Pesticide poisoning of animals in 2007

Investigations of suspected incidents in the United Kingdom

A report of the Environmental Panel of the Advisory Committee on Pesticides

2007

Preface

I am pleased to introduce the pesticides poisoning of animals report for 2007. This report is based on information gathered under the long-running Wildlife Incident Investigation Scheme (WIIS).

WIIS monitors the unwanted effects on wildlife through misuse, abuse or approved use of pesticides. The scheme helps monitor the way pesticides are used and their effect. It allows us to assess how people use pesticides and how well they understand the laws relating to these chemicals and protecting wildlife. WIIS also helps us assess whether pesticides are behaving as predicted once released into the environment. So it shows how well the risk assessment and approval process is working.

The number of cases we investigated in 2007 was slightly lower than in previous years. But, the percentage of incidents where a cause was found has risen slightly compared to 2006. There were two approved-use incidents in 2007, the same number as the previous year.

WIIS is supported by a publicity campaign that provides advice on legal ways of controlling pests and reporting illegal poisoning. Members of the campaign team attended a series of agricultural and pest-control shows and events. The campaign also makes clear that those who deliberately abuse or misuse pesticides in a way which could harm birds, mammals and bees will be prosecuted.

I am grateful for the dedicated work of everyone involved in running this important programme. They give me regular updates throughout the year and are always ready to provide more information when necessary.

L. Melthy

Professor Lorraine Maltby Chair of the Environmental Panel of the Advisory Committee on Pesticides

Summary	4 - 7
Enforcement action	7
Campaign Against Illegal Poisoning of Animals (CAIP)	8
More specific detail for each category of the scheme	10 - 15
Species, samples and the pesticides involved	15 – 20
Interpretation of the significance of residues detected	21
Conclusions from the report	22 - 24
Acknowledgements	24
Tables	25 - 36
Appendix 1 – Incidents caused by approved use of pesticides	37
Appendix 2 – Incidents caused by misuse of pesticides	38 – 41
Appendix 3 – Incidents caused by abuse of pesticides	42 – 54
Appendix 4 – Incidents caused by unspecified use or veterinary use of pesticides and other incidents where pesticides were found	55 – 64

Summary

The Wildlife Incident Investigation Scheme investigates deaths of animals and wildlife (including pets, working dogs, some livestock and bees) in the UK if there is evidence to suggest that they may have been poisoned or put at risk by pesticides. The scheme provides a unique way of monitoring pesticide use. It can be used to measure the success of, and refine, the pesticide-approval processes run by the Pesticides Safety Directorate (PSD) and the Health and Safety Executive (HSE). Evidence from the scheme is also used to enforce laws on the safe use of pesticides, as well as relating to the environment and animals.

In 2007, 354 suspected poisoning incidents were investigated under the scheme. 294 of these involved vertebrates (animals with a backbone or spinal column), 19 involved bees, and in 49 cases suspicious materials or substances were found, but no dead animals. In many cases, animal deaths were found to be the result of causes unrelated to pesticides (for example, disease, starvation, injury and other poisonings). The cause of death was found in 189 incidents, of which 124 (35% of all incidents reported) were pesticide poisoning. In the remaining incidents, there was either too little information, not enough suitable tissues for analysis, or no pesticide residues found. All of this information is shown in table 1 on page 24.



Figure1: causes of all incidents in the UK involving pesticides in 2007

All pesticide incidents reported under the scheme are classed as being in one of the following four categories – approved use, misuse, abuse and unspecified use.

- **Approved use** the product has been used according to the conditions of its approval. In 2007, there were two incidents resulting from approved use. This is equal to 1.6% of all confirmed poisonings. Appendix 1 contains details of these incidents and any follow-up action taken.
- **Misuse** the product has not been used according to the conditions of its approval, but often just carelessly, without the intention of harming animals. In 2007, there were 21 incidents resulting from misuse. This is equal to 17% of all confirmed poisonings. None of these incidents involved bees. Appendix 2 contains details of these incidents and any follow-up action taken.
- **Abuse** a pesticide has been deliberately and illegally used to poison, or to try to poison, animals. In 2007, there were 75 incidents resulting from abuse. This is equal to 61% of all confirmed poisonings. None of these incidents involved bees. Appendix 3 contains details of these incidents and any follow-up action taken.
- **Unspecified use** the source of the pesticide is uncertain, or the incident could not be classed as being in one of the other categories. In 2007, there were 22 incidents resulting from unspecified use. This is equal to 18% of all confirmed poisonings. Two incidents involved bees. These incidents were put down to unspecified use as there was not enough information available to identify the source of the poisoning, or the other categories (approved use, misuse or abuse) did not apply. Appendix 4 contains details of these incidents and any follow-up action taken.

There is also a 'veterinary use' category if veterinary products have been involved in incidents. Veterinary-use incidents may arise from abuse, misuse, approved use or unspecified use of veterinary products. These incidents are not formally included in the scheme. In 2007, there were three incidents resulting from veterinary use. This is equal to 2.5% of all confirmed poisonings. Details of these incidents are in appendix 4. If a veterinary medicine is suspected of being involved, it should be reported to the Veterinary Medicines Directorate (phone: 01932 338427).

In 2007, out of 19 suspected poisoning of honeybees reported under the scheme, there were two incidents of honeybees being poisoned by pesticides (see table 17 on page 33 and incidents 2 and 5 in appendix 4).

All incidents where pesticides are thought to be involved are thoroughly investigated. If there is evidence of misuse or abuse of a pesticide, this may result in legal action. Approved use or misuse incidents may highlight issues (such as the conditions of approval or the instructions for use) which need attention. In 2007, there were no approved or misuse incidents which indicated any need to amend any conditions of approval. All aspects of advertising, selling, supplying, storing and using pesticides are regulated by a number of environmental protection and pesticide laws. If incidents show that these or any other laws (such as the Wildlife and Countryside Act 1981, the Wildlife (Northern Ireland) Order 1985, the Protection of Animals Act 1911 or the Welfare of Animals Act (Northern Ireland) 1972) have been broken, a prosecution or other legal action may follow.

Detailed findings are included in appendices 1, 2, 3 and 4.

Enforcement action

Government departments are committed to using all enforcement methods available to help stamp out illegal poisoning. If the information collected on an incident indicates that pesticide laws may have been broken, a range of regulatory action is considered.

If there seems to be enough evidence of illegal activity, cases are referred to be investigated and court action may be taken. Any fines and costs that have to be paid, together with the publicity such cases attract, encourage others to use pesticides safely.

Even if there is not enough evidence for a formal investigation or prosecution, other action (for example, using enforcement notices or sending out warning letters) may be taken. Also, it may sometimes be appropriate to refer an incident to another authority, such as the police. In these circumstances, Defra will offer help and advice to that authority.

In 2007, enforcement action was considered for 61 incidents. A variety of regulatory action was taken in a number of cases. A lot of this action involved helping the police by producing witness statements, giving advice on matters relating to pesticides and providing information on the approval of products. Five incidents were referred to Defra's Investigation Services (DIS) and another 14 are still being investigated.

Positive enforcement action continues to be a priority to tackle pesticide abuse.

- Incidents resulting from approved use Scottish Government Rural Payment and Inspections Directorate (SGRPID) investigated the two approved use cases. No enforcement action is taken in such cases.
- Incidents resulting from misuse enforcement action was taken for 17 cases. The police have prosecuted the person responsible in one case, after PSD had issued an enforcement notice, and issued a caution in another case. We have sent eight letters to farmers and householders giving advice on the correct way to store and use pesticides. Three cases are still being investigated by Defra's Investigation Services, two of which PSD issued enforcement notices for. We referred one case to Trading Standards.
- Incidents resulting from abuse 34 cases were taken forward for enforcement action. Of these, nine were investigated by the police, and they have prosecuted the people responsible in two cases. In one case, no more action was taken and four are still being investigated. In one of these cases PSD issued two enforcement notices and in another PSD issued one enforcement notice. Two other cases were investigated by the police but no action was taken. Three cases were investigated by Defra's Investigation Services, and two of these are closed because there was not enough proof, and one is still being investigated. The RSPCA investigated three incidents, and in one case they prosecuted the person responsible. One case is still being investigated. Three cases in Scotland were investigated by SGRPID and 16 by both the police and SGRPID. The Pesticides Safety Directorate sent a letter to a householder giving advice on the correct way to store and use pesticides. Eleven cases are still being investigated.

Campaign Against Illegal Poisoning of Animals

The Wildlife Incident Investigation Scheme is supported by the Campaign Against Illegal Poisoning of Animals. The campaign's work is funded and lead by PSD, working with other interested organisations including the RSPCA, RSPB, Natural England, the Countryside Alliance, the Game Conservancy Trust (which became the Game and Wildlife Conservation Trust in October 2007) and the Country Land and Business Association.

The campaign aims to promote responsible use of pesticides by:

- giving farmers, gamekeepers and other land managers advice on legal ways of controlling pests; and
- telling the public how to report illegal poisoning.

The campaign has a freephone line (0800 321600) for the public to report incidents.

You can get more information on the work of the campaign off its website at <u>www.caip-uk.info/</u>.



Figure 2: percentages of reported incidents in 2007 by cause of incident

More specific detail for each category of the scheme:

More detailed information about the results in 2007 is given in the tables on pages 24 to 35. There is also information about incidents involving baits and suspicious pesticide samples.

Approved use incidents

Information on incidents suspected to have resulted from approved use is very important, and is fed into the process of regulating pesticide use (see the <u>list of major publications</u> produced since 1976, reference 11). Where there are significant concerns about the approved use of a pesticide, we will consider what action could be taken to prevent further incidents. The approval holder of the pesticide product involved is always contacted so they can provide comments. Farmers, growers and members of the public are strongly encouraged to report any poisoning which may have resulted from the approved use of a pesticide to Natural England (NE) or by calling Freephone 0800 321600. During 2007, there were two incidents arising from approved use reported under the scheme. These incidents did not indicate any need to look again at any conditions of approval.

- A buzzard was found dead in an area where a rodent control operation is being carried out using Neosorexa. A significant residue of difenacoum was found in liver tissue from the bird.
- A dog became ill after eating slug pellets that the dog's owner had put on her flower beds. The dog recovered after receiving treatment from a vet

Extra information on all the incidents reported in this part is given in appendix 1.

Misuse incidents

There was a number of incidents arising from the misuse of pesticides. These often result from spillages, products not being used or stored in the approved way, or pesticides being disposed of in an inappropriate way (see the <u>list of major scheme</u> <u>publications</u> produced since 1976, reference 3). The pesticides found in these incidents are mainly rodenticides (products to kill some rodents, such as rats) and molluscicides (products to kill slugs and snails). In 2007, there were 21 misuse incidents and eight different compounds were involved. In 2006, there were 22 misuse incidents and 12 different compounds were involved.

There were three misuse incidents that involved metaldehyde slug pellets only.

- In two incidents, (appendix 2, numbers 18 and 20) dogs were poisoned (one of these incidents was associated with a container being left in a garden and the other was the result of a spillage left in a field). Wild animals, such as badgers and foxes, are likely to eat slug pellets and so are at risk when spillages are left in an area. The fact that they are likely to remain out of sight once affected means that they are less likely than dogs to be found and reported to the scheme.
- In one incident (number 19), a contractor did not bury or remove a spillage. There were no casualties.

Fifteen incidents involved anticoagulant rodenticides (poison that prevents blood from clotting).

- One incident (number 2), involved brodifacoum only. A dog recovered but two rats died. Sachets of the rodenticide were also found.
- There were six incidents (numbers 3 to 8) involving bromadiolone only. In one, only a cat was found. In two, both involving rodenticide bait, only a dog was found. One incident involved two dogs that recovered after eating rodenticide baits. In another, a fox was poisoned. In the other, blue-green blocks were seen along a roadside, and dead rats were found.
- Two incidents (numbers 9 and 10) involved both bromadiolone and difenacoum. One involved a dog that recovered, and in the other a dog died and a grain sample containing rodenticide was found.
- Three incidents (numbers 12 to 14) involved difenacoum only. One involved grain, one involved a dog and a rodenticide formulation and the other involved three cats and two samples of grain.
- One incident involved both difenacoum and bromadiolone (number 15). A bait and various samples were found.
- In another case (number 16), difenacoum, brodifacoum and bromadiolone were found in a sample of blue grain.
- In the other incident (number 21), two dead badgers were found near and in the entrance to a badger sett. There were two spillages of slug pellets. Metaldehyde, bromadiolone and difenacoum were all found and contributed to the deaths.

There was one incident involving alphachloralose (appendix 2, number 1), which is not approved in the UK.

In one incident (appendix 2, number 11) samples of carbofuran and sodium cyanide were found. Neither is now approved in the UK.

There was one incident involving flocoumafen (number 17), bait blocks were placed in outside bait stations and there was no record made of the use of the product.

Abuse incidents

As in previous years, a large number of incidents involved the deliberate abuse of pesticides. During 2007, 66 incidents were the result of abuse. There were 67 abuse incidents reported in 2006.

The abuse incidents involved 17 different chemicals, the same as in 2006. Just over half of the abuse incidents involved carbamate compounds, mostly carbofuran. Another compound often associated with abuse incidents was alphachloralose. The number of incidents involving these compounds was as follows.

- Carbofuran 36 (48%) in 2007, 36 (54%) in 2006.
- Aldicarb 4 (5%) in 2007, 9 (13%) in 2006.
- Alphachloralose 10 (13%) in 2007, 13 (19%) in 2006.

The incidents were as follows.

- In 2007, birds of prey were most often involved in the carbofuran incidents (see appendix 3, numbers 18 to 26, 31, 35 to 37, 40 to 46, and 48 to 53) and in many of these incidents, the baits used were also found.
- Only baits were found in thirteen incidents (numbers 13, 16, 17, 33, 38, 56, 60 to 62, 65, 68, 71 and 73). There were also 20 incidents with pets, working animals and domestic animals (numbers 1 to 4, 9, 27 to 30, 32, 47, 54, 58, 63, 64, 66, 67, 70, 74 and 75) and six incidents with corvid species (numbers 26, 31, 39, 46, 52 and 72).
- The 10 incidents involving alphachloralose (numbers 5 to 14) related to birds of prey, sea birds, pets, working animals and domestic animals and baits.
- Twelve of the abuse incidents involved more than one chemical (numbers 4, 14, 15, 47 to 53, 58 and 72).

Forty-one incidents involved the abuse of carbamate compounds.

