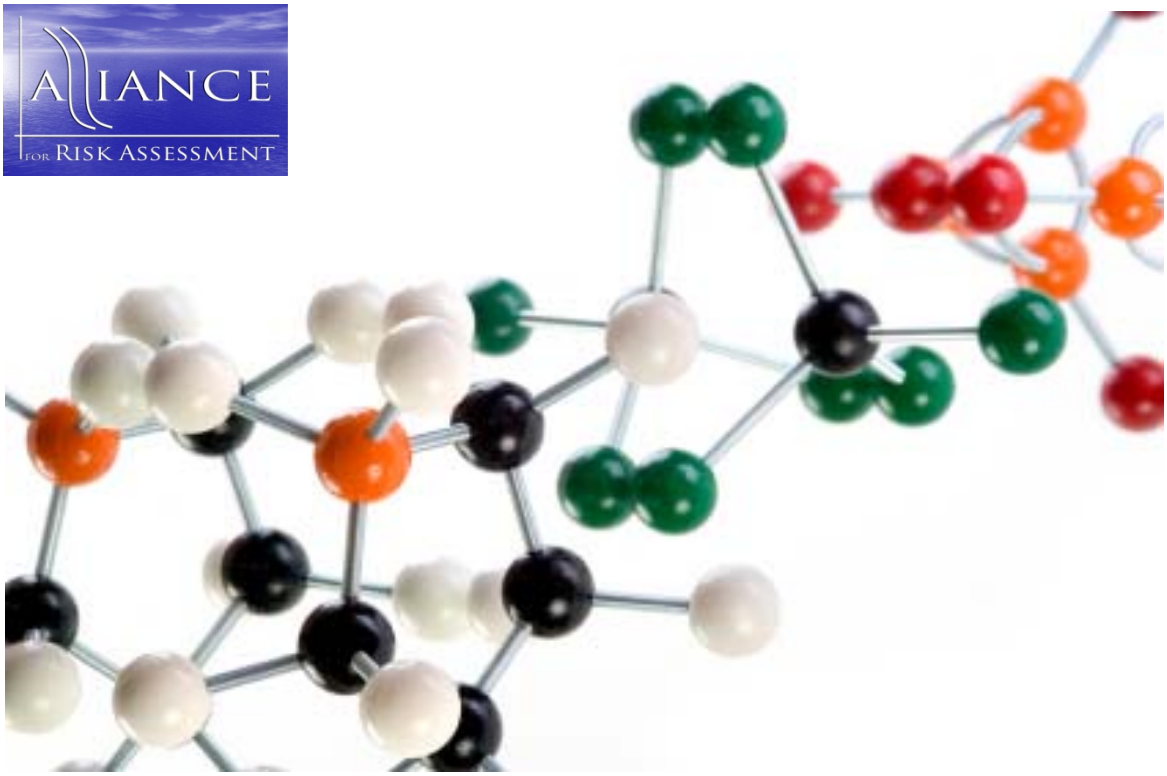


Beyond Science and Decisions:
From Problem Formulation to Dose-Response
Report from Workshop IV - Appendices

Webinar Held:
November 2, 2012

Report Prepared By:
Toxicology Excellence for Risk Assessment (TERA)
Lynne Haber (haber@tera.org)

February 13, 2013

Table of Contents

Appendix 1. Panel Selection Process

The standing Science Panel chosen by the *ARA* Steering Committee prior to Workshop IV continued its service for Workshop V. The standing Science Panel will serve for the next 2-3 years as discussants and to provide diverse scientific input on the utility of the case study methods to address specific problem formulations. The Panel was also asked to identify areas for additional development of case studies and/or methods. The Science Panel was designed to be balanced with a range of affiliations and perspectives, as well as types of expertise (biology, risk assessment, modeling). An open nomination process was used. Panel members from the initial workshop series were invited to self-nominate and announcements were widely distributed through a number of venues to invite additional nominations. The *ARA* Steering Committee carefully considered all the nominations and selected nine standing panel members and one alternate who can substitute for standing panel members in the case of scheduling conflicts. They also selected eight additional *ad hoc* members, providing additional specialized expertise for this workshop or on workshops in the future. Biographies for the Science Panel for Workshop V are provided in Appendix 2; biographies for standing panel members, as well as the *ad hoc* and alternate panel members are provided at http://www.allianceforrisk.org/Workshop/Panel.htm. The Science Panel for Workshop V consisted of the following, including all standing panel members:

- *Richard Beauchamp, Texas Department of State Health Services*
- *James S. Bus, The Dow Chemical Company*
- *Rory Conolly, U.S EPA National Health and Environmental Effects Research Laboratory*
- *Michael L. Dourson, Toxicology Excellence for Risk Assessment*
- *R. Jeffrey Lewis, ExxonMobil Biomedical Sciences, Inc.*
- *Bette Meek, McLaughlin Centre for Population Health Risk Assessment, University of Ottawa*
- *Gregory Paoli, Risk Sciences International*[1]
- *Rita Schoeny, U.S. EPA Office of Water*
- *Alan Stern, New Jersey Dept of Environmental Protection*

[1] Member of the NAS *Science & Decisions* panel

Appendix 2. Biographies for Panel Members

Science Panel

Richard Beauchamp, Texas Department of State Health Services
Richard A. Beauchamp is the Senior Medical Toxicologist for the Texas Department of State Health Services (DSHS) with responsibility for providing advanced toxicological and risk assessment support for the Exposure Assessment, Surveillance, and Toxicology (EAST) Group. As cooperative agreement partners with the Agency for Toxic Substances and Disease Registry (ATSDR), Dr. Beauchamp and other EAST Group members are tasked with conducting Public Health Assessments at abandoned hazardous waste sites that are proposed and added to the Environmental Protection Agency's (EPA's) National Priority List (NPL) of Superfund sites in Texas. Dr. Beauchamp is also involved with conducting other medical and toxicological Public Health Consultations involving exposures to environmental hazardous substances.
After earning his medical degree at the University of Texas Health Science Center at San Antonio (1973-1977), Dr. Beauchamp completed a three year pediatric residency with the Austin Pediatric Education Program at Brackenridge Hospital in Austin, Texas (1977-1980) and began working at the Texas Department of Health as a Public Health Physician Epidemiologist (1980). Early in his career at the health department, he was tasked with developing risk assessment expertise that would be essential for the newly-formed Environmental Epidemiology Program in the evaluation of environmental and chemical exposures. With an undergraduate degree in Electrical Engineering (U.T. Austin) and a strong background in mathematics and computer sciences, Dr. Beauchamp has applied the knowledge gained through participation at numerous risk assessment conferences, symposia, and seminars (sponsored by EPA, NGA, CDC, ASTHO, NIOSH, and others) to the development of his so-called "Risk Assessment Toolkit." Dr. Beauchamp's toolkit consists of a series of Excel® spreadsheets designed for the flexible and rapid evaluation of cancer and non-cancer risks resulting from exposures to a wide variety of environmental contaminants through all of the common exposure pathways. Risks are calculated incrementally using age-specific exposure parameters, including body weights, body surface areas, respiratory daily volumes, and EPA's early-life exposure factors. Risks are integrated over the exposure duration, using up to 46 different age intervals, to insure that childhood exposures are appropriately addressed.

James S. Bus, The Dow Chemical Company
James S. Bus is the Director of External Technology, Toxicology and Environmental Research and Consulting at The Dow Chemical Company (1989-present). He previously held positions as Associate Director of Toxicology and Director of Drug Metabolism at The Upjohn Company (1986-1989), Senior Scientist at the Chemical Industry Institute of Toxicology (CIIT, 1977-1986), and Assistant Professor of Toxicology, University of Cincinnati (1975-1977). Dr. Bus currently participates in several external institutions including the Board of Directors of The Hamner Institutes (formerly CIIT) and the National Academy of Sciences/National Research Council Board on Environmental Studies and Toxicology (BEST). He has also has served as Chair of the American Chemistry Council and International Council of Chemical Associations Long-Range Research Initiatives; the USEPA Chartered Science Advisory Board (2003-2009); and the FDA National Center for Toxicological Research Science Advisory Board (2004-2010). He serves as an Associate Editor of *Toxicology and Applied Pharmacology*,and on the Editorial

