled waters contrary to Section 85(1) of the Water Resources Act 1991.

### 7.6.6 Sole trader prosecuted for illegal trade effluent discharge and water abstraction

#### *Environment Agency v Frank Lyons*

The operation of a wheel-wash at a gravel extraction and waste disposal site at Gilston, Herts, using water illegally abstracted from a tributary of the River Stort and then discharged back to the stream resulted in the prosecution of the site operator, Frank Lyons in September 2000. The wheel-wash was designed as a drive through lagoon for vehicles leaving the site to prevent mud being deposited on the local roads. The company was told that it could be topped-up with

flood water from the river and that no discharge should be made. However, a discharge from the site was identified on 2 December and the company was told to seal the pipe. However, further inspection on 9 December showed that the watercourse downstream of the site was heavily contaminated with solids from the wheel wash. The company was told to seal the drain again, but inspection on 22 December revealed a further discharge. The drain was sealed when checked on 23 December. Mr Lyons, a sole trader, was charged with illegal abstraction (Water Resources Act (WRA) 1991—Section 24) and with three charges of making a trade effluent discharge without consent (WRA 1991 Section 85). He was fined £500 for the illegal abstraction and £1,000 for each of the trade effluent discharges and ordered to pay costs of £1,230.

## 7.7 Recovery of costs

The "Polluter Pays Principle" was introduced by the EC in 1973. The Water Resources Act 1991 contains the legislation for the recovery of the costs of water pollution from the polluter in England and Wales.

Prior to 1995, the recovery of clean-up costs in some regions was normally considered as part of a criminal prosecution. Section 161 of the Water Resources Act, however, gave the Agency the power to make a civil claim for clean-up costs independent of any criminal action. Following a study of cost recovery, new guidance was introduced in April 1995 to standardise the approach in all the regions. Under these guidelines, investigation and clean-up costs are recovered directly whenever the polluter is identified and more than one hour is spent on an incident, irrespective of any legal action as a result of the pollution. Table 20 illustrates the costs recovered in 1999.

Table 20 Costs recovered by each Agency region, 1999

Region	Number of recoveries	Total amount billed £	Range of costs billed £
Anglian	152	63,302	29 - 10,343
Midlands	140	107,304	24 - 5,024
North East	400	141,524	47 - 19,982
North West	319	89,379	19 - 3,944
Southern	275	130,000	29 - 119,446
South West	704	223,138	24 - 9,016
Thames	154	240,062	37 - 137,716
Wales	65	85,000	25 - 7,064
All regions	2,041	1,132,469	19 - 137,716

## 8 Conclusions

Some clear trends have become evident when looking at this and earlier reports. They indicate where effort is needed to reduce the impact of pollution incidents on water quality and to capitalise on the benefits of investment in sewerage and sewage treatment.

### 8.1 Reduction in water pollution incidents

The number of substantiated incidents in Categories 1-3 has fallen for the fifth successive year. The fall is apparent in all but one of the Agency's regions and in all categories of incident. However, although the trend for 1999 follows that for previous years, some caution must be exercised in the comparison of data, because of the impact of the introduction of both a new, multi-functional incident recording system and new incident categories. For example, the new classification system will result in a reduction in the number of Category 1 incidents. This is because, where the spillage is contained and pollution averted, an incident will be recorded in a lower category which relates to the actual environmental impact, rather than the potential for pollution, as in the previous system.

### 8.2 Diffuse pollution

The impact of diffuse pollution is of growing concern to the Agency. The major investment programmes of the water companies are resulting in improved water quality throughout the country. However, it is becoming increasingly apparent that in some cases, water quality targets will not be met, due to the impact of diffuse pollution. With increasing pressure for development in urban areas and difficult social and economic conditions in the agricultural sector resulting in changing practices, it is likely that diffuse pollution will increase in significance.