- Aldicarb was found in four incidents (appendix 3, numbers 1 to 4), which involved cats, dogs and a rabbit bait.
- Thirty-six incidents (numbers 18 to 53) involved carbofuran, with birds of prey being targeted in the majority of incidents, along with corvids, cats, dogs, a knife, baits and chemicals.
- In one incident (number 70), bait laced with methiocarb was found, and the casualties were two dogs.

The abuse of organophosphate compounds is still reported and there were six incidents during 2007.

- Isofenphos was found in three incidents (appendix 3, numbers 48 to 50). All three involved a red kite.
- In one incident, involving malathion (number 59), a peregrine falcon was found dead beside a dead pigeon.
- Two incidents involved mevinphos. In one it was found on a hare carcase (number 71) and in the other (number 72), two red kites, a crow and a suspected rabbit bait were found.

In 2007, anticoagulant rodenticides accounted for 12 abuse incidents, compared to just three in 2006.

- One incident (appendix 3, number 14) involved both bromadiolone and difenacoum (along with alphachloralose), and a buzzard.
- In one incident (number 15) a grain sample was found which contained brodifacoum, bromadiolone and difenacoum.
- In two incidents (numbers 16 and 17) only bromadiolone was involved. One involved a grain sample and in the other, peppers were laced with blue-coloured grain.
- In one incident (number 47), bromadiolone (along with carbofuran) caused the death of two dogs.
- In another incident (number 52), both brodifacoum and difenacoum (along with carbofuran) were found. The carbofuran was the likely cause of death of two ravens and a buzzard.

- Both bromadiolone and difenacoum (along with carbofuran) were found in another incident (number 53), in which two buzzards died.
- Three incidents involved difenacoum only. In one (number 54), a dog recovered after eating something from a bowl in a neighbour's garden. In one (number 55), a pheasant died. In the other (number 56), grain was found, which was suspected to have been left as a bait.
- In another incident (number 58) involving difenacoum (along with endrin) two dogs and a buzzard died. The endrin was the most likely cause of death.
- One incident (numbers 72) involved both bromadiolone and difenacoum (along with mevinphos). Two red kites, a crow and a suspected rabbit bait were found.

There were various other chemicals found in the abuse incidents.

- A sample of diquat was found in one incident (appendix 3, number 57).
- There were 11 incidents associated with the abuse of metaldehyde. One (involving aldicarb also) (number 4) resulted in the death of a cat. Six (numbers 60 to 62, 65, 68 and 69) involved baits or samples only. Two involved cats (numbers 63 and 64) and two involved dogs (numbers 66 and 67).
- One incident (number 73) involved naphthalene. Mothballs had been left in a badger sett.
- One incident involved the abuse of the herbicide paraquat (number 74). This resulted in a dog being put down.
- The remaining incident (number 75) involved strychnine. Two dogs became ill, one of which later died.

Incidents caused by unspecified use, or veterinary use of pesticides, and other incidents where pesticides were found

There is always a number of incidents where the source of the pesticide is not known, despite detailed investigations. This may occur when animals travel some distance from where they were exposed to the pesticide, which is possible with incidents involving anticoagulant rodenticides. In 2007, there were 23 incidents of unspecified-use (two involving bees), and 10 different chemicals were found. In 2006 there were 19 unspecified-use incidents, with one involving bees, and 11 chemicals were found.

Two unspecified-use incidents involved metaldehyde in 2007 (appendix 4, numbers 22 and 23; this compares to none in 2006.

Two of the unspecified-use incidents (appendix 4, numbers 16 and 17) involved an organophosphate (OP) compound in 2007. Chlorpyrifos caused the death of red kites in both cases. This compares to one incident with OPs in 2006.

Anticoagulant-rodenticide incidents

Incidents where exposure to anticoagulant rodenticides causes the deaths of animals are of increasing concern, particularly where red kites are killed. Anticoagulant rodenticides take some time to poison animals (the onset of symptoms is delayed to prevent target rodents from being put off bait). So, it can be difficult to identify all the sources of anticoagulant rodenticide, particularly as the species involved may hunt over a large area. Birds of prey are exposed to anticoagulant rodenticides through secondary poisoning (by eating poisoned animals), and this emphasises the need for thorough searches for carcases after bait has been left. However, it is not only the carcases of targeted rodents that may be eaten by other animals. It is also likely, particularly where baits are in use for a long time and are not placed in appropriate positions, that other small mammals and birds could be poisoned and so have the potential to contaminate other animals. There have been some training initiatives undertaken by Ministry of Agriculture, Fisheries and Food (MAFF) (now Defra), and English Nature (now Natural England) has produced advice leaflets to highlight the risks to red kites. English Nature and the Royal Society for the Protection of Birds (RSPB) produced a leaflet 'Rat poison and the threat to birds of prey', which was issued in 2003. The RSPB also produced a leaflet for Scotland, in partnership with Scottish Natural Heritage, Scottish Executive and Partnership for Action Against Wildlife Crime. Key companies involved in making and marketing rodenticides have also launched a Campaign for Responsible Rodenticide Use. Details are available at <u>www.thinkwildlife.org.uk</u>.

During 2007, there were 17 unspecified-use incidents that involved one or more anticoagulant rodenticides – eight incidents in England and nine incidents in Scotland. In 2006, there were 15 incidents – seven incidents in England and eight incidents in Scotland. Five of the incidents in 2007 involved birds of prey and most of the remaining incidents involved mammals.

- Difenacoum (along with aldicarb) was found in one incident (appendix 4, number 1) in which a marsh harrier died.
- Bromadiolone (along with bendiocarb) was found in one incident (number 3), in which 20 free-range ducks died.
- One incident (number 4) in which a red kite died involved brodifacoum and bromadiolone (along with bendiocarb).
- In one incident (number 6) involving brodifacoum only a dog died.
- Three incidents involved both brodifacoum and difenacoum. One (number 7) involved a badger sett. One (number 19) involved the death of a tawny owl and a barn owl. In the other (number 20), a red kite died.
- Three incidents involved bromadiolone only. In one (number 8) a dog died. In another (number 9) a number of feral and racing pigeons died. In the other (number 10) a fox died.
- In one incident (number 11), in which a fox died, bromadiolone and brodifacoum were found.
- In another incident (number 12), bromadiolone and coumatetralyl were found in a dog.
- In three incidents (numbers 13, 14 and 21), both bromadiolone and difenacoum were found. Two involved red kites and the other involved a buzzard.
- Chlorophacinone only was found in one incident (number 15) involving the death of a ferret.
- One incident in which a red kite died involved difenacoum only (number 18).

Although rodent-control treatments were known of in areas surrounding some of these incidents, they did not always account for the range of residues found in the victims. So, not all the sources of anticoagulant rodenticide in the relevant areas were identified.

There were six unspecified-use incidents that involved other pesticides (not including where another pesticide is referred to in the cases above).

- In one incident (appendix 4, number 2), bendiocarb was found in a sample of honey bees.
- In another (number 5), wild bees were affected by bendiocarb and dieldrin.

- In two incidents (numbers 16 and 17), chlorpyrifos caused the deaths of red kites.
- The remaining two incidents involved metaldehyde (numbers 22 and 23). In one, a badger recovered. In the other, green pellets were found.

'Sub-lethal exposure' to anticoagulant rodenticide

During 2007, birds of prey and some other species were screened for anticoagulant rodenticides, even when death was from another cause. We have summarised the results of this work here to show the range of species affected and which anticoagulant rodenticides are most often found. In all these incidents, the rodenticide is not considered to be the cause of death of the animal, so it is classified as 'sub-lethal exposure'. These incidents are all included in appendix 4 to this report and are mentioned in the sections for each species involved.

In 2007, there were 37 cases of sub-lethal exposure. Five were in England (appendix 4, numbers 30, 54, 55, 62 and 63), two were in Wales (appendix 4, numbers 28 and 56) and 30 were in Scotland (appendix 4, numbers 27, 29, 31 to 53, 57 to 61 and 64).

In 2006, there were 34 incidents of sub-lethal exposure. Seven were in England, eight were in Wales and 19 were in Scotland.

Species, samples and the pesticides involved:

Wildlife: Mammals

In 2007, there were 29 incidents involving wild mammals and the cause of death was found in 18 of these incidents, with eight confirmed as pesticide poisoning (see table 5 on page 27). Table 6 on page 27 shows the number and percentage of pesticide poisonings for the past 10 years.

Badger

The scheme investigated eight incidents involving badgers and the cause of death was found in four of these, two of which were confirmed pesticide poisoning.

Badger setts were involved in four incidents, three of abuse and one unspecified-use.

- In one abuse incident (appendix 3, number 60), blue pellets were found at entrances to a badger sett. Tests showed residues of metaldehyde.
- In another abuse incident (appendix 3, number 61), potatoes had been laced with metaldehyde and left at a badger sett.
- In the other abuse incident (appendix 3, number 73), mothballs containing naphthalene had been left at a badger sett.
- In the unspecified-use incident (appendix 4, number 7), blue grains were found in a badgers' latrine. Tests confirmed residues of brodifacoum and difenacoum.

Fox

Foxes are considered to be a pest species and so they are often the target of illegal poisoning. Table 7 on page 28 shows the number and percentage of pesticide poisonings for the past 10 years.

In 2007, five incidents with foxes were investigated. The cause of death was found in three of these incidents, all of which were confirmed as pesticide poisoning. One of the pesticide poisonings was misuse and two were unspecified-use.

- In the misuse incident (appendix 2, number 7), a bromadiolone residue was found in a dead male fox. It is likely that rodenticide poisoning was the cause of its death.
- In one of the unspecified-use incidents (appendix 4, number 10), a residue of bromadiolone was confirmed in liver tissue taken from a fox found dead on farmland.
- In the other unspecified-use incident (number 11), a fox was found in a snare in a forestry plantation. Residues of bromadiolone and brodifacoum were confirmed in its liver tissue.

Other wild mammals

The other wild mammals reported to the scheme in 2007 are shown in table 5 on page 27. The cause of death was found in 16 of these incidents, and three were confirmed as pesticide poisoning.

- The misuse of brodifacoum occurred in a misuse incident (appendix 2, number 2) where two rats were found near to where a dog had found sachets of rodenticide. Tests showed brodifacoum in the liver of both rats and in the stomach of one. This is likely to be the cause of death.
- One incident involving bromadiolone was also misuse (appendix 2, number 8), where the several rats were found on a roadside. Tests on seven of the rats confirmed bromadiolone in the livers.
- One unspecified incident (appendix 4, number 15) involved a ferret with a residue of chlorophacinone. This incident is still being investigated.

Wildlife: Birds

A total of 184 incidents involving wild birds were investigated in 2007, and the cause of death was found in 104 of these incidents, with 55 identified as pesticide poisonings (see table 8 on pages 29 to 30). Table 9 on page 30 shows the number and percentage of pesticide poisonings for the past 10 years.

Birds of prey (including owls)

Birds of prey were involved in 145 incidents in 2007 (see table 8 on pages 29 to 30) and 48 were identified as pesticide poisonings. Table 10 on page 30 shows the number and percentage of pesticide poisonings for the past 10 years.

Common buzzard

In 2007, there were 65 reported incidents involving common buzzards. In 42 of the incidents, the cause of death was found, and 20 of these were recorded as pesticide poisoning.

One approved-use case (appendix 1, number 1) involved difenacoum. Deliberate abuse of pesticides accounted for 18 incidents (appendix 3). The chemicals involved were alphachloralose (four incidents), alphachloralose, bromadiolone and difenacoum (one

incident), carbofuran (10 incidents), carbofuran, brodifacoum and difenacoum (one incident), carbofuran, bromadiolone and difenacoum (one incident) and endrin and difenacoum (one incident). The remaining pesticide incident was associated with the unspecified-use of difenacoum and bromadiolone (appendix 4, number 21).

Red kite

In 2007, there were 35 reported incidents with red kites, some of which were birds from the programme to reintroduce red kites to the UK. The cause of death was identified in 24 incidents, with 21 being caused by pesticide poisoning.

- There were 11 incidents arising from pesticide abuse (appendix 3), which involved the chemicals carbofuran (seven incidents, numbers 40 to 46), carbofuran and isofenphos (three incidents, numbers 48 to 50) and mevinphos, bromadiolone and difenacoum (one incident, number 72).
- There were three incidents where a veterinary product (diazinon) was involved (appendix 4, numbers 24 to 26).
- The other seven incidents were all classed as unspecified-use (appendix 4, numbers 4, 13, 14, 16 to 18 and 20).

Golden eagle

One incident involving a golden eagle was reported in 2007. The abuse of carbofuran and sodium cyanide occurred in this incident (appendix 3, number 51).

Peregrine falcon

Nine incidents involving peregrine falcons were reported under the scheme during 2007. The cause of death was found in five incidents, and all of these incidents were the result of pesticide abuse. One involved alphachloralose (appendix 3, number 12), three involved carbofuran (numbers 35 to 37) and one involved malathion (number 59).

Other birds of prey

Other birds of prey were reported as possible pesticide poisoning victims. These included four sea eagles, one goshawk, one marsh harrier, one kestrel, two ospreys and 10 sparrowhawks. The cause of death was found in the one of the sea eagles, the goshawk, the marsh harrier and three of the sparrowhawks. Only one of the marsh harrier deaths was attributed to pesticide poisoning, involving the chemicals aldicarb and difenacoum (appendix 4, number 1).

Owls

In 2007, there were 16 incidents involving owls. Ten incidents involved barn owls, two involved little owls and five involved tawny owls. The cause of death of the birds was identified in 10 of the incidents, and one (appendix 4, number 19) was confirmed as pesticide poisoning.

• A tawny owl and a barn owl died. Tests confirmed residues of brodifacoum in the liver of both birds, and a small amount of difenacoum in the barn owl.

Corvids

In 2007, there were 21 incidents involving corvids (for example, crows, ravens magpies, jackdaws and rooks) and four of them were confirmed as pesticide poisoning. Table 11 on page 31 shows the number and percentage of pesticide poisonings for the past 10 years.

- Carbofuran was found in three abuse incidents, and in one case, brodifacoum and difenacoum were also found.
- In one case, mevinphos, bromadiolone and difenacoum were all found.
- There was an abuse incident where two crows and a magpie (all of which are corvids) were killed, involving the chemical carbofuran (appendix 3, number 31).

Other birds

In 2007, there were 22 incidents investigated with other bird species (see table 8 on pages 29 to 30 for details). However, only five of these incidents were attributed to pesticide poisoning.

- Two abuse incidents (appendix 3, numbers 53 and 55) involved pheasants. One involved the pesticides carbofuran, bromadiolone, difenacoum, and the other involved difenacoum only.
- Two abuse incidents (numbers 10 and 11) involved gulls. In one, a herring gull was found to contain a residue of alphachloralose. The other involved a lesser black-backed gull and alphachloralose.
- One unspecified-use incident (appendix 4, number 9) involved four feral and racing pigeons and bromadiolone.

