Citation: Griffiths, Simon and Bond, Jamie (2009) CHaPD: a response to the flooding in Morpeth. In: Five Nations Health Protection Conference, 28-29 April 2009, Newcastle upon Tyne, UK.

URL: http://5nations.org.uk/Downloads/5nations2009-brochure-newcastle.pdf

This version was downloaded from Northumbria Research Link: http://nrl.northumbria.ac.uk/8966/

Northumbria University has developed Northumbria Research Link (NRL) to enable users to access the University’s research output. Copyright © and moral rights for items on NRL are retained by the individual author(s) and/or other copyright owners. Single copies of full items can be reproduced, displayed or performed, and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided the authors, title and full bibliographic details are given, as well as a hyperlink and/or URL to the original metadata page. The content must not be changed in any way. Full items must not be sold commercially in any format or medium without formal permission of the copyright holder. The full policy is available online: http://nrl.northumbria.ac.uk/policies.html

This document may differ from the final, published version of the research and has been made available online in accordance with publisher policies. To read and/or cite from the published version of the research, please visit the publisher’s website (a subscription may be required.)
A response to the flooding in Morpeth

Simon Griffiths,
Environmental Public Health Scientist
Chemical Hazards and Poisons Division – Nottingham Unit
Centre for Radiation, Chemical and Environmental Hazards
Health Protection Agency
The Chemical Hazards and Poisons Division

- Provides specialist advice and support to Health Protection Units for incident response, general queries, etc.

- Specialists include Environmental Public Health Scientists, toxicologists, environmental epidemiologists etc...

- Clinical advice provided by the HPA’s commissioned service National Poisons Information Service (NPIS)
The incident – wide scale flooding in Northumberland (2008)[1]

Thursday 4th September

**Met Office:** Early Warning issued for NE England for Saturday.

Albemarle, Northumberland recorded 112.0 mm (4½ inches) in 72 hours from 09:00, 4 September. **Most fell in the first 48 hours.**

Saturday 6th September

**Met Office:** Flash warnings issued for more than 60 mm rainfall in parts of the UK. ‘The County of Northumberland experienced six weeks rainfall in 24-hours’ [2].

In the Northumberland town of Morpeth:

- River Wansbeck burst its banks
- Nearly a thousand homes and businesses were flooded
- More than 850 houses were evacuated
- The worst flood Morpeth has seen since records began

Of eight severe flood warnings across the country, six were in the Castle Morpeth area.


Picture (top): [The Journal](http://www.journal.co.uk) on Jan 8, 09 11:24 AM [accessed 070409]

Picture (middle and bottom): BBC News Website [accessed 070409]
Flooding checklists and resources

“Flooding Chemical Event Checklist”

Provides a structured approach to the assessment of risk posed by chemicals entering flood waters.

Risk assessment frameworks developed after flooding in 2007 used in the HPA response to Northumberland floods.

<table>
<thead>
<tr>
<th>1. QUESTIONS TO ASK THE NOTIFYING ORGANISATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What type of chemical contamination is involved?</td>
</tr>
<tr>
<td>2. How many people are affected by the flooding?</td>
</tr>
<tr>
<td>3. How any adverse health effects been reported?</td>
</tr>
<tr>
<td>4. What further information is available?</td>
</tr>
<tr>
<td>5. Geographical location</td>
</tr>
<tr>
<td>6. Normal use of flooded area</td>
</tr>
<tr>
<td>7. History data, e.g. NRM, EA, British Geological Survey, water company etc</td>
</tr>
<tr>
<td>8. Suspicion of hazardous chemicals in flooded area</td>
</tr>
<tr>
<td>9. As any hazardous chemicals involved?</td>
</tr>
<tr>
<td>10. What is the source of the flood water?</td>
</tr>
<tr>
<td>11. River water</td>
</tr>
<tr>
<td>12. Lake water</td>
</tr>
<tr>
<td>13. Well water</td>
</tr>
<tr>
<td>14. Water from hazardous chemical site, e.g. landfill, waste water injection</td>
</tr>
<tr>
<td>15. Water from other sources</td>
</tr>
<tr>
<td>16. What environmental investigations have been undertaken?</td>
</tr>
<tr>
<td>17. What further environmental investigations are to be carried out?</td>
</tr>
<tr>
<td>18. Who is funding the sampling?</td>
</tr>
</tbody>
</table>

