

CURRICULUM VITAE

ROBIN ORMEROD



POSITION: Managing Director and co-founder of Pacific Air & Environment

AREAS OF EXPERTISE:

- Applied Meteorology
- Air Quality
- Odour Assessment
- Environmental Management and Impact Assessment

ACADEMIC BACKGROUND:

- BSc. (Hons 1), University of New England (Australia), 1978

PROFESSIONAL AFFILIATIONS:

- American Meteorological Society
- Clean Air Society of Australia & New Zealand
- Australian Meteorological and Oceanographic Society

ACCREDITATIONS:

- Certified Consulting Meteorologist (American Meteorological Society)

PROFESSIONAL EXPERIENCE:

Robin has 25 years' air quality consulting experience. He is Principal Consultant and Managing Director of Pacific Air & Environment, which he co-founded in 1995. PAE has grown to become one of Australia's most respected consultancies in air quality and meteorology, with a national and international clientele. Prior to establishing Pacific Air & Environment, Robin was Australian Region Manager of Air & Noise services for the international environmental consulting company Dames & Moore and had been previously engaged in air quality consulting for 14 years.

In these roles he has conducted and co-ordinated many studies of air quality, climate and meteorology, environmental management and risk assessment. These studies have mainly been associated with environmental impact assessment studies and compliance requirements for industrial and commercial clients, and policy development projects for government.

A substantial part of his experience has involved providing expert evidence on air quality and meteorology for legal proceedings or public hearings in Australia and New Zealand. Robin conducts short courses on air quality and atmospheric science for several educational organisations and directly through PAE. He has been on the scientific committees of major international air quality conferences, and he co-ordinated several international odour conferences and workshops held in Australia and New Zealand between 2001 and 2004. He has also been invited to moderate various other air quality modelling and odour assessment workshops.

As a Director of PAE, Robin shares responsibility for a team of 17 professional staff in two offices (Brisbane and Sydney), engaged in a wide variety of projects for industry and government. The team comprises 3 Ph.D.s and other highly experienced consultants in various specialist areas (dispersion modelling, meteorology, complex flows and CFD modelling, air quality monitoring, emissions estimation, noise modelling and IT).

From 2001 to 2004, Robin was Chair of the Odour Special Interest Group, a key technical forum of the Clean Air Society of Australia & New Zealand. In this role he conducted several workshops and organised international conferences on odour.

Pacific Air & Environment Pty Ltd
 ABN 23 887 350 026

BRISBANE:

Level 1, La Melba
 59 Melbourne Street
 South Brisbane Qld 4101
 PO Box 3306
 South Brisbane Qld 4101
 Ph: +61 7 3004 6400
 Fax: +61 7 3844 5858

SYDNEY:

3 Spring Street
 Sydney NSW 2000
 PO Box 4216
 Sydney NSW 2001
 Ph: +61 2 8249 4464
 Fax: +61 2 8249 4001

Email: enquiries@pae.net.au

Website: www.pae.net.au

PROJECT EXPERIENCE:

Robin has completed consulting studies involving a wide range of projects, for example:

- **Industrial** – oil refineries, oil shale processing, alumina refineries, aluminium smelters, non-ferrous metal refineries, ferrous and non-ferrous foundries, abattoirs, food processing facilities, rendering plants, petrochemical plants, cement plants, wood processing plants, sugar mills and others.
- **Mining** – coal mines, coal export terminals, base metals mines, bauxite mining, mineral sands mining, hard rock quarries.
- **Utility Operations** – landfills, coal-fired power stations, gas-fired power stations, co-generation plants, wastewater treatment plants.
- **Agricultural** – cattle feedlots, piggeries, poultry farms, grain silos, product export terminals. Recently, involvement in agricultural air quality research projects in collaboration with several US universities.
- **Transport** – highways and arterial roads, rail developments, monorail proposals, airports, port facilities, marinas.
- **Commercial** – shopping centres, outdoor entertainment facilities, nightclubs, service stations, resorts, residential developments.
- **Environmental Policy Development** – programs for government on air toxics and human health risk, greenhouse gas emissions estimation, guidelines for emissions of air pollutants, urban and regional air quality management, development of the National Pollutant Inventory, state of the environment reporting and indicators of environmental policy performance.