Pets, Working Animals and Domestic Animals

In 2007, there were 84 incidents involving pets, working animals and domestic animals. The cause of death was found in 43 incidents, and 36 of these incidents were pesticide poisoning. Table 12 on page 31 shows the number and percentage of pesticide poisonings for the past 10 years.

Cats

In 2007, there were 16 incidents with cats, the cause of death was found in 12 incidents, and 10 of these incidents involved pesticides. Table 14 on page 32 shows the number and percentage of pesticide poisonings for the past 10 years. Pesticide abuse accounted for eight of the incidents (appendix 3, numbers 2, 4, 27 to 30, 63 and 64) and pesticide misuse for two incidents (appendix 2, numbers 3 and 14).

Dogs

In 2007 the scheme investigated 52 incidents with dogs. The cause of death was found in 27 incidents and 25 of these incidents were confirmed as pesticide poisoning. Table 15 on page 32 shows the number and percentage of pesticide poisonings for the past 10 years.

One incident (appendix 1, number 2) resulted from the approved use of metaldehyde. A dog recovered after eating slug pellets that the dog's owner had put on her flower beds.

The misuse of pesticides occurred in nine incidents (appendix 2, numbers 2, 4 to 6, 9, 10, 13, 18 and 20), involving a range of compounds.

The abuse of pesticides accounted for 12 incidents (appendix 3, numbers 1, 3, 9, 32, 47, 54, 58, 66, 67, 70, 74 and 75) and these incidents involved a range of compounds.

There were three incidents (appendix 4, numbers 6, 8 and 12) where the source of the pesticides was not known.

Livestock

Livestock is not normally covered by the scheme, but they may be accepted if there are other environmental samples associated with the incident. There were six incidents reported (see table 12 on page 31 for details). The cause of death was found in one incident, which was pesticide poisoning.

• In an unspecified-use incident (appendix 4, number 3), around 20 free-range ducks died. Both bendiocarb and bromadiolone were found.

Others

There were eight incidents with other animals in this category (see table 12 on page 31 for details). The cause of death was found in two incidents, and none were due to pesticide poisoning.

Honeybees

In 2007, there were 19 suspected poisonings of beneficial insects (see table 16, on page 32), with 17 incidents reported in England and two reported in Scotland. There were two incidents of pesticide poisoning, both unspecified-use and both in England. One involved bendiocarb (appendix 4, number 2). The other involved wild bees and both bendiocarb and dieldrin (appendix 4, number 5).

- Dead bees were found outside a hive and none of the other bees were flying. Two days later more dead bees were found outside. Tests showed a residue of bendiocarb in one of the bee samples. We do not know where the pesticide came from.
- Dead bees were found in a living room after flying down the chimney. Tests found a residue of bendiocarb and a smaller residue of dieldrin. It is not certain where these bees were exposed to these pesticides.

For the incidents investigated and the percentage of pesticide poisonings for the past 10 years, see table 17 on page 33. For reviews and articles on bee poisoning incidents see the list of <u>major scheme publications produced since 1976</u>, references 1, 2, 10, 12, 19, 21, 24, 29, 35 and 36.

No pyrethroid spray applications were confirmed as the source for bee poisoning incidents in 2007.

Suspected Poisoned Baits and Suspicious Samples

Each year a number of suspected baits and suspicious samples are investigated, even though no dead animals have been found. There were 46 such incidents in 2007 and pesticides were found in 25 (54%) of these. Table 19 on page 33 shows the number of possible baits and suspicious samples analysed, and the percentage in which pesticides were found, for the past 10 years. There were 16 incidents of abuse and seven incidents of misuse. Some of the baits were indiscriminate attempts to control pests. Badger setts (see also the section on badgers) were involved in some of these incidents.

A badger sett was involved in an abuse incident (appendix 3, number 60). A field walker saw some blue pellets in a badger sett. The badger sett had five entrances and all but one had blue pellets in. Although no badgers were found and there were no recent latrines with blue-coloured faeces found during a field inspection, one badger was reported to have been in distress the day after the pellets had appeared. Tests showed residues of metaldehyde.

In another abuse incident (appendix 3, number 61) potatoes laced with metaldehyde were found near a badger sett.

In an unspecified-use incident (appendix 4, number 7), it was suspected that a badger sett was being blocked and gassed. It looked like a tunnel had collapsed, and there were blue grains in the badgers' latrine. There were no casualties found. Tests on faeces confirmed residues of difenacoum and a small amount of brodifacoum.

A range of chemicals was found in these incidents.

Pesticides

The chemicals found in the incidents attributed to a pesticide in 2007 are listed in table 4 on page 26. Details of these incidents are also given in the appendices 1 to 4. The pesticides involved in the incidents affecting bees can also be found in table 4 on page 26 and in appendix 4 (numbers 2, 5 and 65).

In 2007, 27 different chemicals were thought to be involved in incidents compared with 40 in 2006. There were 18 different chemicals from England (37 in 2006), 17 from Scotland (15 in 2006), six from Wales (three in 2006) and four from Northern Ireland (three in 2006). Table 20 on page 33 shows the number of different pesticides involved in all incidents (except incidents relating to beneficial insects) for the past 10 years.

Other Causes of Death

There were 65 incidents where the cause of death of vertebrates was caused by something other than pesticide poisoning. This represents 18% of these incidents. In 2006, there were 72 incidents (18.5% of all incidents). The bodies of animals that die from disease, starvation or trauma are not usually sent for analysis. However, it is possible that a sub-lethal dose of a pesticide contributed to their death. It is not possible for the scheme to monitor the effects of these doses, but if pesticides are strongly suspected in an incident, tissues may be sent for analysis.

Interpretation of the significance of the residues detected

Interpretation of the significance of residues detected in animals can be challenging. A pesticide acquired by an animal (usually by ingestion, but possibly via dermal exposure) is metabolised by that animal and the pesticide and its metabolites are distributed around the animal's tissues. Information on the toxicity of a pesticide may be a useful indicator of the potential to cause poisoning. However, toxicity information is of limited value in interpreting individual cases as it is often not available for the species concerned. In addition, analyses are usually conducted on selected organs and do not include metabolites so the residue detected is not an estimate of total body burden of the pesticide and its metabolites. Hence it is generally not possible to use toxicity information in a quantitative manner e.g. by comparing residue concentrations detected in organs to LD₅₀ values, which are based on the whole body weight.

Instead, interpretation of the significance of residues is based on years of accumulated data acquired by WIIS on residues detected in poisoned animals, supplemented by similar data from published sources (see the list of <u>major scheme publications produced</u> <u>since 1976</u>, references 21 and 28). This allows for the use of threshold values, above which residue levels are probably indicative of lethal poisoning.

Indicative threshold values for pesticides commonly detected in poisoned animals

- For rapidly acting poisons such as organophosphate and carbamate pesticides, any confirmed residue in the stomach/gizzard/crop content may indicate lethal poisoning if no alternative cause of death is apparent;
- For alphachloralose, tissue residues of >10mg/kg in kidneys of fresh birds, or >1mg/kg in autolysed birds;
- For strychnine, residues of >10 mg/kg in stomach content and/or >1 mg/kg in liver;
- For metaldehyde, residues of >100mg/kg in stomach contents; and
- For anticoagulant rodenticides > 0.1 0.2 mg/kg in liver.

However, given the range of species and variable circumstances involved in each incident, these residue levels are not strict criteria and must be interpreted with caution. The degree of post mortem degradation of a residue, which can vary greatly between animals in differing stages of autolysis, is a particularly important confounding factor. It should also be noted that further corroboration of a diagnosis of poisoning may be obtained from post-mortem findings.

Conclusions from the report:

Number of Incidents

In 2007, 124 of the 354 incidents reported involved pesticides. Other causes of death (other chemicals, disease, starvation, and so on) were identified in 65 other incidents (see table 1 on page 24). There were 98 incidents reported that were classed as 'not applicable' because no pesticides were identified and no dead animals were found. Since 2000, the average number of incidents reported each year (except 2001) is about 403. The overall percentage of incidents involving pesticides has risen to 35%.

There are regional variations in the number of incidents, both in the total reported and in confirmed pesticide incidents (see table 21 on page 34).

In England, after similar numbers were reported in 1999 and 2000, there was a slight decrease (except 2001, when numbers dropped further as a result of the foot and mouth crisis). However, despite this downward trend in incidents reported, the number of pesticide poisonings has remained at a similar number since 2004.

In Wales, the number of incidents reported each year peaked at 50 in 2002. Only 33 incidents were reported in 2006. The number of incidents reported for 2007, at 46, is somewhat higher than the range seen in previous years. The percentage of confirmed pesticide incidents is similar to the range seen in previous years. In Scotland, the number of incidents reported and the percentage confirmed as pesticide incidents in 2006 were broadly similar to that seen in previous years. However, the number of incidents reported has increased in 2007, compared to 2006, and the number of pesticide incidents has increased by a similar number. In Northern Ireland, only 15 incidents were reported in 2007, compared to 32 in the previous year. The percentage of incidents involving pesticides in 2007 was the highest recorded to date (40%); this compares to only 16% in 2006. That said, the number of pesticide poisoning incidents is the same as the previous year.

It is likely that many factors account for the apparent variation in numbers of incidents in England and Northern Ireland. For example, in England, more incidents may be rejected and so there are fewer incidents to be reported. If incidents not likely to involve pesticides have been rejected, then it may in part explain the higher proportion of pesticide incidents in this region. In Northern Ireland, the analytical screening work undertaken may not cover all pesticides likely to be abused and this may in part explain the lower proportion of pesticide incidents in this region.

In 2007, as in 2006, there were two incidents involving the approved use of pesticides. This number is within the range seen for previous years; see table 22 on page 35. The scheme relies on incidents being found and reported and some incidents, particularly those involving small animals, are less likely to be reported. The scheme is only able to monitor severe or lethal effects. Given the low numbers of these incidents, it is more important to consider the circumstances that led to them, rather than just the number of them reported each year.

In 2007, there were 21 incidents caused by the misuse of pesticides. This was one less than in 2006. This number is within the range seen for previous years (see table 22 on page 35). Misuse incidents are often associated with pesticides stored in locations that

are not secure or appropriate. Pesticides must be kept in their original packaging so the instructions for use can be followed. Other misuse incidents include unprotected rodenticide-treated grain, or pellets spilt in fields.

As in previous years, incidents of deliberate abuse account for around half of the incidents involving pesticides. In 2007, there were 75 abuse incidents, compared to 67 in 2006. The proportion of abuse incidents (61%) is similar to that reported in 2006. However, the percentage of abuse incidents has ranged from 59% in 2000 to 50% in 2005 (except for 2001). So, the statistics for 2007 are not exceptional when compared to previous years. There were also 22 incidents caused by unspecified use, where the source of the pesticide could not be identified or the incident could not be placed in one of the other categories. In 2007, there were three incidents reported that involved the suspected abuse of veterinary products. Again, this is within the range seen in previous years. Details of all these poisoning incidents can be found in appendices 1 to 4 of the 2007 report.

Incidents Affecting Vertebrates

Of the 294 incidents affecting vertebrates, 97 involved pesticides (see table 22 on page 35). There were two incidents of approved use, and incidents of misuse amounted to 14. The deliberate abuse of pesticides was behind 59 incidents and there were 18 unspecified use incidents. During 2007, there were three incidents with pesticides formulated as veterinary medicine products.

Since 1994, carbamates have consistently been involved in a larger percentage of vertebrate-poisoning incidents than either organophosphates or alphachloralose, and there is no sign of this trend changing. If data from 2003 are not included, there is a downward trend in the percentage of incidents with carbamates between 2000 and 2005. However, there was a significant increase for 2006. This dropped back down to 46 in 2007. In 2001, there was an increase in the percentage of alphachloralose incidents, to a level not seen for nearly 10 years. This may in part have been due to the information being affected by the foot and mouth crisis, although the percentage in 2002 is also high. Since 2003, this percentage has remained at a similar level to that seen in 1997 to 2000. There was a slight increase in 2007, then a drop back to levels similar to previous years in 2007. In 2002, the Environmental Panel of the Advisory Committee on Pesticides considered including alphachloralose in the Poison Rules 1982 and recommended that it is classified under part one. Pure alphachloralose is no longer sold as a rodenticide by the main UK supplier. All but one of the alphachloralose incidents were abuse incidents and most of the carbamate incidents also arose from abuse.

The highest number of pesticide poisoning incidents amongst vertebrates involved birds of prey. Buzzards are the species most frequently poisoned by pesticides, followed by red kites. In 60% (12 incidents) of the incidents with buzzards, carbofuran was involved. In 2007, there has been a slight increase in incidents at badger setts (3 incidents in 2006 to 4 in 2007) and these involved either baits left in or near badger setts, or the use of a vertebrate gassing compound.

Bee Incidents

Since 2003, the number of bee incidents reported each year has been an average of 20 (it has ranged from 45 incidents in 2000, down to 15 incidents in 2006). However, the percentage of poisoning incidents for 2007 is much lower than that seen in previous

years. In 2007, there was only one incident where the pesticide fluvalinate was identified, compared to two in 2006. There were two incidents that involved bendiocarb and one involving dieldrin. Anyone using a pesticide to control bees, particularly professional users, should refer to the free Health and Safety Executive (HSE) advice leaflet 'Feral Honey Bees – points to consider when asked to treat a honeybee nest' (www.hsebooks.co.uk).

No applications of pyrethroid spray were confirmed as the source for a bee poisoning during 2007. However, in the past, the scheme has reported incidents with pyrethroids, and often they are associated with a mix of pyrethroid and fungicide. The possible risks of pesticide applications to honeybees cannot be effectively reviewed unless the regulatory authority, PSD, recommends changes to approval conditions or highlights areas for research. One source of the information that could help PSD is the scheme, so beekeepers must continue to collect samples of dead honeybees when they suspect a pesticide poisoning.

Incidents with no known cause

There is always a number of incidents where the cause remains unknown. This may be due to several things, such as not having enough tissues to analyse, poisoning by other chemicals and so on. In 148 incidents reported in 2007, the cause of death was not found. This number of incidents is lower than in 2006, when 183 incidents were from an unknown cause.

There were 19 incidents that were classed as "not applicable", which is a decrease since 2006 (24 incidents). These incidents involved suspected baits or suspicious samples where no dead or poisoned animals were found. Often they just involved food placed for animals or birds, or discarded food.

Acknowledgements

We would like to thank the following.

