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PESTICIDES IN THE AQUATIC ENVIRONMENT 1994

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1) Introduction

In November 1995, the National Rivers Authority (NRA) published Water Quality Series Report No. 26 "Pesticides in the Aquatic Environment". This was the first comprehensive report on pesticides and included data from 1992 and 1993. This paper follows on from that publication and summarises data from 1994. It does not include information on pesticide legislation and use, which can be found in the Water Quality Series Report, but concentrates on the significance of the pesticides detected in 1994.

2) The National Picture

During 1994, the NRA monitored 144 pesticides in Controlled Waters¹ and recorded almost 300,000 results from about 2,500 sites. For the purposes of this report, the data were compared against two criteria;

- Environmental Quality Standards (EQSs),
- the 0.1 µg/l standard set in the EC Drinking Water Directive.

An EQS is the concentration of a substance which must not be exceeded within the aquatic environment in order to protect it for its recognised uses. EQSs are specific to individual pesticides and are produced using the best available environmental and ecotoxicological information. Currently EQSs only relate to surface water. Statutory EQSs have been set in legislation by the European Commission and in the UK by the Department of Environment. Other non-statutory operational EQSs have been developed by the Environment Agency and its predecessor, the NRA, to control discharges and assess water quality.

The standard set in the Drinking Water Directive is the standard which all pesticides must meet in drinking water irrespective of their toxicity.

For the purposes of this report all "less than" results were treated as zero e.g. $<0.05\mu\text{g/l} = 0$.

2.1) Surface Freshwaters

In 1994 the NRA monitored 139 pesticides and recorded almost 250,000 results in surface freshwaters from 1483 sites. 10.4% of these sites (154) exceeded the EQS for at least one pesticide. In total 2.6% of sites exceeded for List I pesticides, 4.7% for List II and Annex 1A, and 5.3% for operational standards². These exceedences do not correspond exactly with those reported to DoE, as not all the sites are downstream of discharges and are therefore not appropriate for Directives monitoring. In addition, DoE specify that when reporting EQS failures, all less than results are taken as half the value, whereas in this report "less thans" were

¹Controlled Waters are waters defined in the Water Resources Act (1991) and include all river, lakes, groundwaters, estuaries and coastal waters.

² Adding these figures together does not equate to 10.4% because some sites fail for more than one pesticide

assumed to be zero.

Table 1 indicates the number of sites exceeding EQS for individual pesticides and the location of the failures are illustrated in Figures 1-3. Detailed information on the sites and concentrations can be found in Appendix I.

There appears to be a significantly higher percentage of sites exceeding EQS in 1994 than 1993. There are two main reasons for this:

- a) In 1993 EQS compliance was assessed for 23 pesticides, whereas by 1994 there were EQSs for 45 pesticides. Therefore in 1994 greater compliance was assessed;
- b) In 1994, EQS assessments were made according to different water type e.g. surface freshwater, estuary and coastal water, whereas in 1993 the percentage of all sites failing was reported together. Because most of the estuary and coastal water sites comply with EQSs this reduces the overall percentage failure.

The most frequent exceedences were for the sheep dip insecticides propetamphos, diazinon and chlorfenvinphos. These are associated with textile industries involved in processing wool, but were also seen in upland areas, where they probably occur as a result of incorrect use and disposal of sheep dips. List I exceedences are most frequently observed for Total HCH. Most exceedences were associated with the scouring of a batch of imported wool containing lindane in the North East Region. The company have subsequently been prosecuted. Exceedences for dieldrin in the North East arise from a trade effluent contaminated with dieldrin. The effluent has now be reseeded to a different site, where the contamination can be reduced. This has lead to a reduction in dieldrin concentrations since 1994 and the EQS is now being met. Exceedences for List II compounds are seen for the moth proofing chemicals PCSD/eulan, permethrin and cyfluthrin. Once again, these are mainly associated with the textile industry, but improvements have been made since 1993 and should continue into the future. The exceedences for cyfluthrin occur mainly in South Western Region and this is being investigated. Exceedences of EQS for isoproturon were also seen for the first time in 1994. This may be as a result of the unusual weather conditions during the cropping year 1993/94. The autumn of 1993 was extremely wet and farmers were unable to get onto their land to apply autumn herbicides. Consequently, a great deal of IPU was applied in the spring of 1994. As a result, when they returned to the "normal" application timing in the autumn of 1994, two doses had been applied in the monitoring year of 1994.

Comparing the data against 0.1 µg/l shows that of the 139 pesticides monitored 63 were detected above 0.1 µg/l, 44 were detected, but did not exceed 0.1 µg/l and the other 32 were not detected. Detailed information can be found in Appendix II and a summary is given in Figure 4.

The cereal herbicide isoproturon (IPU) exceeded 0.1 µg/l most frequently in surface freshwaters in 1994. The percentage failures more than doubled over the previous years results. The probable explanation is given above.

Detections above 0.1 µg/l of the herbicide bentazone also increased in 1994, although monitoring was restricted to the Anglian Region.

Figure 1. Surface Freshwater Sites Failing List I Pesticide Environmental Quality Standards in England and Wales During 1994

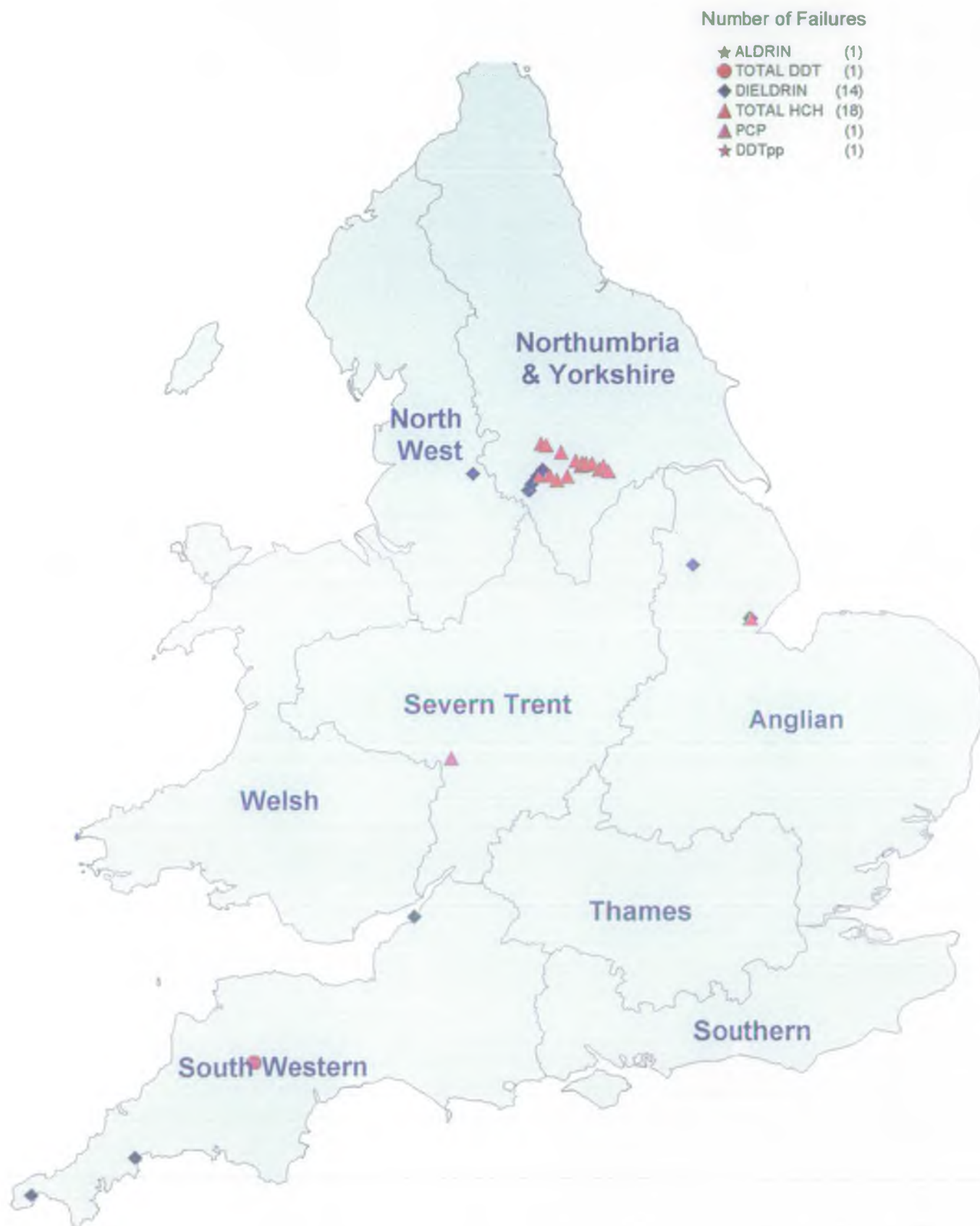
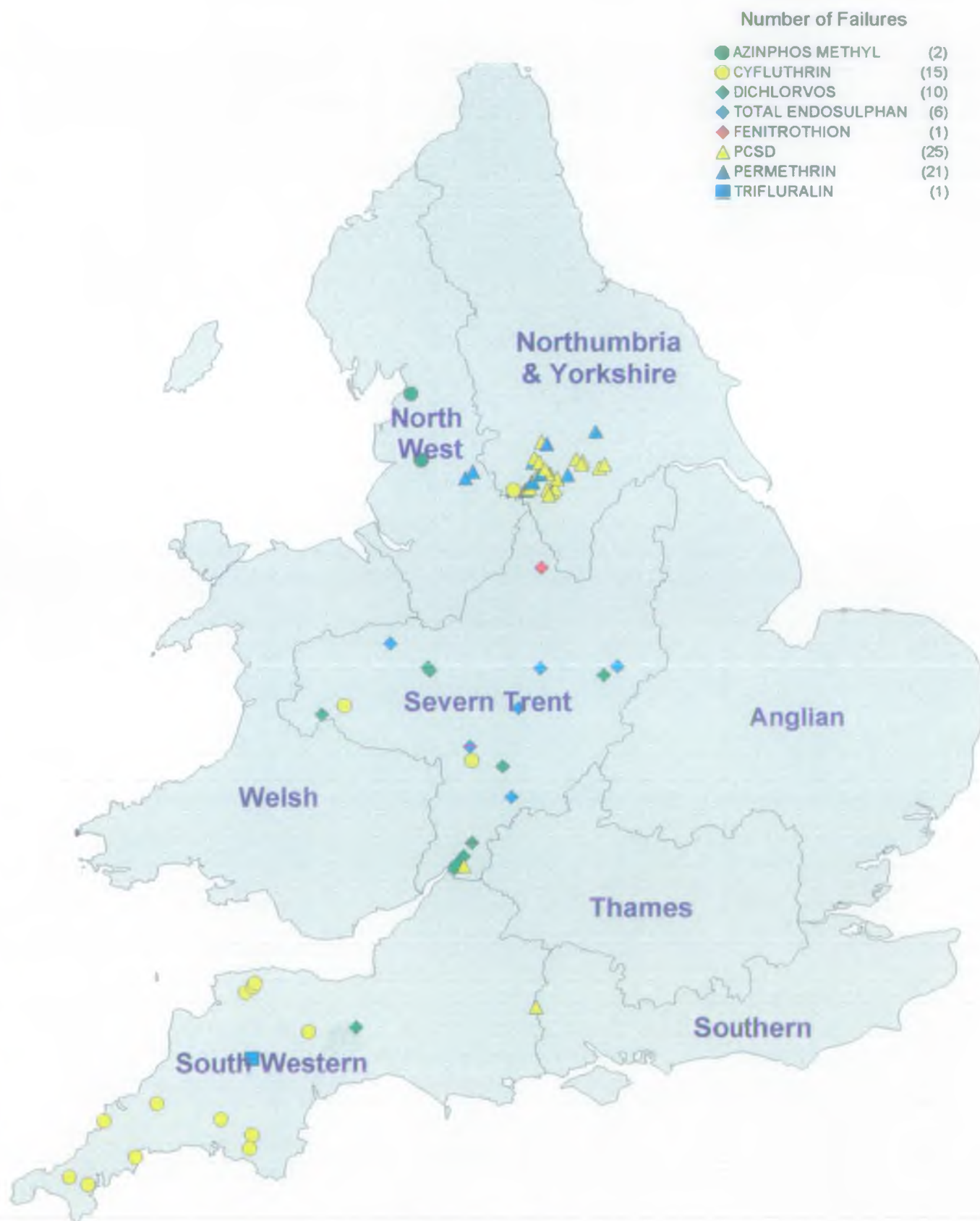


Figure 2. Surface Freshwater Sites Failing List II and Annex 1A Pesticide Environmental Quality Standards in England and Wales During 1994



PESTICIDES IN LIST I EXCLUDED

Figure 3. Surface Freshwater Sites Failing Operational Pesticide Environmental Quality Standards in England and Wales During 1994

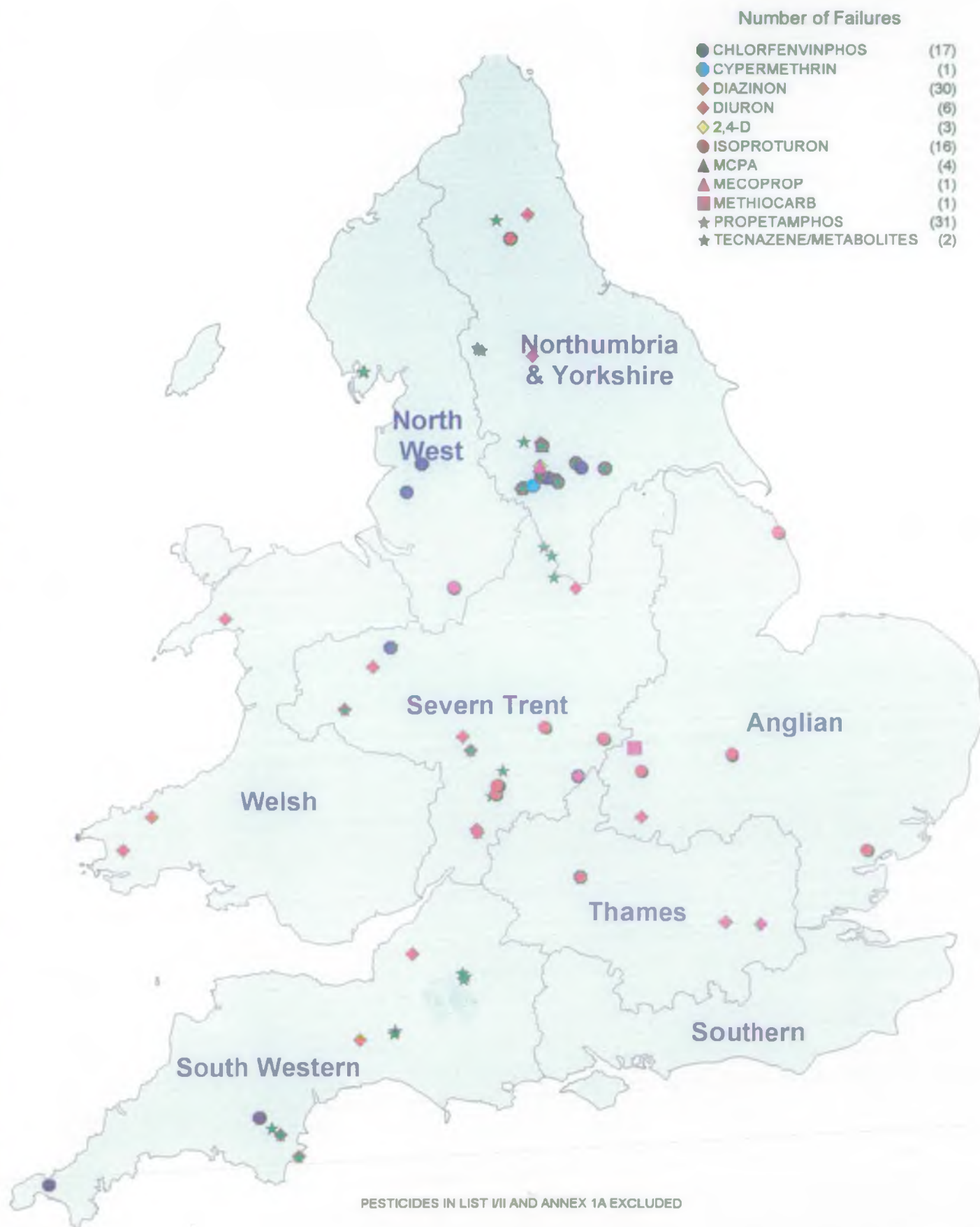


Figure 4. Pesticides most frequently exceeding 0.1 µg/l in surface freshwaters in England and Wales 1992-94

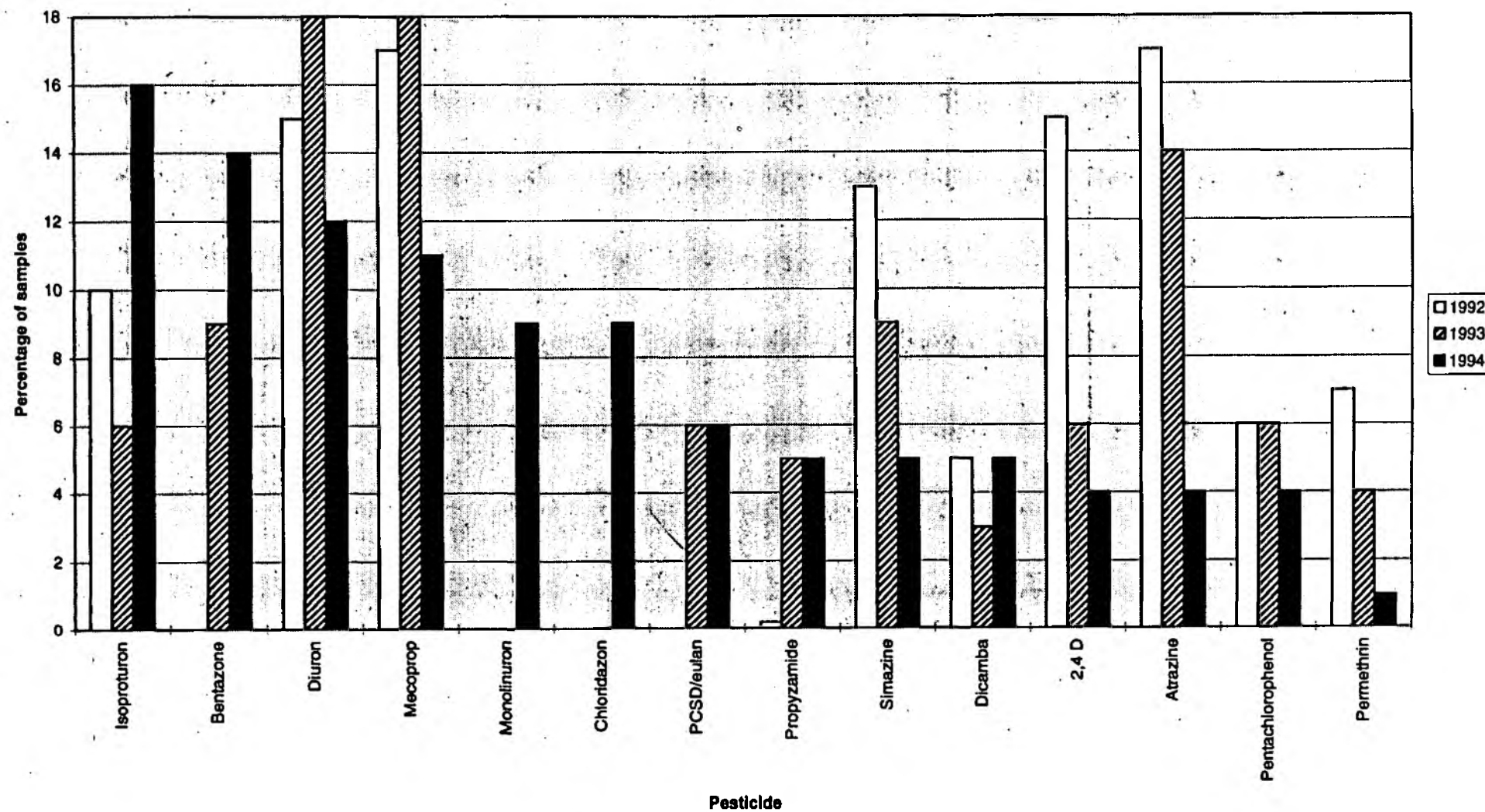


Table 1. Total number of sites exceeding Environmental Quality Standards for individual pesticides in surface freshwaters during 1994.