Studies for the activities listed above have entailed a variety of specific applications, including:

- Climatic and meteorological descriptions and assessments
- Designing and managing air quality monitoring programs
- Modelling of local and regional air quality using a variety of plume dispersion models
- Assessment of impacts of air emissions, in particular nuisance effects (odour, dust)
- Evaluation of greenhouse gas emissions
- Identifying emissions control needs and priorities
- Identifying relevant legislation, policies and guidelines for assessment purposes
- Recommending management programs for air quality and greenhouse gas management

Robin has published papers and presented conference papers in Australia, New Zealand and the US on air quality assessment, risk assessment, weather prediction, air toxics regulation, odour emissions modelling, dispersion modelling, scientific uncertainty and issues of scientific and legal interactions. He has developed innovative techniques for odour modelling (recipient of a National Engineering Award in 1991), risk-based odour and air quality impact assessment, and environmental policy performance indicators. He has also developed new approaches for evaluating ambient odours and validating odour modelling and developing odour emissions models for livestock operations.

EXPERT WITNESS EXPERIENCE

Robin has appeared as an expert witness in many proceedings since 1985 in NSW, Queensland, Victoria and New Zealand, has been engaged as a Court Appointed Expert, and has advised the NSW Planning Department as an independent expert on several large resource development projects.

ACADEMIC POSITIONS:

- Guest lecturer on air quality and noise for environmental assessment course, Queensland University of Technology (ongoing)
- Part-Time Lecturer in air and noise pollution, and natural hazards at QUT (1982-87) and University of New England (1978-80)
- Research Position, Australian Numerical Meteorology Research Centre, Melbourne (1980-81)

PAPERS AND PRESENTATIONS:

- Galvin, G., C. Henry, David Parker, Robin Ormerod, P. D'Abreton and Marty Rhoades (2006) *Efficacy of a Lagrangian and a Gaussian Model for Back Calculating Emission Rates from Feedyard Area Sources*, Workshop on Agricultural Air Quality: State of the Science, Bolger Conference Center, Potomac, Maryland, USA
- Ormerod, R.J (2005) *Odour and Air Quality Policy, Regulation and Practice in Australia*. Presented to Workshop on Odour, University of Nebraska, Lincoln, Nebraska, November 2005.
- Galvin, G and R.J. Ormerod (2005) *Comparison of Pond Odour Flux Rates: Back-Calculation vs Wind Tunnel*. Presented by RO to Joint OSIG-ModSIG Workshop at CASANZ Biennial Clean Air & Environment Conference, Hobart, 3-6 May 2005.
- Taylor, T.J and R.J. Ormerod (2005) *Heated Ponds under Neutral-Stable Conditions: CFD Simulations of Plume Behaviour*. Presented by RO to Joint OSIG-ModSIG Workshop at CASANZ Biennial Clean Air & Environment Conference, Hobart, 3-6 May 2005.
- D'Abreton, P.C and R.J. Ormerod (2003) *Simulation of the Gold Coast eddy using TAPM and MM5: Model Performance and Implications for Atmospheric Dispersion*. Proc. CASN03 Clean Air Conference, Newcastle, November 2003. Clean Air Society of Australia & New Zealand.
- Ormerod, R.J., F. Turatti and P.C. D'Abreton (2003) *Variations in community responses to odour: implications for policy and management*. Proc. CASN03 Clean Air Conference, Newcastle, November 2003. Clean Air Society of Australia & New Zealand.
- Ormerod, R.J., P.C. D'Abreton and G. Holmes (2003) *Buoyancy Effects Associated with Non-Point Odour Sources: Modelling Issues and Implications*. Proc. CASN03 Clean Air Conference, Newcastle, November 2003. Clean Air Society of Australia & New Zealand.
- Ormerod, R.J., P.C. D'Abreton & S.C. Grocott (2002) *Development of Site-Specific Odour Criteria and Compliance Assessments Using Odour Intensity Observations and Modelling*. Proc. 2002 Biennial Conference of the Clean Air Society of Australia & New Zealand, Christchurch, August 2002.
- Ormerod, R.J. & S.C. Grocott (2002) *Development and Application of State-of-the-Science Techniques for Odour Monitoring, Modelling and Assessment: A Case Study from Queensland*. Proceedings, 4th Annual Conference of the Environmental Engineering Society of Queensland, Brisbane, May 2002.
- Ormerod, R.J., S.C. Grocott & P. D'Abreton (2002) *Development of Site-Specific Odour Criteria for Industrial Facilities Using a Variety of Tools*. Proceedings, Enviro 2002 Odour Conference, 7-12 April 2002, Melbourne.
- McGahan, E., C. Kolominskas, K. Bawden & R. Ormerod (2002) *Strategies to Reduce Odour Emissions from Meat Chicken Farms*. Proc. 2002 Poultry Information Exchange, Gold Coast, 14-16 April 2002.
- Ormerod, R.J. (2001) *Abuses of the Atmosphere: Is Sustainability a Myth?* Paper presented to Queensland Environmental Law Seminar, Brisbane, 24 July 2001.

