NRA-Water Quality 23

WATER POLLUTION INCIDENTS IN ENGLAND AND WALES - 1993

Report of the National Rivers Authority

September 1994

NRA

National Rivers Authority

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EXECUTIVE SUMMARY

1 INTRODUCTION

This report forms the fourth annual analysis of pollution incident statistics in England and Wales. Summary statistics are provided on substantiated incidents that occurred in 1993, including commentary on court actions that took place in respect of these incidents together with details of some of the more notable prosecutions. Pollution is categorised into five fundamental sources: agriculture, industry, sewage and water related, transport and "other". The basic types of incidents are defined as oil, sewage, chemical, organic wastes and "other". Incidents are also categorised according to severity of environmental impact with Category 1 the most severe to relatively minor impact in Category 3. Examples of pollution prevention initiatives carried out during 1993 are described and where discrete data are available, the most important types and sources of pollution are highlighted. This will enable the NRA to utilise current and future resources in the most effective way by targeting notable pollution problem areas.

2 PRINCIPAL FINDINGS OF THE REPORT

2.1 A total of 34,296 incidents were reported in England and Wales during 1993, of which 25,299 (74%) were substantiated; these represent an increase of 8% over the 1992 figures. This increase is in the main due to better detection and reporting and the consequence of a wetter year. Of the substantiated incidents, only 331 (1.3%) were classified as Category 1.

2.2 During 1993 the number of Category 1 incidents fell by 15%, reflecting the NRA's effective pollution prevention and control measures. Approximately one third of these incidents arose from industrial **sources** (34%) whilst sewage and chemical incidents (both 23%) accounted for the greatest proportion by **type.** There was a notable decline in unclassified Category 1 incidents.

2.3 The details of incidents were recorded by both **source** and **type** where possible. Figures for 1992 are in parenthesis. Looking at the details by **source** of the substantiated incidents agriculture accounted for 11% (12%), industry 24% (19%) transport 6% (a new category in this report) and water and sewage related sources accounted for 25% (28%). The remaining 34% could not be classified by source.

2.4 Figures on the **type** of pollution show that organic waste, which is a new category primarily of agricultural effluents, accounted for 12% of substantiated incidents. Oil accounted for 25% (26%), chemicals 8% (6%) and sewage for 25% (26%). The remaining 30% were not classified by type.

2.5 Prosecutions were brought for 286 substantiated pollution incidents and 277 (97%) were successfully convicted. At 1 April 1994 there were still a further 133 cases to be brought before the courts.

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1 INTRODUCTION

1.1 BACKGROUND

This report is the fourth annual analysis of pollution incident statistics for England and Wales issued by the National Rivers Authority. It details the substantiated incidents that occurred in the calendar year 1993, according to both **source** of pollution and **type** of pollutant.

1.2 DEFINITIONS

The NRA uses a common pollution incident classification system throughout its eight regions. This defines three categories of pollution incident based on actual or potential environmental impact: Category 1 (major), 2 (significant) and 3 (minor). Appendix A details the criteria upon which these categories are based. In addition, the criteria formerly jointly agreed by the Water Authorities and the Ministry of Agriculture, Fisheries and Food (MAFF) to define a serious incident with respect to agricultural pollution are included for comparative purposes.

Pollution is categorised into five basic **sources:** agriculture, industry, sewage and water related, transport and "other" sources. In addition, the nature of the pollutant has been categorised into five basic **types:** oil, sewage, chemical, organic wastes and "other". Both source and type categories have been broken down further to provide a more detailed picture of the nature of pollution incidents in England and Wales.

Whilst records are kept of all reported incidents, only substantiated pollution incidents are examined in detail. In all cases, every attempt is made by NRA staff to substantiate those incidents which are reported.

1.3 CURRENT AND FUTURE DEVELOPMENTS

It is important that the NRA deals consistently with pollution incidents and to this end a revised classification scheme has been proposed based on actual or potential environmental impact. The scheme maintains the current three tier categorisation system, but tightens up on the definitions for each category, reducing the scope for subjectivity. Levels of service are defined in terms of dealing with pollution incidents and relate to the actual or potential environmental impact of the incident. It is envisaged that the scheme will be implemented late in 1994.

In the latter half of 1993, the NRA introduced a new national freefone number for the reporting of all environmental incidents, including instances of pollution. The emergency hotline number 0800 80 70 60 is a 24 hour free telephone line which enables the public to report pollution, poaching, flooding or any sign of damage or danger to the water environment. The introduction of such an initiative has made the reporting of incidents by the public much simpler and records indicate an increase in the number of reports received. This will obviously impact on the figures recorded in this and future reports, but the extent to which this accounts for the rise in recorded incidents remains uncertain.

2 POLLUTION MANAGEMENT

For the first time in this report a chapter on pollution management has been introduced. In this chapter the types of challenge faced by NRA operational staff on a daily basis are illustrated by some examples of the pollution incidents they dealt with in 1993. This is followed by a description of the role of pollution prevention work with some examples of the campaigns carried out by NRA staff.

2.1 MAJOR INCIDENTS

NRA staff dealt with 331 major pollution incidents in 1993. The following are just a few examples of the type of incidents which occurred, the actions taken and the lessons learned as a consequence. A selection of photographs illustrating the types of incidents dealt with by NRA staff are shown in Plates 1-7 on pages 29 - 32.

2.1.1 Agricultural

On the 8th September at Sandbach in Cheshire a major pollution incident occurred when 90,000 litres of farm slurry were accidentally pumped to the River Wheelock, a tributary of the River Dane, which is a major trout and course fishery. Pollution control and fisheries staff were on site within an hour and aerators were placed in the River Wheelock above its confluence with the Dane. Levels of dissolved oxygen, pH and ammonia were monitored using the recently deployed Grant/YSI 3800 hand held meter which enabled staff to make the most effective use of the aeration facilities available. The pollution caused the death of about 15,000 fish. However, the rapid response of NRA staff and equipment undoubtedly reduced the impact of the pollution and prevented the total destruction of fish in the river.

In November 1993 distressed fish were noticed in the River Glen, south Lincolnshire, a high quality fishery, between Bourne, South Fen and Surfleet Tidal Sluice. Water from the South Fen is pumped into the River Glen and it was established that this water was of a poor quality, with a very low level of dissolved oxygen due to a polluting discharge from a food processing company and the disturbance of sediment as a result of maintenance work by the Internal Drainage Board. Using sonar equipment NRA fishery staff located fish in the river and water quality staff used this information to install aeration equipment to increase the levels of dissolved oxygen. Whilst several hundred fish died in this incident, it is estimated that between 60-80,000 fish were saved by the prompt action of NRA staff. Following the incident, arrangements were made to regulate the pumping of the South Fen drainage water on a "little and often" basis, thus avoiding any further problems.

2.1.2 Industrial

Chemical Store

Following extreme weather conditions, flooding from the River Cober in Helston, Cornwall, on the 9th June 1993 had a serious effect on an agrochemical store in the town. Although the chemicals were stored within a protective bund wall, this was inundated. The bund was found to be leaking badly and temporary works were carried out by the NRA and the Fire Service using polythene sheeting and sandbags to prevent serious contamination of the river. Over 10,000 litres of water containing a cocktail of weedkillers and other chemicals were removed, using agricultural tankers, for safe disposal. A major pollution incident was averted due to the prompt action and co-operation of all the agencies involved.

In July 1993 an explosion occurred at a chemical fertiliser factory in Shropshire. A 22,000 litre acid storage tank was ruptured and other large storage tanks were put at risk. Fortunately the spill was contained within a bunded area which had been constructed by the company on the recommendation of NRA

pollution control staff following a number of site visits. Although this was a major incident, there was no pollution of the River Severn and serious damage to the water environment was avoided.

2.1.3 Transport

Road

On the evening of the 22 February 1993 a road tanker carrying 22,000 litres of fuel overturned in the centre of Shrewsbury, rupturing one of its tanks and causing 7,000 litres of petrol to enter the sewerage system and consequently the River Severn. Due to the risk from fire the river was not boomed. Instead, the decision was taken to increase the natural rate of evaporation of the petrol by surface agitation using high pressure fire hoses. This was completely successful, with no trace of fuel evident at daybreak the next day. A further dimension to this incident was the effect of the petrol in the foul sewerage system. This caused an explosive atmosphere to develop in a main pumping station 2 miles from the site of the incident. As a consequence the water company had to interrupt the normal pumping regime. By careful management they managed to operate the station intermittently, allowing the sewers to surcharge (thus reducing the explosive atmosphere) before restarting the pumps. This was successful in maintaining sewage flows and resulted in only one short period during which a sewage overflow occurred.

Rail

An incident involving a collision between two rail tankers during a routine shunting operation at Jarrow on the 14th August 1993 resulted in the spillage of 40 tonnes of white diesel. The fuel entered the trackside drainage system from where it ran across a riverside park and into the River Don, a tributary of the Tyne Estuary. It was initially thought that the material spilt was petrol and so clean-up operations were not immediately implemented due to the risk of fire. When it became evident that it was oil then absorbent materials were installed in the river. The oil was visible on 1.5 kilometres of the River Don and on the Tyne Estuary in the vicinity of the confluence. An extensive clean-up and recovery operation was undertaken, which included the excavation of trenches across the park to intercept the oil before it entered the river. A total of 16 tonnes of the oil were subsequently recovered. Biological studies of the fauna of the estuary of the River Don were carried out by NRA staff and at some points large numbers of dead ragworms and other invertebrates were found. There is some concern over the long term impact of the spillage on a newly constructed mudflat for a proposed nature reserve and further surveys will be required.

In this case the procedures for the shunting operation had not been properly observed and the collision and spillage were the consequence of British Rail staff not changing points. They were subsequently convicted and fined £8,000. Extensive environmental damage was avoided because of the pollution prevention measures undertaken by the company.

2.2 POLLUTION PREVENTION

2.2.1 "Working Together" - The Co-operative Approach

The NRA is committed to the prevention of pollution by working together with farmers, industry, water companies and the general public. Wherever possible the NRA adopts a proactive approach to pollution prevention, identifying and dealing with potential problems before pollution occurs. We recognise that we cannot achieve our aim of reducing the number of pollution incidents on our own, and that only by working in partnership with others can we bring about a real improvement in the environment we all share.

2.2.2 Education and Advice

Many of the pollution incidents which occur each year are the result of ignorance of how pollution can occur and how it can be avoided. For example there is a common misapprehension that all "drains" pass to the sewage treatment works and that it is therefore satisfactory to discharge waste liquid to any "drain". This is not the case in most of the country where separate drainage systems are installed and clean (surface) water drains discharge directly to watercourses or soakaways.

The NRA therefore sees 'education' in its broadest sense as a vital part of its pollution prevention role. One particular area which is to be targeted is oil pollution, which continues to be the single most common cause of complaint. A number of national and regional initiatives are planned, working with oil companies, retail companies and local authorities to increase awareness of the risk of oil pollution in both the industrial and commercial fields and with the general public. As part of this initiative, the NRA is encouraging the provision and use of oil banks for the recycling of old engine oil. All too frequently this is tipped into surface water drains, resulting in pollution problems and the waste of a valuable resource.

Another area of concern is the issue of pollution with persistent plastics and similar materials, for example condoms, sanitary towels and nappies from sewer overflows and outfalls. Here the NRA, in collaboration with the Department of the Environment and the Women's Environmental Network, are working with the Water Service Companies to encourage their customers to help. The intention is to launch a "Bag it and Bin it" campaign to encourage customers to dispose of these wastes to the dustbin and not by flushing. This attempt to reduce the problem at source is in addition to any investment which may be made to correct unsatisfactory discharges.

Education is not only a matter of informing those outside the NRA - it is important that our staff are trained and equipped to carry out their pollution prevention role. To this end a number of initiatives are planned or have taken place - for example a two day pollution prevention seminar was held in Anglian Region early in 1994 and "on the farm" training sessions were conducted in Thames Region.

2.2.3 Pollution Prevention Activities

Pollution control staff have continued to carry out proactive pollution prevention visits to industrial, agricultural and commercial premises to identify risks and ways of reducing the threat they pose to the water environment. A number of pollution prevention campaigns have also been carried out or are planned. The problem of mis-connection of foul drainage to surface water systems has been dealt with in a number of Regions, including North West and Northumbria & Yorkshire.

Campaigns of farm visits have continued, notably in Welsh and South Western Regions, and in Severn-Trent efforts have been focused on the protection of drinking water abstractions. In Thames Region the construction and demolition industry has been the subject of a direct mailing campaign as a result of the significant number of pollution incidents attributed to it. In all Regions special attention is being paid to the NRA's own sites in order to ensure that they too are complying with the best pollution prevention practice.

2.2.4 Publications

A number of new pollution prevention guidance notes have been published which relate to specific types of sites, such as schools, retail stores and small industrial units and it is intended that the range of sites covered should be extended. These guidelines provide clear, easy to follow advice which can reduce the risk of pollution occurring from a site. In addition, a number of leaflets highlighting specific problem areas have also been published, including one dealing with pollution from domestic premises which account for nearly 10% of all incidents. These leaflets and guidance notes are freely available from the NRA and a list

of these is given in Appendix D. A short video dealing with pollution risks on small to medium sized industrial sites has been produced and will be available from the NRA from September 1994.

2.2.5 Planning

All of the preceding sections describe aims to prevent accidental pollution incidents. However, much can be done to reduce environmental damage by other means, and planning has a vital role. Over the last year the NRA has revised its standard planning responses to local authorities to make them more effective and is endeavouring to ensure that policies for the protection of the water environment are built into local authority structure plans.

2.2.6 Protection Zones

The Water Resources Act 1991 permits the designation of water protection zones and nitrate sensitive areas within which certain activities (such as chemical storage or fertiliser use) can be regulated or prohibited. A proposal for a protection zone covering the River Dee catchment in Welsh Region was the subject of public consultation early in 1994 following a number of incidents which have affected potable water supplies drawn from the river. A special risk assessment computer software package has been developed for use in association with this. A number of nitrate vulnerable zones covering both surface and groundwater catchments were proposed by the Ministry of Agriculture, Fisheries and Food in May 1994.

2.2.7 The Future

It is clear the NRA cannot rest from the struggle to bring about a reduction in the number of pollution incidents which have continued to increase despite efforts so far. Pollution prevention has a long "pay-back" time and requires a long-term commitment. It is therefore essential that the NRA and the proposed Environmental Agency plan to maintain the efforts to work with industry, agriculture and the population in general to prevent pollution and to make a difference to our rivers and groundwaters.

3 ANALYSIS OF INCIDENTS

3.1 ALL INCIDENTS

3.1.1 Reported Incidents

During the calendar year of 1993, a total of 34,296 pollution incidents were reported to the NRA, an increase of 8% on 1992. In all cases, every effort is made to substantiate reports received from the public, to filter out multiple reports of the same incident and to identify the cause and nature of the incident. In 1993, 25,299 incidents (74% of those reported) were substantiated as having occurred. Of these, only 331 incidents were classified as Category 1.

To maintain continuity with previous reports, both reported and substantiated incidents for 1990-1993 are illustrated in Figures 1 and 2; the former illustrates the trend since 1984 for England and Wales and the latter the trend since 1984 by NRA Region. The remainder of the report analyses only those incidents that were substantiated.

3.1.2 Regional Distribution

Since publication of the 1992 report, Yorkshire and Northumbria Regions have merged, as have Wessex and South West Regions to give the NRA eight Regions in total.

The regional distribution of the 25,299 substantiated pollution incidents that occurred in 1993 is illustrated in Figure 3. The greatest proportion (19%) of these was seen in Severn-Trent Region and the smallest (5%) was seen in Southern Region. This distribution does not necessarily reflect the relative impact of pollution on controlled waters across England and Wales, which depends on both the nature of the pollutant(s) and the receiving watercourse together with the size, nature and population density of the different regions. Table 1 gives a regional breakdown by incident category and includes figures for unsubstantiated incidents.

Table 1 - Total number of reported pollution incidents in 1993 by incident category

Region	Substantiated			Total Substantiated	Unsubstantiated
	Category 1	Category 2	Category 3		
Anglian	10	619	1,996	2,625	879
Northumbria & Yorkshire	61	578	3,003	3,642	1,073
North West	77	1,175	2,404	3,656	1,186
Severn-Trent	93	2,162	2,621	4,876	1,813
Southern	7	78	1,270	1,355	498
South Western	48	517	3,564	4,129	1,013
Thames	5	180	1,886	2,071	1,467
Welsh	30	1,459	1,456	2,945	1,068
TOTAL	**331**	**6,768**	**18,200**	**25,299**	**8,997**

3.1.3 Distribution by Source of Pollution

Pollution sources (Figure 4a) have been assigned to five basic categories: agriculture, industrial, sewage and water related, transport and "other" sources. Any incidents that could not be attributed to the first four sources are categorised as "other" pollution events; these include pollution arising from hospitals, domestic/residential premises, schools and hotels. Of the four identified pollution sources (Table 2) the greatest proportion (25%) of incidents were related to water and sewage sources, closely followed by incidents arising from industrial sources (24%). The least number of incidents (6%) arose from transport related sources, whilst agriculture accounted for 11% of incident sources. The largest proportion (34%) of incidents could not be categorised into any of the identified sources and as such fell into the "other" category.

3.1.4 Distribution by Type of Pollutant

Pollutant types have been categorised into four groupings of oil, sewage, chemicals and organic wastes, together with an "other" category for those incidents where it was not possible to classify the pollutant. This last category includes inert suspended solids, vehicle washings, foam, litter and many other contaminants which are not easily defined. The greatest proportion (Figure 5a) of incidents that could be defined by type of pollutant were oil and sewage pollution incidents (both 25%), followed by organic wastes (12%) and lastly chemicals (8%). Thirty percent of incidents could not be attributed to any of these pollutant types and were therefore unclassified, falling into the "other" category.

