

May 19, 2008

Open letter to Stephen Johnson, Administrator, U.S. Environmental Protection Agency

Jennifer Sass, Ph.D. and Sarah Janssen, M.D., Ph.D., M.P.H.
Natural Resources Defense Council

We call on the U.S. Environmental Protection Agency to ban endosulfan

Endosulfan is a persistent, bioaccumulative, highly toxic pesticide that is found in all environmental compartments and in multiple human tissues. Although the European Union and 20 other countries have already banned endosulfan for these reasons, it is still used extensively in the U.S.

About 1.4 million pounds of this chemical are used annually in the U.S.¹ Endosulfan runs off agricultural fields in sediment and contaminates water bodies, where it begins to bioaccumulate in the food chain. Endosulfan and its major degradate are persistent and toxic; it can remain as hazardous waste in the environment for years or even decades after it is applied.² Endosulfan demonstrates environmental fate and ecological effects similar to its chemical cousins, the cyclodiene-like pesticides, that have been either cancelled (toxaphene, mirex, kepone, dieldrin, aldrin, chlordane) or severely restricted (heptachlor) due to their hazardous nature.

Residues of endosulfan are detected as a contaminant on a very wide array of food products, including apples, tomatoes, cucumbers, pickles, zucchini, green peppers, olives, raisins, cantaloupe, prunes, squash, potatoes, canned pears, spinach, green beans, and butter.³ Endosulfan is found in all environmental compartments: rain, fog, surface water, ground water, and soil. Atmospheric transport of endosulfan has resulted in contamination of Arctic regions distant from use areas.^{4, 5} Residues of endosulfan have been detected in multiple human tissues including blood, fetal placenta, breast milk, and mammary adipose tissue.^{6,7,8,9,10}

A review of the peer-reviewed science demonstrates that endosulfan is both an endocrine disruptor and a neurotoxicant.^{11,12,13} Numerous studies have consistently demonstrated that endosulfan behaves physiologically as an anti-androgen.¹⁴ The effects of endosulfan are most pronounced in immature animals whose reproductive systems and brains are still developing.^{15,16}

In its 2002 assessment, the U.S. Environmental Protection Agency (EPA) calculated that the cancellation of endosulfan would have negligible impacts on agriculture.¹⁷ For example, cancellation on Florida tomatoes (approximately 34,900 lbs active ingredient annually) would incur a loss of only 0.02% to 0.7% of the total value of production. The impact on tobacco is similarly minimal. For cotton, the crop where the most endosulfan is used, EPA determined that cancellation would incur a negligible loss of only 0.1% to 2.4% (\$216,000 - \$3.8 million) of the total value of production.

We ask that the EPA cancel all uses of endosulfan without further delay, because it is persistent, bioaccumulative, and highly toxic. We support the petition of the Natural Resources Defense Council (NRDC) to ban endosulfan and revoke all tolerances.¹⁸

SUPPORTERS:

Note: *Unless otherwise indicated, individual signatories' institutions are given for identification purposes only and do not constitute an endorsement on the part of the institutions of information contained in this letter.*

American Nurses Association
Rebecca M. Patton, M.S.N., R.N., C.N.O.R., President
Silver Spring, MD

Cal Baier-Anderson, Ph.D.
Health Scientist, Environmental Defense Fund, and
Assistant Professor, Department of Epidemiology and Preventive Medicine
University of Maryland
Washington, DC

Terri Arthur, R.N., B.S., M.S.
Medical Education Systems, Inc
East Falmouth, MA

Evelyn I. Bain MEd, R.N., C.O.H.N.-S., F.A.A.O.H.N.
Associate Director, Coordinator, Health and Safety Division
Massachusetts Nurses Association
Canton, MA

John Balbus, M.D.
Director, Environmental Health Program, Environmental Defense Fund
Washington, DC

Karen A. Ballard, M.A., R.N.
Chair, Nurses Work Group, Health Care Without Harm
Arlington, VA

Maths Berlin, M.D., Ph.D.
Professor Emeritus of Environmental Medicine, Lunds University, Sweden
Danderyd, Sweden

Alison Bleaney, O.B.E., M.B. Ch.B., F.A.C.R.R.M.
Doctors for the Environment
Australia

Susanna Rankin Bohme, Ph.D.