- David Graham of the Department of Agriculture, Food and Rural Development (DARD) for providing the results from Northern Ireland.
- The analytical chemists (particularly Ainsley Jones, Andrew Charlton, Sheonaidh Charman, Vicki Jowett and Trevor Platt) at the Central Science Laboratory (CSL), and Anna Giela at Scottish Agricultural Science Agency (SASA), for identifying the pesticide residues in this report.
- Colleagues in Defra, SGRPID, the Agricultural Rural Affairs Department (ARAD), DARD, SASA and CSL who have taken part in investigations during 2007.
- All people and organisations who have supported the Wildlife Incident Investigation Scheme by reporting incidents, sending in evidence, providing information or contributing in other ways.

Table 1: numbers of incidents investigated under the scheme in 2007

	Incidents investigated	Pesticide poisoning incidents	Other cause of death found	Incidents where the cause of death was not found
	004			
Vertebrate wildlife	204	62 (30%)	58 (28%)	85 (42%)
Pets, working animals	84	36 (43%)	7 (8%)	41 (49%)
and domestic animals		. ,	. ,	
Livestock	6	1 (17%)	0	5 (83%)
Bees	19	2 (10.5%)	0	17 (89.5%)
Suspected baits and	49	29 (59%)	1 (2%)	19 (40.5)
suspicious samples			()	ζ γ
Total	354	124 (35%)	65* (18%)	167 (47%)
* One vertebrate wildlife inc	ident involved two	birds. One died f	rom trauma and the	other from

starvation.

(A single incident may involve animals from more than one category.)

Table 2: incidents investigated by country in 2007

(Text in brackets shows the number and percentage of incidents confirmed as pesticide poisoning)

	England	Wales	Scotland	Northern Ireland	Totals
Vertebrate wildlife	51 (21, 41%)	18 (4, 22%)	131 (36, 27.5%)	4 (1, 25%)	204
Pets, working animals and domestic animals	30 (20, 67%)	2 (0)	39 (11, 28%)	13 (5, 38.5%)	84
Livestock	2 (0)	0	4 (1, 25%)	0	6
Bees	17 (2, 12%)	0	2 (0)	0	19
Suspected baits and suspicious samples	29 (19, 65,5%)	5 (4, 80%)	14 (6, 43%)	1 (0)	49
Total	126 (58, 46%)	23 (6, 26%)	190 (54, 28%)	15 (6, 40%)	354
One vertebrate wildlife incident involver	ved two hirds One	e died from traur	na and the other fro	m starvation	

One vertebrate wildlife incident involved two birds. One died from trauma and the other from starvation. (A single incident may involve animals from more than one category.)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Vertebrate wildlife	49	57	68	55	63	63	62	55	68	62
Livestock	4	2	0	0	1	0	1	1	2	1
Pets, working animals and domestic animals	90	48	58	34	45	42	26	24	24	36
Exotic animals	2	0	0	0	0	0	0	0	0	0
Earthworms	1	1	0	0	0	0	0	0	0	0
Bees	12	9	13	5	5	8	4	1	2	2
Suspected baits and suspicious samples	29	22	28	16	20	14	16	23	18	29
Total In 2000, four of the A single incident ma	185 incidents ay involve	139 involving animals	162 bees wer from more	109 re probab e than on	131 ly associa e categor	126 ated with y.	104 one appli	103 cation of	111 pesticide.	124

Table 3: number of incidents in which pesticides were identified as a likely cause of poisoning(1998 to 2007)

 Table 4: the number of incidents attributed to a pesticide in 2007 and the species or material involved (Some incidents involved more than one pesticide.)

Organochlorine compounds		
dieldrin	1	feral bee
endrin	1	buzzard, dog
Organophosphorus compounds		
chlorpyrifos	2	red kite
diazinon (veterinary product)	3	red kite
isofenphos	3	red kite
malathion	1	peregrine falcon
mevinphos	2	red kite, crow, bait
Carbamate compounds		
aldicarb	5	bait, cat, dog, marsh harrier
bendiocarb	4	duck, feral bee, honey bee, red kite
carbofuran	37	bait, buzzard, cat, dog, crow, eagle, egg shell fragments, knife, magpie, peregrine falcon, raven, red kite, sample
Rodenticides		
brodifacoum	11	badger sett, barn owl, buzzard, crow, dog, fox, grain, pesticide sachets, rat, raven, red kite, tawny owl
bromadiolone	27	badger, bait, buzzard, cat, crow, dog, fox, grain,
chlorophacinone	1	ferret
coumatetralyl	1	dog
difenacoum	27	badger, badger sett, bait, barn owl, buzzard, cat, crow, dog, fox, grain, marsh harrier, pheasant, raven, red kite, rodenticide formulation, sample, tawny owl
flocoumafen	1	rodenticide bait
Herbicides		
diquat	1	sample
paraquat	1	dog, urine
Other compounds		
alphachloralose	11	bait, buzzard, chemical, dog, herring gull, lesser black-backed gull, peregrine falcon, sample
metaldehyde	18	badger, badger sett, bait, cat, cat food, dog, green pellets, sample
methiocarb	1	dog
naphthalene	1	badger sett, moth balls suspected bait
sodium cyanide	2	chemical, sample
strychnine	1	dog, chicken carcase bait
Causes of death other than pestic	ides	
disease	6	
starvation	11	
injury	24	
not applicable	99	
unknown	94	

Table 5: numbers of incidents involving wild mammals in 2007 (A single incident may involve animals from more than one category.)

		Number of incidents investigated	Number in which pesticide poisoning was identified	Number in which another cause of death was identified	Number where the cause of death was not found
badger	England	5	2	2	1
	Wales	2	0	2	0
	Scotland	1	0	1	0
		8	2 (25%)	5 (62.5%)	1 (12.5%)
ferret	Scotland	1	1 (100%)	0	0
fox	England	4	1	1	2
	Scotland	3	2	0	1
		7	3 (43%)	1 (14%)	3 (43%)
hedgehog	England	2	0	2	0
	Wales	1	0	1	0
		3	0	3 (100%)	0
grey squirrel	England	1	0	0	1 (100%)
red	Scotland	3	0	0	3 (100%)
squirrel					
otter	Scotland	1	0	1 (100%)	0
rabbit	England	1	0	0	1
	Scotland	3	0	1	2
		4	0	1 (25%)	3 (75%)
rat	England	2	2 (100%)	0	0
roe deer	Scotland	1	0	0	1 (100%)
Totals	England	13	5 (38%)	4 (31%)	4 (31%)
	Wales	3	0	3 (100%)	0
	Scotland	13	3 (23%)	3 (23%)	7 (54%)
	Northern Ireland	0	0	0	0
	Total	29	8 (27.5%)	10 (34.5%)	11 (38%)

Table 6: incidents involving wild mammals (1998 to 2007)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of incidents investigated	68	54	56	30	52	44	49	53	47	26
Number of incidents involving pesticides	8 (12%)	17 (31%)	9 (16%)	7 (23%)	11 (21%)	10 (23%)	9 (18%)	12 (23%)	14 (30%)	8 (31%)

Table 7: incidents involving foxes (1998 to 2007)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of incidents investigated	27	24	28	9	24	11	15	23	14	7
Number of incidents involving pesticides	4 (15%)	10 (42%)	7 (25%)	3 (33%)	7 (29%)	5 (45%)	5 (33%)	6 (26%)	9 (64%)	3 (43%)

Table 8: number of incidents involving birds in 2007(A single incident may involve birds from more than one category.)

		Total number of incidents investigated	Number in which pesticide poisoning was	Number in which another cause of death was identified	Number where the cause of death was not found
buzzard	England	10	<u>6</u>	2	2
	Wales	3	2	0	1
	Scotland	48	11	20	17
	Northern Ireland	4	1	0	3
	Total	65	20 (31%)	22 (34%)	23 (35%)
golden eagle	Scotland	1	1 (100%)	ÌO Í	ÌO Í
sea eagle	Scotland	4	` O ´	1 (25%)	3 (75%)
goshawk	Wales	1	0	1 (100%)	ÌO Í
marsh harrier	England	1	1 (100%)	Ò Ó	0
kestrel	Scotland	1	`O ´	0	1 (100%)
osprey	Scotland	2	0	0	2 (100%)
peregrine falcon	England	1	1	0	0
laicon	Wales	3	1	0	2
	Scotland	5	3	ů 0	2
	Total	9	5 (56%)	ů 0	4 (44%)
red kite	England	5	4	0	1
	Wales	3	0	1	2
	Scotland	25	17	2	6
	Total	33	21 (64%)	3 (9%)	9 (27%)
sparrowhawk	England	2	Û	Û	2
•	Scotland	8	0	3	5
	Total	10	0	3 (30%)	7 (70%)
barn owl	England	3	0	1	2
	Scotland	6	0	5	1
	Total	9	0	6 (67%)	3 (33%)
little owl	England	2	0	0	2 (100%)
tawny owl	Scotland	5	0	3 (60%)	2 (40%)
pheasant	Wales	1	1 (100%)	0	0
crow	England	4	1	1	2
	Scotland	6	1	0	5
	Total	10	2 (20%)	1 (10%)	7 (70%)
jackdaw	England	1	0	1	0
	Scotland	1	0	0	1
	Total	2	0	1 (50%)	1 (50%)
magpie	Wales	1	0	1	0
	Scotland	2	1	0	1
	Total	3	1 (33%)	1 (33%)	1 (33%)
raven	England	1	1	0	0
	Scotland	3	1	0	2
no ole	l otal	4	2 (50%)	U	2 (50%)
rook		3	0	3	U
	Scotland	1	0		
	I DI	4	U	3 (75%)	1 (25%)
partriage		1	U	U	1 (100%)
goose	Wales	1	U	U 4 (4000()	1 (100%)
grey neron	vvales	1	U	1 (100%)	U

Table 8: number of incidents involving wild birds in 2007 (continued)

(A single incident ma	y involve birds from m	ore than one category.)
-----------------------	------------------------	-------------------------

		Number of incidents investigated	Number in which pesticide poisoning was identified	Number in which another cause of death was identified	Number where the cause of death was not found
gull	England	2	2	0	0
-	Scotland	4	0	1	3
	Total	6	2 (33%)	1 (17%)	3 (50%)
pigeon and dove	England	5	1	2	2
	Wales	1	0	1	0
	Scotland	3	0	1	2
	Total	9	1 (11%)	4 (44.5%)	4 (44.5%)
bittern	Scotland	1	0	1 (100%)	0
finch	England	1	0	0	1 (100%)
peacock	England	1	0	1 (100%)	0
	Total in England	38	15 (39.5%)	8 (21%)	15 (39.5%)
	Total in Wales	16	5 (31%)	4 (25%)	7(44%)
	Total in Scotland	126	34 (27%)	37 (29%)	55 (44%)
	Total in Northern Ireland	4	1 (25%)	0	3 (75%)
		184	55 (30%)	49 (26.5%)	80 (43.5%)

Table 9: incidents involving wild birds (1998 to 2007)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of incidents investigated	192	151	178	150	184	167	147	160	194	184
Number of incidents involving pesticides	42 (22%)	43 (28%)	59 (33%)	48 (32%)	56 (30%)	56 (34%)	51 (35%)	43 (27%)	57 (29.5%)	55 (30%)

Table 10: incidents involving birds of prey (including owls) (1998 to 2007)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of incidents investigated	97	98	136	111	129	136	109	121	132	145
Number of incidents involving pesticides	29 (30%)	33 (34%)	52 (38%)	41 (37%)	40 (31%)	45 (33%)	42 (39%)	34 (28%)	45 (34%)	48 (33%)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of incidents investigated	26	19	13	12	22	22	15	15	41	21
Number of incidents involving pesticides	4 (15%)	9 (47%)	4 (31%)	4 (33%)	8 (36%)	10 (45%)	10 (67%)	5 (33%)	15 (37%)	4 (19%)

Table 11: incidents involving corvids (1998 to 2007)

Table 12: number of incidents involving pets, working animals and domestic animals in 2007

		Number of incidents investigated	Number in which pesticide poisoning was identified	Number in which another cause of death was identified	Number where the cause of death was not found
cat	England	9	5	2	2
	Scotland	13	5	0	8
	Northern Ireland	2	1	0	1
	Total	24	11 (46%)	2 (8%)	11 (46%)
dog	England	18	15	Û	3
•	Wales	1	0	1	0
	Scotland	22	6	1	15
	Northern Ireland	11	4	1	6
	Total	52	25 (48%)	3 (6%)	24 (46%)
horse	England	2	0	0	2
	Scotland	1	0	0	1
	Total	3	0	0	3 (100%)
lanner	Scotland	1	0	0	1 (100%)
falcon					
peacock	England	1	0	1 (100%)	0
pony	Wales	1	0	0	1 (100%)
rabbit	Scotland	2	0	1 (50%)	1 (50%)
	Total in England	30	20 (67%)	3 (10%)	7 (23%)
	Total in Wales	2	0	1 (50%)	1 (50%)
	Total in Scotland	39	11 (28%)	2 (5%)	26 (67%)
	Total in Northern	13	5 (38%)	1 (8%)	7 (54%)
	Ireland		· · /		. /
		84	36 (43%)	7 (8%)	41 (49%)
livestock	Total in England	2	0	0	2
	Total in Scotland	4	1	0	3
		6	1 (17%)	0	5 (83%)

Table 13: incidents involving p	ets, working animals and	domestic animals (1998 to 2007)
---------------------------------	--------------------------	---------------------------------

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of incidents investigated	235	149	160	109	150	130	95	98	97	84
Number of incidents involving pesticides	90 (38%)	48 (32%)	58 (36%)	34 (31%)	45 (30%)	42 (32%)	25 (26%)	24 (24%)	24 (25%)	36 (43%)

Table 14: incidents involving cats (1998 to 2007)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Incidents investigated	91	58	63	41	40	35	32	30	31	16
Percentage	35	14	19	12	12	7 (200()	7 (220()	6	7 (22.5%)	10
incidents	(38%)	(24%)	(30%)	(29%)	(30%)	(20%)	(22%)	(20%)	(22.5%)	(62.5%)

Table 15: incidents involving dogs (1998 to 2007)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of incidents investigated	149	89	98	63	104	91	55	62	56	52
Number of incidents involving pesticides	60 (40%)	34 (38%)	40 (41%)	21 (33%)	33 (32%)	34 (37%)	18 (33%)	16 (26%)	16 (28.5%)	25 (48%)

Table 16: number of incidents involving bees in the UK during 2007

Number of incidents investigated: Number of incidents caused by pesticides:	19 2						
Pesticide found	Number of incidents	Number of colonies affected					
Carbamate compounds: bendiocarb	2	1					
Pyrethroid compounds: dieldrin	1	1					
Total	2	2					
There was also one incident where a small residue of fluvalinate was found. See appendix 4 for further details.							

