

## **Lesa L. Aylward, Ph.D.**

### **Principal**

Summit Toxicology, LLP  
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### **Fields of Expertise**

Chemical risk assessment; pharmacokinetic modeling; biomonitoring; dose-response assessment; exposure assessment; persistent organic pollutants (POPs); risk communication; bioavailability assessment

### **Education**

B.S., Materials Science and Engineering, Massachusetts Institute of Technology, 1984  
M.S., Materials Science and Engineering, Massachusetts Institute of Technology, 1986  
Ph.D., Toxicology, Utrecht University, 2009

### **Additional Training**

Use of Data for Development of Uncertainty Factors in Non-Cancer Risk Assessment. Society of Toxicology Continuing Education Course, SOT 47<sup>th</sup> Annual Meeting & ToxExpo. Sunday, March 16, 2008.

Hazard Communication for Asia, the Pacific Rim, and Latin America. Society for Chemical Hazard Communication Professional Development Course, Alexandria, VA, September 29, 2001.

6<sup>th</sup> Annual International Hazard Communication Symposium. Sponsored by AIHA's Product Health and Safety Committee in conjunction with the Society for Chemical Hazard Communication Biannual Meeting, October 3-4, 1998.

International Workshop on Physiologically Based Pharmacokinetic Modeling and Risk Assessment, Colorado State University, August 3-21, 1992.

National Institutes of Health Foundation for Advanced Education in the Sciences Graduate School courses: Toxicology (fall 1986) and Allergy and Clinical Immunology (spring 1987).

Society for Risk Analysis Workshop on Carcinogenic Risk Assessment, April 7-9, 1986

### **Experience**

Honorary Associate Professor, University of Queensland, Queensland Children's Medical Research Institute and National Research Center for Environmental Toxicology (Entox) (Joint appointment), 2013-Present

Principal, Summit Toxicology, LLP, 2006-Present

Senior Managing Scientist, Exponent, Inc., 2005-2006

Managing Scientist, Exponent Inc., 2002-2004

Managing Scientist, Blasland, Bouck and Lee, Inc., 1999-2002

Senior Scientist, Karch & Associates, Inc., 1991-1999

Staff Scientist, Karch & Associates, Inc., 1986-1991

## Memberships

Society of Toxicology  
Member, Biological Modeling Specialty Section  
Member, Risk Assessment Specialty Section  
International Society for Exposure Science  
Councilor-Private, 2012-2014  
Society for Risk Analysis

## Awards

Society of Toxicology, Risk Assessment Specialty Section Award, Honorable Mention, Best Papers Advancing the Science of Risk Assessment: 2009, 2010 (multiple papers)

Society of Toxicology, Risk Assessment Specialty Section Award, Honorable Mention, Best Papers Demonstrating an Application of Risk Assessment: 2009, 2010, 2011, 2012, 2013 (multiple papers)

Society of Toxicology, Risk Assessment Specialty Section Award for Best Presentation, March, 2007

## Publications

van Ede, K.I., L.L. Aylward, P.L. Andersson, M. van den Berg, and M.B.M. van Duursen. In press. Tissue distribution of dioxin-like compounds: potential impacts on systemic relative potency estimates. *Toxicol. Letters*.

Kirman, C.R., L.L. Aylward, M. Suh, M.A. Harris, C.M. Thompson, L.C. Haws, D.M. Proctor, S.S. Lin, W. Parker, S.M. Hays. 2013. Physiologically based pharmacokinetic model for humans orally exposed to chromium. *Chemico-Biological Int.* 204:13-27

Aylward, L.L., C.R. Kirman, R. Schoeny, C.J. Portier, S.M. Hays. 2013. Evaluation of biomonitoring data from the CDC National Exposure Report in a risk assessment context: Perspectives across chemicals. *Environ Health Persp.* 121:287-294.

Aylward, L.L., J.J. Collins, K.M. Bodner, M. Wilken, C. Bodnar. 2013. Elimination Rates of Dioxin Congeners in Former Chlorophenol Workers from Midland, Michigan. *Environmental Health Perspectives.* 121:39-45.