Brown University, And, Deputy Editor, Int J Occup Environ Health
Attleboro, MA

Karen Bowman, M.N., R.N., C.O.H.N.-S.
President, Washington State Association of Occupational Health Nurses
Seattle, Washington

Kathy Burns, Ph.D.
ScienceCorps, Lexington, MA

Barry Castleman, Sc.D.
Environmental Consultant, Garrett Park, MD

Lin Kaatz Chary, Ph.D., M.P.H.
Indiana Toxics Action, Gary, IN

Theo Colborn, Ph.D.
Professor, University of Florida, Gainesville
Paonia, CO

Carl F. Cranor, Ph.D.
Professor of Philosophy, University of California
Riverside, CA

Rupali Das, M.D., M.P.H.
Assistant Professor, Dept of Medicine,
Div of Occupational and Environmental Medicine
University of California, San Francisco
San Francisco, CA

Devra Davis, Ph.D.
Director, Center for Environmental Oncology
University of Pittsburgh Cancer Institute
Pittsburgh, PA

Richard Denison, Ph.D.
Senior Scientist, Environmental Defense Fund
Washington, DC

Joseph DiGangi, Ph.D.
Senior Scientist, Environmental Health Fund
Chicago, IL

Mary Anne Dillon, R.N., B.S.
Brookline, MA

Maryann Donovan, Ph.D.
Scientific Director, Center for Environmental Oncology
University of Pittsburgh Cancer Institute
Pittsburgh, PA

Therese Dowd, Ph.D., R.N., C.H.T.P.
Associate Professor, The University of Akron
Akron, OH

Patti Duggan R.N., M.S.
Cambridge, MA

David Egilman M.D., M.P.H.
Clinical Associate Professor, Brown University,
And Editor, Int J Occup Environ Health
Attleboro, MA

Arthur L. Frank M.D., Ph.D.
Professor of Environmental and Occupational Health,
Drexel University School of Public Health
Philadelphia, PA

Erica Frank, M.D., M.P.H.
President, Physicians for Social Responsibility
Professor and Canada Research Chair, University of British Columbia
Department of Health Care and Epidemiology
Vancouver, British Columbia

Thomas P. Fuller, Sc.D., C.I.H., M.S.P.H., M.B.A.
Environmental Performance Group
113 Russell Street
Boston, MA 02129

Joseph A. Gardella, Jr., Ph.D.
Professor of Chemistry, University at Buffalo,
State University of New York
Buffalo, NY

Robert Gould, M.D.
President, San Francisco Bay Area- Physicians for Social Responsibility
Associate Pathologist, Kaiser Permanente Hospital, San Jose
San Jose, CA

Linda Greer, Ph.D.
Director, Health and Environment Program
Natural Resources Defense Council

Washington, DC

Sandeep Guntur, M.D.
Fellow, Occupational and Environmental Medicine
University of California, San Francisco
San Francisco, CA

Robert Harrison, M.D., M.P.H.
Clinical Professor of Medicine, University of California, San Francisco
San Francisco, CA

Ronald B Herberman, M.D.
Director, University of Pittsburgh Cancer Institute
Vice-Chancellor of the University of Pittsburgh
Pittsburgh, PA

James Huff, Ph.D.
Associate Director for Chemical Carcinogenesis
National Institute of Environmental Health Sciences
Research Triangle Park, NC

Peter F. Infante, D.D.S., Dr.P.H.
Professorial Lecturer in Environmental Occupational Health
School of Public Health, George Washington University
Washington, DC

Tushar Kant Joshi, M.D.
Director, Occupational and Environmental Medicine Programme
Centre for Occupational and Environmental Health, MAMC
New Delhi, India

Joseph LaDou, M.D.
Director, International Center for Occupational Medicine
University of California School of Medicine
San Francisco, CA

