Ivan Vince

Qualifications	Sydney University, (Commonwealth Scholarship) BSc (Biochemistry, Pharmacology) Sheffield University, MSc (Combustion Science and Pollution Control) PhD Sheffield University (Styring Scholarship) 'Nitric Oxide Formation in Flames'
Afflilations	Chartered Engineer Chartered Chemist Fellow of Institution of Chemical Engineers Fellow of Institute of Energy Member of Royal Society of Chemistry Member of Loss Prevention Panel (IChemE) Member of Combustion Institute Member of UK Explosion Liaison Group Member of Environmental Law Foundation Member of UK Environmental Law Association UK Register of Expert Witnesses Sweet and Maxwell Checked Expert Witness
Date of Birth	16 May, 1948
Nationality	British and Australian

Current Position at CWA

Since 1982, Ivan has been closely associated with CWA as a specialist applied science consultant and expert witness, with extensive experience in risk and safety studies and marine casualty investigation. He has undertaken numerous assignments including fire and explosion investigation, risk and safety studies, forensic investigation of cargo contamination incidents, quantitative risk assessment, air pollution studies and other forms of environmental impact assessment.

Specific Expertise and Experience

Ivan possesses extensive experience in the application of the various techniques available for fire/explosion investigation, hazard analysis and risk assessment, and for air pollution modelling (including odour nuisance and food tainting). These include state of the art methodologies for:

- Investigation of loss and contamination of bulk cargoes
- Hazard identification, screening and ranking
- Reliability studies
- Failure frequency assessment
- Source, dispersion and deposition modelling for flammable, toxic and pollutant releases
- Consequence analysis for fire and explosion
- Quantitative risk assessment

He has also been involved extensively in software development, including cargo quantity reconciliation package `CAROL'; analysis and computation of cargo loss factors; unsteady conductive and convective heat transfer/ROB formation/flash-point depression by trace contaminants; evaporative loss; simulated weathering of LPG; flame properties; liquid pool fires; fires in partially open tanks. He has also conducted significant research into combustion generated pollution and related subjects.

Ivan is thoroughly conversant with HSE planning criteria for developments in the vicinity of major hazard plant and has contributed to and reviewed several COMAH safety reports for the oil and chemical industries. He was involved in the internal investigation (root cause analysis and explosion modelling) of the Buncefield incident, on behalf of the site owner.

Ivan has taught modules on risk assessment at post-graduate level at several universities in the UK and abroad, and has given evidence at nine public inquiries as well as in criminal and civil cases and commercial arbitrations. He has recently edited and co-authored a practical guide to scientific, technical, regulatory and insurance aspects of Major Accidents to the Environment.

Specific Experience at CWA

The following is not intended to be an exhaustive list, rather its purpose is to indicate the broad scope of Ivan's experience from projects handled over the past few years at CWA.

- Development of toxic gas dispersion model to assess on-site risk for World Bank sponsored ISAS (Integrated Safety Audit System).

- Investigation of near disastrous runaway reaction (acetaldehyde polymerisation catalysed by acid contaminant, onboard vessel owned by Neste Oy), with detailed physicochemical modelling, leading to precise identification of cause.

- Detailed investigation and mathematical modelling of vapour phase contamination during carriage of co-cargoes/petroleum products with different volatilities.

- Extensive research into contamination incidents related tom the presence of sulphur species in the carriage of refrigerated LPG cargoes.

- Investigation of fire, explosion and pollution aspects of one of the largest oil tanker casualties, including detailed modelling of:

    - burning spill on sea;
    - fire in partially intact tanks;
    - spreading of unburned oil on sea;
    - release of oil below water

- Study of evaporative loss and cross-contamination from volatile cargoes in transit; appeared as expert witness on this subject at commercial arbitrations in London and New York.

- Development of computerised simulation of weathering of crude oil and petroleum products.

- Advice regarding safety of proposed inerting of vessel's non-cargo spaces containing explosive mixture.

