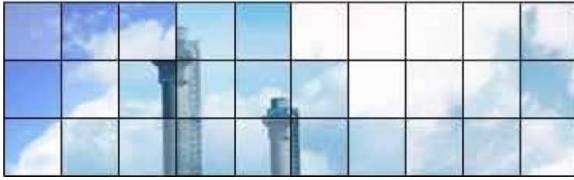Atmospheric Dispersion Modelling Liaison Committee (ADMLC)

Guidelines for the Preparation of Short Range Dispersion Modelling Assessments for Compliance with Regulatory Requirements:
An Update to the ADMLC 2004 Guidance

Simon Gant (HSE, Chair of ADMLC)

Dispersion Modelling User Group (DMUG) meeting,
24 February 2021

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:

Background to ADMLC

- 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:
  - Modelling pollutant dispersion from non-point sources (2016)
  - Presenting uncertain information in radiological emergencies (2016)
  - Sensitivity of dispersion modelling results to source terms (2017)
  - Use of Gaussian modelling techniques for near-field dispersion (2021)
  - Dispersion modelling of odour emissions (2021)
- Ongoing projects:
  - 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

ADMLC Guidelines:
Historical context

- **Early 1990's**: criticism in environmental press of variable quality of environmental impact assessments submitted for permit applications under the Integrated Pollution Control regime

- **1994**: Royal Meteorological Society introduced the qualification of "Chartered Meteorologist"

- **1994-1995**: Prof. Richard Griffiths (UMIST) led the development of the first version of the dispersion modelling guidelines with input from regulators, research institutes and consultancies
  - Aim: to promote good practice in atmospheric dispersion modelling

- **Late 1990s**: rapid expansion in use of dispersion modelling and air quality assessments

- **1997**: Air Quality Management Areas (AQMAs) introduced

- **2002**: Formation of the Institute of Air Quality Management (IAQM)

ADMLC Guidelines:
Historical context

- **2000's**: dispersion modelling applied to other types of source (e.g. aviation, intensive agriculture, road traffic), faster computers, more detailed input data on emissions and meteorology, new air-quality standards

- **2003-2004**: Revision of dispersion modelling guidelines
    - Work coordinated by ADMLC in consultation with regulators, research institutes and consultancies

ADMLC/2004/3

Guidelines for the Preparation of Dispersion Modelling Assessments for Compliance with Regulatory Requirements – an Update to the 1995 Royal Meteorological Society Guidance

These guidelines were prepared by

M P Ireland	(Mott MacDonald, Co-ordinator of DMUG)
J A Jones	(HPA-RPD, Chairman of ADMLC)
R F Griffiths	(University of Manchester)
B Ng	(Environment Agency)
N Nelson	(Defra)

Document status: Version 1.5

ADMLC Guidelines:
Historical context

- **Since 2004**: Science and the profession of air quality modelling and assessment continued to develop rapidly
- **2018-2021**: ADMLC coordinated a group of regulators, research institutes and consultancies to revise the guidelines

Acknowledgements

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Mr Pete Bedwell	Public Health England
Mr Philip Mayes	Northern Ireland Environment Agency
Dr Matthew Hort	Met Office
Dr Simon Gant	Health and Safety Executive
Mr Matthew O'Brien	Mott Macdonald

ADMLC Guidelines:
Contents

Available to download from:

https://admlc.com/model-guidelines

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ADMLC Guidelines:
Aims and scope

- **Aims**: to provide helpful advice on preparing assessments, including:
  - Determining the aims and scope of the assessment
  - Dispersion modelling software selection
  - Data selection
  - Addressing variability, sensitivity and uncertainty
  - Comparison with relevant assessment criteria
  - Communicating results
- Not prescriptive
- Scope focused on controlled (not fugitive) emissions
- Mainly fixed sites
- Compact format: 30 pages
- Advises: if a regulator is to be involved with an assessment, it is both efficient and good practice to secure agreement on the scope, method and objectives in advance

ADMLC: Future Work

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. Importance of spatial resolution of NWP data in dispersion modelling for regulatory purposes
4. Dry/wet deposition of gases and particulates
5. Modelling of sources in an emergency
6. Fire source terms and plume rise
7. 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

If you are interested in tendering for projects, contact: admlc@phe.gov.uk
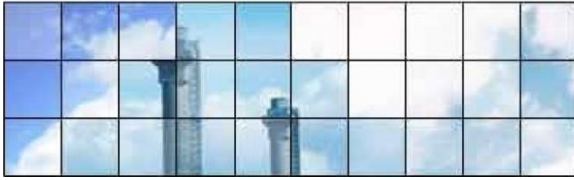
Thank you

Note: the contents of this presentation, including any opinions and/or conclusions expressed, are those of the authors alone and do not necessarily reflect the policy of the Health and Safety Executive or other member organisations of the ADMLC

Extra Material

How does the new version compare to the previous edition?

2004

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2021

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