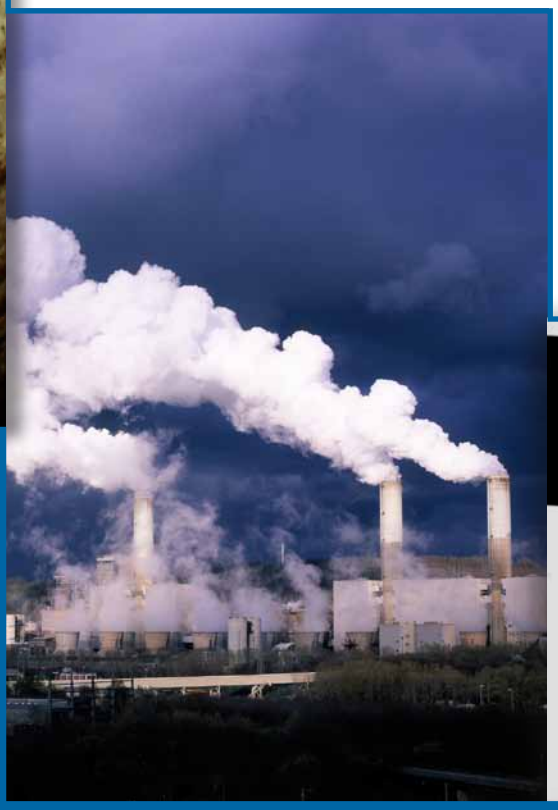
ACTRA 3rd Annual Scientific Meeting



Thursday 26th August 2010

UNSW CBD Campus, 1 O'Connell St, Sydney

Abstracts book

Managing Environmental Health Risk and Liabilities

Wednesday 15th September 2010 - Adelaide Convention Centre

Purpose of the Seminar

The purpose of this seminar is to provide information and promote understanding of issues related to changing regulations and realities of managing health risk & potential liabilities. Assessment of environmental and health risk is routinely carried out for a wide range of projects and situations. The reliability of that risk assessment is critical for development of risk management options and elimination / minimisation of actual or potential liabilities associated with the identified risks.

This seminar is designed to provide the attendees a range of perspectives on this subject and includes presenters from the regulatory agency, legal profession, medical profession, environmental profession and the industry sector.

There is increasing awareness of potential human health impacts from environmental contaminants with the consequent increase in regulatory compliance requirements. It is prudent therefore, to ensure that environmental health risk assessments are carried out by professionals with the relevant qualifications and experience that is recognised by the regulatory agencies and will have credibility in a court of law. This issue is becoming very important with the increasing number of environmental liability issues getting to court not only in Australia but internationally.

This seminar will highlight environmental and regulatory issues to be aware of and also outline some of the steps being taken to improve the level and reliability of professional services for managing health risk and liabilities.

Topics for discussion:

Welcome and introduction; Outline of program and objectives
Chair – Colin Pitman City of Salisbury

An outline of key steps in EHRA and summary of the main changes in updating the enHealth guidance
Professor Brian Priestly – ACTRA

Compliance to Environmental Regulations – Risks & Potential Liabilities
Andrew Pruszinski – SA EPA

Environmental Risk, Regulations & Potential Liabilities (A legal perspective as it applies to Environmental Assessment)
Kyra Reznikov, Finlaysons Lawyers

Environmental Risk & Potential Liabilities in Land Development
Phil Donaldson – SA Land Management Corporation

Health Risk Assessment In Water Industry
Dr Ram Sharma – Environment Business Solutions Pty Ltd

Registration of specialists in Toxicology & Risk Assessment
Professor Brian Priestly – ACTRA

If you would like to receive further details on the program, venue and registration details please register your interest with Elisabethe Dank our secretariat at secretariat@actra.org.au or go to the ACTRA website at http://www.actra.org.au/news.html

Contents

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DELEGATE LIST at time of printing (in alphabetical order)

