

## CURRICULUM VITAE

**Babasaheb (Bob) Sonawane, Ph.D.**

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### EDUCATION:

- 1971 **Ph. D.**, in *Entomology-Toxicology*, Univ. of Missouri, Columbia, Missouri, USA  
1965 **M.S. with Honors** in *Entomology*, University of Pune, Pune, India  
1962 **B.S. with Honors**, in *Agricultural Sciences*, University of Pune, Pune, India

### PROFESSIONAL EXPERIENCE:

- 1995 – Present      *Supervisory Interdisciplinary Toxicologist*  
Effects Identification and Characterization Group  
National Center for Environmental Assessment-Washington Division,  
Office of Research and Development  
U.S. Environmental Protection Agency  
Washington, DC
- 1990 – 1995      *Chief, Reproductive and Developmental Toxicology Branch*  
Human Health Assessment Group  
Office of Health and Environmental Assessment  
Office of Research and Development  
U.S. Environmental Protection Agency  
Washington, DC
- 1985 – 1990      *Biologist*  
Reproductive Effects Assessment Group  
Office of Health and Environmental Assessment  
Office of Research and Development  
U.S. Environmental Protection Agency  
Washington, DC
- 1983 – 1985      *Senior Staff Fellow*

Division of Toxicology  
Center for Veterinary Medicine  
Food and Drug Administration  
5600 Fishers Lane  
Rockville, MD

1976 – 1983      *Research Assistant Professor of Pediatrics and Animal Biology*  
School of Medicine and School of Veterinary Medicine  
University of Pennsylvania  
Philadelphia, PA

1975 – 1976      *Senior Research Associate*  
Department of Pediatrics  
Children's Hospital of Philadelphia  
Philadelphia, PA

1972 – 1975      *NIH Post-Doctoral Fellow*  
National Institute of Environmental Health Sciences  
Research Triangle Park, NC

1971 – 1972      *Research Specialist in Toxicology*  
School of Medicine  
University of Missouri  
Columbia, MO

#### **DETAIL ASSIGNMENTS**

Oct. 1999 – Feb. 2000      *Acting Director*  
National Center for Environmental Assessment-Washington Division  
NCEA/ORD/US EPA  
Washington, DC

April – July 1990      *Acting Deputy Director*  
Environmental Criteria and Assessment Office  
Office of Health and Environmental Assessment  
Cincinnati, OH

Sep. – Dec., 1989      *Acting Branch Chief*  
Reproductive and Developmental Toxicology Branch  
Human Health Assessment Group  
Office of Health and Environmental Assessment  
ORD/US EPA  
Washington, DC

**LEADERSHIP PROVIDED TO THE SCIENTIFIC COMMUNITY (Selected examples):**

- Member Interagency Committee on National Children Study (2006-2007).
- Member Indo-US Sub-Commission for Science and Technology (1987 – 2002).
- EPA liaison to the Environmental Health Committee of the American Academy of Pediatrics (1993 – 2001).
- Member of the Office of Toxic Substance Testing/Research Priorities Task Force SARA section 110 (1999).
- Represented ORD to the Agency’s Science and Policy Committee for Reinvention of Federal Government- Vice President Gore Initiative (1993) and served on the National Performance Review Committee (1993).
- EPA’s Developmental Toxicity Risk Assessment Guidelines (1991).
- Invited Participant to the FDA’s Dental Products Review Panel (1991).
- Member of Office of International Activities, United Nations Advisory Working Group (1991).
- Member of the Committee Advising Office of Mobile Sources –Methanol as a Fuel in the 1990s.
- Member, Risk Assessment Forum for “Cholinesterase Inhibition as An Indication of Adverse Toxicological Effect” (1987-1989).
- Member of the Toxicity Matrix Work group, SARA Section 313 (1988).
- EPA’s Reproductive Toxicity Risk Assessment Guidelines (1987).
- Manuscripts reviewer for the scientific journals: Carcinogenesis, Cytokine, Science, Critical Reviews in Toxicology, Journal of Toxicology and Environmental Health, Environmental Health Perspectives, Reproductive Toxicology, Neurotoxicology, Teratology, Environmental Research, Toxicological Sciences, Regulatory Toxicology and Pharmacology, Toxicology and Applied Pharmacology, Risk Analysis, Environment International, etc.
- Member AAALAC Board representing-Teratology Society.
- Organizer/Participant/Sponsor of over 50 scientific conferences, symposia/workshops at National and International levels related to children's environmental health, toxicology, risk assessment of chemicals, benefit- cost analysis etc,

- Member ORD/EPA Aging Research Plan Team.
- Member of several inter- and intra-agency committees, workgroups and taskforces related to toxicology, children's environmental health and risk assessment of environmental agents.
- Member of the Chemical Emergency Preparedness Program of EPA.
- Member of the Review Board on the California Proposition 65.

**TECHNICAL ASSISTANCE/LEADERSHIP PROVIDED TO THE AGENCY (Examples):**

- Member of the ORD/EPA-wide Committee on Honorary Awards (2008 to 2014).
- EPA Representative and Reviewer of 12<sup>th</sup> Report on Carcinogens (ROC) to Congress (2011) prepared by the National Toxicology Program of NIEHS/HHS (Aristolochic acids, Captafol, Certain Glass Wool Fibers, Cobalt-tungsten Carbide-powders and Hard Metals, Formaldehyde, ortho -Nitrotoluene, Riddelline, and Styrene).
- Provided leadership, reviewer and/or provided technical assistance in developing, coordinating and managing several health risk assessment of chemicals for the Agency programs. Recent examples include but not limited to: Libby Amphibole Asbestos, Ethylene oxide, Phthalate Esters, Chromium III and VI, Benzene, Trichloroethylene, Tetrachloroethylene, Phosgene, Vinyl Chloride, 1,3- Butadiene, Formaldehyde, n-butanol, Vanadium Pentoxide, Tetrahydrofuran, Nitrobenzene, MTBE, MMT, PCBs non-cancer, Dioxins, 1,2 Dichloroethane, Methyl Mercury, Methanol, Antimony, Diesel Exhaust, PAH's, Dioxins, Cadmium, Lead, Strontium an Strontium Compounds, Glass Wool Fibers, etc.
- Provided leadership and/or assisted in developing NCEA/ORD annual operating plans and participated in the development of ORD's multi-year research and research strategies.
- Directed, and/or conducted research on developing methods, models, risk assessment guidelines, and databases to improve and better characterize uncertainties in risk assessment. Some of the recent examples include, but not limited to:
  - ❖ *Report: Lymphohematopoietic Cancers Induced by Chemicals and Other Agents:*
  - ❖ *Overview and Implications for Risk Assessment, Enzyme ontogeny database,*
  - ❖ *Use of Transgenic strains of mice and rats in MOA of cancer and non-cancer health risk evaluation,*
  - ❖ *A Framework for Assessing Risk to Children, Approaches for Incorporating Pharmacokinetics in Children's Risk Assessment,*
  - ❖ *Dose-metrics Adjustment and Scaling Factors Across Life stages,*
  - ❖ *Bisphenol-A Common Mode of Action—A Case Study,*
  - ❖ *Environmental Risk Factors and Prostate Cancer, Early Origins of Neurodegenerative Disease,*

