PESTICIDES IN THE AQUATIC ENVIRONMENT

1995

ENVIRONMENT AGENCY

March 1997

Environment Agency
Information Centre
Head Office
Class No .....
Accession No A20W.

Prepared by the National Centre for Toxic and Persistent Substances (TAPS)

ENVIRONMENT AGENCY
022516

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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. In October 1996 the Environment Agency (the Agency) updated this information by producing a document containing the 1994 data. This report follows on from those publications and summarises 1995 pesticide data, the final calendar year of NRA monitoring. It also looks at trends observed over the past four years and summarises the progress to date with the recommendations made in the Water Quality Series Report. 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 the last four years.

2) The National Picture

During 1995, the NRA (as it was then) monitored 160 pesticides in Controlled Waters[1] out of about 450 currently approved for use in the UK and recorded almost 250,000 results from over 2500 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 (80/778/EC).

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. Currently there are EQSs for about 45 pesticides.

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 results below the limit of detection were treated as zero e.g. <0.05µg/l = 0.

2.1) Surface Freshwaters

2.1.1) EQS Exceedences

In 1995 the NRA monitored 158 pesticides and recorded almost 200,000 results in surface

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

freshwaters from 1705 sites. 7.9% of these sites (135) exceeded the EQS for at least one pesticide. In total 1.3% of sites exceeded for List I pesticides, 4.6% for List II and Annex 1A, and 7.5% for operational standards[2]. These exceedences do not correspond exactly with those reported to DoE for Directives monitoring, as not all the sites are downstream of discharges. 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 assumed to be zero.

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

Table 1- Number of sites exceeding EQS for individual pesticides in surface freshwaters in 1995[3]

List I	**Total sites** (percentage)	**List II/Annex 1A**	**Total sites** (percentage)	**Other**	**Total sites** (percentage)
Total HCH	14 (0.8%)	Permethrin	28 (1.6%)	Diazinon	35 (2%)
Dieldrin	6 (0.4%)	Cyfluthrin	24 (1.4%)	Cypermethrin	26 (1.5%)
Total DDT	1 (0.06%)	PCSD/eulan	13 (0.8%)	Propetamphos	15 (0.9%)
pp DDT	1 (0.06%)	Endosulfan	5 (0.3%)	Total "urons"	12 (0.7%)
Hexachloro benzene	1 (0.06%)	Dichlorvos	4 (0.2%)	Isoproturon	10 (0.6%)
		Azinphos methyl	2 (0.1%)	Chlorfenvinphos	7 (0.4%)
		Fenitrothion	1 (0.06%)	MCPA	5 (0.3%)
		Malathion	1 (0.06%)	Diuron	5 (0.3%)
		Atrazine & Simazine	2 (0.1%)	2,4 D	4 (0.2%)
				Chlorotoluron	3 (0.2%)
				Triazophos	1 (0.06%)
				Mecoprop	1 (0.06%)
				Methiocarb	1 (0.06%)

[2] Adding these figures together does not equate to 7.9% because some sites fail for more than one pesticide.

[3] The UK reports to Europe only those sites downstream of point source discharges as ▸

Figure 1. Surface Freshwater Sites Failing List 1 Pesticide Environmental Quality Standards in England and Wales During 1995

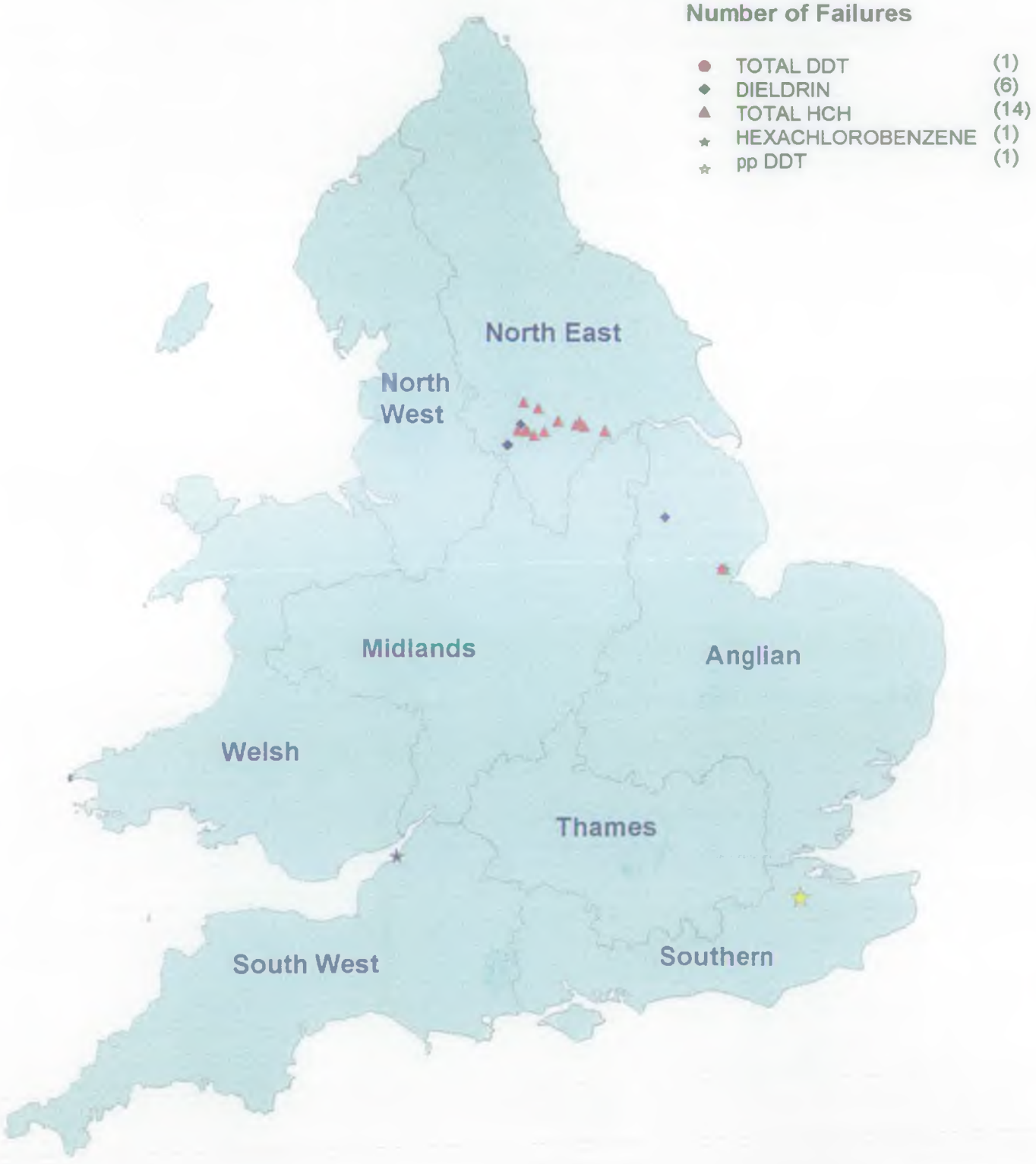


Figure 2. Surface Freshwater Sites Failing List II and Annex 1A Pesticide Environmental Quality Standards in England and Wales During 1995

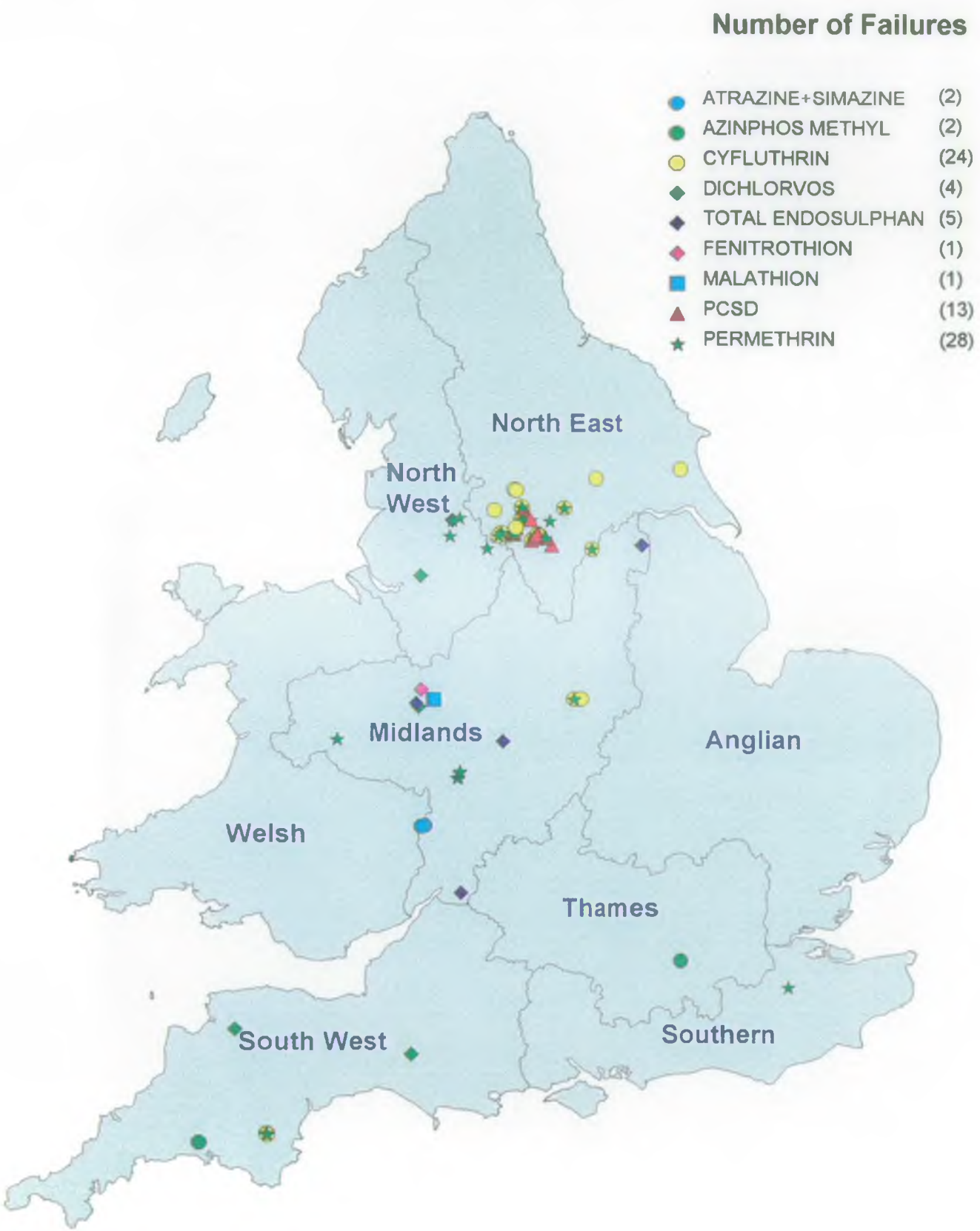
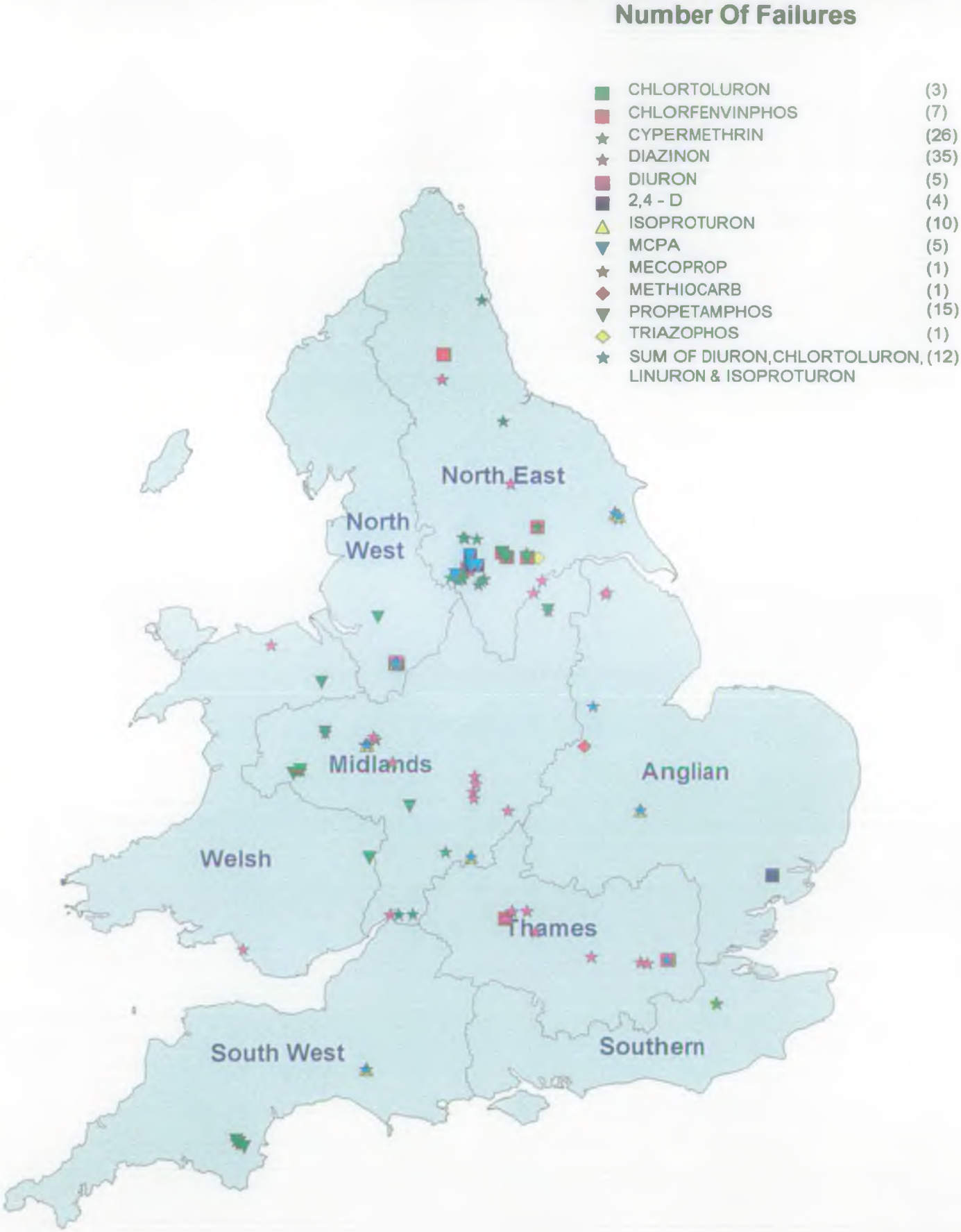


Figure 3. Surface Freshwater Sites Failing Operational Pesticide Environmental Quality Standards in England and Wales During 1995



The most frequent exceedences in 1995 were for the sheep dip insecticides diazinon, cypermethrin and propetamphos, there was a significant increase in the number of samples failing for cypermethrin compared to in 1994. These are mainly associated with textile industries involved in processing wool, but were also seen in upland areas, where they probably occur as a result of the incorrect use and disposal of sheep dips.

List I exceedences are most frequently observed for Total HCH. Most were associated with the scouring of a batch of imported wool containing lindane in the North East Region. The wool was scoured in 1994, but EQS failures are still seen into 1995 because of the persistence of lindane.

Exceedences for List II compounds are seen for the moth proofing chemicals permethrin, cyfluthrin and PCSD/eulan. Once again, these are mainly associated with the textile industry, but improvements have been made since 1993 and should continue into the future. Exceedences of the EQS for these pesticides have been seen over the past few years. Actions have been taken to prevent EQS exceedences in future, but some issues are complex and long term solutions are needed. This is particularly true with the sheep dip pesticides, where there is currently no cost effective treatment to remove the pesticides from effluents. During 1996 a Working Group was set up to look into this issue and is trying to find a combination of solutions which will help reduce the amount of pesticides present in final effluents.

Over the past few years, exceedences of Agency operational EQSs have been seen for a few pesticides. Exceedences for isoproturon were seen for the first time in 1994, some of which were believed to have arisen from its diffuse input. This may have been 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.

2.1.2) Exceedences of 0.1 µg/l.

Comparing the 1995 data against 0.1 µg/l shows that of the 158 pesticides monitored 75 were detected above 0.1 µg/l, 43 were detected, but did not exceed 0.1 µg/l and the other 40 were not detected. Detailed information can be found in Appendix II and a summary is given in Figure 4 (Flutriafol is not included in Figure 4 because it was only monitored for a few samples in a special survey). Overall the numbers of pesticides detected above 0.1 µg/l have risen from 52 in 1992 to 75 in 1995. This almost certainly reflects improvements in analysis and a wider range of determinands (120 in 1992) monitored rather than any real increase in pesticides in water.

◂ the relevant Directives refer to the control of discharges and processes. However, in this report comparison of sites with the EQSs have been made whether or not the site is down-stream of a discharge, with the result that there are a number of sites exceeding EQSs which are not included in the annual returns to DoE. In such cases the Agency will investigate possible causes of any exceedences and take remedial action wherever possible.

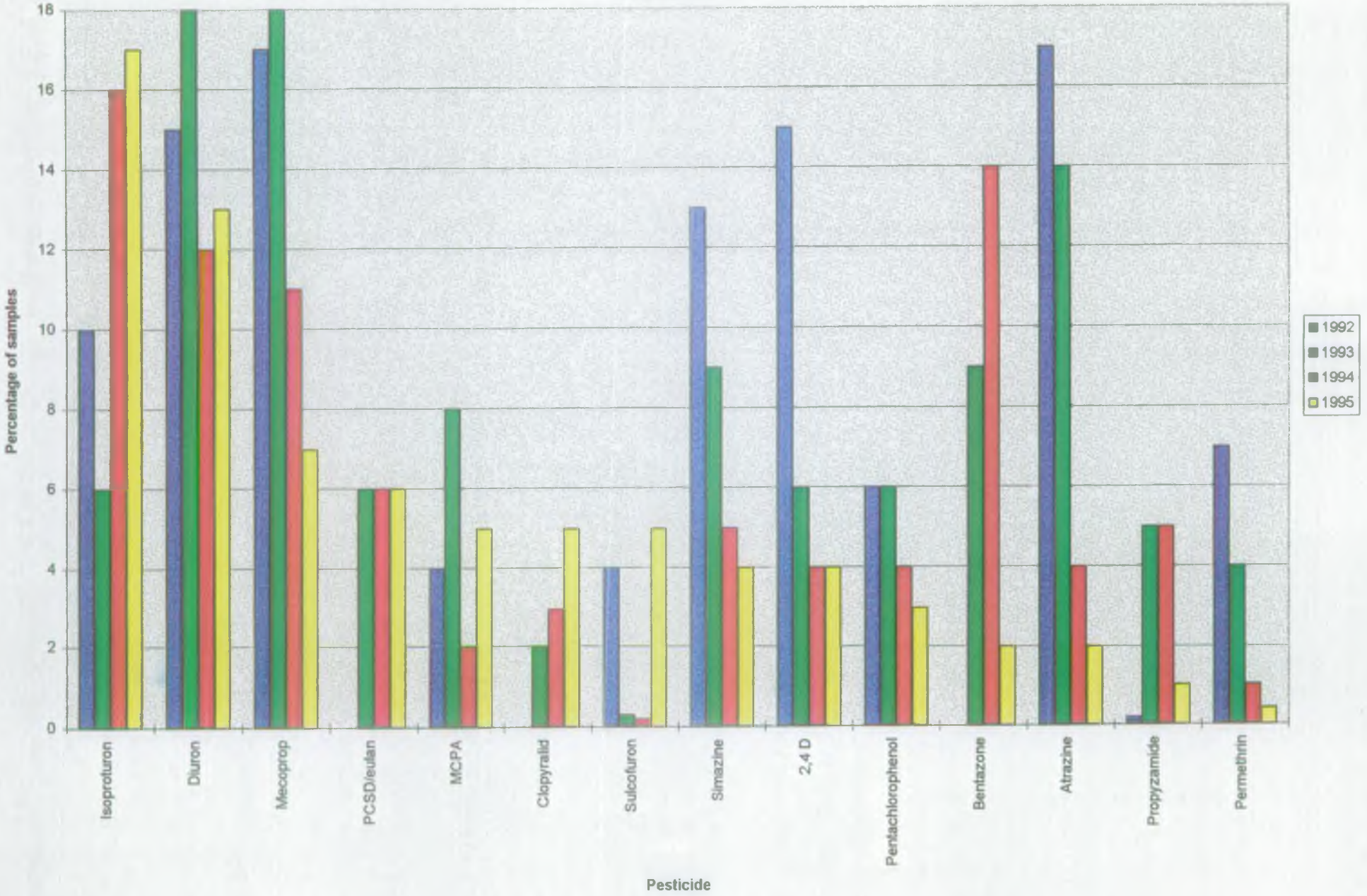
The cereal herbicide isoproturon (IPU) exceeded 0.1 µg/l most frequently in surface freshwaters in 1995. The percentage failures have increased steadily since 1992 from 10% to 17% in 1995. This problem has been recognised by the Pesticides Safety Directorate (PSD) and the Advisory Committee on Pesticides (ACP) who slightly modified the approval in July 1995 to try to reduce water contamination. Subsequently a Stewardship campaign has been initiated by an industry IPU Task Force to reinforce the message of "best practice" to users. It is too early to tell whether this has had any real success in reducing concentrations during 1996, but the Agency will continue to monitor and report its finding to PSD. If there is no improvement, the Agency will press PSD to review the approval of IPU again.

As illustrated in Figure 4 the percentage of samples failing for diuron increased slightly in 1995, but was still lower than the peak of failures which occurred in 1993. Diuron is a herbicide used in non-agricultural situations, and when atrazine and simazine were banned from non-agricultural use in 1993, the detections of diuron increased. Prompt action by the manufacturers resulted in a stewardship campaign targeting local authorities, with the intention of re-educating users in the correct use and disposal of the product. In addition, the manufacturers recommended that the product was applied earlier in the season, when weeds were small, which allows a lower dose to be used. This change of use of the product may have had some effect in reducing environmental concentrations, however, it appears the immediate benefit has now been realised and further work to emphasise continual improvements is still required. A clear downward trend in detections is seen for atrazine and simazine since 1992, although the rate of decline has slowed between 1994 and 1995, and the continuing exceedences indicate that the remaining agricultural use of both of these herbicides is likely to result in failures of 0.1 µg/l. Atrazine is used on maize, while simazine can be used on a variety of agricultural and horticultural crops. The 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 PSD.

A downward trend for mecoprop has been observed since 1992. This reduction in mecoprop concentrations may be linked to a decrease in its use and also to users switching to the newer formulations containing only the active isomer. The use of these formulations means that only half the previous amount of mecoprop is required and should result in lower concentrations being detected in the environment. PSD 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, manufacturers, distributors and farmers will see the environmental benefit of changing swiftly to the new formulation so that no further restrictions on mecoprop will be needed.