Philip J. Landrigan, M.D., M.Sc.
Professor and Chairman, Department of Community & Preventive Medicine
Professor of Pediatrics
Director, Children's Environmental Health Center
Mount Sinai School of Medicine
New York, NY

Mariann Lloyd-Smith, Ph.D.
CoChair, International POPs Elimination Network
Senior Advisor, National Toxics Network

NSW Australia

Ron Melnick, Ph.D.
National Institute of Environmental Health Sciences
Research Triangle Park, NC

Michael McCally, M.D., Ph.D.
Executive Director, Physicians for Social Responsibility
Washington, DC

David Michaels, Ph.D., M.P.H.
Director, The Project on Scientific Knowledge and Public Policy Research Professor and
Associate Chairman, Department of Environmental and Occupational Health
The George Washington University
Washington, DC

Elizabeth A. O'Connor R.N., B.S.N.
Milton, MA

Nicolas Olea, M.D.
Professor, Hospital Clínico, University of Granada
Granada, Spain

Physicians for Social Responsibility
USA

Rebecca M. Patton, M.S.N., R.N., C.N.O.R.
President, American Nurses Association
Silver Spring, MD

Gerald Poje, Ph.D.
Former Board Member
U.S. Chemical Safety and Hazard Investigation Board
Fairfax, VA

Routt Reigart, M.D.
Medical University South Carolina
Charleston, SC

Barbara Sattler, R.N., Dr.P.H., F.A.A.N.
Director, Environmental Health Education Center
University of Maryland School of Nursing
Baltimore, MD

James Seward, M.D., M.P.P.
Clinical Professor of Public Health, Univ of California, Berkeley

Berkeley, CA

Ted Schettler M.D., M.P.H.
Science Director, Science and Environmental Health Network
Boston, MA

David Shearman M.B., Ch.B., Ph.D., P.R.C.P.E., F.R.A.C.P.
Emeritus Professor of Medicine and Hon Visiting Fellow, Department of Geography and
Environmental Sciences, University of Adelaide and Hon Secretary, Doctors for the
Environment, Australia

Morando Soffritti, M.D.
Scientific Director, European Ramazzini Foundation
Cesare Maltoni Cancer Research Centre
Bentivoglio, Italy

Gina Solomon, M.D., M.P.H.
Senior scientist, Health and Environment Program
Natural Resources Defense Council
Assistant Clinical Professor of Medicine, University of California San Francisco
San Francisco, CA

Leni G. Urbano, M.S.N., R.N.
Clinical Programs Consultant, Guam Nursing Services
Chief Nurse, 724 Aeromedical Staging Flight
Family Advocacy Nurse, 36 MDG Andersen Air Force Base
Vice President, Guam Nurses' Association
Guam

Tatjana T. Walker, R.D., C.D.E.
University of Texas Health Science Center at San Antonio
School of Medicine, Office of the Dean
San Antonio, TX

David Wallinga, M.D.
Director, Food and Health, Institute for Agriculture and Trade Policy
Minneapolis, MN

Diana Zuckerman, Ph.D.
President, National Research Center for Women & Families
Washington, DC 20006

¹ US EPA Endosulfan Updated Risk Assessment. November, 2007. Docket ID HQ-OPP-2002-0262-0067; FR Vol 72, No 221, Nov 16, 2007. Available at www.regulations.gov

² The EPA assessment reported that endosulfan parent compound has a half-life in soil of 57 and 208 days for the α and β endosulfan respectively, the half life of the endosulfan sulfate is 1336 days. The degradate is of similar toxicity to the parent compound. Endosulfan bioconcentration factors in fish range from 2,400X to 11,000X. US EPA Endosulfan Updated Risk Assessment. November, 2007. Docket ID HQ-OPP-2002-0262-0067. Available at www.regulations.gov

³ Food and Drug Administration. Total Diet Study: Summary of Residues Found Ordered by Pesticide Market Baskets 91-3 – 97-1, June 1999.