- ❖ *Biomarkers of Exposure and Effects in Children, Structure-Activity Application to Developmental Toxicity,*
- ❖ *Aging and Toxic Response,*
- ❖ *Application of PBPK Models in Risk Assessment,*
- ❖ *Biomarkers of Leukemia in Children,*
- ❖ *Genetic Polymorphisms and Metabolism of Xenobiotics*
- ❖ *Excretion of Chemicals in Breast Milk, etc.*

Planned, organized, sponsored and/or participated in several National and International Scientific Workshops/Meetings and Conferences promoting children's environmental health and risk assessment issues. Examples include:

- Symposium on Aging Population as a Sensitive Subgroup - California Environmental Protection Agency held in Pacific Grove , CA (2006)
- Seven International Neuro-toxicology Conferences (1995 -2001)
- DOD/EPA Annual TriServices Conferences (1996-2001)
- WHO Conference on Environmental Threat to Children's Health, Manila, Philippines (2000)
- International Workshops on Indoor Molds and Children's Health in Alexandria VA (1998)
- Children Environmental Health Network (CEHN) – Research Needs Conferences (1995, 1997)
- Eight Indo-US Workshops, Conferences and Symposia on lead and other heavy metals
- Indian National Congress in Lucknow, India
- Indian Pharmacology Society Meeting in Nagpur, India
- Environment and Genetic Susceptibility in New Delhi, India
- Pediatric Pharmacology, in Ahmadabad, India
- Three Joint Conferences with Industrial Toxicology Research Center in Lucknow, India on toxicology and risk assessment issues related to health effects heavy metals, pharmaceuticals, pesticides and children's environmental health,
- International Symposium on Chelating Agents in Pharmacology and Therapeutics held in Pilsner (Czech Republic)
- NATO Conference on Environmental Health held in L'viv, Ukraine
- Other Conferences related to Women and Children's Environmental Health Risk Assessment in Ukraine, Thailand, Belgium, Italy, France, Canada, Argentina, Australia etc.

**INVITED PRESENTATIONS (Examples):**

- Organizer of Roundtable Discussion and Co-Chair: Trichloroethylene Exposure and Development of Fetal cardiac malformations: What the Data Tells Us about Inhalation exposure Resulting from Vapor Intrusion and Potential health Risks to pregnant Women. 55<sup>th</sup> Annual meeting of the Society of toxicology, New Orleans, LA; March, 2016.
- Organizer and Chairperson, Symposium 12- Environmental Epigenomics and Disease Susceptibility; 46<sup>th</sup> Annual Meeting of Environmental Mutagen and Genomic Society. New Orleans, LA; September, 2015.
- Primary Sponsor, Symposium 7 on The Carcinogenicity of Outdoor Air Pollution; 46<sup>th</sup> Annual Meeting of Environmental Mutagen and Genomic Society. New Orleans, LA; September, 2015.
- Chairperson, Perspectives on the Evaluation and Interpretation of Mutagenicity and Genotoxicity Data, 42<sup>nd</sup> Annual Environmental Mutagen Society meeting, Montreal, Quebec; October 15–19, 2011.
- Co-Chair, Mode of Action and Risk Assessment, Benzene-2009, Health Effects and Mechanisms of Bone Marrow Toxicity; Technische Universität München, Munich, Germany; September 7-11, 2009.
- Co-chair; Formaldehyde and Leukemia: Epidemiology, Potential Mechanisms, and Implications for Risk Assessment; EMS Annual Meeting, San Juan, Puerto Rico; October 18-21, 2008.
- Member, WHO/IPCS/CICAD Final Review Board; meeting held in Helsinki, Finland; Strontium and Strontium Compounds; Cyclic Acid Anhydrides, Inorganic Chromium III, Chromium VI and Compounds, March, 2007.
- Member, Steering Committee; Hershey Medical Center Technical Workshop: Optimizing the Design and Interpretation of Epidemiologic Studies for Assessing Neurodevelopment Effects from *in utero* Chemical Exposure, September, 2005.
- Member, WHO/IPCS/Concise International Chemical Assessment Document 68; Tetrachloroethene; Cobalt and inorganic cobalt compounds, 13th CICAD Final Review Board; Nagpur, India; November, 2005.
- Organizer and Co-chair, WHO/UNEP/ILO International Programme on Chemical Safety -Workshop on Advances in the Use of Biomarkers in Children; Buenos Aires, Argentina; November, 2005.
- Organizer and Co-chair; Workshop: How do neurotoxicants exploit genetic susceptibility? Twenty-First International Neurotoxicology Conference, Honolulu, Hawaii; February 10 -13, 2004.
- Member, Organizing Committee; Report of the International Conference on Environmental Threats to the Health of Children: Hazards and Vulnerability, Bangkok, Thailand; March, 2002.

