GLOBAL RISK ASSESSMENT TOOLS: ITER AND RISKIE DATABASES

Andrea Wullenweber1, Oliver Kroner1, Andrew Rak2, Phil Wexler3, Chuck Tomljanovic4, AND JACQUELINE PATTERSON1

1TOXICOLOGY EXCELLENCE FOR RISK ASSESSMENT (TERA), CINCINNATI, OHIO 2NOBLIS. FALLS CHURCH, VA 3NATIONAL LIBRARY OF MEDICINE, BETHESDA, MD

4CONCURRENT TECHNOLOGIES CORPORATION (CTC), JOHNSTOWN, PA

ABSTRACT

The rate of chemical synthesis and use has outpaced the development of risk values and the resolution of risk assessment methodology questions, both of which are needed by the risk assessment community to make important public health decisions. With limited resources to keep up with a high demand for risk assessment products, it is critical that existing information is readily available and that risk assessors collaborate during the risk assessment process. Two global risk assessment tools are available to address these issues. First, the International Toxicity Estimates for Risk (ITER) is a free Internet database of human health risk data from organizations around the world for 650+ chemicals. ITER provides chronic human health risk assessment data in a side-by-side format, explains differences in risk values derived by different organizations, and links directly to each organization's website for more detailed information. It is also the only database that includes risk information from independent parties whose risk values have undergone independent peer review. ITER is available at www.tera.org/iter and on National Library of Medicine's TOXNET system (http://toxnet.nlm.nih.gov/). Second, the Risk Information Exchange (RiskIE) is a free Internet database that contains notifications about a variety of human health risk assessment projects that are underway. Projects listed on RiskIE range from many types of risk value development to risk methods document development. RiskIE tracks over 5,100 in progress projects being conducted by over 25 different organizations in 13 different countries. RiskIE is available at http://www.allianceforrisk.org/RiskIE.htm and will join ITER on TOXNET. Together, ITER and RiskIE provide essential tools for easily identifying and comparing available risk data, for enhancing networking to decrease duplication of effort, and for encouraging data sharing – ultimately resulting in higher quality assessment documents.

Chemical risk assessment struggles to keep up with chemical synthesis and use.

The United States Government Accountability Office (2006) reported that approximately 20,000 new chemicals have been introduced into commerce since the implementation of the Toxic Substances Control Act (TSCA) in 1979. On average, this equates to over 700 new chemicals each year.

The United States Environmental Protection Agency reports that of the 3,000 high production volume chemicals that the US imports or produces at more than 1 million pounds per year, 43% have no testing data on basic toxicity and only 7% have a full set of basic test data.

The development of risk values for these chemicals is significantly slower than the pace of production. It takes years for all of the chemical testing required by various government agencies to be conducted before risk values can be developed. For example, of the 15 Toxicological Profiles published by Agency for Toxic Substances Disease Registry (ATSDR) during 2006, 13 of those were updates to previously published Toxicological Profiles and only two were first time evaluations. ATSDR has completed approximately 200 Toxicological Profiles total. During 2006, U.S. EPA's Integrated Risk Information System (IRIS) updated one existing chemical and typically adds fewer than 10 chemicals per year. IRIS includes assessments for approximately 700 chemicals total.

International Toxicity Estimates for Risk

Created in 1996, the International Toxicity Estimates for Risk (ITER) is a free Internet database of chronic human health risk values and/or cancer classifications for over 650 chemicals from a variety of authoritative groups worldwide. ITER provides a centralized source of peer reviewed risk data, with a description of the methodologies used by different organizations.

ITER PROVIDES:

- Chronic human health risk data in a side by side format
- A synopsis that explains the underlying basis and rationale for each risk value and differences in risk values
- A link to each organization's website or source document • A forum through which independent parties can share their peer reviewed risk values
- A resource to ensure that risk managers do not "miss" useful data

Chemicals on ITER with peer reviewed, chronic human health risk data from organizations around the world

ORGANIZATIONS INCLUDED

- Agency for Toxic Substances & Disease Registry (ATSDR)
- Health Canada
- International Agency for Research on Cancer (IARC) (in progress)
- NSF International
- National Institute of Public Health & the Environment (RIVM)

• Independent parties whose risk values have undergone peer review.

- U.S. Environmental Protection Agency (US EPA)

loss and/or decreased fetal weight) was seen only occasionally and at the highest dose level, which also induced maternal toxicity. An independent peer review panel, through the TERA ITES

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7440-43-9

Report on Chemical Name : Arsenic, Inorgani

Risk Value Name Risk Value (mg/kg-day)

Basis(EXP) (mg/kg-day) Basis(ADJ) (mg/kg-day)

Uncertainty Factor

Critical Organ or Effect

eviewed by Drs. A. Li-Muller and R.R. Weiler of the Ontario Ministry of Environment and Energy, Drs. H.J. Gibb and C. Chen of the U.S. Environmental Protection Agency, Drs. F. interline and G. Marsh of the University of Pittsburgh and staff of the Information Department of BIBRA Toxicology International. The supporting documentation was externally reviewed

RISKIE RISK INFORMATION EXCHANGE

Created in 2007, Risk Information Exchange (RiskIE) is a free Internet database that contains notifications about in progress human health risk and toxicity assessments. RiskIE includes chemical-specific risk value and methods development, as well as training modules, white papers, and risk documents. By providing a centralized source of project information, RiskIE aims to help bridge communication gaps among industry, academic, and government, environmental stakeholders of the risk assessment community, allowing users to identify potential areas for collaboration.