Barnes	**Judith**	Golder Associates
Bausch	**Michelle**	Office of Chemical Safety & Environmental Health
Capon	**Adam**	NSW Health
Davidson	**Damien**	Coffey Environments
Davies	**Les**	APVMA
De Nola	**Giorgio**	Toxikos
Delaere	**Ian**	SA Health
Dempsey	**Jack**	Dept of Health & Aging
Di Marco	**Peter**	Golder Associates
Edwards	**Prof John**	Flinders University
Filipovska	**Julija**	NICNAS
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Priestly	**Brian**	Monash University
Rummery	**Nicole**	Office of Chemical Safety & Environmental Health
Scorgie	**Ynonne**	ENVIRON Australia Pty Ltd
Sharma	**Ram**	Environment Business Solutions
Stone	**Dr David**	Advanced Analytical Australia
Struik	**Emma**	ENVIRON Australia Pty Ltd
Turczynowicz	**Len**	Golder Associates
Vickers	**Carolyn**	World Health Organization
Winkler	**David**	CSIRO
Wright	**Jackie**	Environmental Risk Sciences

Program

SESSION TITLE	SPEAKER	CONFIRMED TIME
Registration; Tea/Coffee available		9.00 - 9.30 am
Keynote Address: Chemicals, Toxicology and Public Health: A Global Perspective *Sponsored by:* Toxikos	Carolyn Vickers WHO, Geneva	9.30 - 10.10 am
New Frontiers in Toxicology - Implications for ACTRA members	Professor Brian Priestly ACTRA	10.10 - 10.25 am
Development of a Physiologically Based Pharmacokinetic Model for Volatile Organic Compounds from diesel fuel vapour in submarine atmospheres. *Sponsored by:* Toxikos	Giorgio De Nola Toxikos Pty Ltd	10.25 - 10.50 am
	Coffee Break	10.50 - 11.15 am
QSAR: What it is, what it can do, and what it can't do. *Sponsored by:* Australian Government Department of Health and Ageing NICNAS	David Winkler CSIRO	11.15 - 11.45 am
QSAR Modelling of Chemical Toxicity in the International Regulatory Framework: Perspective for Prioritization of the Australian Inventory of Chemical Substance. *Sponsored by:* Australian Government Department of Health and Ageing NICNAS	Julija Filipovska NICNAS	11.45 - 12.15 pm
	Lunch Break & ACTRA AGM	12.15 - 2.00 pm
Background Exposure to Neurotoxic Insecticides in Young Children: An Australian Perspective	Dr Kateryna Babina SA Health	2.00 - 2.20 pm
Vapour Intrusion into Suburban Dwellings - Some National Implications	Ian Delaere SA Health	2.20 - 2.40 pm
The Health Risk Assessment of Volatiles - Inhalation Dosimetry	Len Turczynowicz Golder Associates	2.40 - 3.00 pm
	Coffee Break	3.00 - 3.40 pm
Communities at Risk - Methamphetamine Laboratories in Urban Settings	Professor John Edwards Flinders University	3.20 - 3.40 pm
Human Fluoride Intake Risk Assessment with a Need to Include Children	Francesca Kelly Environmedical Aeraqua NZ	3.40 - 4.00 pm
Open discussion - Current Issues		4.00 - 4.30 pm

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Keynote Address: Chemicals, Toxicology and Public Health: A Global Perspective

Carolyn Vickers

Public Health and Environment Department, World Health Organization, Geneva, Switzerland.

The production and use of chemicals continues to grow, proportionally more so in developing countries. While the toxicity of some chemicals is well understood and knowledge about the toxicity of many more chemicals is being pursued, the contribution of chemicals to the burden of disease is not well understood. This likely impacts on the level of priority given to chemical safety issues by public health decision-makers who face a considerable known burden due to communicable diseases. This presentation will outline initial findings from a WHO project to estimate the known and unknown burden of disease attributable to chemicals.

The Strategic Approach to International Chemicals Management (2006) has enhanced multisectoral and multistakeholder action towards the sound management of chemicals and the goals of the 2002 World Summit on Sustainable Development. Actions to be undertaken include the harmonization of risk assessment methodology. WHO activities relating to risk assessment will be presented, such as the development of a Framework for Risk Assessment of Combined Exposures to Multiple Chemicals, and the development of guidance on characterizing and communicating uncertainty and variability in both exposure and hazard assessment.

In order to address negative impacts of chemicals on global public health, a range of measures are needed in addition to the assessment of many more chemicals and the development of better risk assessment methodologies. This presentation will discuss WHO capacity building activities, including the establishment of a WHO Risk Assessment Network, in which ACTRA may wish to play a part. In addition, WHO chemical risk assessment priorities for the next few years will be outlined.