- Development of CAROL (Control and Reconcile Oil Losses), a computer program commercially available for auditing custody transfer.

- Co-inventor of a patented device for taking representative samples from stratified crude oil.

- Co-author of International Oil Insurers' EML (Estimated Maximum Loss) guidelines for assessment of fire and explosion hazards. Both the IOI Guidelines and associated software are commercially available.

- Investigation of many contaminated cargo claims, appearing as expert witness in arbitration and court hearings.

- Theoretical treatment of diurnal "breathing" emissions from storage tanks and cargo vessels with volatile contents (New York arbitration).

Summary of Previous Employment

Since 1988, Ivan has been actively involved in the provision of environmental technology transfer to Hungary, and has consulted for the EU and EBRD on major projects in Russia and the Ukraine. For the last eight years, he has been a Visiting Lecturer in Process Safety & Loss Prevention at University of Sheffield, (MSc module sponsored by the Institution of Chemical Engineers and the UK Health and Safety Executive). He has previously supervised research or delivered lectures at several universities in the UK, Cyprus and Hong Kong. Ivan is a Member of the Environmental Advisory Board of Castle Environmental, a leading firm of hazardous waste treatment specialists.

1990-2003	**AGEL-CBI Ltd (Budapest)** Founding partner in probably the first environmental consultancy in the region that specialises in industrial risk assessment
1978-1984	**Imperial College, Chemical Engineering Department** Post Doctoral Research Fellow, Department of Chemical Engineering Research on flammability limits and combustion generated pollution
1979-1982	**Watt Committee on Energy** Consultant
1978	**Chelsea College/UNEP Research Centre** Research Assistant, Monitoring and Assessment
1977-1979	**Open University** Course Tutor, Environmental Control and Public Health, Post-Experience Course
1977-1978	**Pergamon Press** Assistant Editor, Progress in Energy and Combustion Science
1972-1973	**Commonwealth Agricultural Bureaux** Edinburgh Scientific Information Officer

Previous Combustion Research

Ten years (Sheffield University and Imperial College) of full-time research on combustion generated air pollution and flammability limits.

Publications

The following is a selection from Ivan's extensive list of titles. A full list of publications is available on request.

Vince I (ed) (2008) Major accidents to the environment – a practical guide to the Seveso II Directive and the COMAH regulations (Oxford: Elsevier) ISBN: 978-0-7506-8389-0.

Vince I (2002) Hydrogen sulphide release from a process vessel, *Loss Prevention Bulletin* 168, 12.

Fisher BEA, Metcalfe E, Vince I, Yates A (2001) Modelling plume rise and dispersion from pool fires, *Atmospheric Environment* 35, 2101.

Bridges JW, Bridges O, Scott P, Vince I (2000) The evaluation of possible health risks to landfill site workers from exposure to gaseous waste emissions (landfill gas), *Environment Agency R&D Technical Report* P257.

Vince I (1999) A pilot information system on environmentally hazardous activities (Institutional Strengthening of the Ukraine State Environmental Inspectorate), European Commission (TACIS, DG IA) Project No. ENVUK9701, 97-0728.00.

Nixon W, Bottelberghs PH, Vince I et al (1995) Environmental risk criteria for accidents: a discussion document, European Commission (DGXII) Contract no. ERBEV5VCT940417.

Tomi DT, Vince IM, Matheussen D, Bishop R (1992) EML – Estimated Maximum Loss from explosion and/or fire: guidelines for assessment in the oil, gas and petrochemical industries (London: International Oil Insurers).

Vince IM, Vovelle C, Weinberg FJ (1984) The effect of plasma jet ignition on flame propagation and sooting at the rich limit of flammability, *Combustion and Flame*, 56, 105.

Hayhurst AN, Vince IM (1977) Production of 'prompt' nitric oxide and decomposition of hydrocarbons in flames, *Nature*, 266, 524.