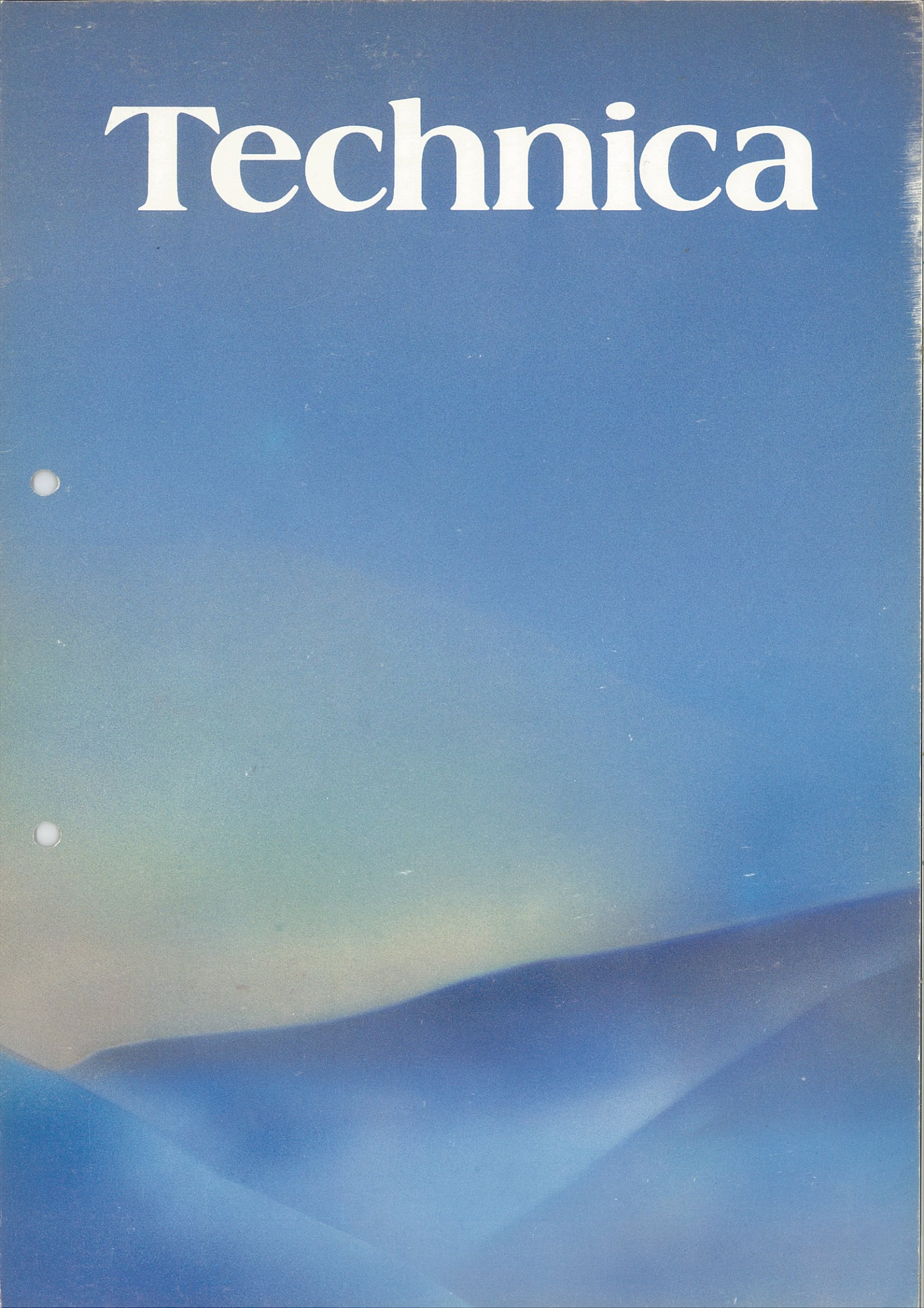
Technica



Technica

TECHNICA Ltd is a new company formed by a group of professional engineers and scientists to provide a consultancy service to both industry and government on the technical aspects of the process industries and their interaction with society and the environment. The company has been active since September 1980.

