Chemical Incidents Surveillance Review: January 2006 - December 2007

1. Introduction

The Division manages a chemical surveillance system (CISS) for England and Wales. This report provides a summary of the characteristics and distribution of chemical incidents recorded in England and Wales during 2006 and 2007.

2. Method

The method used to carry out all the collation, analyses and interpretation of the surveillance data has been described in the previous surveillance report for 2005[1]. Data are primarily obtained from the on-line Chemical hazards and Poisons Division (CHaPD) management system and supplemented by information from the Local and Regional Services (LaRS) surveillance system, the South West Environmental Surveillance System (SWESS) and National Chemical Emergency Centre (NCEC).

Box 1: 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).

3. Results

After screening for duplicates, exercises, events outside the geographical region of England and Wales and those not meeting the definition, 963 and 1015 chemical incidents were recorded for the period 1 January through to 31 December for 2006 and 2007 respectively in England and Wales. Of the 1978 incidents recorded in 2006 and 2007, 74% (1456) were classified as actual, 18% (368) as potential and 8% (154) as for information. A summary of

[1] http://www.hpa.org.uk/publications/2007/chemical_incident_05/chemical_incidents_05.pdf

the results for the analyses of the characteristics and distribution of the chemical incidents is outlined below.

3.1. Estimated exposure count at time of incident

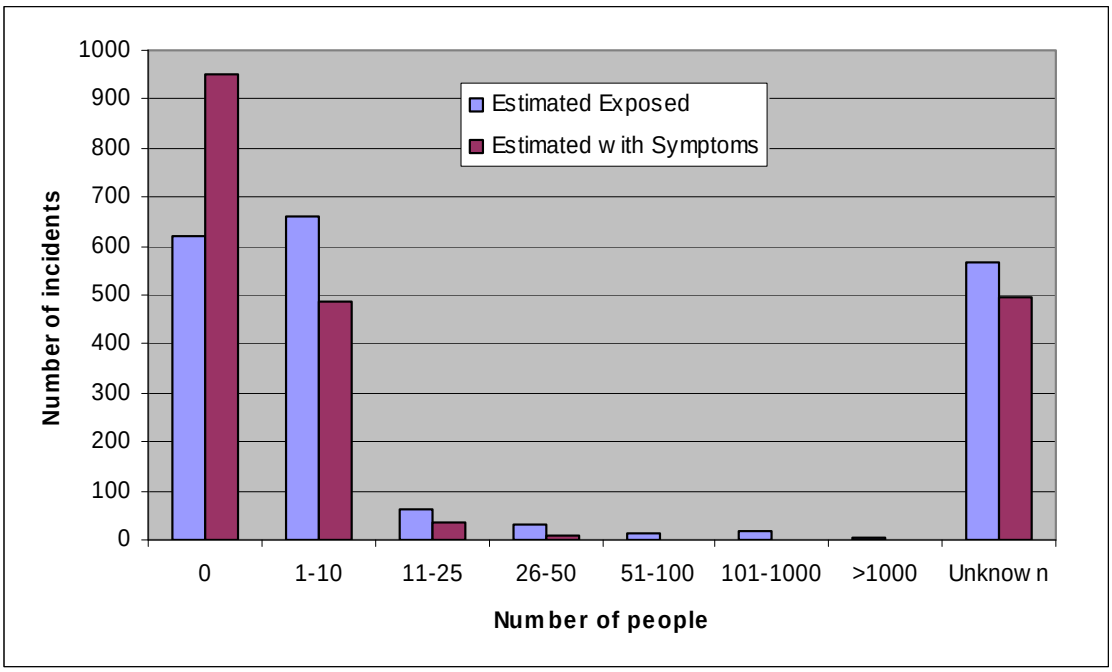


Figure 1: Number of people estimated exposed to chemical incidents and those exhibiting symptoms for 2006 and 2007

Up to 27970 people were estimated to have been exposed with 6220 reporting symptoms. More than 1000 people were exposed in each of six separate events (five of which involved contamination of water). 20% (396) of chemical incidents resulted in evacuation of nearby populations during 2006 and 2007. There were 9 fatalities as a result of chemical incidents.

3.2. Nearby populations

Sufficient information was recorded in the logs to enable the postcode to be determined for 91% of uncontained incidents. Over 500,000 people live within 250 m of uncontained incidents in 2006 and 2007.

3.3. Regional Distribution of Chemical Incidents

Incidents are reported most frequently in London followed by the South East and South West. The lowest numbers (of incidents) were recorded in Wales and the North East (refer to Table 1). Figure 2 shows the regional distribution of the chemical incidents for 2006 and 2007. The ascertainment of the geographical location has greatly improved with completion of this field reaching 100% for 2007.

