



Public Health Surveillance of Chemical Incidents

Surveillance report 1st April – 30th June 2005

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Summary

- Between 1st April and the 30th June 2005, 430 acute chemical incidents were recorded by CHaPD.
- Of the 430 reported incidents 52 did not meet the definition of an acute chemical incident (see paragraph 3 of introduction) and were removed from the system. A further 51 incidents were removed as duplicate entries. Annex I describes those reports excluded from this analysis. The remaining 327 incidents were included for further analysis described in this report.
- The chemical group most frequently identified was organic chemicals (16 %, n=51), followed by metals (14 %, n=46), asbestos and products of combustion (9 %, n=31). The chemical involved was not identified in 62 (18 %) incident reports. For the reporting period chemical incidents were most frequently reported in London (26 %, n=85), followed by the South East (20 %, n=66) and the South West (15 %, n=48). The location of 19 (6 %) incidents was not specified.
- The 327 incidents included were most commonly reported from Health Protection Units (22 %, n=73) and via the National Poisons Information Service (NPIS) (13 %, n=43).
- In 34 % (n=111) of reported incidents 1-10 people were exposed to the chemical hazard and in 19 % (n=61) 1-10 people showed clinical symptoms. This equates to a range of 111-1110 exposed and between 61 and 610 showing symptoms. Six incidents resulted in a total of eight fatalities.

Introduction

1. This report provides a summary of the combined data sets from CHaPD London, Newcastle, West Midlands and Cardiff. Duplicate reporting has been minimised but cannot be guaranteed to have been eliminated due to incomplete data fields within incident log forms.
2. Scotland Health Protection Service (HPS), Local and Regional Services (LARS) and National Chemical Emergency Centre chemical incident surveillance data was not available at the time of writing; however these data providers have been approached for a quarterly update. CHaPD and the Environment Agency (EA) are in the process of signing a Memorandum of Understanding and a Service Level Agreement to allow a national exchange of surveillance data between organisations. This exchange is expected to take place early 2006. The EA is anticipating that incident surveillance will contribute to the Spotlight report on environmental performance.

3. The National Focus programme¹ for chemical incident surveillance co-ordinated by Cardiff CHaPD used the following definition of a chemical incident; '*An acute event in which there is, or could be, exposure of the public to chemical substances which cause, or have the potential to cause ill health*'. On the 24th August 2005 the division agreed a revised definition of an acute incident with inclusion and exclusion criteria (see annex II). On the 18th October 2005 the division conducted an audit of incidents logged on the database to test fit to the definition and identify those incidents where the HPA involvement was closed. The revised definition of an acute incident will be applied to reports from the 1st July 2005.
4. The initial 430 incidents were screened and 103 reported cases were removed as duplicates or not meeting the definition. The most common (n=15) cause for incident removal was insufficient information in the log to make a judgement on the nature of an incident (unsubstantiated). A small number of reports (n=5) related to occupational exposure. A summary of removed incidents is provided in annex I. Data collected in quarters 1 and 2 of 2005 have been compared against equivalent 2004 data to assess potential trends.

Source of chemical incident reports

5. Between 1st April and the 30th June 2005, 22 % (n=73) acute chemical incidents were reported by local Health Protection Units (HPU), 13 % (n=43) of incidents were reported via the National Poisons Information Service (NPIS) and 10 % (n=33) of incidents were sourced from media articles. In 13 % (n=42) of incidents the notifying organisation was not recorded. (Figure 1)
6. Of the included incidents 50 % (n=164) were reported in the on-line database and 42 % (n=138) reported by the London unit. Due to many reports being submitted as hard copies in addition to being logged on the database there were a high number of duplicate reports. The increased number of incidents reported during this quarter (compared to previous quarters) may be attributable to duplicate entries that were not removed because the level of detail required for their deletion was insufficient. For example incident logs that included similar details but insufficient data to discriminate as separate incidents (see paragraph 9). Difficulty in the removal of duplicate reports highlighted the inconsistent quality of data entry and the need for subsequent incident follow up.