Figure 1 - Total number of pollution incidents in England and Wales, 1984 - 1993

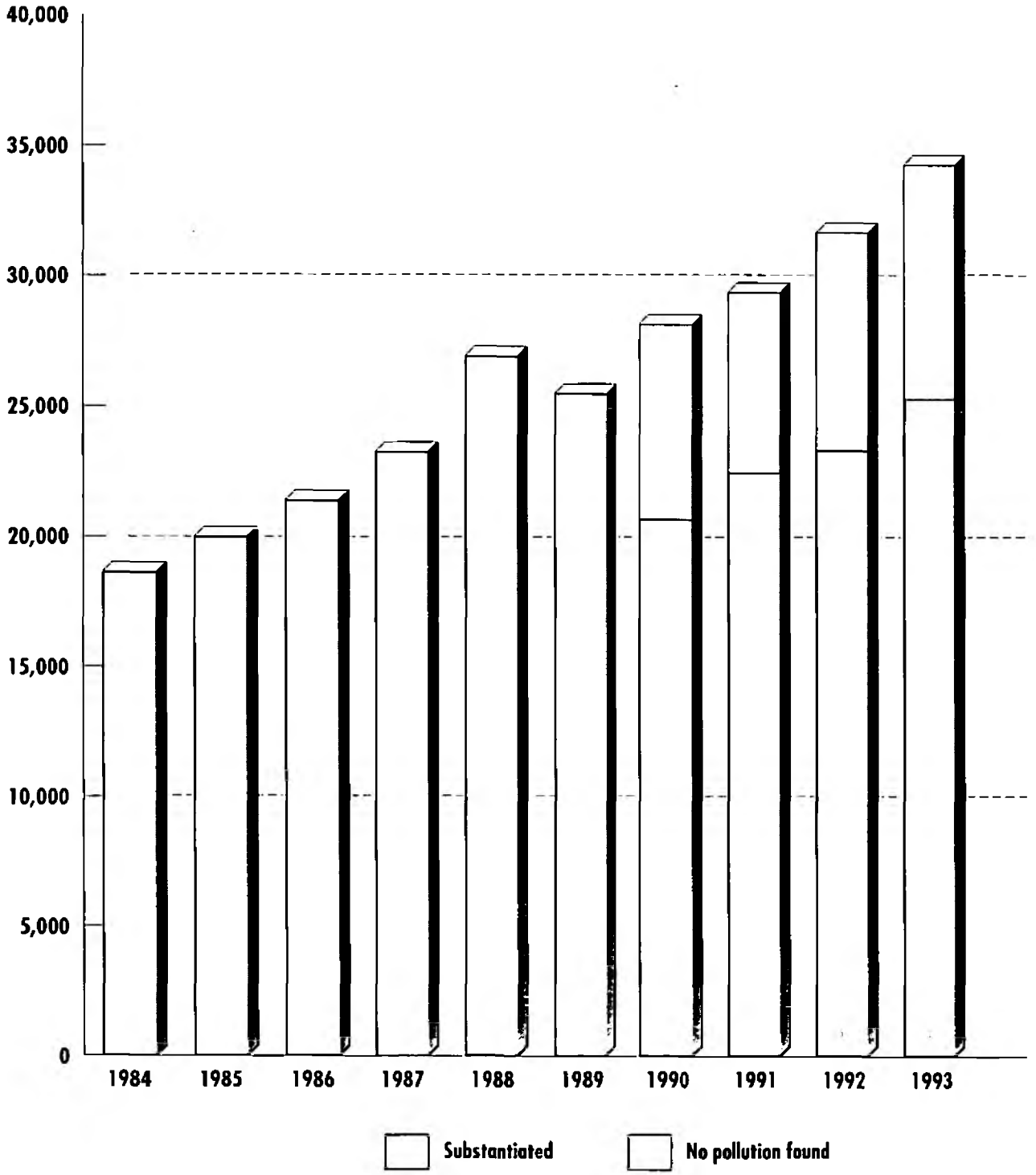


Figure 2 - Total number of pollution incidents by NRA Region, 1984 - 1993

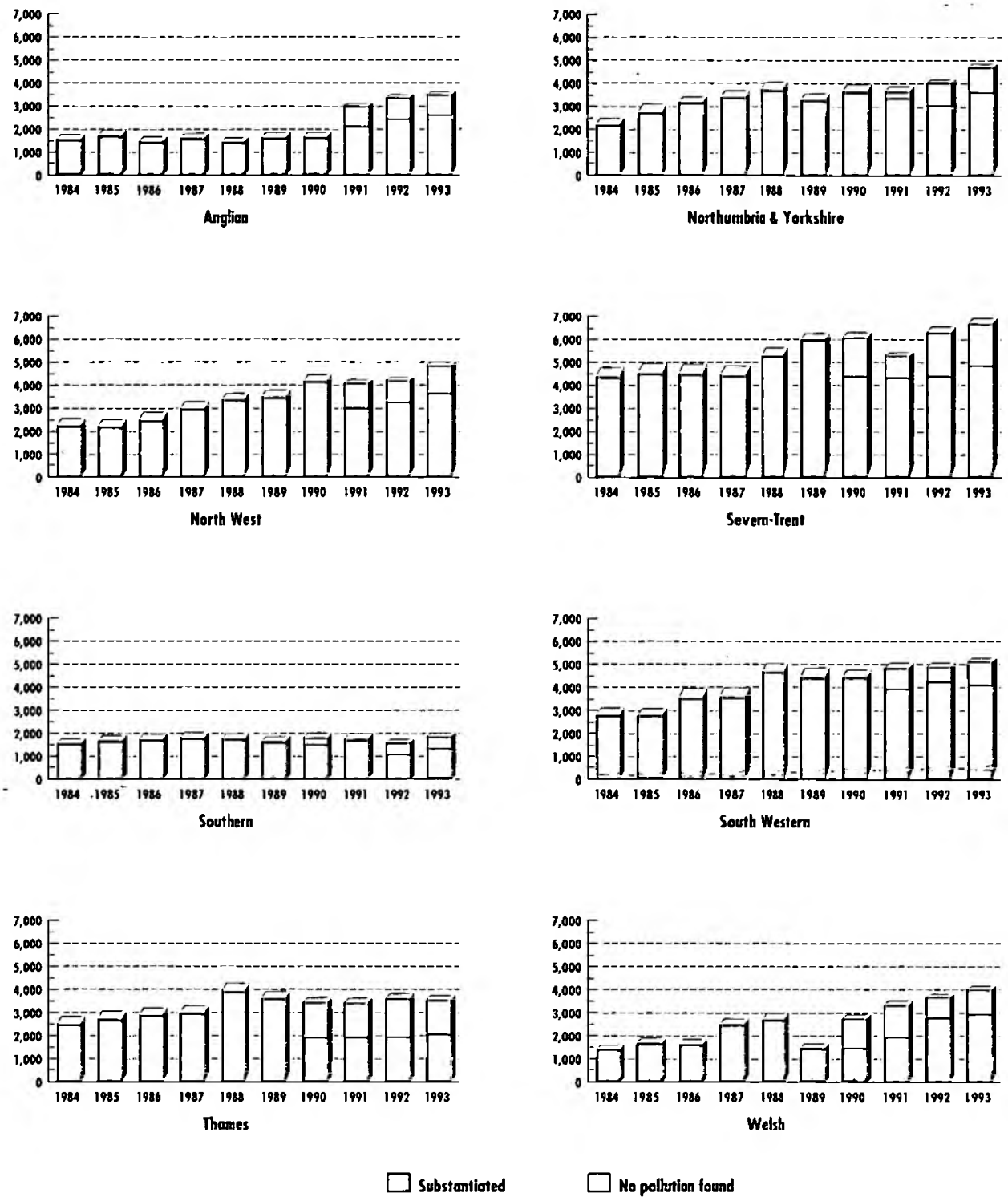
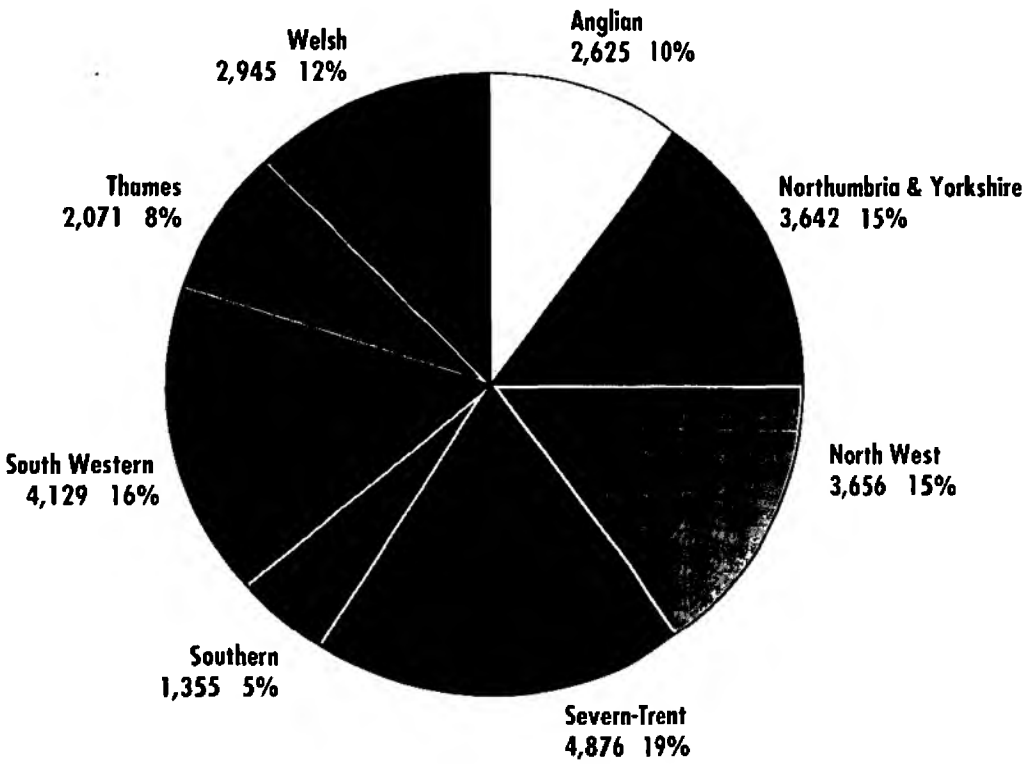


Figure 3 - Total number of substantiated pollution incidents by NRA Region, 1993



Total: 25,299

Figure 4 - Distribution of substantiated pollution incidents by source, 1993

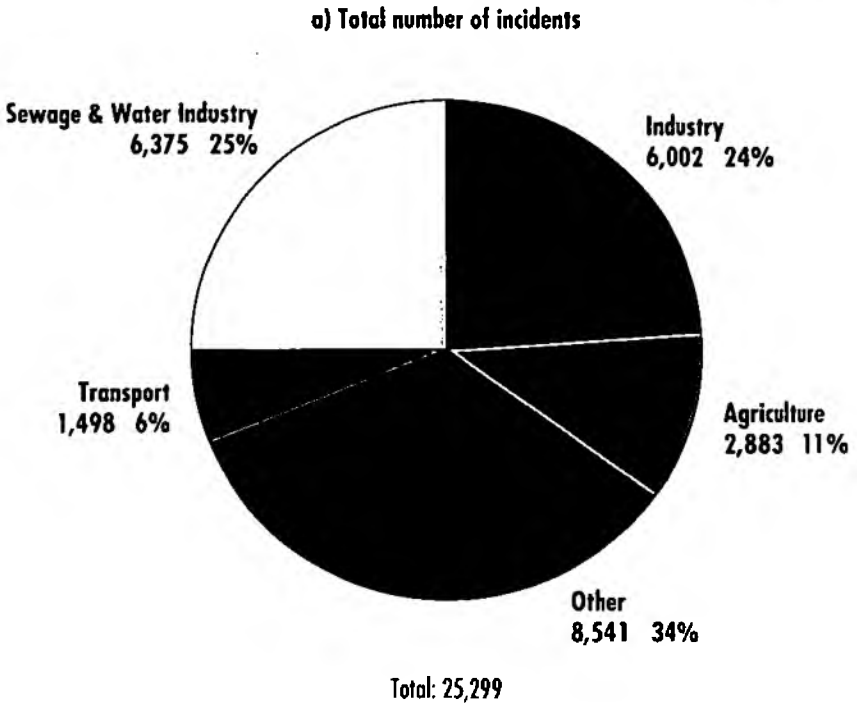
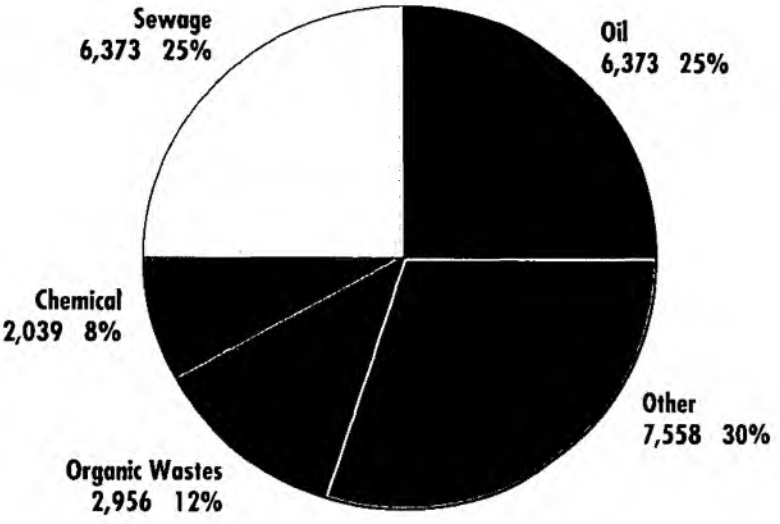


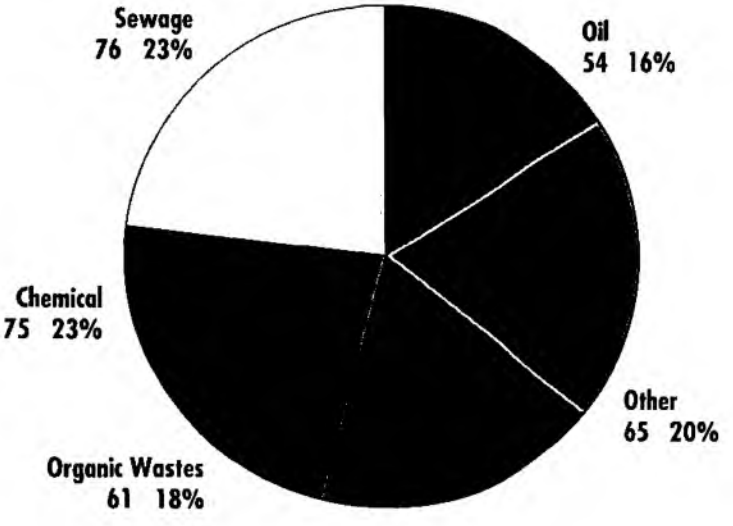
Figure 5 - Distribution of substantiated pollution incidents by type of pollutant, 1993

a) Total number of incidents



Total: 25,299

b) Category 1 incidents only



Total: 331

Table 2 Total number of substantiated pollution incidents in 1993 by pollution source category

Region	Agricultural	Industrial	Sewage & Water	Transport	Other	Total	Percent
Anglian	356	601	586	99	983	2,625	10
Northumbria & Yorkshire	148	1,092	726	146	1,530	3,642	15
North West	403	1,335	1,066	66	786	3,656	15
Severn-Trent	391	727	1,327	202	2,229	4,876	19
Southern	68	203	227	173	684	1,355	5
South Western	943	767	1,124	403	892	4,129	16
Thames	132	397	421	192	929	2,071	8
Welsh	442	880	898	217	508	2,945	12
TOTAL	**2,883**	**6,002**	**6,375**	**1,498**	**8,541**	**25,299**	**100**
Percent	11	24	25	6	34	100	

Table 3 Total number of substantiated pollution incidents in 1993 by type of pollutant

Region	Organic Wastes	Oil	Sewage	Chemicals	Other	Total	Percent
Anglian	329	961	586	198	551	2,625	10
Northumbria & Yorkshire	320	597	851	410	1,464	3,642	15
North West	398	806	1,066	568	818	3,656	15
Severn-Trent	381	1,493	1,327	281	1,394	4,876	19
Southern	101	469	215	100	470	1,355	5
South Western	848	661	1,024	145	1,451	4,129	16
Thames	102	896	468	172	433	2,071	8
Welsh	477	490	836	165	977	2,945	12
TOTAL	**2,956**	**6,373**	**6,373**	**2,039**	**7,558**	**25,299**	**100**
Percent	12	25	25	8	30	100	

Table 4 Total number of Category 1 (Major) substantiated pollution incidents by pollution source category, 1992 and 1993

Region	Agriculture		Industrial		Sewage & Water		Transport	Other		Total		Percent	
	1992	1993	1992	1993	1992	1993	1993	1992	1993	1992	1993	1992	1993
Anglian	3	0	6	6	1	1	0	8	3	18	10	5	3
Northumbria & Yorkshire	6	7	24	24	18	19	0	12	11	60	61	15	18
North West	10	11	9	26	19	25	3	23	12	61	77	16	23
Severn-Trent	17	15	43	29	15	16	6	76	27	151	93	39	28
Southern	1	0	1	3	4	0	1	1	3	7	7	2	2
South Western	20	24	11	12	16	5	4	12	3	59	48	15	15
Thames	0	2	3	1	1	0	0	0	2	4	5	1	2
Welsh	10	4	5	10	5	9	2	8	5	28	30	7	9
TOTAL	**67**	**63**	**102**	**111**	**79**	**75**	**16**	**140**	**66**	**388**	**331**	**100**	**100**
Percent	17	19	26	33	21	23	5	36	20	100	100		

Table 5 Total number of Category 1 (Major) substantiated pollution incidents by type of pollutant, 1992 and 1993

Region	Organic Wastes		Oil		Sewage		Chemical		Other		Total		Percent	
	1992	1993	1992	1993	1992	1993	1992	1993	1992	1993	1992	1993	1992	1993
Anglian	1	0	3	3	1	1	7	3	6	3	18	10	5	3
Northumbria & Yorkshire	5	9	7	6	14	21	3	18	31	7	60	61	15	18
North West	10	11	9	7	19	25	6	20	17	14	61	77	16	23
Severn-Trent	17	13	39	26	15	16	21	23	59	15	151	93	39	28
Southern	1	0	1	3	4	0	0	2	1	2	7	7	2	2
South Western	20	24	8	5	13	5	5	4	13	10	59	48	15	15
Thames	0	0	2	2	0	0	2	1	0	2	4	5	1	2
Welsh	10	4	1	2	5	8	5	4	7	12	28	30	7	9
TOTAL	**64**	**61**	**70**	**54**	**71**	**76**	**49**	**75**	**134**	**65**	**388**	**331**	**100**	**100**
Percent	16	18	18	16	18	23	13	23	35	20	100	100		

3.1.5 Category 1 Incidents

Of the 25,299 pollution incidents substantiated by the NRA during 1993, only 331 (just over 1%) were classified as Category 1 incidents. This represents a substantial decrease (15%) in Category 1 incidents compared with the number recorded in 1992 and reflects not only the increased awareness associated with pollution problems, but also the effectiveness of the pollution prevention and control measures carried out by the NRA.