Boards of *Environmental Health Perspectives* and *Dose Response*. Dr. Bus is a member of the Society of Toxicology (serving as President in 1996-97), the American Society for Pharmacology and Experimental Therapeutics, the American Conference of Governmental and Industrial Hygienists, and the Teratology Society. He is a Diplomate and Past-President of the American Board of Toxicology and a Fellow of the Academy of Toxicological Sciences (member of Board of Directors, 2008-present; Vice-President and President-Elect, 2010). Dr. Bus received the Society of Toxicology Achievement Award (1987) for outstanding contributions to the science of toxicology; the Society of Toxicology Founders Award (2010) for leadership fostering the role of toxicology in improving safety decisions; Rutgers University Robert A. Scala Award (1999) for exceptional work as a toxicologist in an industry laboratory; and the K.E. Moore Outstanding Alumus Award (Michigan State University, Dept. Pharmacol. And Toxicol.). He received his B.S. in Medicinal Chemistry from the University of Michigan (1971) and Ph.D in pharmacology from Michigan State University (1975) and currently is an Adjunct Professor in the Dept. Pharmacology and Toxicology at that institution. His research interests include mechanisms of oxidant toxicity, defense mechanisms to chemical toxicity, relationship of pharmacokinetics to expression of chemical toxicity, and general pesticide and industrial chemical toxicology. He has authored/co-authored over 100 publications, books, and scientific reviews.

Rory Conolly, U.S EPA National Health and Environmental Effects Research Laboratory
Rory Conolly is a Senior Research Biologist in the Integrated Systems Toxicology Division of the U.S EPA's National Health and Environmental Effects Research Laboratory in Research Triangle Park, North Carolina, USA. His major research interests are (1) biological mechanisms of dose-response and time-course behaviors, (2) the use of computational modeling to study these mechanisms and, (3) the application of computational models to quantitative dose-response assessment. Dr. Conolly received the U.S. Society of Toxicology's (SOT) Lehman Award for lifetime achievement in risk assessment in 2005. He was a member of the National Academy of Sciences Board on Environmental Studies and Toxicology from 2004 until joining the EPA in 2005, President of the SOT Biological Modeling Specialty Section (2000 – 2001), President of the SOT Risk Assessment Specialty Section (1997 - 1998), a member of the SOT Risk Assessment Task Force (1998 - 2000) and is currently a Councilor with the Risk Assessment Specialty Section. He is Adjunct Professor of Biomathematics at North Carolina State University, Faculty Affiliate, Department of Environmental and Radiological Health Sciences, Colorado State University and has four times received awards from the SOT Risk Assessment Specialty Section (1991, 1999, 2003, 2004). Dr. Conolly was born in London, England and raised in Canada and the United States. He received a bachelor's degree in biology from Harvard College in 1972, a doctorate in physiology/toxicology from the Harvard School of Public Health in 1978, and spent a post-doctoral year at the Central Toxicology Laboratory of Imperial Chemical Industries, PLC, in Cheshire, England. He was a member of the Toxicology Faculty at The University of Michigan School of Public Health from 1979 through 1986, and worked with the U.S. Air Force Toxic Hazards Research Division, Wright-Patterson Air Force Base, Ohio from 1986 until 1989. In 1989 Dr. Conolly joined the Chemical Industry Institute of Toxicology (CIIT) and worked there until 2005, when he joined the U.S. EPA.

Mike Dourson, Toxicology Excellence for Risk Assessment
Mike Dourson is the President of Toxicology Excellence for Risk Assessment (TERA), a nonprofit corporation dedicated to the best use of toxicity data in risk assessment. Before founding TERA in 1995, Dr. Dourson held leadership roles in the U.S. Environmental Protection Agency as chair of US EPA's Reference Dose (RfD) Work Group, charter member of the US EPA's Risk Assessment Forum and chief of the group that helped create the Integrated Risk Information System (IRIS). Dr. Dourson received his Ph.D. in Toxicology from the University of Cincinnati. He is a Diplomate of the American Board of Toxicology and a Fellow of the Academy of Toxicological Sciences. Dr. Dourson has served on or chaired numerous expert panels, including peer review panels for US EPA IRIS assessments, US EPA's Risk Assessment Forum, TERA's International Toxicity Estimates for Risk (*ITER*) independent peer reviews and consultations, FDA's Science Board Subcommittee on Toxicology, the NSF International's Health Advisory Board, and SOT's harmonization of cancer and non-cancer risk assessment. He served as Secretary for the Society for Risk Analysis (SRA) and has held leadership roles in specialty sections of SRA and SOT. He is currently on the editorial board of three journals. Dr. Dourson has published more than 100 papers on risk assessment methods, has co-authored over 100 government risk assessment documents, and has made over 100 invited presentations.