List I	Total sites (percentage)	List II/Annex 1A	Total sites (percentage)	Other	Total sites (percentage)
Total HCH	18 (1.2%)	PCSD/eulan	25 (1.7%)	Propetamphos	31 (2.1%)
Dieldrin	14 (0.9%)	Permethrin	21(1.4%)	Diazinon	30 (2.0%)
Endrin	5 (0.34%)	Cyfluthrin	15 (1.0%)	Chlorfenvinphos	17 (1.1%)
Isodrin	5 (0.34%)	Dichlorvos	10 (0.7%)	Isoproturon	16 (1.1%)
Aldrin	1(0.06%)	Endosulfan	6 (0.4%)	Diuron	6 (0.4%)
Total DDT	1 (0.06%)	Azinphos methyl	2 (0.01%)	MCPA	4 (0.3%)
pp DDT	1 (0.06%)	Fenitrothion	1 (0.06%)	2,4 D	3 (0.2%)
PCP	1(0.06%)	Trifluralin	1 (0.06%)	Tecnazene/ metabolites	2 (0.1%)
				Cypermethrin	1 (0.06%)
				Mecoprop	1 (0.06%)
				Methiocarb	1 (0.06%)

The percentage of samples failing for diuron and mecoprop fell in 1994. Diuron is a herbicide used in non-agricultural situations, and at the time of the ban on atrazine and simazine, the detections of diuron increased. Prompt action by the manufacturers to improve the use of the product appears to have had some effect in reducing environmental concentrations. They recommended that the product was applied earlier in the season, when the weeds were smaller, which allowed the dose to be reduced. Also, a stewardship campaign targeting local authorities was initiated, with the intention of re-educating users in the correct use and disposal of the product. This does illustrate that improvements can be made if the users are targeted and are made to take notice of key issues.

The reduction in mecoprop concentrations may be linked to users switching to the newer formulations of mecoprop containing only the active isomer. This halves the amount of mecoprop required and should result in lower concentrations being detected in the environment. MAFF's Pesticides Safety Directorate have already agreed that the new formulation of mecoprop should be used in the future, but manufacturers have until December 1997 to re-register new formulations. Hopefully, distributors and farmers will see the benefit of the new formulation and start using it sooner.

Monolinuron and chloridazon were both seen to exceed 0.1µg/l for the first time in 1994, although all the monitoring was undertaken in the Anglian Region. It is important to establish

whether this is repeated in future years.

A clear downward trend in detections is seen for atrazine and simazine. The last legal use of these two herbicides for non-agricultural situations was in August 1993 and therefore any detections of atrazine or simazine in 1994 should have arisen from their agricultural use. Atrazine is used on maize, while simazine can be used on a variety of agricultural and horticultural crops. The Environment Agency is concerned about the use of atrazine on maize, because the acreage of maize being grown is increasing rapidly. This is resulting in atrazine being detected in surface waters in maize growing areas, but of more concern is the potential for atrazine to contaminate groundwater where maize is grown over vulnerable aquifers. This issue is being discussed with the Pesticides Safety Directorate.

2.2) Groundwaters

Monitoring of groundwaters is not as widespread as that for surface freshwaters. In 1994, a total of 75 pesticides were monitored from 372 sites leading to nearly 9,000 results. Currently, there are no EQSs established for groundwater, but failures of the 0.1 µg/l standard are relevant, especially where groundwater is used for public water supply. Groundwaters are rarely treated with anything more extensive than chlorine before entering supply, so any contamination by pesticides is significant. Water supplies derived from groundwater are regularly monitored by water companies and as a result, NRA monitoring has been limited. This is being addressed by the development of a national groundwater monitoring programme to be carried out by the Environment Agency.

Because groundwater monitoring is limited, both in number of samples and geographically, it is difficult to draw too many conclusions from the data. However, it is clear that atrazine was the pesticide most frequently detected above 0.1 µg/l in groundwaters between 1992 and 1994 and that concentrations are not declining despite the ban on non-agricultural use. This is probably to be expected since groundwaters take much longer to recover from pollution than surface waters. It is also possible that the continuing use of atrazine on maize may be a contributing factor. Failures for IPU also seem to have increased significantly in 1994 and this needs to be investigated further to ensure that the situation does not deteriorate. Other pesticides which are detected above 0.1 µg/l are mainly from the triazines, "urons" and phenoxy acid herbicides. Figure 5 shows the pesticides that were most frequently detected above 0.1 µg/l. Detailed information on the pesticides detected in groundwater can be found in Appendix II.

2.3) Estuaries and Coastal Waters

In 1994 the NRA monitored 96 pesticides and recorded over 45,000 results in estuaries and coastal waters from 502 sites.

Exceedences of EQSs are seen infrequently with 8 sites (less than 2%) breaching relevant EQSs. Most frequent failures are seen for Total HCH (3) and PCSD (3), with a single exceedence for both dieldrin and endosulfan. This is illustrated in Figure 6 and details of the sites and concentrations are given in Appendix I.

Figure 5. Pesticides most frequently exceeding 0.1 µg/l in groundwaters in England and Wales 1992-1994

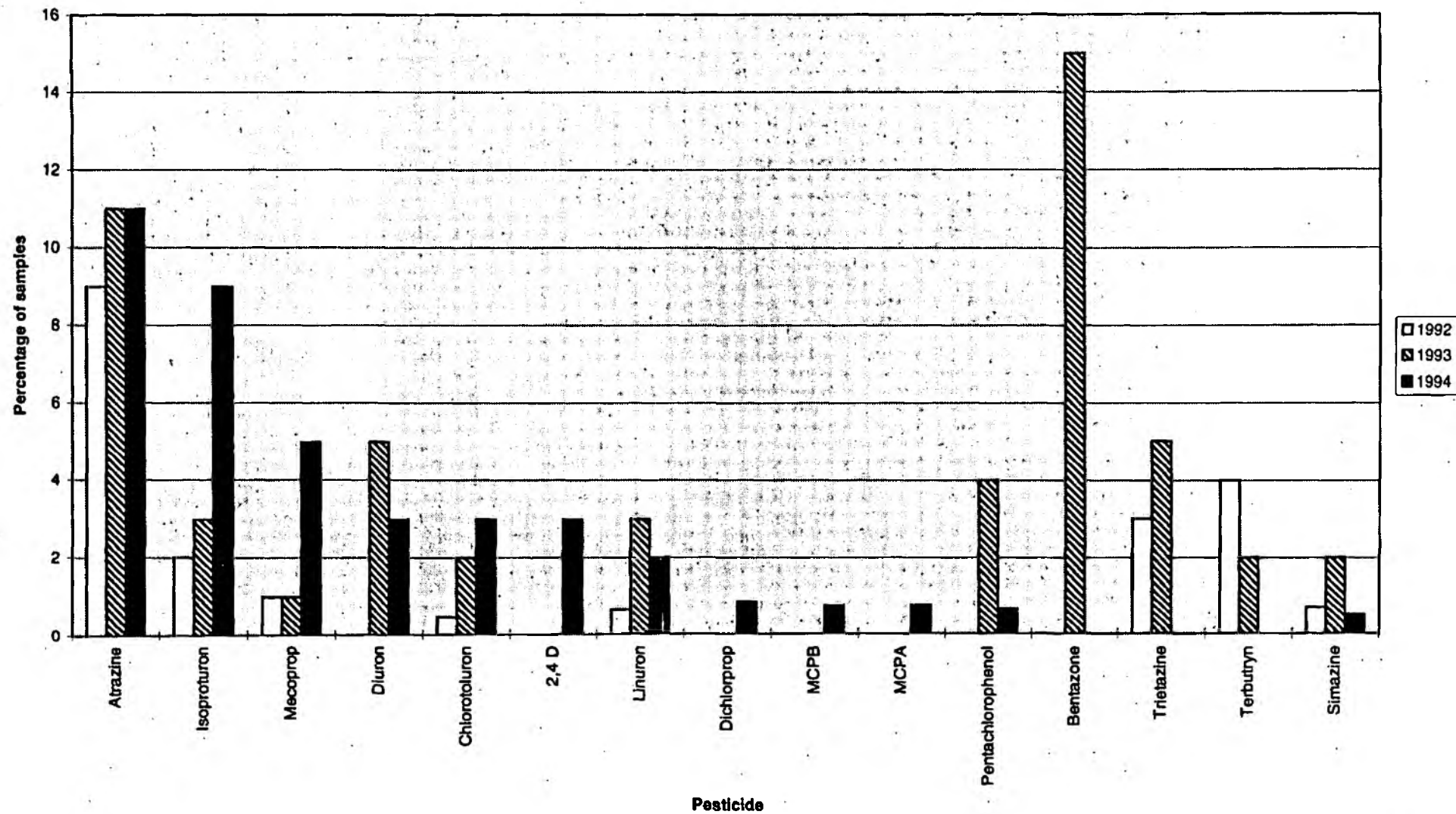
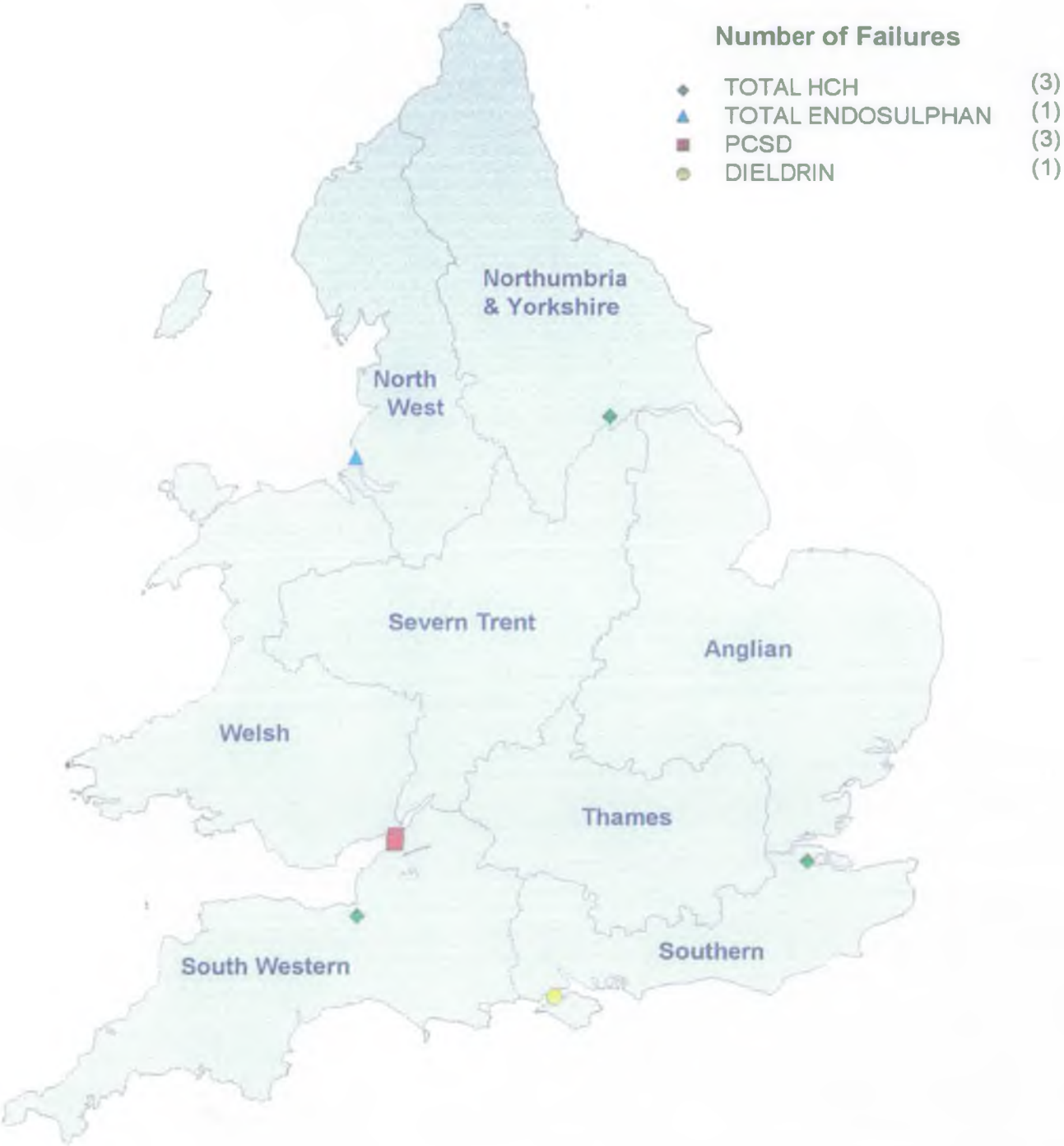


Figure 6. Estuary and coastal water sites failing Environmental Quality Standards for pesticides in England and Wales during 1994



Although estuaries and coastal waters are not used to supply drinking water, the data have been compared against 0.1 µg/l to determine those pesticides present in saline waters. Those most frequently observed are very similar to those in freshwaters, notably IPU, diuron, mecoprop, MCPA, PCSD, simazine and others from similar chemical groups. There has been a big increase in detections of IPU since 1992 and this needs investigating further. Detailed information on individual pesticides can be found in Appendix II.

3) The Regional Picture

3.1) Anglian

Exceedences of the EQSs for dieldrin and HCH at Boston are associated with the historic use of these pesticides at a timber treatment site. A treatment plant has now been installed and the situation should improve. Another exceedence occurs for dieldrin at Greetwell Beck and is believed to be related to the historic pesticide storage and manufacture in the area.

EQS exceedences were seen for the first time for IPU. Three are river sites and are believed to have arisen from diffuse or small point sources. The others are associated with pollution from a waste disposal site.

The EQS for the molluscicide methiocarb was also exceeded in the region during October and may have been associated with a spillage.

Failures of 0.1 µg/l in 1994 are illustrated in Figure 7. IPU exceeds 0.1 µg/l most frequently in the region. This shows a large increase in exceedences over the previous two years. The autumn of 1993 was very wet and consequently many farmers were unable to apply their IPU until the spring of 1994. IPU was applied again in the autumn, at the more traditional time and effectively resulted in two applications of IPU in 1994.

Mecoprop is also frequently detected, but there appears to be a decline in failures since 1992. This may be as a result of users switching to the newer formulation, which halves the dose required. Bentazone and diuron continue to be detected regularly in the region. There is a clear downward trend for atrazine and simazine since 1992 and their subsequent ban in non-agricultural situations.

Monolinuron and chloridazon were detected above 0.1 µg/l for the first time in 1994 and therefore it is important to establish whether this is repeated in future years and the corresponding action required.

No specific groundwater monitoring for pesticides was undertaken in 1994.

3.2) Severn Trent

Exceedences of EQS were mainly seen for the sheep dip insecticides diazinon and propetamphos. Most of these appear to be associated with rural upland areas where sheep are farmed. One site on the Stour may reflect the discharge of sewage effluent containing carpet manufacturing

effluent.

Other EQS exceedences occur for dichlorvos and failures were seen in similar locations in 1993. The source of dichlorvos has not been traced and seems to have a distribution in rural areas. An exceedence on the Severn at Gloucester is in the location of the docks area and this is also suspected of being responsible for the detections in the Gloucester and Sharpness Canal.

Exceedences of the EQS for IPU are seen for the first time and may again be due to the unusual weather. IPU surveys were conducted in both the Whitsun and Piddle Book catchments, but no source was located. This is related to delays in receiving analytical results for pesticides and the difficulty in sampling when pesticides may be detected in the environment.

The EQS for total endosulfan is also exceeded at various points across the region and action will be needed to ensure that EQS is met in future. There is no ready explanation for the detection of endosulfan at levels exceeding the EQS. However, there remains an analytical problem detecting endosulfan at the very low limits in the EQS and this may be a reason for the apparent failures. Endosulfan has very low usage and it is not easy to explain its presence in the River Tame at Perry Barr, which is an urban area of Birmingham. There is an increasing problem with discharges of pesticide and other chemicals in sewage effluents derived from the reception of tankered wastes. Consideration is currently being given to the investigation of these occurrences, but resources may be a problem.

IPU and mecoprop exceeded 0.1 µg/l most frequently. Percentage failures of IPU were much higher in 1994 than 1993, which again probably reflects the timing of application. There is a gradual decline in failures for simazine between 1992 and 1994, but this is not as marked as in other regions and may reflect the continued agricultural use in the region. This information is illustrated in Figure 8.

3.3) Northumbria and Yorkshire

In 1994 there was a notable increase in EQS failures for total HCH especially on the River Aire in Yorkshire. These were attributed to a wool scouring company with a consented discharge to foul sewer. The processing of a contaminated batch of imported Russian fleeces by this company led to a breach of their consent for lindane. Prosecution of the company resulted in a fine of £4,000 and £1,000 costs.

EQS failures for dieldrin result from a trade effluent discharging in the region. This effluent has now been sewered out from the Meltham sewerage system to the Huddersfield sewerage system. This has reduced the dieldrin levels since 1994, so that the EQS is now being met.

Continuing improvement in quality of effluent from textile industry discharges has resulted in a reduction in permethrin EQS failures. Consents have been issued for the major sewage works receiving these textile trade effluents and has resulted in "better housekeeping" with respect to moth proofer application within the textile industry. However, a number of sites still exceed the EQS for permethrin and further improvements are necessary to ensure that this recovery is sustained.