Hays, S.M., L.L. Aylward, J. Driver, J. Ross, C. Kirman. 2012. 2,4-D Exposure and risk assessment: Comparison of external dose and biomonitoring based approaches. *Regul Toxicol Pharmacol.* 64(3):481-9.

Kirman, C.R., S.M. Hays, L.L. Aylward, M. Suh, M.A. Harris, C.M. Thompson, L.C. Haws, D.M. Proctor. 2012. Physiologically based pharmacokinetic model for rats and mice orally exposed to chromium. *Chem Biol Interact.* 200(1):45-64.

Proctor, D.M., M. Suh, L.L. Aylward, C.R. Kirman, M. Harris, C.M. Thompson, H. Gurleyuk, R. Gerads, L.C. Haws, S.M. Hays. 2012. Hexavalent chromium reduction kinetics in rodent stomach contents. *Chemosphere* 89(5):487-493.

Aylward, L.L., C.R. Kirman, J.L. Adgate, L.M. McKenzie, S.M. Hays. 2012. Interpreting variability in population biomonitoring data: Role of elimination kinetics. *J. Exp. Sci. Environ. Epidemiol.* 22(4):398-408.

Boogaard, P.J., S.M. Hays, L.L. Aylward. 2012. Application of human biomonitoring (HBM) of chemical exposure in the characterisation of health risks under REACH. *Int. J. Hyg. Environ. Health.* 215(2):238-41.

Hays, S.M., L.L. Aylward. 2012. Interpreting human biomonitoring data in a public health risk context using Biomonitoring Equivalents. *Int. J. Hyg. Environ. Health.* 215:145-148.

Becker, R.A., S.M. Hays, S. Robison, L.L. Aylward. 2012. Development of screening tools for the interpretation of chemical biomonitoring data. *J. Toxicol.* Article ID 941082, doi:10.1155/2012/941082. Available at: <http://www.hindawi.com/journals/jt/2012/941082/>.

Hays, S.M., D.W. Pyatt, C.R. Kirman, L.L. Aylward. 2012. Biomonitoring Equivalents for benzene. *Reg. Toxicol. Pharmacol.* 62(1):62-73.

Kirman C.R., Aylward L.L., Blount B.C., Pyatt D.W., Hays S.M. 2012. Evaluation of NHANES biomonitoring data for volatile organic chemicals in blood: Application of chemical-specific screening criteria. *J Expo Sci. Environ. Epidemiol.* 22(1):24-34.

Aylward, L.L., R.A. Becker, C.R. Kirman, S.M. Hays. 2011. Assessment of margin of exposure based on biomarkers in blood: An exploratory analysis. *Reg. Toxicol. Pharmacol.* 61:44-52.

Aylward, L.L., M. Lorber, S.M. Hays. 2011. Urinary DEHP metabolites and fasting time in NHANES. *J. Exp. Sci. Environ. Epidemiol.* 21(6):615-624.

Aylward, L.L., and S.M. Hays. 2011. Consideration of dosimetry in the evaluation of ToxCast™ data. *J. Appl. Toxicol.* 31(8):741-751.

Angerer, J., L.L. Aylward, S.M. Hays, B. Heinzow, M. Wilhelm. 2011. Human biomonitoring assessment values: Approaches and data requirements. *Int. J. Hyg. Environ. Health.* 214:348-360.

Aylward, L.L., Krishnan, K., Kirman, C.R., Nong, A., Hays, S.M. 2011. Biomonitoring Equivalents for deltamethrin. *Reg. Toxicol. Pharmacol.* 60(2):189-199.

Hays, S.M., Aylward, L.L., Kirman, C.R., Krishnan, K., Nong, A. 2011. Biomonitoring Equivalents for diisononyl phthalate (DINP). *Reg. Toxicol. Pharmacol.* 60(2):181-188.

Kirman, C.R., Aylward, L.L., Hays, S.M., Krishnan, K., Nong, A. 2011. Biomonitoring Equivalents for DDT/DDE. *Reg. Toxicol. Pharmacol.* 60(2):172-180.