Detections of the herbicide bentazone above 0.1 µg/l appear to have decreased dramatically during 1995. However, the data for bentazone is biased to some extent as a result of it being included in the monitoring programme of Welsh region in response to it being detected elsewhere. Bentazone is unlikely to be used to any great extent in Wales and was only detected above 0.1 µg/l in one sample. This results in the national percentage failures for bentazone being lowered compared with previous years data. Such fluctuations in sampling numbers can significantly affect national statistics. Results from Anglian Region do indicate that there are still

Figure 4. Pesticides most frequently exceeding 0.1 µg/l in surface waters in England and Wales 1992-1995



detections of bentazone, but that these have perhaps reduced slightly in 1995.

Monolinuron and chloridazon were both seen to exceed 0.1µg/l for the first time in 1994, although monitoring was only undertaken in the Anglian Region. Failures in 1995 were not as significant as 1994, but their detection is still being investigated and so they have not been included on Figure 4.

2.2) Groundwaters

Monitoring of groundwaters is not as widespread as that for surface freshwaters. In 1995, a total of 124 pesticides were monitored from 580 sites producing nearly 18,000 results. Details are given in Appendix II and a summary shown in Figure 5. 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 Agency and to augment and complement Water Company monitoring. The range of pesticides monitored in groundwater continues to increase however from 78 in 1992 to 124 in 1995.

Because groundwater monitoring is limited, both in the number of samples and its extent geographically, it is difficult to draw too many conclusions from the data. However, it is clear that atrazine was most frequently detected above 0.1 µg/l in groundwaters between 1992 and 1995. The apparent improvement seen in 1995 is due to additional monitoring being undertaken in the North East Region and does not reflect a real improvement in groundwater quality for atrazine. This is probably to be expected since changes in groundwater contamination levels take much longer to be observed due to the length of travel time in aquifer substrates. It is also likely that the continuing use of atrazine on maize may be a contributing factor in certain areas.

Failures for IPU seem to have levelled off again in 1995, but it is necessary to keep a close eye on any IPU groundwater contamination so that advice and guidance can be given to Government regulated manufacturers and distributors.

Pesticides which are detected above 0.1 µg/l are mainly from the triazine, "uron" and phenoxy acid herbicide groups.

2.3) Estuaries and Coastal Waters

In 1995 the NRA monitored 101 pesticides and recorded almost 35,000 results in estuaries and coastal waters from 413 sites.

Exceedences of EQSs are seen infrequently with 6 sites (less than 2%) breaching relevant EQSs. Failures are seen for Total HCH (2), azinphos methyl (1), pp DDT (1), endosulfan (1) and chlorfenvinphos (1). This is illustrated in Figure 6 and details of the sites and concentrations are given in Appendix I.

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 diuron, IPU, mecoprop, MCPA, PCSD, simazine and others from similar chemical groups. The organotin compounds which are used as antifouling paints on ships are also detected in marine waters. Detailed information on individual pesticides can be found in Appendix II.

3) The Regional Picture

For each region details of exceedences in freshwaters, groundwaters and estuary/coastal waters are given in Appendix III and summaries of exceedences in freshwaters shown in Figures 7 - 14.

3.1) Anglian

Failures of EQS for List I pesticides have been restricted to a couple of sites over the past few years. One is associated with a timber treatment plant, where historic contamination of the land results in EQS failures for HCH and dieldrin. A surface water treatment plant has now been completed and was fully commissioned during July 1994. The treatment plant is working well, however, the extent of the contamination means that it is likely that high concentrations of HCH remain in the river sediment and are contributing to the EQS failures. This is being investigated, but it is anticipated that there may still be problems meeting the EQS in the short term. The other site at Greetwell Beck fails the EQS for dieldrin and this is believed to be related to the historic pesticide storage and manufacture in the area.

Over the past few years there have also been isolated exceedences of operational EQSs. Most of these have been transitory and have not been repeated in following years. This implies that spillages or incorrect use of the pesticides may have been involved.

Isoproturon most frequently exceeds 0.1 µg/l in freshwaters in the Region. It was generally believed that 1994 was a particularly bad year for IPU results, because the preceding autumn had been very wet and farmers had not been able to apply IPU until the spring of 1994. This resulted in two applications being applied in the monitoring year of 1994. However, more recent data indicate that the problem was just as bad in 1995 with over 50% of samples analysed exceeding 0.1 µg/l. PSD reviewed IPU in 1995 and subsequently made some minor modifications to its use to try and reduce water pollution. In addition, a Stewardship campaign was initiated in the autumn to try to raise awareness of the issue and provide information which would help reduce concentrations in water. It is too early to tell if these measures have had any success.

The percentage of failures for mecoprop in freshwaters appear to have declined slightly over the past four years. Hopefully this will continue to fall as manufacturers change to the single isomer formulation which halves the dose required.

Big reductions in failures in freshwaters have been seen for atrazine and simazine between 1992 and 1994, however, the 1995 data shows a similar percentage to that seen in 1994. This suggests that the concentrations being detected now result from their agricultural use. In contrast, the

Figure 5. Pesticides most frequently exceeding 0.1 µg/l in groundwaters in England and Wales 1992-1995

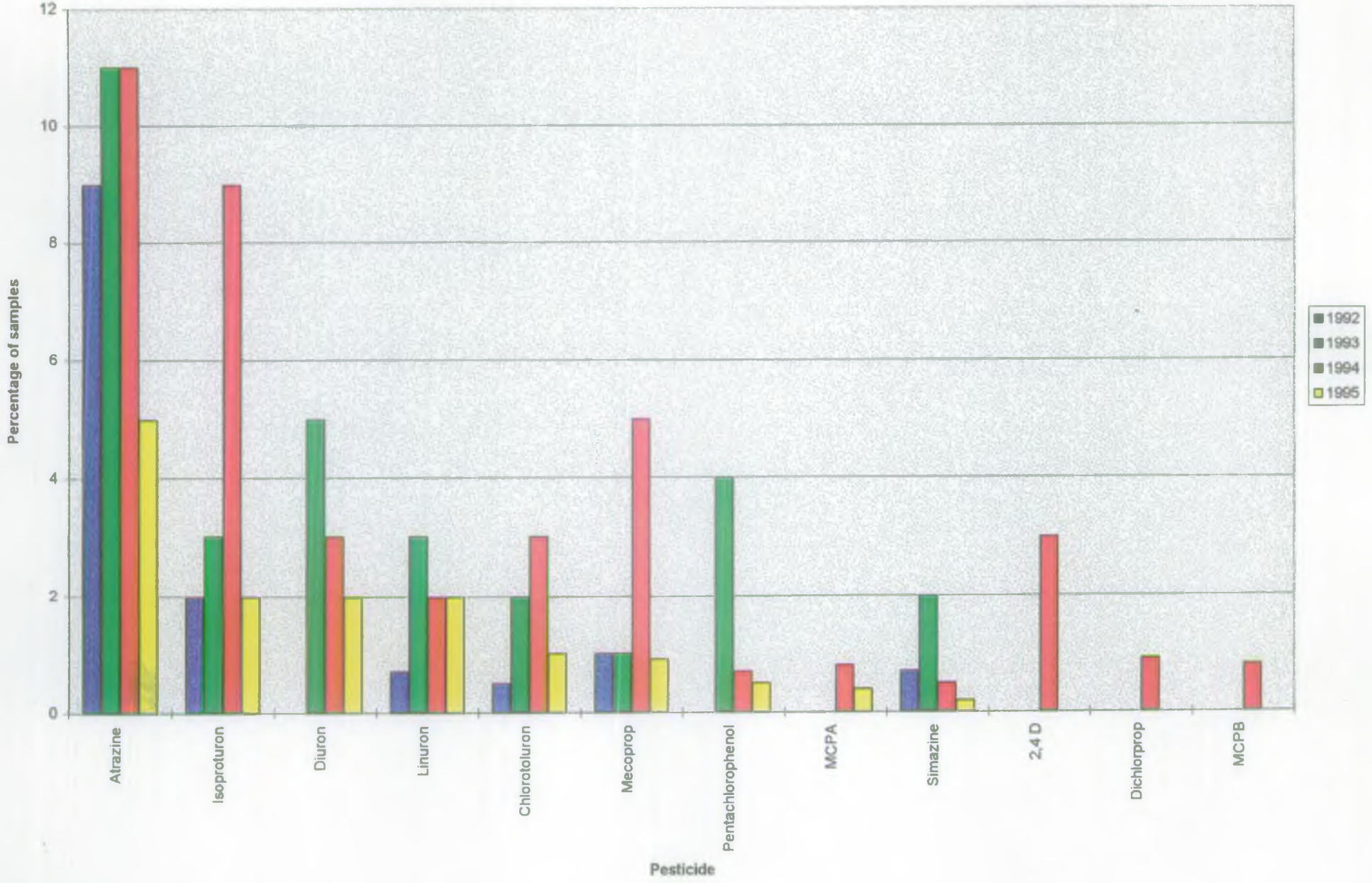
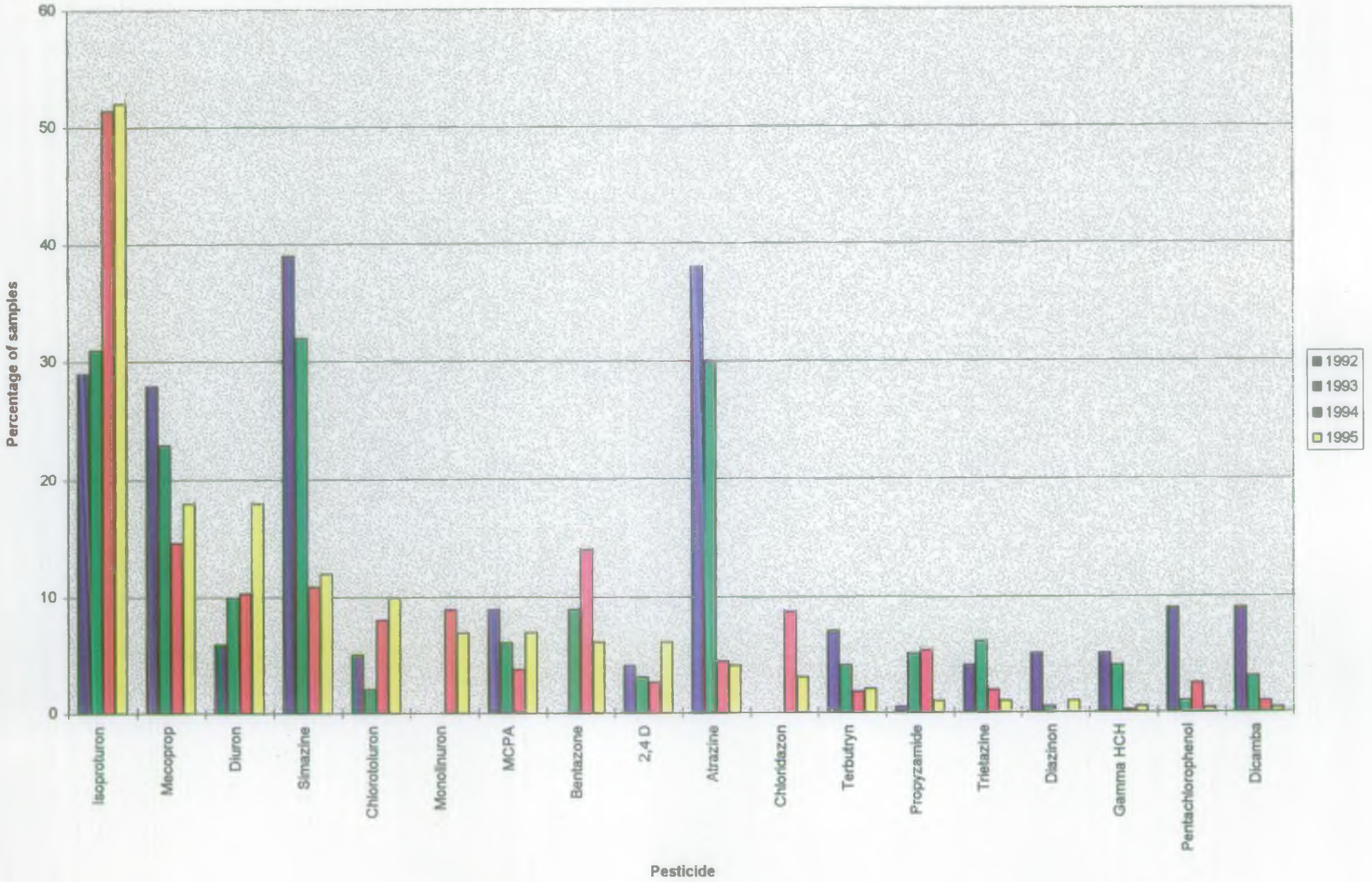


Figure 6 Estuary and Coastal Water Sites Failing Environmental Quality Standards for Pesticides in England and Wales during 1995

Figure 7. Pesticides most frequently exceeding 0.1 µg/l in surface freshwaters in Anglian Region 1992-1995



percentage of samples exceeding 0.1 µg/l for diuron have increased since 1992, from 6% to nearly 20% in 1995. It is important for the Region that more work is focussed on educating non-agricultural pesticide users.

Many other agricultural herbicides are detected above 0.1 µg/l and this reflects the intensive agricultural nature of the Region. Work will need to continue to highlight "best practice" amongst farmers if this is to be improved.

Groundwater monitoring in the Region is extremely limited. In 1992 and 1993 a special groundwater investigation was undertaken. This revealed that atrazine and simazine were most frequently detected, but that bentazone was also detected at one site. Since 1993, no specific groundwater monitoring has been undertaken so it is difficult to assess whether there has been any improvement or deterioration. However, in 1996, a national groundwater monitoring network was set up and it is hoped that this will provide better groundwater information in the not too distant future.

3.2) Midlands

The pesticides which most frequently exceed the EQS in the Region are those associated with the wool processing and textile industry. The sheep dip pesticides diazinon and propetamphos are most common. These arise from both diffuse and point sources. The latter are primarily due to discharges from sewage works receiving effluent from industries associated with various stages of wool processing. These have been of concern in recent years, but so far there has been little improvement in meeting the EQS. The problem is that there is currently no cost effective treatment to remove the pesticides from the effluent. A working group was set up in early 1996 to look at ways that this issue could be tackled and is investigating the possibility of reducing the quantity of pesticides on the wool, marketing "pesticide free" wool and finding viable options for improving treatment.

In 1995 EQS exceedences were also seen for the moth proofing pesticides permethrin and cyfluthrin which also arise from wool processing industries. Experience has been gained in improving the use and disposal of the moth proofing agents so the EQS can be met. Further improvements are planned at these sites.

There were no failures of List I pesticides during 1995. This shows an improvement over the previous two years monitoring data, where List I failures occurred for pentachlorophenol, DDT and HCH.

Reductions in EQS exceedences were also seen in 1995 for dichlorvos, endosulfan and isoproturon.

The failures of EQS at the site of Cox's Chemicals are in a small tributary and not the actual chemical site. They indicate residual contamination from a major fire several years ago.

Exceedences of 0.1 µg/l in freshwaters are frequent and reflect the agricultural nature of the region. Isoproturon exceeds this standard most frequently, with about one fifth of samples above

0.1 µg/l each year. There appears to have been little change in exceedence rate over the past four years. Mecoprop is another pesticide which is often detected above 0.1 µg/l. It is possible that there was an improvement in 1995, but it goes against the trend of the previous three years and more information is needed to confirm this.

The downward trend of detections of simazine in freshwaters between 1992 and 1994 appears to have been reversed in 1995. This is of concern because it implies that the agricultural use of simazine in the Region is leading to its regular detection above 0.1 µg/l. Atrazine in contrast has declined, since 1992 and the subsequent ban on non-cropped surfaces in 1993. Diuron, another non-agricultural herbicide, remains quite commonly detected.

Other pesticides detected above 0.1 µg/l in freshwaters are the industrial pesticides, flucofuron, pentachlorophenol and diazinon. These generally appear to be declining below the 0.1 µg/l standard.

The region has recently undertaken a thorough review of pesticide monitoring and has introduced a screening survey which it is hoped will be used to identify sources of pesticide pollution.

3.3) North East

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. The 1995 data show that failures of the EQS continue to be seen for lindane, due to its very long persistence in the environment.

Improvement in quality of effluent from textile industry discharges during the early 1990s resulted in a reduction of permethrin EQS failures in 1994 and 1995. 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.

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 seen in the upper reaches of catchments and 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 in 1994, but continue to cause breaches also in 1995. 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 in freshwaters for these herbicides are linked to this discharge, but because the river is not abstracted for water supply

Figure 8. Pesticides most frequently exceeding 0.1 µg/l in surface freshwaters in Midlands Region 1992-1995

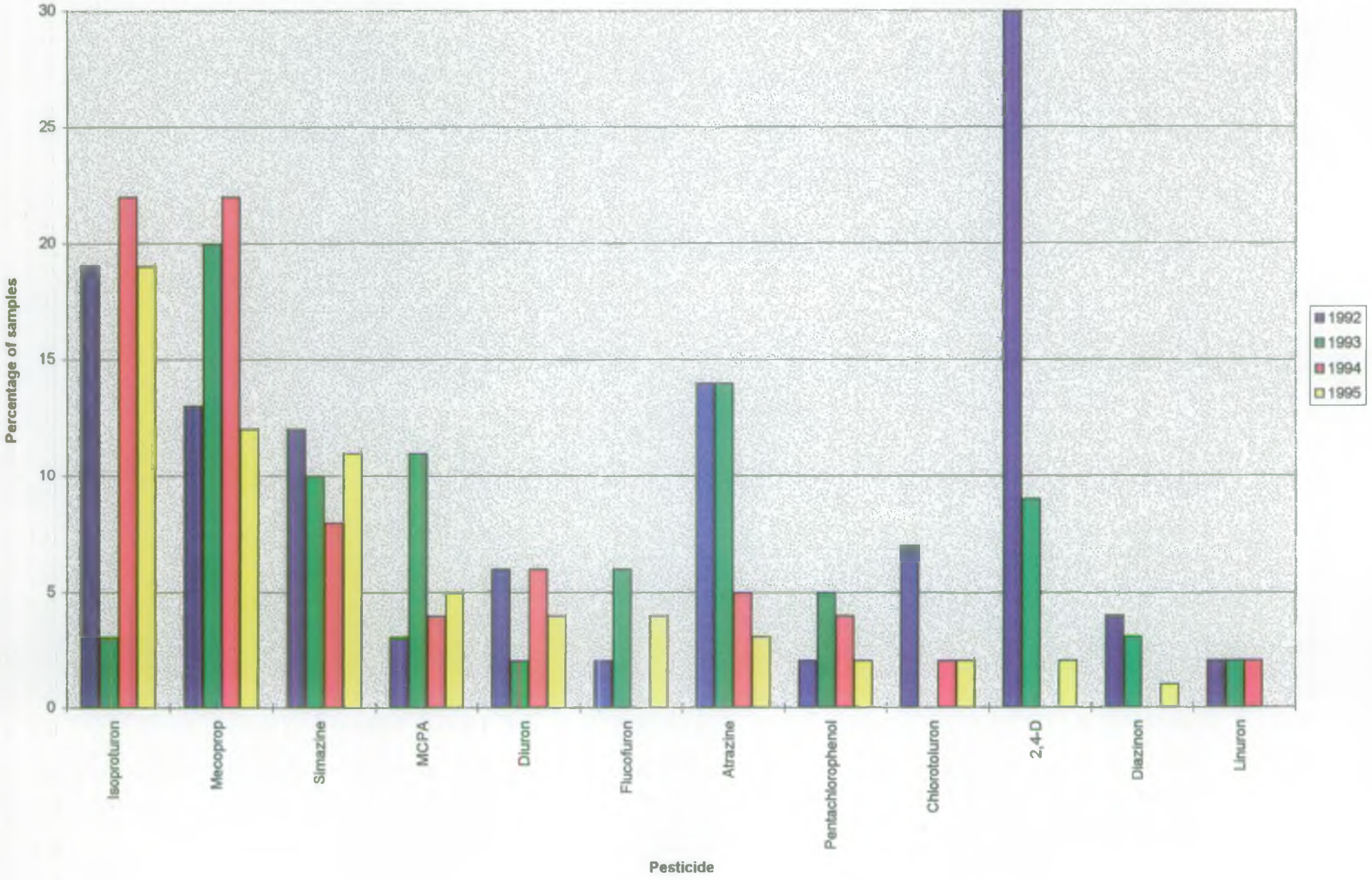
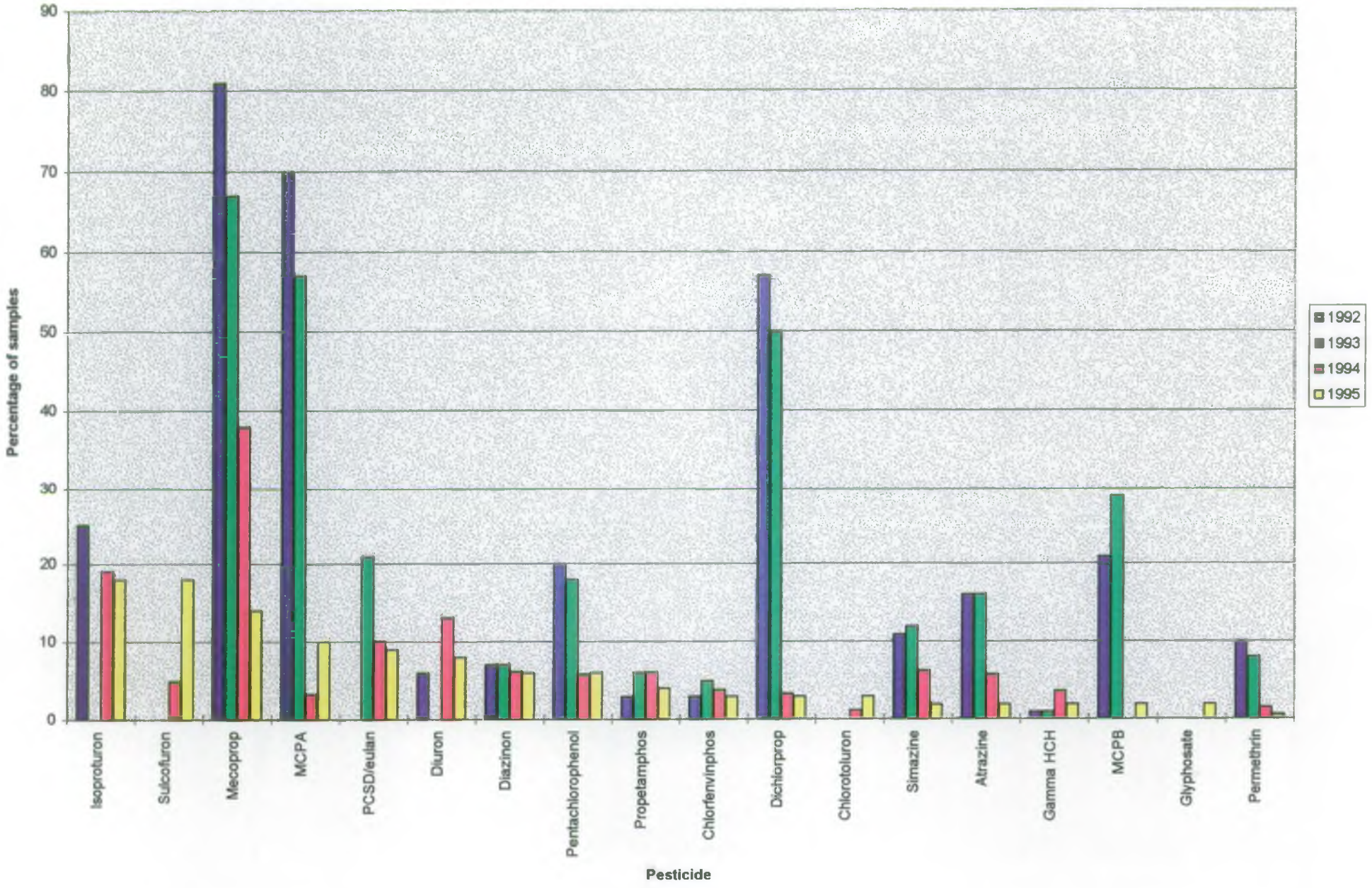


Figure 9. Pesticides most frequently exceeding 0.1 µg/l in surface freshwaters in North East Region1992-1995



they have been excluded from the 0.1 µg/l analysis in 1994 and 1995. This is reflected in the apparent downward trend of their occurrence in the region.