- Invited to participate in the “Sixth International Symposium on Chelating Agents in Pharmacology, Toxicology and Therapeutics”, Pilsen, Czech Republic, September, 2000.
- Invited to plan a Conference on “Chemical Excretion in Human Milk” with March of Dimes and to participate in the National Advisory Council’s meeting for the Children’s Health and the Environment (New York, NY); November, 2000.
- Member, Organizing Committee of Toxicology and Risk Assessment Conferences with DOD and other federal agencies at Wright Patterson US Air Force Base in Dayton, OH, for five years.
- Children’s Health and the Environment 2000, ed: JM Cranmer, CF Bearer, CF Chaisson, DA Cory-Slechta, LR Goldman, DC Rice, W Slikker, Jr., BR Sonawane, HA Tilson, B Weiss, RT Zoeller. *NeuroToxicology* 2001; 22(5):555-722.
- Children’s Health and the Environment: Mechanisms and Consequences of Developmental Neurotoxicology, ed: JM Cranmer, MA Aschner, CF Bearer, LG Costa, CT DeRosa, LR Goldman, AG Kirshner, DC Rice, BR Sonawane, HA Tilson, and B Weiss, *NeuroToxicology* 2000; 21(1-2):229-238; and 21(6):923-1155. 18th International Neurotoxicology Conference, Colorado Springs, CO; September 23-26, 2000.
- Invited to participate in the World Health Organization (WHO) Workshop on “Environmental Threats to Children” held in association with the Pacific Basin Consortium Meeting: [ManillaManila](#), Philippines; April, 2000.
- Pesticides and Susceptible Populations: Who is at Risk and When? ed: JM Cranmer, W Slikker, V Moser, B Weiss, M Aschner, L Costa, D Ray, BR Sonawane, *NeuroToxicology* 2000; 1(1-2):9-227. 17th International Neurotoxicology Conference, Little Rock, AR; October 17-20, 1999.
- Invited as a speaker and serve as a discussant in three sessions at “Lead Poisoning: An International Conference on Prevention and Treatment”, Bangalore, India; February, 1999.
- Participated as Member of Steering Committee, Planning Meeting on “Workshop on Benzene Leukemogenesis – State of the Sciences”, Ottawa, Canada; July, 1998.
- Invited by the American Petroleum Institute (API) to participate “Benzene: State of the Sciences Workshop Planning Meeting. Chicago, IL; June, 1998.
- Invited to American Crop Protection Association (ACPA) 1998 Spring Conference on “Redefining the Crop Protection Industry”; Arlington, VA; April, 1998.
- Invited by the Great Lakes Association of Colleges of Medicine, Inc. to the 7<sup>th</sup> Annual Training Seminar in Heavy Metals Toxicology to give a lecture on Arsenic Toxicology. Orlando FL; March, 1998.
- 16th International Neurotoxicology Conference, Little Rock, AR. September 13-16, 1998.
- Invited Presentation at 5th Annual Convention on Human Embryology and Birth Defects Related to Environmental Factors held in Manila, Philippines; 1996.

- Invited presentation on Sono-embryology to the 8th Post-graduate Course on Genetics, Congenital Anomalies, Fetal Therapy; Pediatric Adolescent Gynecology and Updates on Ultrasound held at Philippine Children Hospital Medical Center, Manila; November, 1996.
- Human Embryology and Birth Defects Related to Environmental Factors and Database of Fetal Risk on Maternal Exposure to Infections, Pharmaceuticals and Environmental Toxic Agents, Fifth Annual Convention, Manila, Philippines; November, 1996.
- Neurotoxicity of Mercury: Indicators and Effects of Low-Level Exposure, ed: JM Cranmer, RW Amler, TW Clarkson, SE Gilbert, DC Rice, W Slikker Jr, B Sonawane, HA Tilson, MA Verity. *NeuroToxicology* 1996; 17(1):1-299.

**PUBLICATIONS (Selected from over 120):**

1. Segal D, Lin YS, Ginsberg G, Sonawane B. (2015) A conceptual framework for evaluating the interaction of a chemical and nonchemical stressor in human health risk assessments: a case study for lead and psychosocial stress. *Human and Ecological Risk Assessment*. 21:7, 1840-1868.
2. Thomas, R., Hubbard, A.E., McHale, C.M., Zhang, L., Rappaport, S.M., Lan, Q., Rothman, N., Vermeulen, R., Guyton, K.Z., Jinot, J., Sonawane, B.R. and Smith, M.T. (2014) Characterization of changes in gene expression and biochemical pathways at low levels of benzene exposure. *PLoS One*, 9, e91828.
3. Olden, K., Lin, Y.S., Gruber, D. and Sonawane, B. (2014) Epigenome: biosensor of cumulative exposure to chemical and nonchemical stressors related to environmental justice. *Am J Public Health*, 104, 1816-21.
4. Lin, Y.S., Ho, W.C., Caffrey, J.L. and Sonawane, B. (2014) Low serum zinc is associated with elevated risk of cadmium nephrotoxicity. *Environ Res*, 134, 33-8.
5. Lin, Y.S., Ginsberg, G., Lin, J.W. and Sonawane, B. (2014) Mercury exposure and omega-3 fatty acid intake in relation to renal function in the US population. *Int J Hyg Environ Health*, 217, 465-72.
6. Lin, Y.S., Ginsberg, G., Caffrey, J.L., Xue, J., Vulimiri, S.V., Nath, R.G. and Sonawane, B. (2014) Association of body burden of mercury with liver function test status in the U.S. population. *Environ Int*, 70, 88-94.
7. Ginsberg, G., Sonawane, B., Nath, R. and Lewandowski, P. (2014) Methylmercury-induced inhibition of paraoxonase-1 (PON1)-implications for cardiovascular risk. *J Toxicol Environ Health A*, 77, 1004-23.
8. Eastmond, D.A., Keshava, N. and Sonawane, B. (2014) Lymphohematopoietic cancers induced by chemicals and other agents and their implications for risk evaluation: An overview. *Mutat Res Rev Mutat Res*.