R. Jeffrey Lewis, ExxonMobil Biomedical Sciences, Inc.
R. Jeffrey Lewis is a Senior Scientific Associate with ExxonMobil Biomedical Sciences, Inc. In this position, Dr. Lewis is responsible for providing support to ExxonMobil's epidemiology and health risk assessment scientific programs. He currently manages company scientific programs related to children's health, emerging environmental health issues, legislative/regulatory affairs and regulatory impact analysis (e.g., benefit-cost analysis). He has served on a number of industry trade association scientific committees, external science advisory boards (e.g., Peer Consultation panel for EPA's Voluntary Children's Chemical Evaluation Program), and is a member of ExxonMobil's Occupational Exposure Limits committee. Dr. Lewis also has an adjunct faculty appointment at the University of Texas School of Public Health and is currently Treasurer Elect of the Society for Risk Analysis. Dr. Lewis received his Bachelors of Science degree in biology from the University of Kansas in 1985 and a M.S. and Ph.D. in Epidemiology from the University of Texas, School of Public Health in 1987 and 1990, respectively. In addition, he earned a Masters in Business Administration from Rutgers University in 1997.

Bette Meek, McLaughlin Centre for Population Health Risk Assessment, University of Ottawa
Bette Meek has a background in toxicology receiving her M.Sc. in Toxicology (with distinction) from the University of Surrey, U.K. and her Ph.D. in risk assessment from the University of Utrecht, the Netherlands. She is currently the Associate Director of Chemical Risk Assessment at the McLaughlin Centre for Population Health Risk Assessment, University of Ottawa, completing an interchange assignment from Health Canada. She has extensive experience in the management of chemical assessment programs within the Government of Canada, most recently involving development and implementation of process and methodology for the health assessment of Existing Substances under the Canadian Environmental Protection Act (CEPA) and previously, programs for contaminants in drinking water and air.
With colleagues within Canada and internationally, she has contributed to or led initiatives to increase transparency, defensibility and efficiency in health risk assessment, having convened

and participated in initiatives in this area for numerous organizations including the International Programme on Chemical Safety, the World Health Organization, the International Life Sciences Institute, the U.S. Environmental Protection Agency, the U.S. National Academy of Sciences and the U.S. National Institute for Environmental Health Sciences. Relevant areas have included frameworks for weight of evidence analysis including mode of action, chemical specific adjustment factors, physiologically-based pharmacokinetic modeling, combined exposures and predictive modeling. She has also authored over 175 publications in the area of chemical risk assessment and received several awards for contribution in this domain.

Greg Paoli, Risk Sciences International

Greg Paoli serves as Principal Risk Scientist and COO at Risk Sciences International, a consulting firm specializing in risk assessment, management and communication in the field of public health, safety and risk-based decision-support. Mr. Paoli has experience in diverse risk domains including toxicological, microbiological, and nutritional hazards, air and water quality, climate change impacts, medical and engineering devices, as well as emergency planning and response for natural and man-made disasters. He specializes in probabilistic risk assessment methods, the development of risk-based decision-support tools and comparative risk assessment. Mr. Paoli has served on a number of expert committees devoted to the risk sciences. He was a member of the U.S. National Research Council committee that issued the 2009 report, *Science and Decisions: Advancing Risk Assessment*. He serves on the Canadian Standards Association Technical Committee on Risk Management, advisory committees of the National Roundtable on the Environment and the Economy, a US NRC Standing Committee on the Use of Public Health Data at the U.S. Food Safety and Inspection Service, and has served on several expert committees convened by the World Health Organization. Mr. Paoli completed a term as Councilor of the Society for Risk Analysis (SRA) and is a member of the Editorial Board of *Risk Analysis*. Recently, Mr. Paoli was awarded the Sigma Xi – SRA Distinguished Lecturer Award. He has provided training in risk assessment methods around the world, including the continuing education programs of the Harvard School of Public Health and the University of Maryland. Greg holds a Bachelors Degree in Electrical and Computer Engineering and a Master's Degree in Systems Design Engineering from the University of Waterloo.