The largest proportion (34%) of Category 1 incidents in 1993 (Table 4) arose from industrial sources, with sewage and water related incidents (23%), agricultural sources (19%) and transport sources (5%) comprising the remainder of those that could be identified. Only 20% of incidents arose from sources that could not be categorised into any of the above. This is a decrease of 44% compared with the number classified as "other" in 1992.

The majority of types of Category 1 incidents in 1993 were attributable to both sewage (23%) or chemical (23%) pollutants, with pollution from organic wastes (18%) and oil (16%) also of significance. The proportion of incidents which could not be categorised has fallen from 35% in 1992 to 19% in 1993.

The decrease in "other" category by both source and type of pollutant reflects not only the determination of the NRA to correctly classify incidents, but moreover, the efforts made to identify both the nature and source of all substantiated pollution incidents.

4 ANALYSIS OF INCIDENTS BY SOURCE

4.1 AGRICULTURAL POLLUTION INCIDENTS

4.1.1 Total Incidents

In 1993, a total of 2,883 substantiated pollution incidents were found to arise from agricultural sources accounting for 11% of all incidents.

4.1.2 Sources of Agricultural Pollution

The distribution of agricultural incidents by source is given in Figure 6. The greatest proportion of the 2,883 substantiated agricultural incidents was related to cattle, with dairy cattle accounting for 35% and beef cattle 32% of all incidents. Pollution from pigs accounted for 7% of agricultural sources, with poultry and arable sources each comprising 2% of the total.

4.1.3 Regional Distribution

The regional distribution of agricultural pollution incidents is shown in Figure 7. The largest share of agricultural incidents occured in South Western Region (33%) where incidents from dairy cattle accounted for 69% of the total. Similarly in Severn-Trent (78%), Welsh (71%) and North West Region (66%), the majority of agricultural incidents originated from cattle farming. In Anglian Region incidents arising from pigs and poultry farming accounted for 48% and 49% of the national totals respectively. This clearly demonstrates the variation in agricultural activity and intensity of farming operations across the country.

4.1.4 Historical Trends

In contrast to previous years, the actual source of agricultural pollution incidents is reported in addition to the type of pollution (see section 5.1). Table 6 shows the number of agricultural pollution incidents by NRA Region for the years 1988 to 1993. In comparison with 1992, the total number of substantiated pollution incidents in 1993 has increased slightly. However, despite well above average rainfall over much of the country during 1993, agricultural incidents (and in particular major incidents) remained broadly at the same level as in drier years. Regionally, the largest increases were seen in Anglian and Severn-Trent Regions, 26% and 22% respectively, whilst the biggest decrease was found in Northumbria & Yorkshire Region (36%). In a number of Regions there has been an increase in recent years in incidents associated with run-off from land due to poor management of irrigation systems and storage lagoons. As a proportion of total substantiated incidents, those attributable to agriculture have fallen from 12% to 11%.

4.1.5 Category 1 Incidents

Category 1 pollution incidents attributed to agriculture continued to decline and have fallen from 99 in 1991 to 63 in 1993, when they accounted for 19% of all such incidents. The general decrease since 1988 also reflects the change to the NRA classification of Category 1 incidents from the MAFF definition of a "serious" incident; many of these are now defined as Category 2. By Region the largest number of Category 1 incidents in 1993 (Table 6) occurred in South Western Region (38%), whilst neither Anglian nor Southern Region had any major agricultural pollution incidents. By specific source, dairy cattle (52%) made up the vast majority of Category 1 pollutions, with beef cattle accounting for 30%. This pattern reflects the national trend in incidents from agricultural sources.

Table 6 Total farm pollution incidents by NRA Region, 1988 - 1993
(Data for 1989 from NRA/MAFF annual farm waste reports; prior to 1989 from WA/MAFF reports).
(R=reported; S=serious; M = NRA Category 1, i.e. major; Sub = Substantiated)

NRA Region	1988		1989		1990		1991		1992		1993	
	R	S	R	S	R	S	Sub	M	Sub	M	Sub	M
Anglian	205	31	204	23	179	-	212	3	283	3	356	0
Northumbria & Yorkshire	411	52	332	29	370	45	343	22	231	6	148	7
North West	841	125	468	89	630	140	469	10	417	10	403	11
Severn-Trent	625	77	431	44	271	46	402	27	320	17	391	15
Southern	95	17	80	13	84	12	93	3	71	1	68	0
South Western	1,237	490	895	250	1,008	222	936	28	911	20	943	24
Thames	160	36	125	7	58	9	78	2	91	0	132	2
Welsh	567	112	354	67	547	134	421	4	446	10	442	4
Total	**4,141**	**940**	**2,889**	**522**	**3,147**	**608**	**2,954**	**99**	**2,770**	**67**	**2,883**	**63**

Figure 6 - Agricultural pollution incidents by source, 1993

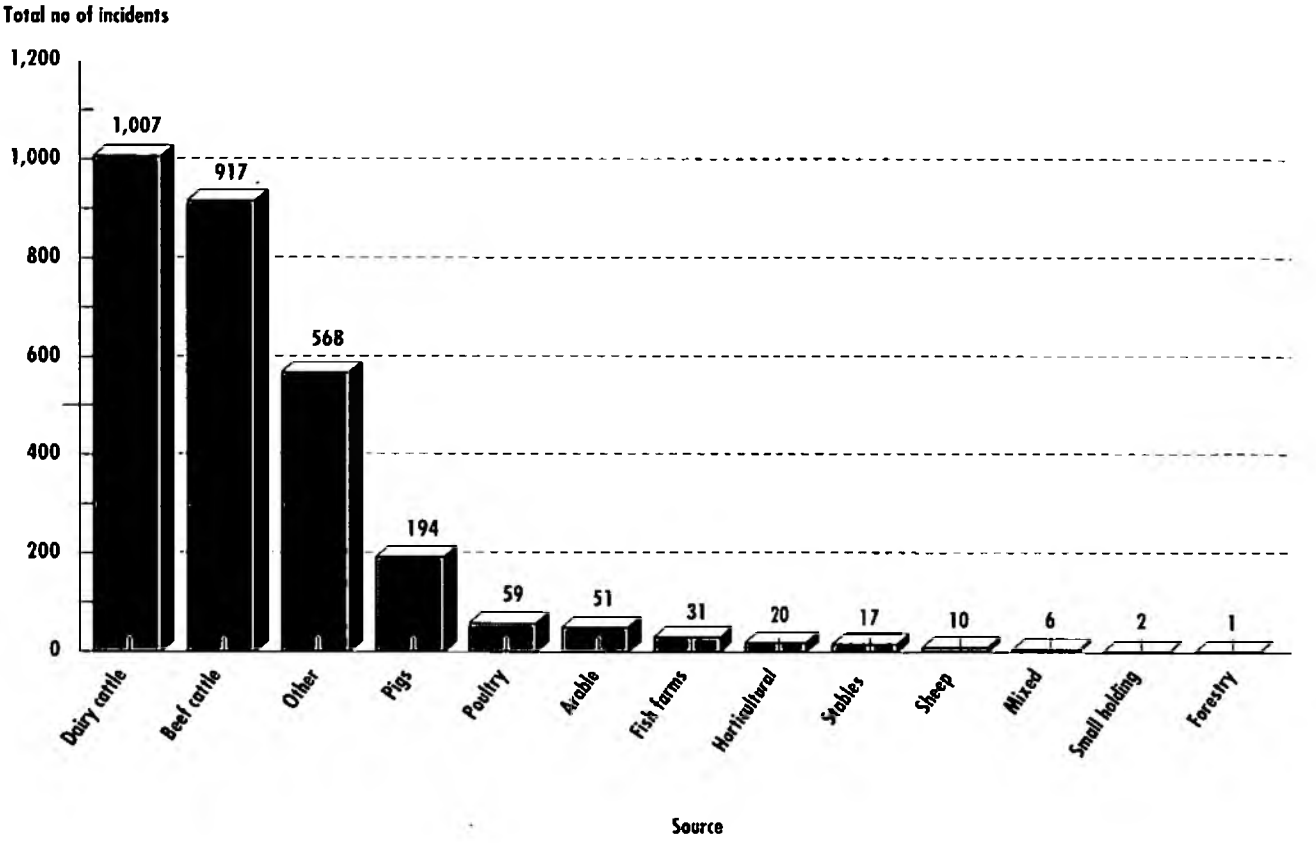
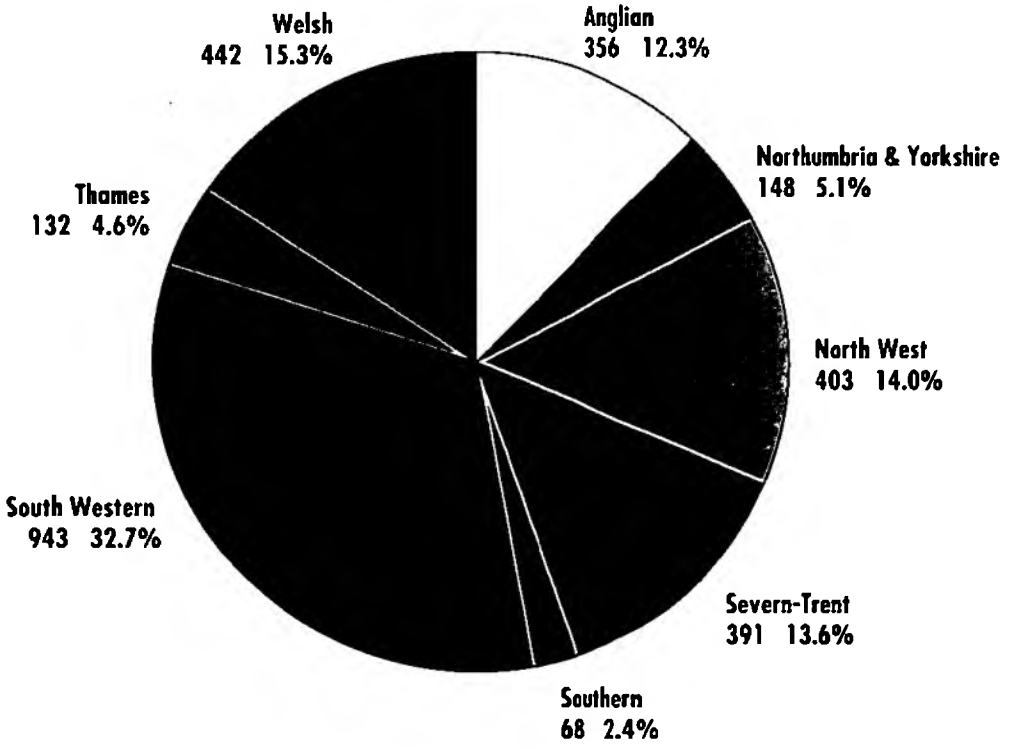


Figure 7 - Total substantiated agricultural pollution incidents by NRA Region, 1993



Total: 2,883

4.2 INDUSTRIAL POLLUTION INCIDENTS

4.2.1 Total Incidents

A total of 6,002 pollution incidents from industrial sources were substantiated in 1993, 24% of the total.

4.2.2 Sources of Industrial Pollution

Figure 8 illustrates the general pattern of substantiated industrial incidents by source for 1993. Almost half of these incidents (47%) could not be specifically defined and consequently were designated as "unclassified". This aside, substantiated incidents of pollution from the oil industry comprised the largest source (21%). This category, however, reflects not only incidents arising from the oil industry, but due to difficulties of classification in various Regions includes, in some cases, incidents of oil pollution arising from industry. Other important sources arose from the chemical industry (10%), construction industry (6%), landfill/waste disposal (6%), mining (4%) and the food industries (2%). In contrast, incidents arising from fuelling stations, power generation and the metal and textile industries in total comprised less than 1% of the categorised industrial incidents.

4.2.3 Regional Distribution

The regional distribution of substantiated industrial pollution incidents is given in Figure 9. As expected, the largest proportion of industrial incidents occurred in the more heavily industrialised areas of the country, notably North West Region (22%) and Northumbria & Yorkshire Region (18%). The least number of incidents attributable to industry occurred at the opposite end of the country in Thames (7%) and Southern (3%) Regions. Of those incidents attributable to the chemical industry the majority occurred in Northumbria & Yorkshire (90%). In both this Region (35%) and North West Region (63%), a large proportion of incidents were also attributable to oil. Incidents from landfill/waste disposal and the construction industry accounted for 23% and 22% respectively of the Welsh Region total, whilst almost half of the incidents nationally arising from the food industry occured in Thames Region (47%).

4.2.4 Historical Trends

As mentioned previously, the breakdown of incidents by source includes, for some Regions, incidents which involved oil from industry. This is a function of the way in which each of the Regions record their incidents. As a consequence, the number of pollution incidents attributable to the oil industry appears to have increased substantially. There has, however, been a very real increase (33%) in the total number of industrial pollution incidents compared with 1992. This increase is reflected in all but Southern Region where there was a 14% decline in incidents from industrial sources compared to 1992. The greatest increase, including oil from industry incidents, occurred in North West Region (79% increase on 1992), with Northumbria & Yorkshire Region showing a 24% increase in incidents from industry. (Table 7).

4.2.5 Category 1 Incidents

Of the 331 substantiated Category 1 pollution incidents 111 (34%) of these were classified as arising from industrial sources (Figure 4b), an increase of 9% on 1992. As a percentage of all substantiated industrial incidents, Category 1 events represent only 2%. On a regional scale, the majority of Category 1 industrial incidents were found in Severn-Trent (26%), North West (23%) and Northumbria & Yorkshire (22%) Regions. Category 1 incidents from the chemical industry comprised 20% of the total, whilst 12% were attributable to the oil industry.

Table 7 - Total reported industrial pollution incidents by NRA Region, 1987-1993
(Data up to 1988 from DoE Digest of Environmental Pollution and Water Statistics 1988 provided by previous Water Authorities)

NRA Region	1987	1988	1990	1991*	1992*a	1993*a
Anglian	180	169	213	194	584	601
Northumbria & Yorkshire	579	686	543	446	827	1,092
North West	336	338	267	336	279	1,335
Severn-Trent	785	1,108	350	608	715	727
Southern	181	182	164	168	236	203
South Western	304	501	742a	412	653	767
Thames	190	323	385	211	351	397
Welsh	237	353	138	428	864	880
Total	**2,792**	**3,660**	**2,802**	**2,803**	**4,509**	**6,002**

* Substantiated Incidents

a Includes some oil based incidents

Figure 8 - Substantiated industrial pollution incidents by source, where classified, 1993

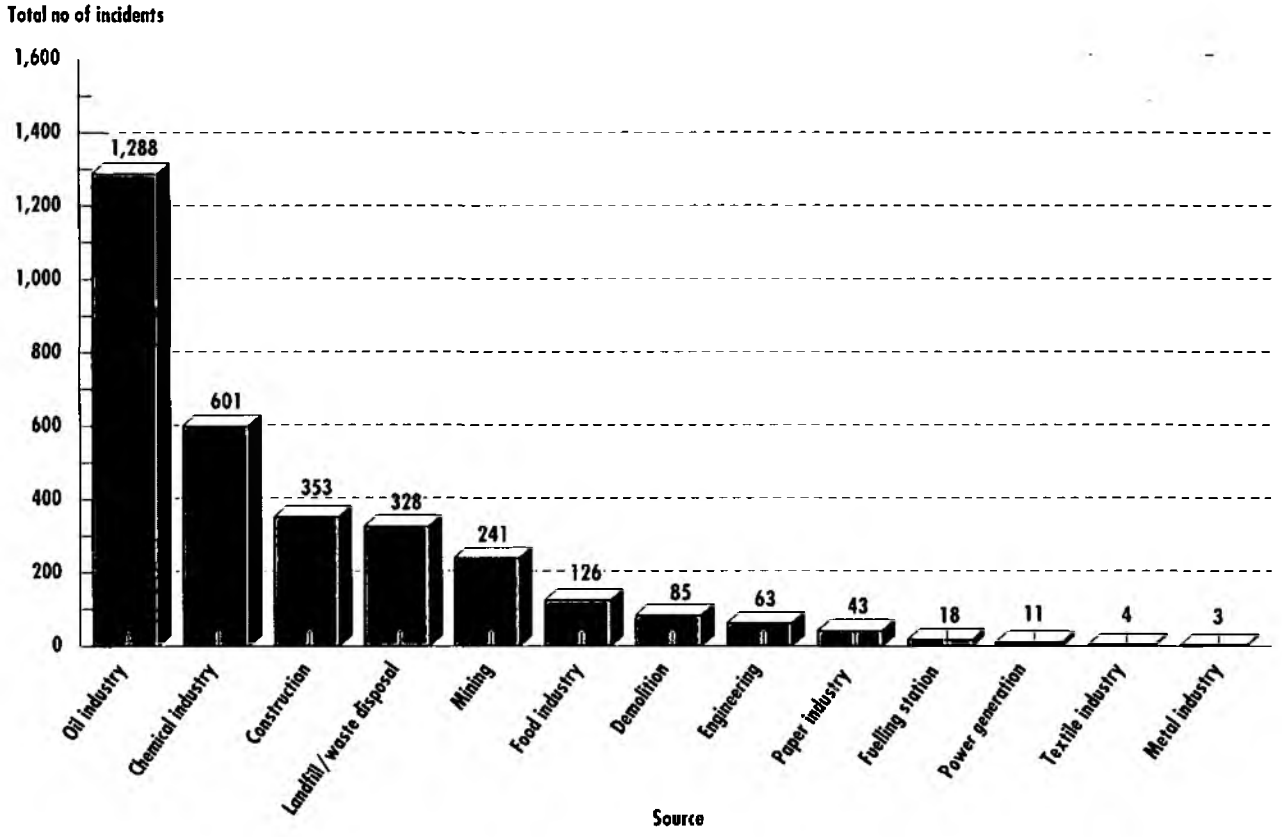
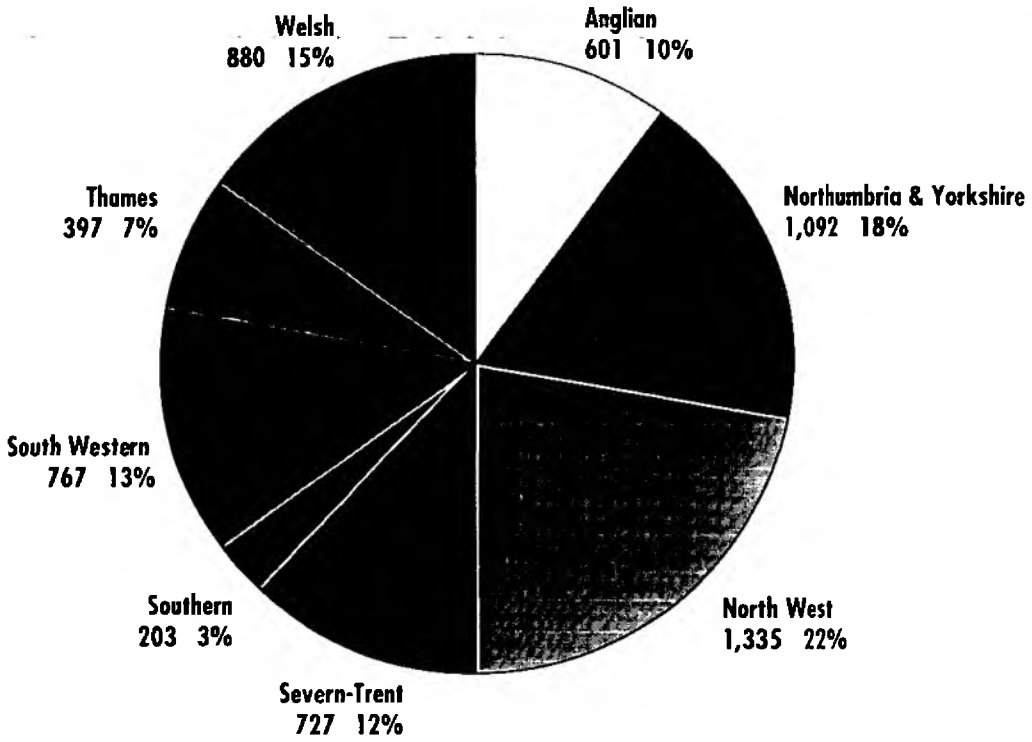


