Testimony of Kenneth A. Cook

President
Environmental Working Group

Before the

SUBCOMMITTEE ON
SUPERFUND, TOXICS AND ENVIRONMENTAL HEALTH
U.S. SENATE COMMITTEEE ON ENVIRONMENT & PUBLIC WORKS

On

"Current Science on Public Exposures to Toxic Chemicals"

Thursday, February 4, 2010

Mr. Chairman and distinguished Members of the Subcommittee: My name is Kenneth A. Cook, and I am the President and Co-Founder of Environmental Working Group (EWG), a nonprofit research and advocacy organization based here in Washington, DC, with offices in Ames, Iowa, and Oakland, California. I thank the members of the subcommittee for holding this important hearing and for the opportunity to testify.

Emerging science on human exposure has transformed the debate over toxic chemicals policy. This morning, I would like to talk to you about 10 Americans whose exposure to toxic chemicals has had an important impact on that policy debate. EWG tested these 10 Americans in 2004 and found more than 200 synthetic industrial chemicals in their blood, including dioxins and furans, flame retardants, and active ingredients in stain removers and carpet protectors. We also found lead, polychlorinated biphenyls (PCBs), and pesticides that the federal government banned more than 30 years ago.

We do not know much about these 10 Americans, but we do know a little about how they were exposed. Their chemical exposures did not come from the air they breathed, the water they drank, or the food they ate. They were not exposed at work or at school. They did not encounter these chemicals in personal care products or cleaning agents they used.

How do we know? These 10 Americans were newborns. The more than 200 chemicals we found in their umbilical cord blood crossed the placenta to contaminate the babies before birth. Our research uncovered a startling truth — babies are coming into the world pre-polluted with toxic chemicals.

EWG commissioned this biomonitoring study and obtained cord blood samples from the American Red Cross. We tested ten of them at a cost of $10,000 per sample. Then last year, we examined the cord blood of another group of 10 Americans — children of African American, Asian-Pacific, and Latino heritage. We found similar unsettling results, including the first national detections in cord blood in the United States of the endocrine-disrupting chemical bisphenol A (BPA) and the thyroid toxin perchlorate.

We found no significant differences in results between the two studies. Instead, we discovered that we are all united by the disturbing reality that toxic pollution begins in the womb.

The current science makes clear that we must reform the Toxic Substances Control Act (TSCA) to ensure that industry submits pre-market evidence that its chemicals are safe for kids, our most vulnerable population. Each day brings another jarring headline as new research documents the health dangers of these exposures.

My testimony focuses on the current science of human exposure to toxic chemicals. But I want to thank you, Mr. Chairman, for your leadership over the past five years to put children's' exposure to toxic chemicals at the forefront of a policy debate that is long overdue — the debate over how to reform the 34-year-old Toxic Substances Control Act. You may not have realized it at the time, but when you named your reform proposal the "Kid-Safe Chemicals Act", Mr. Chairman, you instantly engaged millions of people in the debate over toxic chemicals.

Conduct a Google search for the (exact) phrase "Kid-Safe Chemicals Act" today and you find an extraordinary 554,000 links on the Web, including literally tens of thousands of entries about your bill in blogs, newspaper articles, discussion groups, and other online publications, written by parents, journalists, medical professionals, educators, and scientists. State legislators from Maine to Washington and numerous other states in between subsequently followed your lead and used the phrase "child-safe" or "kid-safe" in naming their initiatives for chemical policy.

And research shows time and again something that you have known throughout your career, Mr. Chairman: focus an issue through its impacts on children, their health and well being, and the American people get it. For anyone who wants proof, I would point to the current struggle to arrive at bipartisan consensus on health care reform. And I would contrast it to the successful, bipartisan effort that ultimately resulted in a major health care reform in 2009 after years of strong bipartisan support: the major expansion of the State Children's Health Insurance Program.

BIOMONITORING REVEALS EXPOSURES TO HUNDREDS OF CHEMICALS

The Centers for Disease Control and Prevention (CDC) calls biomonitoring "the most health-relevant assessment of exposure" and warns that "[f]or children age 5 years and younger, minimal information exists on exposure to priority environmental chemicals, and this lack of information is a major gap in protecting children from harmful exposures"(CDC 2010). EWG's umbilical cord study set out to address this gap. Our researchers conducted a comprehensive survey of the published scientific literature, identifying every study in which scientists had tested umbilical cord blood for industrial chemicals. EWG's findings agree with CDC's — the peer-reviewed literature contains surprisingly little biomonitoring information for newborns. The vast majority of chemicals found in cord blood were first identified in EWG-led research. Altogether, biomonitoring studies have found up to 358 chemicals in cord blood from U.S. newborns (see ATTACHMENT A).

Detection of a chemical in umbilical cord blood does not prove that it will cause harm. As researchers have mapped more and more of the "human toxome," however, scientists, public health experts, and policymakers have embraced biomonitoring as the logical foundation for changing the way government regulates industrial chemicals. There is now widespread agreement that cord blood monitoring should be the starting point. The Kid-Safe Chemicals Act, S. 3040, introduced in the 110th Congress would prioritize safety assessments by focusing first on the chemicals that show up in people. The law would require phasing out production and use of toxic chemicals found in umbilical cord blood unless rigorous, expedited testing showed them to be safe.

CHEMICALS AT PARTS-PER-BILLION LEVELS ARE LINKED TO DISEASE

CDC's biomonitoring studies have revealed the presence of scores of chemicals in the blood and urine of Americans, often at concentrations as low as a few parts-per-billion (ppb). Such low levels may sound trivial, but science shows that chemicals can be biologically active even in the ppb range. In fact, many commonly prescribed medications are biologically active at concentrations in that range and below. Two examples are Cialis, which is active in the body at levels as low as 30 ppb, and the birth control device, Nuvaring, whose estrogen component is clinically effective at 0.035 ppb. At these tiny doses, these drugs can initiate procreation or prevent it. The fact that pharmaceuticals can exert their clinical effects at very low concentrations makes clear that industrial chemicals may do the same. In addition, an increasing number of toxicity studies are done at concentrations that mimic environmental exposures. If animal studies find effects at very low exposures, we must strongly consider the possibility that there are biological effects in humans. Simply put, low doses do matter.

Epidemiological studies have long since established critical links between environmental exposures and adverse health effects, including the relationship between tobacco exposure and lung cancer (Blair et al 2009). Recent biomonitoring studies have discovered associations between exposure to various industrial and consumer chemicals and adverse health effects, including reduced birth weight and head circumference in newborns, thyroid disease, aggressive behavior in children, and difficulty conceiving (Table 1). In just the last year, researchers using data from the National Health and Nutrition Examination Surveys (NHANES) have linked thyroid and heart disease to exposures to compounds such as perfluorochemicals (PFCs) and BPA respectively (Melzer et al 2010a, Melzer et al 2010b).

