Summary
During the year, FOD staff investigated 79 reported pesticide incidents, including 30 cases involving allegations of ill health. This is a decrease in the number of complaints alleging ill health. As in previous years, the majority of people involved in reported incidents were members of the public, allegedly exposed as bystanders during spraying activities.

PIAP considered all 30 of the reported incidents involving allegations of ill health. The panel assessed six cases as ‘likely’ to be linked to pesticide usage.

Introduction
1 This report provides information on incidents and complaints involving pesticides investigated by the Field Operations Directorate (FOD) of the Health and Safety Executive (HSE) between 1 April 2010 and 31 March 2011.

2 The report comprises:

- statistical information on complaints and enforcement;
- a report on alleged ill-health incidents reviewed by HSE’s Pesticide Incidents Appraisal Panel (PIAP); and
- environmental and other complaints not alleging ill health.

3 FOD’s activity on pesticides is not limited to the investigation of incidents and complaints and formal enforcement. HSE staff also provide advice and guidance to members of the public and to employers, the self-employed and employees during site visits and inspections.

4 When investigating pesticide incidents and complaints, HSE staff are concerned not only with the health of people at work and members of the public who may be affected by work activities, but also with the effects of pesticides on the environment. The investigation of incidents often requires expertise from a range of disciplines within HSE. Inspectors, specialist inspectors, qualified medical and occupational health professionals and scientists from the Health and Safety Laboratory (HSL) and HSE’s Chemical Regulation Directorate (CRD) may all be involved. Inspectors also liaise locally with other bodies that have enforcement responsibilities for pesticide activities, including other government departments such as the Environment Agency (EA), the Department for Environment, Food and Rural Affairs (Defra) and the local authorities (LAs) in Britain, to ensure a consistent and co-ordinated approach.

5 This report does not include investigations for which these other bodies are the enforcing authority. Similarly, products such as veterinary medicines (including sheep treatments), which are subject to the Medicines Act 1968, are outside the remit of the report.

6 The report and details of individual incidents will be presented to the Advisory Committee on Pesticides (ACP) to inform the pesticides approvals process.
Statistical summary

7 During 2010/11 FOD inspectors investigated 79 reported pesticide incidents (complaints). Thirty complaints involved allegations of ill health, with the remaining 49 complaints involving other issues to do with pesticide use. The total of 79 incidents is a decrease from the previous year’s figure of 92, 44% lower than the average for the previous ten years and also the lowest number recorded since 1994/95.

8 Figure 1 shows how the numbers of incidents and complaints compared with previous years.

9 The number of complaints alleging ill health is a decrease of 11 from the previous year’s figure of 41 and 20 (40%) fewer than the average of the previous ten years. This is the lowest figure on record since 1994/95 (the range is between 71 and 32). Further analysis of these complaints is in paragraphs 15–41.

10 The number of other complaints is two less than the previous figure of 51 and 43 (46%) lower than the average for the previous ten years. This is also the lowest figure recorded since 1994/95. Further analysis of these complaints is in paragraphs 42–47.

11 Inspectors issued 11 enforcement notices, three under the Food and Environment Protection Act 1985 (as amended) (FEPA) and eight under the Control of Pesticides Regulations 1986 (as amended) (COPR) during the year, compared with four in 2009/10.

12 No charges were laid before the courts during the year under FEPA or COPR.

13 These enforcement figures are provisional and may change when finalised.

14 Inspectors also enforce matters relating to the use of pesticides under health and safety legislation, principally the Health and Safety at Work etc Act 1974 (HSWA) and the Control of Substances Hazardous to Health Regulations 2002 (as amended) (COSHH). This report does not include information on any related enforcement under this legislation.
Alleged ill-health incidents

The Pesticide Incidents Appraisal Panel

15 HSE’s Pesticide Incidents Appraisal Panel considers all incidents reported to FOD where there is any allegation that the use of a pesticide has caused ill health, complaints usually coming from members of the public alleging overspray from some farming spraying activity. PIAP is notified of these incidents only on completion of the inspector’s investigation.

16 On occasion, PIAP also considers a small number of other incidents, which fall within the jurisdiction of other parts of HSE or of a different enforcing authority, such as a local authority.

17 The data in this report is presented in line with that of previous reports since 1995/96. However, the role of PIAP remains under continuing review within HSE as part of a wider discussion – both within government and by its Advisory Committee on Pesticides – on pesticide monitoring and surveillance schemes.

18 We believe that considerable improvements have been made to the data collection and handling since our last report. This view was also endorsed by the panel when it met on 1st September 2011.

