

## **EMBARGOED UNTIL THURSDAY, MAY 11, AT 10 AM**

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### **FOR IMMEDIATE RELEASE – THURSDAY, MAY 11**

## **PROMINENT PHYSICIANS GROUP ISSUES REPORT LINKING COMMON HOUSEHOLD AND INDUSTRIAL CHEMICALS TO BEHAVIORAL AND LEARNING DISABILITIES**

### **OVER 80 PERCENT OF AMERICANS, INCLUDING CHILDREN, HAVE EVIDENCE OF ONE OR MORE HARMFUL PESTICIDES IN THEIR BODIES**

Washington, DC – The Greater Boston Physicians for Social Responsibility (GBPSR) issued today a national report linking common household and industrial chemicals to behavioral and learning disabilities. These chemicals – developmental neurotoxicants – are toxic to the developing brain and contribute to hyperactivity, attention deficit, lower IQ and motor skill impairment. A more detailed list of specific chemicals and their effects is attached. It includes such chemicals as:

- metals – lead, mercury, cadmium, and manganese – found in food or common consumer products
- pesticides – such as organophosphates and others that are widely used in homes and schools
- dioxins and PCBs that bioaccumulate in the food chain
- solvents used in gasoline, paints, glues, and cleaning solutions, and
- nicotine and alcohol.

“It is critical that we understand and, as a matter of public policy, address the impact of these neurotoxic chemicals on behavioral and learning disabilities,” said Dr. Ted Schettler, a practicing physician and one of the report’s co-authors. “The urgency of this issue is underscored by the fact that between 5 and 10 percent of school children in America have learning disabilities, and at least an equivalent amount have ADHD (attention deficit hyperactivity disorder).”

“The threat that these neurotoxicants pose to children is more than just theoretical,” said Dr. Jill Stein, also a practicing physician and a co-author of the report. “The evidence suggests that adverse impacts can be seen even at the current levels of exposure. Since the damage is nonspecific and insidious, widespread harm can occur without its chemical origin being recognized by parents or physicians.”

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- One million children in the United States currently exceed the accepted level above which lead affects behavior and cognition.
- Studies indicate that a metabolite of the neurotoxic pesticide chlorpyrifos is present in the urine of over 80 percent of adults and 90 percent of children in the United States.

Vast quantities of neurotoxic chemicals are released into the environment each year. Of the top 20 chemicals reported by the Toxics Release Inventory as released in 1997, nearly three-quarters are known or suspected neurotoxicants. Over a billion pounds of these chemicals were released by industrial facilities directly into the air, water, and land. Mercury contamination of U.S. waterways alone is so widespread that ten states have issued health advisories -- warning women of reproductive age to avoid or limit fish consumption -- for every lake and river within their borders. Forty states have issued health advisories for at least some of their waterbodies.

The most pressing issues in this regard are the following:

First, most of the 80,000 chemicals in use in the United States have not even been minimally tested for their toxicity in animals or humans, not to mention toxicity to a child's developing brain specifically.

- Complete tests for developmental neurotoxicity have been submitted to the U.S. Environmental Protection Administration (EPA) for only 12 chemicals – nine pesticides and three solvents – as of December 1998.
- Nearly 75 percent of the most used and produced chemicals have undergone little or no toxicity testing.
- Testing for developmental neurotoxicity is not required even in the registration or re-registration of pesticides, one of the strictest areas of chemical regulation.
- In this connection, GBPSR and the national Physicians for Social Responsibility (PSR), joined the Natural Resources Defense Council and eight other organizations in calling today for the EPA to begin testing all new pesticides for their effects on the brain and nervous system, before they are registered and marketed. Such testing may sound like common sense, but it would be a major step forward for the EPA.

Second, even when regulated, the risks from chemical exposure are estimated for one chemical at a time, while children are exposed to many potential toxicants in complex mixtures throughout development. Multiple chemical exposures can interact to intensify damaging effects or cause new types of harm.

- New studies in humans and in the laboratory show that PCBs and mercury interact to cause harm at lower thresholds than either substance acting alone.
- A recent five-year pesticide study showed that combinations of commonly used agricultural chemicals, in levels typically found in groundwater, adversely effected neurological as well as immune and endocrine function in laboratory animals.

Third, the historical record of chemical testing reveals that as testing procedures advance, it becomes clear that lower and lower doses are harmful. These falling thresholds of harm indicate that “currently available knowledge” regularly underestimates the true magnitude of harm. This biases the existing regulatory system towards a “too little, too late” response.