9. Lin, Y.S., Caffrey, J.L., Lin, J.W., Bayliss, D., Faramawi, M.F., Bateson, T.F. and Sonawane, B. (2013) Increased risk of cancer mortality associated with cadmium exposures in older Americans with low zinc intake. *J Toxicol Environ Health A*, 76, 1-15.
10. Eastmond, D.A., Vulimiri, S.V., French, J.E. and Sonawane, B. (2013) The use of genetically modified mice in cancer risk assessment: challenges and limitations. *Crit Rev Toxicol*, 43, 611-31.
11. Vulimiri, S.V., Berger, A. and Sonawane, B. (2011) The potential of metabolomic approaches for investigating mode(s) of action of xenobiotics: case study with carbon tetrachloride. *Mutat Res*, 722, 147-53.
12. Pachkowski, B.F., Guyton, K.Z. and Sonawane, B. (2011) DNA repair during in utero development: a review of the current state of knowledge, research needs, and potential application in risk assessment. *Mutat Res*, 728, 35-46.
13. Gwinn, M.R., DeVoney, D., Jarabek, A.M., Sonawane, B., Wheeler, J., Weissman, D.N., Masten, S. and Thompson, C. (2011) Meeting report: mode(s) of action of asbestos and related mineral fibers. *Environ Health Perspect*, 119, 1806-10.
14. Gwinn, M.R., Craig, J., Axelrad, D.A., Cook, R., Dockins, C., Fann, N., Fegley, R., Guinnup, D.E., Helfand, G., Hubbell, B., Mazur, S.L., Palma, T., Smith, R.L., Vandenberg, J. and Sonawane, B. (2011) Meeting report: Estimating the benefits of reducing hazardous air pollutants--summary of 2009 workshop and future considerations. *Environ Health Perspect*, 119, 125-30.
15. Ginsberg, G., Angle, K., Guyton, K. and Sonawane, B. (2011) Polymorphism in the DNA repair enzyme XRCC1: utility of current database and implications for human health risk assessment. *Mutat Res*, 727, 1-15.
16. Zhang, L., Freeman, L.E., Nakamura, J., Hecht, S.S., Vandenberg, J.J., Smith, M.T. and Sonawane, B.R. (2010) Formaldehyde and leukemia: epidemiology, potential mechanisms, and implications for risk assessment. *Environ Mol Mutagen*, 51, 181-91.
17. Ginsberg, G., Guyton, K., Johns, D., Schimek, J., Angle, K. and Sonawane, B. (2010) Genetic polymorphism in metabolism and host defense enzymes: implications for human health risk assessment. *Crit Rev Toxicol*, 40, 575-619.
18. Walker, K., Ginsberg, G., Hattis, D., Johns, D.O., Guyton, K.Z. and Sonawane, B. (2009) Genetic polymorphism in N-Acetyltransferase (NAT): Population distribution of NAT1 and NAT2 activity. *J Toxicol Environ Health B Crit Rev*, 12, 440-72.
19. Thompson, C.M., Sonawane, B. and Grafstrom, R.C. (2009) The ontogeny, distribution, and regulation of alcohol dehydrogenase 3: implications for pulmonary physiology. *Drug Metab Dispos*, 37, 1565-71.
20. Thompson, C.M., Johns, D.O., Sonawane, B., Barton, H.A., Hattis, D., Tardif, R. and Krishnan, K. (2009) Database for physiologically based pharmacokinetic (PBPK) modeling:

- physiological data for healthy and health-impaired elderly. *J Toxicol Environ Health B Crit Rev*, 12, 1-24.
21. Neafsey, P., Ginsberg, G., Hattis, D. and Sonawane, B. (2009) Genetic polymorphism in cytochrome P450 2D6 (CYP2D6): Population distribution of CYP2D6 activity. *J Toxicol Environ Health B Crit Rev*, 12, 334-61.
  22. Neafsey, P., Ginsberg, G., Hattis, D., Johns, D.O., Guyton, K.Z. and Sonawane, B. (2009) Genetic polymorphism in CYP2E1: Population distribution of CYP2E1 activity. *J Toxicol Environ Health B Crit Rev*, 12, 362-88.
  23. Keshava, N., Chen, C., White, P., Sonawane, B. and Bussard, D. (2009) Biomarkers in toxicology and risk assessment: informing critical dose-response relationships by Swenberg et al., 2008. *Chem Res Toxicol*, 22, 8-10; author reply 10-2.
  24. Guyton, K.Z., Kyle, A.D., Aubrecht, J., Cogliano, V.J., Eastmond, D.A., Jackson, M., Keshava, N., Sandy, M.S., Sonawane, B., Zhang, L., Waters, M.D. and Smith, M.T. (2009) Improving prediction of chemical carcinogenicity by considering multiple mechanisms and applying toxicogenomic approaches. *Mutat Res*, 681, 230-40.
  25. Ginsberg, G., Smolenski, S., Neafsey, P., Hattis, D., Walker, K., Guyton, K.Z., Johns, D.O. and Sonawane, B. (2009) The influence of genetic polymorphisms on population variability in six xenobiotic-metabolizing enzymes. *J Toxicol Environ Health B Crit Rev*, 12, 307-33.
  26. Ginsberg, G., Smolenski, S., Hattis, D., Guyton, K.Z., Johns, D.O. and Sonawane, B. (2009) Genetic Polymorphism in Glutathione Transferases (GST): Population distribution of GSTM1, T1, and P1 conjugating activity. *J Toxicol Environ Health B Crit Rev*, 12, 389-439.
  27. Ginsberg, G., Neafsey, P., Hattis, D., Guyton, K.Z., Johns, D.O. and Sonawane, B. (2009) Genetic polymorphism in paraoxonase 1 (PON1): Population distribution of PON1 activity. *J Toxicol Environ Health B Crit Rev*, 12, 473-507.
  28. Thompson, C.M., Sonawane, B., Barton, H.A., DeWoskin, R.S., Lipscomb, J.C., Schlosser, P., Chiu, W.A. and Krishnan, K. (2008) Approaches for applications of physiologically based pharmacokinetic models in risk assessment. *J Toxicol Environ Health B Crit Rev*, 11, 519-47.
  29. Meek, M.E., Sonawane, B. and Becker, R.A. (2008) Foreword: Biomonitoring Equivalents special issue. *Regul Toxicol Pharmacol*, 51, S3.
  30. Makris, S.L., Thompson, C.M., Euling, S.Y., Selevan, S.G. and Sonawane, B. (2008) A lifestage-specific approach to hazard and dose-response characterization for children's health risk assessment. *Birth Defects Res B Dev Reprod Toxicol*, 83, 530-46.
  31. Gift, J.S., McGaughy, R., Singh, D.V. and Sonawane, B. (2008) Health assessment of phosgene: approaches for derivation of reference concentration. *Regul Toxicol Pharmacol*, 51, 98-107.
  32. Foos, B. and Sonawane, B. (2008) Overview: Workshop on children's inhalation dosimetry and health effects for risk assessment. *J Toxicol Environ Health A*, 71, 147-8.

