Pesticide Incidents Report
Field Operations Directorate investigations
1 April 2011 – 31 March 2012

Summary
During the year, staff from the Field Operations Directorate (FOD) investigated 69 reported pesticide incidents, including 22 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 an alleged ill health incident were members of the public, who claim to have been exposed as bystanders during spraying activities.

The Pesticide Incidents Appraisal Panel (PIAP) considered all 22 of the reported incidents involving allegations of ill health. The panel assessed five cases as ‘likely’ to be linked to pesticide usage and one case as confirmed.

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 2011 and 31 March 2012.

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 activity on pesticides is not limited to the investigation of incidents and complaints and formal enforcement. 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, the Department for Environment, Food and Rural Affairs (Defra) and the local authorities throughout Great 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 this report.

6 This 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 2011/12 FOD inspectors investigated 69 reported pesticide incidents (complaints). Twenty-two (22) complaints involved allegations of ill health. The remaining 47 complaints involved other issues to do with pesticide use, eg approval, labelling, supply, storage, overspray etc. The total of 69 incidents is a decrease from the previous year’s figure of 79; 48% lower than the average for the previous ten years and the lowest number recorded since 1994/95.

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

![Figure 1](image-url)  

Figure 1 FOD alleged ill-health incidents and other complaints 2001/02–2011/11

9 The number of complaints alleging ill health is a decrease of 8 from the previous year’s figure of 30, and 24 (52%) fewer than the average of the previous ten years. This is the lowest figure on record since 1994/95 (the range over this period being between 128 and 30 cases). Further analysis of these complaints is set out in paragraphs 15–40.

10 The number of other complaints is two less than the previous figure of 49 and 40 (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 41–46.

11 Inspectors issued nine enforcement notices: two under the Food and Environment Protection Act 1985 (as amended) (FEPA); four under the Control of Pesticides Regulations 1986 (as amended) (COPR); and three under the Plant Protection Products (Basic Conditions) Regulations 1997 (PPPR) (as amended) during the year, compared with 11 in 2010/11.

12 In May 2012 three informations were laid before the courts under COPR relating to the storage and use of non-approved pesticides. The defendant pleaded guilty and was fined £3000 plus £3500 towards the prosecution costs.
13 These enforcement figures are provisional and may be revised before publication in HSE’s Annual Report 2011/12. Further details can be found on HSE’s register of prosecutions and notices database at www.hse.gov.uk/enforce/prosecutions.htm.

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 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 2011/12

The Pesticide Incidents Appraisal Panel (PIAP)

15 PIAP considers all incidents reported to FOD where there is any allegation that the use of a pesticide has caused ill health. Complaints are usually made by members of the public alleging overspray from farm spraying activity. PIAP is notified of these incidents only on completion of the inspector’s investigation.

16 On occasion, PIAP will also consider 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 continual review within HSE as part of a wider discussion – both within government and 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 endorsed by the panel when it met on 4 September 2012.

19 The PIAP membership for 2011/12 is listed below:

Dr D Sen, HSE, Corporate Medical Unit, Chair
Dr S Bradberry, City Hospital Birmingham (and National Poisons Information Service)
Dr N Langford, City Hospital, Birmingham
Dr L Hetherington, Health Protection Agency
Mr J Battershill, Health Protection Agency
Dr Karen Galea, IOM Consulting
Mr N Sangha, HSE, Agriculture, Waste and Recycling 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. In recent years, therefore, the panel has assessed reports based on the ‘balance of probability’ from available information and not, as before 2002, making an assessment ‘beyond reasonable doubt’.

22 Appendix 1 outlines the current case/incident classification scheme, which remains largely unchanged from previous years. Appendix 2 is a flow chart which shows how PIAP reviews cases to reach its decision.