Krishnan, K., Adamou, T., Aylward, L.L., Hays, S.M., Kirman, C.R., Nong, A. 2011. Biomonitoring Equivalents for 2,2',4,4',5-pentabromodiphenylether (PBDE-99). *Reg. Toxicol. Pharmacol.* 60(2):165-171.

Aylward, L.L., and S.M. Hays. 2011. Biomonitoring-based risk assessment for hexabromocyclododecane. *Int. J. Hyg. Environ. Health.* 214(3):179-187.

Blount, B.C., L.C. Backer, L.L. Aylward, S.M. Hays, and J.S. LaKind 2011. Human Exposure Assessment for DBPs: Factors Influencing Blood Trihalomethane Levels. In: Nriagu JO (ed.) *Encyclopedia of Environmental Health*, volume 3, pp. 100–107 Burlington: Elsevier.

Boogaard, P.J., S.M. Hays, L.L. Aylward. 2011. Human biomonitoring as a pragmatic tool to support health risk management of chemicals - Examples under the EU REACH programme. *Reg. Toxicol. Pharmacol.* 59:125-132.

Aylward, L.L., S.M. Hays, M. Gagné, A. Nong, K. Krishnan. 2010. Biomonitoring Equivalents for hexachlorobenzene. *Reg. Toxicol. Pharmacol.* 58(1):25-32.

Hays, S.M., L.L. Aylward, M. Gagné, A. Nong, K. Krishnan. 2010. Biomonitoring Equivalents for inorganic arsenic. *Reg. Toxicol. Pharmacol.* 58(1):1-9.

Krishnan, K., M. Gagné, A. Nong, L.L. Aylward, S.M. Hays. 2010. Biomonitoring Equivalents for triclosan. *Reg. Toxicol. Pharmacol.* 58(1):10-17.

Krishnan, K., M. Gagné, A. Nong, L.L. Aylward, S.M. Hays. 2010. Biomonitoring Equivalents for bisphenol A (BPA). *Reg. Toxicol. Pharmacol.* 58(1):18-24.

Aylward, L.L., C.R. Kirman, B.C. Blount, S.M. Hays. 2010. Chemical-specific screening criteria for interpretation of biomonitoring data for volatile organic compounds (VOCs) - Application of steady-state PBPK model solutions. *Reg. Toxicol. Pharmacol.* 58(1):33-44.

Cohen Hubal, E.A., A. Richard, L. Aylward, S. Edwards, J. Gallagher, M.-R. Goldsmith, Sastry Isukapalli, R. Tornero-Velez, E. Weber, R. Kavlock. 2010. Advancing exposure characterization for chemical evaluation and risk assessment. *J. Toxicol. Environ. Health* 13(2-4):299-313.

Burns, C.J., J.J. Collins, N. Humphrey; K.M. Bodner, L.L. Aylward, D. McBride. 2010. Correlates of serum dioxin to self-reported exposure factors. *Environ. Res.* 110(2):131-136.

Aylward, L.L., M.K. Morgan, T.E. Arbuckle, D.B. Barr, C.J. Burns, B.H. Alexander, S.M. Hays. 2010. Biomonitoring data for 2,4-dichlorophenoxyacetic acid in the US and Canada: Interpretation in a public health risk assessment context using Biomonitoring Equivalents. *Environ. Health Perspect.* 118:171-181.

Aylward, L.L., K.M. Bodner, J.J. Collins, M. Wilken, D. McBride, C.J. Burns, S.M. Hays, N. Humphry. 2009. TCDD exposure estimation for workers at a New Zealand 2,4,5-T manufacturing facility based on serum sampling data. *J. Exp. Sci. Environ. Epidemiol.* 20:417-426.

Simon, T., L. Aylward, C.R. Kirman, C. Rowlands, R. Budinsky 2009. Estimates of cancer potency of 2,3,7,8-tetrachlorodibenzo-p-dioxin using linear and non-linear dose-response modeling and toxicokinetics. *Toxicol. Sci.* 112(2):490-506.