33. Firestone, M., Sonawane, B., Barone, S., Jr., Salmon, A.G., Brown, J.P., Hattis, D. and Woodruff, T. (2008) Potential new approaches for children's inhalation risk assessment. *J Toxicol Environ Health A*, 71, 208-17.
34. Walker, K., Hattis, D., Russ, A., Sonawane, B. and Ginsberg, G. (2007) Approaches to acrylamide physiologically based toxicokinetic modeling for exploring child-adult dosimetry differences. *J Toxicol Environ Health A*, 70, 2033-55.
35. Chiu, W.A., Barton, H.A., DeWoskin, R.S., Schlosser, P., Thompson, C.M., Sonawane, B., Lipscomb, J.C. and Krishnan, K. (2007) Evaluation of physiologically based pharmacokinetic models for use in risk assessment. *J Appl Toxicol*, 27, 218-37.
36. Barone, S., Jr., Brown, R.C., Euling, S., Cohen Hubal, E., Kimmel, C.A., Makris, S., Moya, J., Selevan, S.G., Sonawane, B., Thomas, T. and Thompson, C.M. (2006) Visión General De La Evaluación Del Riesgo En el niño Empleado Un Enfoque Por Etapas De Desarrollo [Overview of a Life Stage Approach to Children's Health Risk Assessment]. *Acta Toxicol. Argent.*, 14(Sup), 7-10.
37. Amler, R.W., Barone, S., Jr., Belger, A., Berlin, C.M., Jr., Cox, C., Frank, H., Goodman, M., Harry, J., Hooper, S.R., Ladda, R., LaKind, J.S., Lipkin, P.H., Lipsitt, L.P., Lorber, M.N., Myers, G., Mason, A.M., Needham, L.L., Sonawane, B., Wachs, T.D. and Yager, J.W. (2006) Hershey Medical Center Technical Workshop Report: optimizing the design and interpretation of epidemiologic studies for assessing neurodevelopmental effects from in utero chemical exposure. *Neurotoxicology*, 27, 861-74.
38. Landrigan, P.J., Sonawane, B., Butler, R.N., Trasande, L., Callan, R. and Droller, D. (2005) Early environmental origins of neurodegenerative disease in later life. *Environ Health Perspect*, 113, 1230-3.
39. LaKind, J.S., Brent, R.L., Dourson, M.L., Kacew, S., Koren, G., Sonawane, B., Tarzian, A.J. and Uhl, K. (2005) Human milk biomonitoring data: interpretation and risk assessment issues. *J Toxicol Environ Health A*, 68, 1713-69.
40. Ginsberg, G., Hattis, D., Russ, A. and Sonawane, B. (2005) Pharmacokinetic and pharmacodynamic factors that can affect sensitivity to neurotoxic sequelae in elderly individuals. *Environ Health Perspect*, 113, 1243-9.
41. Brown, R.C., Lockwood, A.H. and Sonawane, B.R. (2005) Neurodegenerative diseases: an overview of environmental risk factors. *Environ Health Perspect*, 113, 1250-6.
42. Berlin, C.M., LaKind, J.S., Fenton, S.E., Wang, R.Y., Bates, M.N., Brent, R.L., Condon, M., Crase, B.L., Dourson, M.L., Ettinger, A.S., Foos, B., Furst, P., Giacoia, G.P., Goldstein, D.A., Haynes, S.G., Hench, K.D., Kacew, S., Koren, G., Lawrence, R.A., Mason, A., McDiarmid, M.A., Moy, G., Needham, L.L., Paul, I.M., Pugh, L.C., Qian, Z., Salamone, L., Selevan, S.G., Sonawane, B., Tarzian, A.J., Rose Tully, M. and Uhl, K. (2005) Conclusions and recommendations of the expert panel: technical workshop on human milk surveillance and

- biomonitoring for environmental chemicals in the United States. *J Toxicol Environ Health A*, 68, 1825-31.
43. Ginsberg, G., Slikker, W., Jr., Bruckner, J. and Sonawane, B. (2004) Incorporating children's toxicokinetics into a risk framework. *Environ Health Perspect*, 112, 272-83.
  44. Ginsberg, G., Hattis, D. and Sonawane, B. (2004) Incorporating pharmacokinetic differences between children and adults in assessing children's risks to environmental toxicants. *Toxicol Appl Pharmacol*, 198, 164-83.
  45. Ginsberg, G., Hattis, D., Russ, A. and Sonawane, B. (2004) Physiologically based pharmacokinetic (PBPK) modeling of caffeine and theophylline in neonates and adults: implications for assessing children's risks from environmental agents. *J Toxicol Environ Health A*, 67, 297-329.
  46. Ginsberg, G., Hattis, D., Miller, R. and Sonawane, B. (2004) Pediatric pharmacokinetic data: implications for environmental risk assessment for children. *Pediatrics*, 113, 973-83.
  47. Daston, G., Faustman, E., Ginsberg, G., Fenner-Crisp, P., Olin, S., Sonawane, B., Bruckner, J., Breslin, W. and McLaughlin, T.J. (2004) A framework for assessing risks to children from exposure to environmental agents. *Environ Health Perspect*, 112, 238-56.
  48. Bostwick, D.G., Burke, H.B., Djakiew, D., Euling, S., Ho, S.M., Landolph, J., Morrison, H., Sonawane, B., Shifflett, T., Waters, D.J. and Timms, B. (2004) Human prostate cancer risk factors. *Cancer*, 101, 2371-490.
  49. Olin, S.S. and Sonawane, B.R. (2003) Workshop to develop a framework for assessing risks to children from exposure to environmental agents. *Environ Health Perspect*, 111, 1524-6.
  50. Hattis, D., Ginsberg, G., Sonawane, B., Smolenski, S., Russ, A., Kozlak, M. and Goble, R. (2003) Differences in pharmacokinetics between children and adults--II. Children's variability in drug elimination half-lives and in some parameters needed for physiologically-based pharmacokinetic modeling. *Risk Anal*, 23, 117-42.
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63. Choudhury, H., C. T. De Rosa, B. R. Sonawane and W. Stiteler. 1990. Risk Assessment of systemic and reproductive toxicity studies. Toxicologist: 10(1), Society of Toxicology, Washington, D.C.