19 The PIAP membership for 2010/11 is listed below:

- Dr D Sen, HSE, Corporate Medical Unit, Chair
- Mr Alastair Robertson, IOM Consulting
- Dr N Langford, City Hospital, Birmingham
- Dr S Bradberry, City Hospital Birmingham (and NPIS)
- Mr J Battershill, Health Protection Agency
- Dr L Hetherington, Health Protection Agency
- Mr N Sangha, HSE, Agriculture and Food Sector
- Mr D Jacques, HSE, Corporate Medical Unit, Secretary

20 The main purpose of PIAP, however, remains ‘to provide an overview of alleged ill health attributed to pesticide exposure (as reported to and investigated by HSE) so that new issues and trends can be identified, and to inform the pesticides approval process’.

21 To fulfil this purpose, PIAP considers individual incident and case reports, not to establish the cause, but to consider the strength of the association between exposure and ill health. During the year the panel has, therefore, continued to assess reports based on the ‘balance of probability’ from available information and not, as before 2002, making an assessment ‘beyond reasonable doubt’.

22 This shift in the approach to case assessment should lower the threshold for recording cases as being potentially relevant or important. It should also help identify any new associations. While the change might cause some distortion to the comparative year-on-year results presented in the annual report series, it will provide a ‘categorisation’ of cases more appropriate to PIAP’s defined purpose.

23 Appendix 1 outlines the current case/incident classification scheme, which remains largely unchanged from previous years, and Appendix 2 is a flow chart showing how PIAP reviews cases to reach its decision.
Summary information on alleged ill-health incidents for 2010/11

24. Table 1 shows the outcome for the 30 incidents forwarded to PIAP in 2010/11 (there were no incidents forwarded by LAs in this year) broken down according to the panel’s assessment (using the classification scheme in Appendix 1) and the employment status of the people involved.

Table 1 Number of alleged ill-health incidents and people affected analysed by PIAP decision and employment status 2010/11

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Employees/self-employed working with pesticides</th>
<th>Members of public/others</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Incidents</td>
<td>(People)</td>
<td>Incidents</td>
</tr>
<tr>
<td>Confirmed</td>
<td>0</td>
<td>(0)</td>
<td>0</td>
</tr>
<tr>
<td>Likely</td>
<td>6</td>
<td>(7)</td>
<td>0</td>
</tr>
<tr>
<td>Open assessment (i)</td>
<td>2</td>
<td>(2)</td>
<td>0</td>
</tr>
<tr>
<td>Open assessment (ii)</td>
<td>2</td>
<td>(4)</td>
<td>0</td>
</tr>
<tr>
<td>Unrelated</td>
<td>7</td>
<td>(10)</td>
<td>1</td>
</tr>
<tr>
<td>Insufficient information</td>
<td>10</td>
<td>(14)</td>
<td>0</td>
</tr>
<tr>
<td>Pending</td>
<td>0</td>
<td>(0)</td>
<td>0</td>
</tr>
<tr>
<td>Not an incident</td>
<td>3</td>
<td>(4)</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
<td><strong>(41)</strong></td>
<td><strong>2</strong></td>
</tr>
</tbody>
</table>

25. In this and subsequent analyses, incidents in which more than one individual was alleged to have been made ill, and for which the individuals received a different assessment by the panel, have been classified according to the most serious individual assessment. The ranking of severity is taken as being ‘confirmed’, ‘likely’, ‘open assessment’, and ‘insufficient information’. There is also an ‘unrelated’ category.

26. In all the ‘likely’ cases involving more than one individual, the panel assessed, on every occasion, all the members of each group to be similarly and therefore ‘likely’ exposed.

27. There were 10 incidents with ‘insufficient information’, 4 with an ‘open assessment (i and ii)’, and 7 which the panel considered ‘unrelated’.

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Pesticide Incidents Report: Field Operations Directorate investigations
Overall trends

28. Figure 2 shows the number of incidents forwarded to PIAP in each of the last ten years, analysed according to whether the panel classified the link between pesticide usage and the alleged ill health as “confirmed” or “likely”, or came to some other decision.

![Figure 2](image)

Figure 2 Trends in PIAP decisions

29. The proportion of the total (excluding ‘pending’) incidents assessed as ‘confirmed’ or ‘likely’ has been in the order of 20–25% since 1995/96, except in 2000/01 when it was 10%. In 2002/03 the figure was 13%, while for 2009/10 the figure had fallen to 9.8% (4 out of 41). In the current year, if one considers just those incidents (30) reported to HSE in 2010/11, the figure for ‘confirmed’ and/or ‘likely’ incidents is 20% (6 out of 30) – 17.1% of cases (7 out of 41 individuals) were ‘likely’. There were 33% of incidents (10 out of 30) with insufficient information, a significant decrease from the previous year.