Figure 9 - Total substantiated industrial pollution incidents by NRA Region, 1993



Total: 6,002

4.3 SEWAGE & WATER INDUSTRY RELATED POLLUTION INCIDENTS

4.3.1 Total Incidents

There were 6,375 substantiated sewage and water related pollution incidents during 1993 accounting for 25% of the national total.

4.3.2 Sources of Sewage and Water Industry related incidents

Figure 10 illustrates the distribution of sewage and water related incidents by source for 1993. In common with the data for 1992, Water Service Company (WSc) combined sewer overflows (CSOs) accounted for the greatest proportion (21%) of all sewage and water related incidents, suggesting that instances of poor sewerage infrastructure and inadequate capacity exist throughout England and Wales. Other important sources included WSc surface water outfalls (SWO, 16%), WSc foul sewer systems (15%) and both private (11%) and WSc sewage treatment works (STW, 10%).

4.3.3 Regional Distribution

The distribution of substantiated sewage and water related pollution incidents by Region is shown in Figure 11. The largest number of incidents attributed to this source were found in Severn-Trent (21%), South Western (18%) and North West (17%) Regions. Southern Region accounted for only 4% of all sewage and water related incidents, the majority of which were attributable to WSc combined sewer overflows (47% of the Regional total for this source). Similarly, 57% of Northumbria & Yorkshire Region's sewage and water related incidents originated from WSc combined sewer overflows. In Severn-Trent Region incidents arising from WSc surface water outfalls accounted for 45% of the national total, whilst 60% of all WSc foul sewer incidents occured in North West Region.

4.3.4 Historical Trends

Table 8 gives the figures for the regional distribution of sewage and water related pollution incidents from 1987 to 1993. In comparison with 1992, the national figure for 1993 has fallen slightly, by less than 1%. The greatest decline in the number of sewage and water related incidents was seen in Southern Region (49%), with Northumbria & Yorkshire and Anglian Regions falling by 31% and 11% respectively. Increases in the number of substantiated incidents were seen in all the other Regions, the largest increase in Severn-Trent Region (38%).

4.3.5 Category 1 Incidents

Of the total number of sewage and water related incidents, only 1.2% (75) were classified as Category 1 incidents (Table 4). This figure represents 23% of all substantiated Category 1 incidents in 1993, a decrease of 15% compared to 1992. Regionally, 33% of the Category 1 incidents were recorded in North West Region, 25% in Northumbria & Yorkshire Region and 21% in Severn-Trent Region. The majority of Category 1 incidents were attributable to WSc sewage treatment works (32%), WSc combined sewer overflows (23%) and WSc foul sewer systems (20%).

Plate 1 - Effects of phosphoric acid tank explosion,
NRA Severn-Trent Region

Plate 2 - Derailed train cars, NRA Northumbria & Yorkshire Region
Car carrying Shell logo has been punctured on impact with buffer of car in foreground

Inset - Close up of puncture caused by buffer of forward tank

Plate 3 - Oil boom deployed to contain oil, NRA Northumbria & Yorkshire Region
Oil was subsequently vacuumed from river surface behind boom

Plate 4 - Oil present at Jarrow Slake, NRA Northumbria & Yorkshire Region

Plate 5 - Interception trenches constructed to catch oil in ground, NRA Northumbria & Yorkshire Region

Plate 6 - Slurry pollution incident on River Wheelock, NRA North West Region

Plate 7 - Pollution from foul sewer on Nant Cylla caused by vandalism, NRA Welsh Region

Table 8 - Total sewage and water industry related incidents by NRA Region, 1987-1990 plus substantiated incidents for 1991 to 1993
(Data up to 1988 from DoE Digest of Environmental Pollution and Water Statistics 1988 and 1989)

NRA Region	1987	1988	1990	1991*	1992*	1993*
Anglian	381	373	362	570	657	586
Northumbria & Yorkshire	756	732	1,214	1,220	1,055	726
North West	460	614	968	986	1,051	1,066
Severn-Trent	880	772	424	1,329	961	1,327
Southern	320	345	487	376	446	227
South Western	556	656	874	925	1,019	1,124
Thames	423	610	765	416	373	421
Welsh	402	476	717	525	858	898
Total	**4,178**	**4,578**	**5,811**	**6,347**	**6,420**	**6,375**

* Substantiated Incidents

Figure 10 - Distribution of sewage and water related pollution incidents by source, 1993

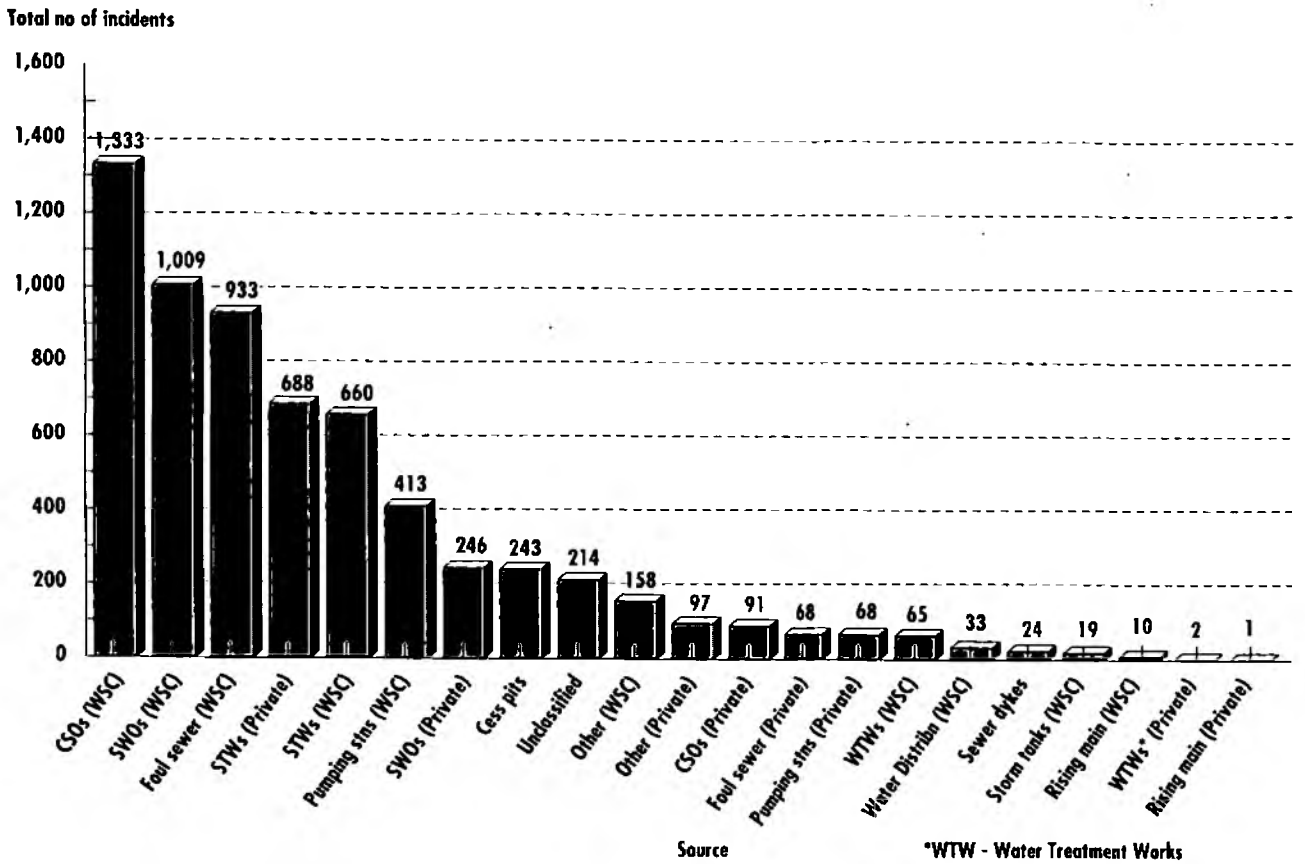
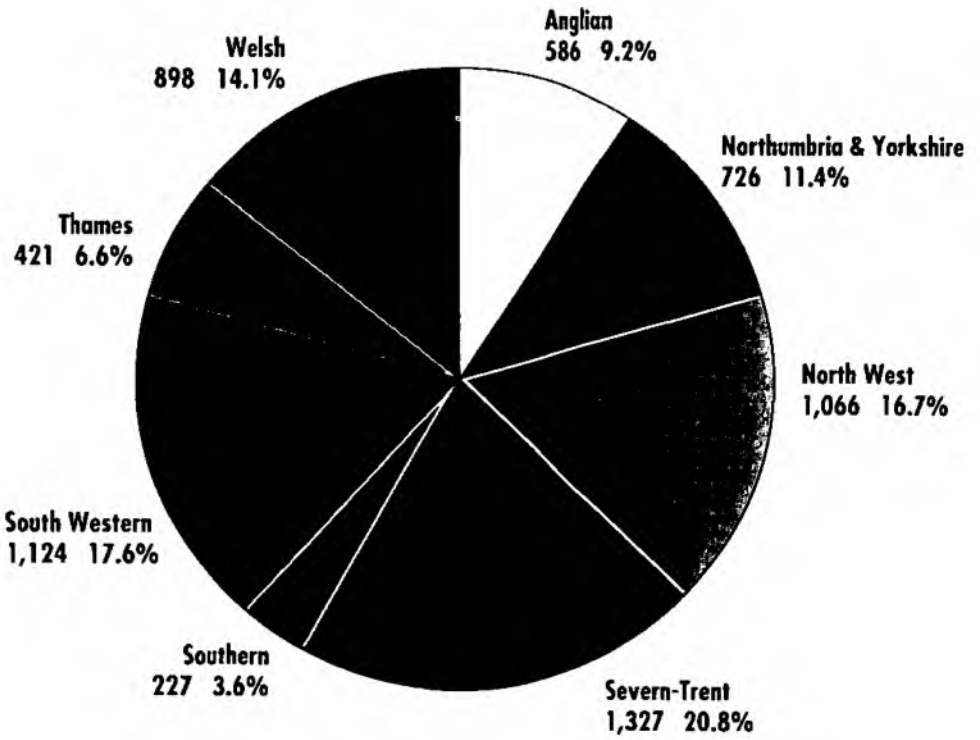


Figure 11 - Total substantiated sewage and water industry related pollution incidents by NRA Region, 1993



Total: 6,375

4.4 TRANSPORT POLLUTION INCIDENTS

4.4.1 Total Incidents

A total of 1,498 transport related pollution incidents were substantiated in 1993, 6% of the national total.

4.4.2 Sources of Transport related incidents

The distribution of transport incidents by source is shown in Figure 12. Of the total number of transport related pollution incidents, a significant proportion originated from roads (73%), mostly as a result of road traffic accidents. Ships and boats accounted for 16% of all incidents, with 2.4% arising from long distance pipelines. Twenty-one incidents (1.4%) arose from rail transport incidents and only 8 (0.5%) from airports.

4.4.3 Regional Distribution

Figure 13 illustrates the regional distribution of substantiated transport related incidents. The proportions in Regions vary from 4% in North West to 27% in South Western Region. In all Regions incidents attributable to road transport accounted for over half of all categorised incidents. Pollution from ships and boats was also an important source in most Regions, accounting for 27% in Thames Region, 24% and 22% in Southern and Severn-Trent Regions respectively.

4.4.4 Category 1 Incidents

Of the 331 substantiated Category 1 incidents for 1993, 16 (5%) of these were classified as arising from transport related sources. As a proportion of the total number of transport incidents these represent only 1%. The majority of Category 1 incidents arose from road transport, reflecting the national trend for all transport incidents. Regionally, 6 (37%) occured in Severn-Trent Region, 4 (25%) in South Western Region and 3 (19%) in North West Region.

Figure 12 - Substantiated transport related incidents by source, 1993

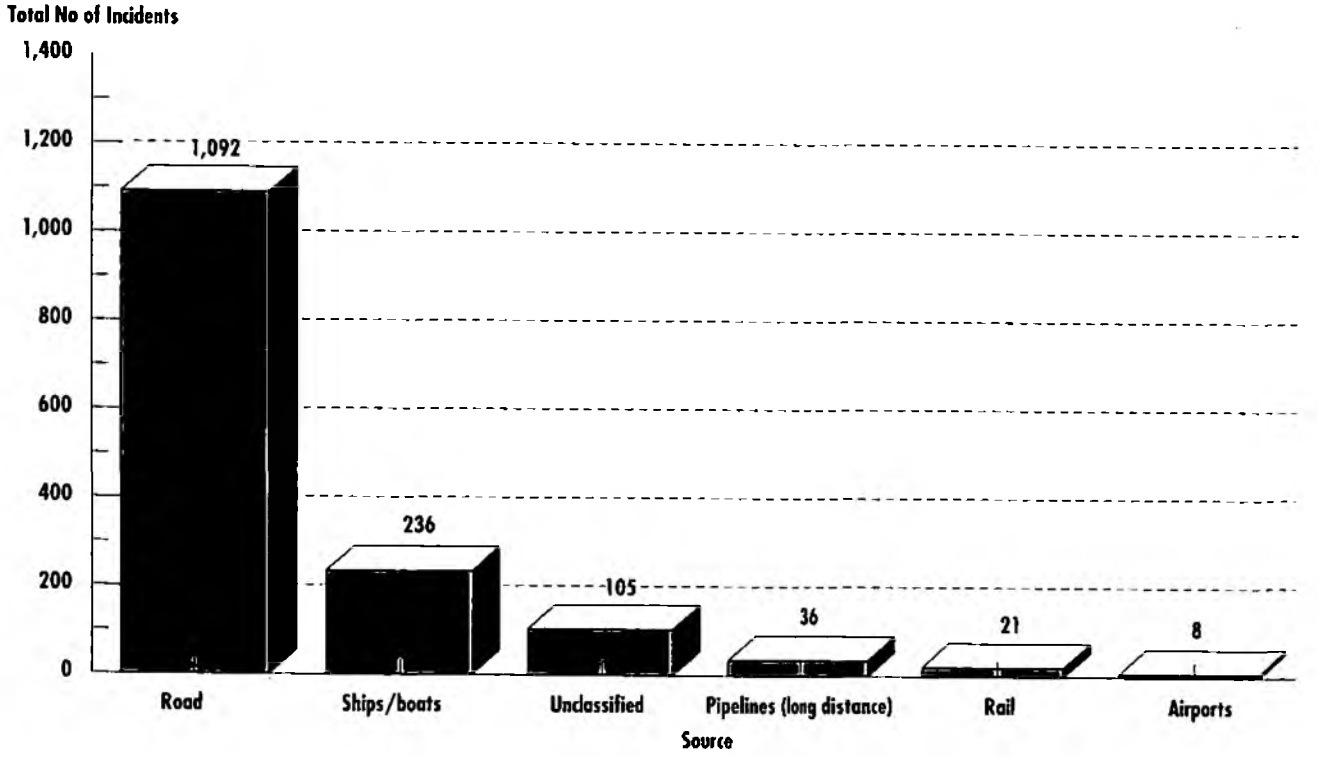
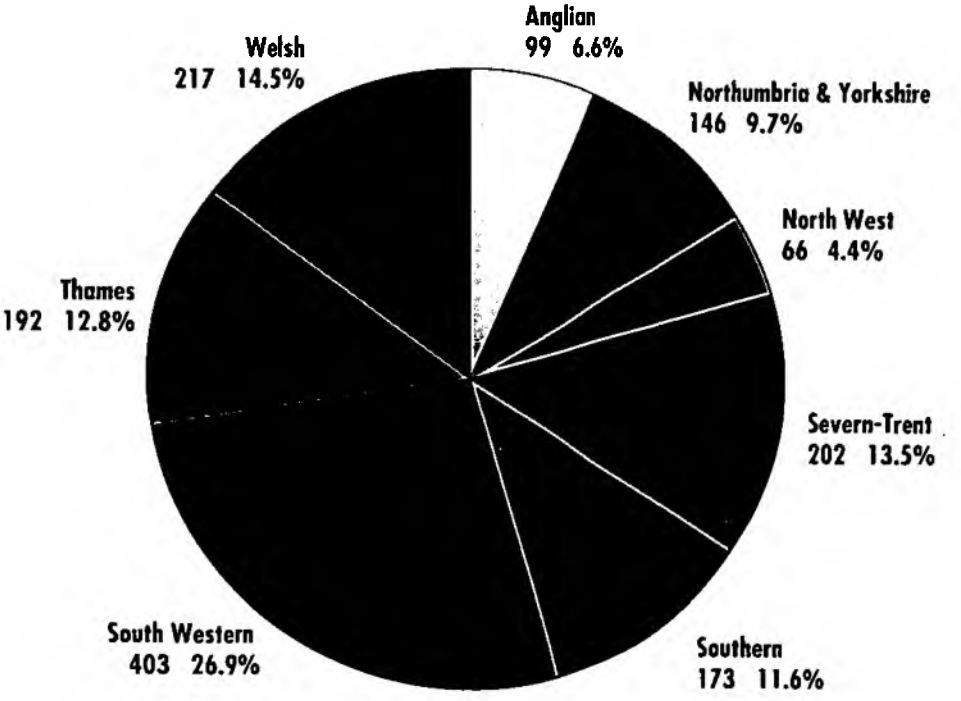


Figure 13 - Total substantiated transport related pollution incidents by NRA Region, 1993



Total: 1,498

4.5 "OTHER" POLLUTION SOURCES

4.5.1 Total Incidents

A total of 8,541 other pollution incidents were substantiated in 1993, 34% of the total substantiated pollution incidents that were recorded for that year.