Table 1: Studies show everyday chemical exposures are linked to serious adverse health effects

Chemical	Study Population	Finding	Range of concentrations in population studied (ppb)
Phthalates	Infant boys (n=85)	Boys with higher prenatal exposure to phthalates (measured in maternal urine) had decreased anogenital distance (Swan et al 2005).	Mono-isobutyl phthalate (MiBP): Not detected (ND) to >7.7 Mono-benzyl phthalate (MBzP): ND to >25.8 Mono-n-butyl phthalate (MBP): ND to >38.7 Mono-ethyl phthalate (MEP): ND to >1076
Bisphenol A (BPA)	Children (n=249)	Parents of children with higher exposure to BPA during early pregnancy (as measured in maternal urine) report higher incidence of behavioral effects in daughters, including increased aggression and hyperactivity (Braun et al 2009).	ND to >37.3
Bisphenol A (BPA)	Adults (n=2,605)	Adults with higher BPA levels in urine reported higher prevalence of cardiovascular disease (Melzer et al 2010a).	ND to 80.1
Brominated flame retardants (PBDEs)	Newborns (n=288)	Newborns with higher levels of certain PBDEs in cord blood serum had decreased levels of thyroid hormones	Bromodiphenyl ether congener 47 (BDE-47): 1.1 to 311 BDE-100: 0.5 to 77

		critical to normal brain development (Herbstman et al 2008).	
Perfluorochemicals (PFCs)	Newborns (n=293)	Newborns with higher levels of two PFCs in cord blood serum, PFOA and PFOS, were found to have lower birth weight and head circumference (Apelberg et al 2007).	Perfluorooctane sulfonate (PFOS): ND to 34.8 Perfluorooctanoic acid (PFOA): 0.3 to 7.1
Perfluorochemicals (PFCs)	Adults (n=3,974)	Adults with higher levels of two PFCs in their blood serum, PFOA and PFOS, reported higher prevalence of thyroid disease (Melzer et al 2010b).	PFOA: 0.1 to 123 PFOS: 0.1 to 435
Brominated flame retardants (PBDEs)	Adult women (n=223)	Women with higher levels of certain PBDEs in their blood serum were found to have significant decreases in their ability to conceive (Harley et al 2010).	BDE-47: ND to >25.2 BDE-100: ND to >4

THE TOLL OF CHEMICAL POLLUTION ON HEALTH AND HEALTH COSTS

The last ten years have produced an avalanche of credible studies documenting the costs of diseases associated with toxic pollution. Our failure to protect the American people, and especially America's kids, from contamination by toxic chemicals has taken a tremendous toll on Americans' health and resulted in significant health care costs.

As of 2009, 182 human diseases in all had been linked to chemical exposures, according to researchers at the University of California-San Francisco and Boston Medical Center (Janssen 2008). These range from autism to birth defects to asthma to childhood cancer. Take, for example, neuro-developmental disease, which includes autism and autism spectrum disorders, speech and language disorders, learning disorders, and neurological and psychiatric disease. A Canadian study in 2001 estimated that as much as half of these afflictions may be the result of chemical exposures. The cost of treating and caring for the affected children was estimated at up to $83.5 billion a year (Muir 2001).

Toxic pollution has been linked to a variety of other childhood diseases. In 2002, researchers at the Mount Sinai School of Medicine calculated that all lead poisoning cases, 30 percent of all asthma cases, 10 percent of neurobehavioral disorders, and five percent of pediatric cancers were traceable to chemical exposures. The financial cost topped $55 billion annually as of 2002, which was nearly three percent of U.S. health care costs at the time (Landrigan 2002).

We also know that low dose chemical exposures can affect brain development in utero, in infants, and in children even when these exposures do not cause diagnosable disease. One result is lower IQ, which has huge implications for the future productivity and earning potential of affected children (Mendola 2002). Researchers at the National Institutes of Environmental Health Sciences and Mt. Sinai estimated that the figure for mercury poisoning alone is nearly $9 billion a year (Trasande 2005).

Other data suggests that toxic pollution may contribute to 80 percent of chronic childhood diseases. Mount Sinai's Philip Landrigan estimates that genetics account for only 10 to 20 percent of cases of chronic disease in childhood in the U.S. and other industrialized nations (Landrigan 2001). These include birth defects, the leading cause of infant death; developmental disorders such as attention deficit hyperactivity disorder and autism; asthma, which more than doubled in incidence from 1980 to 1996, according to the CDC (Moorman 2007); and childhood leukemia and brain cancer, on the rise since the 1970s (Gurney 1996; Linabery 2008). Dr. Landrigan's team and other specialists have determined that many diseases, from respiratory illness to immune, thyroid and neuropsychological deficits, are likely linked to environmental toxins (Etzel 2004; Sly 2008; Wigle 2008).

THE U.S. SPENDS MORE TO TEST FOR TOXIC CHEMICALS IN SOIL AND FISH THAN IN INFANTS

The federal government budgets far more to monitor soil, water, and air for chemical contamination than it spends to test for chemicals in people. The disparity is great. In 2008, for example, the government funded the CDC's human biomonitoring program, part of the National Health and Nutrition Examination Survey, at $13.6 million. Compare this to the $12 million spent on testing wildlife, including peregrine falcons in Alaska and the Arctic, for toxic chemicals (McClure 2009 and US Fish & Wildlife Service 2009). In 2008, the government paid $22.5 million to test large mouth bass, Charr, herring, eels, lamprey, minnows, and shad for persistent organic contaminants (USGS 2009). In 2008, EPA spent an estimated $300 million for soil and water testing under Superfund (EPA 2009a). Even the expansive National Children's Study, which EWG strongly supports, only includes a small fraction of its $179 million budget for the biomonitoring of 525 pregnant women. And until very recently, the federal budget for biomonitoring of cord blood was zero. We should allocate more resources to biomonitor the pollution in people.

EXTENT OF EXPOSURE IS LIKELY FAR GREATER THAN STUDIES HAVE SHOWN

Current biomonitoring studies cover just a small percentage of the chemicals that could be in our bodies. More than 80,000 chemicals have been registered for use in the U.S. since 1976, and more than 15,000 have been manufactured or imported in medium-to-high amounts in the past 25 years. Biomonitoring tests to date have involved less than one percent of those compounds. In its own work, EWG has tested more than 200 people over the past 15 years. We tested for 540 chemicals and detected up to 482 of them. The more chemicals we test for, the more we find. Meanwhile the research on biologically active low doses of toxic chemicals has exploded.

Some chemicals EWG found were banned 30 years ago. Scientists tend to rigorously investigate chemicals only after they are banned. The unfortunate reality is that we often know little about more recently introduced chemicals that are in our bodies now.

In addition to the need for more research, a recent EWG investigation showed that the identities of many new chemicals are kept hidden from the public (EWG 2010). EWG found that industry has placed "confidential business information" (CBI) claims on the identity of 13,596 new chemicals produced since 1976—nearly two-thirds of the 20,403 chemicals added to commerce in the past 34 years. A significant number of these secret chemicals are used everyday in consumer products, including artists' supplies, plastic products, fabrics and apparel, furniture, and items intended for use by children. EPA data shows that at least 10 of the 151 high volume confidential chemicals produced or imported in amounts greater than 300,000 pounds a year are used in products specifically intended for use by children.