LaKind, J.S., D.Q. Naiman, S.M. Hays, L.L. Aylward, B.C. Blount. 2009. Public health interpretation of trihalomethane blood levels in the United States: NHANES 1999-2004. *J. Exp. Sci. Environ. Epidemiol.* 19(4):435-441.

Hays, S.M., L.L. Aylward, M. Gagné, K. Krishnan. 2009. Derivation of Biomonitoring Equivalents for cyfluthrin. *Regul. Toxicol. Pharmacol.* 55(3):268-75.

Aylward, L.L., S.M. Hays, M. Gagné, K. Krishnan. 2009. Derivation of Biomonitoring Equivalents for di(2-ethylhexyl)phthalate (CAS No. 117-81-7). *Regul. Toxicol. Pharmacol.* 55(3):249-58.

Aylward, L.L., S.M. Hays, M. Gagné, K. Krishnan. 2009. Derivation of Biomonitoring Equivalents for di-n-butyl phthalate (DBP), benzylbutyl phthalate (BzBP), and diethyl phthalate (DEP). *Regul. Toxicol. Pharmacol.* 55(3):259-267.

Garabrant, D.H., L.L. Aylward, S. Berent, Q. Chen, C. Timchalk, C.J. Burns, S.M. Hays, and J.W. Albers. 2009. Cholinesterase inhibition in chlorpyrifos workers: Characterization of biomarkers of exposure and response in relation to urinary TCPy. *J. Exp. Sci. Environ. Epidemiol.* 19(7):634-642.

McBride, D.I., J.J. Collins, N.F. Humphry, P. Herbison, K.M. Bodner, L.L. Aylward, C.J. Burns, M. Wilken. 2009. Mortality in workers exposed to 2,3,7,8-Tetrachlorodibenzo-p-dioxin at a trichlorophenol plant in New Zealand. *J. Occ. Env. Med.* 51(9):1049-1056.

Collins, J.J., K. Bodner, L.L. Aylward, M. Wilken, G. Swaen, R. Budinsky, C. Rowlands, C.M. Bodnar. 2009. Mortality rates among workers exposed to dioxins in the manufacture of pentachlorophenol. *J. Occ. Env. Med.* 51(10):1212–1219.

Collins, J.J., K. Bodner, L.L. Aylward, M. Wilken, C.M. Bodnar. 2009. Mortality rates among trichlorophenol workers with exposure to 2,3,7,8-tetrachlorodibenzo-p-dioxin. *Am J Epidemiol.* 170(4):501-6.

Moore, J.M., J.L. Newsted, M. Hecker, M.J. Zwiernik, S.D. Fitzgerald, D.P. Kay, X. Zhang, E.G. Higley, L.L. Aylward, K.J. Beckett, R.A. Budinsky, S.J. Bursian, and J.P. Giesy. 2009. Hepatic P450 enzyme activity, tissue morphology and histology of mink (*Mustela vison*) exposed to polychlorinated dibenzofurans (PCDFs). *Arch. Environ. Contam. Toxicol.* 57:416–425.

Hays, S.M. and L.L. Aylward. 2009. Using biomonitoring equivalents to interpret human biomonitoring data in a public health risk context. *J. Appl. Toxicol.* 29(4):275-288.

LaKind, J.S., S.M. Hays, L.L. Aylward, and D.Q. Naiman. 2009. Perspective on serum dioxin levels in the United States: An evaluation of the NHANES data. *J. Exp. Sci. Environ. Epidemiol.* 19:435-441.

Simon, T., C.R. Kirman, L.L. Aylward, R.A. Budinsky, J.C. Rowlands, and T.F. Long. 2008. Linear and non-linear estimates of cancer potency of 2,3,4,7,8-pentachlorodibenzofuran. *Toxicol. Sci.* 106(2):519-37.

Aylward, L.L., J.S. LaKind, and S.M. Hays. 2008. Derivation of Biomonitoring Equivalent (BE) values for 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) and related compounds: A screening tool for interpretation of biomonitoring data in a risk assessment context. *J. Toxicol. Environ. Health Pt. A.* 71(22):1499-1508.