4.5.2 Sources of "Other" Pollution

Whilst the majority of pollution incidents categorised as "other" could not be further broken down, a significant proportion originated from domestic/residential sources (9%). Incidents arising from Crown exempt sources together with restaurants, hotels and public houses accounted for less than 1% of categorised "other" sources (Figure 14).

4.5.3 Regional Distribution

The Regional distribution of "other" incidents by source is given in Figure 15. The greatest proportion of incidents classified by source as "other" occurred in Severn-Trent Region (26%), together with Northumbria & Yorkshire Region (18%). Of those that were classified, incidents from domestic/residential premises were recorded across the country with 32% of the national total in Thames Region, 23% in Southern Region, 21% in Northumbria & Yorkshire Region and 12% in each of Severn-Trent and South Western Regions.

4.5.4 Category 1 Incidents

Category 1 incidents represented only 0.8% (66) of the 8,541 "other" pollution incidents substantiated in 1993. In contrast to 1992 (36%), this figure represents 20% of all Category 1 incidents (Figure 4b). This decline suggests that a higher proportion of major incidents are attributable to categorised sources. Of those that comprised the 20%, two were from domestic/residential premises. Although the remainder were individually identifiable, they did not fit within any of the major categories and were therefore defined as "unclassified".

Figure 14 - Distribution of "other" incidents by source of pollution, where classified, 1993

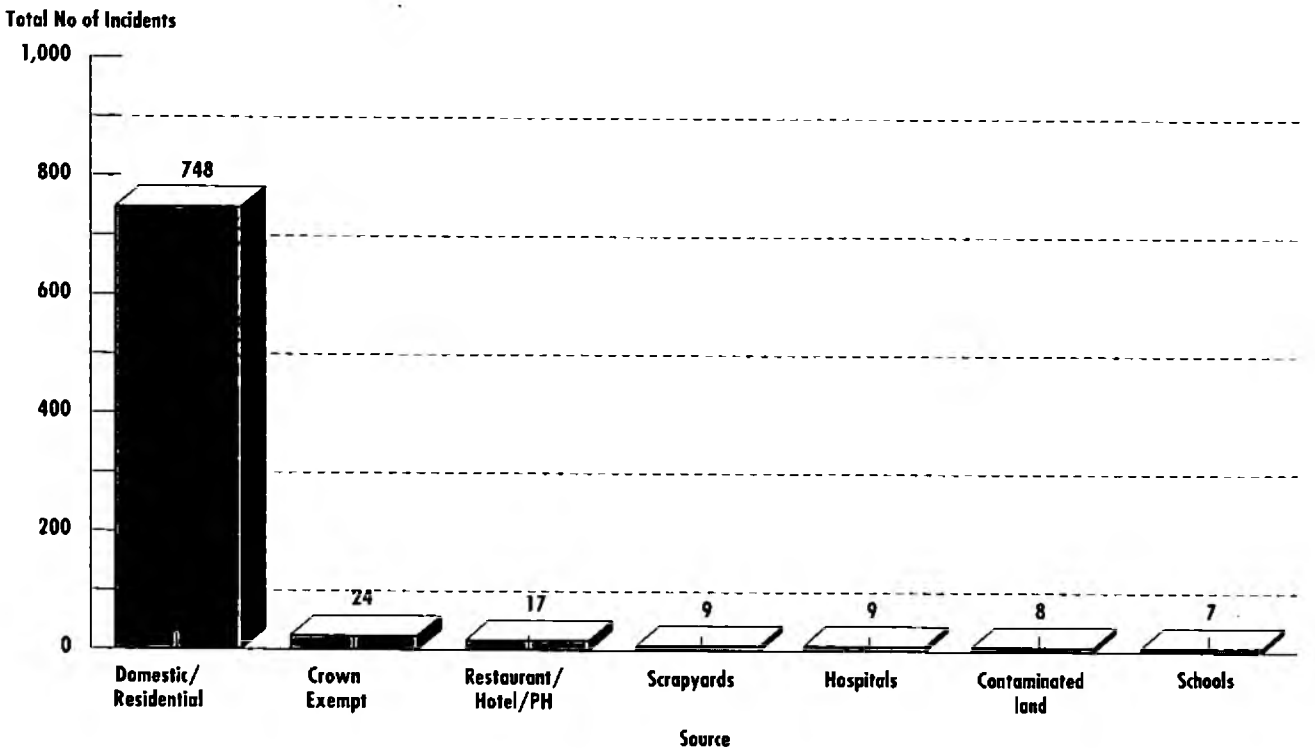
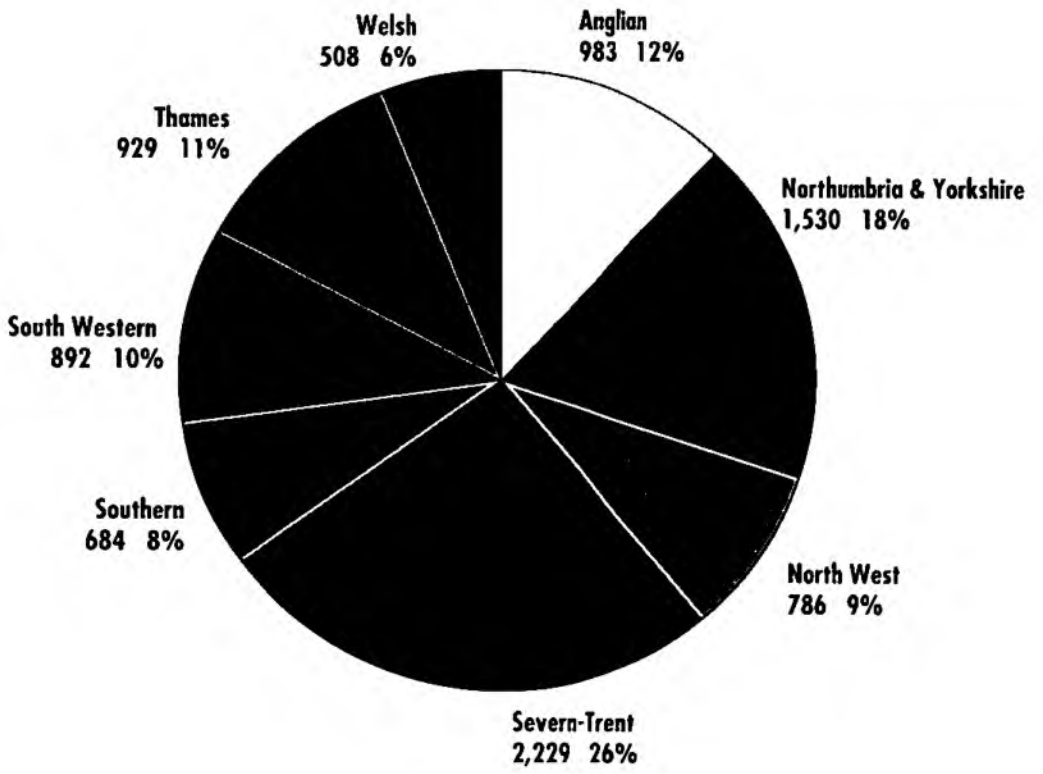


Figure 15 - Total "other" sources of pollution incidents by NRA Region, 1993



Total: 8,541

5 ANALYSIS OF INCIDENTS BY TYPE OF POLLUTANT

5.1 ORGANIC WASTES

5.1.1 Total Incidents

A total of 2,956 pollution incidents attributable to organic wastes were substantiated in 1993. This figure represents 12% of the total number of substantiated incidents.

5.1.2 Types of Organic Waste Pollution

The distribution of organic wastes by type is given in Figure 16. Excluding those incidents that could not be classified (29%), the largest proportion of the 2,956 incidents was related to cattle slurry (25%). Silage liquor accounted for 12.5% together with cattle manure (solid) which represented 9% of all organic waste incidents. These figures reflect the findings of the agricultural source section, in that pollution from beef and dairy cattle accounts for almost 70% of all agricultural incidents by source. Of the remaining incidents, other organic suspended solids (6%), pig slurry (5%) and animal carcasses (4%) were significant.

5.1.3 Regional Distribution

Figure 17 illustrates the Regional distribution of organic waste pollution incidents. The greatest proportion of organic waste incidents occured in South Western Region (28.5%) where cattle slurry and silage liquor incidents were most prevalent. Similarly, in Welsh Region (16% of all incidents), cattle slurry incidents accounted for 55% of the regional total. North West Region (13.5% of all incidents) and Severn-Trent Region (13%) were also notable, with incidents of cattle manure representing 61% of the national total in the latter Region. In Anglian Region (11%), the predominance of pig and poultry farming was reflected in the high incidence of pig manure (76% of the national total), pig slurry (45%) and poultry (46%) pollution incidents.

5.1.4 Historical Trends

For the first time this year, the type categorisation of organic waste has been included in this report to give a fuller picture of the types of pollution incidents substantiated in England and Wales. As a consequence, any comparisons with previous years are difficult to make. Table 9 shows the Regional distribution of organic waste incidents for 1992 and 1993 (Figures for 1992 are those reported as farm type).

Table 9 - Total organic waste pollution incidents by NRA Region, 1992-1993

Region	1992*	1993
Anglian	203	329
Northumbria & Yorkshire	228	320
North West	406	398
Severn-Trent	296	381
Southern	63	101
South Western	445	848
Thames	69	102
Welsh	425	477
Total	**2,567**	**2,956**

* substantiated farm incidents by type

5.1.5 Category 1 Incidents

Of the 2,956 organic waste incidents, 61 (2%) were classified as Category 1 incidents representing 18% of the total substantiated Category 1 incidents. Regionally, the largest number of Category 1 incidents were found in South Western Region (39%), with 13% in Severn-Trent and 11% in North West Region. As with the total number of organic waste incidents, cattle slurry (46%) and silage liquor (15%) incidents accounted for the greatest proportion of Category 1 incidents.

Figure 16 - Distribution of organic waste incidents by type, 1993

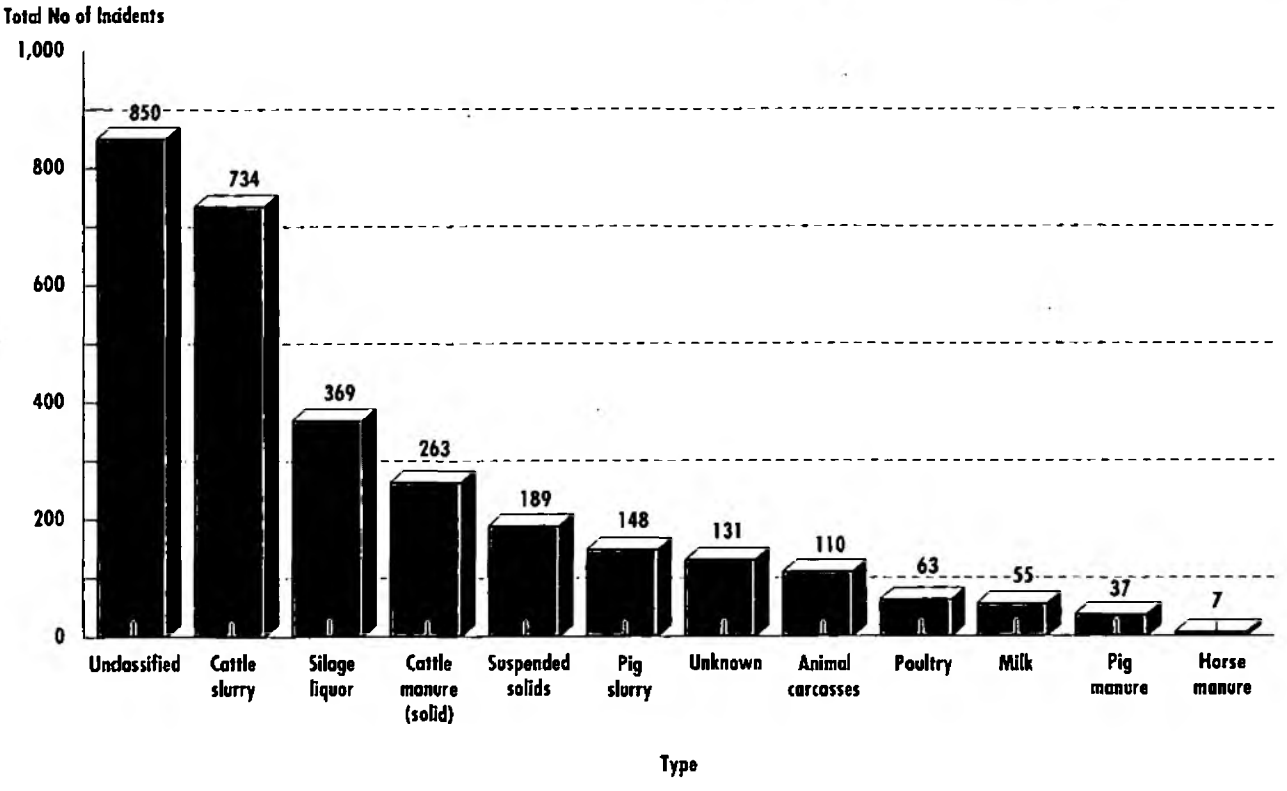
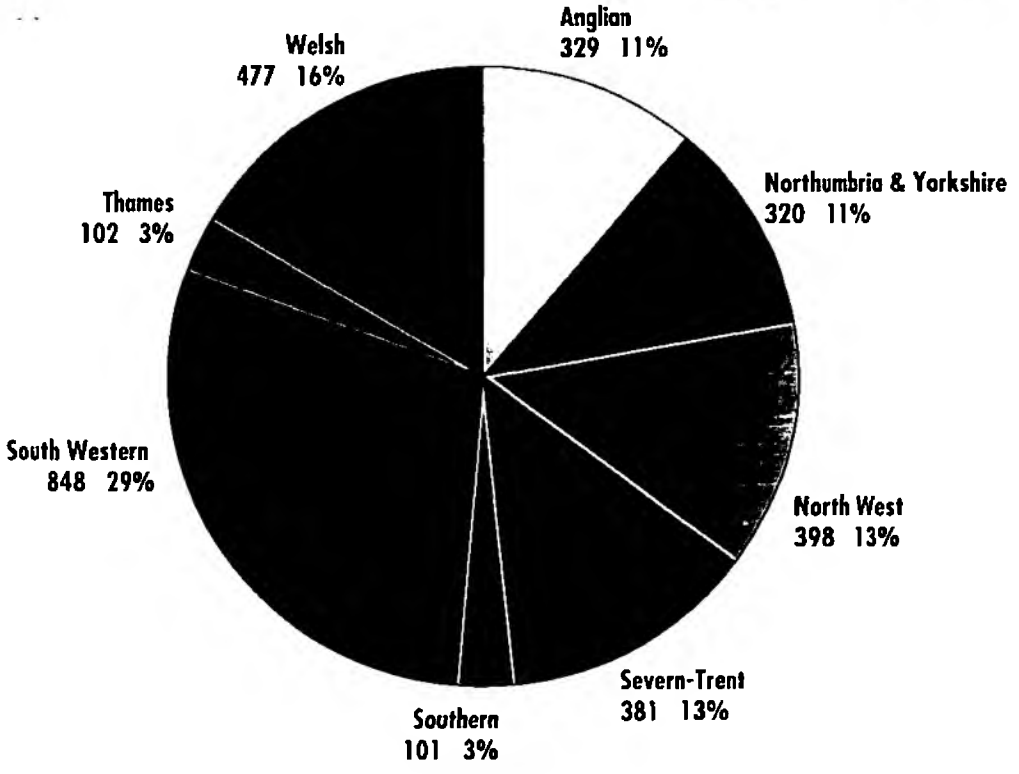


Figure 17 - Total organic waste pollution incidents by NRA Region, 1993



Total: 2,956

5.2 OILS

5.2.1 Total Incidents

6,373 oil pollution incidents were substantiated in 1993, accounting for 25% of the total.

5.2.2 Types of Oil Pollution

Figure 18 gives the distribution of oil pollution incidents by type. Whilst the majority of oil pollution incidents could not be classified, diesel (16%) was the most commonly identified oil pollutant. Incidents involving gas oil (6%), waste oil (4%), petrol and other fuel oils (each 3%) accounted for the remaining significant types of oil incident.