3.4) North West

There has been a reduction in non-compliance with EQS for List I pesticides in the Region over the past three years. In 1993 three sites failed, whereas in 1995 there were only one instance of non-compliance for List I pesticides. Exceedences of EQSs for List II pesticides, are mainly associated with the mothproofing agent permethrin, although in previous years cyfluthrin and azinphos methyl have both exceeded EQSs. The operational standard for the "urons" is exceeded in the vicinity of contaminated land at an agrochemical manufacturing site. Improvements are being required as part of the IPC authorisation.

Failures of the 0.1 µg/l standard are relatively infrequent in the Region and are generally associated with industrial uses of pesticides. These generally occur in stretches of rivers which are not abstracted for drinking water supply and are therefore not particularly significant provided the individual EQSs are met. There have been no recent exceedences of the EC Surface Water Abstraction Directive pesticide standards.

3.5) Southern

EQS failures are mainly associated with a discharge from an agrochemical formulation plant. Treatment is currently being installed to address this issue, which is expected to result in the EQSs being met in the near future.

Failures of 0.1 µg/l in freshwaters over the past few years have been associated primarily with the agricultural herbicides. In 1994, a very high percentage of failures of 0.1 µg/l was seen for IPU and chlorotoluron, which was associated with a pollution incident on the Isle of Wight. Subsequent pollution prevention and research projects appear to have been quite successful in alleviating the problem. Results from 1995 indicate that IPU and chlorotoluron failures have reduced to a level consistent with a predominantly agricultural area.

Other pesticides which have been detected over the years have been HCH and its isomers. These result from an agrochemical formulation plant, where historical pollution of the groundwater occurred. The contaminated groundwater is gradually leaching out into the local river system and being detected above both the EQS and 0.1 µg/l level. The company are currently undertaking a groundwater remediation project, which is expected to rapidly improve the situation.

The concentration of atrazine in freshwaters has clearly declined over the past four years in the region following the ban on non-cropped surfaces. Simazine declined between 1992 and 1994, but this drop has not been sustained into 1995. This suggests that the continual agricultural use of simazine in the Region will still result in its detection in water above 0.1 µg/l.

The non-agricultural herbicide diuron was included more widely in the monitoring programme in 1995 and appears to be detected frequently. It may be necessary to introduce a campaign

amongst local authorities to try and reduce the concentrations in future.

3.6) South West

A single trade discharge is responsible for EQS exceedences relating to permethrin, cyfluthrin, diazinon and propetamphos. During 1995/6 powdered activated carbon trials took place at this site and future EQS compliance is expected.

One site which failed the EQS for DDT was found to have been the result of a single high positive value in June 1995. Since that time no further DDT results have been detected above the limit of detection.

Most exceedences of the 0.1 µg/l standard in freshwaters over the past few years have been associated with mecoprop, IPU, atrazine and MCPA. The percentage failures of atrazine have reduced in recent years, due primarily to the ban on non-agricultural use. However, atrazine is still widely used on maize crops and consequently is likely to continue to be detected.

Levels of IPU appear to be increasing in the region. This will need to be monitored closely and further stewardship and pollution prevention messages reiterated to local farmers.

Though neither mecoprop or MCPA were detected above 0.1 µg/l in 1995, it is too early to confirm whether this signifies an improvement.

3.7) Thames

Exceedences of EQS for List I and List II pesticides have been infrequent in the Region over the past three years. There have been a few exceedences for diuron over this period, which probably reflects it high usage in an urban region. In 1995, there was an increase in EQS exceedences for the sheep dip pesticide diazinon, which mainly result from a single high result at the sites during the year.

Diuron has remained the most significant pesticide in terms of failures of 0.1 µg/l in freshwaters over the past four years. Unfortunately, despite much effort on the part of the Agency and Water Companies re-educating non-agricultural users, the concentration of diuron does not appear to be declining in the Region. This may suggest that restrictions on its use in vulnerable catchments may be needed in future. In contrast, atrazine and simazine, the other pesticides previously used in non-agricultural situations have declined considerably over the same time period, although the data from 1995 does indicate that this is now levelling off. It is assumed that any atrazine and simazine detected in 1995 is arising from its agricultural use.

The two other pesticides which regularly exceed 0.1 µg/l in freshwaters are isoproturon and mecoprop. Isoproturon appears to have become more of a problem in the last 2 years. However, the stewardship campaign was initiated at the end of 1995 and so hopefully future data will start to show some improvements. On a positive note, there appears to be a reduction in failures for mecoprop over the past few years, although 15% of samples still exceed this figure in 1995.

Figure 10. Pesticides most frequently exceeding 0.1 µg/l in surface freshwaters in North West Region 1992-1995

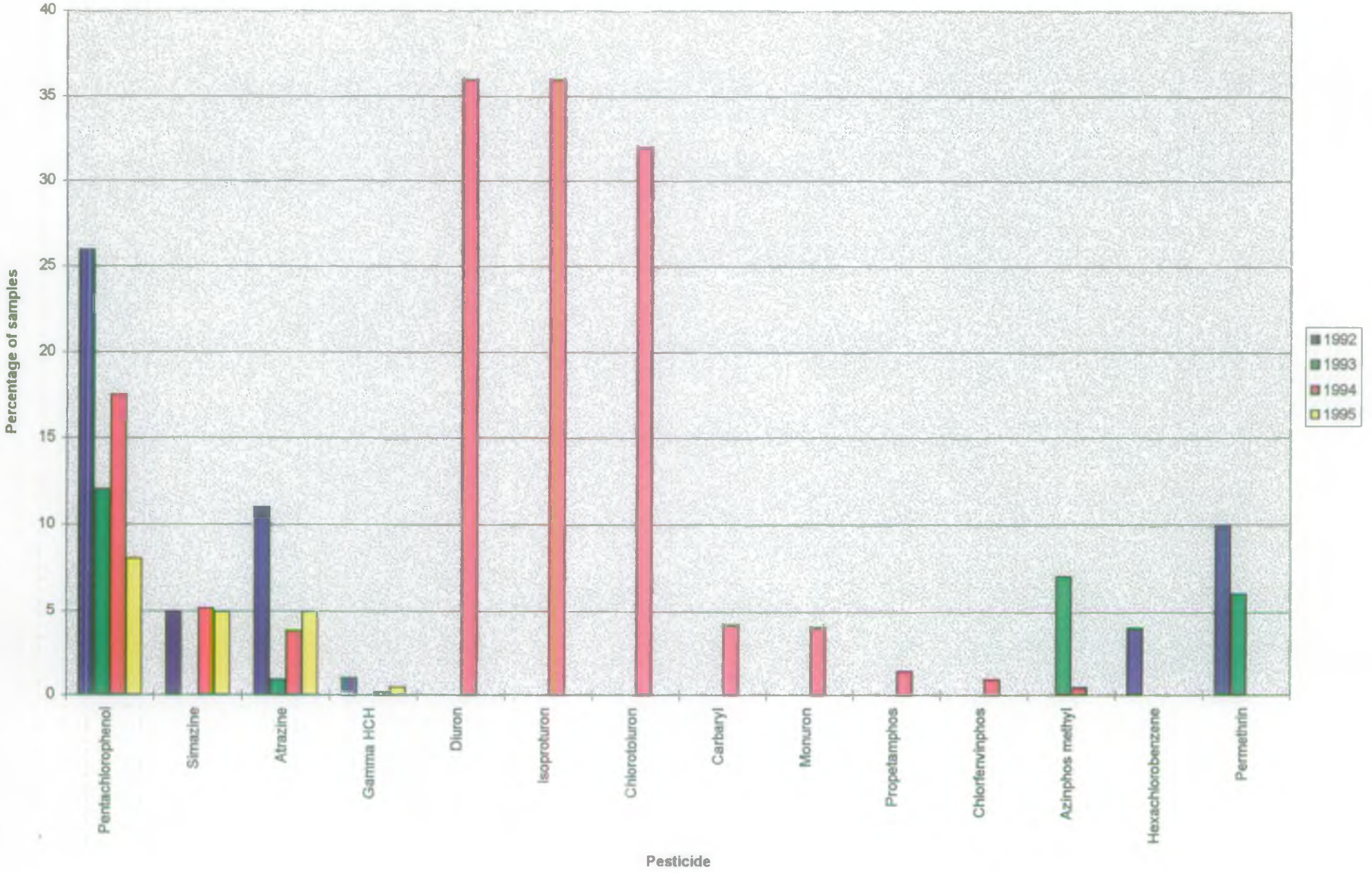
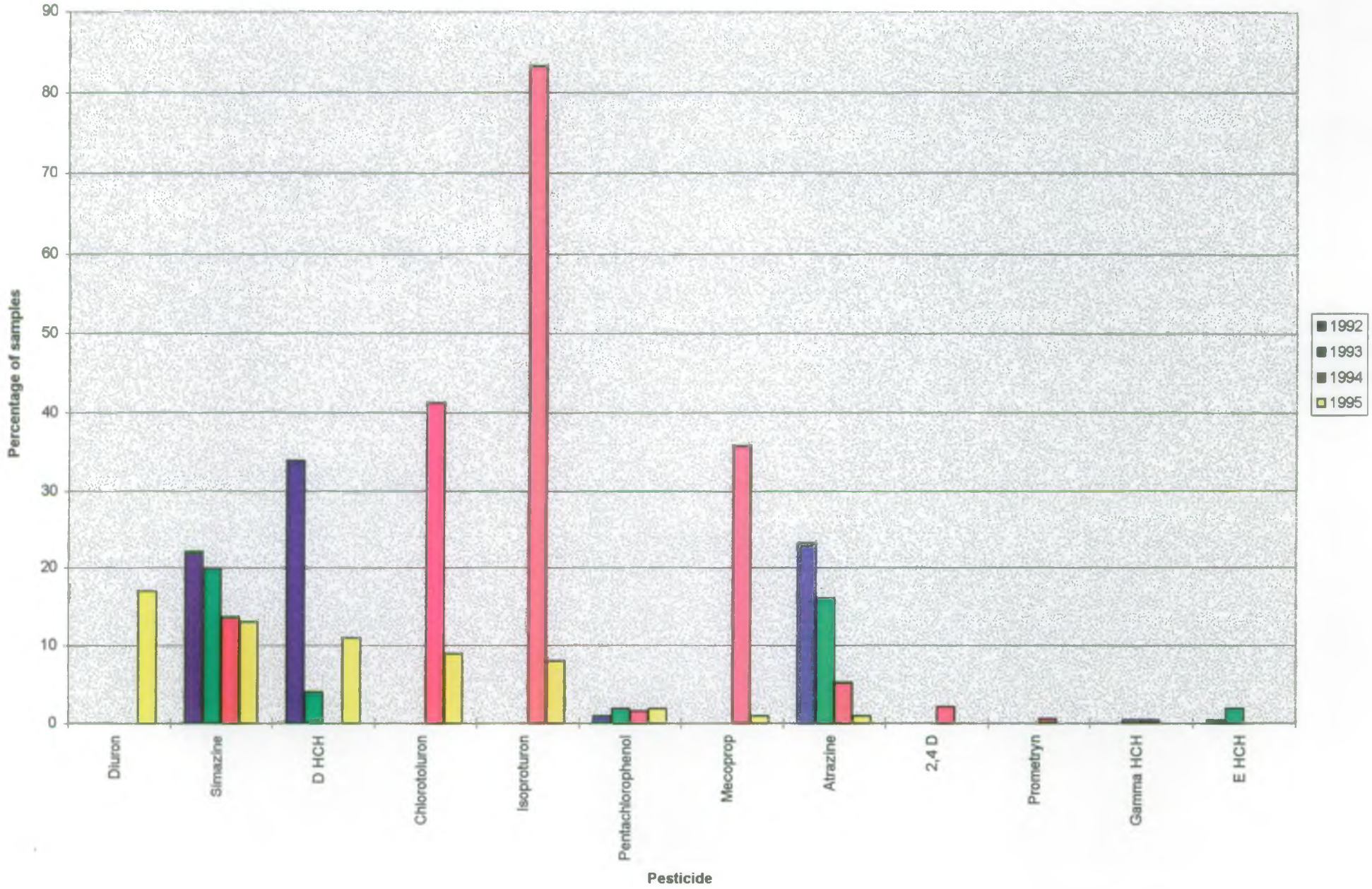


Figure 11. Pesticides most frequently exceeding 0.1 µg/l in surface freshwaters in Southern Region 1992-1995



In groundwaters, atrazine is detected most frequently above 0.1 µg/l. The regional groundwater monitoring programme has gradually been implemented since 1992 and the atrazine data for 1993 is derived from samples taken at a relatively small number of public supply boreholes compared with the sampling carried out in 1995. As a result it is difficult to make firm conclusions about any trends, although crude analysis of the data and observations made by some Water Companies would appear to indicate that atrazine concentrations in groundwater are falling in some areas. The "uron" herbicides isoproturon, diuron and chlorotoluron have also been detected in groundwaters in the Region. Analytical errors are thought to be responsible for previous reports of the high and widespread occurrence of linuron, and the analytical method is currently under review.

3.8) Welsh

There have been no failures of EQS for List I or List II pesticides in the Region throughout the past three years. Exceedences of operational EQSs in freshwaters have been associated with the sheep dip pesticides diazinon and propetamphos and are probably as a result of spillages during dipping or incorrect disposal of the dip. Pollution control staff are continuing to carry out farm visits in the Region to raise local awareness of the problem. EQS failures have also occurred for atrazine/simazine. There were no failures for operational EQSs in estuary or coastal waters.

Exceedences of the 0.1 µg/l standard in freshwaters in the region overall are infrequent, due to the small percentage of arable land in the Region. However, exceedences still occur for some herbicides, most notably mecoprop, isoproturon and diuron. Detections of atrazine and simazine have declined over the past four years and this corresponds with national trends following their ban from non-agricultural usage.

4) Conclusion

Over the past four years the NRA and subsequently Environment Agency has undertaken almost a million analyses for pesticides in Controlled Waters. It now has a comprehensive database for pesticides, so that detailed analysis of the pesticides detected in Controlled Waters can be undertaken and important information fed into the regulatory process. The number of pesticides monitored for has increased substantially during the past four years from 120 in 1992 to 160 in 1995. This reflects the Agency's use of commercially available predictive models to indicate the pesticides most likely to be present and the subsequent analytical development undertaken to either confirm or deny model predictions. Future Agency monitoring will be guided by its own risk assessment tool POPPIE (Prediction Of Pesticide Pollution In the Environment). However, although targeting monitoring is important in terms of being cost effective, it does exaggerate the apparent problem and therefore this needs to be considered when analysing data. It is important in future for the Agency to set up a national pesticide monitoring network to reflect more accurately changes in background concentrations.

A large number of pesticides have been detected at low concentrations over recent years. Most did not lead to exceedences of EQS and are therefore thought unlikely to be having a detrimental effect on the aquatic environment. Nonetheless, pesticides are potentially "poisonous, noxious

and polluting" and every effort must be maintained to minimise their occurrence in water. In most situations where EQS failures have occurred, measures have been taken or are being initiated to prevent future exceedences. This is easier to resolve when failures occur as a result of point source inputs, such as manufacturing discharges. Diffuse inputs are much more difficult to control and will rely much more heavily in improving practice amongst pesticide users. This is an ongoing education process and is being undertaken by various bodies, including pesticide manufacturers, BAA, PSD and the Environment Agency. If EQS failures are repeated in similar locations year on year, pesticide users in the vicinity can be targeted by Agency staff and pollution prevention advice given or enforcement action taken.

In addition, to EQS exceedences, the high number of failures of 0.1 µg/l for IPU needs to be resolved, particularly in water supply catchments. Although a Stewardship campaign was initiated during 1995, it is too early to measure any success or otherwise of the campaign. The 1996 data for IPU will be critical in assessing whether any improvement can be made via a Stewardship route or whether a more severe restriction on its use will be required.

It appears that further work will be needed in reinforcing the message of "best practice" to non-agricultural users if the concentrations of diuron are to be reduced further. In contrast, a clear downward trend in detections of both atrazine and simazine in surface waters has been seen over the past few years following their ban from non-agricultural situations.

4.1) Recommendations

The Water Quality Series Report No 26 made 20 recommendations to reduce pesticide pollution of environmental waters. It is important that these recommendations continue to be progressed by the Agency, other Government Departments, pesticide manufacturers and other organisations associated with pesticides. The recommendations are outlined below and include the latest position on each. **Text in bold is reproduced from the Water Quality Series report (1995).**

1) A national strategy aimed at minimising pollution of the water environment by pesticides should be produced and implemented. The strategy should consider the results of pesticide monitoring in environmental waters and address a range of pollution prevention measures, define clear roles and responsibilities and draw upon latest scientific knowledge and best practices. The task will require the active participation of Government departments, regulatory organisations, pesticides producers and distributors, the farming industry and other pesticide users.

A group is currently being set up to action this recommendation. The terms of reference of the group have been drafted and the first meeting should be held in early 1997. The group will ensure that its work does not duplicate that dealt with by the "Pesticides Forum", but will complement it and where appropriate feed information into it.

2) The current Government review of the use of the List I pesticide, gamma HCH (lindane), should consider its impact on the aquatic environment. Possible causes of EQS failures should be identified and appropriate action taken to ensure that the standard is met.

The Environment Agency produced information on EQS failures for gamma HCH and also maps illustrating the locations where HCH is detected at varying concentrations. PSD considered this information, but concluded that as its agricultural use could not be proved to be leading to EQS failures, its current approved uses would not be amended. The Agency will continue to assess gamma HCH and where possible identify any failures which arise from agricultural use.

3) The Government should review ways to meet its commitments under the 1990 North Sea Conference Declarations for those pesticides where the 1995 reduction target is unlikely to be met. The review should look at ways of achieving the targets for those pesticides which arise principally from diffuse sources. The review should also consider new requirements for other pesticides identified at the 1995 Conference.

The participating countries have agreed to continue towards the 50% reduction by the year 2000 and agreed to develop diffuse Best Environmental Practice. At the Conference, it was also agreed to review the marketing of 14 pesticides found in the North Sea and link them to National PARCOM Action Plans.

4) The wool processing and textile industries should continue to improve effluent discharges. The NRA will continue to revise discharge consents as necessary to enable rivers to meet appropriate EQSs. Sewage and industrial discharges containing sheep dip pesticides and moth proofing agents should remain a high priority for pollution control. Solutions involving changing processes or treatment will be sought from industry and the water companies.

A working group has been set up to look into this issue and includes members from the Environment Agency, Scottish Environmental Protection Agency, Veterinary Medicines Directorate, National Office of Animal Health, Water companies and the textile and wool processing industry. The group met for the first time in February 1996 and held a further three meetings in the year. It appears that a combination of methods will be required to reduce concentrations of sheep dip chemicals being discharged so that EQSs can be met in future. So far four key areas have been identified, reducing the amount of dip remaining on the fleece, marketing "pesticide free" wool, reviewing additional information on the pesticides to ensure that the EQS is set at the correct figure and improving treatment at either the textile site or sewage treatment works or both.

5) The Ministry of Agriculture, Fisheries and Food (MAFF) and Health and Safety Executive (HSE) should ensure that appropriate data are available to the NRA from the approval and review process, so that informal standards can be established. The NRA will continue to develop non-statutory EQSs for pesticides which are commonly detected in environmental waters and may present a risk to the aquatic environment. Future EQS development should also focus on the possible impact when a mixture of pesticides arise.

A meeting was recently held with PSD to discuss the development of EQSs. The Agency will continue to develop its own operational standards to allow for the setting of discharge consents and to assess water quality. PSD will exchange information and data as appropriate.

6) As part of the EC reviews of the "triazine" herbicides, bentazone and diuron, specific consideration should be given to the consequences of their use in groundwater catchments used for drinking water supply.

The Agency raised this issue when atrazine and simazine were undergoing their EC review. Subsequently a meeting was held between the Agency, PSD, DoE, Soil Survey and Land Research Centre to discuss the possibility of restricting their use over vulnerable groundwaters. This is currently being considered and appropriate action will be taken. Diuron and bentazone will be discussed when appropriate.

7) Pesticide distributors and agronomists should always consider water protection issues when recommending pesticides. Wherever possible, they should advise the use of improved formulations with lower dose rates. The NRA will liaise with the British Agrochemicals Association to look at ways to try to ensure this approach is understood and adopted by advisors.

The Agency has discussed this with the BAA, but are aware that advisors are required to consider all aspects of agronomy, operator exposure and environmental issues when giving advice. The Agency, however, has started providing information to distributors in the form of training sessions and will continue to raise the issue of water pollution at these times. Other trade organisations such as UKASTA and NAAC are also being approached.

8) Amenity users, such as Local Authorities, Railtrack and public utilities should continue to be targeted by the regulators, manufacturers and the British Agrochemicals Association to alert them to the risk of contamination from the amenity use of pesticides.

The Agency, in conjunction with WSA, have been working well with Railtrack to study the impact, on rivers and the railway, of only using non-residual herbicides in selected high risk areas. If successful this approach will be extended more widely. BAA have initiated a BASIS Amenity Pest Management training course. Currently 120 people from the amenity sector have been through course, but there are still considerable numbers of people missing out. It is important to continue to promote this training for non-agricultural users, so they are better able to understand the issues.

9) Arrangements for the disposal of sheep-dips should be reviewed by the Government. The NRA's task of protecting Controlled Waters would be helped if the Authority was notified of the location of sheep dips and the proposed method of disposal of spent solution. The development of an effective treatment process to make spent sheep dip solution harmless should be a priority for the industry.

The Agency is seeking Government approval to be notified of the location of sheep dips. Continuing liaison with the sheep dip manufacturers is providing detailed information on treatments available to breakdown used sheep dip.

10) The Government should seek improved information on the use of pesticides on non-agricultural land, in sheep dips and other veterinary medicines, as and industrial biocides.

This information should be published routinely.