PAPERS AND PRESENTATIONS:

- Ormerod, R.J. (2001) *Improving Odour Assessment by Using Better Dispersion Models: Some Examples*. Prepared for presentation at First IWA Odour Conference on Odours: Measurement, Regulation and Control Techniques, University of NSW, 25-29 March 2001, Sydney, Australia.
- Ormerod, R.J. (2000) *Determining Ground Level Concentrations for Health Risks Assessments* presented to Air Forum on Human Health Risk, organised by Queensland Health Department, December 2000.
- Ormerod, R.J., Zeise, K.M. & Sullivan, R. (2000) *Management of Urban and Regional Air Quality: Some Lessons Learned in Australia*. First Environmental Forum Colombia-Canada: Solutions to Environmental Problems in Iberoamerica. Centro de Convenciones, Cartagena de Indias, Colombia May 24-26, 2000.
- Ormerod, R.J. & Sullivan, R. (2000) *Indicators for Measuring Environmental Policy Performance Against Sustainability Targets*. Queensland Environmental Law Association Conference, Kooralbyn, May 2000.
- Sullivan, R., J.M. Sullivan, C. Kolominskas & R. Ormerod, *Where are the Engineers?* Paper for 'The Environmental Engineer', April 2000.
- Ormerod, R.J. & Best, P.R. (2000) *Review of Odour Assessment Principles: A Perspective on Apparently Conflicting Approaches*. Proc. Enviro 2000 Odour Conference, Sydney, 9-13 April.
- Sullivan, R., C. Kolominskas, J.M. Sullivan & R. Ormerod, *Responding to Greenhouse: The Challenge for the Engineering Profession*. Presentation to the Environmental Engineering Society & Clean Air Society Australia & New Zealand, Brisbane, 14 March 2000.
- Ormerod, R.J. (2000) *Queensland Broiler Farm Odours*. RIRDC Seminar on Broiler Odours, UNSW, Sydney, 4 March 2000. Rural Industries Research & Development Corporation, Sydney.
- Ormerod, R.J. (1999) *Environmental Issues Facing the Australian Broiler Industry*. Australian Poultry Convention, Gold Coast (Australia), October 1999.
- Ormerod, R.J., R. Sullivan & B. Koks (1999) *The Brisbane Landfill Saga*. Paper presented to Queensland Environmental Law Association Annual Conference, May 1999, Noosa. (Queensland, Australia).
- Ormerod, R.J. (1998) *Odour Impacts Associated with a Non-Ferrous Foundry*. Case Study presented to Odour Special Interest Group Workshop, International Clean Air Conference, Melbourne, October 1998.
- Lunney, C.M & R.J. Ormerod (1997) *Implications of Odour Study Results for Policy Guidelines*. Proc. National Workshop on Odour Measurement Standardisation. University of NSW, 20-22 August 1997.
- Invited contribution on Risk Assessment for the *Environmental Manager* magazine (Issue 155, May 1997).
- Ormerod, R.J. (1996) *Air Quality Measurement, Modelling and Assessment: Science or Black Magic?* Invited keynote paper for the New Zealand Resource Management Association Conference, Auckland, 4-6 October 1996.
- Dixon, B & R. Ormerod (1996) *Some Practical Issues Associated with Developing Indicators Relevant to Australia's Atmospheric Environment*. Proc. Fenner Conference on the Environment: Tracking Progress – Linking Environment and Economy Through Indicators and Accounting Systems, UNSW October 1996.
- Ormerod, R.J., K.M. Zeise & P. Morgan (1996) *Management of Australia's Air Quality: Some Current Developments and Implications for the Future*. Proc. International Clean Air Conference, Adelaide, September 1996, pp 3-8.
- Ormerod, R.J. & R. Cudmore (1996) *A Risk Based Approach for Assessment of Odour Impacts*. Proc. International Clean Air Conference, Adelaide, September 1996, pp 145-150.