5.2.3 Regional Distribution

The Regional distribution of oil pollution incidents is illustrated in Figure 19. The greatest percentage of oil incidents were found in Severn-Trent Region (23%), with Anglian Region (15%), Thames Region (14%) and North West Region (13%) all dealing with considerable numbers of oil pollution incidents during 1993.

Within each Region, oil pollution accounted for a large number of the incidents substantiated during 1993, particularly in Thames Region (43% of the Regional total). Similarly, high proportions were found in Anglian (37%), Southern (35%) and Severn-Trent (31%) Regions.

Where discrete data were available, a breakdown of specific types of oil pollution was recorded in each Region. In most Regions, incidents involving diesel oil comprised a large proportion of the total number of oil incidents, in Welsh Region (48%), South Western Region (41%), Southern Region (36%) and Thames Region (35%). Gas oil accounted for 40% of the national number of oil related incidents in each of Thames and Welsh Regions, whilst 52% of the total number of incidents attributable to waste oil occured in Thames Region. In South Western Region fuel oils and petrol were important types of oil pollutant comprising 58% and 34% of the national oil pollution total respectively.

5.2.4 Historical Trends

Table 10 gives the Regional distribution of oil pollution incidents between 1987 and 1993. Overall, the total number of substantiated oil pollution incidents has risen during 1993 by 4%. This rise has been reflected across the country with most Regions recording an increase in the number of substantiated oil pollution incidents. The largest increase was recorded in Southern Region (31%), with Welsh (15%), North West (12%), Anglian (10%) and Severn-Trent (8%) Regions all showing significant increases. The only Region to show a decrease was South Western which recorded a fall of 30%.

Table 10 - Total oil pollution incidents by NRA Region, 1987-1993
(Data up to 1988 from DoE Digest of Environmental Pollution and Water Statistics 1988 and 1989)

NRA Region	1987	1988	1990	1991*	1992*	1993*
Anglian	603	478	620	775	873	961
Northumbria & Yorkshire	530	538	593	524	561	597
North West	494	508	593	571	719	806
Severn-Trent	1,078	1,300	1,893	1,194	1,379	1,493
Southern	483	459	492	536	357	469
South Western	601	689	383a	734	945	661
Thames	861	1,256	1,122	851	876	896
Welsh	133	197	250	103	426	490
Total	**4,783**	**5,425**	**5,946**	**5,288**	**6,136**	**6,373**

* Substantiated Incidents

a Does not include oil from industrial sources.

5.2.5 Category 1 Incidents

Category 1 incidents involving oils accounted for less than 1% of the total number of substantiated oil pollution incidents in 1993. Of the total number of Category 1 incidents, those attributable to oil (54) accounted for 16%, a fall of 23% compared to 1992. It is suggested that even greater reductions in the number of pollution incidents could be achieved if regulations similar to the Control of Pollution (Silage, Slurry and Agricultural fuel oil) were introduced covering all sectors of industry. Regionally, the greatest number of Category 1 pollution incidents was recorded in Severn-Trent Region (48%) with North West (13%), Northumbria & Yorkshire (11%) and South Western (9%) Regions all recording significant numbers. Whilst in over 70% of Category 1 incidents the oil type was either unknown or unclassified, diesel oil accounted for 6 incidents (11%), fuel oils 3 (6%) and gas and waste oils each 2 incidents.

Figure 18 - Distribution of oil incidents by type of oil, 1993

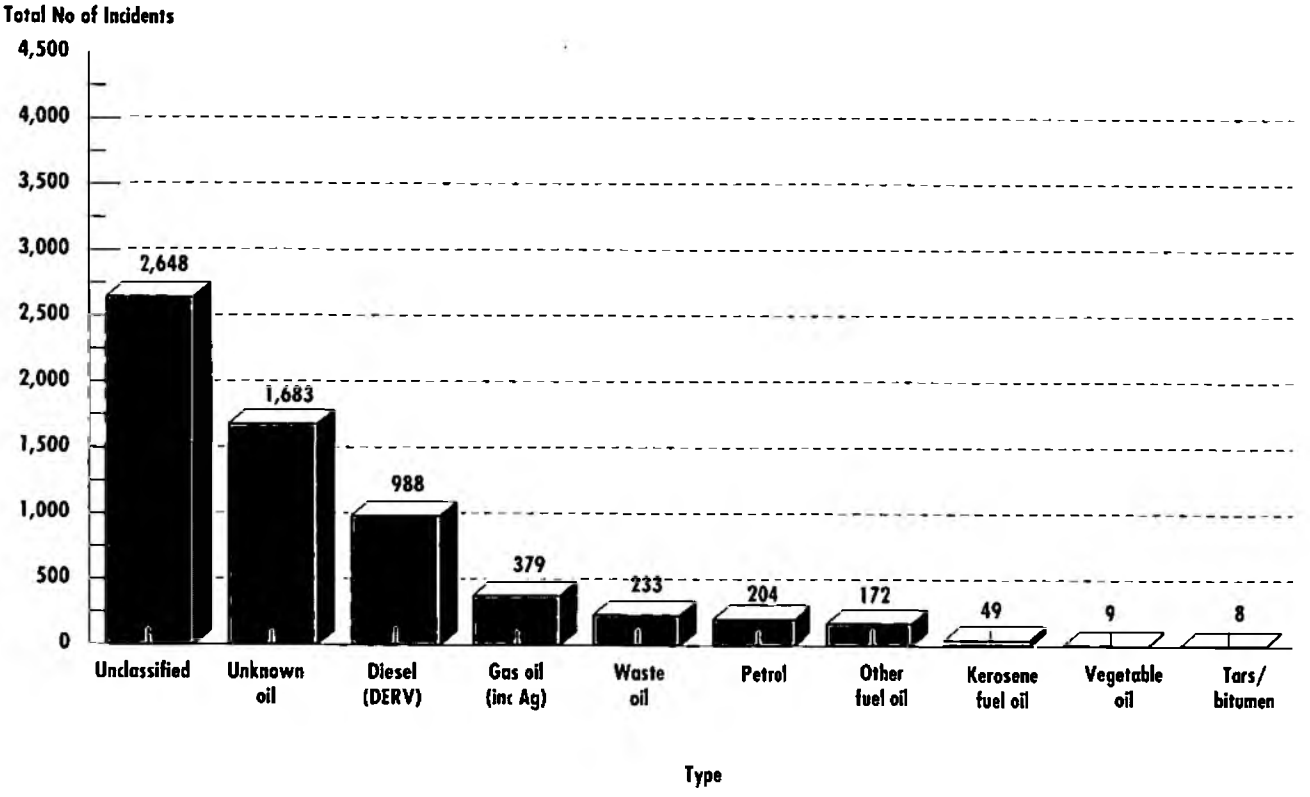
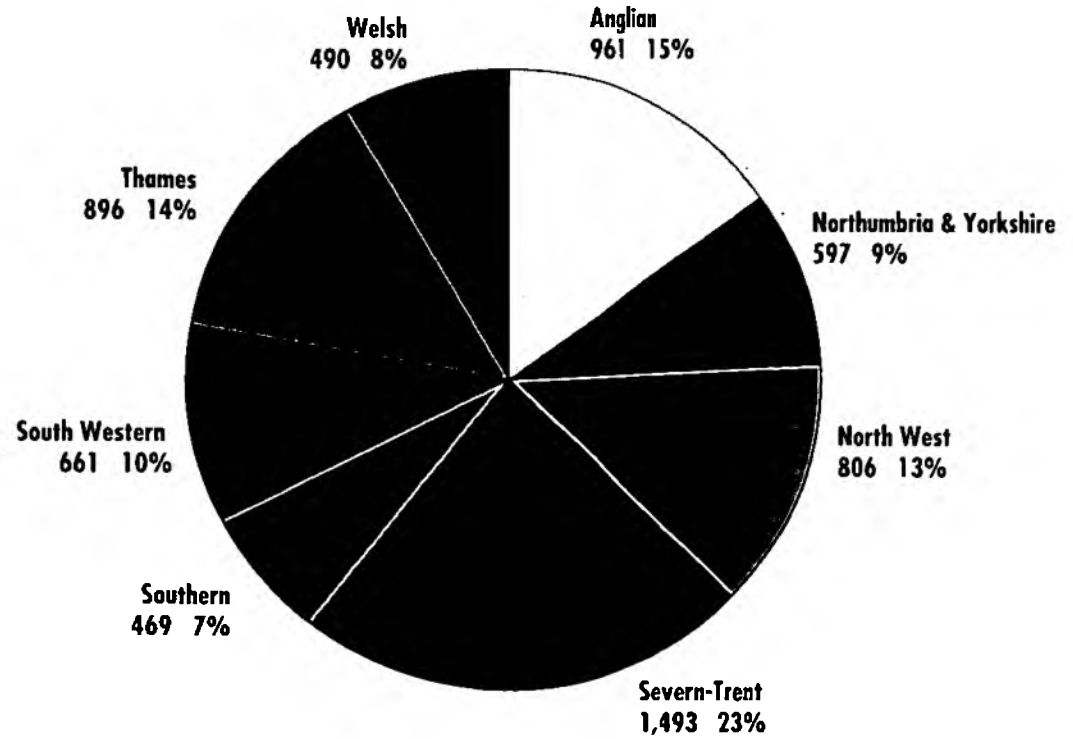


Figure 19 - Total oil pollution incidents by NRA Region, 1993



Total: 6,373

5.3 CHEMICALS

5.3.1 Total Incidents

In 1993 there were a total of 2,039 substantiated chemical pollution incidents, representing 8% of all incidents substantiated during that year.

5.3.2 Types of Chemical Pollutants

The distribution of chemical pollutants by type is shown in Figure 20. The majority of incidents (73%) could not be precisely defined and were therefore recorded as unclassified. Of the remaining incidents, pollution from paint and dyes (6%), detergents (4.5%), pesticides and other organics (each 3.5%) comprised the most notable types of chemical pollutants.

5.3.3 Regional Distribution

Figure 21 illustrates the Regional distribution of chemical pollutants for 1993. The greatest percentage (28%) of chemical incidents was found in North West Region, with chemical pollutants accounting for 16% of the Regional total. Northumbria & Yorkshire Region had 20% of all chemical pollution incidents with Severn-Trent (14%), Anglian (10%) and Thames and Welsh (each 8%) Regions remaining significant. This trend reflects the significance of the chemical industry in the north of the country. The least number of chemical pollution incidents was found in Southern Region (5%).

Where possible within each Region, incidents attributable to chemical pollutants were broken down into type of chemical. Within Anglian Region, incidents involving fertilisers (15) comprised 47% of the national total, whilst paint and dye incidents accounted for 51% of the national total in Thames Region. Pollution from other organic chemicals (66%) was significant in Welsh Region.

5.3.4 Historical Trends

Table 11 shows the Regional distribution of chemical incidents for 1992 and 1993. During 1993, the total number of substantiated chemical pollution incidents has risen by 54%. This increase has been reflected in most Regions and particularly in the north of the country, with chemical pollution incidents showing a three-fold increase in Northumbria & Yorkshire Region and more than doubling in the North West. Both Thames and Anglian Regions showed a decline in the number of chemical incidents of 11% and 5% respectively.

Table 11 - Total chemical pollution incidents by NRA Region, 1992-1993

Region	1992	1993
Anglian	209	198
Northumbria & Yorkshire	135	410
North West	236	568
Severn-Trent	206	281
Southern	57	100
South Western	124	145
Thames	194	172
Welsh	160	165
Total	**1,321**	**2,039**

5.3.5 Category 1 Incidents

Of the 2,039 incidents involving chemical pollutants only 4% fell into the Category 1 classification, comprising 23% of the national total of Category 1 incidents (Figure 5). This is an increase of 53% in the number of Category 1's of this type during 1993. Whilst most of the Category 1 incidents could not be classified, pesticides and detergents (both 5%) accounted for the largest proportion of categorised chemical incidents.

Figure 20 - Distribution of chemical incidents by type of chemical, where classified, 1993

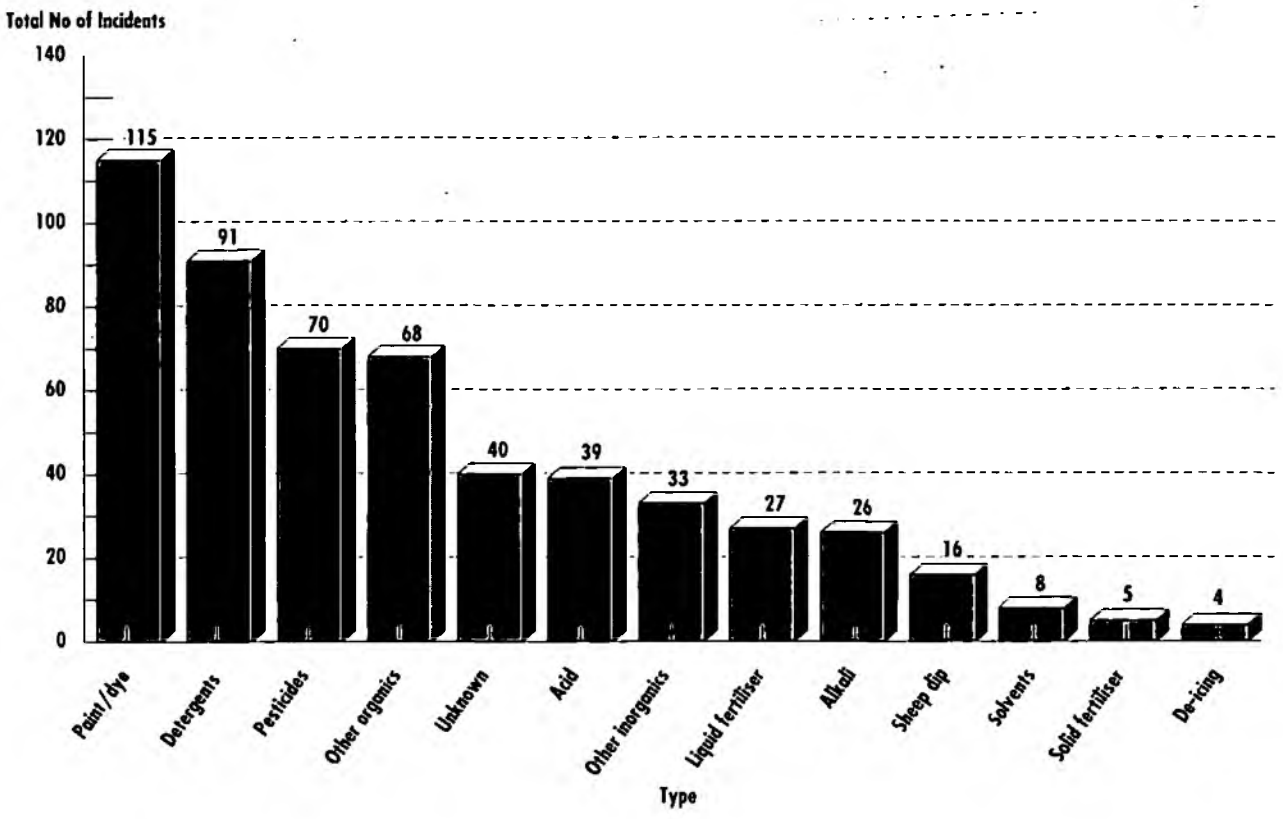
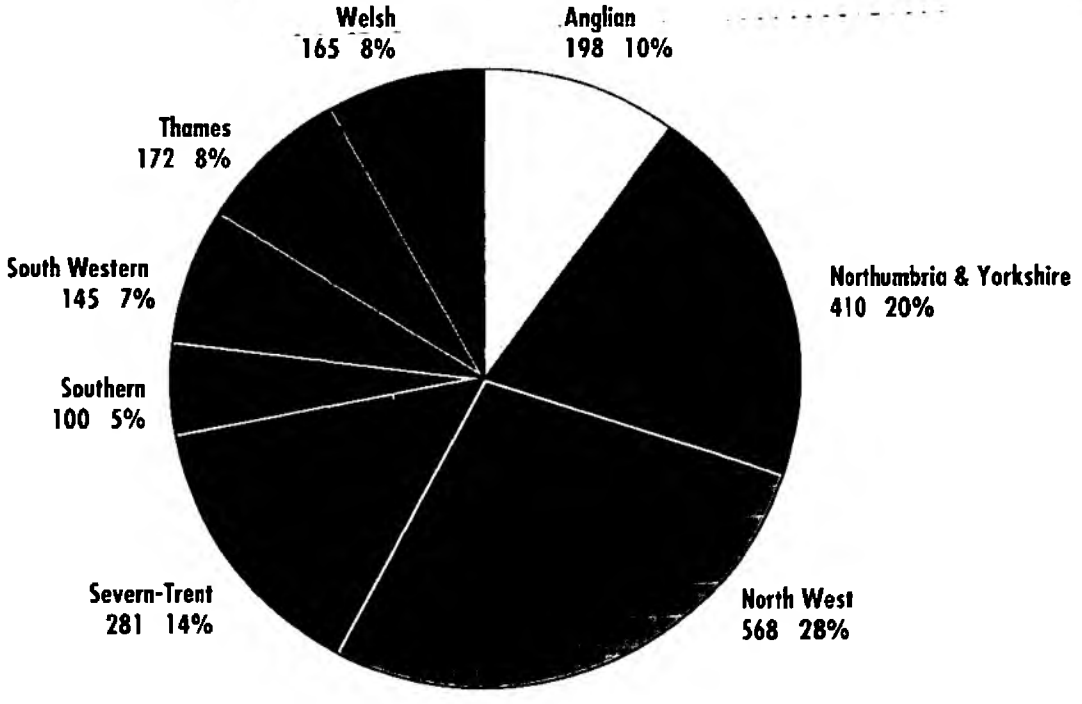


Figure 21 - Total chemical pollution incidents by NRA Region, 1993



Total: 2,039

5.4 SEWAGE

5.4.1 Total Incidents

The total number of incidents defined as sewage (6,373) represented 25% of all incidents substantiated during 1993.

5.4.2 Types of Sewage Pollution

Figure 22 illustrates the distribution of substantiated sewage pollution incidents in 1993. Pollution from storm sewage accounted for the largest proportion of incidents (25%). Apart from those incidents that could not be identified and were therefore unclassified (22%), crude sewage (22%), treated effluent (17%) and septic tank effluent (12%) were important types of sewage pollution. Pollution from sewage debris and sewage sludge (both 1%) comprised only a small proportion of all substantiated sewage incidents.