Table 1: Regional distribution of chemical incidents and rate per 1,000,000 population 2006 and 2007

Geographical Region	Total number of incidents	Rate per 1,000,000 population
North East	60	23.1
North West	145	21.0
Yorkshire & The Humber	126	24.7
East Midlands	115	26.1
West Midlands	213	39.5
East of England	138	26.1
London	587	78.2
South East	263	32.1
South West	250	49.0
Wales	79	26.3

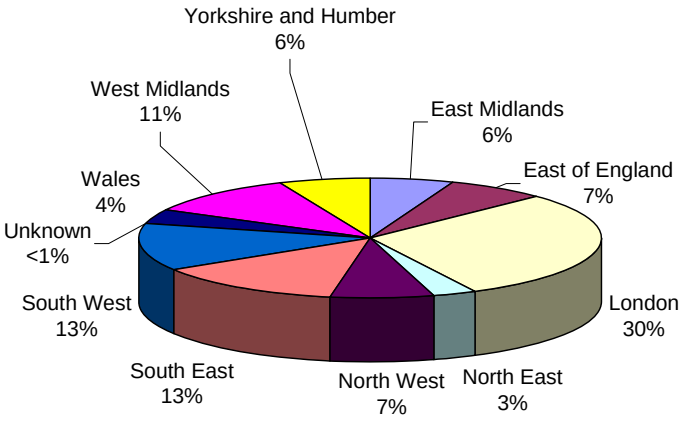


Figure 2: Regional distribution of chemical incidents in 2006 and 2007

3.4. Temporal Trend

Figure 3 shows the monthly distribution of chemical incidents reported for 2006 and 2007. There is no clear trend in the data.

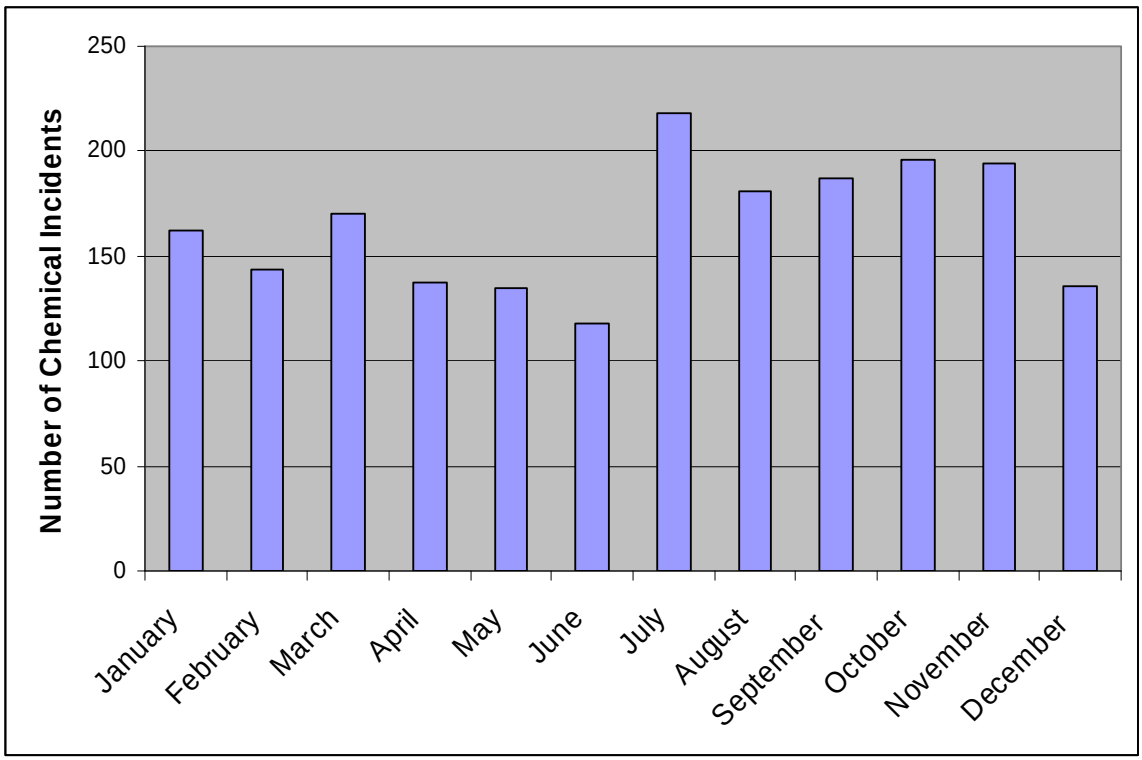


Figure 3: Monthly distribution of chemical incidents in 2006 and 2007

3.5. Type of chemical incident

Figure 4 shows that fires (28%, n=598) were the most common type of incident resulting in the release of chemical(s). Chemical releases were involved in 15% of incidents for the reporting period (n=288). In 6% (n=120) of events the type of incident was not recorded or unknown, although ascertainment for this field has improved from 92% in 2006 to 96% in 2007.