Centre for Radiation Chemical and Environmental Hazards
Support of LaRS (Regional and HPU functions)

- Specialist Environmental Public Health advice requested and provided
- Tasked to review potential for chemicals to have been released into the flood waters and to indicate the hazard these pose to public health

To deliver the task, we needed:

- Flooding data
  - Extent of the flooding: Where had the flood waters got to?
    : Where were they likely to extend to?
- Sources of chemicals in the area
  - *What* is stored *where*?
  - *How* contained?
Extent of the flooding

**Likely source:** Environment Agency (EA) and Local Authorities

**Challenge:** Maps of actual flooding from EA were not readily available because EA still dealing with the initial response to the flooding. Identify an obtain local knowledge for affected areas

**HPA response:** Discussed with EA whether standard flood plans could be a proxy for actual flooding. 1 in 100 year flood map acceptable. Spoke to Environmental Health Officers at the affected Councils

**Sourcing map:** Requested from EA. Requested from HPA GIS specialists
Use of HPA GIS capability to identify (a) the potential flood extent and (b) historic landfill sites in the area.
EA’s draft flood extent which closely reflects the 1 in 100 year flood GIS map used
Sources of chemicals

**Likely source:** Environment Agency (EA), local authorities, local knowledge

**Challenge:** What to look for informed by internal framework document

**HPA response:** Local knowledge important
Sites permitted under the IPPC/EP legislation
Businesses with large chemical storage
Framework from 2007 floods
Potential Sources:

Part of source-pathway-receptor risk assessment approach

Sources
- IPPC sites/COMAH
- Waste management sites
  - Scrapyards
  - Landfills
  - Transfer station
  - Civic amenity
- Petrol/fuel storage
- Sewage works
- Land contamination
- Mineworkings
- Slurry
- Farming
  - Agrochemicals
  - Silage
- Low level chemical storage
  - others
  - B&Q
  - Retail
  - Gardensheds
Recovery and Restoration

- Participation at Castle Morpeth Council’s Recovery and Restoration Group
- Support for the LaRS Consultant/front-line
- HPA support to Council’s “Morpeth Town – Clean-up and Infrastructure Group Meeting”

“We estimate that approx 4000 litres of gas oil has been lost from our Rothbury depot due to flood damage to our storage facilities, I think the photograph is self explanatory”

Led to a review of risk assessment using this and local knowledge from Alnwick District Council’s Environmental Health Officers

Source: Email from County Council Officer, received Thursday 11th September 2008
Reflections

Lessons

- Actual flood mapping data not readily accessible
- Standard flooding maps can provide proxy
- Useful application of the HPA flooding checklist and internal framework documents developed following 2007 flooding
- Local knowledge very important
- Multi-agency working important

HPA GIS capabilities provide customisable overlays of:

- Flooding maps, e.g. 1 in 100 year flood plans
- Chemical sites
- Historical land use
- Licensed waste sites
- Sensitive receptors e.g. schools, GP surgeries, hospitals, etc.

Enables rapid identification and prioritisation of hazards.
HPA GIS capability:

Map of Morpeth with various landmarks and features such as schools, petrol stations, leisure facilities, and community centres. The map is titled "Morpeth" and includes a legend identifying different types of locations and zones. The map is printed on 30/01/2009, at 15:30 by Chemical Hazards and Poisons Division. The map is under Crown copyright, All rights reserved, Health Protection Agency, 100016969, 2000.
Thank you.....

http://www.hpa.org.uk/