5.4.3 Regional Distribution

The Regional distribution of sewage incidents is illustrated in Figure 23. Severn-Trent Region had the largest percentage of sewage pollutions (21%), together with North West (17%) and South Western (16%) Regions.

Within each Region sewage incidents accounted for between 16% in Southern Region and 29% in North West Region of all incidents substantiated in 1993.

Of these incidents, pollution from crude and storm sewage were the most common type of incidents in many Regions, accounting for 69% of all sewage incidents in Welsh Region, 63% in Thames Region, 54% and 52% in Northumbria & Yorkshire and North West Regions respectively. In each of Severn-Trent and South Western Regions sewage pollution from septic tanks comprised 25% of the national total for this type of incident.

5.4.4 Historical Trends

The Regional distribution of sewage pollution incidents for 1992 and 1993 is given in Table 12. Overall there has been an increase (4%) in the number of sewage incidents during 1993. The largest increase was recorded in Severn-Trent Region (38%), with South Western (19%) and Thames (11%) Regions all showing a rise in the number of sewage incidents. In contrast, Southern Region showed a substantial decrease (45%) in the number of incidents as did Northumbria & Yorkshire (17% decrease) and Anglian (11%decrease) Regions.

Table 12 Total sewage pollution incidents by NRA Region, 1992-1993

Region	1992	1993
Anglian	657	586
Northumbria & Yorkshire	1,032	851
North West	1,026	1,066
Severn-Trent	961	1,327
Southern	392	215
South Western	857	1,024
Thames	423	468
Welsh	786	836
Total	**6,134**	**6,373**

5.4.5 Category 1 Incidents

There were 76 Category 1 sewage pollution incidents during 1993 which represented just over 1% of all sewage incidents. On a national scale, sewage incidents accounted for 23% of the national Category 1 total, a 7% increase on 1992 (Table 5). The greatest proportion of these incidents consisted of treated sewage effluent (36%) together with storm (32%) and crude (10%) sewage. Most of these Category 1 incidents occured in North West Region (33%) with Northumbria & Yorkshire (28%) and Severn-Trent (21%) Regions both recording significant numbers.

Figure 22 - Distribution of sewage incidents by type of sewage, 1993

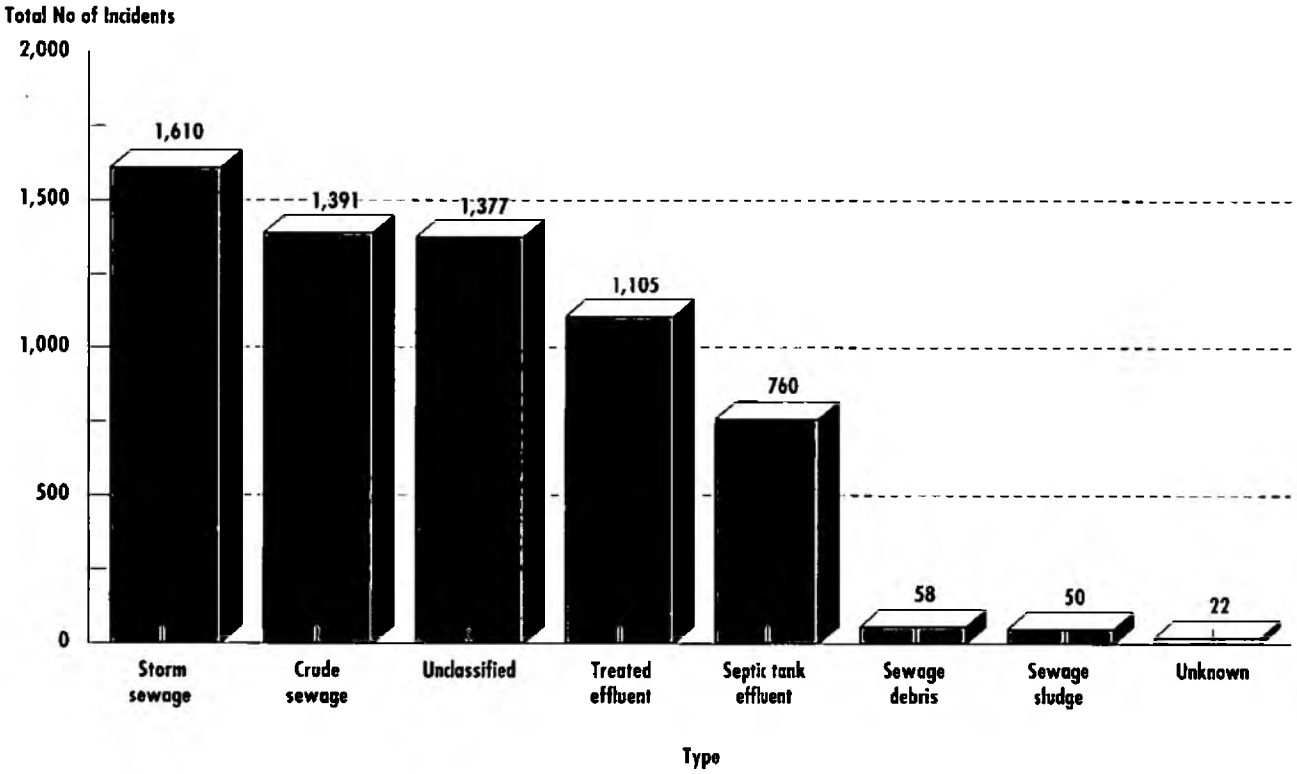
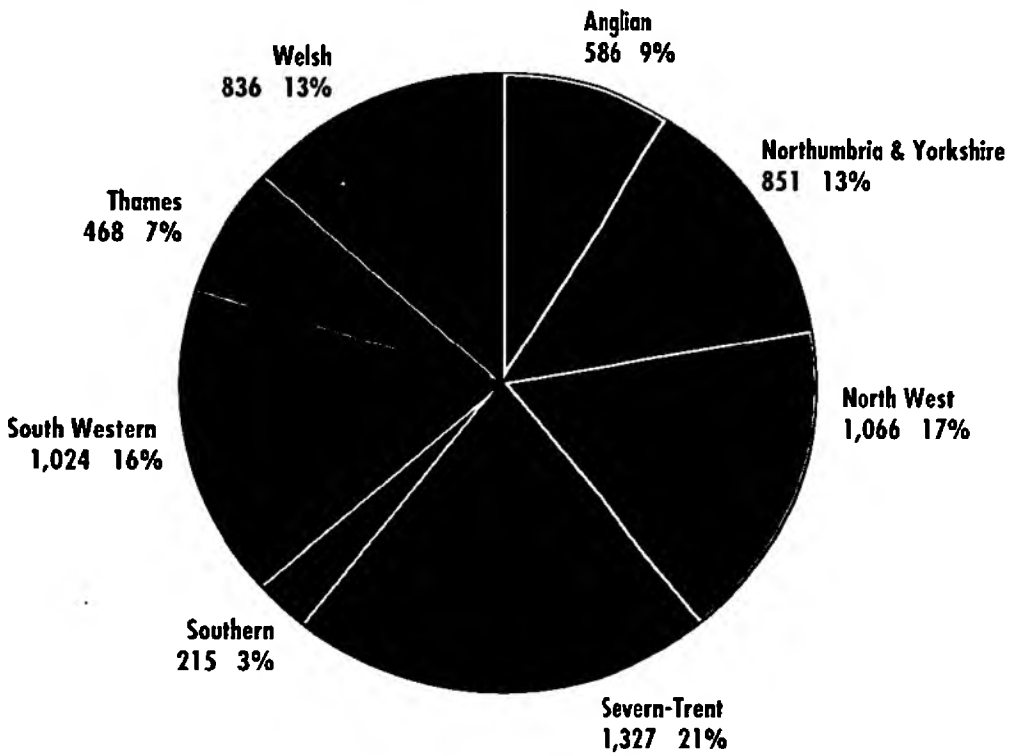


Figure 23 - Total sewage pollution incidents by NRA Region, 1993



Total: 6,373

5.5 "OTHER" TYPES OF POLLUTANTS

5.5.1 Total Incidents

During 1993, a total of 7,558 incidents involving "other" types of pollutant were substantiated. This figure represents 30% of the total number of incidents substantiated during the year.

5.5.2 Types of "Other" Pollutants

The "other" category contains those pollution incidents whose type could not be readily defined as belonging to any of the categories listed previously. Figure 24 gives the distribution of "other" incidents that could be classified in more detail. Excluding those that were classified as unknown (53%), the principal types of pollutant were inert suspended solids (17%), "natural" pollution incidents (7%), rubble/litter and colour (both 6.5%) and foam (5%).

5.5.3 Regional Distribution

The Regional distribution of "other" pollution types is illustrated in Figure 25. Northumbria & Yorkshire Region (19.5%) together with South Western Region (19%) and Severn-Trent Region (18.5%) recorded the greatest proportion of "other" pollution incidents. In South Western and Severn-Trent Regions aesthetic pollution due to colour accounted for 59% and 41% respectively of the national total for this pollutant. Pollution caused by inert suspended solids was reported in most Regions, accounting for 34% of the national total in Severn-Trent Region, 20% in both North West and Welsh Regions and almost a third of the regional total in Thames Region.

5.5.4 Category 1 Incidents

Of the 7,558 "other" types of incident, 65 (less than 1%) fell into the Category 1 classification. This figure represents only 20% of the total Category 1 incidents by pollution type and is a 51% decline in Category 1 "other" incidents since 1992. The largest proportion (60%) of these were not further defined by NRA Regions but a notable fraction of the remainder were attributable to inert suspended solids (22%).

Figure 24 - Distribution of "other" incidents by type of pollutant, where classified, 1993

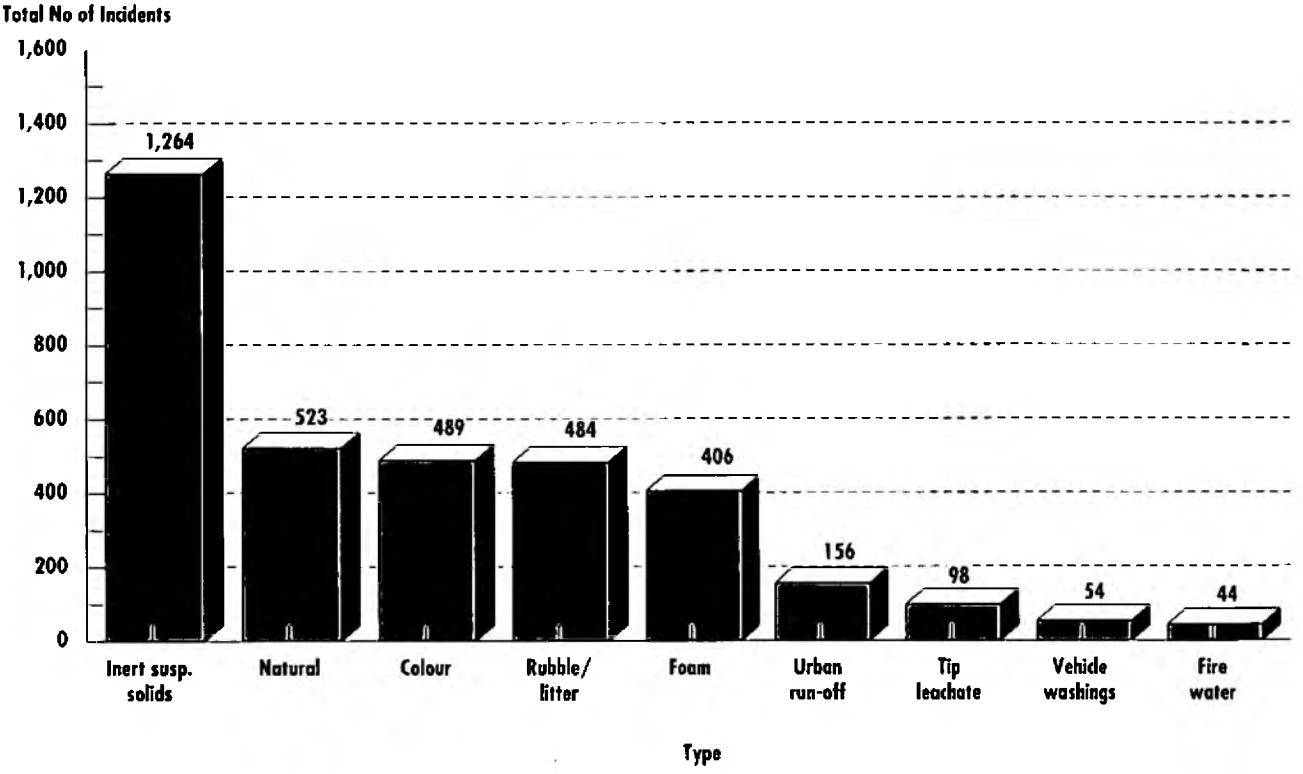
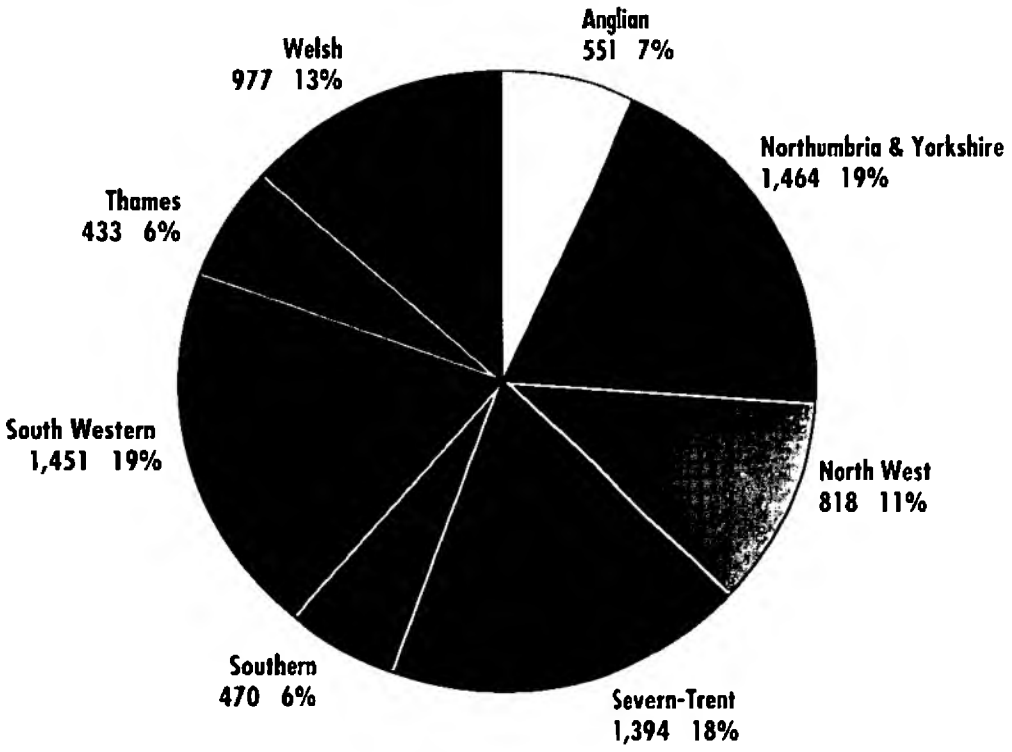


Figure 25 - Total "other" pollution incident types by NRA Region, 1993



Total: 7,558

6 LIMITATIONS OF DATA

The reporting of pollution incidents is dependent to a large extent on public observation. For this reason the quality and quantity of reports will be influenced by factors such as population density, public awareness, the visibility of the pollution and seasonality. Incident information is therefore likely to underestimate the real extent of episodic pollution problems which varies across England and Wales.

The great diversity in polluting materials and the nature of pollution incidents mean that the assessment of impact severity associated with an incident is not always straightforward. Delays in incident reporting by the public or the cessation of pollutant discharges prior to the arrival of NRA staff may make incident substantiation impossible or very difficult.

The problems associated with positive identification of the pollutant source and type when investigating an incident have led to a large number of incidents being unclassified or categorised as "other", rather than being assigned to specific pollutant sources or types. In addition, whilst many incidents could be categorised as belonging to one of the broad pollutant type fields, further sub division was not possible and the incident was therefore classified as unknown or "other". In 1993, 8,541 incidents were classified as "other" by source and 7,558 by type, representing 34% and 30% of substantiated incidents respectively.

Differences in both the type and source field definitions between 1992 and 1993 make direct comparison between these two years difficult throughout the report.

Lastly, even when the pollutant source and type have been identified, the interpretation of pollutant source and type categories is often rather subjective. For instance, within the organic waste pollution category it is often difficult to assign an incident to a single type due to the involvement of more than one pollutant material (eg slurry and silage liquor).

7 NRA COURT ACTIONS

7.1 COURT ACTIONS

Table 13 shows the Regional distribution of prosecutions taken and convictions that were obtained for pollution offences that occurred in 1993. By the end of March 1994, 286 prosecutions for pollution incidents that occurred in 1993 had been heard in court and 277 (97%) of these resulted in convictions. There were 133 cases which had still to come to court as of 1 April 1994.

The NRA not only takes court action against polluters, but also issues formal cautions. The purpose of these is not only to deal quickly and simply with less severe incidents, but at the same time impress on the polluter that the offence is of a serious nature and that should any repetition of pollution from that source occur, reference to the previous issue of a caution may be made in court. Before a formal caution is issued there must be evidence of the polluter's guilt, the polluter must admit the offence and also understand the significance of a caution and give informed consent to being cautioned. Table 13 gives the Regional distribution of cautions issued by the NRA during 1993. A total of 206 formal cautions were issued during the period January 1993 to March 1994, with a further 46 still to be issued as of 1 April 1994.