Chemicals involved in incidents during reporting period

7. A breakdown of the type of chemical involved in each incident shows that in 18 % (n=62) of cases the chemical involved is unknown (figure 2a). For each incident where a chemical has been described, it has been placed in a group of chemicals with similar characteristics.
8. During the reporting period organic compounds (16 %, n=51) were the most commonly reported chemical release followed by metals (14 %, n=46), asbestos and products of combustion (9 %, n=31).
9. Generally the same groups of chemicals are most commonly involved in incidents reported in the first two quarters of both 2004 and 2005 (figure 2b). There were a lower number of incidents reported involving metals in the first quarter 2005

¹ http://www.uwic.ac.uk/new/research/national_focus.asp

compared to other reporting periods, while there were a greater number of incidents involving carbon monoxide in the first quarter of 2004 compared to other periods. The way in which data has been gathered is not sufficiently rigorous to allow an in depth study of temporal trends. The low number of unknown chemicals identified in the first quarter of 2005 compared to the other periods might be due to the way in which the data was entered into the database for this period.. For the first quarter of 2005, chemical information was entered from the incident form and log, but this may have not been performed for the other reporting periods and demonstrates the value of consistent and methodological data entry.

Regional distribution of chemical incidents

10. During the reporting period 26 % (n=85) of incidents were in London (figure 3), 20 % (n=66) in the South East, 15 % (n=48) in the South West and 6 % (n=19) of incidents occurred at unknown locations.
11. Only 8 % (n=25) of incidents were reported in the West Midlands which is a similar number of incidents, but much lower percentage, than were reported in the first quarter 2005 (15 %, n=21) (figure 3b). Duplicate reports generally originated from entry of data into the on-line database and separate submission of data to CHaPD Chilton. The London unit most commonly reported incidents in the South East and London (n=33), followed by the South West (n=23) in the second quarter of 2005. The higher than usual number of incidents reported, in total and in these regions, (and subsequent lower percentages in other regions) might indicate that not all duplicate entries were removed, as discussed in paragraph six. In quarters one and two 2005 the number of incidents with an unknown regional location was lower compared to the same period in 2004. This increased identification of the region in 2005 may be attributed to better reporting by first line responders and/or better ascertainment by HPA staff.

Chemical incident location type

12. The most frequently reported location types (figure 4) were residential (24 %, n=77), industrial (17 %, n=55) and commercial (12 %, n=40). Educational premises were involved in 8 % (n=26) of chemical incidents. Location type was unknown in 12 % (n=39) of incidents.

Number of casualties and fatalities from chemical incidents

13. Figure 5 shows that, of 327 chemical incidents, 34 % (n=111) reported 1-10 people exposed to the chemical hazard. In 52 % (n=170) of chemical incidents it was not reported how many people were exposed. No one was reported to having been exposed to a chemical agent in only 6 % (n=20) of incidents.
14. The number of people with symptoms was from 1-10 in 19 % (n=61) incidents, no-one showed symptoms in 8 % (n=25) incidents (figure 5). In 72 % (n=236) of chemical incidents it was not known how many people showed symptoms of exposure to a chemical hazard. It is encouraging that only a low number of incidents reported cases where people experienced symptoms. However, due to the high number of incidents with an unknown number of affected people, there is the potential to underestimate the public health impact.

15. During the reporting period eight fatalities were reported at six incidents, including an acetylene cylinder explosion at a scrap yard and two residential fires.

Recommendations

16. Future quarterly reports will incorporate data collected from the Fire Service, Environment Agency and National Chemical Emergency Centre.

17. From the 1st July chemical incident data collected has been submitted and stored on a central on-line management database maintained by the West Midlands ChaPD unit. A review of the incidents reported to the National Focus programme and the HPA between 1999-2004 has been completed. The results are available on the HPA website as part of the HPA [Burden of Disease report](#).