Rita Schoeny, U.S. EPA Office of Water

Rita Schoeny is Senior Science Advisor for the U.S. Environmental Protection Agency=s Office of Water. She received her B.S. in biology at the University of Dayton and a Ph.D. in microbiology from the School of Medicine of the University of Cincinnati. After completing a postdoctoral fellowship at the Kettering Laboratory, Department of Environmental Health, she was appointed Assistant Professor in that department of the U.C. Medical School. Dr. Schoeny has held several adjunct appointments and regularly lectures at colleges and universities on risk assessment. She has given lectures and courses on risk assessment in many areas of the world. Dr. Schoeny joined the U.S. EPA in 1986. Prior to her current position she was Associate Director of the Health and Ecological Criteria Division of the Office of Science and Technology, Office of Water. She has been responsible for major assessments and programs in support of the Safe Drinking Water Act, including scientific support for rules on disinfectant by-products, arsenic, microbial contaminants and the first set of regulatory determinations from the Contaminant Candidate List. She has held various positions in the Office of Research and Development including Chief of the Methods Evaluation and Development Staff, Environmental

Criteria and Assessment Office, Cincinnati; Associate Director NCEA-Cin; and chair of the Agency-wide workgroup to review cancer risk assessments. Dr. Schoeny has published in the areas of metabolism and mutagenicity of PCBs and polycyclic aromatic hydrocarbons; assessment of complex environmental mixtures; health and ecological effects of mercury; drinking water contaminants; and principles and practice of human health risk assessment. She was a lead and coauthor of the *Mercury Study Report to Congress* and was a principal scientist and manager for Ambient Water Quality Criterion for Methylmercury. She has been the chair of an EPA working group on use of genetic toxicity data in determining mode of action for carcinogens. She participates in many EPA scientific councils as well as national and international scientific advisory and review groups. Current involvement includes panels on interpretation of DNA adduct data for risk assessment and evaluation of episodic and less-than-lifetime exposure to carcinogens. Dr. Schoeny is the recipient of several awards including several U.S. EPA Gold, Silver and Bronze Medals; EPA=s Science Achievement Award for Health Sciences; the Greater Cincinnati Area Federal Employee of the Year Award; the University of Cincinnati Distinguished Alumnae Award; Staff Choice Award for Management Excellence; and the FDA Teamwork Award for publication of national advice on mercury-contaminated fish.

Alan Stern, New Jersey Department of Environmental Protection

Dr. Alan H. Stern is the Section Chief for Risk Assessment in the Office of Science of the New Jersey Department of Environmental Protection; Adjunct Associate Professor in the Department of Environmental and Occupational Health of the University of Medicine and Dentistry of New Jersey-School of Public Health. He received a bachelor's degree in biology from the State University of New York at Stony Brook (1975), a master's degree in cellular and molecular biology from Brandeis University (1978), a master of public health degree (1981) and a doctorate in public health from the Columbia University School of Public Health (1987). Dr. Stern is board-certified in toxicology by the American Board of Toxicology (Diplomate of the American Board of Toxicology). Dr. Stern's areas of expertise include risk assessment and exposure assessment including the application of probabilistic techniques to quantitative estimation of exposure and risk. His research interests have focused on heavy metals including lead, mercury, chromium and cadmium. Dr. Stern was a member of the National Research Council/National Academy of Sciences Committee on the Toxicology of Methylmercury (1999-2000) and a member of the recent USEPA Science Advisory Board panel for the National-Scale Mercury Risk Assessment for Coal- and Oil-Fired Electrical Generating Units (June-July 2011) as well as the USEPA Science Advisory Board Panel for Peer Review of the All-Ages Lead Model (Oct. 27-28, 2005). He has also served on numerous USEPA-IRIS review panels including Toxicological Review of Urea (Dec. 13, 2010, Panel Chair), Toxicological Review of Trichloroacetic Acid (Dec. 10, 2009, Panel Chair), Toxicological Review of 2-Hexanone (May 22, 2008, Panel Chair), Toxicological Review of Toluene (Feb. 5, 2004, Panel Chair). Other panels, committees and workshops include, ATSDR Toxicological Profile Review of Revised Minimal Risk Levels (MRLs) for 1,4-Dioxane (March-April, 2010), ATSDR Toxicological Profile Review of Revised Inhalation MRL for 1,4-dioxane (Sept. 2011),.USEPA Panel for the Review of Draft Exposure Factors Handbook (March 3-4, 2010), USEPA Workshop on Cardiovascular Toxicity of Methylmercury (Jan. 12-13, 2010), USEPA Panel for Review of —Draft Child-Specific Exposure Factors Handbook (Sept. 19-20, 2007). Dr. Stern has authored numerous articles in peer-reviewed journals, and contributed a book chapter on Exposure

Assessment for Neurotoxic Metals in ―Human Developmental Neurotoxicology - D. Bellinger, ed. (Taylor & Francis, New York, 2006.), and the article on *Environmental Health Risk Assessment‖ in the Encyclopedia of Quantitative Risk Assessment and Analysis*. John Wiley and Sons Ltd., 2008.