The five founding directors of the company are all experienced consultants in this field. Their academic and industrial backgrounds give the company a wide range of engineering and applied science skills in fields as diverse as chemical engineering, aeronautical engineering, combustion and fluid dynamics. Based on their extensive experience of multidisciplinary studies, TECHNICA is able to tackle a broad range of problems related to environment and safety for industrial operations. These include:

IMPACT ASSESSMENT

Major Hazards – risk assessment and planning studies
As risks can never be totally eliminated, the siting of hazardous activities and the control and monitoring of such installations is of great importance and concern. TECHNICA's contribution includes engineering appraisal, estimation of the behaviour of large releases of hazardous material and evaluation of damage caused. Risks to employees and the community at large can then be evaluated and compared against published standards appropriate to the situation.

Environmental Pollution – baseline and impact assessment
Air, noise and water pollution are all to some extent controllable either by judicious siting policies or by effluent treatment or process changes. Requirements for the control of pollution are constantly being tightened by both local and national governments. For example, new developments often require Environmental Impact Statements and therefore, by implication, baseline studies. In operating installations pollution monitoring may show that plant improvements are required. TECHNICA can advise on all of these aspects of environmental control, and will undertake both theoretical and experimental studies.

Product Liability – evaluation of safety of manufactured products
Concern over inequities in existing provisions for compensation for personal injury caused by consumer products has resulted in consultative documents and legislation at both national and international levels. The steps in evaluating liability for product defects are essentially similar to those for major hazard investigations, i.e. identify potential sources of hazard, estimate possible effects and their likelihood, then assess design changes. TECHNICA's multidisciplinary capability and experience can help with the technical questions arising in post-accident investigation and in the setting of insurance rates.

HEALTH AND SAFETY AT WORK

Safety Audits – systematic surveys of operating plant
Safety auditing is often taken to mean a spot check of the safety of the installation with regard to compliance with codes of practice. TECHNICA takes the view that this method is 'hit-and-miss' and can cause wasted effort on bureaucratic details, while not being wholly adequate for new-technology cases. TECHNICA adopts a more fundamental approach, in which the intrinsic process hazards are first inventorised and then the audit is directed specifically at the causes of the more significant potential hazards, the main aim being to identify the most likely failure mechanisms and then develop recommendations for preventive measures.

Occupational Health – effects of toxic materials on the workforce
Among the most important of the risks to which a workforce may be exposed are those brought about by toxic or carcinogenic chemicals. To assess this, the mechanisms of release are first examined, be they normal or accidental, then ambient concentrations are estimated or measured; after this, the total exposure and the resulting effects on personnel can be calculated and compared with appropriate standards.

TECHNICAL SERVICES

Design Checks – Hazard & Operability Studies and Failure Modes and Effects Analysis
Hazard and Operability Studies (H&O), which were pioneered by ICI, provide a systematic tool for checking a process design. H&O involves an exhaustive search for all possible malfunctions in the system. To undertake H&O it is necessary to impose a strict discipline on the study team, whilst maintaining a high level of creativity and sense of purpose throughout the exercise. The staff of TECHNICA have experience in H&O both as team members and as study leaders. For other situations, Failure Modes and Effects Analysis (FMEA) can be usefully employed; this is particularly appropriate for non-process hazards.

Reliability Analysis – for efficiency and safety
Reliability analysis has been employed in many different applications from aerospace to process plant. By quantifying from historical data the failure probabilities at the component level, the reliability of complex systems, such as process plant, may be derived. This has implications for the safety of the system as well as the design of maintenance and inspection schedules. TECHNICA has experience in using reliability analysis as a check on system design, and for determining priorities for improvement. Particular expertise is available in the construction and analysis of fault trees and event trees.