Figure 7. Pesticides most frequently exceeding 0.1 µg/l in surface freshwaters in Anglian Region 1992-1994

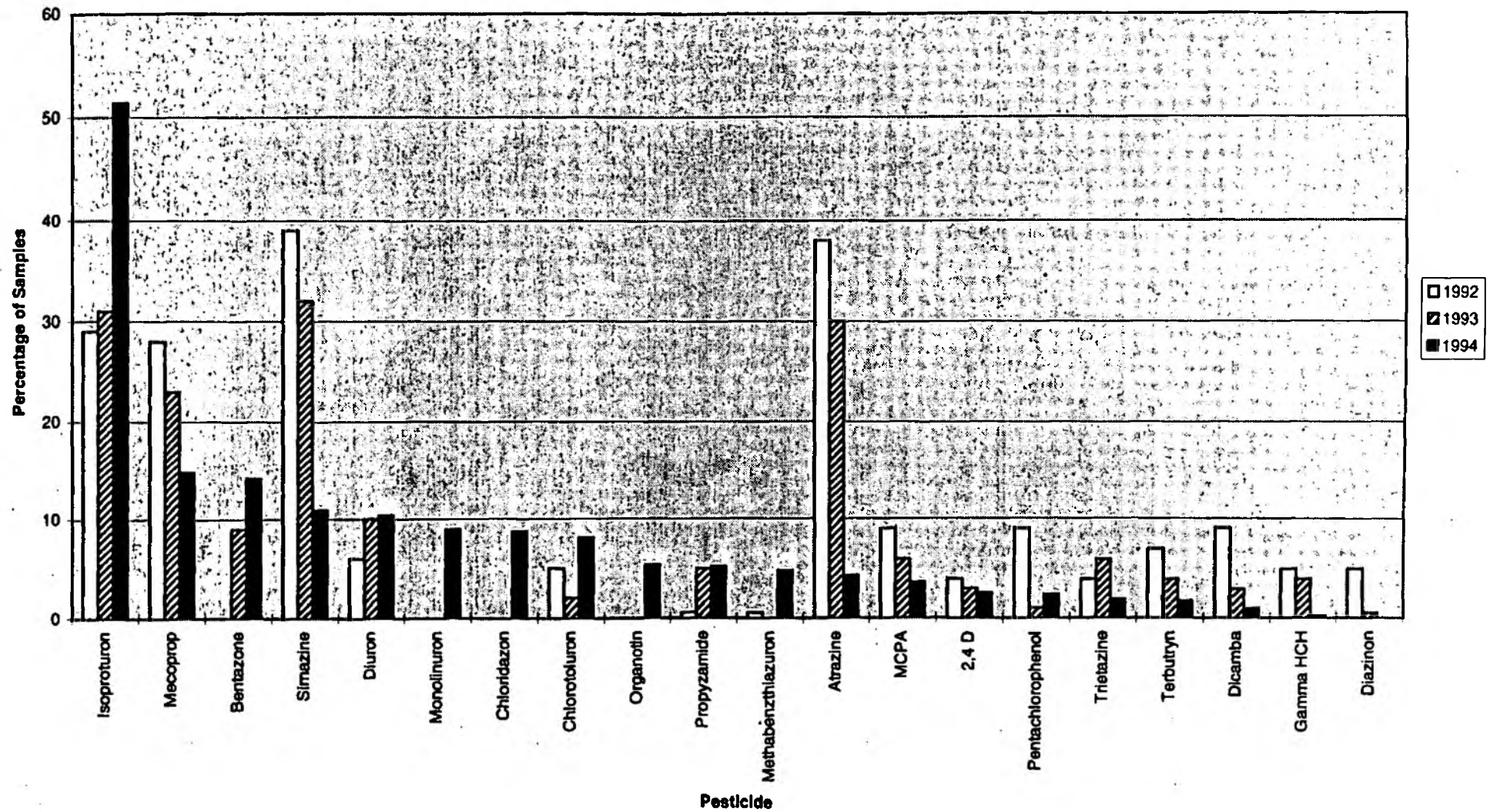
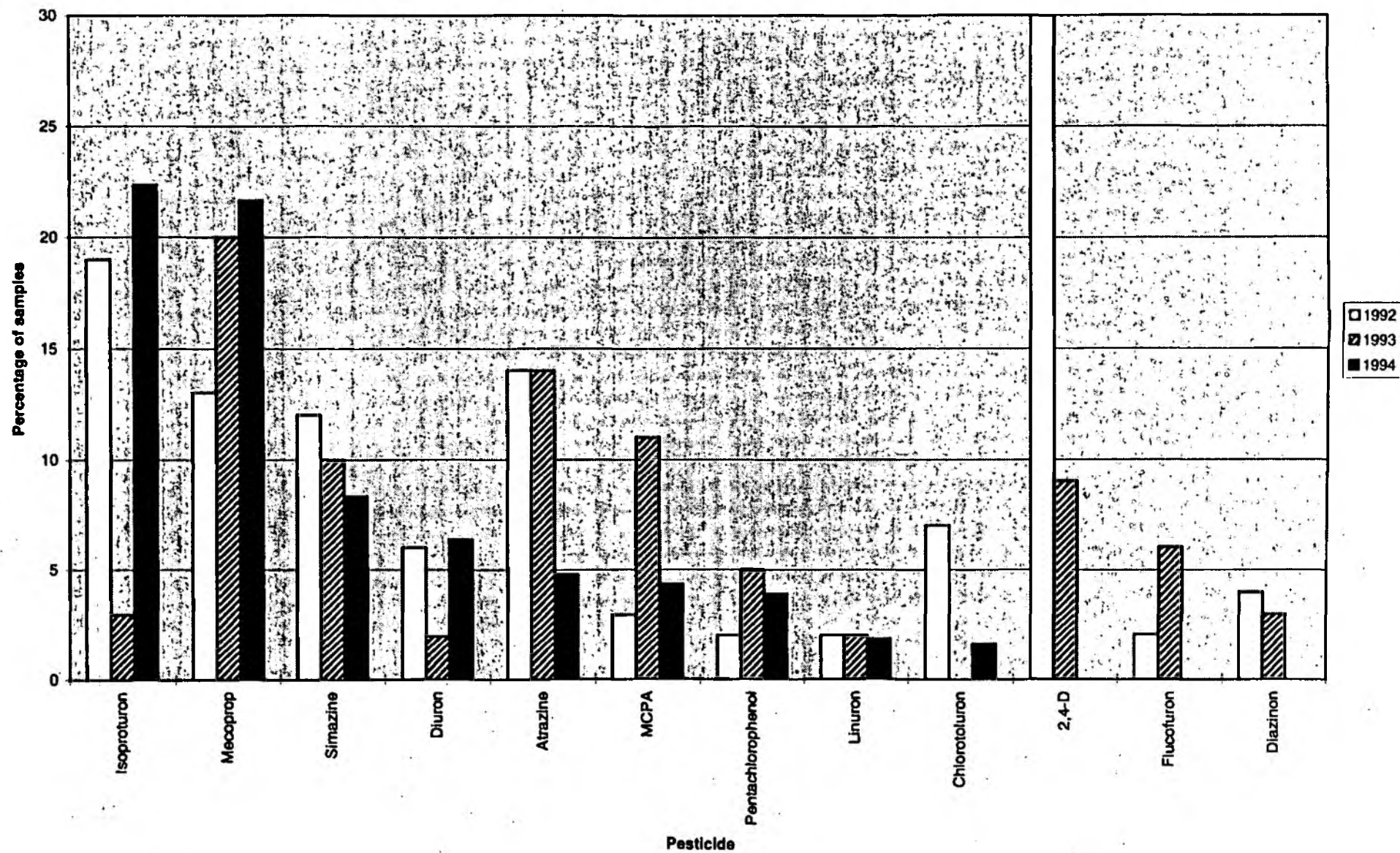


Figure 8. Pesticides most frequently exceeding 0.1 µg/l in surface freshwaters in Severn Trent Region 1992-1994



Diazinon EQS failures continue to be detected, as do exceedences for the other sheep dip pesticides propetamphos and chlorfenvinphos, which were not assessed against EQS in 1993. These are again mainly associated with the wool scouring process, but occasional isolated failures are probably due to pollution incidents linked with dipping sheep. Actions to control these substances are under review.

MCPA, 2,4-D and mecoprop were all seen to fail their operational EQS for the first time. All these herbicides are associated with a chemical manufacturer which has a consent to discharge to foul sewer and action is required to control these limits to ensure EQSs are met in future. Failures of 0.1 µg/l for these herbicides are linked to this discharge, but because the river is not abstracted for water supply they have been excluded from the 0.1 µg/l analysis in 1994. This is reflected in the apparent downward trend of their occurrence in the region - see Figure 9.

3.4) North West

Exceedences of the proposed and existing EQSs are mainly associated with industrial discharges to sewer from the textile and wool scouring industries. Permethrin and propetamphos being the most frequent pesticides to cause exceedences.

The EQSs for IPU and diuron were also exceeded in the vicinity of contaminated land at an agrochemical manufacturer's site. Improvements are required as part of the IPC authorisation relating to the process.

Exceedences of 0.1 µg/l are infrequent and are illustrated in Figure 10.

3.5) Southern

There were no reported freshwater exceedences of EQS in 1994, but a couple of marine failures, one for dieldrin and one for total HCH. Both of these arose because of a single high result during the year and as such it is difficult to find an explanation.

IPU and chlorotoluron exceeded 0.1 µg/l most frequently, with over 80% of IPU samples above this figure in 1994. Both pesticides were linked to a pollution incident on the Isle of Wight in the spring. Investigation revealed 12 farmers had used IPU and chlorotoluron according to good agricultural practice, but that all the spraying had been undertaken in three weeks in March. The heavy rainfall which followed led to very high levels of IPU being detected in the River Eastern Yar. Subsequent pollution prevention work and research projects have been undertaken to try to prevent the problem recurring.

Mecoprop was added to the monitoring programme in 1994 and consequently found to exceed 0.1 µg/l. This mirrors the national picture and would be expected in a rural agricultural region.

A decline in failures for atrazine and simazine can be seen clearly and is attributed to the ban on non-agricultural use. Figure 11 illustrates the pesticides detected above 0.1 µg/l in surface freshwaters.

3.6) South Western

The EQS for cyfluthrin appears to be most frequently exceeded and this is being investigated. It is possible that problems with analytical accuracy at the very low limit of detections required (EQS is 0.001 µg/l) are exacerbating the situation. Exceedences are also seen for the sheep dip pesticides propetamphos and diazinon. Those on the River Dart and Tidal Dart are linked to a trade discharge. The exceedence at Otterhead Reservoir arose when one high result was detected. Subsequent resampling reported diazinon below the limit of detection.

A contaminated field results in Spires Lake exceeding the EQS for aldrin, dieldrin, Total DDT and pp DDT, although the River Taw, into which it flows, consistently has levels below the LOD because of the significant dilution factor.

Exceedences of 0.1 µg/l are mainly associated with the herbicides mecoprop, IPU, atrazine and MCPA. This is illustrated in Figure 12. The frequency of detections of atrazine does not appear to be declining in the South West as it is in many other regions, and this is believed to be as a result of its widespread use on the maize crop which is increasing in acreage in the South West.

Atrazine is also detected above 0.1 µg/l in groundwaters in the region. If failures of the standard can be linked to the use of atrazine on maize, it may be necessary to impose further restrictions on atrazine to prevent groundwater contamination.

3.7) Thames

Two EQS exceedences occurred for diuron, which is probably attributable to its use in non-agricultural situations. One site also exceeded the EQS for both the sheep dips diazinon and chlorfenvinphos. The EQS exceedences observed for HCH in 1993 were not repeated in 1994.

Failures of the 0.1 µg/l standard increased noticeably for IPU in surface freshwaters, which again probably reflects the unusual season observed nationally. Exceedences of 0.1 µg/l for diuron remain high in the region, but levels of atrazine and simazine are continuing to decline in surface waters. Failures of 0.1 µg/l are illustrated in Figure 13.

Atrazine, mecoprop, IPU, chlorotoluron and diuron have all been detected in groundwaters above 0.1 µg/l in the region.

3.8) Welsh

Exceedences of EQS are limited to the sheep dip insecticide diazinon and are probably linked with spillages during dipping or incorrect disposal of the dip. Pollution control staff are carrying out a programme of farm visits in the catchments where the EQS was exceeded to identify sources of sheep dip discharges and to raise local awareness on pollution prevention measures.

Exceedences of 0.1 µg/l are relatively infrequent and have declined over the past two years. This is illustrated in Figure 14. Mecoprop, simazine, IPU and MCPA occur most frequently in the region.

Figure 9. Pesticides most frequently exceeding 0.1 µg/l in surface freshwaters in Northumbria/Yorkshire Region 1992-1994

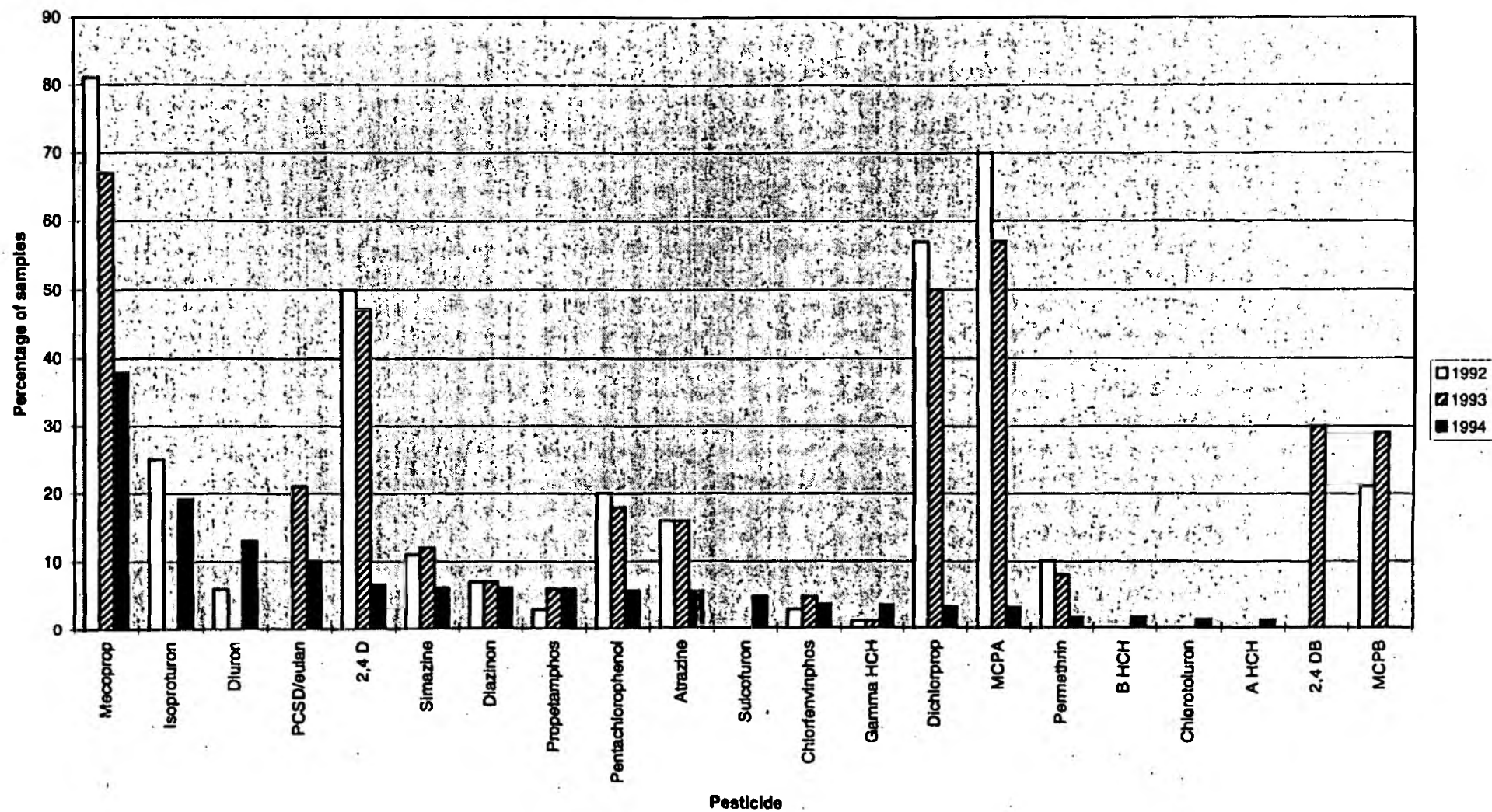


Figure 10. Pesticides most frequently exceeding 0.1 µg/l in surface freshwaters in North West Region 1992-1994

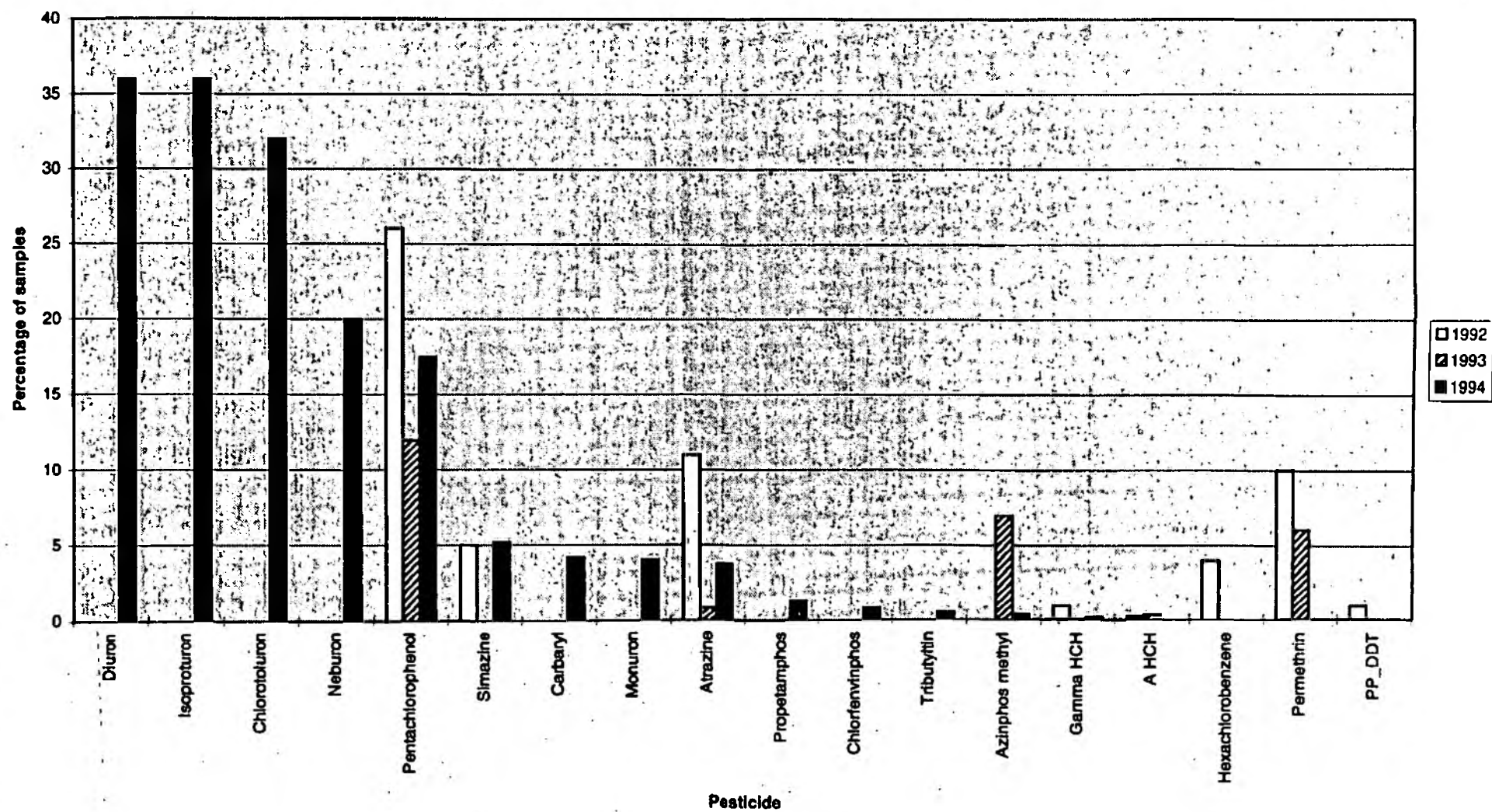


Figure 11. Pesticides most frequently exceeding 0.1 µg/l in surface freshwaters in Southern Region