Table 17: incidents involving bees 1998 to 2007

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of incidents investigated	43	28	45	23	25	24	23	17	15	19
incidents involving pesticides	12 (28%)	9 (32%)	10 (22%)	5 (22%)	5 (20%)	8 (33%)	4 (17%)	1 (6%)	2 (13%)	2 (10.5%)

Table 18: pesticides found in incidents involving bees poisoned by pesticides in the UK during 2007

Month	Location	Number of colonies in apiary	Number of colonies affected	Pesticide involved	Level detected
June	Greater London	1	1	bendiocarb	0.025 micrograms per bee
Мау	Staffordshire	1	1	bendiocarb	0.018 micrograms per bee
				dieldrin	0.062 micrograms per bee

Table 19: incidents involving only possible baits and suspicious samples (1998 to 2007)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of incidents	62	67	64	35	47	31	43	44	41	46
Number of incidents involving pesticides	29 (47%)	22 (33%)	28 (44%)	16 (46%)	20 (43%)	14 (45%)	16 (37%)	23 (52%)	16 (39%)	25 (54%)

Table 20: the number of different pesticides found in all incidents except those involving bees (1998 to 2007)

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	
Number of	34	27	29	23	23	22	27	34	39	26	
pesticides											

Year	2000	2001	2002	2003	2004	2005	2006	2007
England Number of	244	133	188	160	145	130	135	126
incidents reported								
Number of incidents	83 (34%)	51 (38%)	80 (42%)	62 (39%)	59 (41%)	62 (48%)	48 (36%)	58 (46%)
involving								
Wales								
Number of incidents reported	42	34	50	43	38	33	46	23
Number of incidents	11 (26%)	6 (18%)	10 (20%)	10 (23%)	7 (18%)	6 (18%)	6 (13%)	6 (26%)
involving pesticides								
Scotland	167	107	156	145	101	157	177	100
incidents	107	121	150	145	121	157	177	190
reported Number of	57 (34%)	35 (28%)	34 (22%)	37 (26%)	34 (28%)	32 (20%)	52 (29%)	54 (28%)
incidents			· (/ ·)		···(_·//)			. (,,)
pesticides								
Northern								
Number of	53	52	56	49	51	49	32	15
incidents								
Number of	11 (21%)	17 (33%)	7 (13%)	17 (35%)	4 (8%)	3 (6%)	5 (16%)	6 (40%)
incidents								
pesticides								
Total number	506	346	450	397	355	369	390	354
reported								
Total number	162	109	131	126	104	103	111	124
of incidents involving pesticides	(32%)	(32%)	(29%)	(32%)	(29%)	(28%)	(28%)	(35%)

Table 21: number of incidents reported to the scheme from 2000 to 2007, and number of incidents found to involve pesticides

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007
Abuse	61	95	81	78	85	55	51	67	59
	(47%)	(63%)	(78%)	(62%)	(71%)	(55%)	(50%)	(61%)	(61%)
Misuse	31	22	6	19	16	18	22	21	14
	(24%)	(15%)	(6%)	(15%)	(14%)	(18%)	(21.5%)	(19%)	(14%)
Approved use	7	9	2	5	3	0	2	2	2
	(5%)	(6%)	(2%)	(4%)	(3%)	0	(2%)	(2%)	(2%)
Unspecified use	29	19	14	22	13	23	24	18	19
	(22%)	(13%)	(13%)	(17%)	(11%)	(23%)	(23.5%)	(17%)	(20%)
Veterinary	2	4	1	2	1	4	3	1	3
	(2%)	(3%)	(1%)	(2%)	(1%)	(4%)	(3%)	(1%)	(3%)
Total	130	149	104	126	118	100	102	109	97

Table 22: Number of each type of incident where vertebrates were poisoned by pesticides (1999 to 2007)

Figures for 2007 only include incidents in which there were vertebrate casualties. Figures for previous years include all incidents, except those in which there were invertebrate casualties (usually bees).

Appendix 1 Incidents caused by approved use of pesticides in 2007

WIIS number	Incident number	Chemical	Species or sample involved	Month	County	Comments
					-	A bird was found dead in an area where a rodent control operation is being carried out using Neosorexa. A significant residue of difenacoum was found in liver tissue from the
07028	1	difenacoum	buzzard	March	Western Isles	bird.
						A dog became ill after eating slug pellets that the dog's owner had put on her flower
07066	2	metaldehyde	dog	June	Fife	beds. The dog recovered after receiving treatment from a vet.

Appendix 2 Incidents caused by misuse of pesticides in 2007

			Species or			
WIIS	Incident		sample			
number	number	Chemical	involved	Month	County	Comments
					Dumfries and	
07147	1	alphachloralose	formulation	September	Galloway	An unapproved alphachloralose product was found in a shed.
						A dog was being walked by its owner and found and ate some sachets of
						rodenticide. The owner took her dog to a vet and it got better. Two dead rats
						were found near to where the dog had found the sachets of rodenticides. Tests
						showed brodifacoum in the liver of both rats and in the stomach of one, and in
						the bait sample. This is likely to be the cause of death. This rodenticide,
			dog, two			approved 'for indoor use only', was found outside in uncovered baits. An
			rats,			enforcement notice (making sure dead bodies are removed and baits are
			pesticide			cleaned up) was issued and had been followed. This case is still being
100/960	2	brodifacoum	sachets	December	Lincolnshire	investigated.
						A two-year-old cat was found dead with froth at its mouth. A post-
2007-					_	mortem showed that there were feathers and food in the stomach. There were
001400	3	bromadiolone	cat	January	Tyrone	no signs of haemorrhages. Bromadiolone was found.
						A dog died after eating an uncovered rodenticide bait in an open Dutch-style
						barn. Lests on the dog vomit and blue grain showed traces of bromadiolone. We
						told the farmer about how to store pesticides and lay covered baits safely, which
400/050		han a d'alama		Deserves	0	he has done. We have sent a warning letter and the case is still being
100/950	4	bromadioione	aog	December	Cornwall	investigated.
						A Jack Russell was stopped from eating a blue-coloured lump of material from a
						balt box. This had been placed inside a main stables block by a private
100/054	F	h romodiolono	doa	Nevenber	Wiltobirg	company. The boxes were not clearly labelled and there were no warning signs
100/954	5	bromadioione	aog	November	vviitsnire	or a treatment. Tests confirmed bromadioione. This case is closed.
						An owner saw her dog eat two or three bluey-green blocks on the edge of a field
						The versit was a bluev groop colour. Another deg was also treated after its
						The volnit was a bluey-green colour. Another dog was also treated after its
						beit comple confirmed a residue of bromedialone. Both dogs made a full
			two dogo			ball sample commence a residue of bronnautorone. Both doys made a full
100/714	6	bromadiolone	hait	February	Cornwall	using the advice provided. The case is closed
100/114			bait	i coruary	Johnwan	Bromadiolone was found in a dead male for. The fox also had jaundice and
						haemorrhaging and it is likely that rodenticide poisoning was the cause of its
100/050	7	bromadiolone	fox	December	Surrov	death. This case is closed
100/909	1	Siomaalolone	107	December	Juney	

Appendix 2 Incidents caused by misuse of pesticides in 2007

			Species or			
WIIS	Incident		sample			
number	number	Chemical	involved	Month	County	Comments
100/941	8	bromadiolone	seven rats, bait	November	Suffolk	Blue-stained wholewheat bait and dead rats were seen along a roadside. The next day the bait had been cleared up, but there were still dead rats on the roadside and evidence of blue staining on one of the tracks near a farm. Tests on the rats confirmed bromadiolone in the livers. An advisory letter was sent to the farmer. This case is closed.
100/940	9	bromadiolone, difenacoum	dog	November	Northamotonshire	Poisoning was suspected when a pet dog became ill after eating unprotected blue-coloured grain from along a fence line. There were no samples available from the dog to test, though the grain contained difenacoum and a small residue of bromadiolone. This mixture may have been the result of cross-contamination.
100/040	•		dog	November	Northamptononine	It was suspected that a dog had been poisoned. Tests confirmed a residue of
100/884	10	bromadiolone, difenacoum	dog, rodenticide grain	August	Suffolk	bromadiolone in the sample of faeces from the dog. Bromadiolone and a small residue of difenacoum were also confirmed in the grain sample. It seems likely that exposure to bromadiolone caused the death of this dog. A warning letter was sent. This case is closed.
100/833	11	carbofuran, sodium cvanide	two samples	June	Northumberland	Following an incident a property was searched and a container of Phostoxin was found not properly stored. A jam jar containing Cymag was found. An enforcement notice was issued for the disposal of the Cymag and the correct storage or disposal of the Phostoxin, which was followed. The police investigated the case and the Crown Prosecution Service prosecuted the person responsible. He was found guilty of illegally storing pesticides and fined £600 and had £70 costs awarded against him. The case is closed.
		,				Grain stained blue was found in a plastic bag in a building that was being
07031	12	difenacoum	grain sample	February	Lothian	searched by police. Tests on the grain confirmed there was difenacoum present.
100/916	13	difenacoum	dog, rodenticide formulation	October	Essex	A dog became unwell and was later put down after a local authority treated its owner's garden with rodenticide. Tests showed residues of difenacoum in grain removed from an open sachet (used in the treatment) and in a sample of faeces. This case is still being investigated.

Appendix 2 Incidents caused by misuse of pesticides in 2007

WIIS	Incident		Species or sample			
number	number	Chemical	involved	Month	County	Comments
100/713	14	difenacoum	three cats, two red grain samples	February	Oxfordshire	It was suspected that three cats had been exposed to a rodenticide, although their symptoms were not typical. The cats were treated by a vet but two of the cats died. An investigation revealed the product had been sold in unlabelled packaging with no instructions for use. Tests confirmed residues of mainly difenacoum in the grain samples, but no residues were found in samples tested from the cats. The reason for the symptoms shown and cause of death is still uncertain. The sale of the unlabelled product was investigated by Trading Standards. The case is closed.
100/737	15	difenacoum, bromadiolone	bait, eight samples	March	Norfolk	There were various samples during follow-up investigations to a previous incident. Laboratory analysis for a range of likely pesticides show no residues from the tested compound groups were found in the chicken carcase or the syringe. Grain samples were confirmed to be difenacoum, although one sample also had a residue of bromadiolone.
100/772	16	difenacoum, brodifacoum, bromadiolone	blue grain	April	Norfolk	A pest controller had been given (by an animal-feed seller) rodenticide which was not in its original container. A sample of grain was tested and had difenacoum and residues of brodifacoum and bromadiolone in it. These could have contaminated the grain while it was being stored and the rodenticide was being used. Trading Standards have investigated the case and it is now closed.
100/699	17	flocoumafen	rodenticide bait	January	West Sussex	Flocoumafen bait blocks were placed in outside bait stations and there was no record made of the use of this product. There were no casualties. An advisory letter was sent to the contractor. The case is closed.
07080	18	metaldehyde	dog	June	Fife	A dog became ill after getting into a neighbour's garden and eating metaldehyde slug pellets from the flower beds. The dog also chewed through the product container that had been left in the garden. The dog recovered after receiving treatment from a vet.
100/697	19	metaldehyde	sample	January	West Sussex	A spillage of metaldehyde slug pellets was left by a contractor who did not bury or remove the spillage. There were no casualties, and no tests were carried out on the sample of pellets. We sent an advisory letter to the contractor. The case is closed.

Appendix 2 Incidents caused by misuse of pesticides in 2007

	Incident		Species or			
WII5	Inclaent		sample		_	
number	number	Chemical	involved	Month	County	Comments
100/915	20	metaldehyde	dog, pellet sample	October	East Yorkshire	A dog became ill after eating something it found under a plastic bag in a field. Samples from the faeces and slug trap showed metaldehyde. The farmer admitted using slug traps but it cannot be confirmed whether this was done after a recent change to the label for all metaldehyde products, that says that slug traps are not to be used. We sent an advisory letter to the farmer and the case is now closed.
100/929	21	metaldehyde, bromadiolone, difenacoum	two badgers	November	Essex	Two dead badgers were found near and in the entrance to a badger sett. There were two spillages of slug pellets. Tests found a residue of metaldehyde and this was likely to be the cause of death. Further tests showed bromadiolone in the livers of both badgers and a residue of difenacoum in one badger's liver. This was also a cause of their deaths. The case is closed.