Appendix 3. Meeting Agenda

Agenda
Date: November 2, 2012

Location: Webinar

Purpose: To advance the recommendations of NAS (2009) and subsequent framework of *ARA* (2012) on problem formulation and dose-response analysis, through review of illustrative case studies for further development of methods

**All times are Eastern Standard Time.

Informational Sessions

The World Health Organization Chemical Risk Assessment Network (10:00 to 10:30)

- Becki Clark, U.S. EPA
- Kathy Hughes, Health Canada

Advancing Multi-scale Integration of Human Health and Environmental Data: Computational and Conceptual Interoperability (10:30 to 11:00)

- Annie Jarabek, U.S. EPA

FutureTox: Building the Road for 21st Century Toxicology and Risk Assessment Practices (11:00 to 11:30)

- J. Craig Rowlands, The Dow Chemical Company

EPA's NexGen Program (11:30 to noon)

- Dan Krewski, University of Ottawa

Lunch Break (noon to 1:00)

Science Panel Deliberations:

Welcome and Introductions (1:00 to 1:15)

- Panel Chair – Bette Meek

Discussion of Beyond Science and Decisions Dose Response Assessment Framework and Discussion (1:15-2:00)

- *ARA* Science Panel

Summary of Framework & Case Studies for the NAS IRIS Panel (2:00-2:30)

- *ARA* Science Panel

Break (2:30-2:45)

Preliminary Case Study Review: Endogenous Chemical Risk Assessments using Formaldehyde as a Case Example (2:45 to 3:30)

- Robinan Gentry, ENVIRON

Observer Comments (3:30 to 4:00)

Adjourn (4:00)

Appendix 4. List of Workshop Participants

Mr. Wilfred Abia
Integrated Health for All Foundation (IHAF) / University of Yaounde I, Cameroon

Dr. Janet Anderson
Air Force

Dr. Dan Arrieta
Chevron Phillips Chemical Company

Ms. Lea Aurelius
Parsons

Ms. Barbara Bankoff
Bankoff Associates

Jeff Beaubier
US EPA

Dr. Richard Beauchamp
Texas Dept State Health services

K. Bechard
Geosyntec Consultants

Dr. Nancy Beck
American Chemistry Council

Dr. Elizabeth Becker
CERM

Dr. Steven Bennett
Consumer Specialty Products Association

Bob Benson
US EPA Region 8

Mr. Jody Berry
WorleyParsons

Virunya Bhat
NSF International

Patricia Bishop
People for the Ethical Treatment of Animals

Dr. Sol Bobst
Nexeo Solutions LLC

Dr. Tiffany Bredfeldt
Texas Commission on Environmental Quality

Dr. Janice Britt
ToxStrategies

Mr. Kevin Bromberg
SBA

Dr. Douglas Bryant
Intrinsik Environmental Sciences

Dr. Jim Bus
The Dow Chemical Company

Dr. Stuart Cagen
Shell Health

Sharan Campleman
EPRI

Dr. Erik Carlson
General Electric Company

Dr. Hillary Carpenter
Minnesota Department of Health

Ms. Patricia Casano
General Electric Company

Krista Christensen
US EPA

Becki Clark
US EPA Office of Research and Development (ORD)