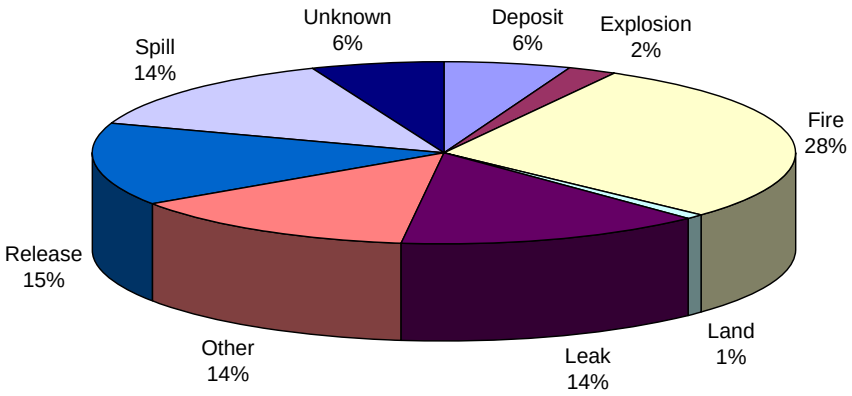


Figure 4: Types of chemical incident in England and Wales in 2006 and 2007

3.6. Chemicals involved

A breakdown of the type of chemical involved in each incident during the reporting review is shown in Figure 5. Although ascertainment of chemicals involved in chemical incidents has improved since 2005, the number of incidents where

this is not known remains high at 11%. The chemical group most frequently reported during the period was products of combustion (31%, n=588) followed by “other organics” (15%, n=274), “other inorganics” (13%, n=258) and metals (6%, n=115). Mercury featured in approximately half of incidents involving metals. The majority (n=34) of the events involving mercury took place in residential settings and the Division has responded by publishing guidance on mercury spill clean-up[2].

Although only 2% (n=38) of chemical events involved the release of asbestos it was found that this hazard was also associated as a secondary pollutant in 8% (n=47) of fires. A review of the public health impact of asbestos released during major fires was published in 2008[3].

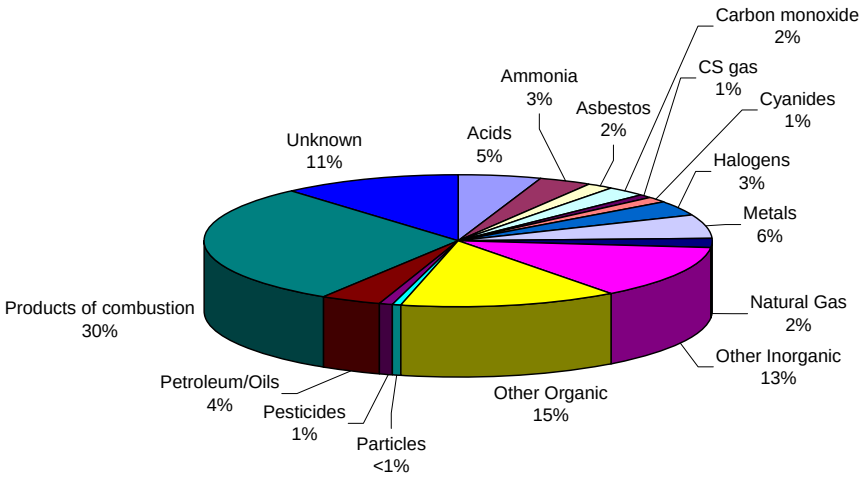


Figure 5: Chemicals involved in chemical incidents in 2006 and 2007

2 http://www.hpa.org.uk/chemicals/incident_management/incident_management_factsheets/mercury_spills_cleanup.htm

3 http://www.hpa.org.uk/web/HPAweb&Page&HPAwebAutoListName/Page/1204013013222

3.7. Chemical incident location

Chemical incidents most often occur in residential settings (24%, n=475) followed by industrial (21%, n=407) and commercial properties (16%, n=317). Approximately 20% of events in residential locations are fires. Only 1% of chemical incidents occur at COMAH sites demonstrating the effectiveness of process control at these sites (refer to Figure 6).