Appendix 3 Incidents caused by abuse of pesticides in 2007

		Species or			
Incident		sample			
number	Chemical	involved	Month	County	Comments
				Feet Verlehim	A pet dog collapsed and later died after eating an object while on a walk beside a canal. Earlier in the week another dog had become ill after walking along the same canal, but later recovered. Tests confirmed a residue of aldicarb from some bait-like material removed from the dog's stomach. We do not know where the aldicarb came
1	aldicarb	dog	Мау	East Yorkshire	from. This case is closed.
2	aldicarb	cat	September	County Durham	A cage trap baited with live canaries was found. There was also a dead cat and the remains of a sparrowhawk. Tests showed a residue of aldicarb in the cat. The amount found is likely to be the cause of its death. There is a suspect and proof of abuse of pesticides. The RSPB and the police are investigating the case.
3	aldicarb	dog, rabbit bait	April	Lothian	A dog became ill after eating part of a dead rabbit. A residue of aldicarb was found in the rabbit's tissues. Liver and kidney tissue from the dog were received about four weeks later, but no aldicarb was found in these tissues. This case is closed. No enforcement action was taken.
4	aldicarb, metaldehyde	cat	Мау	Lincolnshire	A man found his cat dead beside a dish of cat food behind a shed in an allotment. He found bluey-black granules in the cat food. Tests confirmed a residue of aldicarb. The amount is likely to be the cause of death. Also two suspected slug pellet products were tested, and one contained metaldehyde. The RSPCA investigated this and the case is now closed.
5	alnhachloralose	buzzard	Sentembor	Montaomenyshira	A dead buzzard was found on a nature reserve close to a pheasant shoot. It was suspected that this buzzard had been poisoned. Laboratory analysis for some likely pesticides has been carried out on the sample. These tests have detected a residue of alphachloralose in the kidney of this buzzard. At present, the source of the alphachloralose is uncertain and abuse is suspected, but this incident happened sometime before it was reported. The case is still under investigation
	Incident number	Incident numberChemical1aldicarb1aldicarb2aldicarb3aldicarb3aldicarb4metaldehyde5alphachloralose	Incident numberChemicalsample involved1aldicarbdog1aldicarbcat2aldicarbcat3aldicarbdog, rabbit bait4aldicarb, metaldehydecat5alphachloralosebuzzard	Incident numberChemicalsample involvedMonth1aldicarbdogMay1aldicarbcatSeptember2aldicarbcatSeptember3aldicarbdog, rabbit baitApril4aldicarb, metaldehydecatMay5alphachloralosebuzzardSeptember	Incident numberChemicalsample involvedMonthCounty1aldicarbdogMayEast Yorkshire2aldicarbcatSeptemberCounty Durham3aldicarbdog, rabbit baitAprilLothian4aldicarb, metaldehydecatMayLincolnshire5alphachloralosebuzzardSeptemberMontgomeryshire

Appendix 3 Incidents caused by abuse of pesticides in 2007

			Species or			
WIIS	Incident		sample			
number	number	Chemical	involved	Month	County	Comments
						A dead buzzard was found on the edge of a well-used path in the
						forest, half a mile from the nearest road. Tests on samples have
						confirmed a residue of alphachloralose in the kidney and the three
						rodenticides, bromadiolone, brodifacoum and difenacoum in the liver.
						The amount of alphachloralose found is likely to be the cause of death
						of the buzzard. These levels of rodenticides found are considered to
100/721	6	alphachloralose	buzzard	March	Suffolk	be too low to cause death. This case is still being investigated.
						A buzzard was found dead against a fence. A residue of
07193	7	alphachloralose	buzzard	December	Highland	alphachloralose was confirmed in its gullet.
						A dead buzzard appeared to show traces of alphachloralose and was
						found metres from the body of a cut-open rabbit. Tests on powder
			buzzard, rabbit			found on the body showed alphachloralose. The amount is likely to be
100/726	8	alphachloralose	carcase	February	North Yorkshire	the cause of death. The police are investigating this case.
						A four-year-old dog was suffering from shock and having mild fits. It
						later died despite treatment. White powder was found in a food bowl
2007-						which the dog had eaten from. Alphachloralose was found in the dog's
001765	9	alphachloralose	dog	February	Armagh	stomach.
			herring gull,			It was suspected that a herring gull had been poisoned. Tests have
			four rabbit			confirmed a residue of alphachloralose on a rabbit and in the gull's
100/752	10	alphachloralose	carcases	April	North Yorkshire	kidney, which suggests abuse. The police are investigating this case.
			lesser			This involved a follow-up investigation by the police and the RSPB to
			black-backed			a previous incident (number 35). A number of unapproved pesticides
			gull, rabbit bait,			were found. Tests confirmed alphachloralose in a syringe. This case
100/798	11	alphachloralose	sample	May	North Yorkshire	is still being investigated.
						A freshly dead peregrine falcon was found alongside a partially
			peregrine			plucked pigeon. It is claimed that the local peregrine population has
			falcon, pigeon			collapsed from an average of seven breeding pairs in the area to only
W/07/05	12	alphachloralose	bait	April	Pembrokeshire	one pair in the past few years.
						A farmer found a rabbit body with white powder on it on land with
						livestock. Tests showed alphachloralose. The main witness was not
100/695	13	alphachloralose	rabbit bait	January	County Durham	willing to help with investigations so the case has been closed.

Appendix 3 Incidents caused by abuse of pesticides in 2007

			Species or			
WIIS	Incident	Chomical	sample	Month	County	Commonte
100/900	14	alphachloralose, bromadiolone, difenacoum	buzzard	September	Gloucestershire	A live buzzard was found by a member of the public while walking on a public footpath. The bird was taken for treatment to a vet but it died later the same day. Tests confirmed a significant amount of alphachloralose, which is likely to be the cause of death. There were also residues of bromadiolone and difenacoum. The case is closed.
07095	15	brodifacoum, bromadiolone, difenacoum	grain sample	July	Strathclvde	Allegations had been made that several cats had gone missing and were thought to have been poisoned. Coloured grain was found in a garden in the area. Analysis has confirmed that the grain had been used to prepare anticoagulant rodenticide bait.
W/07/20	16	bromadiolone	blue grain sample	October	Glamorgan	It was suspected that this sample contained a pesticide. Laboratory analysis for some likely pesticides has been carried out on the sample. These tests have found a residue of bromadiolone. It appears that grain treated with rodenticide had been left in a garden and this is considered an abuse of the product.
100/732	17	bromadiolone	peppers	March	Devon	A blue-coloured grain in green peppers and a crystalline substance were found near a shelter for horses and Exmoor ponies. Tests on grain confirmed bromadiolone. It is suspected that this was a deliberate act as there is a history of disagreements about roaming animals and wild goats in the area. No suspect has been found so the case has been closed.
07041	18	carbofuran	buzzard	April	Strathclyde	This buzzard was found dead in an area where there is a history of pesticide abuse (see incidents 26 and 42). Carbofuran was found in tissues from the buzzard. Bromadiolone was also found in liver tissue from the bird.
07135	19	carbofuran	buzzard	September	Border	A buzzard was found dead by a member of the public, in an area where there have been recent pesticide poisoning incidents (see incidents 20, 25, 31 and 33). The investigation confirmed carbofuran poisoning as the cause of death. The incident is still being investigated.
07042	20	carbofuran	buzzard	April	Border	This bird was found dead in an area where there is a history of pesticide abuse (see incidents 19, 25, 31 and 33). Carbofuran poisoning was confirmed as the cause of death. This is an ongoing police investigation.

Appendix 3 Incidents caused by abuse of pesticides in 2007

			Species or			
WIIS	Incident		sample			
number	number	Chemical	involved	Month	County	Comments
						A dead buzzard was sent to the laboratory as a suspected poisoning
						case. The post-mortem showed that the buzzard was in very good
						condition. There was little proof of trauma. Carbofuran was found in
2007-						high levels in the gizzard contents of the buzzard and was thought to
018076	21	carbofuran	buzzard	December	Londonderry	have caused the death.
						This buzzard was found dead near to the remains of a rabbit in an
						area where there is a history of pesticide poisoning (see incidents 23
			buzzard, rabbit			and 24). Residues of carbofuran were found in the buzzard and on the
07076	22	carbofuran	bait	June	Highland	rabbit. This is an ongoing police investigation.
						A buzzard was seen alive near a partly-eaten rabbit. The bird died
						soon after. Blue grains were found on the rabbit's muscle tissue. The
						investigation showed residues of carbofuran in liver tissue and the
						stomach contents of the bird. A residue of carbofuran was also found
07407		and a famous	buzzard, rabbit	L .	L Parla La card	on the tissue sample from the rabbit. This incident happened in the
0/18/	23	carboturan	bait	December	Highland	same area as incidents 22 and 24.
						I nese items were found on open moorland in an area where there is
			burnard three			a history of pesticide poisoning (see incidents 22 and 23). Dead
			buzzaru, triree			insects and some grains were found on the ball samples. Residues of
07072	24	carbofuran	haro baito	luno	Highland	taken from each of the baits. This is an engoing police investigation
07072	24	carbolulari		June	Піўпапи	Three buzzerde were found doed in an area where there is a bistory of
						nesticide abuse (see incidents 19, 20, 31 and 33) A search of the
						area revealed a number of nieces of rabbit and bare, that were
						contaminated with dark grains. Carbofuran residues were found in all
			three buzzards			of the buzzards and baits. Low residues of bromadiolone and
			10 rabbit and			difenacoum were also found in liver tissue from the buzzards. This is
07039	25	carbofuran	hare baits	April	Border	an ongoing police investigation.
01000				, pin	201001	
						Those retting bodies were found in an area where posticide poisoning
						is known to take place (see incidents 18 and 42). The analysis
						confirmed that the huzzard had been poisoned with carbofuran but no
07062	26	carbofuran	buzzard, raven	May	Strathclyde	residues were found in the raven.

Appendix 3 Incidents caused by abuse of pesticides in 2007

			Species or			
WIIS	Incident		sample			
number	number	Chemical	involved	Month	County	Comments
						One of several cats in the same area died suddenly, and in the same
07044	07	a a rh a fu ma n	aat	A	Otra the short s	area as incident 28. The investigation found a residue of carboturan in
07044	27	carboluran	cal	Aprii	Strathclyde	the cat's stomach. This is an ongoing police investigation.
07049	28	carbofuran	cat	April	Strathclyde	This is the second incident in this area (see incident 27). The cat appeared fine before it went out, but when it returned 20 minutes later it had seizures and died very quickly. Residues of carbofuran were found in the cat's liver tissue and stomach. This is an ongoing police investigation.
						Several cats from the same neighbourhood were believed to have
						been poisoned. The stomach of this cat was full of dark grains and pet
						food. The analysis confirmed residues of carbofuran in the cat's liver
	00	a a sha a fa su a sa	1		Otreth altreda	tissue and stomach. This case is closed. No enforcement action was
07091	29	carboluran	cal	July	Strathciyde	laken.
						A cat was found dead in the garden. Blue-stained cooked meat found in the garden was contaminated with carbofuran. Desidues of
						in the galden was containinated with carbonulari. Residues of carbofuran were found in the cat's stomach. The case is closed. No
07010	30	carbofuran	cat meat bait	February	Highland	enforcement action was taken
		Sanboraran		i obraary	- inginiaria	Several birds were found dead in an area where there is a history of
			two crows.			pesticide poisoning (see incidents 19, 20, 25 and 33). A search of the
			buzzard.			area found 13 pieces of rabbit and hare, all with grains on them.
			magpie, 13			Carbofuran was found in all four birds and in each of the bait samples.
			baits (rabbit			A very low residue of difenacoum, not enough to kill, was found in the
07034	31	carbofuran	and hare)	March	Border	buzzard's liver tissue. This is an ongoing police investigation.
						A dog was fitting and vomited a piece of chicken containing bluey-
						black grains. He responded to treatment. Carbofuran was found in the
2007-8677	32	carbofuran	dog, sample	June	Armagh	sample.
						These hare remains were found in woodland in an area where there is
						an ongoing problem with pesticide abuse (see incidents 19, 20, 25
07052	33	carbofuran	two hare baits	May	Border	and 31). This is an ongoing police investigation.

Appendix 3 Incidents caused by abuse of pesticides in 2007

			Species or			
WIIS	Incident		sample			
number	number	Chemical	involved	Month	County	Comments
						A residue of carbofuran was found on the blade of a knife. The knife
						had been found during a police investigation following several red-kite
07164	34	carbofuran	knife	November	Tayside	poisoning incidents in the area.
						A peregrine falcon was found with clenched feet, and then suffered
						from fits before it died. Tests on samples found a residue of
			peregrine			carbofuran in the peregrine's gizzard. The amount found is suspected
100/718	35	carbofuran	falcon	February	North Yorkshire	to be the cause of death. The case is closed.
						The peregrine falcon was found dead by men working on a railway
			peregrine			line. A dried-out pigeon carcase was also found but it was not
			falcon, pigeon			analysed. A residue of carbofuran was found in the stomach of the
07065	36	carbofuran	bait	May	Strathclyde	peregrine. This is an ongoing police investigation.
						These chicks were found dead in the nest during a visit to ring and
						weigh them. Both birds had full crops and pesticide poisoning was
						suspected. DNA analysis of feathers showed that the birds had eaten
			two peregrine			from a pigeon carcase. Residues of carbofuran were found in tissues
07068	37	carbofuran	falcon chicks	May	Grampian	from both birds. The parent birds were not affected.
						Tests for a range of likely pesticides have been carried out on the
						eggshell fragments and the remains of the rabbit. There were no
						residues from the compound groups tested, apart from a very small
			rabbit carcase,			residue of carbofuran in an eggshell fragment. Nothing was found in
			crow bait,			the rabbit and so the crow was not tested. It appears that the eggs
			eggshell			were laced with carbofuran, which is an abuse of the pesticide. This
100/801	38	carbofuran	fragments	May	North Yorkshire	case is still under investigation.
						This bird was found dead at a known raven roost site. Analysis has
						shown that it died from carbofuran poisoning. The case is closed. No
07100	39	carbofuran	raven	July	Grampian	enforcement action was taken.
						A red-kite skeleton was found. Lots of dead invertebrates on the body
						suggested that it may have died from pesticide poisoning. A low
						residue of carbofuran was found in material analysed from the body.
07009	40	carbofuran	red kite	January	Tayside	The case is closed. No enforcement action was taken.

Appendix 3 Incidents caused by abuse of pesticides in 2007

			Species or			
WIIS	Incident		sample			
number	number	Chemical	involved	Month	County	Comments
						A red kite was found dead. Muscle tissue found in the bird's digestive
						system was contaminated with grains. Residues of carbofuran were
						found in its liver tissue and gullet contents. Residues of brodifacoum,
07040	4.4	a a sha a fi sua a	no d leito		l li sub la sa d	bromadiolone and difenacoum were also found in liver tissue. This
07040	41	carboluran		Aprii	Highland	
						This bird was found dead in an area where there is a history of wildlife
						being poisoned (see incidents 18 and 26). Residues of carbofuran
						were found in liver tissue and in the gullet of the kite. Low residues of
07048	42	carbofuran	red kite	April	Strathclyde	bromadiolone and difenacoum were also found in liver tissue.
						This kite was found dead in woodland by a walker. The investigation
						confirmed that it had been poisoned with carbofuran. A red kite was
						also poisoned in this area in 2006. Scottish Government Rural
07056	43	carboturan	red kite	Мау	Highland	Payment and Inspections Directorate issued a warning letter.
07070	11	aarbofuran	rod kito	luna	Tavaida	A red kite carcase was found. Residues of carboturan were found in
07078	44	Carbolulan		June	Tayside	This radio tagged bird was found dead in a tree. The post mortem
						showed that carbamate insecticide poisoning was the likely cause of
						death. Ananlysis confirmed residues of carbofuran in liver tissue and
						gullet content material from the kite. The source of the chemical is not
					Dumfries and	known. A residue of bromadiolone, too low to cause death, was also
07191	45	carbofuran	red kite	December	Galloway	found in the liver tissue.
						A male, radio-tagged bird was found dead on the ground within a
						block of forestry. A dead crow was found in a nearby sheep field. The
						kite was found to have died from carbofuran poisoning but no
07053	46	carbofuran	red kite crow	May	Grampian	enforcement action was taken
07033	-0	carbolaran		lvidy	Clampian	A seven-year-old English Setter was jerking and fitting, with severely
						congested mucous membranes and a rapid heart rate. The dog died
						90 minutes later despite treatment. The other family dog, a Rottweiler
						pup, died suddenly at home on the same night. Carbofuran and
		carbofuran,				bromadiolone were found in the vomit. Deliberate poisoning is
2007-6761	47	bromadiolone	two dogs	April	Fermanagh	suspected.