Source of chemical incident reports

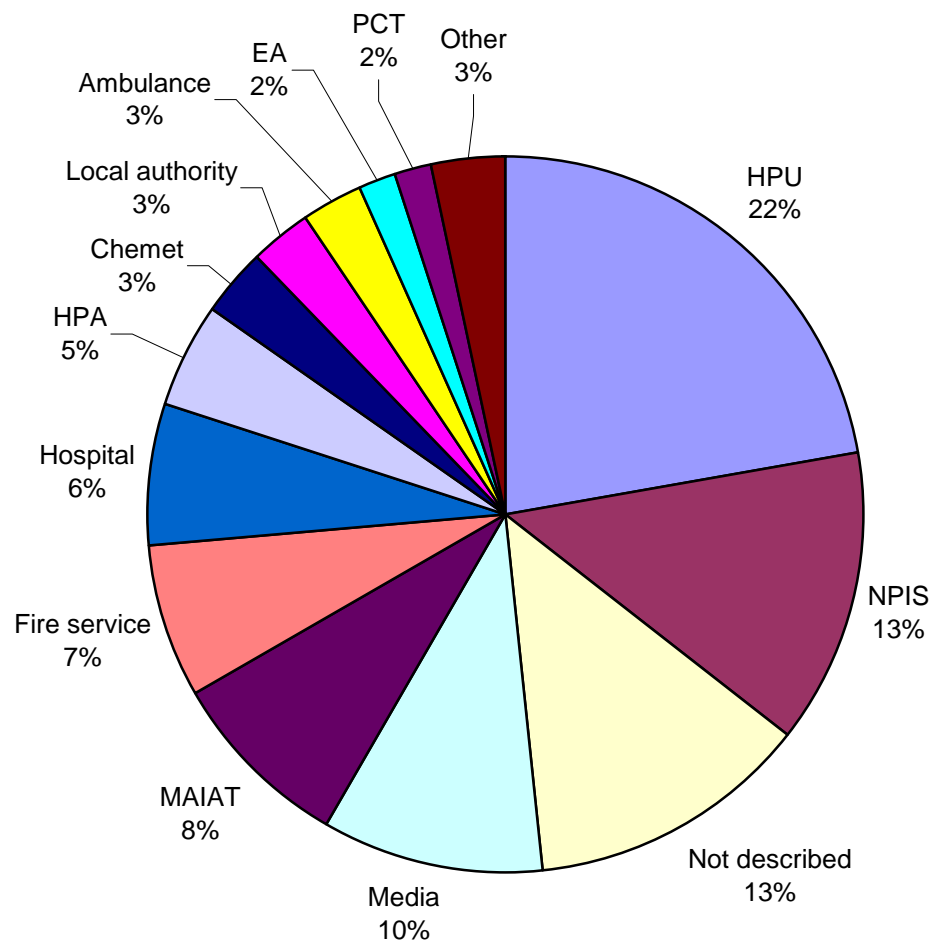


Figure 1 Notifying organisation of chemical incidents reported between 1st April and 30th June 2005 (n=327). Abbreviations: Environment Agency (EA), Health Protection Agency (HPA), Health Protection Unit (HPU), Multi Agency Initial Assessment Team (MAIAT), National Poisons Information Service (NPIS), Primary Care Trust (PCT), Other includes the Health and Safety Executive, National Health Service Direct and the Police.