In 1996 DoE undertook and published a survey of the non-agricultural uses of pesticides, updating herbicide information from a 1990 survey and including data on fungicides and insecticides. Information on veterinary medicines and industrial biocides is still not readily available, although HSE have been asking for information on usage of non-agricultural pesticides, such as anti-fouling paints during reviews. However, better and more detailed information is still needed in these areas.

11) Analytical techniques which could be adopted by the water industry should be developed for agricultural fungicides and pyrethroid insecticides at detection limits required by their EQSs. Pesticide manufacturers should assist with the development of practical analytical methods for pesticides in current use. The NRA will work with the pesticide manufacturers and Standing Committee of Analysts to help with this process.

The Environment Agency has prioritised a list of pesticides, including fungicides and pyrethroids for which methods are currently being developed. Once methods are available, monitoring will commence in targeted areas.

12) To avoid duplication of monitoring programmes water companies should be encouraged to continue to exchange and review pesticide data with the NRA. The NRA will provide water companies with pollution risk information from POPPIE to assist them to target their monitoring.

Water companies are starting to supply the Agency with their pesticide monitoring data. This additional information, particularly on concentrations in groundwater will be particularly useful in prioritising monitoring strategies. The Agency will make available information to the water companies from POPPIE.

13) Further assessment of the economic case for Water Protection Zones to control pesticide pollution in water supply catchments should be considered by the Government, water companies and the NRA, so that the full costs of catchment control versus those of water treatment can be fully evaluated.

Approval has been given for the Agency to undertake this work as part of an R & D project and co-funding is being sought from the water companies. The results will be useful in identifying the most economic way of protecting drinking water supplies from pesticides.

14) The Government should, as a priority, examine the case for "no spray" zones of appropriate width adjacent to all watercourses to prevent overspray, and to minimise spray drift and run-off (except for those pesticides approved for use in or near water). The NRA believe that these should be a minimum of six metres for all pesticides. Larger zones may be necessary for highly toxic pesticides and for application techniques likely to cause increased drift e.g. aerial or orchard application.

Two working groups, made up of a "Scientific" group and a "Policy" group have been reviewing

the use of 6m buffer strips. However, this is proving a difficult issue to resolve and a practical solution has yet to be reached. The Agency is represented on the "Scientific" group and has been involved with the "Policy" group.

15) To help offset the cost of "no spray" zones more effective use should be made of set-aside to create buffer zones along watercourses and this should be a priority for MAFF. The optimum solution would be to change the existing rules to allow a six metre vegetated strip to qualify for the set-aside payment. This change would need to be negotiated through the European Union.

MAFF are currently looking into the possibility of this, but this is proving difficult due to the annual change in set-aside rate.

16) Future opportunities arising from the Common Agricultural Policy and land use change should be taken to reduce the risk of pesticide pollution from agriculture.

Opportunities to use Agri-environment schemes to protect watercourses from pesticide pollution are being investigated. Various schemes have "riparian" buffer strips options. In addition, the Agency's Rural Land Use Group has an R & D project targetted at identifying potential water protection measures and future water quality issues arising from changes to the CAP.

17) The independent registration scheme for the pesticide industry - BASIS - should continue to inspect distributors' pesticide stores. The extension of BASIS inspection and certification to all large pesticide stores (e.g. manufacturing plants, large farm stores and other user stores such as local authorities and spraying contractors) should be encouraged. A similar scheme advocating minimum pollution prevention requirements for all pesticide stores should be developed and introduced.

BASIS continued to inspect distributors stores and 98% of stores passed in 1995, in contrast with only 0.5% in 1979 when BASIS first started inspecting stores. The BASIS, Fire Authorities and NRA advice document was updated in 1996 to reflect the change to the Agency and other key points. In addition, HSE revised their advice on farm storage of pesticides in 1996 and this is detailed in a new free leaflet AIS16.

18) The pesticide industry should further improve formulations and techniques for handling pesticides to reduce the risk of environmental contamination from spillages and disposal e.g. tablet formulations and refillable containers. In addition, machinery manufacturers should be encouraged to continue developing improved spraying techniques, such as direct injection systems, self-cleaning sprayers and container rinsing systems and the NRA will encourage their use.

Development of new technology is an ongoing process which continues to be promoted by the Environment Agency.

19) Pesticide manufacturers, distributors and representative groups (NFU, CLA etc) should inform their members of current pesticide pollution issues and provide advice on

pollution prevention and "best practice". The NRA will assist by publishing pesticide data, providing leaflets, attending agricultural shows and holding seminars.

The business of educating all those involved in pesticides to always adopt "best practice" for the protection of water and the environment generally is a continual process. The Agency has been involved in a number of industry schemes such as the IPU Stewardship Campaign, aerial spraying of bracken, atrazine use on maize and amenity pesticide use on roads and other hard surfaces. During 1996, the Agency updated its leaflet "Agricultural Pesticides and Water". It also produced an in house report containing the 1994 pesticide data and provided data and comments to MAFF and manufacturers. The pesticide manufacturers have been heavily involved in the IPU Stewardship campaign and are educating distributors and farmers on how the problem of water pollution can be reduced.

20) Current research on less intensive farming systems should be extended and the findings implemented by the farming industry. Particular emphasis should be placed on systems which require lower pesticide inputs such as Integrated Crop Management, biological control and insecticide resistant crops.

Work is ongoing in this area by a number of organisations. The Agency is involved with a project at Long Ashton on Integrated Farming. The organisation Linking Environment and Farming (LEAF) have opened additional farms to demonstrate how integrated farming can work in practice and Rhone Poulenc have introduced an Integrated trial alongside their organic work at Boarded Barn Farm. MAFF have been promoting ICM and produced a free leaflet during the year entitled "Pesticides and Integrated Farming". Development of various precision farming techniques should allow the use of new technology such as yield mapping and the ability to accurately target pest, disease and fertiliser requirements.

APPENDICES

APPENDIX 1

Sites failing EQS Annual Average values for List 1 pesticides

Region	Receiving Water	Location	Map Reference	Sample Type	Pesticide	EQS Value ng/l	No. of Sample	Annual Average ng/l	No of Samples <LOD
ANGLIAN		CALDERS AND GRANDIDGE LONDON RD	TF3185042000	FW	Dieldrin	10.0	10	206.80	2
ANGLIAN		CALDERS AND GRANDIDGE TOWN DRN	TF3120042300	FW	Dieldrin	10.0	11	53.09	4
ANGLIAN		GREETWELL BECK D/S ALLENBY	TF0015071200	FW	Dieldrin	10.0	10	37.40	3
ANGLIAN		CALDERS AND GRANDIDGE LONDON RD	TF3185042000	FW	Total HCH	100.0	11	181.73	0
ANGLIAN		CALDERS AND GRANDIDGE TOWN DRN	TF3120042300	FW	Total HCH	100.0	11	521.45	4
NORTH EAST		CLOUGH BECK	SE2043023750	FW	Dieldrin	10.0	8	24.88	2
NORTH EAST		MAG BROOK AT COCKING STEP	SE1259012390	FW	Dieldrin	10.0	14	20.14	6
NORTH EAST		MAG BROOK	SE1360012300	FW	Dieldrin	10.0	13	13.92	6
NORTH EAST		AIRE & CALD NAV.WHITLY BR	SE5560022700	FW	Total HCH	100.0	4	116.50	0
NORTH EAST		AIRE & CALD NAV.KNOTT'LY	SE5090023800	FW	Total HCH	100.0	4	115.50	0
NORTH EAST		AIRE & CALD NAV.NEW BRDG	SE6680020300	FW	Total HCH	100.0	4	117.50	0
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Total HCH	100.0	13	102.31	0
NORTH EAST		AIRE AT CALVERLEY BR.	SE2240036900	FW	Total HCH	100.0	16	128.56	0
NORTH EAST		AIRE AT LEEDS BR.	SE3030033200	FW	Total HCH	100.0	14	104.29	0
NORTH EAST		CALDER AT HORBURY BR.	SE2800017900	FW	Total HCH	100.0	13	110.31	0
NORTH EAST		CALDER AT KIRKGATE	SE3360020000	FW	Total HCH	100.0	13	135.15	0
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Total HCH	100.0	28	123.39	0
NORTH EAST		CALDER AT DEWSBURY	SE2410020300	FW	Total HCH	100.0	13	133.69	0
NORTH EAST		CALDER AT BATTYEFORD	SE1890020500	FW	Total HCH	100.0	14	140.07	1
NORTH EAST		SPEN (A644)	SE2310020500	FW	Total HCH	100.0	14	126.36	0
SOUTH WEST		KWR MIXED	ST5130079800	FW	Hexachlorobenzene	30.0	15	228.27	3
SOUTHERN	R. MEDWAY	MEDWAY SPRINGFIELD I	TQ7530057000	FW	pp DDT	10.0	12	34.07	9
SOUTHERN	R. MEDWAY	MEDWAY SPRINGFIELD I	TQ7530057000	FW	Total DDT	25.0	12	34.28	8

In line with the rest of the report, EQS failures have been calculated taking "less than" results as zero. In line with DoE guidance however, in reporting for the Dangerous Substances List I returns "less thans" were taken as half the value.

APPENDIX 1

Sites failing EQS 95 percentile values for List II and Annex 1A pesticides

Region	Receiving Water	Location	Map Reference	Sample Type	Pesticide	EQS Value ng/l	No. of Sample	Result ng/l
MIDLAND		INLET BLACKBROOK RESERVOIR	SK4672017000	FW	Cyfluthrin	1.0	12	12.80
MIDLAND		NANPANTAN	SK5062017000	FW	Cyfluthrin	1.0	12	3.20
MIDLAND		ABERBECHAN	SO1450093500	FW	Permethrin	10.0	13	30.30
MIDLAND		STOURPORT	SO8135070900	FW	Permethrin	10.0	4	18.70
MIDLAND		SEDIMENT S PT DS KIDDER WRW	SO8217071500	FW	Permethrin	10.0	5	63.90
MIDLAND		SEDIMENT S PT DS KIDDER WRW	SO8278073900	FW	Permethrin	10.0	4	48.20
MIDLAND		FALLING SANDS	SO8305074600	FW	Permethrin	10.0	4	16.40
MIDLAND		INLET BLACKBROOK RES	SK4672017000	FW	Permethrin	10.0	12	10.20
NORTH EAST		OUSE NABURN LOCK	SE5940044500	FW	Cyfluthrin	1.0	17	26.80
NORTH EAST		AIRE AT ALLERTON BYWATER	SE4180027300	FW	Cyfluthrin	1.0	35	42.90
NORTH EAST		HULL AT HEMPHOLME LOCK	TA0800050000	FW	Cyfluthrin	1.0	26	2.90
NORTH EAST		DEARNE AT CUCKSTOOL ROAD	SE2330008700	FW	Cyfluthrin	1.0	24	20.90
NORTH EAST		DEARNE AT LITHEROP LANE	SE2710012200	FW	Cyfluthrin	1.0	24	4.70
NORTH EAST		DEARNE AT L COMMON LANE	SE2510010500	FW	Cyfluthrin	1.0	23	36.80
NORTH EAST		DEARNE U/S CLATON WESTSW	SE2660011900	FW	Cyfluthrin	1.0	23	5.00
NORTH EAST		DON AT NORTH BRIDGE	SE5680003800	FW	Cyfluthrin	1.0	19	10.10
NORTH EAST		AIRE AT SALTS WEIR	SE1390038200	FW	Cyfluthrin	1.0	13	41.50
NORTH EAST		HALL DYKE ABOVE WPCW	SE1100011400	FW	Cyfluthrin	1.0	12	16.00
NORTH EAST		MAG BROOK AT COCKING STEP	SE1259012390	FW	Cyfluthrin	1.0	14	33.10
NORTH EAST		MAG BROOK	SE1360012300	FW	Cyfluthrin	1.0	13	80.20
NORTH EAST		R CALDER BREARLEY WEIR	SE0270025900	FW	Cyfluthrin	1.0	13	14.80
NORTH EAST		R COLNE COLNEBRIDGE	SE1760020200	FW	Cyfluthrin	1.0	14	36.00
NORTH EAST		R COLNE KINGS	SE1480016000	FW	Cyfluthrin	1.0	12	25.70
NORTH EAST		R COLNE LINGARDS	SE0640013100	FW	Cyfluthrin	1.0	11	10.40
NORTH EAST		WESSENDEN BROOK	SE0480011500	FW	Cyfluthrin	1.0	12	496.40
NORTH EAST		BRAD. BK AT SHIPLEY WEIR	SE1510037600	FW	Cyfluthrin	1.0	14	13.80
NORTH EAST		HUNSWORTH BK AT SUGDEN BK	SE1840026800	FW	Cyfluthrin	1.0	12	48.20
NORTH EAST		HUNSWORTH BK U/S NBSW	SE1800027800	FW	Cyfluthrin	1.0	15	20.30
NORTH EAST		DEARNE AT LOWER PUTTING MILL	SE3450006000	FW	PCSD	50.0	5	601.50

APPENDIX 1

Sites failing EQS 95 percentile values for List II and Annex 1A pesticides

Region	Receiving Water	Location	Map Reference	Sample Type	Pesticide	EQS Value ng/l	No. of Sample	Result ng/l
NORTH EAST		DEARNE AT CUCKSTOOL RD	SE2330008700	FW	PCSD	50.0	24	495.30
NORTH EAST		DEARNE AT DARTON BR	SE3120010100	FW	PCSD	50.0	11	96.80
NORTH EAST		DEARNE AT LITHEROP LANE	SE2710012200	FW	PCSD	50.0	24	169.60
NORTH EAST		DEARNE AT L. COMMON LANE	SE2510010500	FW	PCSD	50.0	23	535.70
NORTH EAST		DEARNE U/S CLAYTON WESTSW	SE2660011900	FW	PCSD	50.0	23	323.40
NORTH EAST		CLOUGH BECK	SE2043023750	FW	PCSD	50.0	8	733.80
NORTH EAST		MAG BROOK AT COCKING STEP	SE1259012390	FW	PCSD	50.0	14	51.90
NORTH EAST		MAG BROOK	SE1360012300	FW	PCSD	50.0	13	68.90
NORTH EAST		R COLNE KINGS	SE1480016000	FW	PCSD	50.0	12	77.40
NORTH EAST		R HOLME QUEENS	SE1420015700	FW	PCSD	50.0	12	127.50
NORTH EAST		SPEN (A644)	SE2310020500	FW	PCSD	50.0	14	92.40
NORTH EAST		HUNSWORTH BK AT SUGDEN BK	SE1840026800	FW	PCSD	50.0	12	60.80
NORTH EAST		AIRE AT ALLERTON BYWATER	SE4180027300	FW	Permethrin	10.0	25	27.50
NORTH EAST		CALDER AT KIRKGATE	SE3360020000	FW	Permethrin	10.0	10	42.10
NORTH EAST		DEARNE AT DARTON BR	SE3120010100	FW	Permethrin	10.0	11	10.40
NORTH EAST		DEARNE AT L. COMMON LANE	SE2510010500	FW	Permethrin	10.0	23	27.40
NORTH EAST		DON AT NORTH BR	SE5680003800	FW	Permethrin	10.0	16	36.20
NORTH EAST		MAG BROOK AT COCKING STEP	SE1259012390	FW	Permethrin	10.0	13	39.20
NORTH EAST		MAG BROOK	SE1360012300	FW	Permethrin	10.0	13	56.10
NORTH EAST		CALDER AT BATTYEFORD	SE1890020500	FW	Permethrin	10.0	9	110.30
NORTH EAST		R COLNE COLNEBRIDGE	SE1760020200	FW	Permethrin	10.0	12	82.20
NORTH EAST		R COLNE KINGS	SE1480016000	FW	Permethrin	10.0	11	41.60
NORTH EAST		R COLNE LINGARDS	SE0640013100	FW	Permethrin	10.0	11	10.40
NORTH EAST		R HOLME QUEENS	SE1420015700	FW	Permethrin	10.0	11	41.60
NORTH EAST		SPEN (A644)	SE2310020500	FW	Permethrin	10.0	14	19.30
NORTH EAST		WESSENDEN BROOK	SE0480011500	FW	Permethrin	10.0	12	28.90
NORTH EAST		HUNSWORTH BECK U/S NBSW	SE1800027800	FW	Permethrin	10.0	15	15.40
NORTH WEST		RIVER TAME AT MANCHESTER RD	SD9856904039	FW	Permethrin	10.0	12	11.00
NORTH WEST		COWPE BROOK ABOVE CONFLUENCE	SD8341621660	FW	Permethrin	10.0	12	17.10

APPENDIX 1

Sites failing EQS 95 percentile values for List II and Annex 1A pesticides

Region	Receiving Water	Location	Map Reference	Sample Type	Pesticide	EQS Value ng/l	No. of Sample	Result ng/l
NORTH WEST		RIVER IRWELL AT IRWELL VALE BR	SD7923120249	FW	Permethrin	10.0	10	43.30
NORTH WEST		RIVER IRWELL AT STUBBINS BR	SD7934518097	FW	Permethrin	10.0	11	35.10
SOUTH WEST		R DART AUSTIN'S BRIDGE	SX7500066000	FW	Cyfluthrin	1.0	9	8.00
SOUTH WEST		R DART D/S BUCKFASTLEIGH STW	SX7536065310	FW	Cyfluthrin	1.0	16	8.80
SOUTH WEST		R DART AUSTIN'S BR	SX7500066000	FW	Permethrin	10.0	9	14.10
SOUTH WEST		R DART D/S BUCKFASTLEIGH STW	SX7536065310	FW	Permethrin	10.0	16	15.50
SOUTHERN		D/S ZENECA YALDING	TQ6860050600	FW	Permethrin	10.0	12	15.10

APPENDIX 1

Sites failing EQS Annual Average values for List II and Annex 1A pesticides

Region	Receiving Water	Location	Map Reference	Sample Type	Pesticide	EQS Value ng/l	No. of Sample	Result ng/l	No of Samples <LOD
MIDLAND	TRIB. OF R. TERN	ALLSCOTT INN 2KM NW COXS CHEM	SJ6018012400	FW	Dichlorvos	1.0	11	46.18	10
MIDLAND	NAILSWORTH STREAM	CUDBRIDGE	SO8345004500	FW	Endosulphan	3.0	5	26.60	4
MIDLAND	RODEN	RODINGTON	SJ5900014300	FW	Endosulphan	3.0	6	8.33	5
MIDLAND	BOTTESFORD BECK	SNAKE PLANTATION	SE8680005900	FW	Endosulphan	3.0	7	4.43	6
MIDLAND	R.TAME	PERRY BARR	SP0710091900	FW	Endosulphan	3.0	12	3.67	11
MIDLAND	TRIB. OF R. TERN	ALLSCOTT INN 2KM NW COXS CHEM	SJ6018012400	FW	Fenitrothion	10.0	11	39.82	10
MIDLAND	TRIB. OF R. TERN	ALLSCOTT INN 2KM NW COXS CHEM	SJ6018012400	FW	Malathion	10.0	11	32.45	10
NORTH WEST		RIVER MERSEY ABOVE HOWLEY WEIR	SJ6159787999	FW	Dichlorvos	1.0	12	2.92	11
NORTH WEST		RIVER IRWELL AT IRWELL VALE BR	SD7923120249	FW	Endosulphan	3.0	4	9.00	2
SOUTH WEST		SB RES OFF TOWER	ST5540011400	FW	Dichlorvos	1.0	6	6.58	5
WELSH	Lugg	R.FROME AT CANON FROME BRIDGE	SO6340043400	FW	Atrazine/Simazin	2000.0	12	2042.58	1
WELSH	Lugg	R.FROME AT YORKHILL BRIDGE	SO6138042700	FW	Atrazine/Simazin	2000.0	12	7061.08	0

APPENDIX 1

Sites failing EQS MAC values for List II and Annex 1A pesticides

Region	Receiving Water	Location	Map Reference	Sample Type	Pesticide	EQS Value ng/l	No. of Sample	Result ng/l	No of Samples <LOD	Sample Date	Sample Time	Reasons
MIDLAND	TRIB. OF R. TERN	ALLSCOTT INN 2KM NW COXS CHEM	SJ6018012400	FW	Fenitrothion	250.0		438.00		22/12/95	09:45	CM
SOUTH WEST		NOTTER BRIDGE RIVER LYNHER	SX3850060900	FW	Azinphos methyl	40.0		89.00		28/07/95	12:35	CM
THAMES	Thames-Wey	WEY ABOVE THAMES	TQ0750065700	FW	Azinphos methyl	40.0		48.00		16/01/95	11:25	CM:ED:HM

APPENDIX 1

Sites failing Environment Agency operational EQS Annual Average values

Region	Receiving Water	Location	Map Reference	Sample Type	Pesticide	EQS Value ng/l	No. of Sample	Annual Average ng/l	No of Samples <LOD
ANGLIAN		SALARY BK.S TRIB.PLAINS FARM	TM0206028910	FW	2,4 D	1000.0	4	6386.00	1
ANGLIAN		R.ANCHOLME CADNEY TOP	TA0011002820	FW	Diazinon	10.0	4	52.50	3
ANGLIAN		ELSHAM RAW WATER AT CADNEY RESERVOIR	TA0127004400	FW	Diazinon	10.0	4	48.50	3
ANGLIAN		R.GWASH (N) UPPER HAMBLETON	SK8750008500	FW	Methiocarb	20.0	4	27.50	3
ANGLIAN		R.WITHAM SALTERSFORD FT.BR.	SK9269033460	FW	Urons total	2000.0	4	2045.00	2
MIDLAND	RODEN	RODINGTON	SJ5900014300	FW	Diazinon	10.0	12	16.00	10
MIDLAND	TRIB. OF R. TERN	ALLSCOTT INN 2KM NW COXS CHEM	SJ6018012400	FW	Diazinon	10.0	11	70.64	10
MIDLAND	R.IDLE	BAWTRY	SK6560092700	FW	Diazinon	10.0	5	10.80	3
MIDLAND	SEVERN	AT APLEY FORGE	SO7070098300	FW	Diazinon	10.0	9	28.67	6
MIDLAND	SEVERN	ATCHAM	SJ5400009300	FW	Diazinon	10.0	10	13.80	7
MIDLAND	SEVERN	LLANDRINIO	SJ2980016900	FW	Diazinon	10.0	13	18.38	6
MIDLAND	R.BLYTHE	BLYTHE BRIDGE B4114	SP2110089800	FW	Diazinon	10.0	5	57.60	4
MIDLAND	R.BLYTHE	PACKINGTON FORD FOOTBRIDGE	SP2180085200	FW	Diazinon	10.0	6	34.83	5
MIDLAND	EASTCOTE BROOK	HAMPTON BRIDGE	SP2000080200	FW	Diazinon	10.0	6	180.00	5
MIDLAND	TEMPLE BALSALL BROOK	TEMPLE BALSALL AT B4101 BRIDGE	SP2063076000	FW	Diazinon	10.0	6	34.00	5
MIDLAND	SEVERN	ABERBECHAN	SO1450093500	FW	Diazinon	10.0	14	11.50	8
MIDLAND	TERN	ATCHAM	SJ5520009200	FW	Isoproturon	2000.0	5	2620.00	3
MIDLAND	STOUR	STOURPORT	SO8135070900	FW	Propetamphos	10.0	6	22.67	3
MIDLAND	R.IDLE	BAWTRY	SK6560092700	FW	Propetamphos	10.0	5	16.60	1
MIDLAND	SEVERN	LLANDRINIO	SJ2980016900	FW	Propetamphos	10.0	13	15.77	5
MIDLAND	SEVERN	ABERBECHAN	SO1450093500	FW	Propetamphos	10.0	14	23.86	8
MIDLAND	SEVERN	FOOT BRIDGE BACK LANE CP NTON	SO1052091600	FW	Propetamphos	10.0	14	10.21	12
MIDLAND	TERN	ATCHAM	SJ5520009200	FW	Urons total	2000.0	6	2183.33	4
NORTH EAST		SPEN (A644)	SE2310020500	FW	2,4 D	1000.0	13	1511.54	5
NORTH EAST		HUNSWORTH BK AT SUGDEN BK	SE1840026800	FW	2,4 D	1000.0	13	4073.08	3
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Chlorfenvinphos	10.0	14	146.86	0
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Chlorfenvinphos	10.0	15	91.93	0
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Chlorfenvinphos	10.0	25	156.20	2
NORTH EAST		DERWENT RESERVOIR SOAKAWAY M/H	NZ0270051200	FW	Chlorfenvinphos	10.0	8	40.00	4
NORTH EAST		AIRE AT ALLERTON BYWATER	SE4180027300	FW	Cypermethrin	0.1	24	11.25	22
NORTH EAST		AIRE AT CALVERLEY BR.	SE2240036900	FW	Cypermethrin	0.1	15	4.00	14
NORTH EAST		WANSBECK AT SHEEPWASH	NZ2570085700	FW	Cypermethrin	0.1	5	14.00	4
NORTH EAST		TEES AT LOW WORSALL	NZ3910010200	FW	Cypermethrin	0.1	4	17.50	3
NORTH EAST		OUSE AT NABURN LOCK	SE5940044500	FW	Cypermethrin	0.1	17	5.88	15
NORTH EAST		HULL AT HEMPHOLME LOCK	TA0800050000	FW	Cypermethrin	0.1	25	0.80	24