Hays, S.M., L.L. Aylward, and J.S. Lakind. 2008. Introduction to the Biomonitoring Equivalents Pilot Project: Development of guidelines for the derivation and communication of Biomonitoring Equivalents. *Reg. Toxicol. Pharmacol.* 51:S1-S2.

Hays SM, Aylward LL, LaKind JS, Bartels MJ, Barton HA, Boogaard PJ, Brunk C, DiZio S, Dourson M, Goldstein DA, Kilpatrick ME, Krewski D, Krishnan, K, Lipscomb J, Nordberg M, Okino M, Tan Y-M, Viau C, Yager JW. 2008. Guidelines for the derivation of Biomonitoring Equivalents: Report from the Biomonitoring Equivalents Expert Workshop. *Reg. Toxicol. Pharmacol.* 51:S4-S15.

LaKind, J.S., L.L. Aylward, C. Brunk, S. DiZio, M. Dourson, D.A. Goldstein, M.E. Kilpatrick, D. Krewski, M.J. Bartels, H.A. Barton, P.J. Boogaard, J. Lipscomb, K. Krishnan, M. Nordberg, M. Okino, Y.-M. Tan, C. Viau, J.W. Yager, and S.M. Hays. 2008. Guidelines for the communication of Biomonitoring Equivalents: Report from the Biomonitoring Equivalents Expert Workshop. *Reg. Toxicol. Pharmacol.* 51:S16-S26.

Hays, S.M., and L.L. Aylward. 2008. Biomonitoring equivalents (BE) dossier for acrylamide (AA) (CAS No. 79-06-1). *Reg. Toxicol. Pharmacol.* 51:S57-S67.

Hays, S.M., M. Nordberg, J.W. Yager, and L.L. Aylward. 2008. Biomonitoring equivalents (BE) dossier for cadmium (Cd) (CAS No. 7440-43-9). *Reg. Toxicol. Pharmacol.* 51:S49-S56.

Aylward, L.L., J.S. LaKind, and S.M. Hays. 2008. Biomonitoring equivalents (BE) dossier for trihalomethanes. *Reg. Toxicol. Pharmacol.* 51:S68-S77.

Aylward, L.L., and S.M. Hays. 2008. Biomonitoring equivalents (BE) dossier for 2,4-dichlorophenoxyacetic acid (2,4-D) (CAS No. 94-75-7). *Reg. Toxicol. Pharmacol.* 51:S37-S48.

Aylward, L.L., H.A. Barton, and S.M. Hays. 2008. Biomonitoring equivalents (BE) dossier for toluene (CAS No. 108-88-3). *Reg. Toxicol. Pharmacol.* 51:S27-S36.

Aylward, L.L., J.E. Goodman, G. Charnley, L.R. Rhomberg. 2008. A margin of exposure approach to assessment of non-cancer risks of dioxins based on human exposure and response data. *Environ. Health Persp.* 116:1344-1351.

Zwiernik, M.J., S. Bursian, L.L. Aylward, D. Kay, J. Moore, J. C. Rowlands, K. Woodburn, M. Shotwell, J.-S. Khim, J.P. Giesy, and R.A. Budinsky. 2008. Toxicokinetics of 2,3,7,8-TCDF and 2,3,4,7,8-PeCDF in mink (*Mustela vison*) at ecologically relevant exposures. *Toxicol. Sci.* 105:33-43.

Zwiernik, M.J., J. Moore, J.-S. Khim, L.L. Williams, D.P. Kay, S. Bursian, L.L. Aylward, and J.P. Giesy. 2008. Non-destructive scat sampling in exposure assessment of mink (*Mustela vison*) exposed to polychlorinated dibenzofurans (PCDFs). *Arch. Environ. Contam. Toxicol.* 55(3):529-537.

LaKind, J.S., L. Barra, N. Tran, and L.L. Aylward. 2008. Environmental chemicals in people: Challenges in interpreting biomonitoring information. *J. Environ. Health.* 70(9):61-64.

Aylward, L.L., Charnley, G., Goodman, J., and Rhomberg, L. 2008. Comment on "Chronic Disease and Early Exposure to Air-Borne Mixtures. 2. Exposure Assessment." *Environ. Sci. Technol.* 42(6) 2201 – 2201.