**Summary information on alleged ill-health incidents for 2011/12**

23 Table 1 shows the outcome for the 22 incidents forwarded to PIAP in 2011/12 (there were no incidents forwarded by local authorities during the 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>
<thead>
<tr>
<th>Table 1</th>
<th>Number of alleged ill-health incidents and people affected analysed by PIAP decision and employment status 2011/12</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>Incidents (People)</td>
<td>Incidents (People)</td>
</tr>
<tr>
<td>Confirmed</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Likely</td>
<td>4.5* (7)</td>
</tr>
<tr>
<td>Open assessment (i)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Open assessment (ii)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Unrelated</td>
<td>7 (17)</td>
</tr>
<tr>
<td>Insufficient information</td>
<td>7.5* (19)</td>
</tr>
<tr>
<td>Pending</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Not an incident</td>
<td>2 (3)</td>
</tr>
<tr>
<td>Total</td>
<td>22 (47)</td>
</tr>
</tbody>
</table>

* Relates to a single incident where a number of individuals had been exposed to pesticides but panel felt that each case ought to be assessed on an individual basis.

24 In this and previous analyses, those incidents in which more than one individual person claimed to have been made ill by pesticides were subsequently classified according to the most serious individual assessment. The panel concluded that each individual should be assessed separately and the case ranked according to severity. The ranking by severity is: ‘confirmed’; ‘likely’; ‘open assessment’; and ‘insufficient information’. There is also an ‘unrelated’ category.

25 However, in one of the incidents that involved 14 individuals, the panel assessed each person according to symptoms, severity and similarity. The panel concluded that only two individuals were ‘likely’ to have been exposed on the balance of probability. Information as to the remaining 12 individuals was deemed to be ‘insufficient’.
A further four incidents (involving five individuals) were classed as ‘likely’ to have been exposed. In seven incidents the panel concluded that the available data was ‘insufficient’. None of the incidents was classed as ‘open assessment (i and ii)’, and the panel considered that the remaining seven incidents were ‘unrelated’ to pesticide exposure.

**Overall trends**

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-url)  
**Figure 2** Trends in PIAP decisions

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 just those incidents (22) reported to HSE in 2011/12 are considered, the figure for ‘confirmed’ and/or ‘likely’ incidents is 25% (5.5 out of 22) – 17% of cases (8 out of 47 individuals) were ‘confirmed’ or ‘likely’. There were 34% of incidents (7.5 out of 22) with ‘insufficient information’, which is disappointing in view of the efforts being made to collect relevant information. The main shortfall remains in the availability of corroborating medical information (from a general practitioner (GP) or hospital doctor) and the failure by a number of complainants to return signed consent forms.

The number of people involved in reported incidents considered by the panel in each of the last ten years, either those 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  Trends in employment status: all alleged ill-health incidents

30 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 impact 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
31 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). Difficulty in obtaining signed consent from complainants and hence obtaining their medical information to corroborate their signs and symptoms has been mentioned in paragraph 29.

32 Table 2 summarises the information on severity of symptoms for the current year, 2011/12. It incorporates the assessments of all incidents (5.5) and associated individuals (8) with a ‘confirmed’, ‘likely’, or ‘open’ assessment.

<table>
<thead>
<tr>
<th>Severity of Ill Health</th>
<th>Mild Incidents</th>
<th>Moderate Incidents</th>
<th>Severe Incidents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>People</td>
<td>People</td>
<td>People</td>
</tr>
<tr>
<td>Confirmed</td>
<td>1 (1)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Likely</td>
<td>4.5* (7)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Open assessment (i)</td>
<td>0 (0)</td>
<td>1 (1)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Open assessment (ii)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><em><em>5.5</em> (8)</em>*</td>
<td><strong>0 (0)</strong></td>
<td><strong>0 (0)</strong></td>
</tr>
</tbody>
</table>
33 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; 8 were assessed as having ‘mild local’ symptoms that were usually self-limiting.

34 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**

35 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.

36 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 2011/12, however, products could not be identified in only one of the 22 reported incidents (4.5%).

37 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. Moreover, 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.