TSCA's overbroad secrecy provisions threaten public health. Under section 8(e) of TSCA, companies must turn over all data showing that a chemical may present "a substantial risk of injury to health or the environment." By definition, compounds with 8(e) filings are the chemicals of the greatest health concern. In the first eight months of 2009, industry concealed the identity of the chemicals in more than half the studies submitted under 8(e). Non-industry scientists and the public simply do not know how many of the chemicals that have been flagged as "posing a significant risk of injury to health or the environment" by industry, but are not identified by name because of CBI protections, could also be present in our bodies and in newborns.

RECOMMENDATIONS

In conclusion, we commend Administrator Jackson's call for TSCA reform and the steps that Assistant Administrator Owens has taken to address abuses of confidential business information claims. To protect our children's health, however, EPA needs strong authority from Congress to put the burden on industry to show a chemical is safe before it goes on the market. EPA must have express authority to require more transparency of chemical health and safety data. The federal government should use biomonitoring of cord blood to prioritize which of the 80,000 chemicals registered for use we should tackle first. Therefore, EWG looks forward to the re-introduction of the Kid-Safe Chemicals Act and urges Congress to take quick action to pass this necessary TSCA reform legislation.

We strongly support the CDC's existing biomonitoring programs and urge full funding of the national children's study. We urge CDC to consider umbilical cord monitoring as part of an expanded biomonitoring program. More funding for large, population-scale biomonitoring studies could fill this critical gap in data. Such studies could help scientists and policymakers to determine how infant exposure to chemicals in the womb varies across populations; what other industrial compounds may be present in umbilical cord blood; and what health risks those pollutants may pose, alone or in combination, to developing babies.

Thank you for your time. I welcome the opportunity to answer any questions you may have.

Attachments

ATTACHMENT A: Results of Select Cord Blood Biomonitoring Studies of American Infants

ATTACHMENT B: Government Spending on Testing Soil, Water & Air vs. Human Biomonitoring

ATTACHMENT C: Chart of Public Health Costs of Toxic Chemical Exposures

References

ATTACHMENT A

RESULTS OF SELECT CORD BLOOD BIOMONITORING STUDIES OF AMERICAN INFANTS
Nationally, cord blood biomonitoring studies have detected up to 358 chemicals

Chemical class	Chemical subclass	Summary of representative study	No. of newborns tested	Place of birth	No. of Chemicals found
Dioxin & Furan	Brominated dioxin	EWG tested cord blood from 10 newborns for 12 brominated dioxins and furans and found at least one of these chemicals in 7. In the 7 newborns, 6 to 7 different congeners were found. Mean total level was 12 pg/g lipids in blood serum. (EWG 2005)	10	U.S. hospitals	6-7
Dioxin & Furan	Brominated dioxin	EWG tested cord blood from 10 newborns of minority background for 12 brominated dioxins and furans and found at least one in 4 of the subjects. Six different congeners were found. Mean total level was 10.7 pg/g lipids in blood serum. (EWG 2009)	10	Mich. Fla. Wis. Mass. Calif.	6
Dioxin & Furan	Chlorinated dioxin	Researchers from the SUNY Health Science Center tested cord blood from 5 babies delivered via C-section from late 1995 to early 1996 for dioxins, dibenzofurans, and coplanar PCBs. Mean measured levels of total PCDDs, PCDFs, and coplanar PCBs were 165 pg/g for cord blood. (EWG 2005)	5	N.Y.	1
Dioxin & Furan	Chlorinated furan	EWG tested cord blood from 10 newborns for 17 chlorinated dioxins and furans and found at least one in all 10 subjects. Eleven different congeners were found. Mean total level was 56.3 pg/g lipids in blood serum. (EWG 2005)	10	U.S. hospitals	11
Dioxin & Furan	Chlorinated furan	EWG tested cord blood from 10 newborns of minority background for 17 chlorinated dioxins and furans and found at least one in all 10 subjects. Fifteen (15) different congeners were found. Mean total level was 59.7 pg/g lipids in blood serum. (EWG 2009)	10	Mich. Fla. Wis. Mass. Calif.	15
Fire Retardant	Brominated Fire Retardant	EWG measured TBBPA levels in cord blood from 10 newborns of minority background. TBBPA was found in 3 samples with a mean level of 11 ng/g lipids in blood serum. (EWG 2009)	10	Mich. Fla. Wis. Mass. Calif.	1
Metal	Cadmium	Researchers from Harvard measured cord blood concentrations of cadmium in 94 healthy babies, finding concentrations ranging from 0.003 to 0.210 ug/dl, with mean of 0.045 ug/dl. (Rabinowith 1984)	94	Boston, Mass.	1
Metal	Lead	Researchers from SUNY Oswego, the New York State Department of Health, the University of Albany, and Penn State University measured cord blood lead levels in 154 children and correlated lead levels with adrenocortical responses to acute stress in children. They divided cord blood levels into the following 4 quartiles: < 1.0 (1st quartile; n = 37),	154	N.Y.	1

Chemical class	Chemical subclass	Summary of representative study	No. of newborns tested	Place of birth	No. of Chemicals found
		1.1–1.4 ?g/dL (2nd quartile; n = 39), 1.5–1.9 ?g/dL (3rd quartile; n = 36), and 2.0–6.3 ?g/dL (4th quartile; n = 42). (Gump 2008)			
Metal	Lead	Researchers from Harvard University, Emory University, and University of Massachusetts at Amherst tested lead levels in cord blood from 527 babies born between 1993 and 1998 and found mean levels of 1.45 ug/dL. (Sagiv 2008)	527	New Bedford, Mass.	1
Metal	Mercury	Researchers from Columbia University and the CDC tested for cord blood levels of mercury in women who live and or work close to the World Trade Center site between Dec. 2001 and June 2002. The researchers found a mean cord mercury level of 7.82 ug/L. (Lederman 2008)	289	New York City, N.Y.	1
Musk	Musk	EWG measured nitro and polycyclic musk levels in cord blood from 10 newborns of minority background. Galoxolide was found in 6 samples at a mean level of 0.483 ng/g, and tonalide was found in 4 samples at a mean level of 0.147 ng/g. (EWG 2009)	10	Mich. Fla. Wis. Mass. Calif.	2
PAH	Polyaromatic hydrocarbons (PAHs)	Researchers from Columbia University measured levels of benzoA-pyrene DNA adduct levels in 203 babies from New York City mothers who were pregnant during 9/11. (Perera 2005)	203	New York City, N.Y.	1
PAH	Polyaromatic hydrocarbons (PAHs)	EWG tested cord blood from 5 newborns for 18 polyaromatic hydrocarbons and found at least one in all 5 subjects. Nine (9) different chemicals were found with total mean concentration of 279 ng/g lipids in blood serum. (EWG 2005)	5	U.S. hospitals	9
PBDE	Polybrominated diphenyl ether (PBDE)	Researchers from Columbia University and Johns Hopkins tested 297 cord blood samples from babies born at Johns Hopkins Hospital from Nov. 26, 2004 to March 16, 2005 for 8 PBDE congeners. They report that 94% of the samples contained at least one of the tested congeners. (Herbstman 2007)	297	Baltimore, Md.	7
PBDE	Polybrominated diphenyl ether (PBDE)	Researchers from Indiana University measured levels of 6 PBDEs in 12 paired samples of maternal and cord blood from live births that occurred from Aug. to Dec., 2001. They found that concentrations of PBDEs in both sets of samples were 20-to-106 fold higher than levels reported in a similar study from Sweden, leading them to conclude "human fetuses in the United States may be exposed to relatively high levels of PBDEs." (Mazdai 2003)	12	Indianapolis, Ind.	6
PBDE	Polybrominated diphenyl ether (PBDE)	EWG tested cord blood from 10 newborns for 46 polybrominated diphenol ethers (PBDEs) and found at least one of these chemicals in 10 out of 10 participants. Among all 10	10	U.S. hospitals	27-32