Budinsky, R.A., J.C. Rowlands, S. Casteel, G. Fent, C.A. Cushing, J. Newsted, M.V. Ruby, and L.L. Aylward. 2008. A pilot study of oral bioavailability of dioxins and furans from contaminated soils: Impact of differential hepatic enzyme activity and species differences. *Chemosphere* 70:1774-1786.

Butterworth, B.E., L.L. Aylward, S.M. Hays. 2007. A mechanism-based cancer risk assessment for 1,4-dichlorobenzene. *Regul. Toxicol. Pharmacol.* 49:138-48.

Nichols, B.R., K.L. Hentz, L. Aylward, S.M. Hays, J.C. Lamb. 2007. Age-specific reference ranges for polychlorinated biphenyls (PCB) based on the NHANES 2001-2002 survey. *J. Toxicol Environ Health A.* 70:1873-7.

Pyatt, D.W., L.L. Aylward, and S.M. Hays. 2007. Is age an independent risk factor for chemically induced acute myelogenous leukemia in children? *J. Toxicol. Environ. Health B Crit. Rev.* 10(5):379-400.

Hays, S.M., R. Becker, H.-W. Leung, L.L. Aylward, and D.W. Pyatt. 2007. Biomonitoring equivalents: A screening approach for interpreting biomonitoring results from a public health risk perspective. *Regulatory Toxicology and Pharmacology.* 47(1):96-109.

Connor, K.C. and L.L. Aylward. 2006. Human response to dioxin: Aryl hydrocarbon receptor (AhR) molecular structure, function, and dose-response data for enzyme induction indicate an impaired human AhR. *J. Toxicol. Environ. Health Part B: Critical Reviews.* 9:147-171.

Rowlands, J.C., R.A. Budinsky, L.L. Aylward, A.S. Faqi, and E.W. Carney. 2006. Sex ratio of the offspring of Sprague-Dawley rats exposed to 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) in utero and lactationally in a three-generation study. *Toxicol. Appl. Pharmacol.* 216(1):29-33.

Cheng, H., L.L. Aylward, T.B. Starr, C. Beall, R. Brunet, G. Carrier, and E. Delzell. 2006. TCDD exposure-response analysis and risk assessment. *Risk Analysis.* 26(4):1059-71.

Gray, M.N., L.L. Aylward, and R.E. Keenan. 2006. Relative cancer potencies of selected dioxin-like compounds on a body burden basis: Comparison to current Toxic Equivalency Factors (TEFs). *J. Toxicol. Environ. Health.* 69:907-917.

Guzelian, P., L. Quattrochi, N. Karch, L. Aylward, and R. Kaley. 2006. Does dioxin exert toxic effects in humans at or near current background body levels?: An evidence-based conclusion. *Human and Experimental Toxicology.* 25:99-105.

Aylward, L., R. Brunet, T. Starr, G. Carrier, E. Delzell, H. Cheng, and C. Beall. 2005. Exposure reconstruction for the TCDD-exposed NIOSH cohort using a concentration- and age-dependent model of elimination. *Risk Anal.* 25(4):945-956.

Wright, P.C., T. F. Long, and L. L. Aylward. 2005. Twenty-five years of dioxin cancer risk assessment. *Natural Resources & Environment.* 19(4):31-35.

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Aylward, L.L., R.C. Brunet, G. Carrier, S.M. Hays, C.A. Cushing, L.L. Needham, D.G. Patterson, Jr., P.M. Gerthoux, P. Brambilla, and P. Mocarelli. 2005. Concentration-dependent TCDD elimination kinetics in humans: Toxicokinetic modeling for moderately to highly exposed adults from Seveso, Italy, and Vienna, Austria, and impact on dose estimates for the NIOSH cohort. *J. Exp. Anal. Environ. Epidemiol.* 15:51–65.