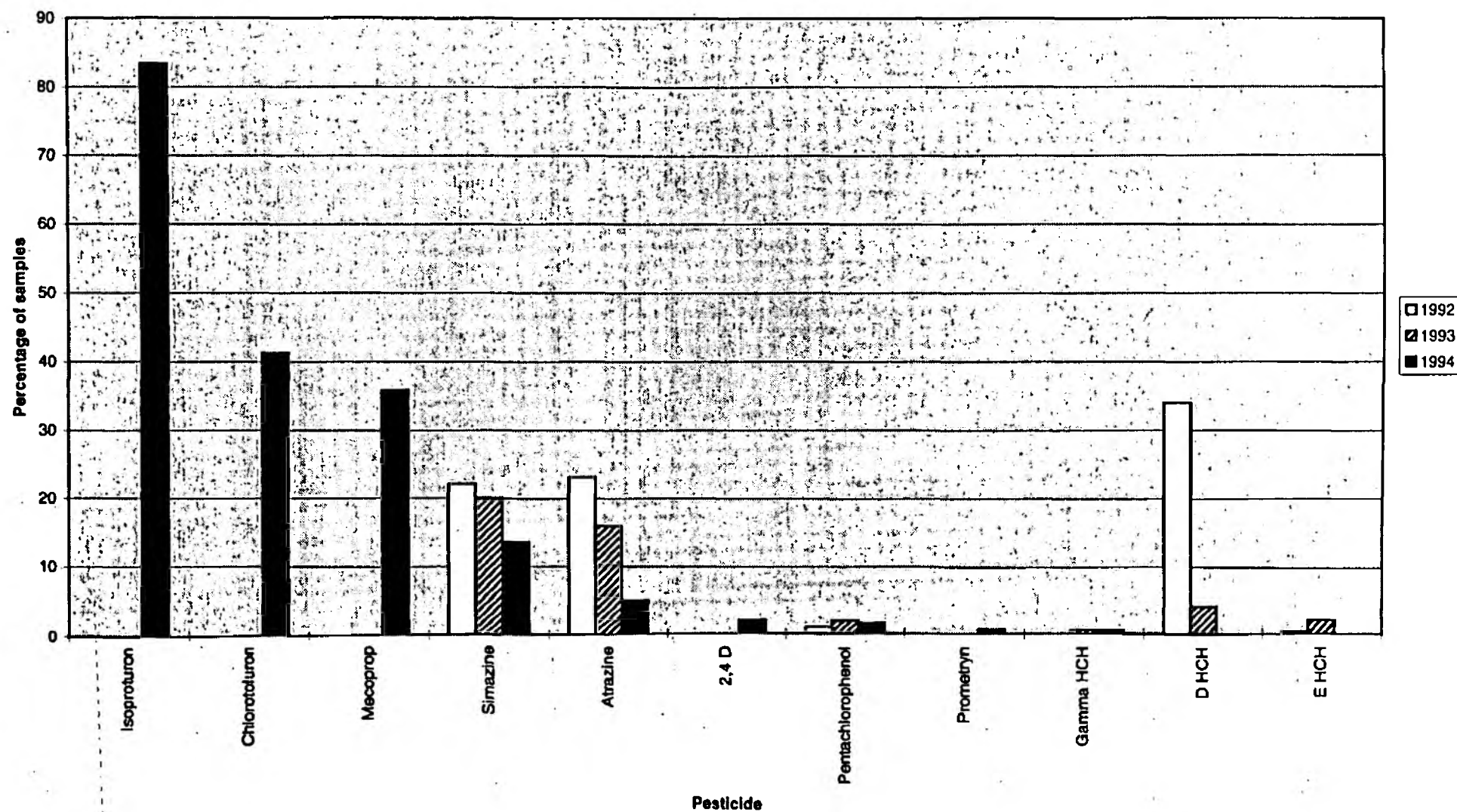


Figure 12. Pesticides most frequently exceeding 0.1 µg/l in surface freshwaters in South Western Region 1992-1994

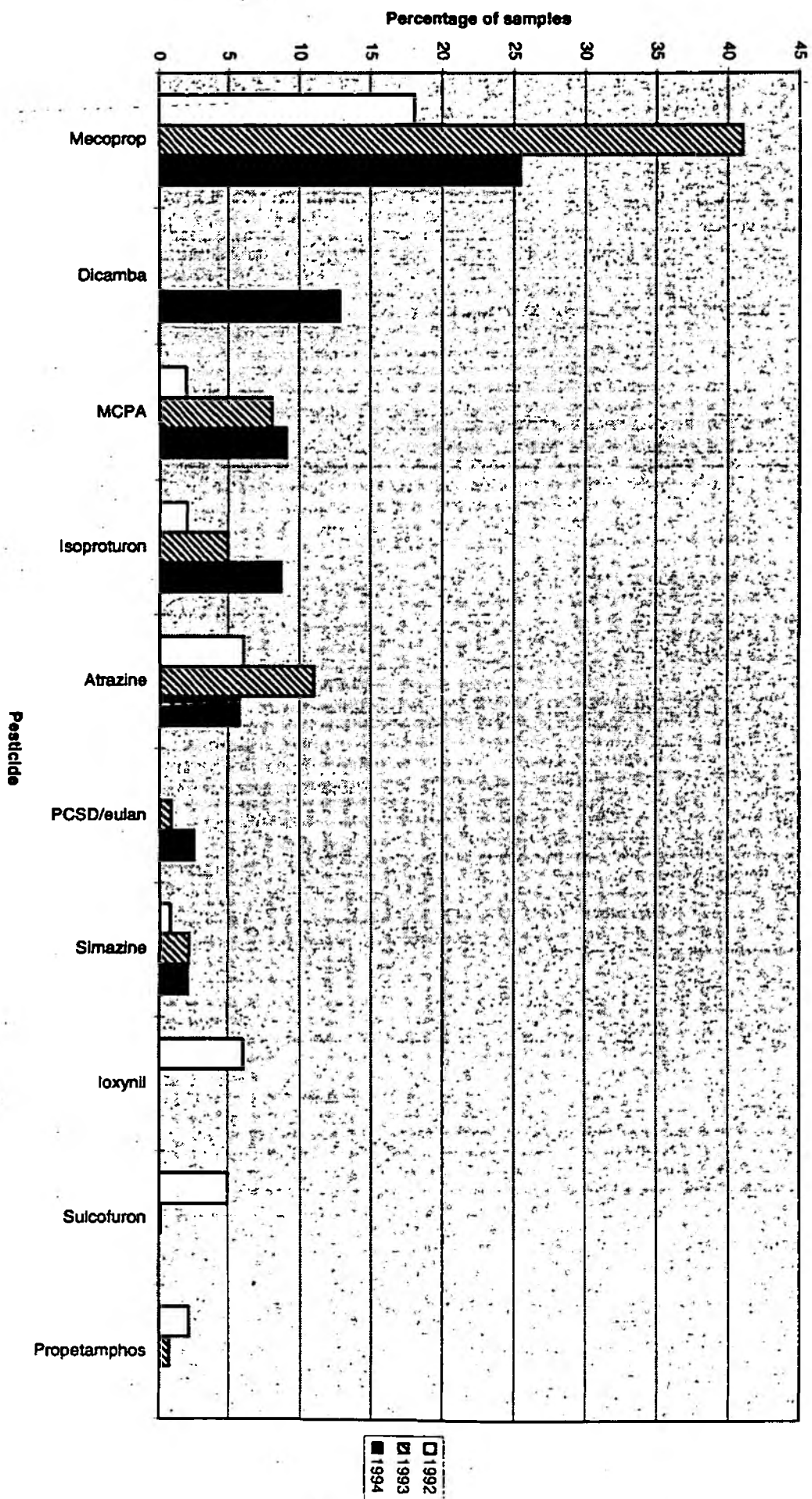


Figure 13. Pesticides most frequently exceeding 0.1 µg/l in surface freshwaters in Thames Region 1992-1994

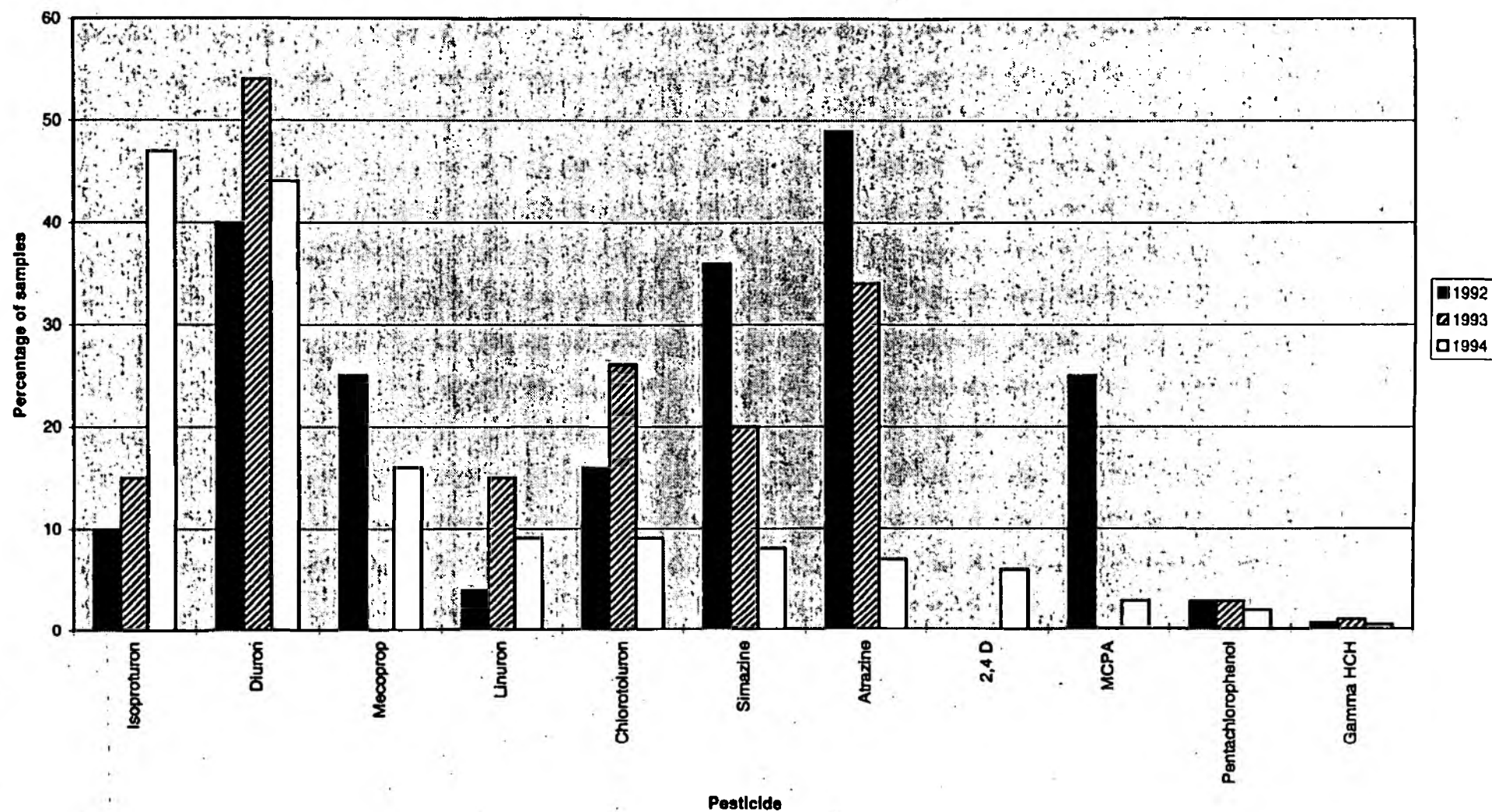
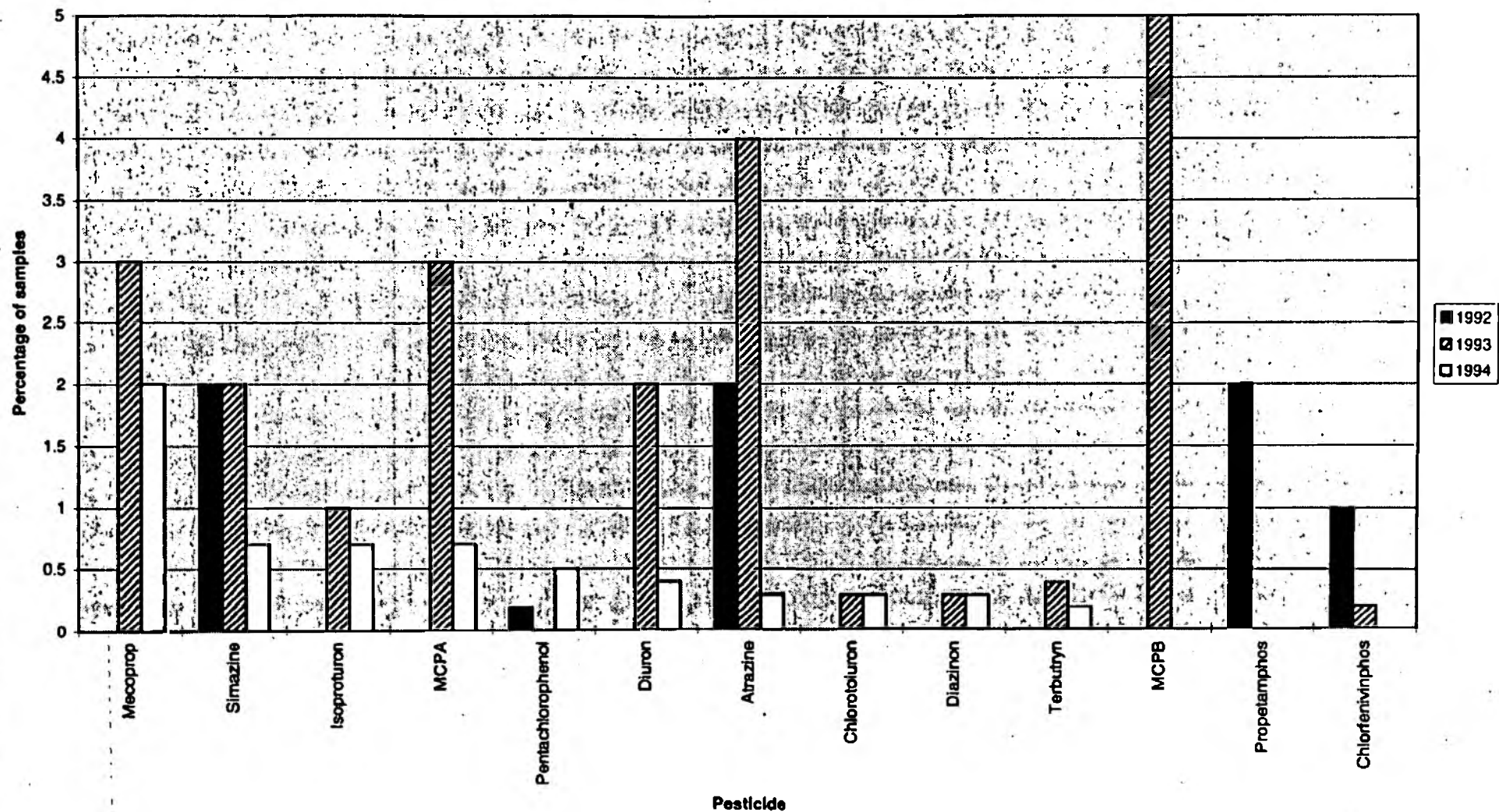


Figure 14. Pesticides most frequently exceeding 0.1 µg/l in surface freshwaters in Welsh Region 1992-1994



4) Conclusion

Pesticides continue to be detected at low concentrations in environmental waters. Exceedences of EQS are relatively infrequent, but have increased over the previous year, due to additional EQSs being developed. Action needs to be taken, where practical, to ensure that they are not repeated in future years. This is particularly important where contaminated imports, such as fleeces, have been identified as the cause of the problem. Similarly, the high number of failures of 0.1 µg/l for IPU and mecoprop need to be addressed in public water supply catchments. This is currently being tackled with IPU via a Task Force, comprising the major manufacturers of IPU. Practical guidance explaining how to minimise IPU contamination of water has been produced in a leaflet and is being distributed widely to farmers and advisors. This "Stewardship" approach has had some success in reducing the concentrations of diuron in watercourses and may be the way forward for some priority pesticides.

Pollution prevention messages need to be highlighted continually to pesticide users and the Environment Agency must continue to press Government for regulatory controls for those pesticides for which other methods have proved ineffective.

APPENDICES

APPENDIX I

Sites failing EQS for List I pesticides 1994

Region	Receiving Water	Location	Map Reference	Determinand	No of Samples	Relevant EQS ng/l	Annual average ng/l
Anglian		CALDER LONDON RD.DYKE	TF3185042000	Dieldrin	10	10	305.6
Anglian		CALDER LONDON RD.DYKE	TF3185042000	Total HCH	11	100	1236.6
Anglian		CALDER TOWN DRN D/S CONF.	TF3120042300	Dieldrin	9	10	128.5
Anglian		CALDER TOWN DRN D/S CONF.	TF3120042300	Total HCH	10	100	385.7
Anglian		GREETWELL BECK CULVERT D/S EST	TF0025071500	Dieldrin	9	10	14.1
Severn Trent	TEME TRIB OF	TEME TRIB B4203 D/S FOREST FEN	SO7112066000	Pentachlorophenol	14	2000	62281.4
Northumbria/Yorkshire		AIRE & CALD NAV.KNOTTLY	SE5090023800	Total HCH	4	100	196.8
Northumbria/Yorkshire		AIRE & CALD NAV.ROCKWARE	SE5030023800	Total HCH	6	100	156.7
Northumbria/Yorkshire		AIRE & CALD NAV.WHITLY BR	SE5560022700	Total HCH	4	100	192.8
Northumbria/Yorkshire		AIRE AT AIREDALE	SE4690027100	Total HCH	12	100	165.8
Northumbria/Yorkshire		AIRE AT ALLERTON BYWATER	SE4180027300	Total HCH	12	100	131.8
Northumbria/Yorkshire		AIRE AT BEAL	SE5320025500	Total HCH	22	100	155.0
Northumbria/Yorkshire		AIRE AT CALVERLEY BR.	SE2240036900	Total HCH	10	100	176.3
Northumbria/Yorkshire		AIRE AT FLEET WEIR	SE3810028500	Total HCH	11	100	145.8
Northumbria/Yorkshire		AIRE AT LEEDS BR.	SE3030033200	Total HCH	12	100	134.3
Northumbria/Yorkshire		AIRE D/S HICKSON & WELCH	SE4360026900	Total HCH	11	100	8799.5
Northumbria/Yorkshire		AIRE U/S HICKSON FINE CH.	SE4320026300	Total HCH	10	100	136.2
Northumbria/Yorkshire		APPERLEY BRIDGE - R.AIRE	SE1950037900	Total HCH	9	100	277.4
Northumbria/Yorkshire		BATTYFORD (R.CALDER)	SE1890020500	Total HCH	13	100	191.3
Northumbria/Yorkshire		CALDER AT HORBURY BR.	SE2800017900	Total HCH	12	100	253.1
Northumbria/Yorkshire		CALDER AT KIRKGATE	SE3360020000	Total HCH	12	100	225.2
Northumbria/Yorkshire		CALDER AT METHLEY BR.	SE4090025800	Total HCH	14	100	175.6
Northumbria/Yorkshire		CLOUGH BECK	SE2043023750	Dieldrin	13	10	33.2
Northumbria/Yorkshire		COLNEBRIDGE (R.COLNE)	SE1760020200	Dieldrin	13	10	10.8
Northumbria/Yorkshire		DEWSBURY (R.CALDER)	SE2410020300	Total HCH	12	100	200.6
Northumbria/Yorkshire		MAG BROOK	SE1360012300	Dieldrin	13	10	64.2
Northumbria/Yorkshire		MAG BROOK AT COCKING STEP	SE1259012390	Dieldrin	10	10	69.0
Northumbria/Yorkshire		QUEENS (R.HOLME)	SE1420015700	Dieldrin	11	10	13.1
North West		COWPE BROOK PTC IRWELL	SD8350021301	Dieldrin	7	10	10.9
North West		COWPE BROOK U/S KEARNS DRAIN	SD8350021302	Dieldrin	8	10	61.8
South Western	SEVERN ESTUARY	KWR MIXED	ST5130079801	Dieldrin	16	10	10.1
South Western	SEVERN ESTUARY	KWR MIXED	ST5130079801	Hexachlorobenzene	16	30	68.7

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Sites failing EQS for List I pesticides 1994