Email: vickersc@who.int

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Sponsored by:

Toxikos Toxicology Consultants

Carolyn Vickers

Carolyn Vickers is the Team Leader for Chemical Safety in the World Health Organization Department of Public Health and the Environment. The Team is responsible for: development of internationally harmonized methods for risk assessment; risk assessment of chemicals of public health importance; poisons prevention, information and management; prevention and response to chemical emergencies; and WHO's involvement in international conventions and agreements on chemicals. Prior to joining WHO, Carolyn's career included managing Australia's Existing Chemicals Programme at NICNAS, and managing the occupational health and safety assessment of pesticides and the development of occupational health standards at WorkSafe Australia. She is a toxicologist by training.

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New Frontiers in Toxicology - Implications for ACTRA members

Brian G. Priestly

Monash University; President ACTRA

In 2007, the US National Research Council published a monograph (NRC 2007) that set out a vision for the toxicological evaluation of chemicals in the 21st Century. The vision included embracing new in vitro and in silico technology to enable high-throughput screening of the toxicological profile of large numbers of chemicals, as well as the use of quantitative structure-activity relationship (QSAR) assessment, physiologically-based pharmacokinetic (PBPK) modelling and other dose-response assessment techniques (e.g. benchmark dosing; BMD) to enhance quantitative methodology. Further expansion of these issues was contained in the NRC Monograph Science & Decisions: Advancing Risk Assessment (NRC 2008).

ACTRA members were privileged to gain further insights into the application of such methodologies to the better understanding of human diseases and the potential role of chemicals in their causation or modification, through presentations by Dr Christopher Portier at the December 2009 ACTRA ASM, and the May 2010 ACTRA Workshop on carcinogenic risk assessment. These insights illustrated the use of disease biomarkers and linkages to establish commonality of toxicological mechanisms. These programs will drive the US National Toxicology Program (NTP) towards more targeted testing programs, reduced animal usage and new predictive tools, based on a better understanding of the cellular basis for human disease.

The NRC publications stimulated a dialogue in the Forum section of Toxicological Sciences, with the publication of nine commentaries through 2009 and 2010. These commentaries addressed strategies for implementing the vision, applications to the chemicals, pharmaceuticals and nanotechnology sectors, biomarkers for exposure assessment, uses of stem cells, and challenges faced by regulators, including the need to create a taxonomy of effects to differentiate those biological effects critical for disease causation from those associated with adaptive physiological changes.

This presentation raises challenges to ACTRA members on how to move beyond the conventional toxicity testing paradigms currently used to identify and characterise hazardous environmental chemicals. These challenges will need to be faced by both HRA practitioners and regulators in order to gain the benefits on offer through new high-throughput toxicity assessment techniques. A major challenge will be the interpretation of quantitative (i.e. dose-response) data if this information is to be useful for standard setting and informing quantitative risk assessment and risk management.

References:

NRC (2007) Toxicity testing in the 21st Century. A vision and a strategy. National Academy Press, Washington DC

NRC (2008) Science and decisions: Advancing risk assessment. Washington, DC: National Academy Press.

Brian Priestly

Brian Priestly is President of the Australasian College of Toxicology & Risk Assessment (ACTRA) and Director (now part time) of the Australian Centre for Human Health Risk Assessment (ACHHRA) at Monash University. Prior to leading ACHHRA, Brian was Director of the Laboratories Branch in the Therapeutic Goods Administration. He also previously led the chemicals toxicology and chemicals risk management programs of the Commonwealth Health portfolio, with overall responsibility for toxicological assessment of pesticides and other toxic chemicals, including input into various national and international chemicals management programs. ACHHRA was contracted to update the seminal 2002 enHealth guidance document on environmental health risk assessment (EHRA), and his talk will summarise the main changes in updating enHealth guidance relating to carcinogens.

Development of a Physiologically Based Pharmacokinetic Model for Volatile Organic Compounds from diesel fuel vapour in submarine atmospheres.

Giorgio De Nola

Toxikos Pty Ltd

The application of physiologically based pharmacokinetic models (PBPK) to predict exposures and body burden to workers exposed to volatile organic compounds from Diesel fuel is discussed. Models have until recently been based on perfuse limited assumptions however recent improvements in models have seen diffuse limited assumptions implemented for various compartments.