Contract Research – specification and management of research programmes
Because of the innovative nature of many of the company's fields of activity the organisation and management of research is one of its necessary skills. The TECHNICA staff have experience in such research activities and have been instrumental in organising and executing work in fluid dynamics, thermodynamics, soil chemistry, air pollution meteorology, risk assessment and combustion science. This work includes theoretical studies, laboratory work, and hydro- and aerodynamic testing.

Software Services – computer programs for safety and environmental analysis
TECHNICA's staff have developed programs for modelling safety and environmental problems, such as air pollution impact (average concentrations and frequency distributions) and the risk impact of petrochemical complexes. Their software skills

are available to clients for the supply of working programs or system architecture as required.

Fire and Explosion – Accident Investigation and Fundamental Research
Knowledge of the effects of fires and explosions and of the characteristics of combustible materials in their various physical states is essential for the forensic analysis of such incidents. TECHNICA's personnel have experience of such investigations and have also undertaken basic research in this field.

ENERGY STUDIES

Coal Utilisation and Conversion Processes – chemicals and fuels from coal
The changing pattern of energy use requires the exploitation of solid fuels both directly and as a source for more convenient energy forms (gas, electricity) and for feedstocks.

The new technolgies which will have to be developed for these uses of coal present potential environmental and safety problems which TECHNICA is well equipped to tackle. Examples are: disposal of waste products from the processes; safety of pressurised systems; siting and layout.

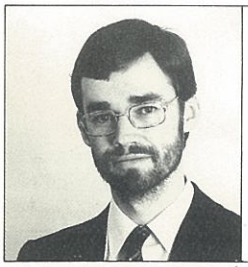
Energy Policy Implications – strategic studies
TECHNICA has developed an understanding of energy conversion processes and systems through past involvement of its staff in broad-based economic and technical studies. This work included examination of the influence of energy supply policy on overall environmental impact, and the economic consequences of pollution control measures required to achieve stated environmental goals.

D H SLATER BSc PhD CChem CEng FRSC FInstE FInstPet
David Slater has, for the past four years, been a partner in a leading firm of consulting engineers and scientists, where he was responsible for the firm's hazard and environmental teams. He has extensive experience of the consulting business, and has been a member of several key committees. He has served as secretary of the Royal Society Study Group on the Assessment and Perception of Risk, and was the chairman of the Committee of Technical Experts advising the Court of Inquiry into the Flixborough Disaster.