Dr. Rory Conolly
US EPA

Ms. Angela Curry
Texas Commission on Environmental Quality

Mr. Richard Davis
Georgia-Pacific LLC

Dr. Michael Dourson
Toxicology Excellence for Risk Assessment

Caroline English
NSF International

Dr. Neeraja Erraguntla
Texas Commission on Environmental Quality

Ms. Shannon Ethridge
Texas Commission on Environmental Quality

Dr. David Farrer
Oregon Health Authority

Dr. Penelope Fenner-Crisp
Private Consultant

Julie Fitzpatrick
US EPA

Jack Fowle

Dr. David Fowler
CDC/ATSDR

Dr. Lucy Fraiser
AECOM

Dr. Sarah Gallagher
US EPA

Ms. Naida Gavrelis
ERG

Robinan Gentry
Environ

Dr. Amlan Ghosh
Jacobs

Dr. Stephen Graham
US EPA/OAQPS

Dr. Grant Roberta
Texas Commission on Environmental Quality

Dr. Lynne Haber
Toxicology Excellence for Risk Assessment

Dr. Pertti (Bert) Hakkinen
National Institutes of Health, NLM

Charles Hall
Texas A&M School ofural and Public Health

Dr. Lance Hallberg
UTMB

Ali Hamade
Alaska Section of Epidemiology

Ms. Cory Handy
MPH EOH Graduate Student

Mr. Joseph Haney
Texas Commission on Environmental Quality

Dr. Richard Hertzberg
Emory University

Dr. Kim Hoang
US EPA

Colette Hodes
US EPA

Dr. Michael Honeycutt
Texas Commission on Environmental Quality

Dr. Brian Hughes
The Dow Chemical Company

Kathy Hughes
Health Canada

Dr. Smitha Infante
Northern Kentucky University

Dr. Maia Jack
GMA

Dr. Sylvia Jacobi
Albemarle Europe SPRL

Allison Jenkins
Texas Commission on Environmental Quality

Dr. Elke Jensen
Dow Corning Corp

Dr. Ross Jones
Texas Commission on Environmental Quality

Debra Kaden
ENVIRON International

Dr. Grazyna Kalabisz
Ontario Ministry of the Environment

Dr. Janet Kester
NewFields

Dr. Carla Kinslow
Brown and Caldwell

Dr. Carla Kinslow
Brown and Caldwell

Chris Kirman
Summit Toxicology

Mr. Gary Kolesar
Dow Corning Corporation

Mr. Oliver Kroner
Toxicology Excellence for Risk Assessment

Dr. K Prem Kumar
Alabama Department of Environmental Management

Dr. Susan Laessig
US EPA

Mr. John Langstaff
US EPA

Ms. Kathy Lanier
Noblis

Dr. Brian Lee
GE

Dr. Jong-Song Lee
Texas Commission on Environmental Quality

Dr. R. Jeffrey Lewis
ExxonMobil Biomedical Sciences, Inc.