5,100+ In-progress or recently completed risk and toxicty assessments being conducted by 25 organizations representing 13 countries across the world

RiskIE: Risk Information Exchange

RiskIE View								
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Chemical Name △		CAS	Project Type Project Description	Status	Date of Completion	Organization	Contact	Link
Ethylbenzene	100-41-4	Risk Document Development	TP	In Progress	not specified	ATSDR	cdcinfo@cdc.gov	http://www.atsdr.cdc.gov/toxprofiles/tp110.
ethylbenzene	100-41-4	Risk Document Development	OEL	In Progress	not specified	EU ECB (ORATS)	sharon.munn@jrc.it	http://ecb.jrc.it/esis/index.php?PGM=ora
Ethylbenzene	100-41-4	Risk Document Development	CNRV	In Progress	3/30/2009	USEPA IRIS	hotline.iris@epa.gov	http://cfpub.epa.gov/iristrac/index.cfm
Ethylbenzene	100-41-4	Testing	Long-term testing for health effects	In Progress	2005	Ministry of Health, Labour and Welfare (Japan) (Report of Occupational Health Research)	RKATAISAKU@mhlw.go.jp	http://webdomino1.oecd.org/ehs/exichem.ns
Ethylbenzene	100-41-4	Risk Document Development	acute and chronic toxicity; odor and vegetative effect	s In Progress	Nov-07	Texas Commission on Environmental Equality	rgrant@tceq.state.tx.us	

ORGANIZATIONS INCLUDED

• Advisory Committee on Existing Chemicals (BUA)

A search for ethylbenzene identifies five organizations currently conducting a risk assessment.

- American Conference of Governmental and Industrial Hygienists • American Industrial Hygiene Association • Agency for Toxic Substances and Disease Registry • California Environmental Protection Agency • Department of the Environment (UK):
- **Environmental Hazard Assessment** • Environment Canada • European Chemicals Bureau
- Food Standards Agency (UK) • Hawaii Department of Health • Health Canada • International Agency for Research on Cancer • Institution for Statutory Accident Insurance and Prevention in the Chemical Industry (BG Chemie) • International Programme for Chemical Safety • Ministry of Health, Labour, and Welfare (Japan) National Academy of Sciences • National Chemicals Inspectorate (Sweden)

• National Environmental Research Institute

(Denmark)

- National Industrial Chemicals Notification and Assessment Scheme (Australia) National Resources Canada National Toxicology Program
- Nordic Expert Group (Denmark, Finland, Iceland, Sweden, and • Organization for Economic Co-operation and Development (OECD) • Occupational Safety and Health Administration • Texas Commission on Environmental

• United States Environmental Protection Agency (AEGL, HPV, IRIS,

CONCLUSION

With an increase in unevaluated chemicals and limited resources, it is critical that the risk assessment community shares existing risk assessment information and collaborates during the risk assessment process to reduce duplicate efforts. The ITER database (www.tera.org/iter) helps by providing risk assessors easy access to peer reviewed chronic human health risk assessment data from a variety of organizations worldwide. The RiskIE database (www.allianceforrisk.org/RiskIE.htm) offers notifications of in-progress human health risk assessment work, which promotes networking and collaboration among organizations. ITER focuses on completed chronic human health risk assessments, while RiskIE spans the full scope of human health risk assessment work and serves as a complement to ITER. An enhanced ITER currently exists on the TOXNET (http://toxnet.nlm.nih.gov) compilation of databases, and RiskIE will soon join ITER on TOXNET. Together, the ITER and RiskIE databases provide risk assessors essential tools for readily locating and comparing available risk data, sharing progress of work, and identifying opportunities for collaboration among organizations to reduce duplication of effort.

REFERENCES

Toxic Substances Control Act, 1976. 15 U.S.C. s/s 2601 et seq.

United States Environmental Protection Agency. Chemical Hazard Data Availability Study. High Production Volume (HPV) Chemicals and SIDS Testing. Available at: http://www.epa.gov/chemtrk/pubs/general/hazchem.htm United States Government Accountability Office, 2006. Testimony before the Committee on Environment and Public Works, U.S. Senate. CHEMICAL REGULATION. Actions Are Needed to Improve the Effectiveness of EPA's Chemical Review Program. Statement of John B. Stephenson, Director, Natural Resources and Environment.