The Agency is taking steps to identify the nature and costs of diffuse pollution, through a collaborative report involving SEPA, the Chartered Institute of Water and Environmental Management and the International Water Association to be published in late 2000. It is also working to encourage the adoption of sustainable urban drainage and improved soil management on farms. However, these are not issues that can be readily tackled using regulation.

### 8.3 Pollution prevention

The Agency has endeavoured to be proactive in the prevention of pollution, through a wide range of initiatives. There has been a particular focus on oil pollution, the construction industry and soil conservation in recent years. However, with an increasing range of statutory

responsibilities and limited resources, the Agency has had to prioritise its activities. As a result, a decision was taken in 1999 to focus efforts on ensuring compliance in those areas where the Agency has a statutory duty. The consequence has been a reduced level of resource available for waste minimisation and pollution prevention activities where these are not linked to its regulatory responsibilities. In the medium term, the Agency wishes to increase its proactive work, but under the current circumstances the aim is to use the reduced resource as effectively as possible. This is a particular challenge given the impact of diffuse pollution, which is best dealt with through a proactive approach.

### 8.4 Pollution incidents involving unregulated premises

Although the Environment Agency is responsible for a wide range of environmental protection regulation, the vast majority of industrial, commercial and institutional operations are not directly licenced or regulated by the Agency. Studies of pollution incidents in a number of regions have confirmed that the vast majority of such incidents occur as a result of activities at sites not regulated by the Agency.

### 8.5 Fines

For some years, the Agency has been concerned that the relatively low level of fines imposed for environmental offences is not a sufficient deterrent in many cases. These concerns were reflected when the Sentencing Advisory Committee, established under the Crime and Disorder Act in 1999, undertook a review of environmental crime as its first task. The Panel passed its findings to the Court of Appeal in 1999, although they were not influential in the *Sea Empress* case, where the record fine of £4 million was reduced on appeal to £750,000. Sentencing guidelines for Magistrates courts have also been reviewed to include environmental crime for the first time. However, whilst the new guidelines give suggested levels of sentencing for most crimes, they do not do so for those involving the environment. A Home Office review of sentencing is proposed. Unfortunately this will not deal with corporate sentencing, which is the area of greatest concern for environmental crime.

### 8.6 Oil storage regulations

The question of how to tackle the large number of serious oil pollution incidents involving inadequate oil storage has been discussed for some years, and the introduction of regulations has been proposed. A final round of consultation on such regulations was initiated by DETR in early 2000, with a view to introducing the regulations within 12 months.

## **8.7 Farm pollution - Groundwater Regulations**

The Agency's concern over the adverse impact of pesticides (including sheep dips) on the aquatic environment has been a repeated theme in these reports. The introduction of the Groundwater Regulations in 1999 requires the "Prior Authorisation" of the Agency for disposal operations for both spent sheep dip and pesticide residues in order to prevent pollution of the groundwater. The Authorisation includes any conditions deemed necessary to prevent the disposal causing pollution of groundwater. If the risk from the disposal activity is unacceptable, the Authorisation will not be granted. Over 12,000 applications for Authorisations were received before the deadline of 1 April 1999. Most were from sheep farmers (approximately 10,000).

## **8.8 "Natural pollution"**

In recent years there have been a number of major and significant incidents for which there has been no simple explanation. Many of these are caused by "natural" processes, such as low flows, mineralisation or excessive plant activity. Extremely low levels of dissolved oxygen are a common water quality problem caused by eutrophication (excessive nutrient enrichment), which sometimes results in significant fish kills. A number of schemes have been implemented to control eutrophication, most notably in the Norfolk Broads and the Lake District.

A proposed management strategy for tackling aquatic eutrophication was published for consultation by the Agency in December 1998. The consultation closed in March 1999 with a stakeholder seminar and the final strategy was due for publication in the Summer in 2000. The strategy recognises the need to take a catchment-wide approach to assessing eutrophication, quantifying the contributions from various sources and applying best control practices. Unless such an approach is taken, there will be an increasing risk of major incidents, especially at times when the environment is already stressed, for example under high temperature or drought conditions.