South Western		SPIRES LAKE AT SPIRES CROSS	SS6461000650	Aldrin	9	10	17.1
South Western		SPIRES LAKE AT SPIRES CROSS	SS6461000650	Total DDT	9	25	26.0
South Western		SPIRES LAKE AT SPIRES CROSS	SS6461000650	Dieldrin	9	10	322.3
South Western		SPIRES LAKE AT SPIRES CROSS	SS6461000650	pp DDT	9	10	18.4
South Western		ST. AUSTELL RIVER AT MOLINGEY	SX0071049450	Dieldrin	12	10	11.0
South Western		TREEREIFE STREAM PRIOR TO NEWLY	SW4520029280	Dieldrin	12	10	10.1

APPENDIX I

Sites failing List II and Annex 1A EQS

Region	Receiving Water	Location	Map Reference	Determinand	No of Samples	Relevant EQS 95%ile ng/l	95 percentile ng/l
Severn Trent		ABERBECHAN	SO1450093500	Cyfluthrin	13	1	8.9
Severn Trent	COXS CHEMICALS	ALLSCOTT INN 2KM NW COXS CHEM	SJ6018012440	Dichlorvos	11	1*	18.3*
Severn Trent	R.WYE	ASHFORD	SK1940069000	Fenitrothion	4	10*	84.8*
Severn Trent	PERRY	BAGGY MOOR US LAGOON	SJ3887027380	Total Endosulfan	11	3*	4.0*
Severn Trent	R.TAME	CHETWYND BRIDGE	SK1870013800	Total Endosulfan	20	3*	3.5*
Severn Trent	AVON	EVESHAM	SP0345043150	Total Endosulfan	19	3*	7.8*
Severn Trent		HOLT FLEET	SO8245063350	Cyfluthrin	16	1	7.2*
Severn Trent	SEVERN	LLANDINAM BRIDGE	SO0250088500	Dichlorvos	12	1*	2.3*
Severn Trent	SEVERN-AVON TID	LLANTHONY BRIDGE	SO8235018250	Dichlorvos	6	1*	12.3*
Severn Trent		MILL END	SO7815005450	PCSD	4	50	2599.7
Severn Trent	BRADGATE BK	NEWTOWN LINFORD	SK5220009850	Dichlorvos	3	1*	3.5*
Severn Trent	GLOS SHARP CNL	PARKEND	SO7775010650	Dichlorvos	6	1*	13.2*
Severn Trent	GLOS SHARP CNL	PATCH BRIDGE	SO7275004250	Dichlorvos	6	1*	12.2*
Severn Trent	R.TAME	PERRY BARR	SP0710091950	Total Endosulfan	20	3*	33.4
Severn Trent	BOW BK	PRIEST BRIDGE	SO9895059950	Dichlorvos	6	1*	6.2*
Severn Trent	RODEN	RODINGTON	SJ5900014300	Dichlorvos	22	1*	2.0*
Severn Trent	R.SOAR	SILEBY MILL	SK5931014780	Total Endosulfan	32	3*	4.5*
Severn Trent	GLOS SHARP CNL	SPLATT BRIDGE	SO7425006750	Dichlorvos	6	1*	12.5*
Severn Trent	STOUR	STOURPORT	SO8135070950	Total Endosulfan	19	3*	6.9*
Northumbria/Yorkshire		AIRE & CALD NAV.KNOTTLY	SE5090023800	PCSD	5	50	90.2
Northumbria/Yorkshire		AIRE & CALDER NAV.ROCKWARE	SE5030023800	PCSD	5	50	79.2
Northumbria/Yorkshire		AIRE AT ALLERTON BYWATER	SE4180027300	PCSD	10	50	99.7
Northumbria/Yorkshire		AIRE AT BEAL	SE5320025500	PCSD	12	50	152.2
Northumbria/Yorkshire		AIRE AT CALVERLEY BR.	SE2240036900	Permethrin	11	10	24.4
Northumbria/Yorkshire		AIRE AT FLEET WEIR	SE3810028500	PCSD	11	50	272.8
Northumbria/Yorkshire		APPERLEY BRIDGE - R.AIRE	SE1950037900	PCSD	18	50	82.7
Northumbria/Yorkshire		BATTYFORD (R.CALDER)	SE1890020500	Permethrin	14	10	661.0
Northumbria/Yorkshire		CALDER AT HORBURY BR.	SE2800017900	Permethrin	11	10	34.9
Northumbria/Yorkshire		CALDER AT HORBURY BR.	SE2800017900	PCSD	11	50	71.2
Northumbria/Yorkshire		CALDER AT KIRKGATE	SE3360020000	PCSD	11	50	68.0
Northumbria/Yorkshire		CALDER AT KIRKGATE	SE3360020000	Permethrin	11	10	56.4

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Northumbria/Yorkshire		COLNEBRIDGE (R.COLNE)	SE1760020200	PCSD	12	50	148.2
Northumbria/Yorkshire		COLNEBRIDGE (R.COLNE)	SE1760020200	Permethrin	13	10	17.3
Northumbria/Yorkshire		DEARNE @ L.COMMON LANE	SE2510010500	PCSD	18	50	470.5
Northumbria/Yorkshire		DEARNE @ LITHEROP LANE	SE2710012200	PCSD	18	50	218.2
Northumbria/Yorkshire		DEARNE AT CUCKSTOOL ROAD	SE2330008700	PCSD	16	50	340.0
Northumbria/Yorkshire		DEARNE U/S CLAYTON WESTSW	SE2260011900	PCSD	15	50	296.8
Northumbria/Yorkshire		DEWSBURY (R.CALDER)	SE2410020300	PCSD	11	50	83.2
Northumbria/Yorkshire		HALL DYKE ABOVE WPCW	SE1100011400	Permethrin	12	10	25.0
Northumbria/Yorkshire		HALL DYKE AT HEALEY HOUSE	SE1181012110	PCSD	4	50	207.3
Northumbria/Yorkshire		HALL DYKE AT HEALEY HOUSE	SE1181012110	Permethrin	4	10	17.3
Northumbria/Yorkshire		HUNSWORTH BK AT SUGDEN BK	SE1840026800	PCSD	12	50	109.4
Northumbria/Yorkshire		HUNSWORTH BK AT SUGDEN BK	SE1480026800	Permethrin	12	10	38.5
Northumbria/Yorkshire		KINGS (R.COLNE)	SE1480016000	PCSD	10	50	204.2
Northumbria/Yorkshire		KINGS (R.COLNE)	SE1480016000	Permethrin	10	10	186.9
Northumbria/Yorkshire		LOW MOOR BK AT COMMON RD	SE1580028900	PCSD	4	50	205.2
Northumbria/Yorkshire		MAG BROOK	SE1360012300	PCSD	11	50	144.6
Northumbria/Yorkshire		MAG BROOK	SE1360012300	Permethrin	12	10	66.9
Northumbria/Yorkshire		MAG BROOK AT COCKING STEP	SE1259012390	PCSD	11	50	147.2
Northumbria/Yorkshire		MAG BROOK AT COCKING STEP	SE1259012390	Permethrin	11	10	246.9
Northumbria/Yorkshire		QUEENS (R.HOLME)	SE1420015700	PCSD	12	50	136.5
Northumbria/Yorkshire		QUEENS (R.HOLME)	SE1420015700	Permethrin	12	10	24.7
Northumbria/Yorkshire		SPEN (A644)	SE2310020500	PCSD	13	50	58.3
Northumbria/Yorkshire		SPEN BECK AT STATION LANE	SE2140022900	PCSD	4	50	96.0
Northumbria/Yorkshire		WESSENDEN BROOK	SE0480011500	Cyfluthrin	9	1	69.8
Northumbria/Yorkshire		WESSENDEN BROOK	SE0480011500	Permethrin	9	10	21.1
Northumbria/Yorkshire		WHARFE U/S TADCASTER WEIR	SE4850043700	Permethrin	20	10	25.0
North West	Darwen	A6 ROAD BRIDGE	SD5570927969	Azinphos methyl	1	10*	65.0*
North West		COWPE BROOK PTC IRWELL	SD8350021301	Permethrin	22	10	14.3
North West		COWPE BROOK U/S KEARNS DRAIN	SD8350021302	Permethrin	21	10	621.9
North West	Lune	DENNY BRIDGE	SD5036464692	Azinphos methyl	10	10*	32.5*
North West		KEARNS - DRAIN	SD8350021300	Permethrin	19	10	2033.4
North West		PTC RIVER IRWELL	SD8341621660	Permethrin	10	10	14.2
North West		STUBBINS BRIDGE	SD7934518097	Permethrin	12	10	70.9
South Western		ARGAL RESERVOIR - AT SECOND DR	SW7620032400	Cyfluthrin	4	1	6.8
South Western		AVON DS SALISBURY SW	SU1620028600	PCSD	5	50	153.4

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Sites failing List II and Annex 1A EQS

South Western		BOLHAM LEAT AT BOLHAM - RIVER	SS9488015190	Cyfluthrin	4	1	8.5
South Western		BOSWYN RESERVOIR - AT DRAW OFF	SW6590036300	Cyfluthrin	4	1	4.9
South Western		BROCKENBURROW INTAKE AT STOWFO	SS6629041750	Cyfluthrin	4	1	2.5
South Western		BUTTERBROOK RESERVOIR AT FIR	SX6460059300	Cyfluthrin	4	1	4.8
South Western		DE LANK RIVER AT ST. BREWARD (	SX1358076550	Cyfluthrin	4	1	3.0
South Western	HELE BROOK	LUXHAY RESERVOIR	ST2020017750	Dichlorvos	8	1*	7.3*
South Western		RIVER ERME AT SEQUER'S BRIDGE	SX6321051880	Cyfluthrin	6	1	2.5
South Western		RIVER MENALHYL AT MAWGAN PORTH	SW8493067160	Cyfluthrin	6	1	2.3
South Western		RIVER TAVY AT DENHAM BRIDGE	SX4769067760	Cyfluthrin	6	1	2.7
South Western		RYE STREAM AT LOXHORE (RIVER	SS6131036660	Cyfluthrin	4	1	4.5
South Western		SPIRES LAKE AT SPIRES CROSS	SS6461000650	Trifluralin	9	100*	138.6*
South Western		SPRECOTT STREAM AT SPRECOTT (R	SS6537039740	Cyfluthrin	4	1	3.4
South Western		ST. AUSTELL RIVER AT PENTEWAN	SX0175047250	Cyfluthrin	6	1	4.1
		* = annual average					

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Sites failing Environment Agency operational EQS 1994

Region	Receiving Water	Location	Map Reference	Determinand	No of Samples	Relevant EQS ng/l	Annual average ng/l
Anglian		BUCKDEN WDS BRAMPTON BK.RAIL B	TL2150069200	Isoproturon	8	2000	5028.8
Anglian		BUCKDEN WDS DITCH ON SOUTHERN	TL2130068600	Isoproturon	4	2000	239250.0
Anglian		BUCKDEN WDS DITCH SOUTH DISCH.	TL2120068440	Isoproturon	6	2000	118778.3
Anglian		BUCKDEN WDS LAKE E OF BUCKDEN	TL2150068901	Isoproturon	7	2000	3578.6
Anglian		GT.EAU CLOVES BRIDGE	TF4682090510	Isoproturon	5	2000	4120.0
Anglian		HOLLOWELL RES DRAW OFF TOWER	SP6890072430	Methiocarb	1	200*	653.0*
Anglian		LAYER BK.U/S ABBERTON RESERVOI	TL9400016550	Isoproturon	4	2000	2705.0
Anglian		R.NENE DUSTON MILL	SP7290059600	Isoproturon	4	2000	10190.0
Anglian		R.OUSE WQMS FOXCOTE INTAKE	SP7270034700	Diazinon	5	10	13.2
Severn Trent	SEVERN	ABERBECHAN	SO1450093500	Diazinon	12	10	14.2
Severn Trent	SEVERN	ABERBECHAN	SO1450093500	Propetamphos	13	10	34.3
Severn Trent	PERRY	BAGGY MOOR US LAGOON	SJ3887027380	Chlorfenvinphos	11	10	20.7
Severn Trent	BOW BK	BESFORD BRIDGE	SO9275046350	Propetamphos	6	10	40.0
Severn Trent	AVON UPPER	CLIFTON	SP5320077200	Isoproturon	5	2000	2420.0
Severn Trent	BOW BK	DEFFORD BRIDGE	SO9245043650	Propetamphos	6	10	34.0
Severn Trent	PIPERS HILL	DS CHEMICULTURE BISHOPS ITCHIN	SP3895056750	Chlorfenvinphos	6	10	20.3
Severn Trent	PIPERS HILL	DS CHEMICULTURE BISHOPS ITCHIN	SP3895056750	Diuron	5	2000	16800.0
Severn Trent	WHITSUN BK	DS DEAN LODGE FARM	SO9685051650	Isoproturon	4	2000	3425.0
Severn Trent	OGSTON RES	DWD SAMPLING POINT	SK3805059900	Diazinon	4	10	46.5
Severn Trent	R.DERWENT	GRINDLEFORD	SK2450077800	Propetamphos	1	100*	271.0*
Severn Trent	SEVERN-AVON TID	HAW BRIDGE	SO8455027850	Diazinon	18	10	12.2
Severn Trent	TRIMPLEY	INTAKE WATER	SO7720078600	Diazinon	5	10	10.4
Severn Trent	SEVERN	LLANDRINIO	SJ2980016900	Diazinon	13	10	17.2
Severn Trent	BOW BK	PRIEST BRIDGE	SO9895059950	Propetamphos	6	10	323.3
Severn Trent	R.DERWENT	ROWSLEY	SK2570065900	Propetamphos	4	10	14.5
Severn Trent	PIDDLE BK	SEAFORD	SO9595051250	Isoproturon	4	2000	2825.0
Severn Trent	R.NOE	SHATTON	SK2030082600	Propetamphos	4	10	20.8
Severn Trent	R.BLYTHE	STONEBRIDGE	SP2140083190	Isoproturon	5	2000	3240.0
Severn Trent	STOUR	STOURPORT	SO8135070950	Diazinon	8	10	22.0
Severn Trent	STOUR	STOURPORT	SO8135070950	Propetamphos	7	10	14.1

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Severn Trent	CHELT	WAINLODES	SO8505026150	Diazinon	1	100*	136.0*
Severn Trent	CHELT	WAINLODES	SO8505026150	Propetamphos	17	10	10.9
Severn Trent	PIDDLE BK	WYRE MILL	SO9545046750	Isoproturon	4	2000	2250.0
Northumbria/Yorkshire		AIRE AT BEAL	SE5320025500	Chlorfenvinphos	13	10	105.5
Northumbria/Yorkshire		AIRE AT BEAL	SE5320025500	Diazinon	12	10	440.7
Northumbria/Yorkshire		AIRE AT BEAL	SE5320025500	Propetamphos	10	10	296.0
Northumbria/Yorkshire		AIRE AT FLEET WEIR	SE3810028500	Chlorfenvinphos	10	10	140.4
Northumbria/Yorkshire		AIRE AT FLEET WEIR	SE3810028500	Diazinon	11	100	252.5
Northumbria/Yorkshire		AIRE AT FLEET WEIR	SE3810028500	Propetamphos	10	10	180.5
Northumbria/Yorkshire		APPERLEY BRIDGE - R.AIRE	SE1950037900	2,4 D	10	1000	3930.0
Northumbria/Yorkshire		APPERLEY BRIDGE - R.AIRE	SE1950037900	2,4 D	1	10000*	25000.0*
Northumbria/Yorkshire		APPERLEY BRIDGE - R.AIRE	SE1950037900	Chlorfenvinphos	1	100*	206.0*
Northumbria/Yorkshire		APPERLEY BRIDGE - R.AIRE	SE1950037900	Diazinon	1	100*	309.0*
Northumbria/Yorkshire		APPERLEY BRIDGE - R.AIRE	SE1950037900	MCPA	9	2000	2800.0
Northumbria/Yorkshire		APPERLEY BRIDGE - R.AIRE	SE1950037900	Propetamphos	1	100*	130.0*
Northumbria/Yorkshire		BATTYFORD (R.CALDER)	SE1890020500	Chlorfenvinphos	1	100*	196.0*
Northumbria/Yorkshire		BATTYFORD (R.CALDER)	SE1890020500	Diazinon	1	100*	379.0*
Northumbria/Yorkshire		BATTYFORD (R.CALDER)	SE1890020500	Propetamphos	1	100*	351.0*
Northumbria/Yorkshire		CALDER (CALDER ROAD)	SE2260020100	Chlorfenvinphos	1	100*	110.0*
Northumbria/Yorkshire		CALDER (CALDER ROAD)	SE2260020100	Diazinon	1	100*	197.0*
Northumbria/Yorkshire		CALDER (CALDER ROAD)	SE2260020100	Propetamphos	1	100*	345.0*
Northumbria/Yorkshire		CALDER AT HORBURY BR.	SE2800017900	Chlorfenvinphos	1	100*	116.0*
Northumbria/Yorkshire		CALDER AT HORBURY BR.	SE2800017900	Diazinon	1	100*	400.0*
Northumbria/Yorkshire		CALDER AT HORBURY BR.	SE2800017900	Propetamphos	1	100*	238.0*
Northumbria/Yorkshire		CALDER AT METHLEY BR.	SE4090025800	Chlorfenvinphos	14	10	154.1
Northumbria/Yorkshire		CALDER AT METHLEY BR.	SE4090025800	Diazinon	11	10	527.8
Northumbria/Yorkshire		CALDER AT METHLEY BR.	SE4090025800	Propetamphos	10	10	1036.7
Northumbria/Yorkshire		CALDER ZONE 4	SE2670019200	Chlorfenvinphos	1	100*	900.0*
Northumbria/Yorkshire		CALDER ZONE 4	SE2670019200	Diazinon	1	100*	1040.0*
Northumbria/Yorkshire		COTTERDALE BK @ RDBRIDGE	SD8500091600	Propetamphos	17	10	66.8
Northumbria/Yorkshire		COVER AT COVER BR.	SE1440087000	Diazinon	1	100*	110.0*
Northumbria/Yorkshire		CROSSFLATTS - RIVER AIRE	SE0990040200	Propetamphos	1	100*	104.0*
Northumbria/Yorkshire		DERWENT RESERVOIR SOAKAWAY M/H	NZ0270051200	Chlorfenvinphos	13	10	74.5