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Sites failing Environment Agency operational EQS Annual Average values

Region	Receiving Water	Location	Map Reference	Sample Type	Pesticide	EQS Value ng/l	No. of Sample	Annual Average ng/l	No of Samples <LOD
NORTH EAST		DEARNE AT CUCKSTOOL ROAD	SE2330008700	FW	Cypermethrin	0.1	24	5.83	22
NORTH EAST		DEARNE @ LITHEROP LANE	SE2710012200	FW	Cypermethrin	0.1	24	0.83	23
NORTH EAST		DEARNE @ L.COMMON LANE	SE2510010500	FW	Cypermethrin	0.1	23	6.09	21
NORTH EAST		DEARNE U/S CLAYTON WESTSW	SE2660011900	FW	Cypermethrin	0.1	23	1.30	22
NORTH EAST		DON @ NORTH BRIDGE	SE5680003800	FW	Cypermethrin	0.1	5	10.00	4
NORTH EAST		AIRE AT SALTS WEIR	SE1390038200	FW	Cypermethrin	0.1	12	10.00	11
NORTH EAST		BRAD. BK AT SHIPLEY WEIR	SE1510037600	FW	Cypermethrin	0.1	13	3.08	12
NORTH EAST		HALL DYKE ABOVE WPCW	SE1100011400	FW	Cypermethrin	0.1	12	4.17	11
NORTH EAST		MAG BROOK AT COCKING STEP	SE1259012390	FW	Cypermethrin	0.1	14	8.57	13
NORTH EAST		MAG BROOK	SE1360012300	FW	Cypermethrin	0.1	13	15.38	12
NORTH EAST		COLNEBRIDGE (R.COLNE)	SE1760020200	FW	Cypermethrin	0.1	12	8.33	9
NORTH EAST		KINGS (R.COLNE)	SE1480016000	FW	Cypermethrin	0.1	11	7.27	10
NORTH EAST		LINGARDS (R.COLNE)	SE0640013100	FW	Cypermethrin	0.1	11	0.91	10
NORTH EAST		HUNSWORTH BK AT SUGDEN BK	SE1840026800	FW	Cypermethrin	0.1	12	12.50	11
NORTH EAST		HUNSWORTH BECK U/S NBSW	SE1800027800	FW	Cypermethrin	0.1	15	3.33	14
NORTH EAST		MASPIN MR DR.AT ROE LN.BR	SE5280028600	FW	Diazinon	10.0	8	12.25	6
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Diazinon	10.0	14	363.64	0
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Diazinon	10.0	14	211.36	0
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	10.0	24	599.58	1
NORTH EAST		HOUSELOP BECK AT A689	NZ0170036200	FW	Diazinon	10.0	5	13.40	2
NORTH EAST		SWALE AT THORNTON BRIDGE	SE4330071400	FW	Diazinon	10.0	12	32.25	7
NORTH EAST		DON @ NORTH BRIDGE	SE5680003800	FW	Diazinon	10.0	11	20.18	9
NORTH EAST		WEST BECK AT CORPS LANDG.	TA0620053400	FW	Isoproturon	2000.0	4	2530.00	2
NORTH EAST		WEST BECK INTAKE	TA0820052000	FW	Isoproturon	2000.0	4	2410.00	2
NORTH EAST		R.COLNE D/S PENNINE CHEM	SE0960014600	FW	MCPA	2000.0	12	2820.83	1
NORTH EAST		SPEN (A644)	SE2310020500	FW	MCPA	2000.0	13	9643.08	3
NORTH EAST		HUNSWORTH BK AT SUGDEN BK	SE1840026800	FW	MCPA	2000.0	12	7820.00	1
NORTH EAST		HUNSWORTH BK AT SUGDEN BK	SE1840026800	FW	Mecoprop	20000.0	12	174975.00	0
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Propetamphos	10.0	14	370.43	0
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Propetamphos	10.0	15	196.47	0
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	10.0	25	629.40	2
NORTH EAST		TEMPLE DR AT TEMPLE FM	SE5960025300	FW	Triazophos	5.0	5	17.40	3
NORTH EAST		WEST BECK AT CORPS LANDG.	TA0620053400	FW	Urons total	2000.0	4	2530.00	2
NORTH EAST		WEST BECK INTAKE	TA0820052000	FW	Urons total	2000.0	4	2410.00	2
NORTH WEST		FLASH BROOK D/S M.T.M	SJ7285659984	FW	Chlorotoluron	2000.0	10	5180.00	3

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Sites failing Environment Agency operational EQS Annual Average values

Region	Receiving Water	Location	Map Reference	Sample Type	Pesticide	EQS Value ng/l	No. of Sample	Annual Average ng/l	No of Samples <LOD
NORTH WEST		FLASH BROOK D/S OF MTM	SJ7249859499	FW	Chlorotoluron	2000.0	9	8135.56	4
NORTH WEST		FLASH BROOK D/S MTM SEPTIC TAN	SJ7290060150	FW	Chlorotoluron	2000.0	10	3103.00	4
NORTH WEST		RIVER WHEELOCK D/S SANDBACH E.	SJ7410359308	FW	Diuron	2000.0	10	5806.00	0
NORTH WEST		FLASH BROOK D/S M.T.M	SJ7285659984	FW	Diuron	2000.0	10	34536.00	0
NORTH WEST		FLASH BROOK D/S OF MTM	SJ7249859499	FW	Diuron	2000.0	9	21583.33	2
NORTH WEST		FLASH BROOK D/S MTM SEPTIC TAN	SJ7290060150	FW	Diuron	2000.0	10	9926.00	2
NORTH WEST		RIVER WHEELOCK D/S SANDBACH E.	SJ7410359308	FW	Isoproturon	2000.0	11	2592.73	1
NORTH WEST		FLASH BROOK D/S M.T.M	SJ7285659984	FW	Isoproturon	2000.0	10	58640.00	0
NORTH WEST		FLASH BROOK D/S OF MTM	SJ7249859499	FW	Isoproturon	2000.0	9	66738.89	0
NORTH WEST		FLASH BROOK D/S MTM SEPTIC TAN	SJ7290060150	FW	Isoproturon	2000.0	10	37782.00	1
NORTH WEST		RIVER MERSEY ABOVE HOWLEY WEIR	SJ6159787999	FW	Propetamphos	10.0	12	20.33	7
NORTH WEST		RIVER WHEELOCK D/S SANDBACH E.	SJ7410359308	FW	Urons total	2000.0	11	8274.55	0
NORTH WEST		FLASH BROOK D/S M.T.M	SJ7285659984	FW	Urons total	2000.0	10	98356.00	0
NORTH WEST		FLASH BROOK D/S OF MTM	SJ7249859499	FW	Urons total	2000.0	9	96457.78	0
NORTH WEST		FLASH BROOK D/S MTM SEPTIC TAN	SJ7290060150	FW	Urons total	2000.0	10	50811.00	1
SOUTH WEST		R.DART-RIVERFORD BRIDGE	SX7720063720	FW	Diazinon	10.0	4	18.65	0
SOUTH WEST		R.DART-D/S BUCKFASTLEIGH STW	SX7536065310	FW	Diazinon	10.0	8	11.85	3
SOUTH WEST		SB ST SUNNYMEADE	ST5443009050	FW	Isoproturon	2000.0	4	3976.50	2
SOUTH WEST		R.DART-RIVERFORD BRIDGE	SX7720063720	FW	Propetamphos	10.0	4	59.80	0
SOUTH WEST		R.DART-TOTNES WEIR	SX8010061220	FW	Propetamphos	10.0	4	15.48	0
SOUTH WEST		R.DART-D/S BUCKFASTLEIGH STW	SX7536065310	FW	Propetamphos	10.0	8	36.24	2
SOUTH WEST		SB ST SUNNYMEADE	ST5443009050	FW	Urons total	2000.0	4	3976.50	2
SOUTHERN	R. MEDWAY	DOWNSTREAM OF ZENECA - YA	TQ6860050600	FW	Cypermethrin	0.1	10	8.70	8
SOUTHERN	R. MEDWAY	UPSTREAM ZENECA - YALDING	TQ6880049800	FW	Cypermethrin	0.1	11	3.45	9
THAMES	Thames-Windrush	WINDRUSH AT GAUGING STATION, N	SP4020001900	FW	Chlorfenvinphos	10.0	11	15.27	10
THAMES	Thames-Beverley	BEVERLEY BROOK AT PRIESTS BRID	TQ2148075520	FW	Diazinon	10.0	12	13.00	11
THAMES	Thames-Thame	THAME AT DORCHESTER BRIDGE	SU5790093900	FW	Diazinon	10.0	14	13.21	12
THAMES	Thames	THAMES AT WATER INTAKE, FARMOO	SP4390006400	FW	Diazinon	10.0	12	38.08	11
THAMES	Thames	CUT ABOVE THAMES	SU9140078700	FW	Diazinon	10.0	11	18.27	10
THAMES	Thames-Wandle	WANDLE AT THE CAUSEWAY, WANDSW	TQ2558074840	FW	Diazinon	10.0	12	14.17	10
THAMES	Thames-Windrush	WINDRUSH AT GAUGING STATION, N	SP4020001900	FW	Diazinon	10.0	12	35.92	9
THAMES	Thames-Ravensbourne	RAVENSBOURNE AT DEPTFORD BRIDG	TQ3743076660	FW	Diuron	2000.0	13	2250.00	1
THAMES	Thames-Ravensbourne	RAVENSBOURNE AT DEPTFORD BRIDG	TQ3743076660	FW	Urons total	2000.0	13	2752.31	0
WELSH	Swansea Bay	RKENFIG-BSCWEIR&FISHPASSR	SS7948083080	FW	Diazinon	10.0	9	29.22	8
WELSH	n/a	PLASUCHAFRESA'GELEPLAS	SH9690071300	FW	Diazinon	10.0	10	10.60	9

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Sites failing Environment Agency operational EQS Annual Average values

Region	Receiving Water	Location	Map Reference	Sample Type	Pesticide	EQS Value ng/l	No. of Sample	Annual Average ng/l	No of Samples <LOD
WELSH	n/a	LEGACYWTW-TYMAWRRESERVOIRLEGACY	SJ2750048000	FW	Propetamphos	10.0	4	14.00	3
WELSH	R Wye	RFROMEATLONGWORTHBRIDGER	SO5655039220	FW	Propetamphos	10.0	23	16.70	21

APPENDIX 1

Sites failing Environment Agency operational EQS MAC values

Region	Receiving Water	Location	Map Reference	Sample Type	Pesticide	EQS Value ng/l	No. of Sample	Result ng/l	No of Samples <LOD	Sample Date	Sample Time	Reasons
ANGLIAN		BUCKDEN WDS BRAMPTON BK.RAIL BR	TL2150069200	FW	Isoproturon	20000.0		50700.00		14/03/95	11:45	CM: : : :
ANGLIAN		BUCKDEN WDS BRAMPTON BK.RAIL BR	TL2150069200	FW	Urons total	20000.0		50700.00		14/03/95	11:45	CM: : : :
ANGLIAN		R.ANCHOLME CADNEY TOP	TA0011002820	FW	Diazinon	100.0		210.00		25/10/95	15:07	CM:SD: : :
ANGLIAN		ELSHAM RAW WATER AT CADNEY RESERVOIR	TA0127004400	FW	Diazinon	100.0		194.00		25/10/95	14:45	CM:SD: : :
MIDLAND	LEAM	US MARTON	SP4160068600	FW	Diazinon	100.0		116.00		21/06/95	14:00	SS
MIDLAND	NAILSWORTH STREAM	CUDBRIDGE	SO8345004500	FW	Cypermethrin	1.0		160.00		29/12/95	11:40	CM
MIDLAND	PURTON(NEW) WORKS: BWWC	INTAKES BRISTOL W/W CO PURTON	SO6950004200	FW	Diazinon	100.0		473.00		22/08/95	12:10	CM
MIDLAND	RODEN	RODINGTON	SJ5900014300	FW	Diazinon	100.0		164.00		31/07/95	08:10	CM
MIDLAND	TRIB. OF R. TERN	ALLSCOTT INN 2KM NW COXS CHEM	SJ6018012400	FW	Diazinon	100.0		777.00		22/12/95	09:45	CM
MIDLAND	CAM RIVER	NEWHOUSE FARM	SO7455004300	FW	Cypermethrin	1.0		150.00		08/02/95	12:45	CM
MIDLAND	SEVERN	AT APLEY FORGE	SO7070098300	FW	Diazinon	100.0		162.00		16/08/95	14:20	CM
MIDLAND	AVON-ARROW TO SEVERN	EVESHAM	SP0345043100	FW	Cypermethrin	1.0		60.00		11/08/95	11:20	CM
MIDLAND	R.BLYTHE	BLYTHE BRIDGE B4114	SP2110089800	FW	Diazinon	100.0		288.00		20/07/95	10:00	SS
MIDLAND	R.BLYTHE	PACKINGTON FORD FOOTBRIDGE	SP2180085200	FW	Diazinon	100.0		209.00		20/07/95	10:15	SS
MIDLAND	EASTCOTE BROOK	HAMPTON BRIDGE	SP2000080200	FW	Diazinon	100.0		1080.00		20/07/95	10:35	SS
MIDLAND	TEMPLE BALSALL BROOK	TEMPLE BALSALL AT B4101 BRIDGE	SP2063076000	FW	Diazinon	100.0		204.00		22/09/95	10:25	SS
MIDLAND	SEVERN	ABERBECHAN	SO1450093500	FW	Propetamphos	100.0		125.00		14/12/95	08:30	CM
MIDLAND	SEVERN	FOOT BRIDGE BACK LANE CP NTON	SO1052091600	FW	Propetamphos	100.0		129.00		14/12/95	09:45	CM
MIDLAND	EBRINGTON	SPRING SOURCE	SP1885040000	FW	Isoproturon	20000.0		46400.00		30/11/95	11:05	CM
MIDLAND	EBRINGTON	SPRING SOURCE	SP1885040000	FW	Urons total	20000.0		56260.00		30/11/95	11:05	CM
NORTH EAST		AIRE AT ALLERTON BYWATER	SE4180027300	FW	Cypermethrin	1.0		180.00		13/06/95	15:25	CM
NORTH EAST		AIRE AT ALLERTON BYWATER	SE4180027300	FW	Cypermethrin	1.0		90.00		06/07/95	13:20	CM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Chlorfenvinphos	100.0		190.00		19/04/95	13:55	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Chlorfenvinphos	100.0		320.00		02/06/95	14:25	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Chlorfenvinphos	100.0		210.00		28/06/95	12:02	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Chlorfenvinphos	100.0		430.00		14/07/95	11:56	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Chlorfenvinphos	100.0		253.00		22/08/95	13:40	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Chlorfenvinphos	100.0		110.00		14/09/95	14:45	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Chlorfenvinphos	100.0		112.00		19/10/95	14:40	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Diazinon	100.0		170.00		11/01/95	10:30	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Diazinon	100.0		110.00		24/02/95	09:30	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Diazinon	100.0		150.00		04/04/95	09:15	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Diazinon	100.0		460.00		19/04/95	13:55	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Diazinon	100.0		280.00		12/05/95	11:35	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Diazinon	100.0		430.00		02/06/95	14:25	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Diazinon	100.0		310.00		28/06/95	12:02	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Diazinon	100.0		870.00		14/07/95	11:56	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Diazinon	100.0		808.00		22/08/95	13:40	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Diazinon	100.0		290.00		14/09/95	14:45	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Diazinon	100.0		460.00		19/10/95	14:40	ED:HM

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Sites failing Environment Agency operational EQS MAC values

Region	Receiving Water	Location	Map Reference	Sample Type	Pesticide	EQS Value ng/l	No. of Sample	Result ng/l	No of Samples <LOD	Sample Date	Sample Time	Reasons
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Diazinon	100.0		280.00		08/11/95	13:58	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Diazinon	100.0		400.00		13/12/95	14:02	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Propetamphos	100.0		110.00		11/01/95	10:30	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Propetamphos	100.0		160.00		04/04/95	09:15	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Propetamphos	100.0		500.00		19/04/95	13:55	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Propetamphos	100.0		310.00		12/05/95	11:35	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Propetamphos	100.0		440.00		02/06/95	14:25	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Propetamphos	100.0		280.00		28/06/95	12:02	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Propetamphos	100.0		920.00		14/07/95	11:56	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Propetamphos	100.0		829.00		22/08/95	13:40	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Propetamphos	100.0		210.00		14/09/95	14:45	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Propetamphos	100.0		545.00		19/10/95	14:40	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Propetamphos	100.0		280.00		08/11/95	13:58	ED:HM
NORTH EAST		AIRE AT BEAL	SE5320025500	FW	Propetamphos	100.0		460.00		13/12/95	14:02	ED:HM
NORTH EAST		AIRE AT CALVERLEY BR.	SE2240036900	FW	Cypermethrin	1.0		60.00		01/02/95	12:55	ED
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Chlorfenvinphos	100.0		140.00		16/02/95	11:05	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Chlorfenvinphos	100.0		150.00		13/06/95	11:00	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Chlorfenvinphos	100.0		190.00		27/06/95	10:40	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Chlorfenvinphos	100.0		120.00		20/07/95	10:00	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Chlorfenvinphos	100.0		102.00		21/08/95	10:30	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Chlorfenvinphos	100.0		183.00		04/12/95	11:10	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Diazinon	100.0		210.00		16/02/95	11:05	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Diazinon	100.0		160.00		07/03/95	11:00	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Diazinon	100.0		200.00		10/05/95	10:25	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Diazinon	100.0		580.00		13/06/95	11:00	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Diazinon	100.0		260.00		27/06/95	10:40	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Diazinon	100.0		270.00		20/07/95	10:00	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Diazinon	100.0		290.00		21/08/95	10:30	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Diazinon	100.0		134.00		12/10/95	13:15	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Diazinon	100.0		137.00		30/10/95	11:15	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Diazinon	100.0		360.00		21/11/95	10:10	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Diazinon	100.0		172.00		04/12/95	11:10	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Propetamphos	100.0		150.00		16/02/95	11:05	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Propetamphos	100.0		160.00		07/03/95	11:00	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Propetamphos	100.0		180.00		10/05/95	10:25	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Propetamphos	100.0		480.00		13/06/95	11:00	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Propetamphos	100.0		260.00		27/06/95	10:40	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Propetamphos	100.0		410.00		21/08/95	10:30	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Propetamphos	100.0		274.00		28/09/95	11:35	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Propetamphos	100.0		142.00		12/10/95	13:15	ED:HM

APPENDIX 1

Sites failing Environment Agency operational EQS MAC values

Region	Receiving Water	Location	Map Reference	Sample Type	Pesticide	EQS Value ng/l	No. of Sample	Result ng/l	No of Samples <LOD	Sample Date	Sample Time	Reasons
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Propetamphos	100.0		245.00		30/10/95	11:15	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Propetamphos	100.0		290.00		21/11/95	10:10	ED:HM
NORTH EAST		AIRE AT FLEET WEIR	SE3810028500	FW	Propetamphos	100.0		154.00		04/12/95	11:10	ED:HM
NORTH EAST		TEMPLE DR AT TEMPLE FM	SE5960025300	FW	Triazophos	50.0		58.00		08/11/95	12:00	CM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Chlorfenvinphos	100.0		160.00		13/06/95	09:45	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Chlorfenvinphos	100.0		180.00		19/06/95	11:26	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Chlorfenvinphos	100.0		240.00		28/06/95	10:10	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Chlorfenvinphos	100.0		270.00		11/07/95	09:45	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Chlorfenvinphos	100.0		340.00		14/07/95	10:10	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Chlorfenvinphos	100.0		420.00		20/07/95	12:42	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Chlorfenvinphos	100.0		250.00		01/09/95	10:46	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Chlorfenvinphos	100.0		250.00		05/09/95	11:02	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Chlorfenvinphos	100.0		185.00		14/09/95	11:10	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Chlorfenvinphos	100.0		150.00		19/09/95	10:30	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Chlorfenvinphos	100.0		233.00		26/09/95	09:43	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Chlorfenvinphos	100.0		228.00		17/10/95	10:21	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Chlorfenvinphos	100.0		206.00		19/10/95	10:45	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Chlorfenvinphos	100.0		210.00		07/11/95	10:00	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Chlorfenvinphos	100.0		195.00		11/12/95	15:00	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		300.00		11/01/95	14:25	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		160.00		04/04/95	13:20	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		240.00		19/04/95	12:52	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		340.00		16/05/95	10:55	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		630.00		13/06/95	09:45	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		670.00		19/06/95	11:26	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		580.00		28/06/95	10:10	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		760.00		04/07/95	11:10	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		610.00		11/07/95	09:45	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		620.00		14/07/95	10:10	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		1300.00		20/07/95	12:42	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		330.00		08/08/95	13:11	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		420.00		17/08/95	11:15	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		570.00		22/08/95	10:50	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		670.00		01/09/95	10:46	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		1200.00		05/09/95	11:02	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		530.00		14/09/95	11:10	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		670.00		19/09/95	10:30	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		860.00		17/10/95	10:21	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		1000.00		19/10/95	10:45	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		660.00		07/11/95	10:00	ED:HM