Dr. Jin Li Unilever

Yu-Sheng Lin
EPA

Yan Liu
Intertek

Ms. Heather Magee-Hill
Minnesota Pollution Control Agency

Mr. Darrell Mccant
Texas Commission on Environmental Quality

Dr. Bette Meek
University of Ottawa

Ms. Anita Meyer
Army Corps Engineers

Ms. Vesna Milovanovic
Serbian Chemicals Agency

Mr. Asish Mohapatra
Health Canada

Dr. Martha Moore
NCTR/FDA

Mr. Robert Morrison
Dow Chemical

Mrs. Chandrika Moudgal
The Clorox Company

Dr. Moiz Mumtaz
ATSDR

Dr. Raghu Nath
US EPA

Dr. Brian Pachkowski
ORISE/US EPA

Norka Paden
Idaho Department of Health and Welfare

Dr. Greg Paoli
Risk Sciences International

Sang-ki Park
FDA

Mrs. Lori Parker
Arylessence

Dr. Geoff Patton
US FDA/CFSAN

Dennis Pinski
New Hampshire Department of Environmental Services

Dr. Lynn Pottenger
The Dow Chemical Company

Dr. Resha Putzrath
Navy and Marine Corps Public Health Center, U.S. Navy

Mr. Drew Rak
Noblis

Dr. Santhini Ramasamy
US EPA OW/OST/HECD

HeatherReddick
Texas Commission on Environmental Quality

Ms. Amy Rosenstein
Consultant

Dr. Diego Rua
FDA

Louis Scarano
US EPA

Dr. Rita Schoeny
US EPA

Jennifer Seed
US EPA

Raja Settivari
Dow Chemical

Dr. Stephanie Shirley
Texas Commission on Environmental Quality

Mrs. Hanna Silberberg
ICL-IP America, Inc

Dr. Ted Simon
Ted Simon LLC

Dr. Jacqueline Smith
Harris County

Dr. MariStavanja
Celanese International

Dr. Alan Stern
NJ Department of Environmental Protection

Ravi Subramaniam
US EPA

Maria Szilagyi
U.S. EPA

Ms. Ayako Takei
ICaRuS Japan Limited

Dr. Cecilia Tan
US EPA

Dr. Dawei Tang
Unilever UK

Mr. Joseph Tobin
Dow Corning

Mr. Anthony C. Tweedale
R.I.S.K. Consultancy

Carolyn Vickers
World Health Organization

Dr. Sury Vulimiri
US EPA

Dr. Linda Wennerberg
NASA HQ

Dr. Albert Westerman
EEPC, DEP, Div Water

Mr. John Whalan
US EPA

Katrina White
US EPA

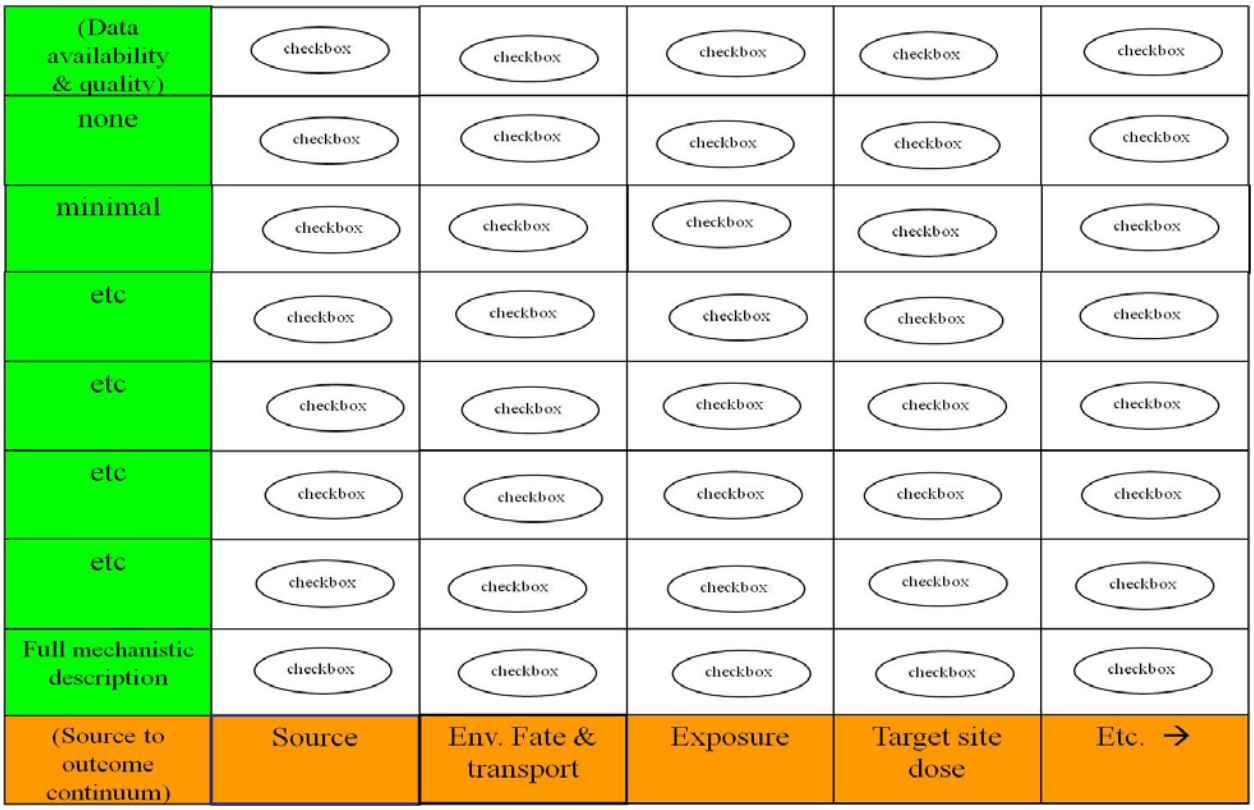
Mr. Gary Wilkinson
The Scotts Company LLC

Patrick Wilson
US EPA Region IX

Dr. Tong Zhou
FDA

June Zhu
The Dow Chemical

Appendix 5. Concept for *ARA* Framework Portal



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