

Recent work and future plans of the Atmospheric Dispersion Modelling Liaison Committee (ADMLC)

Simon Gant, HSE (Chair of ADMLC)

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Atmospheric Transport and Dispersion Modeling
2-4 November 2021



Outline

- Introduction to the ADMLC
- Summary of recent activities
- Ongoing projects
- Future work



Background

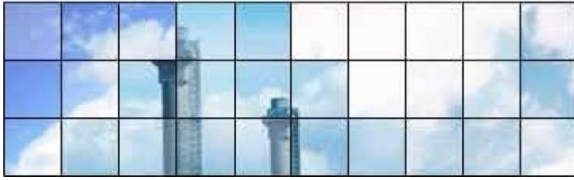
1977: Representatives of UK government departments, utilities and research organisations met to discuss calculation methods for atmospheric dispersion of radioactive releases

- Informal steering committee set up to review recent developments in dispersion modelling (predecessor to ADMLC)

1995: ADMLC formally established with initial focus on the nuclear industry

Since 1995:

- Focus widened to include range of interests of its 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, inc. both routine releases and releases in accident or “upset” conditions



ADMLC Membership 2021



Met Office



Environmental Protection Agency



Public Health
England

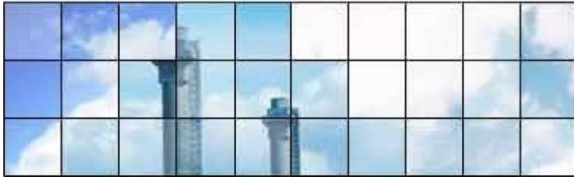


Cyfoeth Naturiol Cymru
Natural Resources Wales



ADMLC Organisation

- ADMLC Committee meetings held 3 times per year
- Each member organization contributes £3k each year (\$4.1k)
- Public workshop/seminar every 2 to 3 years
 - Impact of uncertainty in dispersion modelling and provision of advice, 2017
 - Challenges in modelling for emergency planning and response to contaminant releases, March 2020
- Webinars
 - Dispersion modelling in emergency response, January 2021
 - Satellite-based monitoring and atmospheric dispersion modelling as complementary techniques, May 2021
- Guidelines for the preparation of short-range dispersion modelling assessments for compliance with regulatory requirements
 - Last update published in February 2021



ADMLC Organisation

- Small research projects commissioned (typically up to £55k):
 - Modelling pollutant dispersion from non-point sources (2016)
 - Presenting uncertain information in radiological emergencies (2016)
 - Sensitivity of dispersion modelling results to source terms (2017)
 - Applicability of Gaussian modelling techniques to near-field dispersion (2021)
 - Dispersion modelling of odour emissions (2021)
 - Dense-gas dispersion for industrial regulation and emergency response (2021)
- Hosting of dispersion model validation datasets on website
 - e.g. Thorney Island, SMEDIS database
- Reports and datasets all publicly available
 - <http://www.admlc.com>





Dense gas dispersion

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Odour Modelling

ADMLC/2021/4

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A Review of Approaches to Dispersion Modelling of Odour Emissions and Intercomparison of Models and Odour Nuisance Assessment Criteria

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Ongoing ADMLC Project

- **Impact of different grid resolutions of NWP met data on atmospheric dispersion modelling for application to:**
 - **Regulatory air quality impact assessments**
 - **Probabilistic accident consequence assessments for radiological releases**
- Literature review
- Simulations using data from one or more NWP models, at three spatial resolution levels (e.g., 1.5 km, 4 km and 12 km)
- Different release scenarios: ground level and elevated sources
- Both flat and complex terrain
- Assess potential for double counting of terrain effects
- PHE PACE model to be used for radiological assessment
- Contract awarded to CERC. Work to start in November 2021



Future ADMLC Projects

Possible future ADMLC research projects (www.admlc.com/work):

1. Application of models to the design of monitoring networks
2. A review of model evaluation procedures
3. Dry/wet deposition of gases and particulates
4. Modelling of sources in an emergency
5. Fire source terms and plume rise
6. Understanding the impact of meteorological uncertainties

HARMO19

conference paper
discusses these topics

ADMLC is seeking to partner with other funding agencies or self-funding research organisations on topics of mutual interest

https://www.harmo.org/Conferences/Proceedings/Bruges/publishedSections/PPT/H19-057_Hort_Gant.pdf



Future Webinar

- **Use of dispersion modelling for sensor network design and inverse modelling, February 2022**
- Introduced and co-chaired by Veronica Bowman (DSTL)
- Four talks:
 - Matthew Goodwin (AWE)
 - Benjamin Truchot (INERIS)
 - Anders Helgeland (FFI)
 - Paul Westoby (DSTL)
- Free to attend
- Details provided in due course: www.admlc.com/events



- Thanks to the ADMLC committee members and Secretariat:
 - Justin Smith and Peter Bedwell (PHE, now UK Health Security Agency)
- Contact: admlc@phe.gov.uk

Thank you

The contents of this presentation, including any opinions and/or conclusions expressed, are those of the authors alone and do not necessarily reflect HSE policy