- The initial “safe” blood lead level was set at 60 micrograms/deciliter (ug/dl) in 1960. This was revised down to 10 ug/dl in 1990. Current studies suggest that lead may have no identifiable exposure level that is “safe.”
- The estimated “toxic threshold” for mercury has also continued to fall, and, as with lead, any level of exposure may be harmful.

Fourth, because of the complexity of the human nervous system, animal studies generally underestimate human vulnerability to neurotoxicants.

- Animal studies of lead, mercury and PCBs each underestimated the levels of exposures that harm humans by 100 to 10,000 fold.

“It is time for us, as a nation, to recognize the connection between these chemicals and behavioral and learning disabilities,” said Dr. Schettler, “and to insist that all levels of government play a stronger role in ensuring the health and safety of our nation’s children, including more comprehensive tracking and monitoring of toxic environmental exposures and incidences of developmental disabilities.”

“The scientific evidence is convincing, and should be a call to action for parents, educators and health professionals,” said Dr. Stein. “We risk needless and irreversible harm to current and future generations if we fail to overhaul our flawed regulatory system.”

The release of this report will activate a joint educational campaign by GBPSR and other PSR affiliates throughout the nation, in conjunction with the Clean Water Fund. The campaign is designed to build public awareness of the linkages between toxic chemicals and developmental disabilities, and to reduce exposures to those chemicals.

**The full text of the report is available online at [www.igc.org/psr](http://www.igc.org/psr). Additional educational information based on the report is available at [www.preventingharm.org](http://www.preventingharm.org).**

Greater Boston Physicians for Social Responsibility is an affiliate of Physicians for Social Responsibility (PSR), a national organization of over 18,000 physicians, health care professionals and supporters. PSR's international federation, the International Physicians for the Prevention of Nuclear War, was awarded the 1985 Nobel Peace Prize for its efforts to educate the public about the medical consequences of nuclear war.

## **The Developmental Impacts of Specific Neurotoxic Chemicals**

### **Pesticides**

- Animal tests of pesticides belonging to the commonly used organophosphate class of chemicals show that small single doses on a critical day of development can cause hyperactivity and permanent changes in neurotransmitter receptor levels in the brain.
- One of the most commonly used organophosphates, chlorpyrifos (Dursban), decreases DNA synthesis in the developing brain, resulting in deficits in cell numbers.
- Some pyrethroids, another commonly used class of pesticides, also cause permanent hyperactivity in animals exposed to small doses on a single critical day of development.
- Children exposed to a variety of pesticides in an agricultural community in Mexico show impaired stamina, coordination, memory, and capacity to represent familiar subjects in drawings.

### **Lead**

- Increases in blood levels during infancy and childhood are associated with attention deficits, increased impulsiveness, reduced school performance, aggression, and delinquent behavior.
- Effects on learning and behavior are seen at blood levels below those currently considered “safe.”

### **Mercury**

- Large fetal exposures to methylmercury cause mental retardation, gait and visual disturbances.
- Smaller fetal exposures, such as those resulting from regular maternal fish consumption, have been implicated in language, attention, and memory impairments that appear to be permanent.

### **Manganese**

- Unlike many other metals, some manganese is essential as a catalyst in several critically important enzymatic processes. However, several studies report a relationship between excessive childhood levels of manganese exposure and hyperactivity or learning disabilities.
- With FDA approval, some infant formula is supplemented with manganese, and soy formula naturally contains elevated levels of manganese.

### **Dioxins and Polychlorinated Biphenyls (PCBs)**

- Monkeys exposed to dioxins as fetuses show evidence of learning disabilities.
- Humans and animals exposed to low levels of PCBs as fetuses have learning disabilities.
- Children exposed to PCBs during fetal life show IQ deficits, hyperactivity, and attention deficits when tested years later.

### **Solvents**

- Exposure to organic solvents during development may cause a spectrum of disorders, including structural birth defects, hyperactivity, attention deficits, reduced IQ, learning and memory deficiencies.
- As little as one alcoholic drink a day by a mother during pregnancy may cause her offspring to exhibit impulsive behavior and lasting deficits in memory, IQ, school performance, and social adaptability.
- Animal and limited human studies show that exposures to common chemicals like toluene, trichloroethylene, xylene, and styrene during pregnancy can also cause learning deficiencies and altered behavior in offspring, particularly after fairly large exposures.

### **Nicotine**

- Children born to women who smoke during pregnancy are at risk for IQ deficits, learning disorders, and attention deficits.
- Children born to women who are passively exposed to cigarette smoke are also at risk for impaired speech, language skills, and intelligence.