⁴ Carrera G, Fernandez P, Grimalt JO, Ventura M, Camarero L, Catalan J, Nickus U, Thies H, Psenner R. Atmospheric deposition of organochlorine compounds to remote high mountain lakes of Europe. *Environ Sci Technol*. 2002 Jun 15;36(12):2581-8.

⁵ Miller, P. Comments by the Alaska Community Action on Toxics. February 19, 2008. Docket ID EPA-HQ-OPP-2002-0262-0096. Available at www.regulations.gov

⁶ Hernandez F, Pitarch E, Serrano R, Gaspar JV, Olea N. Multiresidue determination of endosulfan and metabolic derivatives in human adipose tissue using automated liquid chromatographic cleanup and gas chromatographic analysis. *J Anal Toxicol*. 2002 Mar;26(2):94-103.

⁷ Cerrillo I, Granada A, Lopez-Espinosa MJ, Olmos B, Jimenez M, Cao A, Olea N, Olea-Serrano M. Endosulfan and its metabolites in fertile women, placenta, cord blood, and human milk. *Environ Res*. 2005 Jun; 98(2):233-9.

⁸ Campoy C, Jimenez M, Olea-Serrano MF, Moreno-Frias M, Canabate F, Olea N, Bayes R, Molina-Font JA. Analysis of organochlorine pesticides in human milk: preliminary results. *Early Hum Dev*. 2001 Nov;65 Suppl:S183-90.

⁹ Shen H, Main KM, Andersson AM, Damgaard IN, Virtanen HE, Skakkebaek N, Toppari J, Schramm KW. Concentrations of persistent organochlorine compounds in human milk and placenta are higher in Denmark than in Finland. *Hum Reprod*. 2008 Jan;23(1):201-210.

¹⁰ Lopez-Espinosa MJ, Granada A, Carreno J, Salvatierra M, Olea-Serrano F, Olea N. Organochlorine pesticides in placentas from Southern Spain and some related factors. *Placenta*. 2007 Jul;28(7):631-8. Epub 2006 Nov 15.

¹¹ Singh SK, Pandey RS. Effect of sub-chronic endosulfan exposures on plasma gonadotrophins, testosterone, testicular testosterone and enzymes of androgen biosynthesis in rat. *Indian J Exp Biol*. 1990 Oct;28(10):953-6.

¹² Singh SK, Pandey RS. Gonadal toxicity of short term chronic endosulfan exposure to male rats. *Indian J Exp Biol*. 1989 Apr;27(4):341-6.

¹³ Singh SK, Pandey RS. Differential effects of chronic endosulfan exposure to male rats in relation to hepatic drug metabolism and androgen biotransformation. *Indian J Biochem Biophys*. 1989 Aug;26(4):262-7.

¹⁴ Wilson V, LeBlanc GA. Endosulfan elevates testosterone biotransformation and clearance in CD-1 mice. *Toxicol Appl Pharmacol* 148:158-168, 1998.

¹⁵ Sinha N, Narayan R, Saxena DK. Effect of endosulfan on the testis of growing rats. *Bulletin Environ Contamination Toxicol* 58:79-86, 1997. Sinha N, Narayan R, Shanker R, Saxena DK. Endosulfan-induced biochemical changes in the testis of rats. *Veterinary and Human Toxicol* 37:547-549, 1995.

¹⁶ U.S. National Cancer Institute (1978) Bioassay of Endosulfan for Possible Carcinogenicity. By Division of Cancer Cause and Prevention, Carcinogenesis Testing Program. Bethesda, Md.: U.S. Dept. of Health, Education, and Welfare. (DHEW publication no. (NIH) 78-1312.

¹⁷ U.S. EPA Biological and economic analysis of endosulfan benefits on selected crops: impacts of cancellation. July 12, 2002.

¹⁸ Sass, J. Comments by the Natural Resources Defense Council. Petition to ban endosulfan and revoke all tolerances and comments on the endosulfan updated risk assessment. February 19, 2008. Docket ID EPA-HQ-OPP-2002-0262-0084.1. Available at www.regulations.gov