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Sites failing Environment Agency operational EQS MAC values

Region	Receiving Water	Location	Map Reference	Sample Type	Pesticide	EQS Value ng/l	No. of Sample	Result ng/l	No of Samples <LOD	Sample Date	Sample Time	Reasons
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Diazinon	100.0		1200.00		11/12/95	15:00	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		110.00		11/01/95	14:25	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		110.00		13/03/95	11:00	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		160.00		04/04/95	13:20	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		210.00		19/04/95	12:52	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		560.00		16/05/95	10:55	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		950.00		13/06/95	09:45	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		550.00		19/06/95	11:26	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		570.00		28/06/95	10:10	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		760.00		04/07/95	11:10	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		800.00		11/07/95	09:45	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		530.00		14/07/95	10:10	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		1300.00		20/07/95	12:42	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		320.00		08/08/95	13:11	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		400.00		17/08/95	11:15	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		900.00		22/08/95	10:50	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		840.00		01/09/95	10:46	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		670.00		14/09/95	11:10	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		1120.00		19/09/95	10:30	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		1260.00		26/09/95	09:43	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		1100.00		17/10/95	10:21	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		1100.00		19/10/95	10:45	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		970.00		07/11/95	10:00	ED:HM
NORTH EAST		CALDER AT METHLEY BR.	SE4090025800	FW	Propetamphos	100.0		445.00		11/12/95	15:00	ED:HM
NORTH EAST		WANSBECK AT SHEEPWASH	NZ2570085700	FW	Cypermethrin	1.0		70.00		04/12/95	06:40	FD:HM
NORTH EAST		DERWENT RESERVOIR SOAKAWAY M/H	NZ0270051200	FW	Chlorfenvinphos	100.0		270.00		04/07/95	15:30	CM
NORTH EAST		TEES AT LOW WORSALL	NZ3910010200	FW	Cypermethrin	1.0		70.00		21/03/95	14:35	HM:ED
NORTH EAST		OUSE AT NABURN LOCK	SE5940044500	FW	Chlorfenvinphos	100.0		120.00		27/01/95	13:00	FD:ED:HM
NORTH EAST		OUSE AT NABURN LOCK	SE5940044500	FW	Cypermethrin	1.0		50.00		12/06/95	13:10	FD:ED:HM
NORTH EAST		OUSE AT NABURN LOCK	SE5940044500	FW	Cypermethrin	1.0		50.00		05/07/95	15:56	FD:ED:HM
NORTH EAST		HULL AT HEMPHOLME LOCK	TA0800050000	FW	Cypermethrin	1.0		20.00		10/04/95	10:35	FD:SD:HM
NORTH EAST		SWALE AT THORNTON BRIDGE	SE4330071400	FW	Diazinon	100.0		340.00		11/09/95	09:50	FD:ED
NORTH EAST		DEARNE AT CUCKSTOOL ROAD	SE2330008700	FW	Cypermethrin	1.0		30.00		20/04/95	14:32	CM
NORTH EAST		DEARNE AT CUCKSTOOL ROAD	SE2330008700	FW	Cypermethrin	1.0		110.00		24/11/95	13:34	CM
NORTH EAST		DEARNE @ LITHEROP LANE	SE2710012200	FW	Cypermethrin	1.0		20.00		20/04/95	12:57	ED
NORTH EAST		DEARNE @ L.COMMON LANE	SE2510010500	FW	Cypermethrin	1.0		90.00		05/10/95	11:08	ED
NORTH EAST		DEARNE @ L.COMMON LANE	SE2510010500	FW	Cypermethrin	1.0		50.00		24/11/95	13:03	ED
NORTH EAST		DEARNE U/S CLAYTON WESTSW	SE2660011900	FW	Cypermethrin	1.0		30.00		20/04/95	13:23	CM
NORTH EAST		DON AT KIRK BRAMWITH	SE6210011500	FW	Diazinon	100.0		110.00		08/11/95	09:10	ED
NORTH EAST		DON @ NORTH BRIDGE	SE5680003800	FW	Cypermethrin	1.0		50.00		31/07/95	13:15	ED:HM

APPENDIX 1

Sites failing Environment Agency operational EQS MAC values

Region	Receiving Water	Location	Map Reference	Sample Type	Pesticide	EQS Value ng/l	No. of Sample	Result ng/l	No of Samples <LOD	Sample Date	Sample Time	Reasons
NORTH EAST		DON @ NORTH BRIDGE	SE5680003800	FW	Diazinon	100.0		140.00		08/11/95	11:05	ED:HM
NORTH EAST		SALTS WEIR - RIVER AIRE	SE1390038200	FW	Cypermethrin	1.0		120.00		15/06/95	09:15	CM
NORTH EAST		BRAD. BK AT SHIPLEY WEIR	SE1510037600	FW	Cypermethrin	1.0		40.00		15/06/95	09:00	CM
NORTH EAST		HALL DYKE ABOVE WPCW	SE1100011400	FW	Cypermethrin	1.0		50.00		28/09/95	13:19	CM
NORTH EAST		MAG BROOK AT COCKING STEP	SE1259012390	FW	Cypermethrin	1.0		120.00		28/09/95	11:08	CM
NORTH EAST		MAG BROOK	SE1360012300	FW	Cypermethrin	1.0		200.00		28/09/95	10:50	ED
NORTH EAST		CALDER AT BATTYEFORD	SE1890020500	FW	Chlorfenvinphos	100.0		130.00		14/11/95	13:30	ED
NORTH EAST		CALDER AT BATTYEFORD	SE1890020500	FW	2,4 D	10000.0		73000.00		14/11/95	13:30	ED
NORTH EAST		CALDER AT BATTYEFORD	SE1890020500	FW	Diazinon	100.0		450.00		14/11/95	13:30	ED
NORTH EAST		CALDER AT BATTYEFORD	SE1890020500	FW	MCPA	20000.0		56000.00		14/11/95	13:30	ED
NORTH EAST		CALDER AT BATTYEFORD	SE1890020500	FW	Propetamphos	100.0		860.00		14/11/95	13:30	ED
NORTH EAST		COLNEBRIDGE (R.COLNE)	SE1760020200	FW	Cypermethrin	1.0		30.00		25/01/95	14:00	ED
NORTH EAST		COLNEBRIDGE (R.COLNE)	SE1760020200	FW	Cypermethrin	1.0		30.00		02/05/95	09:50	ED
NORTH EAST		COLNEBRIDGE (R.COLNE)	SE1760020200	FW	Cypermethrin	1.0		40.00		20/07/95	15:28	ED
NORTH EAST		KINGS (R.COLNE)	SE1480016000	FW	Cypermethrin	1.0		80.00		02/05/95	10:14	CM
NORTH EAST		LINGARDS (R.COLNE)	SE0640013100	FW	Cypermethrin	1.0		10.00		02/05/95	11:38	CM
NORTH EAST		R.COLNE D/S PENNINE CHEM	SE0960014600	FW	MCPA	20000.0		22400.00		06/03/95	12:45	CM
NORTH EAST		SPEN (A644)	SE2310020500	FW	MCPA	20000.0		54000.00		17/02/95	14:45	ED
NORTH EAST		SPEN (A644)	SE2310020500	FW	MCPA	20000.0		24000.00		08/09/95	11:51	ED
NORTH EAST		HUNSWORTH BK AT SUGDEN BK	SE1840026800	FW	Cypermethrin	1.0		150.00		12/06/95	16:10	CM
NORTH EAST		HUNSWORTH BK AT SUGDEN BK	SE1840026800	FW	2,4 D	10000.0		28000.00		03/05/95	14:52	CM
NORTH EAST		HUNSWORTH BK AT SUGDEN BK	SE1840026800	FW	MCPA	20000.0		31000.00		23/05/95	13:10	CM
NORTH EAST		HUNSWORTH BK AT SUGDEN BK	SE1840026800	FW	MCPA	20000.0		23000.00		30/10/95	11:31	CM
NORTH EAST		HUNSWORTH BK AT SUGDEN BK	SE1840026800	FW	Mecoprop	200000.0		1900000.00		03/05/95	14:52	CM
NORTH EAST		HUNSWORTH BECK U/S NBSW	SE1800027800	FW	Cypermethrin	1.0		50.00		12/06/95	15:35	CM
NORTH EAST		SUGDEN BECK AT CHAIN BAR	SE1820026700	FW	MCPA	20000.0		22000.00		12/06/95	14:20	CM
NORTH WEST		RIVER WHEELOCK D/S SANDBACH E.	SJ7410359308	FW	Urons total	20000.0		21200.00		16/05/95	09:30	CM
NORTH WEST		RIVER WHEELOCK D/S SANDBACH E.	SJ7410359308	FW	Urons total	20000.0		27010.00		04/09/95	14:50	CM
NORTH WEST		FLASH BROOK D/S M.T.M	SJ7285659984	FW	Chlorotoluron	20000.0		31700.00		20/09/95	14:55	CM
NORTH WEST		FLASH BROOK D/S M.T.M	SJ7285659984	FW	Diuron	20000.0		233000.00		20/09/95	14:55	CM
NORTH WEST		FLASH BROOK D/S M.T.M	SJ7285659984	FW	Diuron	20000.0		44500.00		19/10/95	10:10	CM
NORTH WEST		FLASH BROOK D/S M.T.M	SJ7285659984	FW	Diuron	20000.0		40100.00		03/11/95	10:12	CM
NORTH WEST		FLASH BROOK D/S M.T.M	SJ7285659984	FW	Isoproturon	20000.0		280000.00		20/09/95	14:55	CM
NORTH WEST		FLASH BROOK D/S M.T.M	SJ7285659984	FW	Isoproturon	20000.0		177000.00		19/10/95	10:10	CM
NORTH WEST		FLASH BROOK D/S M.T.M	SJ7285659984	FW	Isoproturon	20000.0		80400.00		03/11/95	10:12	CM
NORTH WEST		FLASH BROOK D/S M.T.M	SJ7285659984	FW	Urons total	20000.0		544700.00		20/09/95	14:55	CM
NORTH WEST		FLASH BROOK D/S M.T.M	SJ7285659984	FW	Urons total	20000.0		221500.00		19/10/95	10:10	CM
NORTH WEST		FLASH BROOK D/S M.T.M	SJ7285659984	FW	Urons total	20000.0		131700.00		03/11/95	10:12	CM
NORTH WEST		FLASH BROOK D/S OF MTM	SJ7249859499	FW	Chlorotoluron	20000.0		35000.00		19/10/95	10:30	CM
NORTH WEST		FLASH BROOK D/S OF MTM	SJ7249859499	FW	Diuron	20000.0		26900.00		19/07/95	11:30	CM

APPENDIX 1

Sites failing Environment Agency operational EQS MAC values

Region	Receiving Water	Location	Map Reference	Sample Type	Pesticide	EQS Value ng/l	No. of Sample	Result ng/l	No of Samples <LOD	Sample Date	Sample Time	Reasons
NORTH WEST		FLASH BROOK D/S OF MTM	SJ7249859499	FW	Diuron	20000.0		92400.00		19/10/95	10:30	CM
NORTH WEST		FLASH BROOK D/S OF MTM	SJ7249859499	FW	Diuron	20000.0		61400.00		03/11/95	10:40	CM
NORTH WEST		FLASH BROOK D/S OF MTM	SJ7249859499	FW	Isoproturon	20000.0		28100.00		19/07/95	11:30	CM
NORTH WEST		FLASH BROOK D/S OF MTM	SJ7249859499	FW	Isoproturon	20000.0		390000.00		19/10/95	10:30	CM
NORTH WEST		FLASH BROOK D/S OF MTM	SJ7249859499	FW	Isoproturon	20000.0		147000.00		03/11/95	10:40	CM
NORTH WEST		FLASH BROOK D/S OF MTM	SJ7249859499	FW	Urons total	20000.0		66100.00		19/07/95	11:30	CM
NORTH WEST		FLASH BROOK D/S OF MTM	SJ7249859499	FW	Urons total	20000.0		22780.00		31/08/95	10:30	CM
NORTH WEST		FLASH BROOK D/S OF MTM	SJ7249859499	FW	Urons total	20000.0		517400.00		19/10/95	10:30	CM
NORTH WEST		FLASH BROOK D/S OF MTM	SJ7249859499	FW	Urons total	20000.0		226200.00		03/11/95	10:40	CM
NORTH WEST		FLASH BROOK D/S MTM SEPTIC TAN	SJ7290060150	FW	Diuron	20000.0		58700.00		19/10/95	10:18	CM
NORTH WEST		FLASH BROOK D/S MTM SEPTIC TAN	SJ7290060150	FW	Diuron	20000.0		25600.00		03/11/95	10:20	CM
NORTH WEST		FLASH BROOK D/S MTM SEPTIC TAN	SJ7290060150	FW	Isoproturon	20000.0		66300.00		20/09/95	15:05	CM
NORTH WEST		FLASH BROOK D/S MTM SEPTIC TAN	SJ7290060150	FW	Isoproturon	20000.0		243000.00		19/10/95	10:18	CM
NORTH WEST		FLASH BROOK D/S MTM SEPTIC TAN	SJ7290060150	FW	Isoproturon	20000.0		58500.00		03/11/95	10:20	CM
NORTH WEST		FLASH BROOK D/S MTM SEPTIC TAN	SJ7290060150	FW	Urons total	20000.0		74280.00		20/09/95	15:05	CM
NORTH WEST		FLASH BROOK D/S MTM SEPTIC TAN	SJ7290060150	FW	Urons total	20000.0		320700.00		19/10/95	10:18	CM
NORTH WEST		FLASH BROOK D/S MTM SEPTIC TAN	SJ7290060150	FW	Urons total	20000.0		91050.00		03/11/95	10:20	CM
SOUTH WEST		R.DART-D/S BUCKFASTLEIGH STW	SX7536065310	FW	Propetamphos	100.0		138.40		14/07/95	09:10	SS
SOUTHERN	R. MEDWAY	DOWNSTREAM OF ZENECA - YA	TQ6860050600	FW	Cypermethrin	1.0		57.00		30/01/95		CM
SOUTHERN	R. MEDWAY	DOWNSTREAM OF ZENECA - YA	TQ6860050600	FW	Cypermethrin	1.0		30.00		14/06/95		CM
SOUTHERN	R. MEDWAY	UPSTREAM ZENECA - YALDING	TQ6880049800	FW	Cypermethrin	1.0		8.00		30/01/95		CM
SOUTHERN	R. MEDWAY	UPSTREAM ZENECA - YALDING	TQ6880049800	FW	Cypermethrin	1.0		30.00		14/06/95		CM
THAMES	Thames-Beverley	BEVERLEY BROOK AT PRIESTS BRID	TQ2148075520	FW	Diazinon	100.0		156.00		23/10/95	12:34	CM:ED
THAMES	Thames-Cherwell	CHERWELL AT MARSTON ROAD, OXFO	SP5270006700	FW	Diazinon	100.0		104.00		11/05/95	10:10	CM:ED:HM
THAMES	Thames-Thame	THAME AT DORCHESTER BRIDGE	SU5790093900	FW	Diazinon	100.0		129.00		09/01/95	10:30	CM:ED:HM
THAMES	Thames	THAMES AT WATER INTAKE, FARMOO	SP4390006400	FW	Diazinon	100.0		457.00		04/10/95	13:50	CM:ED:HM
THAMES	Thames	CUT ABOVE THAMES	SU9140078700	FW	Diazinon	100.0		201.00		18/10/95	14:00	CM:ED
THAMES	Thames-Wandle	WANDLE AT THE CAUSEWAY, WANDSW	TQ2558074840	FW	Diazinon	100.0		145.00		23/10/95	13:20	CM:ED
THAMES	Thames-Windrush	WINDRUSH AT GAUGING STATION, N	SP4020001900	FW	Chlorfenvinphos	100.0		168.00		31/05/95	12:21	CM:ED
THAMES	Thames-Windrush	WINDRUSH AT GAUGING STATION, N	SP4020001900	FW	Diazinon	100.0		351.00		31/05/95	12:21	CM:ED
WELSH	Swansea Bay	RKENFIG-BSCWEIR&FISHPASSR	SS7948083080	FW	Diazinon	100.0		263.00		13/11/95	11:15	SS
WELSH	R Wye	RFROMEATLONGWORTHBRIDGER	SO5655039220	FW	Propetamphos	100.0		376.00		03/07/95	12:00	NS
WELSH	n/a	PLASUCHAFRESA'GELEPLAS	SH9690071300	FW	Diazinon	100.0		106.00		20/10/95	12:15	SD

APPENDIX 1

Sites failing estuary and coastal water EQS

Region	Receiving Water	Location	Map Reference	Sample Type	Pesticide	EQS Value ng/l	No. of Sample	Annual Average ng/l	No of Samples <LOD
NORTH WEST		MERSEY ESTUARY AT FIDDLERS FER	SJ5642386656	MW	Total HCH	100.0	9	20.56	6
NORTH WEST		MERSEY ESTUARY AT SEACOMBE FER	SJ3303390903	MW	Endosulphan	3.0	10	3.40	9
SOUTH WEST		R PARRETT D/S BCL	ST3050038800	MW	Total DDT	25.0	12	277.18	11
SOUTH WEST		LOOE COMBINED ESTUARY	SX2540053670	MW	Total HCH	20.0	4	119.20	1
SOUTH WEST		R PARRETT D/S BCL	ST3050038800	MW	pp DDT	10.0	10	200.00	9

APPENDIX II - NATIONAL PESTICIDE SUMMARIES 1992-1995

Table 1. Pesticides exceeding 0.1 µg/l in surface freshwaters in England and Wales 1992-1995

1995						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	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
Flutriafol	14	0.62	79	79	2.34	Isoproturon	16	Chlorpropham	43	Atrazine	17
Isoproturon	2902	0.02-1	24	17	0.49	Bentazone	14	Diuron	18	Mecoprop	17
Diuron	2255	0.02-1	22	13	0.29	Diuron	12	Mecoprop	18	Diuron	15
Tetrachlorothioanisole	29	0.005-0.01	31	10	0.08	Mecoprop	11	Atrazine	14	2,4 D	15
Mecoprop	2608	0.01-0.2	24	7	0.13	Monolinuron	9	Carbendazim	10	Simazine	13
Monolinuron	197	0.02-0.04	39	7	0.08	Chloridazon	9	Simazine	9	Isoproturon	10
PCSD/Eulan	1025	0.001-0.25	14	6	0.08	PCSD/eulan	6	Bentazone	9	Permethrin	7
MCPA	1205	0.01-0.2	18	5	0.08	Propyzamide	5	2,4DCPA	9	Pentachlorophenol	6
Clopyralid	191	0.02-0.2	8	5	0.08	Simazine	5	MCPA	8	Dicamba	5
Sulcofuron	215	0.06-2.5	6	5	1.50	Dicamba	4	PCSD/eulan	6	Sulcofuron	4
Chlorpropham	99	0.005-0.4	9	4	0.05	2,4-D	4	2,4 D	6	Chlorotoluron	4
Simazine	5472	0.005-0.3	17	4	0.08	Atrazine	4	Pentachlorophenol	6	2 DCPA	4
Chlorotoluron	2358	0.02-1	11	4	0.05	Atrazine desethyl	4	Isoproturon	6	MCPA	4
2,4 D	1406	0.02-0.5	17	4	0.10	Chlorotoluron	4	Trietazine	6	Dichlobenil	4
Chloridazon	202	0.02-0.04	6	3	0.09	Pentachlorophenol	4	Chlorotoluron	5	Terbutryn	4

Table 1 - continued

Tetrachloroaniline	431	0.005-0.5	11	3	0.05	Monobutyl tin	3	Propyzamide	5	Diazinon	3
Pirimicarb	217	0.02-1	4	3	0.08	Atrazine deisipropyl	3	Permethrin	4	Trietazine	3
Chloroxuron	222	0.02-0.04	9	3	0.10	Clopyralid	3	Linuron	4	2,3,6 TBA	2
Pentachlorophenol	4975	0.02-50	3	3	0.06	MCPA	2	Metazachlor	4	Demeton S methyl	2
Flucofuron	131	0.06-1	4	2	0.08	Linuron	2	2,4 DB	3	Flucofuron	2
Linuron	2073	0.02-1	6	2	0.03	Propetamphos	2	Benazolin	3	Dichlorprop	1
Atrazine	5639	0.005-0.5	20	2	0.05	Ethofumesate	1	2,3,6 TBA	3	Propetamphos	1
Dichlobenil	688	0.005-0.01	14	2	0.03	Metazachlor	1	Dicamba	3	Linuron	1
D HCH	1914	0.001-0.15	4	2	0.02	Diazinon	1	Ethofumesate	3	Chlorfenvinphos	1
Diazinon	2881	0.005-0.2	8	2	0.03	Pirimicarb	1	E HCH	3	Bromoxynil	0.9
Glyphosate	59	0.1-0.4	2	2	0.09	Tetrachloroaniline	1	Dichlorprop	2	Carbetamide	0.9
Oxamyl	192	0.025	4	2	0.02	Permethrin	1	Tetrachloroaniline	2	Pirimiphos methyl	0.9
Bentazone	1056	0.02-0.3	7	2	0.03	Trietazine	0.9	MCPB	2	Gamma HCH	0.7
Aldicarb	269	0.025-0.2	4	1	0.01	Monuron	0.9	Diazinon	2	Propazine	0.6
Atrazine desisopropyl	336	0.08-0.14	3	1	0.01	Chloroxuron	0.8	Terbutryn	2	Methabenzthiazuron	0.5
Propachlor	71	0.04	1	1	0.02	Dichlorprop	0.8	Clopyralid	2	Ioxynil	0.4
Propetamphos	2460	0.005-0.2	6	1	0.02	Gamma HCH	0.8	Metalaxyl	2	E HCH	0.4
Monobutyl tin	83	0.05-0.59	11	1	0.03	Chlorfenvinphos	0.7	Flucofuron	1	Trifluralin	0.3
Propyzamide	204	0.02-0.1	11	1	0.02	Phenmedipham	0.7	Propetamphos	1	Dieldrin	0.3
Cypermethrin	668	0.01-0.5	4	0.9	0.01	Total organic tin	0.7	Dichlobenil	1	Propyzamide	0.2
Triclopyr	343	0.02-0.2	4	0.9	0.01	Terbutryn	0.6	Triallate	1	Chlorothalonil	0.2
Ethiofencarb	127	0.025	7	0.8	0.02	Metalaxyl	0.6	Phenmedipham	0.9	D HCH	0.3
Carbendazim	395	0.1-0.9	1	0.8	0.03	Methiocarb	0.5	Chlorfenvinphos	0.9	MCPB	0.2