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## What Others Are Saying About *In Harm's Way*

*In Harm's Way* has clarified a starting point for the next era of environmental health. It presents an elegant discussion of normal brain development and explores why these developmental processes are so vulnerable to environmental insult. It goes on to highlight a series of case studies describing chemicals in the environment that are known to disrupt brain development in laboratory animals and in children... Throughout, it identifies some of the areas of greatest confusion in this new field, and delineates the underlying logic and lines of evidence. As a result, this book is sure to inform discussions among representatives of widely varying disciplines.

Dr. Philip J. Landrigan  
Director  
Center for Children's Health and the Environment  
Mt. Sinai Medical Center  
New York, New York

"Balancing a passionate commitment to children's health with a careful presentation of scientific evidence, *In Harm's Way* is a wake-up call. It shines a light on the potential role of toxic chemicals in several increasingly common neurodevelopmental disorders, including ADHD and autism. It points out that current regulations offer little or no margin of safety. Those of us in the health professions, our patients, and policy makers need to pay close attention."

Howard Frumkin, MD, Dr. P.H.  
Chair  
Department of Environmental and Occupational Health  
Rollins School of Public Health  
Emory University  
Atlanta, Georgia

"The authors of *In Harm's Way* have done a masterful job of assembling a vast amount of information, and organizing and presenting it in a forceful and clear fashion. The sociopolitical analysis may be the most important part of the book. I hope it is widely distributed and read."

Herbert L. Needleman, MD  
Professor of Psychiatry and Pediatrics  
University of Pittsburgh School of Medicine  
Pittsburgh, Pennsylvania

“*In Harm’s Way* makes a complex, scientific literature readily available to parents, policymakers and health professionals. It is a call to action to expand our efforts to protect children through research, education, policy and prevention.”

Bruce P. Lanphear, MD  
Director  
Children’s Environmental Health Center  
Children’s Hospital Medical Center  
Cincinnati, Ohio

“*In Harm’s Way* is a seminal report that should awaken doctors, teachers, parents, and all those who care about our children’s health, to the detrimental effects that various environmental exposures may have on human development. I have no doubt that its analysis of the gene-environment interaction during the development process – as well as of the current risk assessment model – will convince policy makers and researchers alike that we need to act now. We need to act to find better ways to prevent these exposures – exposures that can compromise our children’s neurological and other biological systems for life.”

Elise Miller  
Executive Director  
Institute for Children’s Environmental Health  
Langley, Washington

“*In Harm’s Way* presents to the public the scope of environmental hazards which face our children today, focusing specifically on toxicants that impact brain development and function. It enables the reader to comprehend fundamental issues in neurotoxicology without the need for highly specialized technical training and knowledge. This is a good example of how community-based groups can increase the awareness of the public and bring about changes that will improve our world.”

Nasser H. Zawia, Ph.D.  
Associate Professor of Toxicology  
Department of Biomedical Sciences  
University of Rhode Island  
Kingston, Rhode Island

## *In Harm's Way: Toxic Threats to Child Development*

### **Biographies of Authors**

#### *Primary Authors*

#### **Ted Schettler, MD, MPH**

Dr. Schettler received his medical degree from Case-Western Reserve Medical School, and his MPH from the Harvard School of Public Health. He is in the Department of Internal Medicine at Boston Medical Center and has a clinical practice at the East Boston Neighborhood Health Center.

Dr. Schettler serves as science director for the Science and Environmental Health Network. He is a Board Member of Greater Boston Physicians for Social Responsibility (GBPSR) and is co-founder and co-chair of GBPSR's Human Health and Environment Project. He is a member of the Environment and Health Committee of the national Physicians for Social Responsibility (PSR).

Dr. Schettler serves on the Massachusetts Medical Society's Special Committee on Environment and Occupational Health, and he served on the U.S. Environmental Protection Administration's Endocrine Disruptor Screening and Testing Advisory Committee.

He is co-author of *Generations at Risk: Reproductive Health and the Environment* (MIT Press, 1999).

#### **Jill Stein, MD**

Dr. Stein is a board-certified internist, an instructor in adolescent medicine at Harvard Medical School, and on the staff of the Beth Israel Deaconess Medical Center and the Simmons College Health Center. Dr. Stein is a graduate of Harvard College and received her medical degree from Harvard Medical School.