Chemical class	Chemical subclass	Summary of representative study	No. of newborns tested	Place of birth	No. of Chemicals found
		participants who tested positive for the chemicals, 27 to 32 different congeners were found. Mean total level was 4.53 ng/g lipids in blood serum. (EWG 2005)			
PBDE	Polybrominated diphenyl ether (PBDE)	EWG tested cord blood from 10 newborns of minority background for 46 polybrominated diphenyl ethers (PBDEs) and found at least one in all 10 samples. Among all 10 participants who tested positive for the chemicals, 26 to 29 different congeners were found. Mean total level was 72.9 ng/g lipids in blood serum. (EWG 2009)	10	U.S. hospitals	26-29
PBDE	Polybrominated diphenyl ether (PBDE)	Researchers at Columbia University and Johns Hopkins tested 288 cord blood samples from babies born at Johns Hopkins Hospital from Nov. 26, 2004 to March 16, 2005 for 3 PBDE congeners. In all the 288 subjects, all three congeners were found. (Herbstman 2008)	288	Baltimore, Md.	3
PBDE	Polybrominated diphenyl ether (PBDE) Metabolite	Researchers from the School of Public and Environmental Affairs at Indiana University tested PBDE and PBDE metabolities in 20 pregnant women and their newborn babies who had not been intentionally or occupationally exposed. They noted that metabolites in humans seem to be accumulating. (Qiu 2009)	20	Indianapolis, Ind.	10
PCB	Polychlorinated biphenyl (PCB)	Researchers at Columbia University and Johns Hopkins tested 297 cord blood samples from babies born at Johns Hopkins Hospital from Nov. 26, 2004 to March 16, 2005 for 35 PCB congeners. They report levels for 4 of the 35 but note that ">99% (of samples) had at least one detectable PCB congener." (Herbstman 2007)	297	Baltimore, Md.	18
PCB	Polychlorinated biphenyl (PCB)	Researchers from SUNY Oswego investigated cord blood levels of PCBs in children born between 1991 and 1994 and correlated levels with response inhibition when the children were 4.5 years of age. The researchers found that "results indicated a dose-dependent association between cord blood PCBs and errors of commission." (Stewart 2003)	293	Great Lakes states	7
PCB	Polychlorinated biphenyl (PCB)	EWG tested cord blood from 10 newborns for 209 polybrominated diphenol ethers (PBDEs) and found at least one of these chemicals in 10 out of 10 participants. Among all 10 participants who tested positive for the chemicals, 98 to 147 different congeners were found. Mean total level was 6.2 ng/g lipids in blood serum. (EWG 2005)	10	U.S. hospitals	98-147
PCB	Polychlorinated biphenyl (PCB)	EWG tested cord blood from 10 newborns of minority background for 209 polychlorinated biphenyls and found at least one in all 10 samples. Among all 10 participants who tested positive for the chemicals, 98 to 144 different congeners were found. Mean total level was 22.1 ng/g lipids in blood serum. (EWG 2009)	10	Mich. Fla. Wis. Mass. Calif.	98-144

Chemical class	Chemical subclass	Summary of representative study	No. of newborns tested	Place of birth	No. of Chemicals found
PCB	Polychlorinated biphenyl (PCB)	Researchers from Harvard, Emory, and the University of Massachusetts at Amherst tested levels of 51 PCB congeners in cord blood from 542 babies born between 1993 and 1998. No information on levels of individual congeners is given; however, the mean sum of PCB congeners 118,138,153, and 180 is 0.25 ng/g and the TEF-weighted sum of mono-ortho PCB congeners 105, 118, 156, 167, and 189 is 6.75 pg/g lipid. (Sagiv 2008)	542	New Bedford, Massachusetts	>4
PCN	Polychlorinated naphthalene (PCN)	EWG tested cord blood from10 newborns for 70 polychlorinated naphthalenes and found at least one in all 10 subjects. In all, 31 to 50 different congeners were found with total mean concentration of 0.574 ng/g lipids in blood serum. (EWG 2005)	10	U.S. hospitals	31-50
PCN	Polychlorinated naphthalene (PCN)	EWG tested cord blood from10 newborns of minority background for 70 polychlorinated naphthalenes and found at least one in all 10 subjects. In all, 17 to 24 different congeners were found, with total mean concentration of 0.637 ng/g lipids in blood serum. (EWG 2009)	10	Mich. Fla. Wis. Mass. Calif.	17-24
Pesticide	Carbamate	Researchers from Columbia University, the CDC, and the Southwest Research Institute measured the levels of 29 pesticides in cord plasma from 211 babies born into an urban community in New York City between Sept.1998 and May 2001. 48% of the babies had exposure to 2-Isopropoxyphenol, 45% to carbofuran, and 36% to bendiocarb. All of the babies were exposed to at least one carbamate. (Whyatt 2003)	211	New York City, N.Y.	5
Pesticide	Fungicide	Researchers from Columbia University, the CDC, and the Southwest Research Institute measured the levels of 29 pesticides in cord plasma from 211 babies born into an urban community in New York City between Sept. 1998 and May 2001. 83% of the babies had exposure to dicloran, 70% to phthalimide. All of the babies had exposure to at least one fungicide. (Whyatt 2003)	211	New York City, N.Y.	4
Pesticide	Herbicide	Researchers from Columbia University, the CDC, and the Southwest Research Institute measured the levels of 29 pesticides in cord plasma from 211 babies born into an urban community in New York City between Sept. 1998 and May 2001. 38% had exposure to chlorthal-dimethyl and 20% had exposure to Alachor. All had exposure to at least one herbicide. (Whyatt 2003)	211	New York City, N.Y.	5
Pesticide	Imide	Researchers from Columbia University, the CDC, and the Southwest Research Institute measured the levels of 29 pesticides in cord plasma from 211 babies born into an urban community in New York City between Sept. 1998 and May 2001. 83% had exposure to dicloran and 70% had exposure to phthalimide. All had exposure to at least one	211	New York City, N.Y.	1