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Ruby, M.V., S.W. Casteel, T.J. Evans, K.A. Fehling, D.J. Paustenbach, B.D. Landenberger, R.A. Budinsky, J.P. Giesy, and L.L. Aylward. 2004. Rapid communication: Background concentrations of dioxins/furans in Sprague-Dawley rats and juvenile swine. *J. Toxicol. Environ. Health* 67(11):845–850.

Aylward, L., C. Kirman, D. Cher, S. Hays. 2003. Re: analysis of dioxin cancer threshold. *Environ. Health Perspect.* 111(10):A510.

Aylward, L.L., S.M. Hays, J.S. LaKind, and J.J. Ryan. 2003. Rapid communication: partitioning of persistent lipophilic compounds, including dioxins, between human milk lipid and blood lipid: an initial assessment. *J Toxicol Environ Health A.* 66(1):1–5.

Hays, S.M., and L.L. Aylward. 2003. Dioxin risks in perspective: past, present, and future. *Regul Toxicol Pharmacol.* 37(2):202–217.

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Thomas, P.T., L.L. Aylward, and N.J. Karch. 1998. Immunotoxicity of dioxin: Is the TEF concept premature? In: *Chlorine and Chlorine Compounds in the Paper Industry.* Victor Turoski, (ed.), Sleeping Bear Press, Chelsea, Michigan. pp. 307–314.

Arfsten, D.P., L.L. Aylward, N.J. and Karch. 1998. Chromium. In: *Immunotoxicology of Environmental and Occupational Metals.* J.T. Zelikoff and P.T. Thomas, (eds.) Taylor and Francis, London.

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Aylward, L.L., S.M. Hays, N.J. Karch, and D.J. Paustenbach. 1996. Relative susceptibility of animals and humans to the cancer hazard posed by 2,3,7,8-tetrachlorodibenzo-p-dioxin using internal measures of dose. *Environ. Sci. Technol.* 30(12): 3534–3543.



Pirages, S.W., J.E. Johnston, and L.L. Aylward. 1991. Risk assessment: It's not really black magic. Proceedings of the Canadian Waste Management Conference, Toronto, Ontario. October 29–November 1, 1991.

Aylward, L.L., D.K. Roylance, and C.D. Douglas. 1985. A transient finite element model of pultrusion. *Polymer Process Engineering*, 3(3).

### **Conference Proceedings, Posters, and Presentations**

Hays, S.M., L. Aylward, and C. Kirman. 2011. Pharmacokinetics of ingested Cr(VI) in rodents: Extrapolations to target tissue dose in humans. Society of Toxicology Annual Meeting, March 7, 2011, Washington, D.C.

Aylward, L., Blount, B., Pyatt, D., Kirman, C., and Hays, S. 2011. Interpretation of NHANES VOC blood data using health-based screening values. Society of Toxicology Annual Meeting, March 8, 2011, Washington, D.C.

Kirman, C., Aylward, L., Schoeny, R., and Hays, S. 2011. Interpreting NHANES data on arsenic levels in urine using Biomonitoring Equivalents. Society of Toxicology Annual Meeting, March 9, 2011, Washington, D.C.

Aylward, L.L. 2010. Review and recalculation of the US EPA Draft RfD for TCDD based on weight of evidence methods. Presentation at Dioxin 2010, San Antonio, TX, September 12-17, 2010.

Aylward, L.L., C.R. Kirman, B.C. Blount, S.M. Hays, 2010. Derivation of screening criteria for interpretation of biomonitoring data for VOCs – Application of steady-state PBPK model solutions. Poster at the 2010 Society of Toxicology Annual Meeting, Salt Lake City, UT.

Hays, S.M., D.W. Pyatt, L.L. Aylward, 2010. Using the biomonitoring equivalent for benzene to interpret biomonitoring data. Poster at the 2010 Society of Toxicology Annual Meeting, Salt Lake City, UT.

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#### ***Ad hoc Peer Reviewer***

*Environmental Health Perspectives*  
*Journal of Toxicology and Environmental Health*  
*Toxicology and Applied Pharmacology*  
*Journal of Exposure Science and Environmental Epidemiology*  
*Environmental Research*  
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*Regulatory Toxicology and Pharmacology*  
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