Air and breath samples were collected from workers exposed to middle distillate fuels who operate in a confined area. The air data collected was then used to calculate worker exposure whereas the breath data, including time course decay data, were used as a comparison against arterial concentration in the PBPK models. A variety of PBPK models based on those available in the literature for various hydrocarbons were evaluated including an improved PBPK model using decane as the representative VOC. The estimation and selection of physicochemical parameters (eg: partition coefficients) and how they affect diffusion based model assumptions is highlighted.

Giorgio De Nola

Giorgio De Nola has recently joined Toxikos in the role of Senior Associate – Toxicology and Risk Assessment. Giorgio is an experienced environmental chemist with over 20 years experience working in Defence for Defence Science and Technology Organisation. He was involved in providing exposure analysis advice on important occupational health issues with a focus on dermal and air exposure to Volatile Organic Chemicals (VOC).

QSAR: What it is, what it can do, and what it can't do.

David Winkler

CSIRO Materials Science and Engineering

It is clearly necessary to ensure that industrial chemicals used in the home and workplace are not likely to be a significant risk to human health or the environment. Government regulatory bodies have responsibility to ensure that sufficient information is available for new and existing chemical so that hazard and risk can be assessed, and suitable controls can be put in place to manage risk. Experimentally measured physicochemical, toxicological, and environmental impact data has been the main source of information requested and provided for chemical registration process. Experimental measurements also constitute the 'gold standard' against which other sources of data are measured.

A number of technological and regulatory issues have arisen that have put pressure on the ability to rely entirely on experimentally determined data when making decisions on regulation of industrial chemicals. One of these is the cost of generating the required experimental data for registration. This acts as a disincentive to introduce new, more effective and less toxic chemicals to replace those already registered. It also makes it very difficult for companies to register new chemicals with low value and production volume, as the cost of registration cannot be recouped. There is increasing pressure to curb the use of animals to provide data on toxic effects of chemicals. On the positive side, technological advances are making the cost of some biological assays cheaper because they can be miniaturized and done using high throughput methods, and the availability of gene expression profiling methods promises to provide large amounts of data on how chemicals interact with organisms. Potentially large volumes of data may be generated in the future, and this must be managed and information extracted.

Consequently, all regulatory agencies have started investigating and, in some cases, using computational methods to predict physicochemical or toxicological properties of chemicals. Foremost of these are the quantitative structure-activity relationships (QSAR) methods. These are machine learning or regression techniques that extract information on the relationships between the molecular or physicochemical properties of molecules and their biological properties. QSAR was developed about fifty years ago and has been invaluable for drug development and prediction of physicochemical properties of molecules. It can make accurate prediction of peoprties of complex toxicological properties in some cases, and is excellent at analyzing large data sets in particular. Most agencies are interested in the potential of QSAR methods for predicting toxicological properties of chemicals, and for prioritizing inventories of existing chemicals in terms of hazard and risk.

This paper will describe QSAR methods, how models are developed, and how well they can predict relevant properties of industrial chemicals. QSAR methods are deceptively simple and easily used by non-experts. However, there are many traps and pitfalls for inexperienced practitioners. The errors commonly made when developing QSAR models, and limitations of the QSAR modelling techniques will also be discussed, to achieve a balanced view of the value of these important methods.

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Dave Winkler

Dave Winkler is a Senior Principal Research Scientist and Modelling Team Leader with CSIRO. Dave's expertise in in the use of computational methods to model the biological activity of molecules, and to understand their mechanism of action. In particular, he has worked in development of novel QSAR methods over the past twenty years, and his work has been internationally recognized.

He has also had a long association with NICNAS, advising on QSAR-related matters, representing CSIRO on a PACIA NICNAS taskforce, and serving on a NICNAS Human Health Expert Working Group. Dave is a Fellow of the Royal Australian Chemical Institute, has served as Chairman of the Board of RACI, and is an Adjunct Professor in the Pharmacy faculty at Monash University.

Prior to joining CSIRO, Dave's career included materials research at DSTO in Adelaide, and drug design at the Victorian College of Pharmacy in Melbourne. He has also held several research fellowships at the Universities of Kyoto, Oxford, and Calgary. His PhD training was in astrophysics, rotational spectroscopy, and theoretical chemistry.

QSAR Modelling of Chemical Toxicity in the International Regulatory Framework: Perspective for Prioritization of the Australian Inventory of Chemical Substance

Julija Filipovska

NICNAS

The importance of alternative approaches, such as in vitro testing and Quantitative Structure-Activity Relationship QSAR, for evaluating potential toxicity has been emphasized by the recent international emphasis on reduction and replacement of testing in animals for new chemicals. At the same time, national and international regulatory programs seek to evaluate the hazards and risks from chemicals in use for which significant paucity of measured data has been identified.