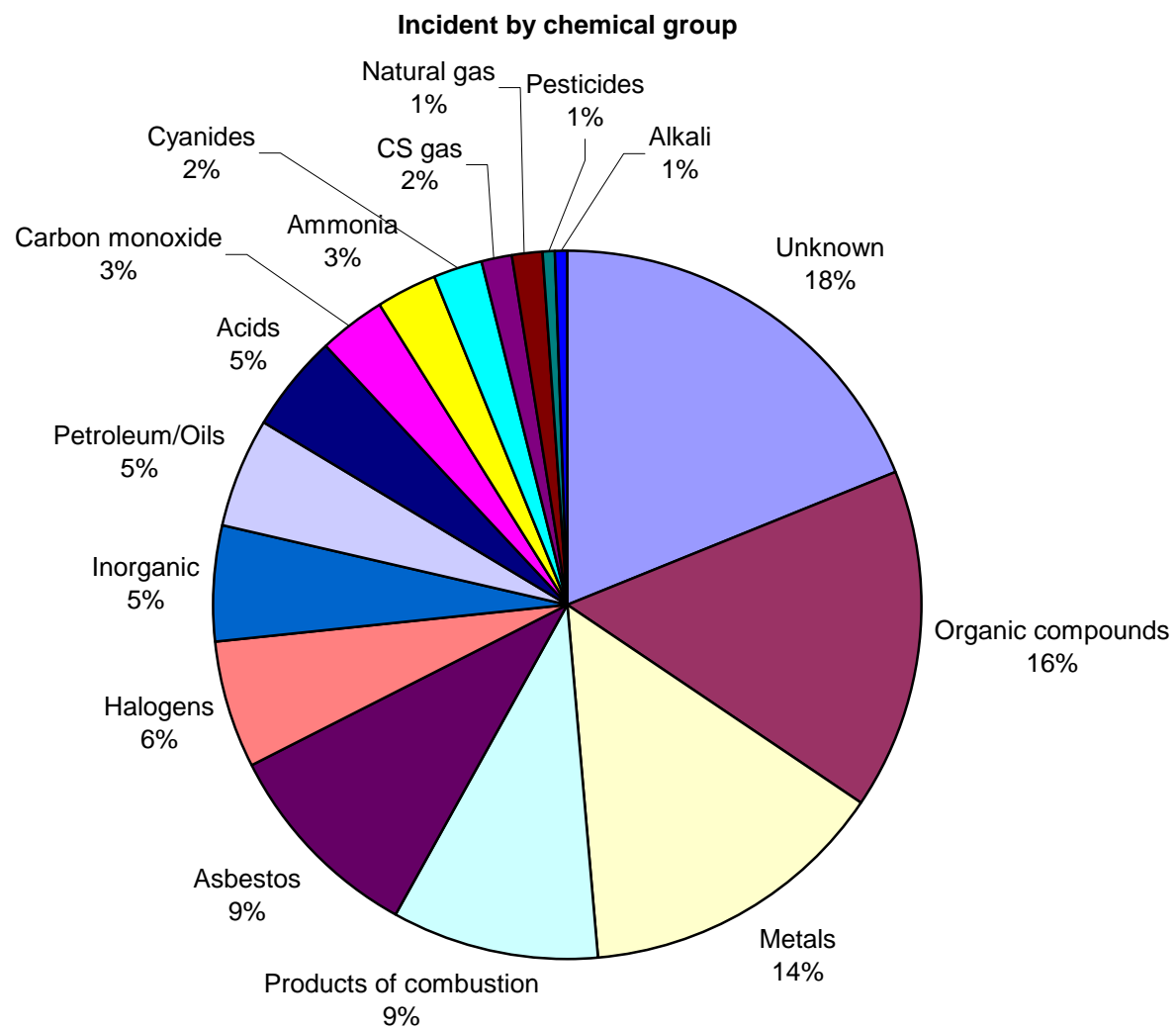


Figure 2a Chemicals involved in incidents reported between 1st April and 30th June 2005 (n=327).