64. De Rosa, C. T., H. Choudhury, S. Irene, A. Bathija, D. Sonawane and R. Rubenstein. 1989. Subchronic toxicity study of 2,3-dichloropropanol in rats. *Toxicologist*: 9(1), Society of Toxicology, Washington, D.C.
65. Rubenstein, R., S. Irene, B. Sonawane, C. T. De Rosa and A. Bathija. 1989. 3D-and 90 day rat oral toxicity study of propargyl alcohol. *Toxicologist*: 9(1), Society of Toxicology, Washington, D.C.
66. Sonawane, B., R. Rubenstein, C. T. De Rosa, A. Bathija, H. Choudhury and S. Irene. 1989. Subchronic toxicity of beta-chloronaphthalene in mice. *Toxicologist*: 9(1), Society of Toxicology, Washington, D.C.
67. Choudhury, H., C. T. De Rosa, S. Irene, A. Bathija, B. Sonawane and R. Rubenstein. 1989. Subchronic toxicity of brucine and strychnine in rats. *Toxicologist*: 9(1), Society of Toxicology, Washington, D.C.
68. Bathija, A., R. Rubenstein, B. R. Sonawane, H. Choudhury, C. T. De Rosa and S. Irene. 1989. Subchronic toxicity study in rats with thallium. *Toxicologist*: 9(1), Society of Toxicology, Washington, D.C.
69. De Rosa, C. T., H. Choudhury, R. Rubenstein, A. Bathija and B. Sonawane. 1988. Sub chronic toxicity of pyridine in rats. *Toxicologist*: 8(1), Society of Toxicology, Washington, D.C.
70. Sonawane, B., R. Rubenstein, A. Bathija; C. T. De Rosa, G. Wolfe and E. N. Albert. 1988. Subchronic toxicity studies in rats with m- and p- xylenes. *Toxicologist*: 8(1), Society of Toxicology, Washington, D. C.
71. Bathija, A. T., B. R. Sonawane, C. T. De Rosa and R. Rubenstein. 1988. Toxicity studies of 2,3,4,6- tetrachlorophenol. *Toxicologist*: 8(1), Society of Toxicology, Washington, D.C.
72. Levine, B. S., D. D. Dietz, R. B. Sonawane, R. Rubenstein and C. T. De Rosa. 1987. Subchronic toxicity of methyl isobutyl ketone in Sprague-Dawley rats. *Toxicologist*: 7(1), Society of Toxicology, Washington, D.C.
73. Sonawane, B., R. Rubenstein, C. T. De Rosa, E. C. Thompkins and D. Dietz, 1987. Comparative toxicity of crotonaldehyde in rats. *Toxicologist*: 7(1), Society of Toxicology, Washington, D.C.
74. Dietz, D. D., B. S. Levine, R. B. Sonawane, R. Rubenstein and C. T. De Rosa. 1987. Comparative toxicity of cresol isomers. *Toxicologist*: 7(1), Society of Toxicology, Washington, D.C.
75. De Rosa, C. T., B. Sonawane, R. Rubenstein, D. A. Mayhew and D. Dietz. 1986. Subchronic toxicity study of oral ethyl acetate administration to rats. In: Proceedings of 7th Annual Meeting of American College of Toxicology, Philadelphia, PA.
76. Sonawane, B. R, Rubenstein, C. T. De Rosa and M. Otto. 1986. Subchronic toxicity testing of chemicals in support of the Resource Conservation and Recovery Act. *Toxicologist*: 6(1), Society of Toxicology, Washington, D.C.

77. Sonawane, B; de Rosa, C; Rubenstein, R. (1986) Estimation of reference dose (RfD) for oral exposure of acetone. 7th Annual Meeting, American College of Toxicology, November 16-19, 1986.

**RESEARCH GRANTS (As Principal Investigator and/or Co-Principal Investigator)**

1. Biotransformation of Drugs and Other Xenobiotics During Postnatal Development of Food Producing Animals: Project Officer FDA/CVM, \$225,000 (1985).
2. Regulation of Drug Metabolism During Development: Principal Investigator, NIH-HD 17475, \$57,336 (1982-1983).
3. Developmental Organizers of Drug Metabolism and Action: Co-Principal Investigator, NIH Grant, \$128,000 (1980-1983).
4. Training Program – Pediatric Clinical Pharmacology and Anesthesiology: Preceptor, NIH-NIGMS T-32GM7514, \$545,067 (1977-1982).
5. Travel Grant, 1981 – To present paper to the International Congress Pharmacology (IUPHR), Paris, France (Supported by McNeil Laboratories, Ft. Washington, PA).
6. Regulation of Drug Metabolism During Development: Co-Principal Investigator, NIH-HD 10063, (1978-1980).
7. Drug Disposition in Sick Infants and Children: Co-investigator, NIH-HD 10053 (1975-1977).
8. Regulation of Drug Metabolism During Development: Co-investigator, NIH-HD 10063, (1977)
9. Biochemical Genetics of Drug Induced Cleft Palate Teratogenesis: Investigator, NIH-Dental Institute, (1977)
10. Developmental Aspects of Acetaminophen Hepatotoxicity: Principal Investigator, McNeil Laboratories, Ft. Washington, PA

**PROMOTED PROFESSIONAL DEVELOPMENT OF STAFF**

Stanley Barone, Jr. Ph.D., Acting Assistant Center Director for Planning, NCEA/ORD  
Maureen Gwinn, Ph.D. Acting Assistant Center Director for Risk Analysis, NCEA/ORD  
Kathryn Guyton, Ph.D. Acting Deputy Director for HHRA/ORD, NCEA/ORD  
Kathleen Raffaele, Ph.D. Acting Assistant Director for Risk Analysis, NCEA/ORD