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Northumbria/Yorkshire		DERWENT RESERVOIR SOAKAWAY M/H	NZ0270051200	Diazinon	11	10	27.8
Northumbria/Yorkshire		DEVILS WATER AT THE LINNELS	NY9550061500	Propetamphos	13	10	13.6
Northumbria/Yorkshire		DUERLY BK @ HAWES SW RDBR	SD8750090100	Propetamphos	17	10	77.5
Northumbria/Yorkshire		ESHOLT (ABOVE)-R.AIRE	SE1870039600	Diazinon	1	100*	102.0*
Northumbria/Yorkshire		ESHOLT (ABOVE)-R.AIRE	SE1870039600	Propetamphos	1	100*	132.0*
Northumbria/Yorkshire		HUNSWORTH BK AT SUGDEN BK	SE1840026800	2,4 D	11	1000	11881.8
Northumbria/Yorkshire		HUNSWORTH BK AT SUGDEN BK	SE1840026800	MCPA	11	2000	43690.9
Northumbria/Yorkshire		HUNSWORTH BK AT SUGDEN BK	SE1840026800	Mecoprop	11	20000	50609.1
Northumbria/Yorkshire		KINGS (R.COLNE)	SE1480016000	Cypermethrin	10	0	7.0
Northumbria/Yorkshire		R.COLNE D/S PENNINE CHEM	SE0960014600	Chlorfenvinphos	9	10	20.1
Northumbria/Yorkshire		R.COLNE D/S PENNINE CHEM	SE0960014600	Diazinon	10	10	84.7
Northumbria/Yorkshire		R.COLNE D/S PENNINE CHEM	SE0960014600	Propetamphos	10	10	23.0
Northumbria/Yorkshire		SLAITHWAITE F/B (R.COLNE)	SE0830014000	Diazinon	10	10	29.9
Northumbria/Yorkshire		SLAITHWAITE F/B (R.COLNE)	SE0830014000	Propetamphos	10	10	13.8
Northumbria/Yorkshire		SPEN (A644)	SE2310020500	MCPA	12	2000	3050.0
Northumbria/Yorkshire		SUGDEN BECK AT CHAIN BAR	SE1820026700	2,4 D	5	1000	1060.0
Northumbria/Yorkshire		SUGDEN BECK AT CHAIN BAR	SE1820026700	MCPA	5	2000	3520.0
Northumbria/Yorkshire		TYNE AT WYLAM BRIDGE	NZ1190064600	Diazinon	4	10	32.5
Northumbria/Yorkshire		TYNE AT WYLAM BRIDGE	NZ1190064600	Diazinon	1	100*	130.0*
Northumbria/Yorkshire		WIDDALE BECK	SD8580090700	Propetamphos	17	10	30.9
North West	Darwen	A6 ROAD BRIDGE	SD5570927969	Chlorfenvinphos	15	10	11.3
North West	Darwen	A6 ROAD BRIDGE	SD5570927969	Chlorfenvinphos	1	100*	170.0*
North West	Flash Brook	D/S OF MTM	SJ7249859499	Diuron	4	2000	3625.0
North West	Flash Brook	D/S OF MTM	SJ7249859499	Isoproturon	4	2000	4175.0
North West		FLASH BROOK D/S MTM	SJ7290060005	Isoproturon	5	2000	3650.0
North West		FLASH BROOK D/S MTM SEPTIC TAN	SJ7290060001	Diuron	6	2000	2505.0
North West		FLASH BROOK D/S MTM SEPTIC TAN	SJ7290060001	Isoproturon	8	2000	8503.8
North West		FLASH BROOK PTC WHELOCK	SJ7290060003	Isoproturon	5	2000	4238.0
North West	Harlock Res	HARLOCK RESERVOIR RAW WATER SP	SD2480079000	Propetamphos	1	100*	158.0*
North West	Poaka Beck Res	POAKA BECK RESERVOIR RAW WATER	SD2440078500	Propetamphos	4	10	81.3
North West	Douglas	WANES BLADES BRIDGE	SD4758912612	Chlorfenvinphos	1	100*	172.0*
North West		WHELOCK D/S SANDBACH WWTW	SJ7290060007	Diuron	10	2000	3499.0
South Western	CONGRESBURY YE	BLAGDON LAKE OUTLET	ST5030060200	Diazinon	4	10	12.3

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South Western	LAMBROOK	LAMBROOK B LI FIELDS	ST4090016900	Tecnazene	5	1000	38882.0
South Western	LAMBROOK	LAMBROOK B PICKEN BR	ST4150018400	Tecnazene	6	1000	3176.0
South Western		OTTERHEAD RESERVOIR WATR ABSTR	ST2260013200	Diazinon	5	10	17.5
South Western		RIVER DART AT LITTLEHEMPSTON R	SX8005061630	Diazinon	4	10	10.2
South Western		RIVER DART AT LITTLEHEMPSTON R	SX8005061630	Propetamphos	4	10	15.7
South Western		RIVER DART BELOW BUCKFASTLEIGH	SX7536065310	Propetamphos	14	10	13.3
South Western		RIVER HAYLE AT ST. ERTH (ABSTR	SW5495034900	Chlorfenvinphos	4	10	23.0
South Western	FROME (SOMERSE	S FROME WALLBRIDGE	ST7870047800	Propetamphos	1	100*	306.0*
South Western	FROME (SOMERSE	S. FROME BLATCH	ST7780045900	Propetamphos	1	100*	167.3*
South Western	FROME (SOMERSE	S. FROME DOLPHIN	ST7730049500	Propetamphos	1	100*	324.7*
South Western		TIDAL DART	SX8990049900	Diazinon	4	10	22.2
South Western		TIDAL DART	SX8990049900	Propetamphos	4	10	37.4
South Western		VENFORD RESERVOIR - AT SECOND	SX6860071101	Chlorfenvinphos	5	10	14.3
Thames	Thames-Ravensbour	Deptford Bridge	TQ3743076660	Diuron	9	2000	2164.4
Thames	Thames-Brent	Lock 100, Brentford	TQ1715077650	Diuron	12	2000	3085.0
Thames	Thames-Windrush	Newbridge Gauging Station	SP4020001900	Chlorfenvinphos	1	100*	1141.0*
Thames	Thames-Windrush	Newbridge Gauging Station	SP4020001900	Diazinon	1	100*	486.0*
Welsh	n/a	120000 WESTERN CLEDDAU SOURCE	SM9530016900	Diazinon	12	10	28.1
Welsh	n/a	121055 BRYNBERIAN RIVER	SN1050035100	Diazinon	1	100*	109.0*
Welsh	n/a	642011 GARNDOLBENMAEN WTW RAW	SH5010043100	Diazinon	10	10	10.2
		* = maximum ng/l					

APPENDIX I

Sites failing estuary and coastal EQS

Region	Receiving Water	Location	Map Reference	Determinand	No of Samples	Relevant EQS ng/l	Annual average ng/l
Northumbria/Yorkshire		DON AT RAWCLIFFE	SE702002100	Total HCH	6	20	36.5
North West	MERSEY ESTUARY	BOUY C21 HELICOPTER POINT 5	SJ2961898014	Total Endosulfan	4	3	3.5
Southern	TIDAL R. MEDWAY	GILLINGHAM STRAND LW	TQ7840069800	Total HCH	4	20	39.8
Southern	THE SOLENT	SOLENT BANKS SPT	SZ4010093500	Dieldrin	4	10	15.3
South Western	PARRETT	R PARRETT D/S BWATER STW	ST3030038800	Total HCH	12	20	35.6
South Western		SEV EST OFF ICI HI	ST5210084101	PCSD	10	50*	132*
South Western		S/EST/OFF/KWR/HIGH	ST5130080100	PCSD	10	50*	69.3*
South Western		S/EST/OFF/HMOUTH/HI	ST5180080800	PCSD	11	50*	56.8*
		* = 95 percentile					

APPENDIX II - NATIONAL PESTICIDE SUMMARIES

Pesticides exceeding 0.1 µg/l in surface freshwaters in England and Wales 1992-1994

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Samples > 0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l
Isoproturon	3360	0.01-0.1	24	16	0.62	Chlorpropham	28	43	Atrazine	3939	17
Bentazone	64	0.02-0.3	17	14	0.84	Diuron	1598	18	Mecoprop	1339	17
Diuron	2296	0.02-0.1	22	12	0.34	Mecoprop	2089	18	Diuron	699	15
Mecoprop	2154	0.02-0.4	32	11	0.23	Atrazine	4100	14	2,4 D	365	15
Monolinuron	200	0.02-0.05	22	9	0.17	Carbendazim	40	10	Simazine	4051	13
Chloridazon	227	0.02-0.05	15	9	0.1	Simazine	4094	9	Isoproturon	2009	10
PCSD/eulan	2134	0.01-0.5	18	6	0.08	Bentazone	196	9	Permethrin	823	7
Propyzamide	171	0.025-0.1	9	5	0.08	2,4DCPA	646	9	Pentachlorophenol	6288	6
Simazine	4253	0.005-0.2	32	5	0.09	MCPA	2085	8	Dicamba	371	5
Methabenzthiazuron	226	0.04-0.05	11	5	0.05	PCSD/eulan	1369	6	Sulcofuron	353	4
Dicamba	271	0.02-0.1	7	4	0.03	2,4 D	1615	6	Chlorotoluron	2098	4
2,4-D	527	0.02-0.2	26	4	0.1	Pentachlorophenol	5478	6	2 DCPA	673	4
Atrazine	4316	0.002-0.2	42	4	0.09	Isoproturon	2977	6	MCPA	1284	4
Atrazine desethyl	869	0.016-0.09	32	4	0.08	Trietazine	310	6	Dichlobenil	648	4
Chlorotoluron	2409	0.02-0.5	9	4	0.06	Chlorotoluron	2389	5	Terbutryn	447	4
Pentachlorophenol	6523	0.02-25	6	4	0.27	Propyzamide	197	5	Diazinon	2280	3
Carbetamide	244	0.04-0.05	6	3	0.05	Permethrin	958	4	Trietazine	490	3

Monobutyl tin	424	0.05-1.5	7	3	0.03	Linuron	2276	4	2,3,6 TBA	349	2
Atrazine deisopropyl	827	0.085-0.5	3	3	0.02	Metazachlor	197	4	Demeton S methyl	1101	2
Clopyralid	76	0.05	3	3	0.03	2,4 DB	569	3	Flucifuron	330	2
MCPA	2114	0.02-0.2	9	2	0.04	Benazolin	196	3	Dichlorprop	481	1
Linuron	2342	0.01-0.1	9	2	0.04	2,3,6 TBA	235	3	Propetamphos	1894	1
Propetamphos	3372	0.005-0.1	9	2	0.03	Dicamba	315	3	Linuron	2039	1
Ethofumesate	137	0.025-0.2	2	1	0.02	Ethofumesate	197	3	Chlorfenvinphos	2010	1
Metazachlor	170	0.025-5	8	1	0.02	E HCH	162	3	Bromoxynil	1020	0.9
Diazinon	3884	0.001-1	8	1	0.02	Dichlorprop	581	2	Carbetamide	307	0.9
Pirimicarb	174	0.02-0.05	1	1	0.02	Tetrachloroaniline	366	2	Pirimiphos methyl	524	0.9
Tetrachloroaniline	561	0.005-0.42	11	1	0.02	MCPB	940	2	Gamma HCH	8156	0.7
Permethrin	1035	0.005-20	4	1	0.02	Diazinon	3462	2	Propazine	1290	0.6
Trietazine	636	0.02-0.05	54	0.9	0.04	Terbutryn	936	2	Methabenzthiazuron	190	0.5
Monuron	703	0.1	3	0.9	0.01	Clopyralid	196	2	Ioxynil	1014	0.4
Chloroxuron	492	0.02-0.05	8	0.8	0.02	Metaxyl	197	2	E HCH	229	0.4
Dichlorprop	506	0.02-0.1	3	0.8	0.01	Flucifuron	767	1	Trifluralin	2946	0.3
Gamma HCH	8065	0.0004-0.3	37	0.8	0.02	Propetamphos	2950	1	Dieldrin	7871	0.3
Chlorfenvinphos	3772	0.005-0.3	3	0.7	0.009	Dichlobenil	541	1	Propyzamide	345	0.2
Phenmedipham	152	0.04-0.05	1	0.7	0.01	Triallate	197	1	Chlorothalonil	406	0.2
Total organic tin	458	0.004-0.04	4	0.7	0.008	Phenmedipham	106	0.9	D HCH	2941	0.3
Terbutryn	1150	0.005-0.2	3	0.6	0.009	Chlorfenvinphos	3498	0.9	MCPB	1009	0.2
Metaxyl	168	0.05-0.15	0.6	0.6	0.002	Tecnazene	1275	0.9	Cypermethrin	556	0.1
Methiocarb	193	0.05	5	0.5	0.02	PCSD	481	0.8	Prometryn	602	0.1
Aldicarb	404	0.05-1	1	0.5	0.004	Bromoxynil	663	0.8	Hexachlorobenzene	6381	0.1

Tributyl tin	617	0.005-0.54	27	0.5	0.02	Gamma HCH	7793	0.7	Dichlorvos	2457	0.1
Bromoxynil	632	0.02-0.5	3	0.5	0.01	Propazine	1676	0.7	Heptachlor	1986	0.1
MCPB	881	0.02-0.5	2	0.5	0.008	Chlorpyrifos methyl	204	0.5	Azinphos methyl	2165	0.09
Dichlobenil	740	0.005-0.075	7	0.4	0.02	Pirimiphos methyl	222	0.5	Fenitrothion	2380	0.08
Pendimethalin	351	0.005-0.12	4	0.3	0.004	Azinphos methyl	2319	0.4	Fenthion	1905	0.05
Demeton s methyl	789	0.01-0.05	1	0.3	0.002	Hexachlorobenzene	4422	0.3	Azinphos ethyl	1967	0.05
B HCH	7217	0.001-0.05	3	0.3	0.03	Ioxynil	660	0.3	pp DDT	6445	0.05
Carbofuran	407	0.04-6	1	0.3	0.003	Dieldrin	7371	0.3	Parathion	2926	0.03
Sulcofuron	420	0.08-2.5	0.2	0.2	0.03	Sulcofuron	767	0.3	A HCH	7755	0.03
Phorate	440	0.01-0.1	0.5	0.2	0.001	D HCH	3203	0.3	op DDT	6722	0.01
Carbofenothon	1429	0.01-0.05	3	0.2	0.006	Dimethoate	1380	0.1	Endrin	7365	0.01
2,4 DB	524	0.02-0.15	2	0.2	0.004	Azinphos ethyl	2227	0.1			
Ioxynil	543	0.02-0.5	0.7	0.2	0.001	Dichlorvos	3435	0.1			
A HCH	7914	0.0003-0.05	5	0.2	0.003	Cyfluthrin	1300	0.08			
Trifluralin	5475	0.05	4	0.2	0.006	Malathion	3618	0.08			
Dieldrin	7925	0.0004-0.38	10	0.2	0.003	Trifluralin	5688	0.07			
Prometryn	615	0.005-0.1	1	0.2	0.002	A HCH	7089	0.06			
Endosulfan a	5361	0.0003-0.12	0.7	0.07	0.001	Fenitrothion	3430	0.03			
Fenitrothion	3589	0.005-0.1	0.4	0.06	0.004	B HCH	5676	0.02			
Azinphos methyl	2288	0.002-0.4	0.3	0.04	0.001						
Dichlorvos	3226	0.002-0.15	0.6	0.03	0.001						
Endosulfan b	4502	0.001-0.027	0.4	0.02	0.001						

The following pesticides were detected, but did not exceed 100 ng/l. The number in brackets denotes the number of samples analysed.

1994	1993	1992
aldrin (7081), azinphos ethyl (2297), benazolin (114), carbaryl (687), chlorpyrifos (860), cyfluthrin (1518), cypermethrin (564), op DDE (4125), pp DDE (6587), pp DDT (6885), pp TDE (6527), op DDT (6841), op TDE (4446), dibutyl tin (436), dimethoate (1136), E HCH (168), endrin (6892), ethiofencarb (135), ethion (902), fenthion (2552), d HCH (3428), heptachlor (3527), hexachlorobenzene (6292), iprodione (16), isodrin (6507), malathion (2791), methomyl (202), oxamyl (186), parathion (5260), parathion methyl (2730), permethrin (1875), propazine (2142), propoxur (195), tecnazene (1181), triallate (2355), triazophos (789), triclopyr (156), triphenyl tin (589), vinclozolin (1897).	aldrin (7025); bendiocarb (197); chlorpyrifos methyl (566); cypermethrin (481); op DDE (3566); pp DDE (5823); op DDT (6727); endosulfan a (4374) endosulfan b (3641); endrin (6813); fenthion (2020); fluroxypyr (410); fonofos (198); heptachlor (2892); heptachlor epoxide (1012); isodrin (6585); monuron (196); parathion (3183); pendimethalin (339); phorate (279); pp DDT (6347); prochloraz (40); prometryn (794); op TDE (4459); pp TDE (6058); tetrachloroethioanisole (27); triazophos (606); triclopyr (196); 2,4,5 T (747).	aldrin (7547); b HCH (4989); chlorofen (10); chlorpyrifos methyl (90); cyfluthrin (584); 2,4 DB (274); op DDE (2327); pp DDE (5879); desmetryn (288); e HCH (229); endosulfan a (2324); endosulfan b (1717); heptachlor (1977); heptachlor epoxide (1877); isodrin (5974); malathion (2618); methoxychlor (317); 2,4,5 T (567); op TDE (3211); pp TDE (5119); tecnazene (1052).

The following pesticides were monitored but were not detected

1994	1993	1992
bendiocarb (383), chlordane (1909), chlorothalonil (289), chlorpropham (216), chlorpyrifos methyl (158), desmetryn (282), diflubenzuron (400), dinoseb (1), DNOC (1), EPTC (85), fenoprop (55), fenpropimorph (177), fenuron (400), fluroxypyr (316), fonofos (162), glyphosate (25), heptachlor epoxide (5359), imazapyr (17), methoxychlor (94), metoxuron (249), mevinphos (752), napropamide (170), neburon (15), pirimiphos methyl (155), propachlor (213), tetrabutyl tin (434).	aldicarb (389); carbaryl (197); carbetamide (197); carbofenothon (926); carbofuran (197); chlordane (12); chlorothalonil (410); chloridazon (197); chlortoxuron (197); demeton-s-methyl (828); desmetryn (401); EPTC (197); ethiofencarb (197); fenpropimorph (197); glyphosate (42); imazapyr (44); maneb (37); methabenzthiazuron (1971); methiocarb (197); methomyl (197); methoxychlor (13); mevinphos (744); monolinuron (197); napropamide (197); oxamyl (223); parathion methyl (805); pirimicarb (197); propoxur (197).	aldicarb (190); carbofenothon (629); carbofuran (190); chlordane (315); chlorpyrifos (235); dimethoate (650); disulfoton (135); eulan (650); fluroxypyr (398); methiocarb (190); methomyl (190); mevinphos (305); oxamyl (190); parathion methyl (805); PCSD (46); phorate (136); phosalone (132); propoxur (190); triazophos (245).

Pesticides exceeding 0.1 µg/l in groundwaters in England and Wales 1992-1994

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Samples > 0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l
Atrazine Desethyl	16	0.017-0.018	56	25	0.15	Bentazone	34	15	Atrazine	543	9
Atrazine	211	0.005-0.147	38	11	0.19	Atrazine	603	11	Terbutryn	106	4
Isoproturon	188	0.02-0.1	30	9	0.16	Trietazine	42	5	Trietazine	106	3
Mecoprop	131	0.02-0.1	12	5	0.09	Diuron	129	5	Isoproturon	175	2
Diuron	146	0.02-0.1	18	3	0.12	Pentachlorophenol	78	4	Mecoprop	148	1
Chlorotoluron	188	0.02-0.1	12	3	0.03	2,3,6 TBA	27	4	Bromoxynil	102	0.9
2,4 D	108	0.02-0.1	9	3	0.06	Linuron	172	3	Diazinon	325	0.9
Linuron	172	0.02-0.1	15	2	0.05	Clpyrazid	30	3	2,3,6 TBA	112	0.8
Dichlorprop	109	0.02-0.1	2	0.9	0.009	Ethofumesate	31	3	Dicamba	112	0.8
MCPB	120	0.02-0.1	5	0.8	0.02	Isoproturon	181	3	Simazine	534	0.7
MCPA	130	0.02-0.1	0.8	0.8	0.005	Chlorotoluron	178	2	Linuron	134	0.7
Pentachlorophenol	143	0.1-2.5	0.7	0.7	0.05	Terbutryn	134	2	Azinphos ethyl	272	0.7
Dichlobenil	143	0.001-0.01	0.7	0.7	0.003	Simazine	603	2	Chlorotoluron	174	0.5
Dieldrin	422	0.001-0.01	2	0.5	0.04	Mecoprop	138	1	Azinphos methyl	296	0.3
Simazine	218	0.005-0.067	20	0.5	0.03	DDT pp	292	0.3	Dichlorvos	326	0.3
Gamma HCH	399	0.0005-0.027	3	0.3	0.003	DDT op	291	0.3			
						TDE pp	290	0.3			
						Gamma HCH	422	0.2			

The following pesticides were detected in groundwater, but did not exceed 0.1 µg/l. The number in brackets denotes the number of samples analysed.