38 Accepting these limitations, the most common pesticide classification associated with incidents reported to PIAP is herbicide, followed by fungicide and insecticide. In 2011/12, of the 37 identified products involved in the reported incidents there were 19 herbicides, 10 fungicides, 6 insecticides, and 2 ‘other’ groupings.

39 The most commonly recorded active ingredient during 2011/12 was pendimethalin (5), flufenacet (5), mesosulfuron-methyl (2), mcpa (2), pyraclostrobon (2), lambda-cyhalothrin (2), cypermethrin (2), fenpropimorph (2), diflufenican, epoxiconazole (2) and iodosulfuron-methyl-sodium (2) with no other actives having a greater involvement.

40 As in the previous year the Medical Panel only met once in 2011/12, a consequence of the steady fall in numbers of reported cases with a possible health outcome. This meeting took place on 4 September 2012.

**Environmental and other non-health complaints 2011/12**

41 During the year 47 environmental and other complaints, ie complaints in which there were no allegations of ill health relating to exposure were reported to HSE. This is a decrease of two from the previous year’s figure of 49 (2010/11) and compares with an average of 87 over the previous ten years 2001/02–2010/11. See Figure 1 and paragraphs 7–10 for statistical analysis of the figures.

42 Figures 4 to 6 summarise the number of complaints in 2011/12, classified according to the industry sector in which the pesticides were used, the work activity involved and the method of application.
Of the 47 complaints, 36 (77%) originated from the use of pesticides within the agricultural sector. One was in horticulture (2%), one in a domestic setting (2%), and the remaining 9 (19%) were associated with ‘other industries’.

Crop spraying accounted for 71% of all environmental and other non-health complaints investigated during 2011/12. Other significant activities included amenity spraying 7%, weed control and storage 6% (each). The remaining 10% occurred within orchard spraying, wood treatment, rodent control, fumigation and other pest control.
Figure 6 Number of environmental and other non-health complaints 2011/12: classified by application method

45 Conventional crop boom sprayers were involved in approximately 71% of all environmental and other non-health complaints. Knapsack spraying accounted for 4% and by ATV and brush (2% each). For the remaining 23% of complaints, the application method was either not recorded or not relevant.

46 Of the 47 complaints, 45 of them were reported by members of the public, consistent with experience in previous years.
Appendix 1:  
Pesticide Incidents Appraisal Panel classification scheme

Confirmed

There are clinical symptoms and signs typical of exposure to the cited pesticide formulation combined with either:

- corroborating medical and (where appropriate) biochemical evidence; or
- evidence of overexposure.

Likely

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.

Open assessment

(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

(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.

Unrelated

There is strong evidence, eg evidence about exposure or from medical reports, that the reported ill health is not pesticide-related.

Insufficient information

The available data is insufficient, incomplete or conflicting and the panel is unable to classify a case for one or more of these reasons.
Appendix 2: Flow chart for PIAP assessments

Submitted pesticide incident investigation papers

Is the incident associated with acute ill health?

Is there an associated chronic ill health?

NOT AN ILL-HEALTH INCIDENT

YES

Adequately defined symptoms

Where consulted – GP records or report available with consent

Is the incident associated with acute ill health?

Is there an associated chronic ill health?

NOT AN ILL-HEALTH INCIDENT

INSUFFICIENT INFORMATION

YES

Is there sufficient information to assess the ill health?

Is there sufficient information to assess exposure?

INSUFFICIENT INFORMATION

NO

KNOWN FORMULATION/ACTIVE 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’

CONFIRMED

NO

UNRELATED

YES

Is the exposure response relationship consistent?

Is there any confounding medical condition?

Are the ill-health effects recognised for constituents of the formulation?

Are the ill-health effects most likely due to the pesticide formulation?

OPEN ASSESSMENT (i)

OPEN ASSESSMENT (ii)

NO

YES

Is there strong evidence for another cause?

Are the ill-health effects most likely due to the pesticide formulation?

CONFIRMED

LIKELY

INSUFFICIENT INFORMATION

NO

YES

YES

NO

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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


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 www.hse.gov.uk/pubns/INDG141.pdf

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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