**PROFESSIONAL TRAINING OPPORTUNITIES PROVIDED TO SCIENTISTS (Served as mentor/advisor):**

**Academia**

Vinod Bhutani, M.D. (1981)  
Chanda Gupta, Ph.D. (1978-1981)  
David Kowalczyk, DVM, Ph.D. (1976-1977)  
Robert Mancini, Ph.D. (1977-1978)  
Larry Andrews, Ph.D. (1976)

### **American Association for Advancement of Science (AAAS) Fellows**

Lynn Adams, Ph.D. (2011 - 2012)  
Sarah- Burgess Herbert, Ph.D. (2010-2011)  
Scott Glabberman, Ph.D. (2010-2011)  
Chadwick Thompson, Ph.D. (2004 - 2005)  
Nancy Beck, Ph.D. (2003 - 2005)  
Susan Euling, Ph.D. (2001 - 2003)  
Dennis Brown, Ph.D. (1998)

### **NCEA – ORD Post-doctoral Fellows**

Douglas Johns, Ph. D. (2006 - 2007)  
Maureen Gwinn, Ph. D. (2004 - 2006)  
Sederick Rice, Ph. D. (2004 - 2005)  
Andrea Kim, Ph.D. (2004 - 2005)  
Marquea King, Ph.D. (2003 - 2005)

### **Oak Ridge Institute for Science and Education (ORISE) Post-doctoral Fellows**

Carol Starkey (2015)  
Larissa Pardo (2015)  
Mary Kushman, Ph. D. (2012 - 2013)  
David Szabo, Ph.D. (2011 -2012)  
Connie Kang-Sickel Ph.D. (2011)  
Brian Pachkowski, Ph.D. (2008 - 2012)  
Andrew Kraft, Ph. D. (2010 - 2011)

### **Oak Ridge Institute for Science and Education (ORISE) Faculty Fellows**

Ivan Rusyn, Ph.D., Professor, Univ. North Carolina, Chapel Hill (2011 - 2013)  
Gary Ginsberg, Ph.D., Assoc. Professor, Univ. of Connecticut/Yale Univ. (2009 - 2012)  
David Eastmond, Ph.D., Professor, Univ. of California, Riverside (2009 - 2012)

### **Association of Schools of Public Health (ASPH) Fellows**

Rebecca Brown, MPH, MES  
Cecilia Alcala, MPH (2014 -2015))  
Jennifer Mall, MPH (2011 - 2012)  
Christine Robel, MPH (2005)  
Margaret Adgent, MPH (2004-2005)



Ann Bradley, MPH (2004-2005)

### **Congressional Fellows**

Elaine Francis, Ph.D. with Senator Joseph Lieberman  
Rebecca Brown, MPH, MES with Congresswoman Diana DeGette and Congressman  
Henry Waxman

### **Detail Assignments- Opportunities Provided and Served as Mentor**

Don Bergfeld, Ph.D. (OPPT)  
Hugh Tilson, Ph.D. (NHEERL-ORD)  
Mike Luster, Ph.D. (NIOSH)  
Prof. Zoltan Anneu, Ph.D., (Johns Hopkins Univ., Baltimore, MD as an IPA)

### **MANAGEMENT TRAINING: Examples**

- Completed the Federal Executive Institute (FEI) Training – “Leaders for a Democratic Society” Elected by the FEI Class 271 to moderate two sessions of the Executive Forum (August 2001)
- Invited to attend training course “Managing People for Maximum Performance and Promoting Innovation and Organizational Change”, Wellesley, MA (July, 2000)
- Promoting Innovation and Organizational Change and Managing People for Maximum Performance Program – Harvard University – John F. Kennedy School of Government, Boston, MA (July 16-20, 2000)
- EPA Senior Executive Service Mentoring Program – Mentor—Alan Sielen, Deputy Assistant Administrator, Office of International Activities/EPA (1999)
- Course on Managing the Federal Employee Discipline and Performance Process offered by the Brookings Institution – Center for Public Policy Education (1998)
- American Business Management Training Course: A five day MPA program (August, 1996)
- Project Officer Course – (1984, 1988, 1996)
- How to Handle Difficult People (June, 1995)
- OPM – Science, Technology and Public Policy – Lancaster, PA (March 6-17, 1995)
- Federal Managers' Financial Integrity Act (FMFIA) Training (March, 1994)
- EPA – Resolving Team Conflicts Course (February, 1994)
- Brookings Institute: Issues in Science and Technology Policy – Williamsburg, VA (December, 1993)
- OPM Government Affairs Institute – Congress and Money (April 12-13, 1993)
- Preventing Sexual Harassment (1993)

- Office of Personnel Management (OPM), Management Development Seminar – Lancaster, PA (March 2-13, 1992)
- ORD Resource Management and Integrity Training (1992)
- Contracts Administration Training for Supervisors and Managers (1992)
- Managing Multiple Projects, Objectives and Deadlines, Skillpath, Inc. (1992)
- Effective Listening and Memory Development (1992)
- Pre-TQM Course – John Pickering (1991)
- Executive Potential Program – OPM (One year training 1990) – William H. Farland (SES Advisor); Developmental Assessments: Edward Johnson, Associate Administrator, OIA/EPA and Michele Mercier (Manager), WHO – IPCS, Geneva, Switzerland (July – August, 1989) and William Jordan, OPPTS/EPA (May- June, 1989). Shadowing Assignment with Joseph Merenda, OPPTS (January, 1990)
- Negotiation Skills Training (1990)
- Position Description Writing for Supervisors and Managers – OPM (1984)
- Effective Writing Course – FDA (1984)