Chemical class	Chemical subclass	Summary of representative study	No. of newborns tested	Place of birth	No. of Chemicals found
		fungicide. (Whyatt 2003)			
Pesticide	Mosquito Repellent	Researchers from Columbia University, the CDC, and the Southwest Research Institute measured the levels of 29 pesticides in cord plasma from 211 babies born into an urban community in New York City between September 1998 and May 2001. 33% of the babies had exposure to diethyltoluamide. (Whyatt 2003)	211	New York City, N.Y.	1
Pesticide	Organochlorine Pesticide (OC)	Researchers from Harvard, Emory, and the University of Massachusetts at Amherst tested levels of 2 organochlorine pesticides in cord blood from 542 babies born between 1993 and 1998. Mean DDE levels were 0.48 ng/g serum. Levels of HCB were not given. (Sagiv 2008)	542	U.S. hospitals	1
Pesticide	Organochlorine Pesticide (OC)	EWG tested cord blood from10 newborns for 28 organochlorine pesticides and found at least one in all 10 subjects. In all, 21 different pesticides were found. (EWG 2005)	10	U.S. hospitals	21
Pesticide	Organophosphate Pesticides and Metabolites	Researchers from Columbia University, the CDC, and the Southwest Research Institute measured the levels of 29 pesticides in cord plasma from 211 babies born into an urban community in New York City between Sept. 1998 and May 2001. 71% had exposure to chlorpyrifos (mean 4.7 pg/g) and 49% had exposure to diazinon (mean 1.2 pg/g), the two most commonly detected pesticides. All other pesticides were found in 4% or less of the samples and all babies had exposure to at least one of the organophosphates. (Whyatt 2003)	211	New York City, N.Y.	8
Pesticide	Pyrethroid	Researchers from Columbia University, the CDC, and the Southwest Research Institute measured the levels of 29 pesticides in cord plasma from 211 babies born into an urban community in New York City between Sept 1998 and May 2001. 7% had exposure to trans-permethrin and 13% had exposure to cis-permethrin. (Whyatt 2003)	211	New York City, N.Y.	2
PFC	Perfluorochemical (PFC)	Researchers from CDC, Columbia University, and Johns Hopkins tested cord blood from 299 babies born at Johns Hopkins Hospital between Nov. 26, 2004 and March 16, 2005 for 10 PFCs. They detected PFOS in 99% and PFOA in 100% of samples. Eight other PFCs were detected at lesser frequency. (Apelberg 2007)	299	Baltimore, Md.	9
PFC	Perfluorochemical (PFC)	EWG tested cord blood from 10 newborns for 12 perfluorochemicals and found at least one of these chemicals in 10 out of 10 participants. Among all 10 participants who tested positive for the chemicals, 9 of 12	10	U.S. hospitals	9

Chemical class	Chemical subclass	Summary of representative study	No. of newborns tested	Place of birth	No. of Chemicals found
		different chemicals were found with total mean concentration of 5.86 ng/g in whole blood. (EWG 2005)			
PFC	Perfluorochemical (PFC)	EWG tested cord blood from10 newborns of minority background for 13 perfluorochemicals and found at least one of these chemicals in 10 out of 10 participants. Among all 10 participants who tested positive for the chemicals, 6 of 13 different chemicals were found with total mean concentration of 2.38 ng/g in whole blood. (EWG 2009)	10	Mich. Fla. Wis. Mass. Calif.	6
Plastic	Bisphenol A & BADGE	Researchers from the Environmental Working Group measured BPA levels in cord blood from 10 newborns of minority background. BPA was found in 9 of 10 samples with a mean level of 2.18 ng/L. (EWG 2009)	10	Mich. Fla. Wis. Mass. Calif.	1
Rocket fuel	Perchlorate	Researchers from the Environmental Working Group measured perchlorate levels in cord blood from 10 newborns of minority background. Perchlorate was found in 9 of 10 samples with a mean level of 0.209 ug/L. (EWG 2009)	10	Mich. Fla. Wis. Mass. Calif.	1

ATTACHMENT B: U.S. Spending on Testing Soil, Water & Air vs. Human Biomonitoring

Agency/Program	Program Description	Annual Budget/ Applicable Year
Centers for Disease Control and Prevention (CDC) – National Health and Nutrition Examination Survey (NHANES)	The NHANES program is designed to assess the health and nutritional status of adults and children in the United States. The program includes biomonitoring participants ages 6 and above for environmental contaminants.	\$13.6M/ 2009 \$13.3M/ 2008 (McClure 2009)
US Fish & Wildlife Service - Environmental Contaminant Program	The Environmental Contaminant Program involves monitoring the nation's fish and wildlife for contaminants. The program's research includes, for example, monitoring Artic and American Peregrine Falcons in Alaska and organochlorine residues in Alaskan peregrines.	\$13.2M/ 2009 \$11.98 M/ 2008 (USFWS 2009)
U.S. Geological Survey (USGS) - Fisheries and Aquatic Resources Program	The Fisheries and Aquatic Resources Program involves testing and monitoring aquatic species for various contaminants. Research includes testing the large mouth bass for persistent organic contaminants, and assessing bioaccumulation of mercury in fish and bioaccumulation of PCBs in Atlantic Charr.	\$22.5M/ 2008 (USGS 2009)
U.S. Environmental Protection Agency (EPA) - Superfund	The Superfund remediation program involves the clean up and long-term monitoring of Superfund sites, including testing of soil and water.	\$591M/ 2008: Total remedial budget (U.S. EPA 2009a) ~\$300M/ 2008: EPA estimated budget for soil and water testing (EPA 2009b)
U.S. Environmental Protection Agency (EPA) - Healthier Outdoor Air Program	The Healthier Outdoor Air Program is designed to provide healthier outdoor air for all Americans. The program includes EPA testing outdoor air for chemical contaminants.	\$587M/ 2008: Total program budget (EPA 2009) ~\$235M- \$294M: EPA estimated budget for air testing and monitoring (EPA 2009c)