Appendix 3 Incidents caused by abuse of pesticides in 2007

			Species or			
WIIS	Incident	Chaminal	sample	Manth	0 aunta	O ammanta
number	number	Chemical	involved	Month	County	Comments
07102	48	carbofuran, isofenphos	red kite	July	Tayside	This bird was found dead in woodland in an area where there is a history of pesticide poisoning (see incidents 49 and 50). The post-mortem showed that pesticide poisoning was the likely cause of death. Residues of carbofuran and isofenphos have been found in the bird's stomach. The case is currently being investigated.
07138	49	carbofuran, isofenphos	red kite	September	Tayside	This red kite was found dead close to an area where there is a recent history of pesticide poisoning (see incidents 48 and 50). The investigation showed residues of carbofuran and isofenphos in samples from the bird. The incident is still being investigated.
07150	50	carbofuran, isofenphos	red kite	October	Tayside	This is the third red kite from the same general area that has been poisoned with carbofuran and isofenphos (see incidents 48 and 49).
07103	51	carbofuran, sodium cyanide	golden eagle	August	Border	This female eagle was found dead at the bottom of a tree. There was food in the bird's mouth and gullet which suggests that the bird might have been poisoned. The investigation showed carbofuran poisoning was the cause of death. A tin of Cymag was found during the field investigation. This incident is still being investigated.
100/944	52	carbofuran, brodifacoum, difenacoum	two ravens, buzzard	November	Shropshire	Two dead ravens were found within four days of each other and a dead buzzard was found nearby. Tests showed carbofuran in the gizzards of all the birds and this was likely to be the cause of their deaths. There were residues of difenacoum and brodifacoum in the liver of one raven. Brodifacoum was found in the liver of the buzzard. The source of the pesticides is not known so the case is closed.
W/07/15	53	carbofuran, bromadiolone, difenacoum	two buzzards, two pheasant baits, three samples	August	Denbighshire	poults on the side of a track. The pheasant poults had had their crops slit open and contained blue-coloured pellets. Further tests showed a residue of bromadiolone in one of the pesticide samples and a residue of difenacoum in another. The incident is still being investigated.

Appendix 3 Incidents caused by abuse of pesticides in 2007

			Species or			
WIIS	Incident		sample			
number	number	Chemical	involved	Month	County	Comments
						A dog was seen to take something from a bowl in a neighbour's
						garden. Tests of the material in the bowl and from the rodenticide
			dog, rodenticide			container detected difenacoum. The police issued a warning letter to
100/934	54	difenacoum	formulation	November	Suffolk	the neighbour. This case has been closed.
						An ill pheasant was found on a pheasant shoot on an estate. The post-
						mortem revealed bluey-green stained material in the gizzard and
14/107/04						intestines. Lests showed difenacoum in the liver and the crop. The
VV/07/21	55	difenacoum	pneasant	November	Gwynedd	amount is likely to be the cause of death.
						It was suspected that this blue grain was an anticoagulant rodenticide.
						the size unstances, it appeared that this grain was being placed in an
100/747	56	difenacoum	blue grain	March	Lancashire	area so that wild pigeons would feed on it. The case is closed
100/747	50		blue grain	March	Lancashire	A sample of crystalline material was found which contained diguat
						dibromide. As there were no casualties and no suspect, the case is
100/852	57	diquat	sample	June	Cornwall	now closed.
	-	- 1	p -			Two dogs were taken ill in separate incidents after a walk in the same
						area. The first dog was seen to eat part of a rabbit. Within hours he
						died. The second dog also died after coming into contact with rabbit
						remains. Tests confirmed endrin, a banned insecticide, in the
						stomach contents of both dogs, in the rabbit remains and in the
						stomach and liver of a buzzard found recently in the same area.
		endrin,	two dogs,			Further tests revealed a small amount of difenacoum in its liver,
100/938	58	difenacoum	buzzard	November	Essex	though the endrin was the most likely cause of death.
			peregrine			A peregrine falcon was found dead beside a dead pigeon. Residues
			falcon, pigeon			of malathion were found in both the peregrine and in samples from
07050	59	malathion	bait	May	Central	the pigeon. This case is closed. No enforcement action was taken.

Appendix 3 Incidents caused by abuse of pesticides in 2007

			Species or				
WIIS	Incident		sample				
number	number	Chemical	involved	Month	County	Comments	
100/734	60	metaldehyde	badger sett, three pellet samples	March	Shropshire	A field walker saw some blue pellets in a badger sett. The badger sett had five entrances and all but one had blue pellets in. Although no badgers were found and there were no recent latrines with blue- coloured faeces found during a field inspection, one badger was reported to have been in distress the day after the pellets had appeared. Tests showed residues of metaldehyde. The case is closed.	
100/749	61	metaldehyde	badger sett, two potato and blue pellets suspected bait	March	Lancashire	It was suspected that these potatoes had been laced with a pesticide, possibly slug pellets. Tests have shown a residue of metaldehyde in a sample removed from both potatoes. This case is closed.	
07179	62	metaldehyde	bread bait	November	Strathclyde	A member of the public reported finding two dead crows in her garden. Earlier in the year she had found dead seagulls and crows on the hill opposite her house. On this occasion a police search of the hill opposite her house found a dead starling and a large amount of white bread, which had a blue chemical on it. Metaldehyde was found on the bread but no residue of metaldehyde was found in samples from the starling.	
100/840	63	metaldehyde	cat, two pellets, fish suspected bait	June	Suffolk	Tests showed metaldehyde in both samples of pellets and in the suspected bait material. The cat had shown signs typical of exposure to metaldehyde, but it had not been possible to find a residue of this in the blood sample. The Pesticides Safety Directorate sent a warning letter to the user and the case is now closed.	
						Three cats were suspected of being poisoned. Two of the cats were	
100/791	64	metaldehvde	three cats	Mav	Northamptonshire	treated by a private vet. They recovered and a sample of vomit from one cat later showed metaldehyde. The case is closed	
						Cat food had been laced with blue pellets. No animals were poisoned	
						as the bait was removed. Tests showed a residue of metaldehyde.	
100/879	65	metaldehyde	cat food	August	Nottinghamshire	The RSPCA is still investigating this case.	

Appendix 3 Incidents caused by abuse of pesticides in 2007

			Species or			
WIIS	Incident		sample			
number	number	Chemical	involved	Month	County	Comments
			dog, vomit sample, meat			A dog became ill and died after a walk. Later its owner retraced the walk and found baits near the entrance to a badger sett. Tests showed metaldehyde in the meat bait and the dog's stomach. This
100/924	66	metaldehyde	bait	October	Worcestershire	case is still being investigated.
100/722	67	metaldehvde	two dogs, three samples	March	Gloucestershire	Two dogs became ill after eating blue pellets wrapped in fat during a walk. Later that day one dog died and the other became sick. This dog survived after treatment from a vet. There was blue vomit near to the dead dog. The land owner had applied slug pellets against badgers and foxes. Tests on a sample of the vomit and stomach contents of the dead dog contained metaldehyde. The magistrates' court prosecuted the person responsible, and found him guilty on two counts of causing unnecessary suffering to the two dogs and on one count of putting down poisoned edible substances. This resulted in court costs of £1526 and expenses. This case is closed.
100/122	07	metaldenyde	Samples	March	Cioucestersnine	The sample found was made up of eggshell, with greeny blue liquid
100/821	68	metaldehyde	eggshell and dough-like suspected bait	June	Somerset	and what looked like a sausage with a greeny-blue paste. Tests showed a residue of metaldehyde. It appears that food had intentionally been laced with metaldehyde, which is an abuse of the pesticide. A closing letter has been sent to the householder. This case is closed.
100/933	69	metaldehyde	sample	November	Derbyshire	An RSPCA officer collected what appeared to be a potato baited with slug pellets from a residential garden. Foxes are fed by the householder every day and it appears the bait might have been intended for them. Tests showed metaldehyde. We do not know where the pesticide came from and the case is closed.
100/949	70	methiocarb	two dogs	November	Staffordshire	Two dogs became ill after a walk near a reservoir. The older one died that evening, the other was put down after five days. An inspection found blue pellets and bait outside a rabbit hole. Tests on vomit showed methiocarb. It is likely to have caused the dog's death. This case is closed.
						Hare carcases were found on an estate. Test showed a residue of
						mevinphos on one of the carcases. Scottish Government Rural
07035	71	mevinphos	two hare baits	March	Highland	Payment and Inspections Directorate issued a warning letter.

Appendix 3 Incidents caused by abuse of pesticides in 2007

	Incident		Species or			
number	number	Chemical	involved	Month	County	Comments
100/911	72	mevinphos, bromadiolone, difenacoum	two red kites, crow, rabbit bait	September	North Yorkshire	Two red kites, a crow and a suspected rabbit bait were found on rough pastureland by a walker, approximately 50 metres from a footpath. Tests confirmed a large residue of mevinphos on the rabbit carcase, in the stomach contents of the fox and the crop and gizzard of the birds and is likely to be the cause of death. Background levels of bromadiolone and difenacoum were found in the birds. A warning letter was sent to the suspect, after he failed to keep to an enforcement notice. This case is still under investigation.
100/835	73	naphthalene	badger sett, two mothballs suspected bait	June	Essex	It was suspected that the mothballs contained naphthalene. Laboratory tests confirmed this. It appears someone has intentionally placed these at a badger sett. The case is closed.
2007-001645	74	paraquat	dog, urine	January	Tyrone	A four year old male working dog had breathing diffiulties, anorexia and tongue ulceration. Tests on a sample of urine were positive for paraquat. The dog did not respond to treatment and had to be put down.
100/711	75	strychnine	two dogs, chicken carcase (bait)	February	West Yorkshire	Two dogs became ill after picking up a carcase while being walked. One of the dogs later died. Tests have shown a residue of strychnine in the bird carcase and in the dog's stomach. The amount found is likely to be the cause of death of one of the dogs and would account for the symptoms of the other dog. The RSPCA was investigating the case, but has now closed it.

				Species or			
WIIS	Incident			sample			
number	number	Chemical	Category	involved	Month	County	Comments
							marsh harrier. The amount found is quite small but may
							have contributed to the death of this bird. Further tests
		aldicarb,					showed a residue of difenacoum. This case is still being
100/783	1	difenacoum	unspecified	marsh harrier	Мау	Norfolk	investigated.
							Dead bees were found outside a hive and none of the other
							bees were flying. Two days later more dead bees were
							found outside. Tests showed a residue of bendiocarb in one
							of the bee samples. We do not know where the pesticide
100/845	2	bendiocarb	unspecified	honey bees	June	Greater London	came from. This case is closed.
							About 20 free-range ducks were thought to have been
							exposed to bromadiolone. The ducks died very quickly after
							and the post-mortem showed no haemorrhaging. There
							were low residues of bromadiolone in liver tissue but
							bromadiolone poisoning was not considered to be the cause
							of death. Further tests showed residues of bendiocarb in the
		bendiocarb,					ducks' stomachs. A field investigation has failed to find
07126	3	bromadiolone	unspecified	20 ducks	August	Grampian	where the bendiocarb came from.
							It was suspected that this red kite had been poisoned. Tests
							showed a residue of bendiocarb in the gizzard which is
							considered to be the cause of death. It is also possible that
							this bird was shot, as there was a lead bullet in the body. It
		bendiocarb,					also had small residues of brodifacoum and bromadiolone in
		brodifacoum,					the liver. The bendiocarb was the likely cause of death, but
100/750	4	bromadiolone	unspecified	red kite	April	East Yorkshire	we do not know where it came from. The case is closed.
							Dead bees were found in a living room after flying down the
							chimney. Tests found a residue of bendiocarb and a smaller
		bendiocarb,					residue of dieldrin. It is not certain where these bees were
100/800	5	dieldrin	unspecified	wild bees	May	Staffordshire	exposed to these pesticides. This case is closed.

				Species or			
WIIS	Incident			sample			
number	number	Chemical	Category	involved	Month	County	Comments
							A young dog became ill and died. The post-mortem showed
							that anticoagulant rodenticide poisoning was the likely cause
							of death. A residue of brodifacoum was found in the liver
							tissue. Where this chemical came from is still being
07144	6	brodifacoum	unspecified	dog	October	Strathclyde	investigated.
							It was suspected that a badger sett was being blocked and
							gassed. It looked like a tunnel had collapsed, and there were
							blue grains in the badgers' latrine. There were no casualties
		brodifacoum,					found. Tests on faeces confirmed residues of difenacoum
100/746	7	difenacoum	unspecified	badger sett	March	Essex	and a small amount of brodifacoum. This case is closed.
							Sudden illness resulting in haemorrhagic gastro-enteritis
							suggested that this dog might have been exposed to
							anticoagulant rodenticides. A low residue of bromadiolone
							was found in liver tissue but where this chemical came from
07132	8	bromadiolone	unspecified	dog	September	Tayside	is still not known.
							A number of dead wild pigeons were found in a garden and
							poisoning was suspected. Bluey-green pellets were seen
							scattered in the garden, although none of these were
							available for analysis. Tests on the pigeons confirmed a
							residue of bromadiolone but the cause of death is not
				four feral and			certain. It is likely that abuse has taken place. The case is
100/771	9	bromadiolone	unspecified	racing pigeons	April	Merseyside	closed.
							A residue of bromadiolone and a trace of difenacoum were
							confirmed in liver tissue from a fox found dead on farmland.
							Four farms in the area were visited, all were using
							difenacoum formulations for rodent control but none were
				_			using bromadiolone products. Where the bromadiolone
07024	10	bromadiolone	unspecified	fox	March	Lothian	came from is not known.
							This fox was found in a snare in a forestry plantation. The
							body was in an advanced state of autolysis (when cells
		bromadiolone,					break down). Residues of bromadiolone and brodifacoum
07016	11	brodifacoum	unspecified	fox	February	Strathclyde	have been confirmed in liver tissue.