As a result, the field of predictive toxicology has experienced a great expansion. Development of new, and significant improvement of previously available (Q)SAR models is being driven by scientific progress but also by demands for validation of methods for regulatory use. Principles for validating (Q)SAR models for regulatory acceptance have been articulated and are currently being elaborated and examined under the umbrella of the OECD. Coordinated international efforts for development of databases of validated and other models used by regulatory agencies and supporting material are also underway.

Australia, through the National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is actively monitoring the international developments in the rapidly evolving field of predictive toxicology and is building capacity for use of selected (Q)SAR models for prioritisation and assessment of industrial chemicals.

NICNAS is currently implementing of a strategy to prioritise the ~38,000 existing substances listed on the Australian Inventory of Chemical Substances (AICS), based largely on human health and environmental hazard indicators for individual and specific groups of chemicals. An analysis undertaken by NICNAS on the availability of human health and environmental hazard data indicated that very limited experimental data are available for over 80% of chemicals on AICS, highlighting the need for and the importance of alternative methods, including (Q)SARs to overcome the experimental data gaps in prioritising chemicals on AICS for further action.

Julija Filipovska, PhD

Julija attained a PhD degree in Biomedical Sciences from the Rockefeller University in New York for research in fundamental aspects of gene expression. Following postdoctoral research in pharmacology of opioid receptors at the New York University and Barcelona University in Spain, Julija moved to Australia and continued research at the University of Sydney. Julija's scientific research has been published in major peer reviewed scientific journals. She joined NICNAS in 2005 as a regulatory scientist. Her work in NICNAS focuses on public health risk assessment and the use of novel approaches, such as QSAR, for assessment of chemical toxicity.

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Background exposure to neurotoxic insecticides in young children: an Australian perspective

Dr Kateryna Babina

Public Health SA Health

Organophosphorus (OP) and pyrethroid (PYR) compounds are the most widely used groups of insecticides in South Australia and worldwide. Insecticides are used extensively in South Australia in agricultural, domestic and public settings.

Australia has more OPs and PYRs registered for both restricted use and domestic use by the general public than other comparable developed countries such as the USA and UK.

The National Environment Protection Measure (NEPM) review process involves variations to the NEPM Schedule B7 Guideline on Health Investigation Levels in soils. The proposed new NEPM B7 will have HILs for wider range of chemicals including some OP and PYR insecticides. Determination of the background exposure to pesticides in the general population is essential for the purposes of setting HIL. So far, the proposed NEPM B7 has largely relied on the results of the 20th Australian Total Diet Survey (ATDS) to account for the background exposure to pesticides.

This presentation will explore the current research into extent and pathways of environmental exposure to OP and PYR insecticides in young children from the Australian perspective. This presentation will also discuss the problems with design and methodology of the 20th ATDS which are likely to lead to the underestimation of the dietary intake of pesticides in the Australian general population, particularly for young children.

Dr Kateryna Babina

Kateryna holds a Bachelor degree in Medicine with major in Public Health Medicine (1996) and Honours in Microbiology (1997), awarded by National Medical University and National Academy for Advanced Medical Postgraduate Education, Kiev, Ukraine.

Kateryna received her PhD in 2006 from Flinders University, South Australia. The focus of her research was environmental exposure to neurotoxic insecticides in preschool children in rural and metropolitan South Australia.

Kateryna is currently employed as a Senior Scientific Officer (Site Contamination, Public Health toxicology group) at the Department of Health, South Australia. Recently she has been involved in a number of investigations related to public health impacts of site contamination in South Australia.

Vapour intrusion into suburban dwellings – some national implications.

Ian Delaere, Kateryna Babina, Richard Evans, David Simon

Department of Health South Australia

Risks to human health from site contamination are managed in Australia at a state and territory level by the local environmental protection and relevant health authorities. To ensure a nationally-consistent approach to the assessment and management of sites a National Environment Protection Measure (NEPM) has been developed by the Australian Government which local jurisdictions implement through their legislative frameworks.

The NEPM provides nationally accepted guidance, with the goal of ensuring equivalent protection for communities from air, water or soil contamination; regardless of where they live. The NEPM is currently undergoing revision and it is proposed that current review should include guidance for the assessment of volatile organic compounds (VOCs) in soil, groundwater and soil vapour.