## 9 References

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Construction Industry Research And Information Association (1997), *Report 163 - Construction of bunds for oil storage tanks*, CIRIA, 6 Storey's Gate, Westminster, London.

# Appendices

## Appendix A

### CIC incident categorisation scheme

This appendix provides a summary version of the Common Incident Classification Methodology document adapted for Water pollution incidents only.

### Tier one - Impact on Agency

The criteria for classifying an incident according to its impact on the Agency are listed below. The level of Agency response assigned to the incident will correspond to the level in which the highest selected criteria is/are found.

#### Level A

- Major deployment of Agency resources
- Potential for Category 1
- Environmental Impact
- Extensive media coverage and/or public interest
- Opening of Area Incident Room

#### Level B

- Significant deployment of Agency resources
- Potential for a Category 2 Environmental Impact
- Considerable media and/or public interest

#### Level C

- Limited deployment of Agency resources
- Potential for a Category 3 Environmental Impact
- Generates limited media and/or public interest

#### Level D

- No attendance or deployment of Agency Resources

### Substantiated

If No, the incident is recorded as Unsubstantiated (U) and no Environmental Impact Category is assigned.

If Yes, then an Environmental Impact Category needs to be assigned.

### Environmental protection incidents - Environmental impact

Where an incident falls within the responsibilities of the EP function the impact across all three environmental media, Air, Land and Water is recorded. This involves assigning a Category to each of the media, with the highest selected criteria determining the level of impact for each medium. Where no impact has occurred for a particular media, then the Impact level is recorded as a Category 4.

## Water

### Category 1

- Persistent and/or extensive effects on water quality
- Major damage to aquatic ecosystem
- Closure of a potable abstraction point
- Major impact on amenity value
- Major damage to agriculture/commerce
- Serious impact on Man

### Category 2

- Significant effect on water quality
- Significant damage to aquatic ecosystem
- Non -routine notification of abstractors
- Reduction in amenity value
- Significant damage to agriculture/commerce
- Impact on Man

### Category 3

- Minimal effect on water quality
- Minor damage to local ecosystems
- Amenity value only marginally affected
- Minimal impact on agriculture/commerce

### Category 4

- No impact occurred



## Appendix B

### Definition of pollution incident categories – System used from 1995 - 1998

#### Category 1

A major incident involving one or more of the following:

- (a) potential or actual persistent effect on water quality or aquatic life;
- (b) closure of potable water, industrial or agricultural abstraction necessary;
- (c) extensive fish kill;
- (d) excessive breaches of consent conditions;
- (e) instigation of extensive remedial measures;
- (f) significant adverse effect on amenity value;
- (g) significant adverse effect on site of conservation importance.

#### Category 2

A significant incident involving one or more of the following:

- (a) notification of abstractors necessary;
- (b) significant fish kill;
- (c) readily observable effect on invertebrate life;
- (d) water unfit for stock watering;
- (e) bed of watercourse contaminated;
- (f) amenity value to downstream users reduced by odour or appearance.

#### Category 3

A minor incident resulting in localised environmental impact only. Some of the following may apply:

- (a) notification of abstractors not necessary;
- (b) fish kill of less than 10 fish (species of no particular importance to the affected water);
- (c) no readily observable effect on invertebrate life;
- (d) water not unfit for stock watering;
- (e) bed of watercourse only locally contaminated;
- (f) minimal environmental impact and amenity value only marginally affected.

#### Category 4 (unsubstantiated)

A reported pollution incident that upon investigation proves to be unsubstantiated, that is, no evidence can be found of a pollution incident having occurred.

## Appendix C

Prosecutions relating to pollution incidents that occurred in 1998 (irrespective of the date of hearing).

