

Lesa L. Aylward, Ph.D.

Principal

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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, University of Utrecht, 2009

Additional Training

Use of Data for Development of Uncertainty Factors in Non-Cancer Risk Assessment. Society of Toxicology Continuing Education Course, SOT 47th 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.

6th 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

Prior Experience

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
International Society for Exposure Assessment
Society for Risk Analysis

Awards

Society of Toxicology, Risk Assessment Specialty Section Award, Top Ten Papers Advancing the Science of Risk Assessment, March, 2009

Society of Toxicology, Risk Assessment Specialty Section Award, Top Ten Papers Demonstrating an Application of Risk Assessment, March, 2009.

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

Publications

Burns, C.J., J.J. Collins, N. Humphrey; K.M. Bodner, L.L. Aylward, D. McBride. In press. Correlates of serum dioxin to self-reported exposure factors. *Environ. Res.*

Simon, T., L. Aylward, C.R. Kirman, C. Rowlands, R. Budinsky. In press. Estimates of cancer potency of 2,3,7,8-tetrachlorodibenzo-p-dioxin using linear and non-linear dose-response modeling and toxicokinetics. *Toxicol. Sci.*

Aylward, L.L., M.K. Morgan, T.E. Arbuckle, D.B. Barr, C.J. Burns, B.H. Alexander, S.M. Hays. In press. 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.*

LaKind, J.S., D.Q. Naiman, S.M. Hays, L.L. Aylward, B.C. Blount. In press. Public health interpretation of trihalomethane blood levels in the United States: NHANES 1999-2004. *J. Exp. Sci. Environ. Epidem.*

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

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. Barraj, 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.

Aylward, L.L., J.C. Lamb, and S. Lewis. 2005. Issues in risk assessment for developmental effects of 2,3,7,8-tetrachlorodibenzo-p-dioxin and related compounds. *Toxicol. Sci.* 87(1):3-10.

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.

Gaylor, D.W. and L.L. Aylward. 2004. An evaluation of benchmark dose methodology for non-cancer continuous-data health effects in animals due to exposures to dioxin (TCDD). *Reg. Toxicol. Pharmacol.* 40:9-17.

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.

Aylward, L.L. and S.M. Hays. 2002. Temporal trends in human TCDD body burden: Decreases over three decades and implications for exposure levels. *J. Exp. Anal. Environ. Epidemiol.* 12:319–328.

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.

Aylward, L.L., N.J. Karch, S.M. Hays, and D.J. Paustenbach. 1998. Response to comment on a 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.* 32(4): 551–552.

Hays, S.M., L.L. Aylward, N.J. Karch, and D.J. Paustenbach. 1997. The relative susceptibility of animals and humans to the carcinogenic hazard posed by exposure to 2,3,7,8-TCDD: An analysis of standard and alternative dosimetric measures. *Chemosphere* 34(5-7): 1507–1522.

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

Aylward, L.L. and Hays, S.M. 2009. Use of biomonitoring and pharmacokinetic data to inform multimedia fate and exposure models – examples and data needs. Presentation at the International Society for Exposure Science 2009 Annual Meeting, Minneapolis, MN.

Aylward, L.L., Toms, L.-M., and Mueller, J.F. 2009. Evaluation of serum dioxin concentrations in Australian Vietnam veterans with diabetes mellitus. Poster presentation at Dioxin 2009, Beijing, China, August 25, 2009.

Aylward, L.L. and S.M. Hays. 2009. Interpreting DBP Human Biomonitoring Data in a Health Risk Context Using Biomonitoring Equivalents. Invited speaker, Gordon Research Conference, Drinking Water Disinfection Byproducts, Mt. Holyoke College, August 9-14, 2009.

Hays, S.M., J.S. LaKind, D.Q. Naiman, L.L. Aylward, B.C. Blount. 2009. Interpreting trihalomethane biomonitoring data using Biomonitoring Equivalents. Poster presented at the Society of Toxicology Annual Meeting, March 2009, Baltimore, MD.

Aylward, L.L., D.H. Garabrant, S. Berent, Q. Chen, C. Timchalk, C.J. Burns, S. M. Hays, J.W. Albers. 2009. Cholinesterase inhibition in chlorpyrifos workers in relation to urinary 3,5,6-trichloro-2-pyridinol (TCPy). Poster presented at the Society of Toxicology Annual Meeting, March 2009, Baltimore, MD.