#### **HONORS AND AWARDS: (Examples)**

- USEPA Distinguished Special Service Citation in Recognition of 34 Years Dedicated Service to the Citizens of This Great Nation awarded by Administrator of EPA (Gina McCarthy, January, 2016)
- EPA Gold Medal- Libby Amphibole Asbestos Assessment (2015)
- Invited Member of the Nomination Committee for Heinz Foundation Awards, 2011-2013.
- Member of the Advisory Committee on: UC Berkeley NIEHS Superfund Research Center (2012-2014) and Mount Sinai School of Medicine NIEHS Superfund Research program (2000)
- Bronze Medal (2006) awarded by ORD in recognition for preparing approaches for application of PBPK models supporting data in risk assessment.
- Science and Technology Achievement Award – Level II for publication co-authored in Toxicological sciences 66 (2): 185-200 (2002).
- Office of Pesticides Program Bronze Medal for Harmonization of Reproductive and Developmental Toxicology Testing Protocols (1999)
- Office of International Activities/EPA Silver Medal Award for Technical Support on International Lead (Pb) Program (1996)

- EPA's Bronze Medal Award for Lead (Pb) Capacity Building in Developing Countries (1996)
- Recipient of Office of Pesticides and Toxic Substances "Joseph Seifter Memorial Award in Regulatory Science" for higher commitment to scientific excellence and understanding of the public impact of regulatory science (June, 1991).
- Special Act Award for Human Resources Development as Acting deputy Director, ECAO – Cincinnati (1991)
- [REDACTED]
- Achievement Awards, OPPT, In recognition of contribution to developing the first set of 25 ATSDR Toxicological Profiles (1987)
- **CERTIFICATES AND LETTERS OF APPRECIATION (Examples):** The President of Fetus as a Patient Institute, Philippines (FPIP) in sincere recognition of contribution as Speaker during the Annual Convention/Postgraduate Course (1996).
  - Invited guest speaker – Institute of Children's Hospital Philippines, Manila, Philippines; Awarded Certificate of Appreciation for teaching post-graduate course to physicians and medical support staff as well as for addressing the Third Annual convention of Pediatricians of Philippines (1993, 1996)
  - MTBE Risk Assessment effort by OHEA (1995)
  - A letter of Appreciation by Dr. James O. Mason, Assistant Secretary for Health Assistance in preparing the US Report to UNICEF to the World Summit on Children (1992)
  - Great Lakes Association of Clinical Medicine – Recognized and Honored for participation in teaching Metal Binding in Medicine at the XVIII International Congress, Grand Rapids, Michigan (1992)
  - A letter of Appreciation from Assistant Secretary for Health and Human Services – Public service participation in health and Medical Sciences Working Groups of the Indo-US Joint Sub-commission for Cooperation in Science and Technology (1991)
  - A letter of Appreciation by Linda Fisher AA/OPTS to recognize contribution in developing the Agency response to the TSCA Section 21 petition on carpet-related health problems at EPA HQ (1990)
  - A Special Appreciation Certificate for organizing and contributing to Asian Pacific American heritage Week at FDA by EEO/PHS Director (1984)
  - **Appreciation of Assignment as Acting Deputy Director of ECAO-Cincinnati – Commendable Efforts for Support both Administratively and technically (1991)**

**Management of Extramural Resources in support of several research projects, sponsorship of symposia/meetings, workshops, conferences etc (some examples):**

### ***Grants and Cooperative Research agreements***

- ❖ WHO-IPCS, Geneva, Switzerland
- ❖ University of Arkansas, Little Rock, AK
- ❖ University of Illinois, Chicago, IL
- ❖ Mt. Sinai School of Medicine, New York, NY
- ❖ Clark University, Worcester, MA
- ❖ University of Rochester, Rochester, NY
- ❖ International Federation of Teratology Societies, Tokyo (Japan)
- ❖ Indiana School of Medicine, Indianapolis, IN
- ❖ Georgetown University, Washington, DC
- ❖ Cornell University, Ithaca, NY
- ❖ Penn State Medical Center, Hershey, PA
- ❖ Johns Hopkins University, Baltimore, MD
- ❖ Children's Environmental Health Network, Washington, DC
- ❖ Teratology Society
- ❖ Neurobehavioral Teratology Society
- ❖ Environmental Mutagen and Genomics Society
- ❖ Society of Risk Analysis, Reston, VA
- ❖ Endocrine Society, Washington, DC
- ❖ University of Wisconsin, Madison, Wisconsin
- ❖ University of Vermont, Burlington, VT
- ❖ California Public Health Foundation
- ❖ University of Maryland, Catonsville, MD
- ❖ University of Washington, Seattle, WA
- ❖ University of Virginia, Richmond, VA
- ❖ International Life Science Institute- Health and Environmental Sciences (ILSI-HESI)
- ❖ Albany Medical College, Albany, NY

### ***Research Contracts: Examples***

- ❖ University of California, Riverside, CA
- ❖ University of San Francisco, San Francisco, CA
- ❖ Versar, Inc., Vienna, VA
- ❖ Eastern Research Group, Boston, MA
- ❖ Syracuse Research Corporation
- ❖ Sciences International Inc.
- ❖ University of California, Berkeley, CA
- ❖ Science Applications International Corporation (SAIC)
- ❖ Department of Pharmacology, State of Maine
- ❖ Department of Environment, New Jersey

- ❖ Mitre Corporation, Washington DC
- ❖ University of Pittsburgh, Pittsburgh, PA
- ❖ University of Arkansas, Little Rock, AK
- ❖ Tulane University, New Orleans, LA
- ❖ Summit Toxicology
- ❖ ENVIRON

*Interagency Agreements (National and International): Examples*

- ❖ National Institute of Environmental Health Sciences (NIEHS), Research Triangle Park, NC
- ❖ National Institute of Occupational Health and Safety (NIOSH), Morgantown, WV
- ❖ Agency for Toxic Substance and Disease Registry (ATSDR), Atlanta, GA
- ❖ National Center for Toxicological Research (NCTR), Food and Drug Administration, Jefferson, AK and Rockville, MD
- ❖ HESI- Risk Sciences Institute, Washington, DC
- ❖ Ministry of Health, National Institute of Occupational Health, Ahmadabad, India
- ❖ Industrial Toxicology Research Center (ITRC), Lucknow; CSIR, New Delhi, India
- ❖ Indian Council of Medical Research, Ministry of Health, New Delhi, India