Challenges in modelling for emergency planning and response to contaminant releases

ADMLC Workshop, Thursday 12 March 2020
PHE, Harwell Campus, Oxfordshire, UK
Coronavirus

How to avoid catching or spreading coronavirus

Do

☑️ wash your hands with soap and water often – do this for at least 20 seconds
☑️ always wash your hands when you get home or into work
☑️ use hand sanitiser gel if soap and water are not available
☑️ cover your mouth and nose with a tissue or your sleeve (not your hands) when you cough or sneeze
☑️ put used tissues in the bin straight away and wash your hands afterwards
☑️ try to avoid close contact with people who are unwell

Don't

☒ do not touch your eyes, nose or mouth if your hands are not clean

http://nhs.uk/coronavirus
### IF YOU HEAR AN ALARM YOU MUST TAKE IMMEDIATE ACTION

<table>
<thead>
<tr>
<th>Category</th>
<th>Action Description</th>
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</thead>
<tbody>
<tr>
<td><strong>FIRE ALARM</strong></td>
<td>A Warbling Sound – Leave the building and follow the signs to the assembly point at the front of the Training Centre</td>
</tr>
<tr>
<td><strong>SITE INCIDENT ALARM</strong></td>
<td>An intermittent noise from the klaxons like harsh car hooters. This requires no action from our building occupants</td>
</tr>
<tr>
<td><strong>CAR PARKING</strong></td>
<td>All vehicles are parked at owners risk. Normal precautions should be taken against loss or theft. Your vehicle registration number should be logged with Reception</td>
</tr>
<tr>
<td><strong>BADGES</strong></td>
<td>Badges should be worn at all times and returned to Reception when you leave</td>
</tr>
</tbody>
</table>
The Chilton Training Centre

- Lecture Theatre
- Office
- Link
- Toilets

J BLOCK

- Syndicate rooms
  - 5
  - 6
  - 7

- Tea, coffee and Lunch

- Muster points

- Emergency Exits

Syndicate room

Toilets

Muster points
Supplementary Information For Visitors

Please put mobile phones on silent

No food and drink in lecture theatre please

Notify reception before leaving the building (even temporarily)
In an emergency we need to know who is still in attendance

Thank you
Background to ADMLC

- **1977**: Experts from UK government departments, utilities and research organisations met to discuss atmospheric dispersion modelling of radioactive releases
  - Informal steering committee reviewed recent developments
- **1995**: ADMLC formed with initial focus on the nuclear industry
- **Since 1995**:
  - Scope widened to include range of interests of ADMLC members, including UK and Irish industrial and regulatory organisations
  - **Aim**: to review atmospheric dispersion and related phenomena for application primarily to authorization or licensing of discharges to atmosphere resulting from industrial, commercial or institutional sites
  - Main interests on fixed sources, rather than transport sources, including both routine releases and releases in accident or “upset” conditions
Background to ADMLC

Current membership:

- AWE
- dstl
- Met Office
- HSE
- SEPA
- EPA
- defra
- Food Standards Agency
- Office for Nuclear Regulation
- Cyfoeth Naturiol Natural Resources
ADMLC committee meets three times per year
Each member organization contributes £3k each year
ADMLC public workshop/seminar every 2 to 3 years
Small research projects commissioned, e.g.:
- Modelling pollutant dispersion from non-point sources (2016)
- Presenting uncertain information in radiological emergencies (2016)
- Sensitivity of dispersion modelling results to source terms (2017)
- Dispersion modelling of odour emissions (2020)
Ongoing projects:
- Applicability of Gaussian modelling techniques to near-field dispersion
- Dense-gas dispersion for industrial regulation and emergency response
Dispersion model validation datasets, e.g. Thorney Island
Reports and datasets publicly available: http://www.admlc.com
Atmospheric dispersion knowledge gaps and research priorities: Results from a recent survey of ADMLC members

- Top four topics for future ADMLC research projects:
  1. **Deposition modelling**
     - Review of dry/wet deposition modelling of gases and particulates
  2. **Modelling of sources in an emergency**
     - When there is limited information available
  3. **Fire source terms and plume rise**
     - Including landfill, chemical and nuclear fires
  4. **Understanding the impact of meteorological uncertainties**

- Partnership with other funding agencies or self-funding research organisations on topics of mutual interest?
<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00</td>
<td>Simon Gant (HSE)</td>
<td>ADMLC Chair welcome</td>
</tr>
<tr>
<td>10:10</td>
<td>Matthew Hort (Met Office)</td>
<td>Introduction – Modelling perspectives</td>
</tr>
<tr>
<td>10:30</td>
<td>Robin Grimes (MOD Chief Scientist)</td>
<td>Perspectives on emergencies involving atmospheric releases</td>
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<td></td>
<td><strong>EMERGENCY RESPONSE</strong></td>
<td></td>
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<tr>
<td>10:55</td>
<td>Pete Bedwell (PHE) and Sarah Millington (Met Office)</td>
<td>The application of atmospheric dispersion modelling for the provision of health protection advice in the event of a radiological incident</td>
</tr>
<tr>
<td>11:15</td>
<td>James Stewart-Evans (PHE)</td>
<td>The practical use of models during the emergency response to chemical incidents and fires</td>
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<tr>
<td>11:35</td>
<td>Claire Witham (Met Office)</td>
<td>Responding to volcanic eruptions</td>
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<tr>
<td>11:55</td>
<td>Q&amp;A</td>
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<tr>
<td>12:20</td>
<td>Lunch</td>
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## Workshop Programme

### EMERGENCY PLANNING AND PREPAREDNESS

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Title</th>
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<tbody>
<tr>
<td>13:05</td>
<td>Matthew Hort</td>
<td>Outline of approaches in the National Risk Register and Resilience Direct</td>
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<td>(Met Office)</td>
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<td>13:25</td>
<td>Jonathan Rougier</td>
<td>What is the reasonable worst case?</td>
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<td>(Rougier Consulting)</td>
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<tr>
<td>13:45</td>
<td>Chris Boyd (ONR)</td>
<td>REPPIR approach to consequence assessment and associated risk framework</td>
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<tr>
<td>14:05</td>
<td>Harvey Tucker (HSE)</td>
<td>How dispersion modelling informs public safety decision making for risks presented by major hazards installations</td>
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<tr>
<td>14:25</td>
<td>Q&amp;A</td>
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<tr>
<td>14:50</td>
<td>Tea</td>
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<tr>
<td>15:20</td>
<td>Discussion on key topics</td>
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<tr>
<td>15:40</td>
<td>Robin Grimes</td>
<td>Conclusions - Key points for taking forward</td>
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<td>(MOD Chief Scientist)</td>
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<tr>
<td>15:55</td>
<td>Simon Gant (HSE)</td>
<td>Close-out</td>
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**Note:** This schedule is subject to change.
Key topics for discussion

- Four key topics:
  1. Current practice in *modelling* approaches
  2. Current practice in *policies* for planning and response
  3. Emergency preparedness and exercises
  4. Improving collaboration across the UK and internationally
- Questions asked on printed handout
- Please provide response to questions on post-it notes and pin to relevant notice board in lobby
- Feedback very welcome!
- Facilitated discussion in afternoon
- Responses and Q&A circulated to attendees after meeting