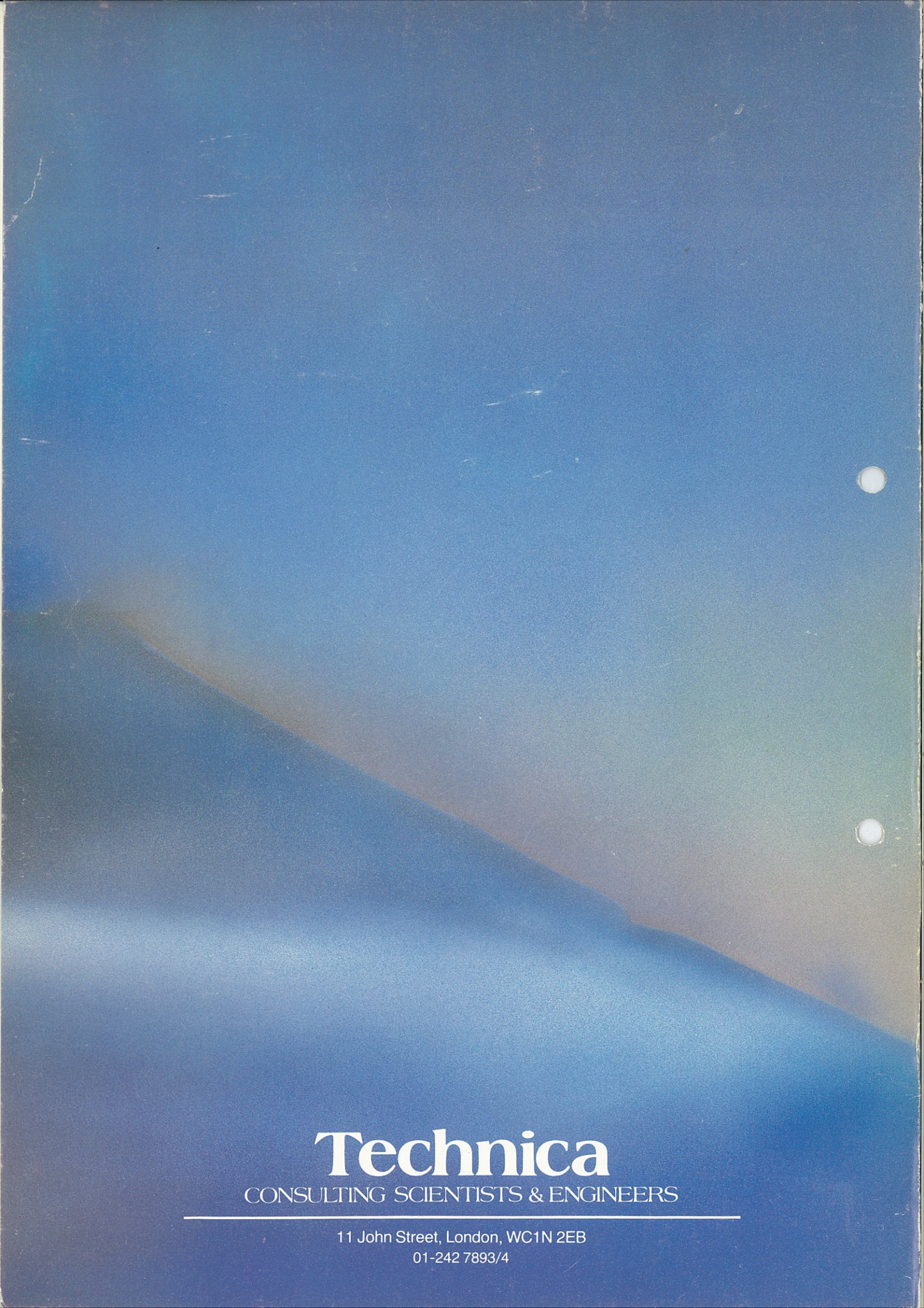
R A COX MA PhD CEng MInstE FRMetSoc
Tony Cox has wide experience of air pollution, hazard analysis and risk assessment. He has been instrumental in the development of a range of analytical methods for consequence calculations and overall risk assessment, and has led teams investigating various major industrial hazards throughout the world, with special reference to planning, siting and layout problems. He is internationally known for his lectures and scientific papers on the mathematical modelling of hazards due to toxic or flammable vapour clouds.

M A SEAMAN BSc (Tech) CEng MIChemE
Miles Seaman is a chemical engineer with additional experience in management science, operational research and econometrics. In a firm of management consultants he led a variety of studies, working particularly on the economic aspects of environmental control strategies. Prior to this he was a plant manager in the Petrochemicals Division of ICI. More recently he has been involved in the hazard and risk assessment of petrochemical plant, and was project manager for a number of important studies in this field.

P J COMER MSc CEng MInstE AFIMA FRMetSoc
Philip Comer specialises in air pollution impact assessment and hazard analysis. He has been responsible for the development of a range of air pollution dispersion models, and techniques for predicting discharge behaviour and evaporation of spills of hazardous materials. He has undertaken several hazard and environmental impact assessment tasks in various contexts worldwide, and has carried out research into air pollution problems both in the academic world and in commercial contract research.



M A F PYMAN BSc PhD MInstE
Prior to joining TECHNICA Mark Pyman was a Senior Scientist in a firm of consulting engineers and scientists. He has worked on a variety of projects involving the siting, planning and layout of major industrial sites, and has been actively engaged both as a team member and as manager in the risk assessment of several proposed liquefied natural gas plants and associated shipping facilities in Australia, Belgium and the Netherlands. Other projects on which he has worked have included chlorine and sulphur dioxide storage facilities, and the storage and transhipment of LPG.



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CONSULTING SCIENTISTS & ENGINEERS

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