1994	1993	1992
aldrin (419), diazinon (262), dichlorvos (61), op DDT (231), pp DDE (242), endosulfan a (218), endrin (241), hexachlorobenzene (243), propazine (89), propetamphos (138), TCA (20), terbutryn (128), pp TDE (242).	aldrin (387), B HCH (260), tetrachloroaniline (26), carbofenothion (378), chlortoxuron (27), DDE pp (290), demeton s methyl (222), desmetryn (42), dieldrin (391), dimethoate (54), 2,4 D (113), fenitrothion (238), fenpropimorph (25), hexachlorobenzene (291), MCPA (138), mevinphos (221), parathion (225), prometryn (112), propazine (129), propetamphos (239), TDE op (272), tecnazene (121), triazophos (26),	a HCH (39); b HCH (36); diuron (104); gamma HCH (48); trifluralin (4)

The following pesticides were monitored in groundwaters but were not detected.

1994	1993	1992
2,4,5 T (22), 2,4 DB (11), aldicarb (12) A HCH (225), atrazine desisopropyl (14), azinphos ethyl (103), azinphos methyl (102), bendiocarb (11), B HCH (124), bromoxynil (22), carbaryl (22), carbofenothion (196), chlorfenvinphos (256), coumaphos (23), cyfluthrin (11), op DDE (130), demeton s methyl (33), dicamba (14), diflubenzuron (20), dimethoate (6), E HCH (4), endosulfan b (128), ethion (35), fenitrothion (144), fenthion (82), D HCH (18), heptachlor (17), heptachlor epoxide (34), ioxynil (22), isodrin (222), malathion (123), mevinphos (100), monuron (12), op TDE (136), parathion (277), parathion methyl (56), PCSD/eulan (22), permethrin (cis and trans) (22), phorate (22), pp DDT (227), prometryn (11), tecnazene (130), triallate (12), triazophos (23), trifluralin (118)	aldicarb (27), azinphos ethyl (237), azinphos methyl (233), A HCH (277), benazolin (29), bendiocarb (25), bromoxynil (31), B HCH (260), carbaryl (27), carbetamide (27), carbofuran (27), chlorpyrifos (39), chlorpyrifos methyl (25), chlorothalonil (26), chlorfenvinphos (224), chloridazon (27), cyfluthrin (3), 2,4 DB (25), 2,4,DCPA (1), DDE op (75), diazinon (336), dicamba (74), dichlobenil (96), dichlorprop (111), dichlorvos (239), D HCH (64), endosulfan a (242), endosulfan b (238), endrin (292), EPTC (25), ethiofencarb (27), E HCH (17), fenthion (225), fluroxypyr (26), fonofos (25), heptachlor (233), heptachlor epoxide (238), ioxynil (32), isodrin (291), malathion (254), MCPB (120), metalaxyl (25), metazachlor (25), methabenzthiazuron (27), methiocarb (27), methomyl (27), monolinuron (27), monuron (27), napropamide (25), oxamyl (27), parathion methyl (26), pendimethalin (26), phenmedipham (12), pirimicarb (25), pirimiphos methyl (24), propoxur (27), propyzamide (25), triallate (25), triclopyr (29), 2,4,5 T (44), trifluralin (241).	aldicarb (78); aldrin (46); azinphos ethyl (2); azinphos methyl (2); carbetamide (98); carbofenothion (2); carbofuran (78); chlorpyrifos (20); chlorpyrifos methyl (2); chlorothalonil (3); chlorfenvinphos (3); 2,4 D (118); d HCH (3); 2,4 DB (25); op DDE (3); pp DDE (12); op DDT (12); demeton S methyl (18); desmetryn (81); diazinon (21); dichlobenil (25); dichlorprop (112); dichlorvos (21); dieldrin (48); dimethoate (37); disulfoton (18); endosulfan a (4); endosulfan b (3); endrin (29); fenitrothion (20); fenthion (2); fluroxypyr (30); hexachlorobenzene (46); heptachlor (3); heptachlor epoxide (20); ioxynil (103); isodrin (4); malathion (36); MCPA (159); MCPB (111); methabenzthiazuron (80); methiocarb (78); methomyl (78); mevinphos (2); oxamyl (78); parathion (18); parathion methyl (3); pentachlorophenol (6); permethrin (16); phorate (18); phosalone (18); pirimiphos methyl (2); pp DDT (15); prometryn (122); propazine (123); propetamphos (19); propoxur (78); propyzamide (102); 2,4,5 T (112); op TDE (3); pp TDE (12); tecnazene (3)

Pesticides exceeding 0.1 µg/l in estuaries and coastal waters in England and Wales 1992-1994

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Samples > 0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l
Isoproturon	118	85	61	61	1.13	Diuron	126	45	Diuron	41	32
Diuron	150	67	36	36	0.49	Isoproturon	128	16	Chlorotoluron	48	25
Mecoprop	25	60	24	24	0.32	Chlorotoluron	128	15	Atrazine	222	21
MCPA	27	30	11	11	0.14	PCSD	48	8	Simazine	276	20
PCSD/eulan	67	9	9	9	0.09	Atrazine	396	6	Pentachlorophenol	842	14
Monuron	61	20	7	7	0.07	Simazine	392	4	Propazine	35	3
Simazine	598	35	6	6	0.11	Linuron	127	3	Isoproturon	37	3
Chlorotoluron	127	27	6	6	0.08	Pentachlorophenol	947	2	Diazinon	40	3
Atrazine desisopropyl	41	7	5	5	0.06	Methabenzthiazuron	49	2	Linuron	48	2
Tributyl tin	250	24	5	5	0.14	Hexachlorobenzene	1180	1	Gamma HCH	1532	0.3
Atrazine desethyl	44	43	5	5	0.07	Gamma HCH	1617	0.6	Azinphos methyl	355	0.2
Linuron	110	30	4	4	0.06	Azinphos methyl	297	0.3	Parathion	395	0.2
Atrazine	601	34	3	3	0.06	Trifluralin	1076	0.2	Hexachlorobenzene	1422	0.2
Carbofenothon	257	12	3	3	0.05	A HCH	1492	0.1			
Total organic tin	83	11	2	2	0.04	Dieldrin	1622	0.1			
Pentachlorophenol	1188	6	2	2	0.02	Aldrin	1595	0.06			
Propoxur	45	2	2	2	0.009	DDT op	1603	0.06			
Methiocarb	47	6	2	2	0.02	DDT pp	1603	0.06			
Oxamyl	49	2	2	2	0.01						
Carbofuran	50	2	2	2	0.008						

Methomyl	50	2	2	2	0.008						
Carbetamide	59	8	2	2	0.03						
Dibutyl tin	81	4	1	1	0.01						
Tetrabutyl tin	185	2	0.5	0.5	0.004						
Gamma HCH	2078	59	0.3	0.3	0.02						
Propazine	463	2	0.2	0.2	0.004						
Hexachlorobenzene	1838	5	0.05	0.05	0.0005						
A HCH	1928	17	0.05	0.05	0.0007						

The following pesticides were detected in estuaries and coastal waters, but did not exceed 0.1 µg/l. The number in brackets denotes the number of samples analysed.

1994	1993	1992
aldicarb (46), aldrin (1902), azinphos methyl (303), B HCH (1749), carbaryl (49), chlordane (819), chlorfenvinphos (138), chlorothalonil (47), chlorpyrifos (61), chlorpyrifos methyl (40), 2,4 D(25), op DDE (1472), diazinon (115), dichlobenil (38), dieldrin (1955), dimethoate (112), endosulfan a (1312), endosulfan b (1224), endrin (1925), ethiofencarb (38), fenitrothion (354), fenthion (176), D HCH (1403), heptachlor (1069), heptachlor epoxide (948), isodrin (1780), malathion (358), MCPB (14), op DDT (1845), op TDE (1473), parathion methyl (142), pendimethalin (101), pp DDE (1797), pp DDT (1800), pp TDE (1793), propetamphos (57), tecnazene (203), tetrachloroaniline (60), triallate (850), trifluralin (1451), triphenyltin (233), vinclozolin (834)	b HCH (1594); chlorpyrifos (47); 2,4 DCPA (9); op DDE (1155); pp DDE (1456); diazinon (80); 2,4-D (9); d HCH (1131); endosulfan a (807); endosulfan b (733); endrin (1612); heptachlor (752); isodrin (1279); mecoprop(9); tetrachlorothioanisole (12); op TDE (978); pp TDE (1597); terbutryn (51); triazophos (8); trietazine (51).	a HCH (1496); aldrin (1518); b HCH (1168); chlorpyrifos (47); chlorpyrifos methyl (47); d HCH (1030); pp DDE (1486); op DDT (1495); dichlorvos (298); dieldrin (1520); endrin (1514); fenitrothion (300); heptachlor (698); isodrin (1255); malathion (300); mecoprop (14); methoxychlor (55); pp DDT (1511); prometryn (19); propetamphos (12); trifluralin (601); op TDE (973); pp TDE (1472); tecnazene (235).

The following pesticides were monitored in estuaries and coastal waters but were not detected.

1994	1993	1992
2,3 6 TBA (14), 2,4 DB (12), azinphos ethyl (135), cyfluthrin (10), desmetryn (26), dichlorprop (14), diclorvos (299), E HCH (155), endosulfan a & b (33), ethion (18), flucofuron (43), fluroxypyr (92), heptachlor epoxide (979), methabenzthiazuron (54), parathion (427), permethrin (97), phorate (26), prometryn (60), sulcofuron (43), terbutryn (57), trietazine (56)	aldicarb (50); azinphos ethyl (75); bromoxynil (9); carbaryl (50); carbetamide (50); carbofenothion (1); carbofuran (50); chlorpyrifos methyl (47); chlorothalonil (168); chlorfenvinphos (80); chloridazon (51); chlortoxuron (51); demeton-s-methyl (11); desmetryn (51); dichlobenil (10); dichlorvos (294); dimethoate (186); ethiofencarb (50); eulan (17); e HCH (263); fenitrothion (298); fenthion (80); flucofuron (48); fonofos (1); heptachlor epoxide (251); ioxynil (9); malathion (297); MCPA (9); MCPB (9); methiocarb (51); methomyl (50); mevinphos (8); monolinuron (51); monuron (49); oxamyl (50); parathion (311); parathion methyl (5); pendimethalin (158); permethrin (71); phenmedipham (22); phorate (7); pirimiphos (1); prometryn (55); propazine (69); propetamphos (11); propoxur (50); sulcofuron (48); tecnazene (239); 2,4,5,-T (9).	aldicarb (6); azinphos ethyl (122); bromoxynil (14); carbetamide (6); carbofenothion (55); carbofuran (6); chlordane (54); chlorothalonil (127); chlorfenvinphos (40); 2,4 D (24); 2,4 DCPA (14); op DDE (780); demeton S methyl (12); desmetryn (13); dichlobenil (12); dimethoate (203); e HCH (275); endosulfan a (593); endosulfan b (547); eulan (20); fenthion (94); flucofuron (1); fluroxypyr (127); heptachlor epoxide (510); ioxynil (14); MCPA (12); MCPB (12); methabenzthiazuron (6); methiocarb (6); methomyl (6); oxamyl (6); parathion methyl (107); PCSD (1); permethrin (28); pirimiphos methyl (7); propoxur (6); propyzamide (3); sulcofuron (1); 2,4,5 T (3); terbutryn (13); trietazine (14).

APPENDIX III - REGIONAL PESTICIDE SUMMARIES

Pesticides exceeding 0.1 µg/l in surface freshwaters in Anglian Region 1992-1994.

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Samples > 0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l
Isoproturon	208	0.02	81	51	2.96	*Chlorpropham	28	43	Simazine	303	39
Mecoprop	224	0.02-0.4	51	15	0.26	Simazine	313	32	Atrazine	278	38
Bentazone	64	0.02-0.3	17	14	0.84	Isoproturon	200	31	Isoproturon	191	29
Simazine	358	0.02-0.1	53	11	0.21	Atrazine	313	30	Mecoprop	251	28
Diuron	241	0.02-0.05	47	10	0.19	Mecoprop	245	23	Dicamba	223	9
Monolinuron	200	0.02-0.05	22	9	0.17	*Carbendazim	40	10	MCPA	223	9
Chloridazon	227	0.02-0.05	15	9	0.10	Diuron	197	10	Pentachlorophenol	243	9
Chlorotoluron	244	0.02-0.1	23	8	0.09	Bentazone	196	9	Terbutryn	224	7
Organotin	37	0.004-0.04	38	5	0.09	Trietazine	310	6	Diuron	191	6
Propyzamide	171	0.025-0.1	9	5	0.08	MCPA	235	6	Diazinon	42	5
Methabenzthiazuron	226	0.04-0.05	11	5	0.05	Propyzamide	197	5	Chlorotoluron	191	5
Atrazine	345	0.02-0.13	51	4	0.13	Terbutryn	310	4	Gamma HCH	469	5
MCPA	218	0.02-0.12	12	4	0.06	Gamma HCH	482	4	Trietazine	304	4
Carbetamide	244	0.04-0.05	6	3	0.05	Metazachlor	197	3	2,4 D	212	4
Linuron	224	0.02-0.07	28	3	0.07	2,4 D	233	3	Dieldrin	458	4
Clopyralid	76	0.05	3	3	0.03	Dicamba	235	3	Dichlorprop	210	3
2,4 D	195	0.02-0.1	23	3	0.06	Dieldrin	470	3	2,3,6 TBA	222	3

Pentachlorophenol	287	0.02-0.2	9	2	0.03	2,3,6 TBA	235	3	Bromoxynil	186	2
Monuron	244	0.02-0.05	7	2	0.03	Benazolin	196	3	Carbetamide	191	1
MCPB	200	0.02-0.1	7	2	0.03	Ethofumesate	197	3	Ioxynil	186	0.5
Trietazine	313	0.02-0.05	7	2	0.02	Chlorotoluron	197	2	Methabenzthiazuron	190	0.5
Terbutryn	341	0.02-0.05	9	2	0.03	Bromoxynil	200	2	Propyzamide	191	0.5
Bromoxynil	174	0.02-0.05	12	2	0.06	Metaxyl	197	2	Prometryn	224	0.4
Chloroxuron	243	0.02-0.05	16	2	0.05	Clopyralid	196	2	Chlorothalonil	406	0.2
Dichlorprop	195	0.02-0.1	5	2	0.02	Linuron	197	1			
Ethofumesate	137	0.025-0.2	2	1	0.02	Tri-allate	197	1			
Tetrachloroaniline	475	0.005-0.4	11	1	0.02	Dimethoate	202	1			
Ioxynil	85	0.02-0.06	5	1	0.01	Phenmedipham	106	1			
Metazachlor	170	0.02-0.1	8	1	0.02	Dichlorprop	233	1			
Aldicarb	190	0.05	3	1	0.009	Pentachlorophenol	273	1			
Dicamba	210	0.02-0.04	2	1	0.01	Pirimiphos methyl	198	0.5			
Phenmedipham	152	0.04-0.05	1	0.7	0.01	Diazinon	202	0.5			
Metaxyl	168	0.05-0.15	0.6	0.6	0.002	Chlorpyrifos methyl	204	0.4			
Pirimicarb	173	0.02-0.05	0.6	0.6	0.004	Tecnazene	437	0.2			
Carbofuran	191	0.05	3	0.5	0.007						
Methiocarb	193	0.05	5	0.5	0.02						
2,4 DB	199	0.02-0.15	4	0.5	0.007						
Pendimethalin	351	0.005-0.12	4	0.3	0.004						
Trifluralin	402	0.005-0.01	12	0.3	0.01						
Gamma HCH	448	0.005-0.01	54	0.2	0.02						

Special investigations

Pesticides exceeding 0.1 µg/l in groundwaters in Anglian Region 1992-1994

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Samples > 0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l
No specific groundwater monitoring for pesticides was undertaken in 1994						Atrazine	42	40	Atrazine	81	15
						Simazine	42	19	Mecoprop	79	3
						Bentazone	34	15	Isoproturon	80	3
						Terbutryn	42	7	Simazine	81	2
						Trietazine	42	5	Terbutryn	81	2
						Chlorotoluron	27	4	Bromoxynil	75	1
						Mecoprop	27	4	Chlorotoluron	80	1
						2,3,6 TBA	27	4	Trietazine	81	1
						Ethofumesate	31	3	Dicamba	93	1
						Diuron	33	3	2,3,6 TBA	93	1
						Clopyralid	30	3			

Pesticides exceeding 0.1 µg/l in estuaries and coastal waters in Anglian Region 1992-1994

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Samples > 0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l
Isoproturon	51	0.02	86	53	1.75	Diuron	51	31	Atrazine	15	33
Diuron	56	0.02-0.05	68	23	0.24	Isoproturon	51	25	Diuron	6	33
Chlorotoluron	60	0.02-0.05	23	10	0.10	Simazine	51	14	Simazine	15	13
Simazine	58	0.02-0.05	33	7	0.07	Atrazine	51	12	Pentachlorophenol	47	11
Monuron	61	0.02-0.05	20	7	0.07	Methabenzthiazuron	49	2			
Linuron	54	0.02-0.05	28	4	0.05	Pentachlorophenol	87	1			
Pentachlorophenol	93	0.02-0.2	12	3	0.03						
Propoxur	45	0.05	2	2	0.009						
Methiocarb	47	0.05	6	2	0.02						
Oxamyl	49	0.02-0.05	2	2	0.01						
Carbofuran	50	0.05	2	2	0.008						
Methomyl	50	0.05	2	2	0.008						
Carbetamide	59	0.04-0.05	8	2	0.03						

Pesticides exceeding 0.1 µg/l in surface freshwaters in Severn Trent Region 1992-1994

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Samples >0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Sample >0.1 µg/l	Pesticide	Total Number of Samples	% of Sample >0.1 µg/l
Phrimicarb	1		100	100	1.1	Mecoprop	598	20	2,4 D	189	30
Dicamba	4		100	50	0.21	Atrazine	858	14	Isoproturon	508	19
Isoproturon	501	0.04-0.1	26	22	1.38	MCPA	605	11	Atrazine	1241	14
Mecoprop	526	0.025	63	22	0.43	Simazine	855	10	Mecoprop	840	13
Simazine	745	0.005-0.15	40	8	0.12	2,4 DCPA	607	9	Simazine	1244	12
Diuron	486	0.04-0.1	9	6	0.25	2,4 D	597	9	Chlorotoluron	794	7
Atrazine	752	0.005-0.15	45	5	0.11	Flucifuron	158	6	Diuron	311	6
MCPA	527	0.025	17	4	0.06	Pentachlorophenol	2024	5	2,4 DCPA	668	4
Pentachlorophenol	2124	0.1-25	4	4	0.94	Isoproturon	477	3	Diazinon	1153	4
Linuron	551	0.04-0.1	2	2	0.05	Diazinon	924	3	Sulcofuron	182	3
Chlorotoluron	448	0.04-0.5	3	2	0.02	Linuron	532	2	Dichlobenil	642	4
Propetamphos	857	0.01-0.05	7	0.7	0.02	Diuron	373	2	MCPA	789	3
Monuron	196	0.1	0.5	0.5	0.01	Propazine	680	2	Linuron	807	2
Phorate	231	0.01-0.1	0.9	0.4	0.002	Dichlobenil	541	1	Pentachlorophenol	2060	2
Dichlobenil	478	0.01-0.075	3	0.4	0.02	Dichlorprop	330	1	Flucifuron	182	2
Endosulfan a	972	0.005-0.025	3	0.4	0.003	Gamma HCH	1370	1	Propazine	727	1
Demeton s methyl	550	0.01-0.05	0.7	0.4	0.002	Sulcofuron	158	0.6	Pirimiphos methyl	473	1
Diazinon	859	0.01-0.05	9	0.4	0.01	Propetamphos	922	0.4	Chlorfenvinphos	1079	1
PCSD/eulan	856	0.025-0.25	0.2	0.2	0.02	Dichlorvos	787	0.4	Carbetamide	116	0.8