Table 13 - Regional distribution of prosecutions and convictions, by NRA Region, against incidents occurring in 1993 and prosecutions outstanding at 1 April 1994

NRA Region	Number of Incidents Prosecuted	Number of Convictions	Outstanding Prosecutions	Number of Cautions Issued	Number of Cautions still to be issued at 31 March 1994
Anglian	45	42	19	35	1
Northumbria & Yorkshire	26	24	34	7	12
North West	61	60	31	61	9
Severn-Trent	56	56	10	28	4
Southern	5	5	6	2	2
South Western	26	25	18	15	13
Thames	31	29	5	16	0
Welsh	36	36	10	42	5
Total	**286**	**277**	**133**	**206**	**46**

7.2 DISTRIBUTION OF PROSECUTIONS

In line with internal NRA guidance, all Regions follow the policy of prosecuting Category 1 pollution incidents where there is sufficient evidence to take such action. In some instances, however, this is not always possible; there were occasions where the source of pollution could not be identified, where the event was caused by persons unknown, or where the source of pollution, for example Crown property, was exempt from prosecution. In a number of Category 2 incidents formal cautions or solicitors' letters were issued as an alternative to court action.

7.2.1 Pollution source category

The number of Category 1 and Category 2 prosecutions taken and convictions obtained by pollution source in 1993 are presented in Table 14. During 1993 the largest number of prosecutions were taken for Category 1 and Category 2 incidents arising from industrial sources (52% of all prosecutions taken). Prosecutions for incidents from agriculture accounted for 34% of all those taken whilst those from the sewage and water industry represented 8%. In all but a small number of cases those prosecutions taken resulted in successful convictions (97%).

Table 14 - Prosecutions taken and convictions obtained for Category 1 and Category 2 incidents by pollution source, 1993

	Prosecutions taken		Convictions obtained	
	Category 1	Category 2	Category 1	Category 2
Agricultural	13	83	13	81
Industrial	23	126	23	121
Sewage and Water Industry	3	20	3	20
Transport	0	0	0	0
Other	2	16	2	14
Total	**41**	**245**	**41**	**236**

7.2.2 Pollution type category

Table 15 gives the number of prosecutions taken and convictions obtained in 1993 for Category 1 and Category 2 incidents by pollution type.

As a proportion of the total number of prosecutions taken, those attributable to organic wastes accounted for the largest portion (35%). Prosecutions for incidents from "other" pollution types (20%), oils (16%), chemicals (15%) and sewage (14%) comprised the remainder.

Table 15 - Prosecutions taken and convictions obtained for Category 1 and Category 2 incidents by pollution type, 1993

	Prosecutions taken		Convictions obtained	
	Category 1	Category 2	Category 1	Category 2
Organic wastes	15	86	15	83
Oils	7	40	7	38
Chemicals	8	34	8	34
Sewage	4	35	4	35
Other	7	50	7	46
Total	**41**	**245**	**41**	**236**

Table 16 - Fines and costs awarded for pollution incidents which occurred in 1993 and resulted in convictions (Jan 1993 - Mar 1994)

NRA Region	Range of Fines £	Range of Costs £
Anglian	500 - 12,000	321 - 2,500
Northumbria & Yorkshire	0 - 5,000	0 - 2,193
North West	200 - 15,000	168 - 1,290
Severn-Trent	0 - 7,000	0 - 1,354
Southern	0 - 500	250 - 1442
South Western	0 - 10,000	0 - 2,200
Thames	0 - 10,000	295 - 900
Welsh	0 - 7,000	0 - 4,755
Nationally	**0 - 15,000**	**0 - 4,755**

Table 17 - Range of fines and costs by pollution incident source (Jan 1993 - Mar 1994)

Pollution Source	Range of Fines £	Range of Costs £
Agricultural	0 - 5,000	0 - 4,755
Industrial	0 - 15,000	0 - 2,193
Sewage and Water Industry	1,000 - 10,000	150 - 1,217
Transport	*	*
Other	**0 - 5,000**	**0 - 1,142**

* no prosecutions taken

Table 18 - Range of fines and costs by pollution incident source (Jan 1993 - Mar 1994)

Pollution Source	Range of fines £	Range of Costs £
Organic wastes	0 - 10,000	168 - 1,519
Oils	0 - 12,000	330 - 2,500
Chemicals	400 - 15,000	0 - 2,200
Sewage	0 - 10,000	225 - 2,200
Other	**0 - 15,000**	**0 - 1,354**

7.3 FINES

Tables 16 to 18 give the ranges of fines and costs awarded for pollution incidents that occurred in 1993. Table 16 gives a Regional breakdown whilst Tables 17 and 18 present those obtained by pollution source and type category respectively. The largest individual fine of £15,000 was obtained for an industrial pollution incident in North West Region. In comparison with previous years, the levels of fines remain similar and indicate that Magistrates courts are using the provisions for fining as laid down in Section 85(6) of the Water Resources Act 1991 which allow for fines of not more than £20,000 (The Water Act 1989 had previously allowed for maximum fines of £2,000). The fines imposable in a Crown Court are

unlimited. It should be noted that the level of fine imposed by the Court may not reflect the severity of the pollution, but is often related to the defendants means or ability to pay.

7.4 RECHARGING FOR POLLUTION INCIDENTS

Under Section 161 of the Water Resources Act 1991 the NRA is entitled to carry out works and operations to prevent polluting matter entering controlled waters, or where matter is already in a watercourse, to either remove or dispose of it, remedy or mitigate any pollution caused by its presence, or to restore the waters, including any flora and fauna, to their state immediately before the matter became present in the water. The costs of these works and operations can be charged back to the polluter, if known. This provision is entirely separate from any court action, so in addition to fines and costs imposed by a court, the offender may face heavy clean-up costs. Costs recovered under this legislation amounted to a maximum of £57,000 in Thames Region.

7.5 NRA PROSECUTIONS FOR INCIDENTS THAT OCCURRED IN 1993

7.5.1 Introduction

This section serves to highlight the more notable pollution incidents that occurred during 1993 for which legal action has been taken. These cases illustrate the way in which the legal process has operated and depict the types of incidents dealt with by the NRA on a regular basis. The section further clarifies case law and examines some of the more unusual and interesting cases. Prosecutions brought for breach of consent conditions are not considered in this section.

7.5.2 Organic Waste Incidents

The NRA's Farm Waste Group report (NRA, Water Quality Series No.6, 1992) highlights the need for a multifunctional approach in dealing with the problems of organic waste pollution. The production of farm waste management plans, farm inspections incorporating pollution prevention advice and education, co-operation and liaison with the farming community and, if appropriate, legal action are examples. The Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations 1991 may be used in addition to Section 85 of the Water Resources Act 1991, and aim to prevent pollution by setting minimum standards for storing and handling these materials. New or extensively enlarged or reconstructed facilities are required to comply with the regulations; however, compliance with them is not a defence against prosecution, but may be a mitigating factor. The following cases are examples of where formal legal action could not be avoided.

In South Western Region, 1,350,000 litres of slurry escaped when a bolt sheared off an above ground slurry store. The slurry discharged across a field and, despite attempts to contain it, heavy rain helped wash a total of 9,000 litres into the river, affecting a stretch of main river approximately 50km long. As a result, two potable water abstractions were temporarily closed and three fish farms and an industrial abstractor were warned of the hazard. The farmer was issued with a formal caution.

In a similar incident, approximately 36,000 litres of slurry escaped into a watercourse following the collapse of a slide valve on the discharge from a slurry store. A slug of pollution 2/3 km long polluted 12 km of river but, due to an NRA fish rescue operation, resulted in only a small fish kill. The farmer was prosecuted and a fine of £2,000 was levied with the NRA obtaining costs of £500.

7.5.2.1 Recharging under Section 161

In Anglian Region there was a case of particular interest where the criminal conviction against the defendant was eventually quashed but the NRA invoked its powers under Section 161 of the Water Resources Act 1991 whereby the costs of undertaking anti-pollution works and operations were recovered from the discharger. The criteria for determining financial liability for such works is the same as that for assessing criminal liability under Section 85 of the Water Resources Act, but significantly the NRA has no formal power to force a person responsible into carrying out the works. The burden is on the NRA to carry out the works before it is entitled to recover reasonable expenses. Section 161 is a civil claim mutually exclusive from any criminal prosecution and it is striking that although the defendant in this case had his conviction quashed, his civil liability remained and the NRA recovered a substantial proportion of its costs.

The incident itself involved the discharge of 3 million gallons of pig slurry which formed a slug of pollution killing 10,000 fish over approximately 74 km of river. The NRA duly prosecuted the owner of the farm where, following a four day trial in Crown Court, he was convicted, fined £10,000 and ordered to pay £20,000 towards the NRA's legal and technical costs. The Judge ordered that costs incurred by the NRA for fish restocking and surveys should be dealt with by way of civil proceedings. The farm owner subsequently appealed against his conviction, the Appeal Court found in his favour on a legal technicality and the conviction was quashed. The NRA, together with a local angling club, then instigated civil proceedings in a claim for damages caused by the pollution to the fishery and for fish restocking and survey costs. The claim for £20,000 legal and technical costs was also resurrected. After two weeks of civil proceedings, the NRA proved their case successfully and the farm owner was ordered to pay costs of approximately £99,000 of which £8,000 was paid to the angling club.

7.5.3 Oil Incidents

Gas oil from a large foodstuffs manufacturer in Thames Region escaped via a break in an oil feed line and found its way into the surface water system. From there it was pumped into a feeder to the Grand Union Canal which runs directly under the factory. The gas oil affected birds which use the canal feeder, killing nine of them, including four Canada geese embryos. In addition to paying the clean up costs, Magistrates fined the company £9,000 and ordered them to pay £400 legal costs to the NRA.

In South Western Region a report from a member of the public revealed gross oil pollution in a major urban watercourse. Investigations found that the oil originated from a construction site where poor on-site management of re-fuelling operations from a bunded bulk oil storage tank, together with an inadequate temporary oil interceptor, had caused the problem. A considerable area of ground was contaminated and the watercourse was visibly affected for 2km. Following legal proceedings the firm was fined £7,500 and ordered to pay £795 in legal costs to the NRA.

7.5.3.1 Third Party Intervention

The issue raised in a case in Severn-Trent Region was whether vandalism could become an intervening act and ultimately relieve the alleged polluter from liability. The case involved the loss of heating oil from a 5,000 litre oil tank belonging to an engineering company. The tank was situated adjacent to a surface water drain which led to a watercourse. A sight gauge was fixed to the tank and the flow of oil to the gauge was controlled by a tap. During a holiday period no lock was placed on the tap, but pliers had been used to wind wire tightly around the gauge. Subsequently the brook was found to be polluted with oil, the source being the engineering yard where the sight gauge on the oil tank had been vandalised.

The NRA prosecuted the engineering company as the site had been subject to vandalism on previous occasions. The Court discussed the relevance of the foreseeability of vandalism and it was held, despite

previous incidents and the company director's knowledge of a danger of vandalism to the oil tank, that the discharge was not directly attributable to the company.

7.5.4 Chemical Incidents

Of particular interest was the first prosecution of a company director under Section 85 of the Water Resources Act 1991 which took place in Severn-Trent Region. Following sampling by the NRA the solvent trichloroethane was found present in samples from a watercourse at more than 500 times the World Health Organisation's recommended safe levels. Other degreasing chemicals were also found in the brook, the overall result being a major fish kill.

Investigations revealed grossly polluting discharges of solvent based materials from two companies, both of which were involved in the reclamation of industrial solvents and were managed by the same director. Day to day operations were supervised by the managing director and he was in personal control of the delivery and storage arrangements of drums of chemicals. A continuing discharge from the site, caused by poor housekeeping, resulted in convictions after a contested hearing and fines to the managing director and his companies of £7,000. He was then obliged to take preventative measures to protect the watercourse from future contamination.

7.5.5 Sewage Incidents

In Thames Region, a sewage pollution which persisted for five days occurred when a foul sewer was blocked causing an overflow to the surface water system which discharges to a local brook. Despite repeated warnings from the NRA, the company and its agents failed to solve the problem which meant the pollution carried on for a long period of time. The Magistrates fined the company £10,000, against which the company subsequently appealed. In Crown Court, however, the original fine of £10,000 was upheld and legal costs of £530 were awarded to the NRA. The Crown Court felt that the company and its agents could have sorted out the blockage much more quickly, thus preventing the continued pollution of the stream.

7.5.6 Other Incidents

An unusual, but very serious incident occurred in Thames Region when a contractor was instructed to clean a silt trap at the inlet to a lake in order to lower the lake level. The contractor opened a sluice at the outlet to the lake releasing a large quantity of silt which resulted in 1,300 fish deaths downstream. The contractor had left the sluice open all night which resulted in the lake level dropping considerably. Some of the fish that died had been flushed downstream from the lake. The contractor was charged under Section 90 (1) of the Water Resources Act 1991 with causing silt to pass into the stream from the lake. He was conditionally discharged for six months and ordered to pay £330 legal costs to the NRA.

8 CONCLUSIONS AND RECOMMENDATIONS

A number of conclusions together with recommendations for future action can be drawn from this report:

8.1 The number of both reported and substantiated incidents has continued to rise, with an increase of 8% since 1992. Whilst this increase has not been substantial, the NRA must continue it's efforts in pollution prevention and control to reverse the upward trend.

8.2 On considering the total number of reported incidents, any efforts made to prevent/control pollution will be offset by greater public awareness in reporting pollution due to the publicity surrounding the introduction of the new national freefone number (0800 80 70 60) in September 1993. In addition, the campaign of pollution prevention site visits by the NRA may have served to raise awareness and at the same time reveal pollution.

8.3 Pollution incidents from industrial sources rose by 33% during 1993. This is a clear indication of the need for the introduction of Regulations defining minimum standards for the storage of oils and chemicals on industrial sites.

8.4 Despite real progress in cleaning up the quality of effluent from sewage treatment works, sewage pollution from combined sewer overflows in particular remains a significant problem, suggesting that instances of poor sewerage infrastructure and inadequate capacity exist throughout England and Wales.

8.5 Oil pollution incidents accounted for a quarter of all those substantiated during 1993 and, as in previous years, the number of incidents involving oil is rising. It is important that pollution prevention campaign efforts continue to target this area.

8.6 The high percentage of incidents categorised as either unclassified or "other" stresses the need for a nationally consistent approach to the recording and reporting of pollution incidents.

9 REFERENCES

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APPENDIX A

DEFINITIONS

NRA Definitions of Pollution Incident Categories

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) extensive remedial measures necessary;
f) major effect on amenity value.

Category 2

A significant pollution which involves one or more of the following:

a) notification to abstractors necessary;
b) significant fish kill;
c) measurable effect on invertebrate life;
d) water unfit for stock;
e) bed of watercourse contaminated;
f) amenity value to the public, owners or users reduced by odour or appearance.

Category 3

Minor suspected or probable pollution which, on investigation, proves unlikely to be capable of substantiation or to have no notable effect.

MAFF Definition of a Serious Incident

An incident that has any of the following effects and includes all cases where legal proceedings are initiated:

a) downgrades the class of any water course classified in the River Quality Survey by more than 10% over 0.5 km;
b) interferes with water abstraction through quantity and quality;
c) results in fish mortality;
d) causes significant interference with legitimate use of water, including stock watering;
e) adversely affects any SSSI, nature reserve or area of high conservation interest.

APPENDIX B

Prosecutions relating to pollution incidents that occurred in 1992 irrespective of the date of hearing.
(P = Prosecutions; C = Convictions)

Region	Prosecutions	Convictions
Anglian	60	55
Northumbria & Yorkshire	62	51
North West	81	81
Severn-Trent	84	84
Southern	13	12
South Western	41	39
Thames	40	37
Welsh	44	42
Total	**425**	**401**

APPENDIX C

Pollution Prevention Guidelines - available in most Regions.

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 and construction sites
PPG7	Fuelling Stations: Construction and Operation
PPG8	Safe storage and disposal of used oils
PPG9	The prevention of pollution of controlled water by pesticides
PPG10	Preventing pollution from Highway depots
PPG11	Preventing pollution on industrial sites
PPG12	The prevention of pollution of controlled waters by sheep dip
PPG13	High pressure water and steam cleaners
PPG14	Inland waterways: Marinas and Craft
PPG15	Preventing pollution from foodstores and similar sites
PPG16	Schools and other educational establishments

In draft:

Guidance on avoiding pollution from scrapyards

Leaflets:

River Pollution and how to avoid it

Oil pollution and how to avoid it

Chemical Pollution and how to avoid it

Chlorinated Solvent Pollution and how to avoid it

Pollution from your Home and how to avoid it

Is your home killing fish - advice on wrong connections

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Rivers House
Waterside Drive
Aztec West
Almondsbury
Bristol
BS12 4UD
Tel: (0454) 624400
Fax: (0454) 624409
London Office
Eastbury House
30-34 Albert Embankment
London SE1 7TL
Tel: (071) 820 0101
Fax: (071) 820 1603

ANGLIAN
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Goldhay Way
Orton Goldhay
Peterborough PE2 5ZR
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Fax: (0733) 231840

NORTHUMBRIA & YORKSHIRE
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Leeds LS1 2QG
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Fax: (0532) 461889
Gosforth Office
Eldon House
Regent Centre
Gosforth
Newcastle Upon Tyne
NE3 3UD
Tel: (091) 213 0266
Fax: (091) 284 5069

NORTH WEST
Richard Fairclough House
Knutsford Road
Warrington WA4 1HG
Tel: (0925) 653999
Fax: (0925) 415961

SEVERN-TRENT
Sapphire East
550 Streetsbrook Road
Solihull B91 1QT
Tel: (021) 711 2324
Fax: (021) 711 5824

SOUTHERN
Guildbourne House
Chatsworth Road
Worthing
West Sussex BN11 1LD
Tel: (0903) 820692
Fax: (0903) 821832

SOUTH WESTERN
Manley House
Kestrel Way
Exeter EX2 7LQ
Tel: (0392) 444000
Fax: (0392) 444238

THAMES
Kings Meadow House
Kings Meadow Road
Reading RG1 8DQ
Tel: (0734) 535000
Fax: (0734) 500388

WELSH
Rivers House/Plas-yr-Afon
St Mellons Business Park
St Mellons
Cardiff CF3 0LT
Tel: (0222) 770088
Fax: (0222) 798555

The NRA is committed to the principles of stewardship and sustainability. In addition to pursuing its statutory responsibilities as Guardians of the Water Environment, the NRA will aim to establish and demonstrate wise environmental practice throughout all its functions.

TO REPORT ANY ENVIRONMENTAL INCIDENTS (E.G. FLOODING OR POLLUTION) PLEASE CONTACT US ON THE FOLLOWING FREEFONE NUMBER: 0800 80 70 60

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