30. The number of people involved in reported incidents considered by the panel in each of the last ten years, either people using pesticides as part of a work activity or members of the public, is shown in Figure 3 (excluding a small number of cases where employment status was not recorded).

![Figure 3](image)

Figure 3 Trends in employment status: all alleged ill-health incidents
31 Figure 3 shows that the majority of people involved in reported incidents each year continue to be members of the public. The proportion in employment has fluctuated over the past ten years, although for the past five years it has remained small. The total number of people involved in alleged ill-health incidents has also fluctuated greatly from one year to the next. Much of this fluctuation may reflect the occurrence of single incidents involving large numbers of people (as in 2009/10), all assessed as ‘likely’ cases. By contrast, over recent years, the number of incidents reported each year has not been so variable, as Figure 2 shows.

**Recent ill-health data**

32 Since 1994/95, the panel has recorded the type and severity of the ill health experienced by people involved in incidents with a ‘confirmed’ or ‘likely’ assessment. In 2002/03 this was extended to include cases receiving an open assessment. Symptoms are recorded as ‘acute’ and/or ‘chronic’, ‘local’ and/or ‘systemic’ and their severity as ‘mild’ (requiring no or self-treatment), ‘moderate’ (presenting to a GP or hospital accident and emergency department) or ‘severe’ (in-patient treatment).

33 Table 2 summarises the information on severity of symptoms for the current year, 2010/11. It incorporates the assessments of all incidents (10) and associated individuals (13) with a ‘confirmed’, ‘likely’, or ‘open’ assessment.

<table>
<thead>
<tr>
<th></th>
<th>Mild Incidents (People)</th>
<th>Moderate Incidents (People)</th>
<th>Severe Incidents (People)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confirmed</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Likely</td>
<td>6 (7)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Open assessment (i)</td>
<td>2 (2)</td>
<td>1 (1)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Open assessment (ii)</td>
<td>2 (4)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>10 (13)</strong></td>
<td><strong>1 (1)</strong></td>
<td><strong>0 (0)</strong></td>
</tr>
</tbody>
</table>

34 The individual who was assessed as having ‘moderate’ symptoms was classified as showing ‘systemic’ signs or symptoms and/or needing the attention of their GP or a doctor in the local accident and emergency department; 13 were assessed as having ‘mild local’ symptoms that were usually self-limiting.

35 Mild local symptoms are most commonly a self-limiting skin rash or an irritation of the skin, eyes or respiratory tract, while mild systemic symptoms include transient headaches and nausea.

**Recent and historical data on pesticides**

36 For each of the pesticides reported to be involved in an incident, the database records the trade names and the names of the active ingredients where these have been identified. In addition to an assessment of cases against the known toxicology of active ingredients the panel has, since April 2001, included a consideration of the hazards associated with co-formulants.

37 For many incidents, however, information relating to product identification is not available and this contributes to the high proportion of cases categorised as ‘insufficient information’. During 2010/11, products could not be identified for 5 of the 30 reported incidents (16.6%).
38 The full interpretation of the overall PIAP database is not only limited by the lack of product information, but also by the fact that the relative importance of particular categories of pesticide may simply reflect the fact that their usage is more widespread rather than indicating that they are more hazardous. Also, mention of an active ingredient in the report of an incident need not imply that it contributed to any ill-health effect; many pesticides include more than one active ingredient, as well as non-active components, and it may be that one of these was responsible.

39 Accepting these limitations, the most common pesticide function associated with incidents reported to PIAP is herbicide, followed by fungicide and insecticide. In 2010/11, of the 58 identified products involved in the reported incidents there were 34 herbicides, 25 fungicides, 8 insecticides, and 4 ‘other’ groupings.

40 The most commonly recorded active ingredient during 2010/11 was tebuconazole (4), glyphosate (3), diflufenican (3) and propaquizafop (3) with no other actives having a greater involvement.

41 Finally, a point of observation – as in the previous year the Medical Panel only met once in 2010/11, a consequence of the steady fall in numbers of reported cases with a possible health outcome. This meeting took place on 1st September 2011.

**Environmental and other non-health complaints 2010/11**

42 During the year there were 49 environmental and other complaints, ie complaints in which there were no allegations of ill health relating to exposure. This is a decrease of two from the previous year’s figure of 51 (2009/10) and compares with an average of 92 over the previous ten years 2001/02–2009/10. See Figure 1 and paragraphs 7–10 for statistical analysis of the figures.

43 Figures 4 to 6 summarise the number of complaints in 2010/11, classified according to the industry sector in which the pesticides were used, the work activity involved and the method of application.
Of the 49 complaints, 38 (78%) originated from the use of pesticides within the agricultural sector. Two were in horticulture (4%), one domestic (2%), and the remaining 8 (16%) were associated with ‘other industries’.