Chlorfenvinphos	765	0.01-0.1	2	0.1	0.002	Chlorfenvinphos	913	0.3	Bromoxynil	812	0.7
Fenitrothion	765	0.01-0.1	0.3	0.1	0.001	2,4 DB	326	0.3	Trifluralin	1198	0.6
Endosulfan b	926	0.005-0.025	2	0.1	0.003	loxynil	427	0.2	Propetamphos	1216	0.6
Gamma HCH	1268	0.005-0.025	16	0.1	0.01	Malathion	912	0.1	Gamma HCH	1547	0.4
									loxynil	806	0.3
									Dichlorprop	270	0.3
									MCPB	792	0.2
									Dichlorvos	1114	0.1

Pesticides exceeding 0.1 µg/l in groundwaters in Severn Trent Region 1992-1994

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Samples >0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Samples >0.1 µg/l	Pesticide	Total Number of Samples	% of Samples >0.1 µg/l
Dichlobenil	12	0.01	8	8	0.04				Trietazine	25	8
Pentachlorophenol	137	0.1-2.5	0.7	0.7	0.06	No exceedences of 0.1 µg/l			Terbutryn	25	8
Gamma HCH	145	0.005	3	0.7	0.008				Isoproturon	25	4
									Linuron	25	4

Pesticides exceeding 0.1 µg/l in estuaries and coastal waters in Severn Trent Region 1992-1994

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Samples > 0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l
						Linuron	6	17	Isoproturon	3	33
No pesticide monitoring of estuaries and coastal waters.						Isoproturon	7	14	Atrazine	12	17
									Diuron	7	14
									Simazine	12	8
									Diazinon	12	8
									Propazine	12	8
									Chlorotoluron	14	7
									Linuron	14	7

Pesticides exceeding 0.1 µg/l in freshwaters in Northumbria and Yorkshire Region 1992-1994

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Samples > 0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l
Mecoprop	29	0.02-0.1	72	38	1.4	Mecoprop	61	67	Mecoprop	63	81
Isoproturon	230	0.01-0.1	32	19	0.6	MCPA	61	57	MCPA	63	70
Diuron	161	0.05-0.1	19	13	0.2	Dichlorprop	18	50	Dichlorprop	30	57
PCSD	596	0.01-0.5	32	10	0.1	2,4 D	55	47	2,4 D	60	50
2,4 D	30	0.1	7	7	0.3	2,4 DB	56	30	Isoproturon	16	25
Simazine	241	0.005-0.2	54	6	0.1	MCPB	59	29	MCPB	62	21
Diazinon	632	0.001-1	17	6	0.1	PCSD	351	21	Pentachlorophenol	1185	20
Propetamphos	644	0.005-0.1	20	6	0.1	Pentachlorophenol	1032	18	Atrazine	192	16
Pentachlorophenol	1287	0.02-0.2	6	6	0.1	Atrazine	307	16	Simazine	195	11
Atrazine	279	0.002-0.2	63	6	0.2	Simazine	290	12	Permethrin	516	10
Sulcofuron	20	0.5-1	5	5	0.9	Permethrin	469	8	Diazinon	280	7
Chlorfenvinphos	630	0.005-0.3	10	4	0.05	Diazinon	416	7	Diuron	16	6
Gamma HCH	1430	0.001-0.005	78	4	0.07	Propetamphos	488	6	Chlorfenvinphos	254	3
Dichlorprop	30	0.1	3	3	0.05	Chlorfenvinphos	510	5	Propetamphos	285	3
MCPA	30	0.1	3	3	0.3	Ioxynil	25	4	Gamma HCH	1525	1
Permethrin	639	0.01-0.2	6	2	0.04	Bromoxynil	27	4	Azinphos methyl	247	0.8
B HCH	1172	0.001-0.05	14	2	0.02	Gamma HCH	1430	1	Heptachlor	384	0.5
Chlorotoluron	81	0.05-0.1	1	1	0.01	Cyfluthrin	460	0.2	Dieldrin	1447	0.5
A HCH	1364	0.001-0.005	15	1	0.02	Fenitrothion	491	0.2	Azinphos ethyl	297	0.3
Dieldrin	1473	0.001-0.005	21	0.3	0.01	Malathion	497	0.2	Dichlorvos	320	0.3

Organotin	421	0.03	1	0.2	0.002	Azinphos ethyl	518	0.1	Fenitrothion	322	0.3
									Fenthion	287	0.3
									Cypermethrin	519	0.1

Pesticides exceeding 0.1 µg/l in groundwaters in Northumbria and Yorkshire Region 1992-1994

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Samples > 0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l
Atrazine	1	0.01	100	100	0.2	No exceedences of 0.1 µg/l			Diazinon	283	1
									Azinphos ethyl	261	0.7
									Azinphos methyl	284	0.3

Pesticides exceeding 0.1 µg/l in estuaries and coastal waters in Northumbria and Yorkshire Region 1992-1994

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Samples > 0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l
Simazine	58	0.01-0.2	34	3	0.07	Pentachlorophenol	83	14	Pentachlorophenol	264	38
Pentachlorophenol	226	0.2	3	3	0.04						
Total Organic tin	74	0.03	9	3	0.04						
Gamma HCH	154	0.001-0.005	59	2	0.2						
Atrazine	60	0.01-0.2	38	2	0.08						

Pesticides frequently exceeding 0.1 µg/l in freshwaters in North West Region 1992-1994

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Samples >0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Samples >0.1 µg/l	Pesticide	Total Number of Samples	% of Samples >0.1 µg/l
Diuron	25	0.1	40	36	4.8	Pentachlorophenol	291	12	MCPA	5	40
Isoproturon	25	0.05-0.1	40	36	2.3	Azinphos methyl	121	7	Pentachlorophenol	350	26
Chlorotoluron	25	0.05-0.1	36	32	0.7	Permethrin	47	6	Atrazine	196	11
Neburon	25	0.04-0.1	20	20	0.3	Atrazine	106	0.9	Permethrin	42	10
Pentachlorophenol	285	0.1-10	18.3	17.5	0.2	A HCH	269	0.3	Simazine	198	5
Simazine	153	0.005-0.15	21.6	5.2	0.1				Hexachlorobenzene	214	4
Carbaryl	24	0.1-1	4.2	4.2	0.05				Gamma HCH	402	1
Monuron	25	0.04-0.1	4	4	0.05				pp DDT	221	0.9
Atrazine	160	0.005-0.15	25.6	3.8	0.05				A HCH	404	0.2
Propetamphos	216	0.01-0.05	8.8	1.4	0.02						
Chlorfenvinphos	217	0.01-0.1	1.4	0.9	0.006						
Tributyltin	174	0.005	48.3	0.6	0.02						
Azinphos methyl	218	0.01-0.1	0.9	0.5	0.006						
Gamma HCH	601	0.005-0.05	3.5	0.2	0.002						

Pesticides exceeding 0.1 µg/l in estuaries and coastal waters in North West Region 1992-1994.

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Samples >0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Samples >0.1 µg/l	Pesticide	Total Number of Samples	% of Samples >0.1 µg/l
Simazine	346	0.005-0.025	29	9	0.13	Azinphos methyl	11	9	Pentachlorophenol	106	7
Atrazine	352	0.005-0.025	30	6	0.06	Pentachlorophenol	277	1	Gamma HCH	93	4
Pentachlorophenol	366	0.1	6	5	0.03	Trifluralin	251	0.8	Atrazine	101	2
Propazine	353	0.005-0.025	3	0.3	0.006	A HCH	277	0.7	Hexachlorobenzene	175	2
						Simazine	193	0.5			
						op DDT	273	0.4			
						pp DDT	273	0.4			
						Aldrin	274	0.4			
						Dieldrin	277	0.3			

Pesticides exceeding 0.1 µg/l in surface freshwaters in Southern Region 1992-1994.

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Sample > LOD	% of Samples > 0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l
Isoproturon	48	0.02	94	83	0.37	Diuron	21	71	Diuron	5	100
Chlorotoluron	46	0.02	72	41	0.55	Simazine	132	20	D HCH	230	34
Mecoprop	39	0.1	85	36	1.37	Atrazine	133	16	Atrazine	202	23
Simazine	206	0.02-0.06	48	14	0.16	D HCH	178	4	Simazine	200	22
Atrazine	211	0.02-0.075	56	5	0.12	E HCH	162	2	Pentachlorophenol	189	1
2,4 D	45	0.02-0.1	9	2	0.03	A HCH	151	2	E HCH	229	0.4
Pentachlorophenol	182	0.02-0.1	8	2	0.02	Pentachlorophenol	124	2			
Prometryn	152	0.02	0.7	0.6	0.004	Dichlorvos	151	1			
Gamma HCH	222	0.005-0.008	46	0.5	0.02	Gamma HCH	175	0.5			
						B HCH	178	0.5			

Pesticides exceeding 0.1 µg/l in groundwaters in Southern Region 1992-1994.

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Sample > LOD	% of Samples > 0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l	Pesticide	Total Number of Samples	% of Samples > 0.1 µg/l
Isoproturon	12	0.02	50	25	0.19	Isoproturon	7	14	Atrazine	16	6
Linuron	11	0.02	9	9	0.09						
Atrazine	13	0.02	25	8	0.92						
2,4-D	16	0.02-0.04	19	6	0.2						

Pesticides exceeding 0.1 µg/l in estuaries and coastal waters in Southern Region 1992-1994.

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Sample > LOD	% of Samples >0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Samples >0.1 µg/l	Pesticide	Total Number of Samples	% of Sample >0.1 µg/l
Gamma HCH	235	0.005-0.02	20	0.9	0.01	Pentachlorophenol	212	1	Simazine	6	50.0
									Atrazine	8	13
									Azinphos methyl	202	0.5
									Parathion	206	0.5
									Gamma HCH	279	0.3

Pesticides exceeding 0.1 µg/l in surface freshwaters in South Western Region 1992-1994.

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Samples >0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Samples >0.1 µg/l	Pesticide	Total Number of Samples	% of Samples >0.1 µg/l
Mecoprop	55	0.04	53	25	0.44	2,4 D	33	52	Mecoprop	265	18
Dicamba	55	0.04	16	13	0.09	Mecoprop	314	41	Atrazine	977	6
MCPA	55	0.04	20	9	0.1	Atrazine	970	11	Ioxynil	16	6
Isoproturon	461	0.02-0.04	16	9	0.2	MCPA	313	8	Sulcofuron	170	5
Atrazine	942	0.01-0.056	43	6	0.09	Tecnazene	111	8	Propetamphos	173	2
Atrazine Desethyl	869	0.016-0.09	32	4	0.08	Isoproturon	562	5	MCPA	258	2
Monobutyl tin	424	0.05-1.5	7	3	0.03	Simazine	978	2	Isoproturon	857	2
Atrazine Desisopropyl	827	0.08-0.5	3	3	0.02	Hexachlorobenzene	689	2	Flucofuron	146	1
PCSD/Eulan	41	0.05-0.17	2	2	0.02	PCSD/eulan	470	0.8	Simazine	1052	0.7
Simazine	927	0.005-0.05	31	2	0.03	Propetamphos	399	0.7	Trifluralin	187	0.5
Carbophenothion	248	0.01-0.02	17	1	0.04	Azinphos methyl	149	0.6	Chlorotoluron	858	0.3
Pentachlorophenol	769	0.05-0.1	1	0.5	12	Diazinon	467	0.4	Gamma HCH	2267	0.2
Tributyl Tin	439	0.009-0.54	18	0.5	0.01	Chlorotoluron	570	0.3	Dieldrin	1979	0.1
Dieldrin	2168	0.0004-0.38	19	0.4	0.006	Pentachlorophenol	338	0.3			
Propetamphos	738	0.004-0.05	5	0.4	0.006	Dieldrin	2254	0.3			
Trifluralin	2181	0.0008-0.03	4	0.3	0.004	Trifluralin	1947	0.2			
Fenitrothion	482	0.007-0.04	0.6	0.2	0.0008	Gamma HCH	2530	0.1			
Dichlorvos	549	0.02-0.15	0.7	0.2	0.002	Flucofuron	598	0.1			
Gamma HCH	2200	0.0004-0.03	44	0.2	0.01	Sulcofuron	598	0.1			

Pesticides exceeding 0.1 µg/l in groundwaters in South Western Region 1992-1994

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Samples >0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Samples >0.1 µg/l	Pesticide	Total Number of Samples	% of Samples >0.1 µg/l
Atrazine Desethyl	16	0.01	56	25		Atrazine	446	8	Dichlorvos	4	25
Isoproturon	28	0.02	29	21	0.1	Simazine	445	0.6	Atrazine	407	9
Atrazine	50	0.009-0.03	52	12	0.15				Simazine	394	0.5
Chlorotoluron	28	0.02	14	4							

Pesticides exceeding 0.1 µg/l in estuaries and coastal waters in South Western Region 1992-1994.

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Samples >0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Samples >0.1 µg/l	Pesticide	Total Number of Samples	% of Samples >0.1 µg/l
Monobutyl tin	5	0.05	2	20	0.08	Atrazine	11	18	Atrazine	9	11
Carbofenothion	50	0.015-0.08	6	16	0.2	PCSD/eulan	45	9	Simazine	29	3
PCSD/Eulan	41	0.05-0.27	1	15	0.14	Hexachlorobenzene	189	5			
Tributyl tin	225	0.01-0.14	2	5	0.15	Pentachlorophenol	125	3			
Atrazine Desisopropyl	41	0.08-0.46	0.7	5	0.06	Gamma HCH	603	1			
Atrazine Desethyl	44	0.15-0.09	4	5	0.07	Dieldrin	591	0.1			
Simazine	58	0.005-0.03	4	2	0.04						
Dibutyl tin	81	0.02-0.4	0.4	1	0.01						
Tetrabutyl tin	185	0.03-0.1	0.2	0.5	0.004						
Pentachlorophenol	228	0.05-0.1	0.2	0.4	0.01						
Hexachlorobenzene	915	0.0006-0.04	0.8	0.1	0.001						
A HCH	952	0.0001-0.07	3	0.1	0.001						
Gamma HCH	1058	0.0005-0.1	9	0.1	0.02						

Pesticides exceeding 0.1 µg/l in surface freshwaters in Thames Region 1992-1994.

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Sample >0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Sample >0.1 µg/l	Pesticide	Total Number of Samples	% of Sample >0.1 µg/l
Isoproturon	408	0.02	75	47	0.81	Diuron	442	54	Atrazine	446	49
Diuron	417	0.02	70	44	1.40	Atrazine	428	34	Diuron	172	40
Mecoprop	207	0.02-0.1	64	16	0.28	Chlorotoluron	443	26	Simazine	447	36
Linuron	338	0.02	39	9	0.12	Simazine	431	20	Mecoprop	4	25
Chlorotoluron	417	0.02	26	9	0.16	Linuron	440	15	MCPA	4	25
Simazine	417	0.02-0.06	52	8	0.11	Isoproturon	444	15	Chlorotoluron	168	16
Atrazine	421	0.02-0.08	69	7	0.14	Pentachlorophenol	455	3	Isoproturon	168	10
2,4-D	202	0.02-0.2	40	6	0.14	Gamma HCH	469	1	Linuron	168	4
MCPA	208	0.02-0.1	21	3	0.05	Permethrin	409	0.2	Pentachlorophenol	468	3
Pentachlorophenol	446	0.02-0.1	29	2	0.06	Tecnazene	462	0.2	Gamma HCH	476	0.6
Trifluralin	417	0.001-0.05	4	0.5	0.09	Azinphos ethyl	398	0.5	Diazinon	172	0.5
Gamma HCH	454	0.005-0.3	62	0.4	0.03						
Dichlobenil	260	0.005-0.05	15	0.4	0.01						
Chlorfenvinphos	416	0.005-0.05	0.2	0.2	0.008						
Diazinon	424	0.005-0.05	0.7	0.2	0.004						

Pesticides exceeding 0.1 µg/l in groundwaters in Thames Region 1992-1994

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Sample >0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Sample >0.1 µg/l	Pesticide	Total Number of Samples	% of Sample >0.1 µg/l
Atrazine	127	0.02-0.15	34	13	0.12	Atrazine	92	15			
Mecoprop	93	0.02-0.1	16	6	0.13	Linuron	94	6	No groundwater monitoring was reported in 1992		
Isoproturon	126	0.02	34	6	0.15	Diuron	95	5			
Chlorotoluron	126	0.02	13	4	0.04	Isoproturon	95	4			
Diuron	126	0.02	21	4	0.14	Chlorotoluron	95	3			
2,4-D	92	0.02-0.1	8	2	0.04	Mecoprop	85	1			
Linuron	111	0.02	23	2	0.07	Simazine	95	1			
Dichlorprop	83	0.02-0.1	2	1	0.01						
MCPB	83	0.02-0.1	7	1	0.03						
MCPA	93	0.02-0.1	1	1	0.008						
Simazine	127	0.02-0.07	20	0.8	0.03						

Pesticides exceeding 0.1 µg/l in estuaries and coastal waters in Thames Region 1992-1994

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Sample > 0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Sample > 0.1 µg/l	Pesticide	Total Number of Samples	% of Sample > 0.1 µg/l
Isoproturon	67	0.02	84	67	0.47	Diuron	70	59	Simazine	82	56
Diuron	67	0.02	88	61	0.76	Chlorotoluron	70	27	Atrazine	76	46
Mecoprop	25	0.02-0.04	60	24	0.32	Atrazine	69	23	Chlorotoluron	28	39
MCPA	27	0.02-0.04	30	11	0.14	Simazine	64	14	Diuron	28	36
Linuron	56	0.02	32	4	0.08	Isoproturon	70	10	Pentachlorophenol	79	5
Simazine	59	0.02-0.04	75	2	0.09	Linuron	70	4			
Chlorotoluron	67	0.02	30	1	0.06						

Pesticides exceeding 0.1 µg/l in surface freshwaters in Welsh Region 1992-1994

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Samples >0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Sample >0.1 µg/l	Pesticide	Total Number of Samples	% of Sample >0.1 µg/l
Mecoprop	1075	0.1-0.2	3	2	0.02	MCPB	38	5	Atrazine	361	2
Simazine	1209	0.01-0.02	10	0.7	0.02	Atrazine	969	4	Simazine	357	2
Isoproturon	1490	0.1	2	0.7	0.02	Mecoprop	858	3	Propetamphos	185	2
MCPA	1077	0.1-0.2	1	0.7	0.007	MCPA	857	3	Chlorfenvinphos	372	1
Pentachlorophenol	1146	0.1-0.2	1	0.5	0.004	Simazine	973	2	Diazinon	376	1
Diuron	761	0.1	2	0.4	0.01	Diuron	562	2	Pentachlorophenol	837	0.2
Atrazine	1209	0.01-0.02	20	0.3	0.02	Isoproturon	1266	1			
Chlorotoluron	698	0.1	2	0.3	0.006	Terbutryn	528	0.4			
Diazinon	808	0.005-0.01	8	0.3	0.006	Chlorotoluron	616	0.3			
Terbutryn	684	0.01-0.2	0.7	0.2	0.003	Diazinon	955	0.3			
						Chlorfenvinphos	943	0.2			
						Linuron	558	0.2			
						Malathion	975	0.1			

Pesticides exceeding 0.1 µg/l in groundwaters in Welsh Region 1992-1994.

1994						1993			1992		
Pesticide	Total Number of Samples	Range of LOD µg/l	% of Samples > LOD	% of Samples >0.1 µg/l	95 Percentile µg/l	Pesticide	Total Number of Samples	% of Samples >0.1 µg/l	Pesticide	Total Number of Samples	% of Samples >0.1 µg/l
Dieldrin	9	0.005	22	22	1.81	No specific groundwater monitoring for pesticides.					

MANAGEMENT AND CONTACTS:

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

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