ATTACHMENT C: Public Health Costs of Chemical Exposures

Disease	Cost or burden associated with chemical exposures	Finding
Childhood Diseases	$55 billion	An authoritative 2002 study attributed all lead poisoning cases, 30 percent of asthma cases, 10 percent of neurobehavioral disorders and 5 percent of pediatric cancers to chemical pollution. The study, led by pediatrician Philip J. Landrigan, director of the Children's Environmental Health Center at Mount Sinai School of Medicine, estimated the annual costs of this toxic disease burden at $55 billion, nearly 3 percent of U.S. health care costs at the time (Landrigan 2002).
Neurodevelopmental Disease	Up to $83.5 billion	The annual cost of neurodevelopmental disease is estimated at $81-to-167 billion per year. As much as half may be due to exposure to toxic chemicals, according to a 2001 study led by economist Tom Muir of Environment Canada (Muir 2001).
Mercury-linked IQ Loss	$8.7 billion	Low-dose exposure to mercury and other neurotoxic chemical pollution can cause severe and sometimes lifelong neurobehavioral and cognitive problems, according to the National Institutes for Environmental Health Studies (Mendola 2002). A 2005 study by Mount Sinai researchers estimated the costs of this loss of intelligence and productivity from childhood mercury poisoning at $8.7 billion a year (Trasande 2005). Mercury is just one of 201 chemicals known to be neurotoxic in humans (Grandjean 2006).
Chronic Childhood Disease	Up to 80-90%	Mount Sinai's Landrigan estimates that genetics account for only 10-20 percent of cases of chronic disease in childhood in the U.S. and other industrialized nations (Landrigan 2001). This includes: birth defects, the leading cause of infant death; developmental disorders such as attention deficit hyperactivity disorder and autism; asthma, which more than doubled in incidence from 1980 to 1996, according to the Centers for Disease Control and Prevention (Moorman 2007); and childhood leukemia and brain cancer, on the rise since the 1970s (Gurney 1996; Linabery 2008). Landrigan's team and other specialists say that many diseases, from respiratory illness to immune, thyroid and neuropsychological deficits, are likely linked to environmental toxins (Etzel 2004; Sly 2008; Wigle 2008).
Developmental Problems	28 percent	An expert committee of the National Academy of Sciences concluded in 2000 that a combination of environmental and genetic factors cause 25 percent of American children's developmental problems, including low birth weight, neurobehavioral deficits and pre- and post-natal death. The report estimated that another 3 percent are caused by toxic environmental exposures alone (NRC 2000).
Children on Medication	26 percent of all children (irrespective of link to chemical exposures)	In 2007, 26 percent of Americans age 19 and under took prescription drugs for chronic health problems, according to a major pharmaceutical benefit provider. The most commonly dispensed medications were treatments for asthma and allergy, followed by attention deficit/hyperactivity disorder (ADHD) and depression (Medco 2008). No one knows for sure how much chemical exposures contribute to this disease burden, but a wide range of compounds have been linked to the most common children's health problems, including 82 types of chemicals or pollution linked to asthma (Janssen 2009).
Lifetime Disability		Chemical injury to developing organs in a young child or an infant can cause lifelong disability (NRC 1993, U.S. EPA 1998). Numerous studies have linked early exposure to chemical pollutants to later health problems, including: asthma and respiratory disorders; thyroid deficits; cardiovascular disease; learning disabilities, intellectual delay, loss of IQ points and corresponding loss of earning potential; and neurodegenerative conditions such as Parkinson's disease (Boyd 2008; Etzel 2004; Landrigan 2002; Muir 2001; Weiss 2000).
Indirect Costs		The U.S. EPA and the European Organization for Economic Cooperation and Development (OECD) say the true costs of chronic childhood illnesses include: parents' earnings forgone to care for child; value of missed school days; child's foregone earnings; effects of reduced educational attainment on child's future earnings; reduced labor force associated with developmental disabilities. (OECD 2006, U.S. EPA 2002).
Human Diseases Linked to Exposures	182 diseases	Based on a comprehensive review of scientific literature, researchers at the University of California, San Francisco and Boston Medical Center documented 182 human diseases and health problems, including birth defects, asthma, and childhood cancers, associated with chemical exposures (Janssen 2008).
		At the 2004 international summit on chemicals and health at the United Nations

"Serious Threat to Children"		Educational, Scientific and Cultural Organization (UNESCO) in Paris, 154 prominent scientists, physicians and other experts from the U.S. and 18 other nations signed a statement asserting that chemical exposures are a "serious threat to children" (PA 2005).

References

Apelberg BJ, Witter FR, Herbstman JB, Calafat AM, Halden RU, Needham LL, Goldman LR. 2007. Cord serum concentrations of perfluorooctane sulfonate (PFOS) and perfluorooctanoate (PFOA) in relation to weight and size at birth. Environmental Health Perspectives 115(11): 1670-6.

Blair A, Saracci R, Vineis P, Cocco P, Forastiere F, Grandjean P, Kogevinas M, Kriebel D, McMichael A, Pearce N, Porta M, Samet J, Sandler DP, Costantini AS, Vainio H. 2009. Epidemiology, public health, and the rhetoric of false positives. Environmental Health Perspectives 117(12): 1809-13.

Boyd DR, Genuis SJ. 2008. The environmental burden of disease in Canada: respiratory disease, cardiovascular disease, cancer, and congenital affliction. Environ Res 106(2): 240-9.

Braun JM, Yolton K, Dietrich KN, Hornung R, Ye X, Calafat AM, Lanphear BP. 2009. Prenatal Bisphenol A exposure and early childhood behavior. Environmental Health Perspectives 117(12): 1945-52.

ENS program budget for 2009 was $7.0M (pers comm., Oct 2009).

EPA (U.S. Environmental Protection Agency). 2009. Office of the Chief Financial Officer: Budget- FY 2009 Budget-in-Brief. Accessed Sept 30 2009 at http://www.epa.gov/budget/.

Etzel RA. 2004. Environmental risks in childhood. Pediatr Ann 33(7): 431-6.

EPA (U.S. Environmental Protection Agency). 2009a. Office of the Chief Financial Officer: Budget- FY 2009 Budget-in-Brief. Accessed Sept 30 2009 at http://www.epa.gov/budget/.

EPA (U.S. Environmental Protection Agency). 2009b. Personal communication between U.S. EPA budget office representative and EWG, September 30th 2009.

EPA (U.S. Environmental Protection Agency). 2009c. Personal communication between U.S. EPA budget office representative and EWG, October 1st 2009.

EWG (Environmental Working Group). 2005. Body Burden: the pollution in newborns. Available online at: http://www.ewg.org/reports/bodyburden2/execsumm.php

EWG (Environmental Working Group). 2009. Pollution in minority newborns. Available online at: http://www.ewg.org/minoritycordblood/home

EWG (Environmental Working Group). 2010. Off the Books: Industry's Secret Chemicals. Available online at: http://www.ewg.org/chemicalindustryexposed/topsecretchemicals.

Grandjean P, Landrigan PJ. 2006. Developmental neurotoxicity of industrial chemicals. Lancet 368(9553): 2167-78.

Gump BB, Stewart P, Reihman J, Lonky E, Darvill T, Parsons PJ, Granger DA. 2008. Low-level prenatal and postnatal blood lead expo- sure and adrenocortical responses to acute stress in children. Environ Health Perspect. Feb;116(2):249-55.

Gurney JG, Davis S, Severson RK, Fang JY, Ross JA, Robison LL. 1996. Trends in cancer incidence among children in the U.S. Cancer 78(3): 532-41.

Harley KG, Marks AR, Chevrier J, Bradman A, Sjodin A, Eskenazi B. 2010. PBDE concentrations in women's serum and fecundability. Environmental Health Perspectives Jan 26 [epub ahead of print].

Herbstman JB, Sjodin A, Apelberg BJ, Witter FR, Halden RU, Patterson DG, Panny SR, Needham LL, Goldman LR. 2008. Birth delivery mode modifies the associations between prenatal polychlorinated biphenol (PCB) and polybrominated dipehnol ether (PBDE) and neonatal thyroid hormone levels. Environmental Health Perspectives 116(10): 1376-82.

Herbstman JB, Sjodin A, Apelberg BJ, Witter FR, Halden RU, Patterson DG, Panny SR, Needham LL, Goldman LR. 2008. Birth delivery mode modifies the associations between prenatal polychlorinated biphenyl (PCB) and polybrominated diphenyl ether (PBDE) and neo- natal thyroid hormone levels. Environmental Helath Perspectives 116(10): 1376-82.