Type of chemicals released in incidents in first half of 2004 and 2005

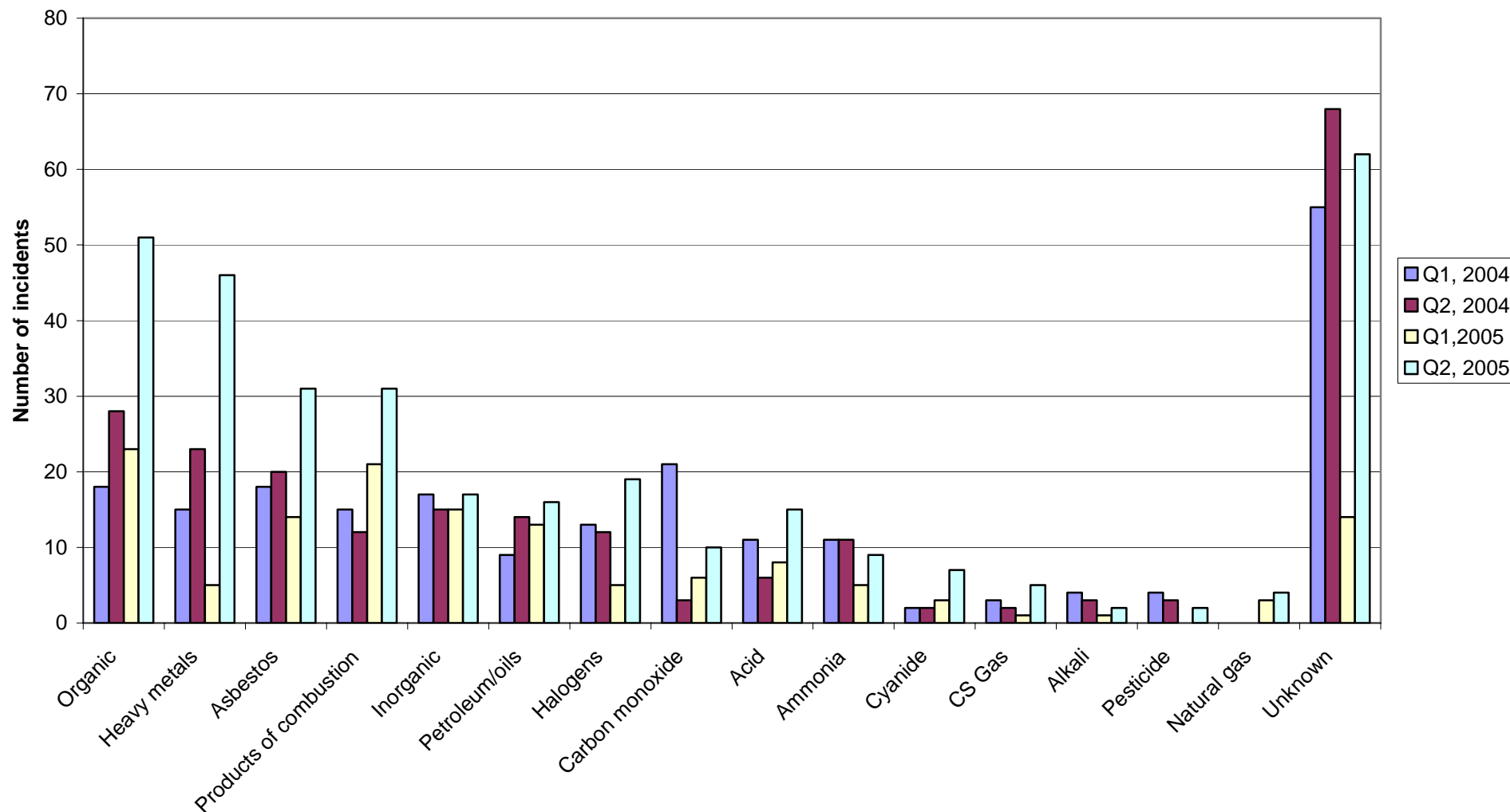


Figure 2b Chemicals involved in incidents reported between 1st January and 30th June 2004 and 2005.

Regional distribution of chemical incidents

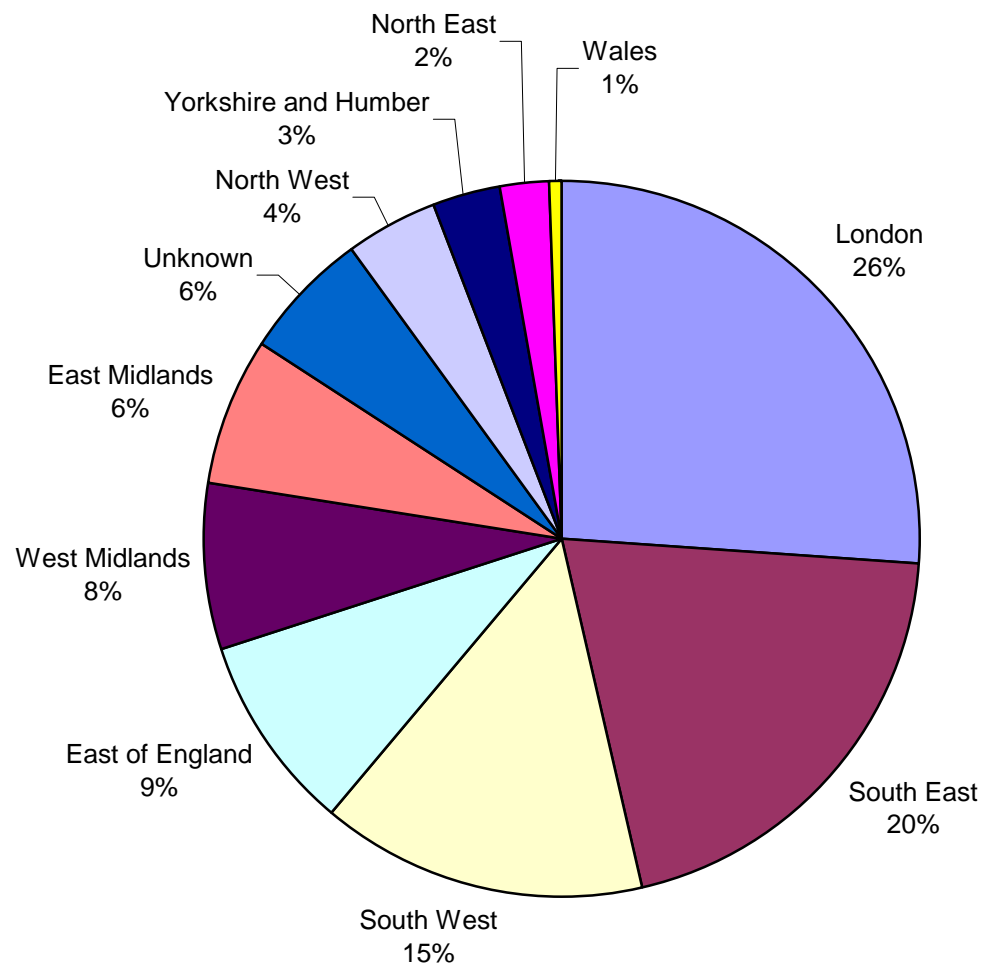


Figure 3a Regional distribution of chemical incidents reported in England, Wales and Ireland between 1st April and 30th June 2005 (n=327). Two incidents reported in Ireland < 1%.