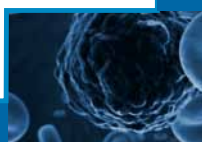
Specifically the NEPM review team will consider variations proposed in the draft "Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater" (petroleum hydrocarbons) and the draft "National Environmental Protection Measure Schedule B7 Guideline on Health Investigation Levels" (volatile chlorinated hydrocarbons). Both proposed regulatory measures have been developed to derive vapour intrusion 'screening' and/or 'investigation' levels for various volatile compounds based entirely on modelled outputs from the Johnson-Ettinger vapour intrusion model (JEM) and its various iterations.

This paper briefly discusses some of the limitations associated with the application of the JEM exposure modelling approach for the derivation of 'regulatory guidelines' and provides field data to 'ground truth' modelled predictions contained within these proposed variations of the NEPM. Subslab and indoor air data for trichloroethene collected from a residential site in Clovelly Park South Australia demonstrate that the critical attenuation factor assumption (=0.01 HILs, =0.005 HSLs) used to calculate soil vapour intrusion under predicts indoor air exposure. In their current form neither draft proposed soil vapour NEPMs are sufficiently robust to be applied as screening tools to protect human health.

Ian Delaere

Ian received his PhD in 1997 from the University of Adelaide for work conducted on neurotoxic non-protein amino acids found in a common forage legume. He has worked in several capacities in industry and government.

Ian has spent the last 8 years informing industry and government of risks posed to the public associated with exposure to particular environmental chemicals. More recently this has taken the form of investigating the impacts of improperly disposed volatile chlorinated hydrocarbons from industry on neighbouring communities.



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The health risk assessment of volatiles – inhalation dosimetry

Len Turczynowicz

Principal Risk Assessor, Golder Associates & School of Population Health and Clinical Practice, Faculty of Health Sciences, University of Adelaide

The health risk assessment of vapour intrusion attempts to determine the risks of indoor inhalation exposures from sub-surface source contaminants. The assessment method may include the examination of existing dwellings or dwellings proposed as part of the redevelopment of contaminated land. The exposure assessment process couples the key areas of subsurface partitioning and transport, dwelling ventilation dynamics and receptor inhalation dosimetry and has been the subject of intensive international investigation. Most of these investigations have been focussed on an understanding of sub-surface vapour migration either from soil or groundwater contaminant sources. There has been limited focus, however, on an understanding of the influencing variables on dwelling ventilation and the dynamics of inhalation dosimetry applicable to human receptors.

In the last few years there has been an increased focus on understanding and refining our knowledge of inhalation exposures for particulates, fibres and volatile pollutants. This has been driven in part by a lack of significant change in the method of assessment of atmospheric exposures for over twenty years and also by growing concerns over internal dose differences between children and adults. A greater recognition of the increased susceptibility of children due to dose and metabolic differences has catalysed investigations of inhalation dosimetry models.

Inhalation dosimetry reflects a complex process requiring an understanding of a range of areas including the influences of anatomical structures, physiological processes, and vapour physico-chemical and toxicological characteristics. Recent research on reactive gas modelling (Category 1 and 2) gases has examined uptake in region-specific sections of the respiratory tract between 3 month old children and adults while PBPK modelling approaches have been used in non-reactive (Category 3) gas modelling employing steady-state equations for systemic dose determinations across age categories. Two recent publications have demonstrated the importance of transient (non-steady-state) absorption of inhaled vapours in the respiratory tract. These papers report that variance in uptake based on transient evaluation was 1.3 to 30 times greater than steady-state values. These publications suggest time-dependent evaluations of exposure through measurement and vapour intrusion modelling may represent more realistic approaches.

This paper introduces current developments in inhalation dosimetry and provides perspective on future directions of research that will lead to significant differences in inhalation exposure assessment moving into the 21st century.

Len Turczynowicz

Len has worked in the field of public health toxicology and human health risk assessment for over 23 years, mostly in the SA Department of Health but the last few years in the environmental consulting industry. He has been involved in the assessment and investigation of human exposures to hazardous substances in South Australia and nationally and provided expert advice to Ministers, government committees and departments, industry, consultants, auditors and the public. He has developed a number of the Health-based- Investigation Levels (HILs) that are part of the National Environment Protection (Assessment of Site Contamination) Measure (NEPM) 1999 and has also contributed to the development of the Air Toxics NEPM.