Herbstman JB, Sjodin A, Apelberg BJ, Witter FR, Patterson DG, Halden RU. 2007. Determinants of prenatal exposure to polychlorinat- ed biphenyls (PCBs) and polybrominated diphenyl ethers (PBDEs) in an urban population. Environ Health Perspect 115(12): 1794-800.

Janssen S, Solomon G, Schettler T. 2009. CHE Toxicant and Disease Database. The Collaborative on Health and the Environment. Accessed April 2 2009 at http://database.healthandenvironment.org/index.cfm.

Landrigan PJ, Schechter CB, Lipton JM, Fahs MC, Schwartz J. 2002. Environmental pollutants and disease in American children: estimates of morbidity, mortality, and costs for lead poisoning, asthma, cancer, and developmental disabilities. Environ Health Perspect 110(7): 721-8.

Landrigan PJ. 2001. Children's environmental health. Lessons from the past and prospects for the future. Pediatr Clin North Am 48(5): 1319-30.

Lederman SA, Jones RL, Caldwell KL, Rauh V, Sheets SE, Tang D, Viswanathan S, Becker M, Stein JL, Wang RY, Perera FP. 2008. Relation between cord blood mercury levels and early child development in a World Trade Center Cohort. Environmental Health Per- spectives 116(8): 1084-91.

Linabery AM, Ross JA. 2008. Trends in childhood cancer incidence in the U.S. (1992-2004). Cancer 112(2): 416-32.

Mazdai A, Dodder NG, Abernathy MP, Hites RA, Bigsby RM. 2003. Polybrominated diphenyl ethers in maternal and fetal blood samples. Environmental Health Perspectives 111(9): 1249-52.

McClure Susan. 2009. Personal communication, Susan McClure (CDC/CCEHIP/NCEH). September 30, 2009.

Medco. 2008. Chronic Medication Nation: Research Finds Chronic Health Problems Now Afflict More Than Half of All Americans. First Time a Majority of Americans Take Medications to Treat Chronic Health Conditions. Younger Adults Show Steepest Rise in Chronic Medication Use. News Release. May 14 2008. Accessed April 1 2009 at http://medco.mediaroom.com/index.php?s=43&item=317 and http://medco.mediaroom.com/index.php?s=64&cat=23.

Melzer D, Rice N, Depledge MH, Henley WE, Galloway TS. 2010b. Associations between serum Perfluoroctanoic Acid (PFOA) and thyroid disease in the NHANES study. Environmental Health Perspectives Jan 7 [epub ahead of print].

Melzer D, Rice NE, Lewis C, Henley WE, Galloway TS. 2010a. Association of urinary Bisphenol A concentration with heart disease: evidence from NHANES 2003/2006. PLoS One 5(1): e8673.

Mendola P, Selevan SG, Gutter S, Rice D. 2002. Environmental factors associated with a spectrum of neurodevelopmental deficits. Ment Retard Dev Disabil Res Rev 8(3): 188-97.

Moorman JE, Rudd RA, Johnson CA, King M, Minor P, Bailey C, Scalia MR, Akinbami LJ; Centers for Disease Control and Prevention (CDC). 2007. National surveillance for asthma--United States, 1980-2004. Morb Mortal Wkly Rep Surveill Summ. 56 (8): 1-54.

Muir T, Zegarac M. 2001. Societal costs of exposure to toxic substances: economic and health costs of four case studies that are candidates for environmental causation. Environ Health Perspect 109 Suppl 6: 885-903.

NRC. 1993. National Research Council report. Pesticides in the Diets of Infants and Children. Available: http://www.nap.edu/cataewg.org/kidsafelog.php?record_id=2126 [accessed February 28, 2009].

NRC. 2000. National Research Council Committee on Developmental Toxicology, Board on Environmental Studies and Toxicology. Scientific Frontiers in Developmental Toxicology and Risk Assessment. Available: http://www.nap.edu/catalog.php?record_id=9871 [accessed February 28, 2009].

OECD. 2006. Organisation for Economic Co-operation and Development. Economic Valuation of Environmental Health Risks to Children. Available: http://www.oecd.org/document/52/0,3343,en_2649_32495306_36095668_1_1_1_1,00.html [accessed February 28, 2009].

PA (Paris Appeal). 2005. Paris Appeal: International Declaration of Diseases Due to Chemical Pollution. Paris conference on Cancer, Environment and Society on 7 May 2004 at the United Nations Educational, Scientific and Cultural Organization (UNESCO). Accessed April 2 2009 at http://www.artac.info/static.php?op=personnalitesfr.txt&npds=1.

Perera FP, Tang D, Rauh V, Lester K, Tsai WY, Tu YH, Weiss L, Hoepner L, King J, Del Priore G, Lederman SA. 2005. Relationships among polycyclic aromatic hydrocarbon-DNA adducts, proximity to the World Trade Center, and effects on fetal growth. Environmental Health Perspectives 113(8): 1062-67.

Qiu X, Bigsby RM, Hites RA. 2009. Hydroxylated metabolites of polybrominated diphenyl ethers in human blood samples from the United States. Environ Health Perspect. Jan;117(1):93-8. Epub 2008 Aug 1

Rabinowith M, Finch H. 1984. Cadmium content of umbilical cord blood. Environmental Research 34(1): 120-2.

Ramirez J, Cosme Y, Perera RP. 2003. Contemporary-use pesticides in personal air samples during pregnancy and blood samples at delivery among urban minority mothers and newborns. Environmental Health Perspectives 111(5): 749-56.

Sagiv SK, Nugent JK, Brazelton TB, Choi AL, Tolbert PE, Altshul LM, Korrick SA. 2008. Prenatal organochlorine exposure and measures of behavior in infancy using the Neonatal Behavioral Assessment Scale (NBAS). Environ Health Perspect. 2008 May;116(5):666-73.

Sly PD, Flack F. 2008. Susceptibility of children to environmental pollutants. Ann N Y Acad Sci 1140: 163-83.

Stewart P, Fitzgerald S, Reihman J, Gump B, Lonky E, Darvill T, Pagano J, Hauser P. 2003. Prenatal PCB exposure, the corpus cal- losum, and response inhibiton. Environmental Health Perspectives 11(13): 1670-77.

Swan SH, Main KM, Liu F, Stewart SL, Kruse RL, Calafat AM, Mao CS, Redmon JB, Ternand CL, Sullivan S, Teague JL. 2005. Decrease in anogenital distance among male infants with prenatal phthalate exposure.. Environmental Health Perspectives 113(8): 1056-61.

Trasande L, Landrigan PJ, Schechter C. 2005. Public health and economic consequences of methyl mercury toxicity to the developing brain. Environ Health Perspect 113(5): 590-6.

U.S. EPA. 1998. The EPA's Children's Environmental Health Yearbook. Available: yosemite.epa.gov/OCHP/OCHPWEB.nsf/content/pdf5.htm/$File/ochpyearbook.pdf [accessed February 28, 2009].