Dr. Stein is a Board member of Greater Boston Physicians for Social Responsibility and co-chair of its Human Health and Environment Project. She is a member of the Special Committee on Environment and Occupational Health for the Massachusetts Medical Society.

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### **Fay Reich, Psy.D**

Dr. Reich is a licensed psychologist who works in a community health center in the Boston area. She holds an M.Ed. in counseling psychology from the University of Massachusetts/Boston, an M.B.A. from Boston University, and a doctorate in clinical psychology from Antioch New England Graduate School.

Dr. Reich provides individual and family treatment to adults, adolescents and children, specializing in individuals with special needs.

### **Maria Valenti**

Ms. Valenti is environmental program director for Greater Boston Physicians for Social Responsibility, as well as a consultant to other organizations on issues concerning the environment and health. She formerly served as executive director of GBPSR, coordinator of New England PSR, and coordinator of the Project on Global Environmental Change & Health, now housed at Harvard Medical School.

Ms. Valenti is president and founder of *One Person's Impact*, an award-winning environmental research, education and advocacy organization. She has organized campaigns, internationally as well as locally, on environmental issues and issues of social justice.

Ms. Valenti is co-author of *Generations at Risk: Reproductive Health and the Environment* (MIT Press, 1999).

***Contributing Author***

**David Wallinga, MD, MPA**

Dr. Wallinga is a physician and Senior Scientist at the Natural Resources Defense Council in Washington, D.C. He works on environmental health policy issues, including the role of environmental chemicals in children's health, especially neurobehavioral problems. Dr. Wallinga received his medical degree from the University of Minnesota and practiced primary care medicine before receiving a Masters in Public Affairs from Princeton University.

Dr. Wallinga has worked on international environmental health policy problems in Asia and Latin America, consulted with the World Bank and the World Health Organization, and was a Science and Diplomacy fellow with the American Association for the Advancement of Science. He currently serves on the Integrated Human Exposure Subcommittee of the U. S. Environmental Protection Administration's Science Advisory Board.

Dr. Wallinga is the author of *Putting Children First: Making Pesticide Levels in Food Safer for Infants & Children*, as well as co-author of several journal articles on the adequacy of the EPA's requirements and protocols for testing the toxicity of pesticides.

## **GREATER BOSTON PHYSICIANS FOR SOCIAL RESPONSIBILITY**

Greater Boston Physicians for Social Responsibility (GBPSR) is an affiliate of Physicians for Social Responsibility (PSR), a national organization of over 18,000 physicians, health care professionals and supporters. PSR was formed in 1961 to address the health consequences of nuclear and other weapons of mass destruction. It has since broadened its mission to include the health consequences of environmental pollution and degradation, and also the reduction of violence and its causes. PSR's international federation, the International Physicians for the Prevention of Nuclear War, was awarded the 1985 Nobel Peace Prize for its efforts to educate the public about the medical consequences of nuclear war.

GBPSR's Human Health and the Environment Project (HHEP) was one of the first in the PSR organization nationally to focus on the public health consequences of environmental pollution. Since 1992 the HHEP has been active in educating the medical community on the linkages between environmental exposures and health, activating members to work to protect public health, assisting grassroots groups with technical and scientific issues relating to human health and the environment, and participating in public policy debates.

In addition to *In Harm's Way: Toxic Threats to Child Development*, current projects include *Generations at Risk: Reproductive Health and the Environment*; the *Boston Sustainable Hospitals Project of Health Care Without Harm*, an organization that is working internationally to prevent pollution and the use of toxic products in the health care industry; and *No Room to Breathe*, focusing on the health effects of air pollution.

## **CLEAN WATER FUND**

The Clean Water Fund (CWF), based in Washington, DC, is a national nonprofit research and educational organization, with locally staffed environmental and health protection programs serving communities in over 20 states. CWF's mission is to develop strong grassroots environmental leadership and to bring together diverse constituencies to work cooperatively for changes that improve their lives, focused on health, consumer, environmental and community problems. Since 1978, CWF has helped people campaign successfully for cleaner and safer water, cleaner air, and protection from toxic pollution in our homes, neighborhoods and workplaces. Organizations and coalitions formed and assisted by CWF have worked together to improve environmental conditions, prevent or clean up health-threatening pollution in hundreds of communities and to strengthen policies locally and nationally. CWF's programs build on and complement those of Clean Water Action, a 700,000-member national organization which has helped develop, pass, strengthen and defend the nation's major water and toxics laws such as the Clean Water Act, Safe Drinking Water Act, Superfund and others, including their state-level counterparts.

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