				Species or			
WIIS	Incident			sample			
number	number	Chemical	Category	involved	Month	County	Comments
07182	12	bromadiolone, coumatetralyl	unspecified	dog	December	Strathclyde	Extensive haemorrhaging was found at the post-mortem, which suggests that this dog might have been exposed to anticoagulant rodenticides. Low residues of bromadiolone and coumatetralyl were confirmed in liver tissue from the dog.
07107	13	bromadiolone, difenacoum	unspecified	red kite	July	Highland	A red kite was found dead below the nest after fledging. The post-mortem suggested that the bird may have died as a result of a traumatic injury. As there is a history of anticoagulant rodenticide poisoning in the area, screening for proof of exposure to these compounds was carried out. Residues of bromadiolone and difenacoum were confirmed in liver tissue. The difenacoum residue is high enough to cause death.
07108	14	bromadiolone, difenacoum	unspecified	two red kites	July	Highland	These kites were found dead in the nest after they had fledged. Residues of difenacoum, high enough to cause death, were confirmed in both kites. A low residue of bromadiolone was also found in one of the birds.
07122	15	chlorophacinone	unspecified	ferret	August	Grampian	This incident is still being investigated.
07119	16	chlorpyrifos	unspecified	red kite	August	Central	A radio-tagged bird was found dead in the same area as incident 17 after being missing for seven days. The investigation showed a residue of chlorpyrifos in the gullet. It is not known where the pesticide came from.
07158	17	chlorpyrifos	unspecified	two red kites	October	Central	The remains of two red kites were found in an area where there is a history of pesticide poisoning (see incident 16). The investigation confirmed residues of chlorpyrifos in samples from one of the birds.
100/939	18	difenacoum	unspecified	red kite	November	North Yorkshire	A red kite was found dead in a field. The post-mortem found blood-clotting which suggested either a gun shot or anticoagulant rodenticides. Tests confirmed a residue of difenacoum in its liver. This would have contributed to its death. An advisory letter on rodenticides use has been sent to the farmer. This case is closed.

WIIS number	Incident number	Chemical	Category	Species or sample involved	Month	County	Comments
100/753	19	difenacoum, brodifacoum	unspecified	barn owl, tawny owl	April	Lancashire	A tawny owl and a barn owl were found alive but in distress in the same location within one day of each other. The tawny owl appeared to be starving and had damage to its left eye and later died. The barn owl appeared very thin and had some damage to its right wing. It was later put down. Tests confirmed residues of brodifacoum in the liver of both birds, and a small amount of difenacoum in the barn owl. This case is closed.
100/873	20	difenacoum, brodifacoum	unspecified	red kite	April	West Yorkshire	A red kite was found dead under a tree in a bird garden. Tests have confirmed residues of difenacoum and brodifacoum. The residues are likely to have contributed to the death of this red kite. It is not known where the pesticide came from. This case is closed.
100/952	21	difenacoum, bromadiolone	unspecified	buzzard	December	East Yorkshire	A male buzzard in good condition was found dead by the edge of a wood. Tests confirmed difenacoum and a smaller residue of bromadiolone. The residues, especially the difenacoum, may have contributed to its death. Although the trauma, the effects of which were found in the post-mortem, may also have contributed. It is not known where or how the buzzard came into contact with these rodenticides. The case is closed.
100/763	22	metaldehyde	unspecified	badger	April	East Sussex	A badger was found in a paddock with blue faeces. When the badger was found it appeared to be paralysed and was twitching. It recovered. The samples from the badger showed metaldehyde. It is not known where the pesticide came from. This case is closed.

wiis	Incident			Species or			
number	number	Chemical	Category	involved	Month	County	Comments
							It was suspected that two pheasants and a number of mice
							found near some turquoise-coloured grains might have been
							poisoned by pesticides. Tests showed metaldehyde in the
							pellets. There were no samples from the pheasants and
							mice available to test, so it is not certain if pesticides were
							involved in their deaths. There were no signs of spillages in
							the field margins and heavy rain had caused the pellets to
W/07/18	23	metaldehyde	unspecified	green pellets	October	Powys	decay.
							A chick was found dead in a nest. Diazinon residue was
						Dumfries and	found in its mouth. A low residue of bromadiolone was also
07082	24	diazinon	veterinary	red kite	June	Galloway	found in the liver tissue.
							A chick was found dead in a nest. Diazinon residue was
							found in the stomach. A low residue of bromadiolone and
							difenacoum was also found in liver tissue. This incident
07084	25	diazinon	veterinary	red kite	June	Central	happened in the same area as incident 26.
							This is the second kite from this area to be found dead (see
							incident 25). Although this bird was found dead at the
							roadside, there was concern that it had been poisoned.
							Tests have confirmed that the bird died from diazinon
							poisoning. A residue of difenacoum was also found in liver
07092	26	diazinon	veterinary	red kite	July	Central	tissue.
							An owl was found dead in a garden. The post-mortem
							showed a growth in the bird's gullet, which had probably
							made it difficult for the bird to eat. A low residue of
07004	27	bromadiolone	disease	tawny owl	January	Border	bromadiolone was confirmed in liver tissue from the owl.

				Species or			
WIIS	Incident			sample			
number	number	Chemical	Category	involved	Month	County	Comments
							A dead kite was found on farmland near to an old kite nest.
							This kite was believed to be one of three seen recently in the
							area. The post-mortem suggested that the kite had died
							from egg peritonitis, but it was suggested that
							organophosphates could stop the muscles of the oviduct
							from working properly. Tests found residues of
							bromadiolone and a smaller amount of difenacoum and
							brodifacoum in the liver. The combination of these residues
							may have caused death. A letter was sent to all landowners
		bromadiolone,					within two kilometres of the incident, telling them about what
		difenacoum,					had happened and emphasising the need for thorough
W/07/08	28	brodifacoum	disease	red kite	April	Cardiganshire	searches for bodies when carrying out rodent control.
							This buzzard was thought to have been poisoned. However,
							the post-mortem suggested that it had probably died from
							mycotic pneumonia. A low residue of difenacoum was found
07099	29	difenacoum	disease	buzzard	July	Grampian	in the liver tissue.
							A dead barn owl was found on an old quarry site by a bird
							ringer. He reported that there was no obvious sign of death.
100/000	20	bromodiolono	atom ration		lanuari	Norfelle	Bromadioione was found at sub-letnal levels. Starvation was
100/693	30	bromadioione	starvation	bam owi	January	NOTIOIK	The most likely cause of death. The case is closed.
07110	24	bromodiolono	atorian	buttord	August	Dordor	residue of bromediolone was found in the liver tiesue
07112	31	bromadioione	Starvation	Duzzaru	August	Dumfrice and	The hird died in poer condition. A low residue of
07117	32	bromadiolone	stanyation	buzzard	August	Galloway	bromadiolone was confirmed in liver tissue
07117	52	Diomacioione	Starvation	buzzaru	August	Galloway	This buzzard was found dead in an area where there is a
							history of pesticide poisoning. The post-mortem showed that
							starvation was the likely cause of death. Screening for proof
							of exposure to anticoagulant rodenticides was carried out
		brodifacoum.					I ow residues of bromadiolone and difenacoum were found
07173	33	difenacoum	starvation	buzzard	November	Border	in the liver tissue.
-		brodifacoum,					This bird died in poor condition. Low residues of
		bromadiolone,					brodifacoum, bromadiolone and difenacoum were found in
07125	34	difenacoum	starvation	buzzard	August	Border	the liver tissue.

				Species or			
WIIS	Incident			sample			
number	number	Chemical	Category	involved	Month	County	Comments
							This male buzzard was found dead in a garden. It was in
						Dumfries and	poor condition with very little food in the stomach. A low
07018	35	difenacoum	starvation	buzzard	February	Galloway	residue of difenacoum was found in the liver tissue.
							The bird died in poor condition. A low residue of difenacoum
07115	36	difenacoum	starvation	buzzard	August	Border	was found in the liver tissue.
							There was bruising under the bird's skull, which suggests
							that trauma was the likely cause of death in this incident.
		brodifacoum,				Dumfries and	Low residues of brodifacoum and bromadiolone were found
07114	37	bromadiolone	trauma	sparrowhawk	August	Galloway	in the liver tissue.
							This bird was found dead at the roadside. The post-mortem
		brodifacoum,					showed that the bird had died from some kind of traumatic
		bromadiolone,					injury. Low residues of brodifacoum, bromadiolone and
07090	38	difenacoum	trauma	buzzard	July	Grampian	difenacoum were found in the liver tissue.
							This bird was found dead in an area where pesticides are
							known to be used. The post-mortem showed that trauma
							was the likely cause of death. Screening for proof of
							exposure to anticoagulant rodenticides was carried out and a
07183	39	bromadiolone	trauma	barn owl	December	Lothian	low residue of bromadiolone was found.
							Information suggested that these birds may have died from
							being electrocuted. A low residue of bromadiolone was
07015	40	bromadiolone	trauma	two buzzards	February	Grampian	found in liver tissue from one of the birds.
							This buzzard was found dead in a field. The post-mortem
							showed that trauma was the likely cause of death. A low
07037	41	bromadiolone	trauma	buzzard	April	Highland	residue of bromadiolone was found in liver tissue.
							The buzzard was found dead. The post-mortem showed that
							trauma was the likely cause of death. An x-ray showed that
							the bird had been shot. A low residue of bromadiolone was
07104	42	bromadiolone	trauma	buzzard	August	Grampian	found in the liver tissue.
							The post-mortem suggested that trauma was the likely
							cause of death. A low residue of bromadiolone was found in
07149	43	bromadiolone	trauma	buzzard	September	Tayside	the liver tissue.

				Species or			
WIIS	Incident			sample			
number	number	Chemical	Category	involved	Month	County	Comments
							Trauma associated with a head injury was the likely cause of
							death. Screening for proof of exposure to anticoagulant
		bromadiolone,					rodenticides was carried out. Low residues of bromadiolone
07110	44	difenacoum	trauma	buzzard	July	Tayside	and difenacoum were found in the liver tissue.
							An owl was found dead under a tree. The post-mortem
							showed that trauma was the likely cause of death. Low
							residues of bromadiolone and brodifacoum were found in the
	4.5	bromadiolone,					liver tissue. The combined residues are high enough to
07060	45	brodifacoum	trauma	barn owl	May	Border	cause death.
							This bird showed signs of traumatic damage to the head and
							right leg. Screening for proof of exposure to anticoagulant
		bromadiolone,					rodenticides was carried out. Low residues of bromadiolone
07142	46	difenacoum	trauma	buzzard	September	Grampian	and difenacoum were found in the liver tissue.
							I his kite was injured in a road traffic accident and put down
							by a vet. There have been incluents involving rodenticide
							exposure to these compounds was carried out. I ow residues
		bromadiolone					of bromadiolone and difenacoum were found in the liver
07106	17	difenacoum	trauma	red kite	lune	Highland	tissue
07100	47		uauma		Julie	i nginana	
							This buzzard was found alive but later died. The post-
							mortem showed that trauma might be responsible for the
						L	death. A low residue of difenacoum was found in its liver
08042	48	difenacoum	trauma	buzzard	December	layside	tissue.
							This buzzard was found dead. A low residue of brodifacoum
07178	49	brodifacoum	unknown	buzzard	November	Highland	was found in the liver tissue.
							A decaying body of an owl had a low residue of brodifacoum
07127	50	brodifacoum	unknown	tawny owl	August	Lothian	in its liver tissue.
							This buzzard was found dead. A cause of death could not be
							found. A low residue of bromadiolone was found in the liver
07033	51	bromadiolone	unknown	buzzard	March	Grampian	tissue.
07454			1.	l		L	I his buzzard was found dead. A low residue of
07154	52	promadiolone	unknown	buzzard	October	layside	bromadiolone was found in the liver tissue.

				Species or			
WIIS	Incident			sample			
number	number	Chemical	Category	involved	Month	County	Comments
07007	53	bromadiolone	unknown	buzzard, kestrel	January	Fife	These birds were found dead in a garden. Both birds were in poor condition and they had eaten little or no food. Low residues of bromadiolone were found in the liver tissue of both birds.
100/778	54	bromadiolone	unknown	two foxes	April	Berkshire	Two dead foxes were tested. One was in good condition and had been found along a footpath. The other was more decomposed and had been found in woodland. Tests confirmed a small residue of bromadiolone in the liver of one fox. The cause of death of these foxes is not known. The case is closed.
100/871	55	bromadiolone	unknown	little owl	August	Derbyshire	A little owl was found near an old waterworks. Two weeks before this, a dead fox had been found in the area, again with no signs of injury. Tests showed a small residue of bromadiolone in the owl's liver. Its cause of death is not known. This case is closed.
W/07/04	56	bromadiolone	unknown	red kite	April	Cardiganshire	A dead kite was found under a nest and it was thought it may have been poisoned. A small residue of bromadiolone was found, but this is thought to only be due to exposure to the pesticide. The cause of death is not known.
07148	57	bromadiolone, difenacoum	unknown	buzzard	September	Tayside	This buzzard was found dead. Tests failed to show the cause of death. Low residues of bromadiolone and difenacoum were found in the liver tissue.
07141	58	bromadiolone, difenacoum	unknown	red kite	September	Highland	A red kite was found hanging by one wing on a barbed wire fence beside a rail track. Low residues of bromadiolone and difenacoum were found in the liver tissue.
07161	59	DDT	unknown	peregrine falcon	November	Border	A residue of DDT (as p,p'-DDE) was found in this bird.
07023	60	difenacoum	unknown	buzzard	March	Border	This buzzard was found dead on an estate. The post- mortem did not show that the bird had been poisoned. A low residue of difenacoum was found in the liver tissue.
07152	61	difenacoum	unknown	buzzard	October	Border	difenacoum was found in the liver tissue.

WIIS number	Incident number	Chemical	Category	Species or sample involved	Month	County	Comments
100/748	62	difenacoum	unknown	two badgers	April	Worcestershire	Two dead badgers were found near a sett. One badger was tested and a residue of difenacoum was found. This is unlikely to be the cause of death. The cause of death is not known.
100/740	63	difenacoum	unknown	seven collared doves, suspected bait	March	East Yorkshire	It was suspected that this dove had been poisoned, possibly after being exposed to an anticoagulant rodenticide. No residues were found, although a small unconfirmed residue of difenacoum was found in the liver from the dove. The cause of death of this dove is not known and the grain sample does not contain an anticoagulant rodenticide. The case is closed.
07188	64	difenacoum	unknown	fox	December	Northern Isles	This fox was found dead at the roadside. A low residue of difenacoum was found in its liver tissue.
100/913	65	fluvalinate	unknown	bees	October	Berkshire	There was no likely cause of death found. Tests showed fluvalinate, probably a treatment for varroa mite. The cause of death of these bees is not known.
100/819	66	pyraclostrobin	unknown	horse, 60 wood pigeons, four samples	June	Lincolnshire	It was suspected that these animals had been exposed to a pesticide. The sample of wheat and the swab from the horse had been analysed for a range of fungicides. A residue was confirmed in the wheat sample only. Tissues from the wood pigeons were also analysed but no residues were found. The death of these birds and the cause of symptoms shown by the horse are not known. This case is closed.