Number of chemical incidents by region in first half of 2004 and 2005

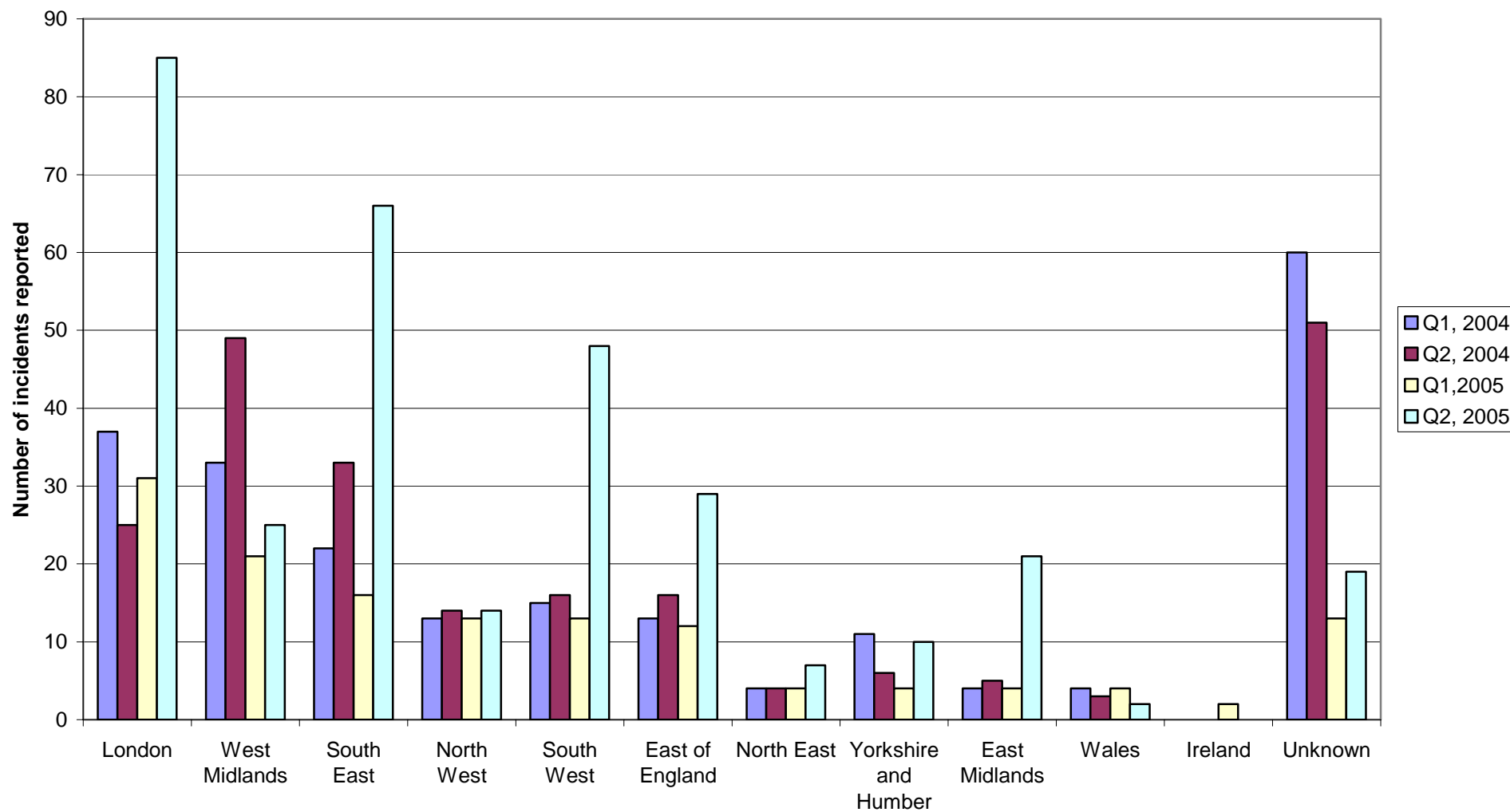


Figure 3b Regional distributions of chemical incidents reported in England, Wales and Ireland between 1st January and 30th June 2004 and 2005.