Table 1 - continued

Chlorpyrifos	266	0.005-0.2	2	0.8	0.02	Aldicarb	0.5	Tecnazene	0.9	Cypermethrin	0.1
Carbofuran	276	0.025-0.23	1	0.7	0.003	Tributyl tin	0.5	PCSD	0.8	Prometryn	0.1
Tetrabutyl tin	278	0.005-0.06	4	0.7	0.01	Bromoxynil	0.5	Bromoxynil	0.8	Hexachlorobenzene	0.1
Chlorfenvinphos	2819	0.005-0.2	2	0.6	0.006	MCPB	0.5	Gamma HCH	0.7	Dichlorvos	0.1
Atrazine desethyl	327	0.02-0.05	54	0.6	0.06	Dichlobenil	0.4	Propazine	0.7	Heptachlor	0.1
Cyfluthrin	1047	0.005-0.3	3	0.6	0.01	Pendimethalin	0.3	Chlorpyrifos methyl	0.5	Azinphos methyl	0.09
Methiocarb	175	0.025	4	0.6	0.009	Demeton s methyl	0.3	Pirimiphos methyl	0.5	Fenitrothion	0.08
Dichlorprop	536	0.02-0.2	3	0.6	0.009	B HCH	0.3	Azinphos methyl	0.4	Fenthion	0.05
Gamma HCH	6744	0.001-0.05	38	0.6	0.02	Carbofuran	0.3	Hexachlorobenzene	0.3	Azinphos ethyl	0.05
Propoxur	189	0.025-0.3	0.5	0.5	0.002	Sulcofuron	0.2	Ioxynil	0.3	pp DDT	0.05
Terbutryn	1149	0.005-0.2	3	0.5	0.01	Phorate	0.2	Dieldrin	0.3	Parathion	0.03
Tributyl tin	395	0.005-0.04	23	0.5	0.02	Carbofenothion	0.2	Sulcofuron	0.3	A HCH	0.03
Ethofumesate	204	0.02-0.25	7	0.5	0.01	2,4 DB	0.2	D HCH	0.3	op DDT	0.01
Methomyl	206	0.025-0.43	1	0.5	0.005	Ioxynil	0.2	Dimethoate	0.1	Endrin	0.01
Monuron	428	0.02-0.1	5	0.5	0.02	A HCH	0.2	Azinphos ethyl	0.1		
Permethrin	1003	0.01-0.1	4	0.4	0.006	Trifluralin	0.2	Dichlorvos	0.1		
MCPB	1543	0.02-0.5	1	0.4	0.03	Dieldrin	0.2	Cyfluthrin	0.08		
Bromoxynil	624	0.02-0.5	1	0.3	0.01	Prometryn	0.2	Malathion	0.08		
Ioxynil	630	0.02-0.5	1	0.3	0.003	Endosulfan a	0.07	Trifluralin	0.07		
Total organo tin	308	0.004-0.03	7	0.3	0.005	Fenitrothion	0.06	A HCH	0.06		
Triphenyl tin	367	0.002-0.04	4	0.3	0.007	Azinphos methyl	0.04	Fenitrothion	0.03		
Pendimethalin	408	0.005-0.01	10	0.3	0.007	Dichlorvos	0.03	B HCH	0.02		

Table 1 - continued

Carbaryl	428	0.05-0.24	0.7	0.2	0.002	Endosulfan b	0.02				
2,4,5 T	1161	0.02-0.2	1	0.2	0.003						
Dimethoate	664	0.005-0.2	0.8	0.2	0.001						
Mevinphos	673	0.005-0.2	0.3	0.2	0.001						
Trietazine	2049	0.02-0.2	0.7	0.2	0.002						
B HCH	5506	0.001-0.05	4	0.1	0.003						
2,4 DB	933	0.02-0.2	4	0.1	0.005						
Dicamba	882	0.02-0.1	0.7	0.1	0.002						
Fluroxypyr	937	0.01-0.2	2	0.1	0.004						
Tecnazene	1095	0.005-00.5	1	0.1	0.002						
Hexachlorobenzene	4098	0.001-0.05	2	0.05	0.001						
Endosulfan b	2299	0.002-0.025	0.4	0.04	0.001						
Fenitrothion	2356	0.005-0.2	0.5	0.04	0.001						
Trifluralin	3264	0.001-0.057	3	0.03	0.002						
A HCH	5613	0.001-0.05	6	0.02	0.002						
pp DDT	4808	0.001-0.05	0.6	0.02	0.001						

Table 2. Pesticides exceeding 0.1 µg/l in groundwaters in England and Wales 1992-1995

1995						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	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
Atrazine Desisopropyl	27	0.09-0.1	7	7	0.03	Atrazine Desethyl	25	Bentazone	15	Atrazine	9
TCA	19	0.02	5	5	0.02	Atrazine	11	Atrazine	11	Terbutryn	4
Atrazine	436	0.005-0.2	19	5	0.06	Isoproturon	9	Trietazine	5	Trietazine	3
Isoproturon	301	0.02-0.1	14	2	0.04	Mecoprop	5	Diuron	5	Isoproturon	2
Diuron	215	0.02-0.1	11	2	0.02	Diuron	3	Pentachlorophenol	4	Mecoprop	1
Linuron	297	0.02-0.1	5	2	0.03	Chlorotoluron	3	2,3,6 TBA	4	Bromoxynil	0.9
Chlorotoluron	300	0.02-0.1	13	1	0.06	2,4 D	3	Linuron	3	Diazinon	0.9
Mecoprop	225	0.02-0.1	5	0.9	0.01	Linuron	2	Clopyralid	3	2,3,6 TBA	0.8
Mevinphos	127	0.005-0.25	0.8	0.8	0.007	Dichlorprop	0.9	Ethofumesate	3	Dicamba	0.8
Pentachlorophenol	203	0.05-0.5	0.5	0.5	0.02	MCPB	0.8	Isoproturon	3	Simazine	0.7
MCPA	225	0.02-0.1	0.9	0.4	0.006	MCPA	0.8	Chlorotoluron	2	Linuron	0.7
Dieldrin	365	0.001-0.01	2	0.3	0.003	Pentachlorophenol	0.7	Terbutryn	2	Azinphos ethyl	0.7
Simazine	428	0.005-0.04	6	0.2	0.01	Dichlobenil	0.7	Simazine	2	Chlorotoluron	0.5
						Dieldrin	0.5	Mecoprop	1	Azinphos methyl	0.3
						Simazine	0.5	DDT pp	0.3	Dichlorvos	0.3
						Gamma HCH	0.3	DDT op	0.3		
								TDE pp	0.3		
								Gamma HCH	0.2		

Table 3. Pesticides exceeding 0.1 µg/l in estuaries and coastal waters in England and Wales 1992-1995

1995						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	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
Bromoxynil	1	0.1	100	100	0.14	Isoproturon	61	Diuron	45	Diuron	32
Diuron	69	0.02	86	58	0.40	Diuron	36	Isoproturon	16	Chlorotoluron	25
Isoproturon	60	0.02	75	53	0.40	Mecoprop	24	Chlorotoluron	15	Atrazine	21
Mecoprop	58	0.02-0.1	74	21	0.31	MCPA	11	PCSD	8	Simazine	20
MCPA	57	0.02-0.1	23	7	0.4	PCSD/eulan	9	Atrazine	6	Pentachlorophenol	14
Chlorotoluron	66	0.02-0.05	38	5	0.08	Monuron	7	Simazine	4	Propazine	3
Linuron	65	0.02	25	3	0.05	Simazine	6	Linuron	3	Isoproturon	3
Propetamphos	48	0.005-0.05	15	2	0.04	Chlorotoluron	6	Pentachlorophenol	2	Diazinon	3
Simazine	501	0.01-0.3	14	1	0.03	Atrazine desisopropyl	5	Methabenzthiazuron	2	Linuron	2
Diazinon	103	0.005-0.2	16	1	0.03	Tributyl tin	5	Hexachlorobenzene	1	Gamma HCH	0.3
Organotin	113	0.004-0.03	21	0.9	0.02	Atrazine desethyl	5	Gamma HCH	0.6	Azinphos methyl	0.2
Atrazine	505	0.01-0.3	12	0.4	0.02	Linuron	4	Azinphos methyl	0.3	Parathion	0.2
Propazine	334	0.01-0.3	0.3	0.3	0.001	Atrazine	3	Trifluralin	0.2	Hexachlorobenzene	0.2
Dichlorvos	362	0.005-0.05	0.6	0.3	0.003	Carbofenothion	3	A HCH	0.1		
Pentachlorophenol	1307	0.05-1	0.4	0.2	0.002	Total organic tin	2	Dieldrin	0.1		
Gamma HCH	1603	0.001-0.05	41	0.1	0.008	Pentachlorophenol	2	Aldrin	0.06		
DDT op	1289	0.001-0.05	0.5	0.1	0.002	Propoxur	2	DDT op	0.06		
DDT pp	1208	0.001-0.05	1	0.1	0.004	Methiocarb	2	DDT pp	0.06		

Table 3 - continued

TDE pp	1207	0.001-0.05	0.9	0.1	0.001	Oxamyl	2				
						Carbofuran	2				
						Methomyl	2				
						Carbetamide	2				
						Dibutyl tin	1				
						Tetrabutyl tin	0.5				
						Gamma HCH	0.3				
						Propazine	0.2				
						Hexachlorobenzene	0.05				
						A HCH	0.05				

APPENDIX III - REGIONAL PESTICIDE SUMMARIES

Table 1. Pesticides exceeding 0.1 µg/l in surface freshwaters in Anglian Region 1992-1995

1995						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	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
Isoproturon	203	0.02	77	52	2.06	Isoproturon	51	*Chlorpropham	43	Simazine	39
Diuron	231	0.02-0.04	52	18	0.23	Mecoprop	15	Simazine	32	Atrazine	38
Mecoprop	279	0.02-0.03	60	18	0.24	Bentazone	14	Isoproturon	31	Isoproturon	29
Tetrachlorothioanisole	25	0.005	36	12	0.09	Simazine	11	Atrazine	30	Mecoprop	28
Chlorpropham	25	0.005	32	12	0.14	Diuron	10	Mecoprop	23	Dicamba	9
Simazine	301	0.02-0.3	55	12	0.2	Monolinuron	9	*Carbendazim	10	MCPA	9
Chlorotoluron	195	0.05	25	10	0.13	Chloridazon	9	Diuron	10	Pentachlorophenol	9
MCPA	279	0.02-0.05	27	7	0.09	Chlorotoluron	8	Bentazone	9	Terbutryn	7
Monolinuron	197	0.02-0.04	39	7	0.08	Organotin	5	Trietazine	6	Diuron	6
2,4 D	209	0.02-0.5	18	6	0.50	Propyzamide	5	MCPA	6	Diazinon	5
Bentazone	218	0.02-0.2	25	6	0.08	Methabenzthiazuron	5	Propyzamide	5	Chlorotoluron	5
Atrazine	353	0.02-0.3	44	4	0.12	Atrazine	4	Terbutryn	4	Gamma HCH	5
Chloridazon	202	0.02-0.04	6	3	0.09	MCPA	4	Gamma HCH	4	Trietazine	4
Chloroxuron	204	0.02-0.04	10	3	0.11	Carbetamide	3	Metazachlor	3	2,4 D	4
Tetrachloraniline	423	0.005-0.01	10	2	0.04	Linuron	3	2,4,D	3	Dieldrin	4
Clopyralid	181	0.02-0.2	6	2	0.03	Clopyralid	3	Dicamba	3	Dichlorprop	3
Aldicarb	189	0.025-0.2	5	2	0.02	2,4 D	3	Dieldrin	3	2,3,6 TBA	3

Table 1 - continued

Total organic tin	49	0.004	39	2	0.03	Pentachlorophenol	2	2,3,6 TBA	3	Bromoxynil	2
Terburtyn	304	0.02-0.2	7	2	0.04	Monuron	2	Benazolin	3	Carbetamide	1
Oxamyl	192	0.025	4	2	0.02	MCPB	2	Ethofumesate	3	Ioxynil	0.5
Dimethoate	84	0.02-0.2	1	1	0.004	Trietazine	2	Chlorotoluron	2	Methabenzthiazuron	0.5
Trietazine	274	0.02-0.2	5	1	0.01	Terbutryn	2	Bromoxynil	2	Propyzamide	0.5
Monuron	189	0.02-0.04	11	1	0.04	Bromoxynil	2	Metalaxyl	2	Prometryn	0.4
Diazinon	204	0.02-0.2	1	1	0.007	Chloroxuron	2	Clopyralid	2	Chlorothalonil	0.2
Propyzamide	204	0.02-0.1	11	1	0.02	Dichlorprop	2	Linuron	1		
Carbofuran	206	0.025-0.23	1	1	0.005	Ethofumesate	1	Tri-allate	1		
Ioxynil	210	0.02-0.2	3	1	0.009	Tetrachloroaniline	1	Dimethoate	1		
Ethiofencarb	127	0.025	7	0.8	0.02	Ioxynil	1	Phenmedipham	1		
Triclopyr	264	0.02-0.2	4	0.8	0.008	Metazachlor	1	Dichlorprop	1		
Gamma HCH	485	0.001-0.005	40	0.6	0.02	Aldicarb	1	Pentachloropheno	1		
Methiocarb	175	0.025	4	0.6	0.009	Dicamba	1	Pirimiphos methy	0.5		
Propoxur	189	0.025-0.3	0.5	0.5	0.002	Phenmedipham	0.7	Diazinon	0.5		
Chlorpyrifos	192	0.02-0.2	1	0.5	0.003	Metalaxyl	0.6	Chlorpyrifos methyl	0.4		
2,4,5 T	202	0.02-0.18	3	0.5	0.01	Pirimicarb	0.6	Tecnazene	0.2		
Carbaryl	206	0.05-0.24	1	0.5	0.004	Carbofuran	0.5				
Ethofumesate	204	0.02-0.25	7	0.5	0.01	Methiocarb	0.5				
Linuron	203	0.02-0.04	18	0.5	0.03	2,4 DB	0.5				
Methomyl	206	0.025-0.43	1	0.5	0.005	Pendimethalin	0.3				
Pirimicarb	204	0.02-0.05	1	0.5	0.006	Trifluralin	0.3				
Dichlorprop	209	0.02-0.09	6	0.5	0.01	Gamma HCH	0.2				

Table 1 - continued

MCPB	209	0.02-0.5	7	0.5	0.02						
Bromoxynil	218	0.02-0.2	2	0.5	0.02						
Dicamba	273	0.02-0.05	1	0.4	0.003						
Pentachlorophenol	289	0.1	0.4	0.4	0.001						
Pendimethalin	408	0.005-0.01	10	0.3	0.007						
Trifluralin	424	0.005-0.01	9	0.2	0.009						

Table 2. Pesticides exceeding 0.1 µg/l in groundwaters in Anglian Region 1992-1995

1995						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	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
								Atrazine	40	Atrazine	15
No specific groundwater monitoring for pesticides was undertaken in 1995.						No specific groundwater monitoring for pesticides was undertaken in 1994.		Simazine	19	Mecoprop	3
								Bentazone	15	Isoproturon	3
								Terbutryn	7	Simazine	2
								Trietazine	5	Terbutryn	2
								Chlorotoluron	4	Bromoxynil	1
								Mecoprop	4	Chlorotoluron	1
								2,3,6 TBA	4	Trietazine	1
								Ethofumesate	3	Dicamba	1
								Diuron	3	2,3,6 TBA	1
								Clopyralid	3		

Table 3. Pesticides exceeding 0.1 µg/l in estuaries and coastal waters in Anglian Region 1992-1995

1995						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	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
Isoproturon	4	0.02	75	50	0.38	Isoproturon	53	Diuron	31	Atrazine	33
Organotin	12	0.004	58	8	0.05	Diuron	23	Isoproturon	25	Diuron	33
Diuron	13	0.02	38	8	0.09	Chlorotoluron	10	Simazine	14	Simazine	13
Simazine	31	0.02-0.03	23	6	0.05	Simazine	7	Atrazine	12	Pentachlorophenol	11
						Monuron	7	Methabenzthiazuron	2		
						Linuron	4	Pentachlorophenol	1		
						Pentachlorophenol	3				
						Propoxur	2				
						Methiocarb	2				
						Oxamyl	2				
						Carbofuran	2				
						Methomyl	2				
						Carbetamide	2				

Table 4. Pesticides exceeding 0.1 µg/l in surface waters in Midlands Region 1992-1995

1995						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	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
Chlorpyrifos	1	0.05	100	100	1.45	Pirimicarb	100	Mecoprop	20	2,4 D	30
Cypermethrin	3	0.01	100	67	0.21	Dicamba	50	Atrazine	14	Isoproturon	19
Clopyralid	10	0.05	60	50	0.85	Isoproturon	22	MCPA	11	Atrazine	14
Triclopyr	4	0.05	100	25	0.14	Mecoprop	22	Simazine	10	Mecoprop	13
Isorproturon	394	0.1-1	20	19	0.85	Simazine	8	2,4 DCPA	9	Simazine	12
Mecoprop	420	0.025-0.04	31	12	0.18	Diuron	6	2,4 D	9	Chlorotoluron	7
Simazine	534	0.03-0.15	27	11	0.12	Atrazine	5	Flucofuron	6	Diuron	6
MCPA	420	0.025-0.04	13	5	0.9	MCPA	4	Pentachloropheno	5	2,4 DCPA	4
Diuron	386	0.1-1	4	4	0.16	Pentachlorophenol	4	Isoproturon	3	Diazinon	4
Flucofuron	82	0.1	4	4	0.13	Linuron	2	Diazinon	3	Sulcofuron	3
Atrazine	531	0.03-0.15	27	3	0.07	Chlorotoluron	2	Linuron	2	Dichlobenil	4
2,4 D	415	0.025-0.04	8	2	0.03	Propetamphos	0.7	Diuron	2	MCPA	3
Tetrabutyrl tin	59	0.005	7	2	0.02	Monuron	0.5	Propazine	2	Linuron	2
Tributyl tin	63	0.005	19	2	0.02	Phorate	0.4	Dichlobenil	1	Pentachlorophenol	2
Pentachlorophenol	1825	0.1-50	2	2	0.03	Dichlobenil	0.4	Dichlorprop	1	Flucofuron	2
Chlorotoluron	391	0.1-1	2	2	0.02	Endosulfan a	0.4	Gamma HCH	1	Propazine	1
Dichlobenil	330	0.01	3	1	0.01	Demeton s methyl	0.4	Sulcofuron	0.6	Pirimiphos methyl	1
Diazinon	734	0.01-0.05	7	1	0.02	Diazinon	0.4	Propetamphos	0.4	Chlorfenvinphos	1

Table 4 - continued

2,4 DB	254	0.04	0.4	0.4	0.002	PCSD/eulan	0.2	Dichlorvos	0.4	Carbetamide	0.8
2,4,5 T	279	0.025-0.04	1	0.4	0.003	Chlorfenvinphos	0.1	Chlorfenvinphos	0.3	Bromoxynil	0.7
Mevinphos	293	0.025	0.3	0.3	0.001	Fenitrothion	0.1	2,4 DB	0.3	Trifluralin	0.6
Bromoxynil	346	0.04-0.5	0.3	0.3	0.009	Endosulfan b	0.1	Ioxynil	0.2	Propetamphos	0.6
Propetamphos	722	0.01-0.05	5	0.3	0.007	Gamma HCH	0.1	Malathion	0.1	Gamma HCH	0.4
MCPB	420	0.025-0.04	0.2	0.2	0.13					Ioxynil	0.3
Hexachlorobenzene	977	0.001-0.005	5	0.2	0.005					Dichlorprop	0.3
Endosulfan b	775	0.005-0.025	0.7	0.1	0.001					MCPB	0.2
										Dichlorvos	0.1

Table 5. Pesticides exceeding 0.1 µg/l in groundwaters in Midlands Region 1992-1995

1995						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	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
Mevinphos	32	0.025-0.25	3	3	0.03	Dichlobenil	8			Trietazine	8
Pentachlorophenol	93	0.1	1	1	0.05	Pentachlorophenol	0.7	No exceedences of 0.1 µg/l		Terbutryn	8
Dieldrin	95	0.005	5	1	0.01	Gamma HCH	0.7			Isoproturon	4
										Linuron	4

Table 6. Pesticides exceeding 0.1 µg/l in estuaries and coastal waters in Midlands Region 1992-1995

1995						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	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
								Linuron	17	Isoproturon	33
No pesticide monitoring of estuaries and coastal waters in 1995						No monitoring of esturaries and coasta waters in 1994		Isoproturon	14	Atrazine	17
										Diuron	14
										Simazine	8
										Diazinon	8
										Propazine	8
										Chlorotoluron	7
										Linuron	7

Table 7. Pesticides exceeding 0.1 µg/l in surface freshwaters in North East Region 1992-1995

1995						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	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
Tetrachloroaniline	6	0.1-0.5	67	67	0.64	Mecoprop	38	Mecoprop	67	Mecoprop	81
Sulcofuron	55	0.5	18	18	6.13	Isoproturon	19	MCPA	57	MCPA	70
Isoproturon	238	0.04-0.05	24	18	0.75	Diuron	13	Dichlorporp	50	Dichlorporp	57
Mecoprop	42	0.004-0.2	29	14	0.60	PCSD	10	2,4 D	47	2,4 D	50
MCPA	82	0.01-0.2	13	10	0.11	2,4 D	7	2,4 DB	30	Isoproturon	25
PCSD/Eulan	681	0.01-0.1	20	9	0.11	Simazine	6	MCPB	29	MCPB	21
Diuron	172	0.03-0.05	10	8	0.17	Diazinon	6	PCSD	21	Pentachlorophenol	20
Pentachlorophenol	982	0.2	6	6	0.18	Propetamphos	6	Pentachloropheno	18	Atrazine	16
Diazinon	599	0.005-0.01	15	6	0.08	Pentachlorophenol	6	Atrazine	16	Simazine	11
Propetamphos	625	0.005-0.05	12	4	0.06	Atrazine	6	Simazine	12	Permethrin	10
Chlorotoluron	86	0.04-0.05	3	3	0.05	Sulcofuron	5	Permethrin	8	Diazinon	7
Dichlorprop	60	0.04-0.2	3	3	0.04	Chlorfenvinphos	4	Diazinon	7	Diuron	6
Chlorfenvinphos	618	0.005-0.01	9	3	0.03	Gamma HCH	4	Propetamphos	6	Chlorfenvinphos	3
Gamma HCH	1320	0.001-0.01	70	2	0.04	Dichlorprop	3	Chlorfenvinphos	5	Propetamphos	3
Simazine	293	0.005-0.05	31	2	0.04	MCPA	3	Ioxynil	4	Gamma HCH	1
Atrazine	351	0.005-0.03	41	2	0.06	Permethrin	2	Bromoxynil	4	Azinphos methyl	0.8
Glyphosate	59	0.1-0.4	2	2	0.09	B HCH	2	Gamma HCH	1	Heptachlor	0.5
MCPB	60	0.04-0.2	2	2	0.01	Chlorotoluron	1	Cyfluthrin	0.2	Dieldrin	0.5
Tributyl tin	65	0.005-0.03	32	2	0.03	A HCH	1	Fenitrothion	0.2	Azinphos ethyl	0.3