Aylward, L.L. and S.M. Hays. 2008. Assessment of human biomonitoring data in a public health risk context: Utility of Biomonitoring Equivalents. Poster presentation at the Society for Risk Analysis 2008 Annual Meeting, December 10, 2008, Boston, MA.

Aylward, L.L. 2008. Biomonitoring Equivalents as Screening Tools for Interpretation of Human Biomonitoring Data. Invited speaker at the Society of Toxicology of Canada 40th Annual Meeting, 2 December 2008, Montreal, CA.

Aylward, L.L., and S.M. Hays, 2008. Interpretating human biomonitoring data for acrylamide: Screening level modeling approaches. Oral Presentation at the International Society for Exposure Analysis 2008 Annual Meeting, October 22, 2008, Pasadena, CA.

Aylward, L.L., K.M. Bodner, J.J. Collins, M. Wilken, D. McBride, C.J. Burns, S.M. Hays, and N. Humphrey, 2008. TCDD exposure reconstruction for workers at a New Zealand 245-T manufacturing facility based on serum sampling data. Poster at Dioxin 2008, October 19, 2008, Birmingham, UK.

Aylward, L.L. 2008. A Margin of Exposure Approach to Assessment of Non-Cancer Risks of Dioxins Based on Human Exposure and Response Data. Oral presentation at Dioxin 2008, October 18, 2008, Birmingham, UK.

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, R.A. Budinsky. 2008. Pharmacokinetic Evaluation of Exposure to Ecologically Relevant Concentrations of 2,3,7,8-TCDF and 2,3,4,7,8-PeCDF in Mink (*Mustela vison*). Poster presented at the 47th Society of Toxicology Annual Meeting, Seattle, WA

Hong, S.J., L. Aylward, M. Edwards, C. Maltby, M.J. Fedoruk. 2008. Effect of PCB contaminated soils on serum PCB levels in trailer park residents. Poster presented at the 47th Society of Toxicology Annual Meeting, Seattle, WA.

Hays, S.M., L.L. Aylward. 2008. Derivation of biomonitoring equivalents: Technical issues and guidelines. Poster presented at the 47th Society of Toxicology Annual Meeting, Seattle, WA.

Pyatt, D.W., S.M. Hays, L.L. Aylward. 2008. Biomonitoring equivalents: Case studies. Poster presented at the 47th Society of Toxicology Annual Meeting, Seattle, WA.

Derivation of biomonitoring equivalents: Technical issues. Presented at the International Society of Exposure Assessment Annual Meeting, October 14-18, 2007, Raleigh-Durham, NC.

Aylward, L.L., S.M. Hays. Biomonitoring Equivalents: Overview and Guidelines for Derivation. Presented at the Society for Risk Analysis Annual Meeting, December 9-12, 2007, San Antonio, TX.

Budinsky, R.A., L.L. Aylward, S. Bursian, S.D. Fitzgerald, K.J. Beckett, D.P. Kay, J. Giesy, J. Newsted, J. Moore, J.C. Rowland, K.B. Woodburn, M. Zwiernik. 2007. Range finding study with ecologically relevant dietary concentrations of 2,3,7,8-TCDF and 2,3,4,7,8-PeCDF in mink (*Mustela vison*). *Organohalogen Compounds* 69:202-205.

Aylward, L.L., K.M. Bodner, J.J. Collins, S.M. Hays. 2007. Exposure reconstruction for a dioxin-exposed cohort: Integration of serum sampling data and work histories. *Organohalogen Compounds* 69:2063-2066.

Collins, J.J., K. Bodner, G.G. Bond, L.L. Aylward, R.A. Budinsky, M. Wilken, M.L. Carson. 2007. Death rates among workers exposed to 2,3,7,8-TCDD in the manufacture of trichlorophenol. *Organohalogen Compounds* 69:2067-2070.

J.J. Collins, S. Haidar, K. Bodner, L. L. Aylward, G. Swaen, R.A. Budinsky, M. Carson. 2007. Death rates among workers exposed to higher chlorinated dioxins in the manufacture of pentachlorophenol. *Organohalogen Compounds* 69:2071-2074.