Location type of chemical incidents

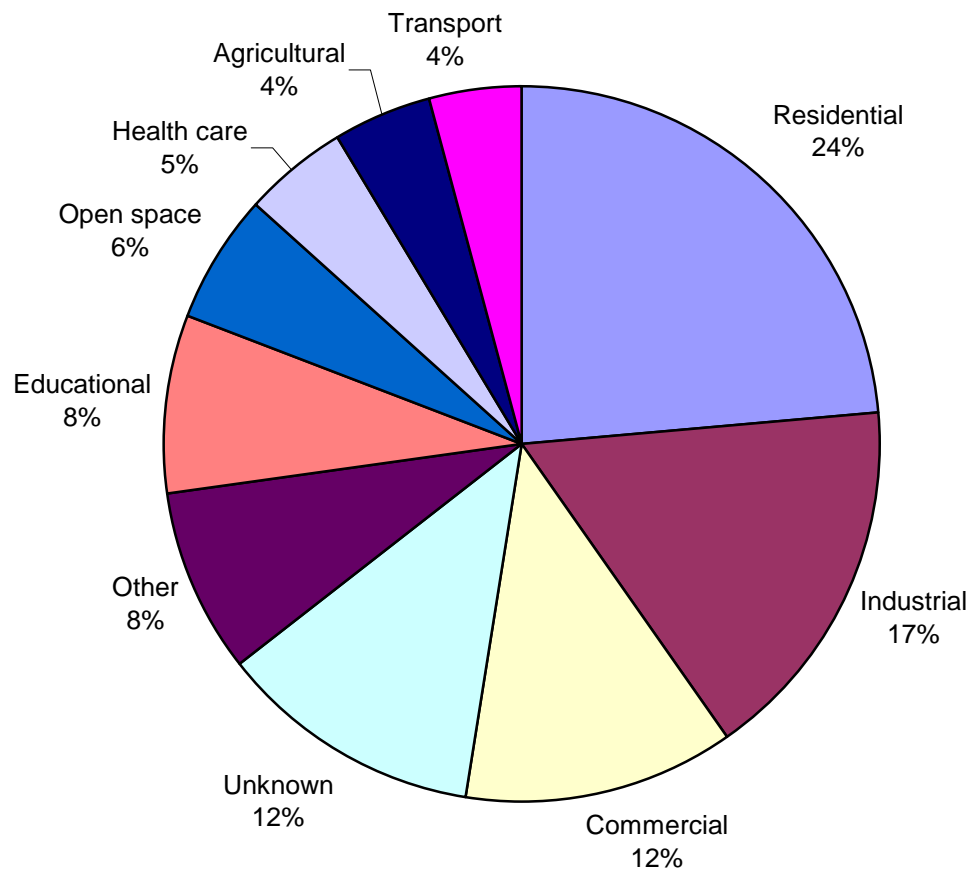


Figure 4 Chemical incident location type for chemical incidents reported in England, Wales and Ireland between 1st April and 30th June 2005 (n=327).