U.S. EPA. 2002. National Centre for Environmental Economics. Existing literature and recommended strategies for valuation of children's health effects. Working Paper 02–07. Available: http://yosemite.epa.gov/ee/epa/eed.nsf/WPNumberNew/2002-07?OpenDocument [accessed February 28 2009].

USFWS (US Fish and Wildlife Service). 2009. Division of Budget: FY 2010 FWS Budget Proposal. Accessed October 1 2009 at http://www.fws.gov/budget/.

USGS (U.S. Geological Survey). 2009 President's Budget - Green Book. Accessed Oct 1 2009 at http://www.usgs.gov/budget/2009/2009index.asp.

USGS (U.S. Geological Survey). FY 2009 Budget Funding Tables. Accessed Oct 1 2009 at http://www.usgs.gov/budget/2009/09funding_tables.asp.

Weiss B, Landrigan PJ. 2000. The developing brain and the environment: an introduction. Environ Health Perspect 108 Suppl 3:373-4.

Whyatt RM, Barr DB, Camann DE, Kinney PL, Barr JR, Andrews HF, Hoepner LA, Garfinkel R, Hazi Y, Reyes A, Ramirez J, Cosme Y, Perera RP. 2003. Contemporary use pesticides in personal air samples during pregnancy and blood samples at delivery among urban minority mothers and newborns. Environmental Health Perspectives 111(5): 749-56.

Wigle DT, Arbuckle TE, Turner MC, Berube A, Yang Q, Liu S, et al. 2008. Epidemiologic evidence of relationships between reproductive and child health outcomes and environmental chemical contaminants. J Toxicol Environ Health B Crit Rev 11(5-6): 373-517.

ENVIRONMENTAL WORKING GROUP

Kenneth A. Cook

ONE collection day

TEN blood samples

413 chemicals

2 8 7

toxic chemicals detected

Video

10 more
Americans

358

Selected U.S. Studies of Industrial Chemicals in Umbilical Cord Blood

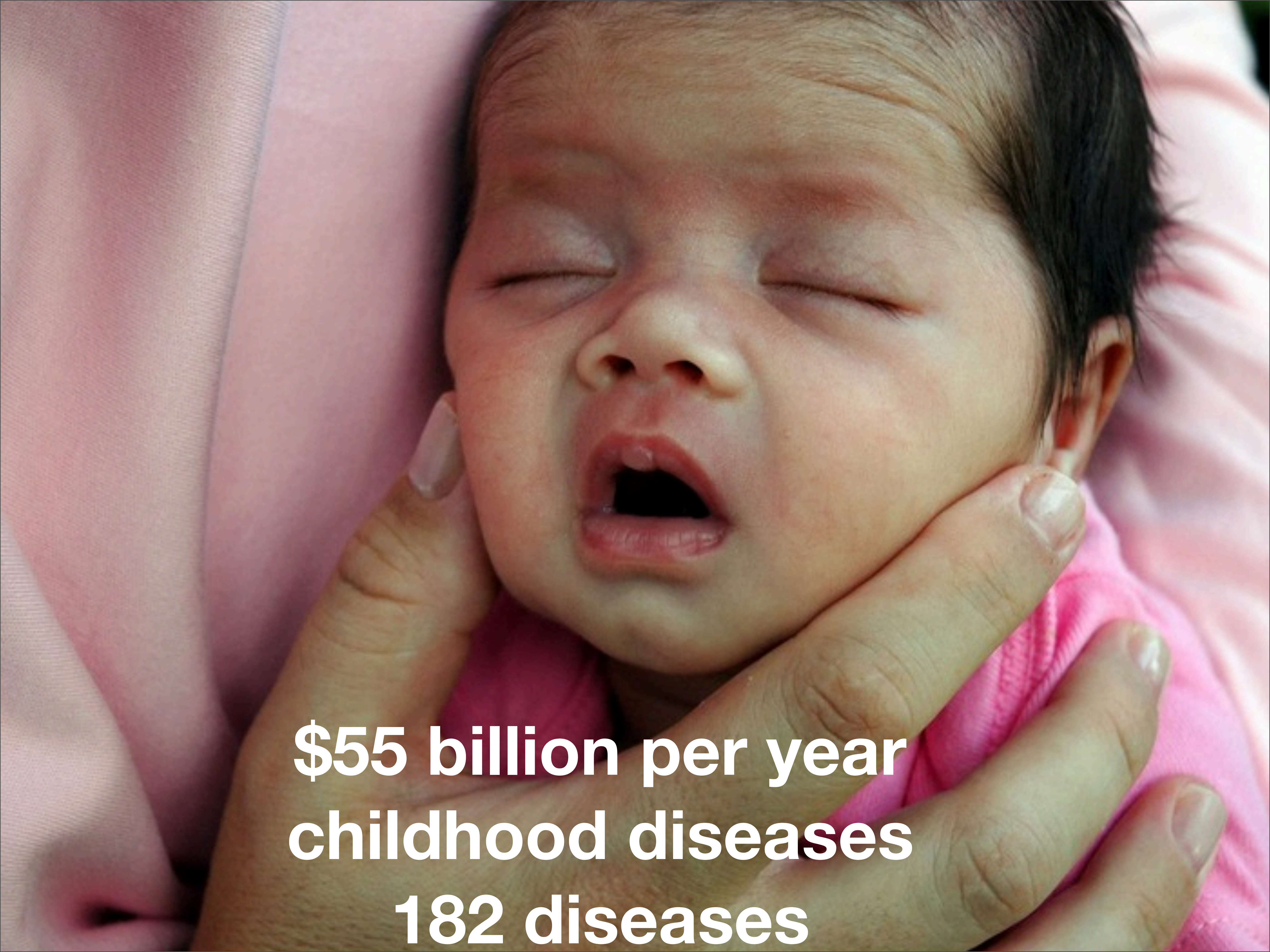
Low Doses Matter

Cialis (tadalafil) tablets	30 ppb
NuvaRing (etonogestrel/ethinyl estradiol vaginal ring)	0.035 ppb
PAXIL PAROXETINE HCl	30 ppb

Birth weight and head circumference (PFOS, PFOA)


Difficulty conceiving (PBDEs),
thyroid disease (PFOS,PFOA)

Heart disease (BPA)


$55 billion per year
childhood diseases
182 diseases

$300 million

$0 million

200 people

493 chemicals

15,000 chemicals

PUBLIC COPY

RECEIVED

09 APR 20 AM 6:03

April 6, 2009

Document Control Officer 8(e) Coordinator
U. S. Environmental Protection Agency – East
Confidential Business Information Center
Mail Code: 7407M
1200 Pennsylvania Avenue. N.W.
Washington, DC 20460

Dear Sir:

In accordance with TSCA 8(e) requirements, [redacted] is submitting [redacted].

The purpose of the study was to determine the acute inhalation toxicity of the test article [redacted]

The information submitted in this study is considered "Confidential Business Information". A sanitized, as well as a confidential version, is being submitted.

Please contact me if you have any questions.

Sincerely,

Video