Throughout the course of his work Len has assessed human exposures to hazardous substances found in soil, water, food, air, and consumer products including chemicals (pesticides, heavy metals, volatile organic compounds (VOCs), petroleum hydrocarbons), fibres (asbestos, MMMF) and airborne particulates. Len has lectured and tutored students on site contamination and risk assessment at the University of Adelaide and Flinders University and presented and published papers relevant to his field at the national and international level.

Communities at Risk - Methamphetamine Laboratories in Urban Settings

Professor John Edwards

Flinders University

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Abstract unavailable at time of printing.

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Human fluoride intake risk assessment with a need to include children

Francesca Kelly

Environmedical Aeraqua (2010) Ltd, Auckland, New Zealand

Fluoride is released into the environment in gaseous and particulate forms from the manufacturing process for superphosphate. Exposure to increased environmental concentrations of fluoride can add to human intake through both inhalational exposure and presence in food. A prototype health risk assessment for daily fluoride intake in New Zealand in the presence of industrial discharges (Ravensbourne HRA 2004) had previously found that consumption of fluoridated water far outweighed contributions from vegetables and other locally grown foods. When WHO estimated daily fluoride intakes for a typical adult population were compared with calculated local consumptions, there was no indication of increased health risk even for people with “home farms” near to the industrial source.

Subsequently this original health risk analysis has been transferred to other communities living adjacent to superphosphate manufacturing. A major difference in each of the other assessments has been the lesser concentrations or absence of fluoride in drinking water supplies. Given that beverage consumption overwhelmed the other sources of daily fluoride intake in the original detailed food chain and dietary pattern analysis, a subsequent conclusion has been that the other communities face an even lower human health risk.

However, where food and water intakes are estimated to be comparatively low, exposure through inhalation can become an unusually high proportion of total estimated intake. The most recent health risk assessment for fluoride conducted by Environmedical has encountered a somewhat challenging dilemma for health risk communication in a community that has campaigned to remove fluoride from the public drinking water supply. In the recent inhalation exposure assessment the most highly exposed people are likely to include infants and preschool children.

Infants are not readily included in a fluoride assessment using the standard approaches for estimating intake based on the published WHO information and methods we have previously relied on. Instead the risk to infants has been inferred. How this has been attempted will be presented.

Francesca Kelly

Francesca Kelly is a NZ public health physician and is owner/director of Environmedical Aeraqua, a consultancy that provides evidence-based public health assessments for businesses and industries to minimise the health risks of industrial processes, workplaces and products. Clients include companies that manufacture chemicals, fertilisers, cement, forest products and fibre boards, asphalt and building materials, dairy and food; that supply water and electricity generation; process wastewater and solid waste; construct roads or operate quarries.

Her team work with other experts encompasses ongoing microbiological, chemical and physical environmental monitoring programmes related to ambient air, water quality and food. She convenes the expert Microbiology Review Group for the Watercare wastewater consents. She has direct experience at implementing community services aimed at environmental health screening and response.

Francesca has expertise in human health risk assessment and risk communication and associated individual health screening, as well as the use of relevant epidemiological information. She is particularly interested in industrial impacts on neighbourhood land use where food and water might be affected. Also investigation of novel problems with chemical manufacturing that may affect health in the workplace or community. Francesca has considerable experience as an expert witness in NZ resource consenting and Environment Court cases.

ACTRA MEMBERSHIP APPLICATION FORM

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Include details on the ACTRA website? ☐ Yes ☐ No

APPLICATION (please also email a 1-2 page brief CV to secretariat@actra.org.au)

I hereby apply for membership of the Australasian College of Toxicology and Risk Assessment (ACTRA). If elected, I agree to abide by the Constitution of the College and the pay the Annual Subscription so long as I shall remain a member. I understand that ACTRA is planning to establish a Register for scientists engaged in the practice of toxicology and/or health risk assessment and that membership of ACTRA will be a prerequisite for consideration of such accreditation. However, I acknowledge that accreditation will be a separate process which will require a further application and fee.

Signature _____

Nominator _____

I propose the above applicant for membership. I am a current financial member of ACTRA.

Name _____

Signature _____

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All payments must be made in Australian dollars. If payment is made by bank transfer, all fees must be paid by the remitter.

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Bank: National Australia Bank

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