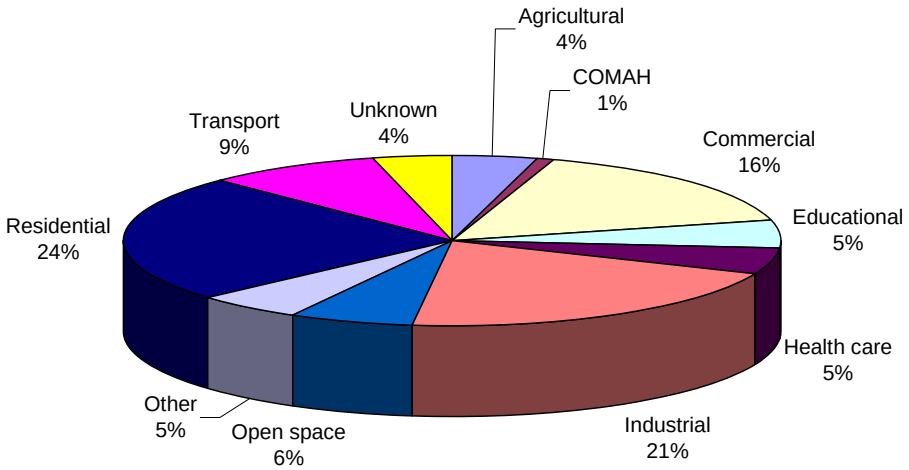
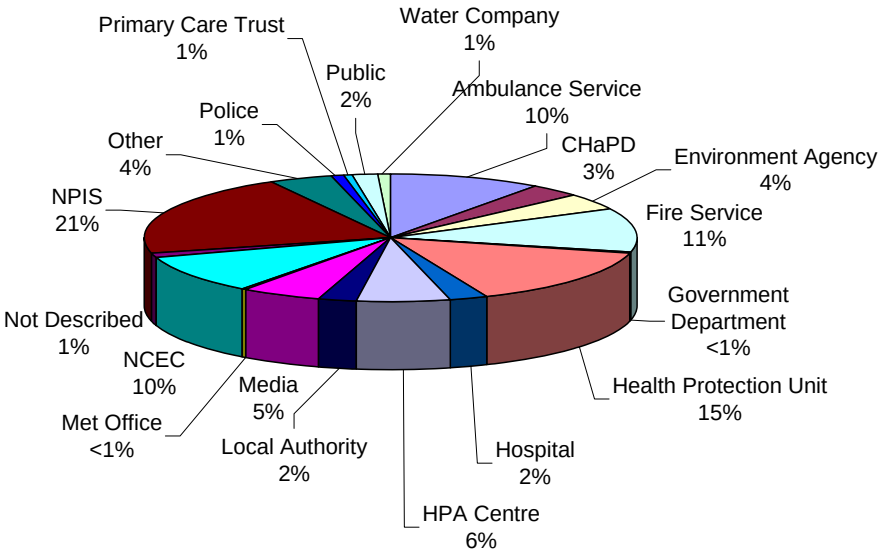


Figure 6: Location type of chemical incidents in 2006 and 2007

3.8 Notifying organisation of chemical Incidents

Figure 7 shows the proportion of chemical incidents by the reporting organisation. NPIS reported 21% (n=411) followed by Health Protection Units (15%, n=290), Fire Service (11%, n=218) and the Ambulance Service (10%, n=198). NPIS is currently contracted to answer all out-of-hours calls to the division and the system is being refined to ensure that the originating agency is effectively recorded. The completion of this field has improved from 91% in 2005 to 99% in 2007.



Abbreviations:

NPIS	National Poisons Information Service
NCEC	National Chemical Emergency Service
Met Office	Meteorological Office

Figure 7: Notifying organisation of chemical incidents in 2006 and 2007

Key Achievement – Establishment of online CISS database
The web-based Chemical Incident Surveillance System for England and Wales is one of only two national population based surveillance systems in the world. The system has been used to inform decisions and work undertaken by the agency to protect the health of the population from hazardous chemicals.

4. Discussion

A number of measures implemented since the introduction of the online CISS database in July 2005 including the transfer of the database to a new HPA server has seen an improvement in the completion and ascertainment of data for chemical incidents.

The surveillance system has been used to inform the development of some of the agency's interventions as well to identify research needs to protect the health and well-being of the population, prevent harm from hazardous chemicals and prepare for emerging threats. Further work on the causes and

costs of chemical incidents including refining exposed population estimates as well as the impact on deprived communities is being undertaken to more effectively quantify effects and identify interventions.