**Figure 5** Number of environmental and other non-health complaints 2010/11: classified by activity

Crop spraying accounted for 68% of all environmental and other non-health complaints investigated during 2010/11. Other significant activities included weed control 18%, orchard spraying 6%, storage and amenity spraying 2% (each). The remaining 4% occurred within a group of miscellaneous activities, including other pest control.

**Figure 6** Number of environmental and other non-health complaints 2010/11: classified by application method

Conventional crop boom sprayers were involved in approximately 60% of all environmental and other non-health complaints. Knapsack spraying accounted for 12% and spraying by ATV a further 6%. For the remaining 22% of complaints, the application method was either not recorded or not relevant.
Of the 49 complaints, 45 of them were reported by members of the public, consistent with experience in previous years. Four incidents were reported by employees.

**Appendix 1: PIAP classification scheme**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Confirmed</strong></td>
<td>There are clinical symptoms and signs typical of exposure to the cited pesticide formulation combined with either:</td>
</tr>
<tr>
<td></td>
<td>■ corroborating medical and (where appropriate) biochemical evidence; or</td>
</tr>
<tr>
<td></td>
<td>■ evidence of overexposure.</td>
</tr>
<tr>
<td><strong>Likely</strong></td>
<td>The balance of evidence based on reported exposure circumstances, clinical symptoms and signs or biochemical evidence (where appropriate) is consistent with ill health due to exposure to the cited pesticide formulation.</td>
</tr>
<tr>
<td><strong>Open assessment</strong></td>
<td>(i) The reported ill health is not consistent with the known potential ill-health effects of the cited pesticide formulation given the reported exposure circumstances but the implied association cannot be entirely discounted in the light of current knowledge; or</td>
</tr>
<tr>
<td></td>
<td>(ii) The evidence is consistent with pesticide exposure being the cause of the reported ill health but alternative explanations, eg pre-existing disease are also present.</td>
</tr>
<tr>
<td><strong>Unrelated</strong></td>
<td>There is strong evidence, eg evidence about exposure or from medical reports, that the reported ill health is not pesticide-related.</td>
</tr>
<tr>
<td><strong>Insufficient information</strong></td>
<td>The available data is insufficient, incomplete or conflicting and the panel is unable to classify a case for one or more of these reasons.</td>
</tr>
</tbody>
</table>
Appendix 2: Flow chart for PIAP assessments

Submitted pesticide incident investigation papers

Is there evidence of ill health?

YES

NO

Is there an associated chronic illness?

YES

NO

NOT AN ILL HEALTH INCIDENT

Is there sufficient information to assess the illness?

YES

NO

INSUFFICIENT INFORMATION

Is the incident associated with a acute illness?

YES

NO

Adequately defined symptoms

Where consulted GP records or report available with consent

Where attended hospital records or consultants report available with consent

Flow chart action ingredient

A clear route of exposure

Where documented - exposure / environmental records available

The temporal relationship between exposure and symptoms is 'credible'

The duration / pattern of symptom development and resolution is 'credible'

YES

NO

UNRELATED

Is the exposure reaction relationship consistent?

YES

NO

Is the exposure reaction relationship consistent?

YES

NO

Is there a strong association with exposure?

YES

NO

Is there strong evidence for another cause?

YES

NO

OPEN ASSESSMENT (i)

Are the illness effects recognized for constituents of the formulation?

YES

NO

OPEN ASSESSMENT (ii)

Are the illness effects most likely due to the pesticide formulation?

YES

NO

Are the illness effects most likely due to the pesticide formulation?

YES

NO

ARE THE ILLNESS EFFECTS MOST LIKELY DUE TO THE PESTICIDE FORMULATION?
Further reading


5 Code of Practice for using plant protection products PB11090 Defra and HSE, available from Defra Publications, ADMAIL 6000, London SW1A 2XX Tel: 08457 556000 or view online at www.pesticides.gov.uk

6 Guidance on storing pesticides for farmers and other professional users Agriculture Information Sheet AIS16 HSE Books 1996 (free)

7 Reporting incidents of exposure to pesticides and veterinary medicines: What to do if you think people, animals or the environment have been harmed by exposure to pesticides or veterinary medicines Leaflet INDG141(rev1) HSE Books 1999 (single copy free)
Further information

Information on approved pesticide products is available online at www.pesticides.gov.uk (agricultural pesticides) and www.hse.gov.uk (non-agricultural pesticides). The sites are continually updated so that the most up-to-date information is freely available.

Enquiries concerning this report should be addressed to:

Health and Safety Executive
Agriculture and Food Sector
City Gate West
Toll House Hill
Nottingham NG1 5AT

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This document contains notes on good practice which are not compulsory but which you may find helpful in considering what you need to do.

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