Number of people exposed and number experiencing symptoms

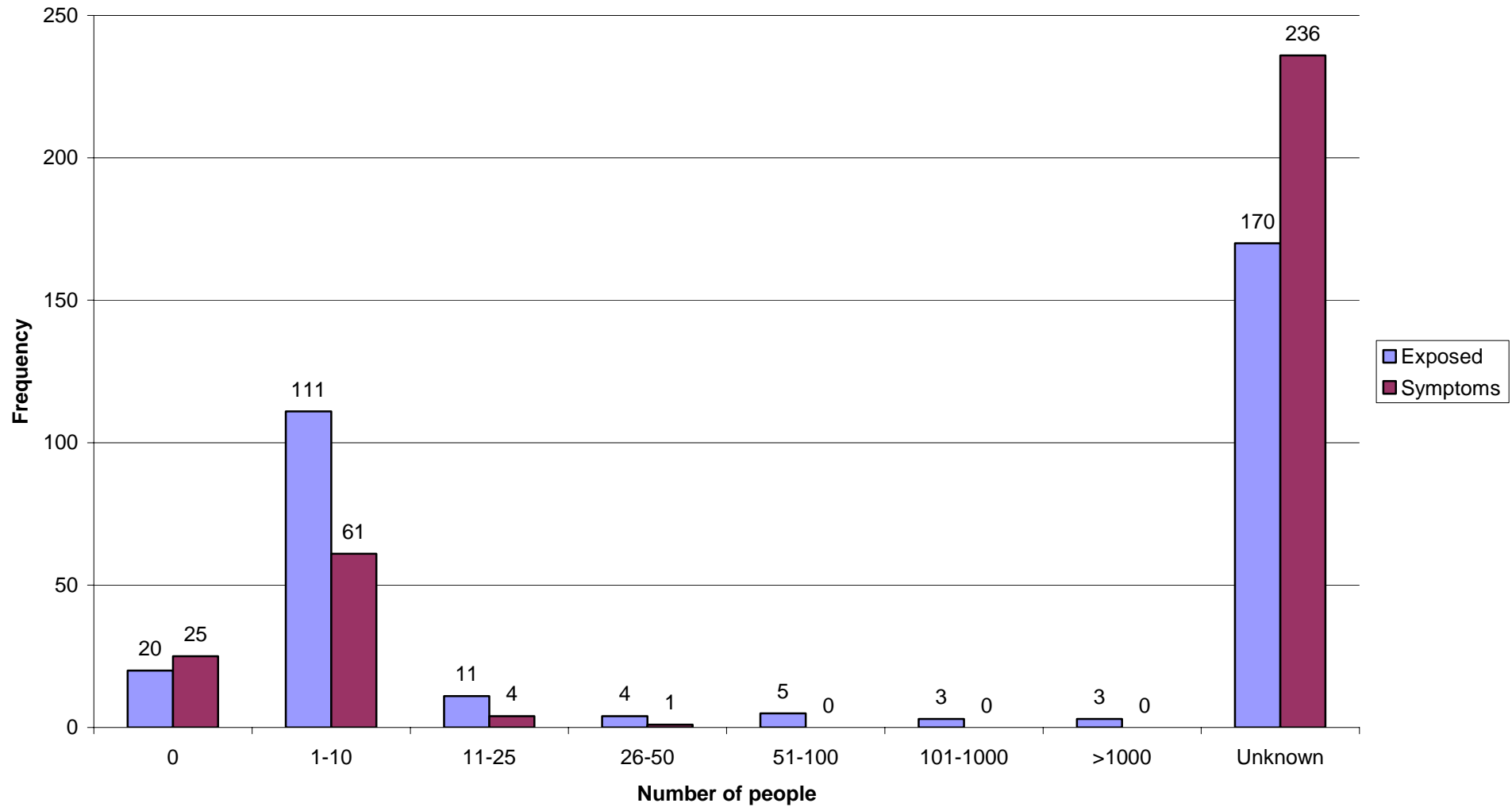


Figure 5 Number of people exposed and experiencing symptoms from a chemical incident reported between 1st April and 30th June 2005 (n=327).

Annex I

Number Incidents removed	Example brief descriptions of incidents	Reason for removal	Incident identification number(s)
51	Various	Duplicate reports	-
15	Limited information available, Contaminated land enquiries	Unsubstantiated	137, 161, 165, 181, 183, 187, 209, 218, 248, 250, 258, 280, 287, 322, 323
10	Old asbestos factory	Chronic	192, 194, 295, 314, 4288, 4289, 4290, 4371, 4426, 4506
6	Carbon monoxide effects	Information	214, 288, 291, 338, 4395, 4434
5	Working with lead	Occupational	176, 182, 210, 235, 246
4	Gastroenteritis outbreak	Microbiological	299, 319, 336, 4327
4	Atlantic Blue	Planning	147, 256, 274, 4593
4	Exposure to uranium in Bosnia	Abroad	199, 301, 4331, 4497
3	Tuna poisoning	Food	281, 304, 4374
1	Man threatening to blow up building	Suicide	171

Table 1 Chemical incident reports removed.

Annex II

Chemical Hazards and Poisons Division

Definition of a Chemical Incident

National Database of Chemical Incidents

REVISED DATA SPECIFICATION AUGUST 2005

Definition of incident

All incidents representing “an acute event in which there is, or could be, exposure of the public to chemical substances which cause, or have the potential to cause ill health” should be included in the National Database. All incidents with an off-site impact are to be included, as well as on-site incidents where members of the public are affected. (For the purposes of the definition, hospital staff and emergency services personnel should be regarded as members of the public).

Examples of incidents to be excluded from national surveillance include:

- Occupational exposure with no potential for public exposure, e.g. a small spill at a factory in which only employees are exposed.
- Food contamination incidents with no potential for public exposure.
- Incidents involving non-ionising radiation.
- Accidental childhood poisoning, e.g. the ingestion of bleach.
- Incidents involving drugs and other substances of abuse.
- suicide attempts not involving chemicals

By way of contrast, the following incidents should be included:

- Cases of non-intentional gas poisoning.
- All workplace incidents with an off-site impact, as well as on-site incidents where members of the public are affected. (For the purposes of the definition, hospital staff and emergency services personnel should be regarded as members of the public).
- Spills of chemicals in a school laboratory, resulting in the admission of pupils to hospital or exposure of staff or pupils.
- Potential chemical terrorism events
- Deliberate contamination of food or water supplies

Those incidents, for which there is uncertainty over whether they should be included in the National Database, should be included, and any difficulties associated with the definition drawn to the attention of the Database Audit Group. By doing so, an informed review of the definition can occur, and incidents can be subsequently deleted from the database if necessary.