Region	Prosecutions	Convictions
Anglian	39	38
Midlands	26	24
North East	15	15
North West	35	35
Southern	29	29
South West	44	42
Thames	26	26
Wales	27	27
<b>All regions</b>	<b>241</b>	<b>236</b>

## Appendix D

### Pollution prevention materials

The following pollution prevention publications are available from the agency:

- ☐ PPG1 - General guide to the prevention of pollution of controlled waters
- ☐ PPG2 - Above ground oil storage tanks
- ☐ PPG3 - The use and design of oil separators in surface water drainage systems
- ☐ PPG4 - Disposal of sewage where no mains drainage is available
- ☐ PPG5 - Works in, near or liable to affect watercourses
- ☐ PPG6 - Working at demolition & construction sites
- ☐ PPG7 - Fuelling stations: construction & operation
- ☐ PPG8 - Safe storage & disposal of used oils
- ☐ PPG9 - Pesticides
- ☐ PPG10 - Highway depots
- ☐ PPG11 - Industrial sites
- ☐ PPG12 - Sheep dip
- ☐ PPG13 - The use of high-pressure water & steam cleaners
- ☐ PPG14 - Boats and marinas
- ☐ PPG15 - Retail premises
- ☐ PPG16 - Schools and other educational establishments
- ☐ PPG17 - Dairies and other milk-handling operations
- ☐ PPG18 - Control of spillages and fire fighting run-off
- ☐ PPG19 - Garages and vehicle service centres
- ☐ PPG20 - Dewatering underground ducts and chambers
- ☐ PPG21 - Pollution Incident Response Planning
- ☐ PPG22 - Dealing with spillages on highways
- ☐ PPG23 - Maintenance of structures over water
- ☐ PPG24 - Stables, kennels and catteries
- ☐ PPG25 - Hospitals and health-care establishments
- ☐ Masonry bunds for oil storage tanks
- ☐ Concrete bunds for oil storage tanks
- ☐ The use of air cooled blast-furnace slag as an unbound aggregate in the construction industry
- ☐ River pollution and how to avoid it
- ☐ Chemical pollution and how to avoid it

- ☐ Pollution from your home and how to avoid it
- ☐ Solvent pollution and how to avoid it
- ☐ Silt pollution and how to avoid it
- ☐ Use Your Brain sticker
- ☐ Follow the Oil Care Code
- ☐ Oil Care at Home
- ☐ Oil Care at Work
- ☐ Oil Care on Your Boat
- ☐ Oil Care: Domestic oil storage
- ☐ Industrial Oil Tank sticker
- ☐ Domestic Oil Tank sticker
- ☐ Car Window sticker
- ☐ Wrong connections
- ☐ Farm pollution and how to avoid it
- ☐ Silage pollution and how to avoid it
- ☐ 0800 card
- ☐ Farm Waste Regulations 1991
- ☐ Farm waste management plans
- ☐ Farm waste minimisation
- ☐ Mobile sheep dipping
- ☐ Managing maize
- ☐ Understanding buffer strips
- ☐ Works notices regulations

**To receive any of the above publications, enter the number required in the appropriate box and return this form to us by fax on 0151 604 1222**

**To receive the video packs below please call 08457 337700.**

- ☐ Pollution Prevention Pays (leaflet, poster and video free)
- ☐ Building a Cleaner Future (booklet, poster and video £50 then £10 for further copies)

Name: \_\_\_\_\_

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### ENVIRONMENT AGENCY FLOOD LINE

**0845 988 1188**

### ENVIRONMENT AGENCY EMERGENCY HOTLINE

**0800 80 70 60**



**ENVIRONMENT  
AGENCY**

This report covers the calendar year 1999 and records the pollution incidents occurring in England and Wales. It provides an analysis of substantiated pollution incidents by both source and type of pollutant and gives an indication of their environmental impact. The report also gives details of legal action taken in respect of these incidents and a commentary on how the Environment Agency manages pollution incidents, and pollution prevention initiatives are described.