Cyfluthrin	680	0.01-0.3	4	0.9	0.02	Dieldrin	0.3	Malathion	0.2	Dichlorvos	0.3
Cypermethrin	631	0.01-0.5	4	0.6	0.008	Organotin	0.2	Azinphos ethyl	0.1	Fenitrothion	0.3
Permethrin	643	0.01-0.1	5	0.6	0.01					Fenthion	0.3
B HCH	1416	0.001-0.02	12	0.4	0.01					Cypermethrin	0.1
Fenitrothion	476	0.005-0.05	0.6	0.2	0.001						
A HCH	1143	0.001-0.01	12	0.1	0.006						

Table 8. Pesticides exceeding 0.1 µg/l in groundwaters in North East Region in 1992-1995

1995						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	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
Atrazine	170	0.005-0.2	8	2	0.02	Atrazine	100			Diazinon	1
Chlorotoluron	77	0.04	1	1	0.06			No exceedences of 0.1 µg/l		Azinphos ethyl	0.7
Isoproturon	77	0.04	4	1	0.01					Azinphos methyl	0.3
Linuron	77	0.04	1	1	0.008						
Mecoprop	78	0.04	1	1	0.005						

Table 9. Pesticides exceeding 0.1 µg/l in estuaries and coastal waters in North East Region 1992-1995

1995						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	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
Bromoxynil	1	0.1	100	100	0.14	Simazine	3	Pentachloropheno	14	Pentachlorophenol	38
Diazinon	44	0.005-0.05	30	2	0.07	Pentachlorophenol	3				
Propetamphos	45	0.005-0.05	16	2	0.04	Organo tin	3				
Dichlorvos	87	0.005-0.05	2	1	0.01	Gamma HCH	2				
Simazine	88	0.01-0.2	23	1	0.02	Atrazine	2				
Pentachlorophenol	330	0.2	0.6	0.6	0.006						

Table 10. Pesticides exceeding 0.1 µg/l in surface freshwaters in North West Region 1992-1995

1995						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	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
Pentachlorophenol	345	0.1-0.5	9	8	0.11	Diuron	36	Pentachlorophenol	12	MCPA	40
Atrazine	244	0.03-0.15	23	5	0.06	Isoproturon	36	Azinphos methyl	7	Pentachlorophenol	26
Simazine	230	0.03-0.15	17	5	0.08	Chlorotoluron	32	Permethrin	6	Atrazine	11
Gamma HCH	638	0.005-0.025	17	0.5	0.01	Neburon	20	Atrazine	0.9	Permethrin	10
						Pentachlorophenol	17.5	A HCH	0.3	Simazine	5
						Simazine	5.2			Hexachlorobenzene	4
						Carbaryl	4.2			Gamma HCH	1
						Monuron	4			pp DDT	0.9
						Atrazine	3.8			A HCH	0.2
						Propetamphos	1.4				
						Chlorfenvinphos	0.9				
						Tributyltin	0.6				
						Azinphos methyl	0.5				
						Gamma HCH	0.2				

Table 11. Pesticides exceeding 0.1 µg/l in estuaries and coastal waters in North West Region

1995						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	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
Simazine	252	0.03-0.15	2	0.8	0.008	Simazine	9	Azinphos methyl	9	Pentachlorophenol	7
Atrazine	252	0.03-0.15	2	0.4	0.005	Atrazine	6	Pentachloropheno	1	Gamma HCH	4
Propazine	303	0.03-0.3	0.3	0.3	0.001	Pentachlorophenol	5	Trifluralin	0.8	Atrazine	2
Pentachlorophenol	327	0.1-0.5	0.6	0.3	0.002	Propazine	0.3	A HCH	0.7	Hexachlorobenzene	2
Gamma HCH	333	0.005-0.025	7	0.3	0.004			Simazine	0.5		
								op DDT	0.4		
								pp DDT	0.4		
								Aldrin	0.4		

Table 12. Pesticides exceeding 0.1 µg/l in surface freshwaters in Southern Region 1992-1995

1995						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	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
Pirimicarb	6	0.1	100	100	1.12	Isoproturon	83	Diuron	71	Diuron	100
Flutriafol	14	0.62	79	79	2.34	Chlorotoluron	41	Simazine	20	D HCH	34
Atrazine desisopropyl	7	0.09	29	29	0.17	Mecoprop	36	Atrazine	16	Atrazine	23
Diuron	30	0.04	23	17	0.09	Simazine	14	D HCH	4	Simazine	22
Simazine	262	0.03-0.3	39	13	0.15	Atrazine	5	E HCH	2	Pentachlorophenol	1
D HCH	331	0.001-0.15	22	11	0.09	2,4 D	2	A HCH	2	E HCH	0.4
Chlorotoluron	351	0.02-0.04	21	9	0.13	Pentachlorophenol	2	Pentachlorophenol	2		
Isoproturon	329	0.02-0.04	18	8	0.25	Prometryn	0.6	Dichlorvos	1		
Pentachlorophenol	198	0.05-0.1	2	2	0.11	Gamma HCH	0.5	Gamma HCH	0.5		
Atrazine	261	0.03-0.3	26	1	0.05			B HCH	0.5		
Mecoprop	326	0.02-0.04	6	0.6	0.02						
pp DDT	275	0.001-0.005	4	0.4	0.005						

Table 13. Pesticides exceeding 0.1 µg/l in groundwaters in Southern Region 1992-1995

1995						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	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
Atrazine	31	0.03	42	3	0.13	Isoproturon	25	Isoprotuon	14	Atrazine	6
						Linuron	9				
						Atrazine	8				
						2,4-D	6				

Table 14. Pesticides exceeding 0.1 µg/l in estuaries and coastal waters in Southern Region 1992-1995

1995						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	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
						Gamma HCH	0.9	Pentatchlorophenol	1	Simazine	50
No pesticides exceeded 0.1µg/l in estuaries or coastal waters in 1995										Atrazine	13
										Azinphos methyl	0.5
										Parathion	0.5
										Gamma HCH	0.3

Table 15. Pesticides exceeding 0.1 µg/l in surface freshwaters in South West Region 1992-1995

1995						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	% of Sample >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
Isoproturon	176	0.02-0.04	26	18	0.58	Mecoprop	25	2,4 D	52	Mecoprop	18
Atrazine	558	0.03-0.04	28	3	0.07	Dicamba	13	Mecoprop	41	Atrazine	6
Tetrabutyl tin	50	0.04-0.06	2	2	0.04	MCPA	9	Atrazine	11	Ioxynil	6
Propachlor	71	0.04	1	1	0.02	Isoproturon	9	MCPA	8	Sulcofuron	5
Chlorpropham	74	0.04	1	1	0.01	Atrazine	6	Tecnazene	8	Propetamphos	2
Triphenyl tin	74	0.01-0.04	1	1	0.03	Atrazine Desethyl	4	Isoproturon	5	MCPA	2
Monobutyl tin	83	0.05-0.59	11	1	0.03	Monobutyl tin	3	Simazine	2	Isoproturon	2
Propetamphos	89	0.005-0.006	16	1	0.03	Atrazine Desisopropyl	3	Hexachlorobenzen	2	Flucofuron	1
Atrazine deisopropyl	329	0.08-0.14	2	0.9	0.008	PCSD/Eulan	2	PCSD/eulan	0.8	Simazine	0.7
Atrazine desethyl	318	0.02-0.05	53	0.6	0.06	Simazine	2	Propetamphos	0.7	Trifluralin	0.5
Chlorotoluron	176	0.02-0.04	2	0.6	0.004	Carbophenothion	1	Azinphos methyl	0.6	Chlorotoluron	0.3
Simazine	517	0.03-0.04	5	0.4	0.01	Pentachlorophenol	0.5	Diazinon	0.4	Gamma HCH	0.2
Gamma HCH	1063	0.005-0.009	39	0.1	0.01	Tributyl Tin	0.5	Chlorotoluron	0.3	Dieldrin	0.1
						Dieldrin	0.4	Pentachlorophenol	0.3		
						Propetamphos	0.4	Dieldrin	0.3		
						Trifluralin	0.3	Trifluralin	0.2		
						Fenitrothion	0.2	Gamma HCH	0.1		
						Dichlorvos	0.2	Flucofuron	0.1		
						Gamma HCH	0.2	Sulcofuron	0.1		

Table 16. Pesticides exceeding 0.1 µg/l in groundwaters in South West Region 1992-1995

1995						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	% of Sample >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
Atrazine	82	0.03	17	9	0.06	Atrazine desethyl	25	Atrazine	8	Dichlorvos	25
Atrazine desisopropyl	27	0.09	7	7	0.03	Isoproturon	21	Simazine	0.6	Atrazine	9
Isoproturon	65	0.02	12	5	0.06	Atrazine	12			Simazine	0.5
						Chlorotoluron	4				

Table 17. Pesticides exceeding 0.1 µg/l in estuaries and coastal waters in South West Region 1992-1995

1995						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	% of Sample >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
pp DDT	247	0.001-0.006	3	0.4	0.03	Monobutyl tin	20	Atrazine	18	Atrazine	11
ppTDE	255	0.001-0.006	2	0.4	0.002	Carbofenothion	16	PSCD/eulan	9	Simazine	3
op DDT	261	0.002-0.007	1	0.4	0.01	PCSD/Eulan	15	Hexachlorobenzen	5		
Gamma HCH	344	0.001-0.006	67	0.3	0.01	Tributyl tin	5	Pentachlorophenol	3		
						Atrazine Desisipropyl	5	Gamma HCH	1		
						Atrazine Desethyl	5	Dieldrin	0.1		
						Simazine	2				
						Dibutyl tin	1				
						Tetrabutyl tin	0.5				
						Pentachlorophenol	0.4				
						Hexachlorobenzene	0.1				
						A HCH	0.1				
						Gamma HCH	0.1				

Table 18. Pesticides exceeding 0.1 µg/l in surface freshwaters in Thames Region 1992-1995

1995						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	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
Diuron	374	0.02	85	49	1.30	Isopruturon	47	Diuron	54	Atrazine	49
Isoproturon	374	0.02	77	48	0.7	Diuron	44	Atrazine	34	Diuron	40
Simazine	371	0.02-0.15	58	15	0.2	Mecoprop	16	Chlorotoluron	26	Simazine	36
Mecoprop	373	0.02-0.1	67	14	0.27	Linuron	9	Simazine	20	Mecoprop	25
Linuron	370	0.02	24	12	0.13	Chlorotoluron	9	Linuron	15	MCPA	25
2,4 D	378	0.02-0.1	39	8	0.14	Simazine	8	Isoproturon	15	Chlorotoluron	16
Chlorotoluron	374	0.02	30	7	0.11	Atrazine	7	Pentachlorophenol	3	Isoproturon	10
Atrazine	377	0.02-0.15	58	7	0.11	2,4-D	6	Gamma HCH	1	Linuron	4
MCPA	359	0.02-0.1	21	4	0.06	MCPA	3	Permethrin	0.2	Pentachlorophenol	3
Carbendazim	29	0.1-0.9	3	3	0.05	Pentachlorophenol	2	Tecnazene	0.2	Gamma HCH	0.6
Dichlobenil	358	0.005-0.01	25	3	0.04	Trifluralin	0.5	Azinphos ethyl	0.5	Diazinon	0.5
Diazinon	377	0.02-0.1	4	2	0.02	Gamma HCH	0.4				
Bentazone	244	0.02-0.3	9	1	0.02	Dichlobenil	0.4				
Pentachlorophenol	375	0.02-1	0.8	0.8	0.005	Chlorfenvinphos	0.2				
Fluroxypyr	243	0.02-0.2	4	0.4	0.007	Diazinon	0.2				
Chlorfenvinphos	361	0.02-0.1	0.6	0.3	0.002						
Tecnazene	385	0.005-0.05	2	0.3	0.002						

Table 19. Pesticides exceeding 0.1 µg/l in groundwaters in Thames Region 1992-1995.

1995						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	% of Sample >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
Atrazine	120	0.03	28	8	0.09	Atrazine	13	Atrazine	15		
TCA	19	0.02	5	5	0.02	Mecoprop	6	Linuron	6	No groundwater monitoring was reported in 1992	
Linuron	117	0.02	12	3	0.07	Isoproturon	6	Diuron	5		
Diuron	120	0.02	19	3	0.04	Chlorotoluron	4	Isoproturon	4		
Chlorotoluron	120	0.02	15	2	0.07	Diuron	4	Chlorotoluron	3		
Isoproturon	120	0.02	23	2	0.05	2,4-D	2	Mecoprop	1		
Simazine	120	0.03	14	0.8	0.03	Linuron	2	Simazine	1		
Mecoprop	122	0.02-0.1	8	0.8	0.02	Dichlorprop	1				
MCPA	126	0.02-0.1	2	0.8	0.01	MCPB	1				
						MCPA	1				
						Simazine	0.8				

Table 20. Pesticides exceeding 0.1 µg/l in estuaries and coastal waters in Thames Region 1992-1995.

1995						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	% of Sample >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
Diuron	56	0.02	96	70	0.43	Isoproturon	67	Diuron	59	Simazine	56
Isoproturon	56	0.02	75	54	0.40	Diuron	61	Chlorotoluron	27	Atrazine	46
Mecoprop	57	0.02-0.1	75	21	0.32	Mecoprop	24	Atrazine	23	Chlorotoluron	39
MCPA	56	0.02-0.1	23	7	0.40	MCPA	11	Simazine	14	Diuron	36
Chlorotoluron	56	0.02	39	5	0.08	Linuron	4	Isoproturon	10	Pentachlorophenol	5
Linuron	52	0.02	15	4	0..04	Simazine	2	Linuron	4		
Atrazine	56	0.03-0.3	38	2	0.06	Chlorotoluron	1				
Simazine	56	0.03-0.3	50	2	0.08						

Table 21. Pesticides exceeding 0.1 µg/l in surface freshwaters in Welsh Region 1992-1995

1995						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	% of Sample >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l	Pesticide	% of Samples >0.1 µg/l
Mecoprop	1103	0.1	3	3	0.05	Mecoprop	2	MCPB	5	Atrazine	2
Isoproturon	1189	0.1	2	2	0.04	Simazine	0.7	Atrazine	4	Simazine	2
Diuron	987	0.1-0.25	2	2	0.02	Isoproturon	0.7	Mecoprop	3	Propetamphos	2
Pentachlorophenol	706	0.1	1	1	0.02	MCPA	0.7	MCPA	3	Chlorfenvinphos	1
Atrazine	2964	0.005-0.5	7	0.8	0.01	Pentachlorophenol	0.5	Simazine	2	Diazinon	1
Carbendazim	366	0.1	0.8	0.6	0.02	Diuron	0.4	Diuron	2	Pentachlorophenol	0.2
Chlorotoluron	786	0.1	0.8	0.5	0.004	Atrazine	0.3	Isoproturon	1		
MCPB	804	0.1	0.6	0.4	0.004	Chlorotoluron	0.3	Terbutryn	0.4		
Simazine	2964	0.005-0.1	4	0.3	0.08	Diazinon	0.3	Chlorotoluron	0.3		
Diazinon	693	0.005-0.01	5	0.3	0.003	Terbutryn	0.2	Diazinon	0.3		
Bentazone	594	0.1	0.5	0.2	0.006			Chlorfenvinphos	0.2		
Propetamphos	706	0.005-0.01	3	0.1	0.003			Linuron	0.2		
Gamma HCH	1401	0.005-0.01	1	0.07	0.001			Malathion	0.1		

Figure 12. Pesticides most frequently exceeding 0.1 µg/l in surface freshwaters in South West Region 1992-1995

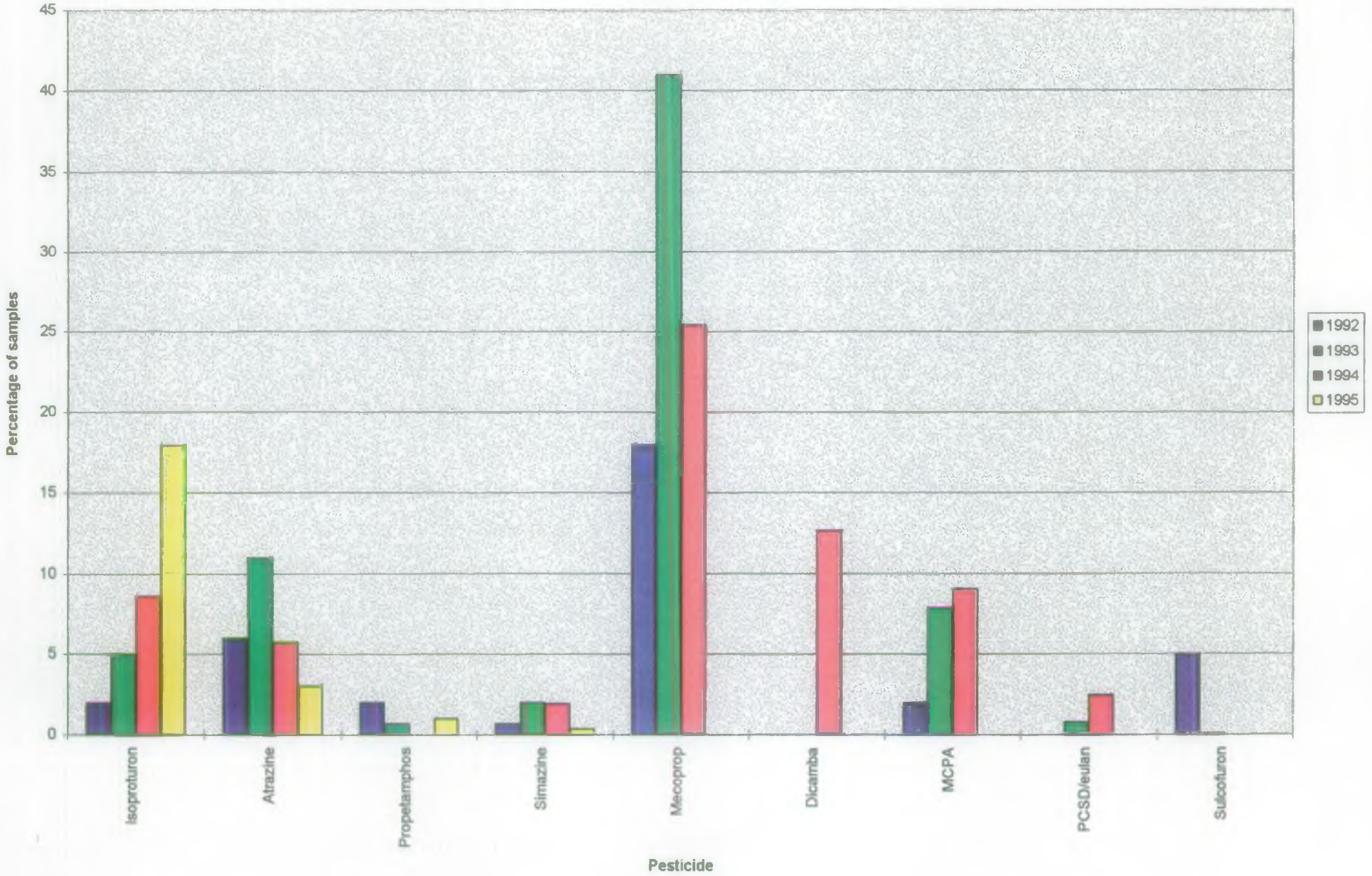

Figure 13. Pesticides most frequently exceeding 0.1 µg/l in surface freshwater in Thames Region 1992-1995

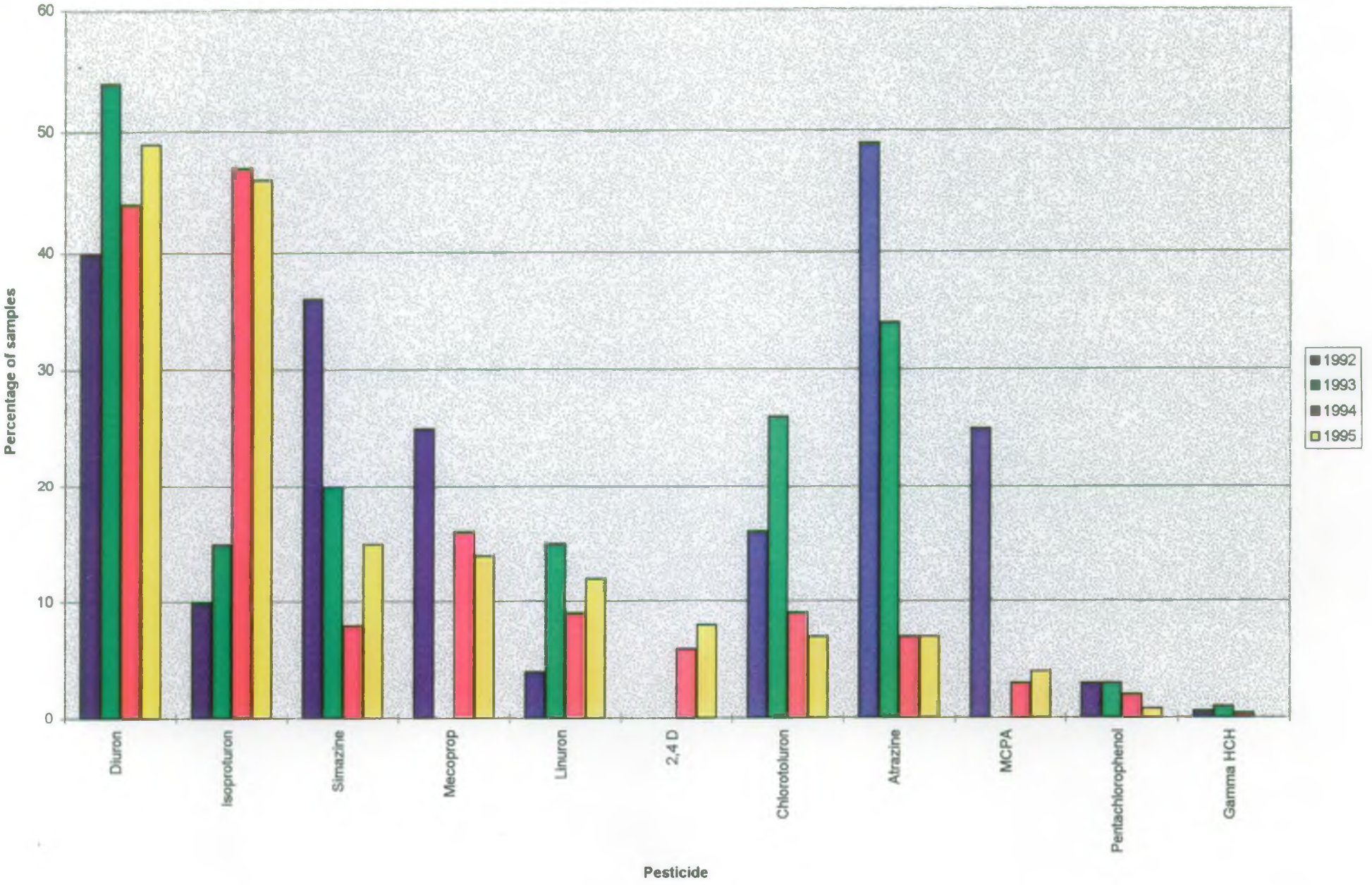

Figure 14. Pesticides most frequently exceeding 0.1 µg/l in surface freshwaters in Welsh Region 1992-1995