J.J. Collins, K. Bodner, G. Bond, L.L. Aylward, R.A. Budinsky, M.L. Carson. 2007. Cancer rates and serum dioxin levels among chlorophenol workers with chloracne. *Organohalogen Compounds* 69:2075-2078.

Hays, S., L. Aylward, D. Pyatt, H. Leung, and R. Becker. 2007. Interpreting human biomonitoring data in a risk assessment context: Biomonitoring equivalents. Abstract No. 427. *Toxicologist* 96(1):89.

Aylward, L. and S. M. Hays. 2007. Interpretation of biomonitoring data for toluene: Use of PBPK modeling. Abstract No. 781. *Toxicologist* 96(1):161.

Butterworth, B.E., L.L. Aylward, and S.M. Hays. 2007. Mechanism-based cancer risk assessment for 1, 4-dichlorobenzene. Abstract No. 1550, *Toxicologist* 96(1):321.

Kirman, C., E. Crouch, L. Aylward, T. Simon, R. Budinsky, B. Landenberger, and T. Long. 2007. Cancer potency estimate for 2,3,4,7,8-pentachlorodiobenzo(p)dioxin (4-PeCDF). Abstract No. 1561, *Toxicologist* 96(1):323.

Javier, A., J.M. Panko, E.C. Shay, K.M. Unice, P.S. Price, S. Hays and L. Aylward. 2007. Assessment of children's exposure to toluene. Abstract No. 1620, *Toxicologist* 96(1):335.

Pyatt, D., S. Hays, L. Aylward, P. Kerzic, and C. Borgert. 2007. The role of hematotoxicity in chemically induced acute myeloid leukemia. Abstract No. 1963, *Toxicologist* 96(1):405.

Budinsky, R., L. Aylward, C. Cushing, G. Fent, M. Ruby and S. Casteel. 2007. Estimation of relative bioavailability of dioxins and furans in soil in rats and swine: Impact of differential EROD induction on bioavailability estimates. Abstract No. 2011, Toxicologist 96(1):415.

Aylward, L.L., R.A. Becker, and S.M. Hays. 2006. Interpreting Human Biomonitoring Data in a Risk Assessment Context: Issues and Approaches. Presented at the Society for Risk Assessment 2006 Annual Meeting, Baltimore, MD, December 2006.

Aylward, L.L., R.C. Brunet, E. Delzell, C. Beall, H. Cheng, T.B. Starr, G. Carrier, S.M. Hays, L.L. Needham, D.G. Patterson, Jr., P.M. Gerthoux, P. Brambilla, and P. Mocarelli. Concentration-dependent elimination kinetics for TCDD in humans – impact on human cancer risk assessment. Presented at the Society for Risk Analysis Annual Meeting, Orlando, FL, December 5, 2005.

Aylward, L., R. Brunet, T. Starr, E. Delzell, H. Cheng, and C. Beall. 2004. Exposure reconstruction for the TCDD-exposed NIOSH cohort using a concentration- and age-dependent model of elimination. Organohalogen Compounds 66:3394–3400.

Aylward, L.L., TCDD elimination kinetics in adults from Seveso: Implementation of the Carrier et al. (1995) model. Presented at Dioxin 2003, Boston, MA, August 26, 2003.

Aylward, L. L., G. Carrier, R.C. Brunet, and S.M. Hays. 2003. TCDD kinetics in Austrian patients: Implementation of the Carrier et al. (1995) model. Organohalogen Compounds 65:238–241.

Aylward, L.L., G. Carrier, R.C. Brunet, S.M. Hays, L.L. Needham, D.G. Patterson, Jr., P.M. Gerthoux, P. Brambilla, and P. Mocarelli. 2003. TCDD elimination kinetics in adults from Seveso: Implementation of the Carrier et al. (1995) model. Organohalogen Compounds 65:199–202.

Brunet, R.C., L.L. Aylward, G. Carrier, and S.M. Hays. 2003. TCDD elimination kinetics: Modification of the Carrier et al. (1995) model to include an additional elimination mechanism. Organohalogen Compounds 65:226–229.

Aylward, L.L., S.M. Hays, R.C. Brunet, G. Carrier and C.A. Cushing. 2003. Impact of a concentration-dependent elimination rate for TCDD on dose estimates for the NIOSH cohort. Organohalogen Compounds 64:128–131.

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