PAPERS AND PRESENTATIONS:

- Zeise, K.M., P. Morgan, R. Riese & R.J. Ormerod (1996) *The Viability of Current National Emissions Control Guidelines and Implications for Future Policy*. Proc. International Clean Air Conference, Adelaide, September 1996, pp 45-50.
- Invited seminar presentation to federal Environment Protection Agency, Canberra on 'Perspectives on Air Quality Management in Australia, with an Emphasis on the Role of Risk Assessment'. 23 July 1996.
- Ormerod, R.J. (1996) *Science, Uncertainty and the Law*. Proc. National Environmental Law Association Conference, Coolum Hyatt Regency, May 1996, pp 1.2.1 - 1.2.6.
- Ormerod, R.J. & K.M. Zeise (1996) *The Role of Risk Assessment in the Management of Air Quality*. Paper presented at New Zealand Institute of Environmental Health Conference '96, Christchurch, March 1996.
- Cudmore, R. & R.J. Ormerod (1996) *Risk Based Approach for Assessment of Odour Impacts*. Paper presented at New Zealand Institute of Environmental Health Conference '96, Christchurch, March 1996.
- Ormerod, R.J. & K.M. Zeise (1995) *Risk Based Assessment of Acute Air Quality Impacts*. Clean Air, 29 (2), May 1995, 53-56.
- Ormerod, R.J. & K.M. Zeise (1994) *Air Toxics: a Review of Australian and International Programs and Implications for Future Policy*. Clean Air '94: Proceedings of 12th International Conference, Clean Air Society of Australia & New Zealand, Perth. Vol. 1, pp 321-334.
- Ormerod, R.J. & R. Sullivan (1994) *Future Directions for Odour Assessment and Odour Control Policy*. Proc. Queensland Environmental Law Association Conference, Kingfisher Bay, May 1994. pp 5A.3.1 - 5A.3.3.
- Duke, K.D. & R.J. Ormerod (1994) *Dispersion Modelling Supported by Multi-disciplinary Findings*. Clean Air '94: Proceedings of 12th International Conference, Clean Air Society of Australia & New Zealand, Perth. Vol. 2, pp 119-128.
- Collins, D.C., R. Sullivan & R.J. Ormerod (1994) *Application of Risk Based Methods to Short Term Air Quality Impact Assessment*. Clean Air '94: Proceedings of 12th International Conference, Clean Air Society of Australia & New Zealand, Perth. Vol. 2, pp 263 -274.
- Ormerod, R.J. (1994), *An Odour Flux Model for Cattle Feedlots* Proceedings Eighth Joint Conference on the Applications of Air Pollution Meteorology with AWMA, Nashville, Tennessee, 23-28 January 1994. American Meteorological Society.
- Ormerod, R.J. (1992), *What the Toronto Emissions Targets Mean for Industry*, Proceedings IIR Conference on Monitoring and Controlling Air Emissions, Sydney, April 1992.
- Ormerod, R.J. (1992), *Modelling of Odour Flux from Feedlots*, International Clean Air Conference, Brisbane. Clean Air Society of Australia and New Zealand.
- Ormerod, R.J. (1991), *Modelling Emissions and Dispersion of Feedlot Odour: A Case Study*, Proceedings Workshop on Agricultural Odours, Toowoomba. Queensland Department of Primary Industries.
- Ormerod, R.J. (1990), *Odours from Cattle Feedlots - A Review of Australian Experience*, Proceedings International Clean Air Conference, Auckland, New Zealand. Clean Air Society of Australia & New Zealand.
- Nicholls, N., J. McBride & R. Ormerod (1982) *On Predicting the Onset of the Wet Season at Darwin*. Monthly Weather Review, 110 (6).