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Testimony to the House Health Care Committee on House Bill 3162

March 20, 2013

Founded in 1968, the Oregon Environmental Council (OEC) is a nonprofit, nonpartisan, membership-based organization. We bring Oregonians together for a healthy environment.

The Oregon Environmental Council (OEC) **supports HB 3162.** This legislation will designate a list of high priority chemicals of concern for children's health, allows the Oregon Health Authority (OHA) to collect data on the presence of these chemicals as ingredients in children's products sold in Oregon, and require manufacturers to replace them with safer alternatives.

HB 3162 is smart public health policy that provides OHA with the necessary tools to effectively protect the health of Oregonians by reducing exposures to hazardous substances that may be encountered by children everyday.

Chemicals linked to disease are found in consumer products and in our bodies.
The Centers for Disease Control and Prevention (CDC) biomonitoring studies[i] regularly find several hundred toxic chemicals in our bodies. According to the CDC, sources of exposure include "using products with chemicals in them or products stored in containers made with the chemicals."[ii] Chemicals used in products are detected in our homes, air, dust, and dirt. Yet the precise origin of these chemicals is uncertain: ingredient information is not fully disclosed to consumers or health officials.

Infants and children are at greatest risk
CDC biomonitoring studies have found higher concentrations of many toxic chemicals in the youngest age groups. The natural habits of children—being on the floor; putting everything in their hands straight into their mouths; gumming, sucking and teething behaviors—these all contribute to children having higher exposures to potential harmful chemicals.

Early childhood is a critical period for preventing chronic disease
The immature metabolism of children means that their bodies are often less able to remove harmful substances from their bodies. In addition, the brain and body are most vulnerable to chemical exposure during critical windows of development, in utero through adolescence. These exposures can be a significant risk factor for chronic disease later in life.

Extensive health studies over the past 30 years have demonstrated that a range of chemicals are contributing to increases in childhood cancers (up more than 20% since 1975), breast cancer, infertility in women and men, asthma, and other chronic disease

including obesity and diabetes. It is clear that with chemicals the proverbial ounce of prevention is the best way to mitigate the effects of these chemicals.

In 2010, the President's Cancer Panel[iii] confirmed that toxic chemical exposure is an important risk factor for cancer. The Panel summarized its investigation into evidence linking environmental chemicals to various kinds of cancer, and concluded that, despite remaining uncertainties, **we know enough to act to reduce exposures to chemicals of concern**.

There is no doubt that one effective tool to prevent cancer and other disease is to eliminate exposure to cancer-causing and other harmful substances. We can have the greatest impact on improving our population's health if we address the exposures that occur when people are most vulnerable: in infancy and childhood.

Lack of data is a barrier to reducing health risks

Children are exposed to skin lotions, toys, bedding, comfort items and many more consumer products every day. Emerging data from Washington's Children's Safe Products Act show that children's products on the market today are currently manufactured with chemicals including formaldehyde, toluene and arsenic[iv]. If we are to prioritize exposure reduction and focus limited resources on interventions that result in the greatest improvements to our children's health, we must first understand where, when, and how exposures to potentially harmful chemicals occur.

The information obtained through HB 3162 provides data to OHA that could be used to determine which children's products are of concern, fully assess potential exposure pathways for a prioritized list of chemicals, and advance our scientific understanding of the contribution that these exposures are making to the health challenges we face.

Specifically, HB 3162 does the following:

- Designates a "High Priority Chemicals of Concern for Children's Health" list.
    - This list is the overlap of Oregon's Department of Environmental Quality focus list of toxic chemicals[v] and Washington's "Chemicals of High Concern for Children"[vi].
    - Currently that overlap is a total of 19 chemicals including formaldehyde, arsenic, bisphenol A, mercury, phthalates, cadmium, and other chemicals demonstrated through peer reviewed scientific studies to be harmful to health (see attachment for details on all 19 chemicals including health concerns, toxicity and potential sources of exposure).
- Publishes this list on the Oregon Health Authority's website with information on potential health impacts of exposure.
- Requires manufacturers of children's products sold in Oregon to disclose chemical information on those products to OHA.
    - Manufacturers of children's products with annual worldwide gross sales of less than $5 million per year are exempt from HB 3162.
- Authorizes OHA to receive and share information about chemical ingredients with other states, advancing knowledge about the possible exposures to toxics from children's products. This includes participation in the Interstate Chemical Clearinghouse.
    - The Interstate Chemicals Clearinghouse (IC2)[vii] is an association of state, local, and tribal governments that promotes a clean environment, healthy communities, and a vital economy through the development and use of safer chemicals and products.

- Requires manufacturers to remove or substitute any chemicals on the list from their product(s) within 5 years.
    - Manufacturers who have removed the chemical must demonstrate that the product with any substitute chemical is inherently less hazardous.
    - Manufacturers who have not removed the chemical from the product within 5 years must apply for a waiver. A waiver can be approved based on:
        - An alternatives assessment to demonstrate that there are not economically or technologically viable alternatives that can be used in place of the chemical of concern. An alternative assessment is a recognized protocol to evaluate the environmental and health impacts of potential alternatives to problematic chemicals[viii]; or
        - A quantitative exposure assessment to demonstrate that the chemical in the product does not present an exposure risk to a child.

States take the lead to reduce health risk.
In 2009, the Environmental Protection Agency (EPA) acknowledged that outdated chemical laws don't protect consumers from harmful exposures to chemicals in everyday products. The President's Cancer Panel includes state governments among those responsible for setting "tangible goals for reducing toxic environmental exposures implicated in cancer causation." The same experts recommend information sharing as a "bedrock component of the environmental health regulatory system."

With federal action stalled, Washington, Maine, Minnesota and California have passed laws to identify and provide information on chemicals that pose a risk to health in consumer products. The information collected through HB 3162 can help OHA gain a better understanding of what chemicals are in the products used by children and help to evaluate whether or not there is a hazard and, if so, what can be done about it.

Companies Large and Small are Creating Safer Products
In August 2012, Johnson & Johnson announced it would remove potentially cancer-causing and other dangerous chemicals from nearly all its adult toiletries and cosmetic products worldwide in less than four years. Johnson and Johnson is on track to have baby products, including its Johnson's *No More Tears* baby shampoo, reformulated with safer ingredients by the end of 2013. Adult products will be reformulated by the end of 2015.[ix]

In 2009, SC Johnson began listing all of the ingredients in their products on a new website, and is also making the ingredient lists public on product labels and through a consumer hotline. The company has had all ingredients for hair care and home cleaning products public since January 2012 on its website: www.WhatsInsideSCJohnson.com. SC Johnson is listing not only the product ingredients, but providing explanations of what the ingredients do.

Oregon companies are finding profitable market niches with less toxic products.

gDiapers, a Portland based biogradable diaper company that is Cradle to Cradle certified. gDiapers worked with suppliers throughout their supply chain to eliminate hazardous chemicals from their product and in the process helped suppliers across the country manufacture less toxic inputs.

Milkies, a global company based in McMinnville manufactures breastfeeding products that are free of chemicals of concern such as bisphenol A and phthalates.

Milkies' WIC approved products are sold throughout Oregon, nationwide and exported to 35 countries.

HB 3162 takes an efficient and cost-effective approach by providing a streamlined process to track chemicals of concern, rather than addressing one at a time. Under HB 3162, Oregon will collect information in a manner that is already being used successfully in other states such as Washington, which avoids placing undue burdens on manufacturers.

HB 3162 provides a prime opportunity for Oregon to take meaningful steps to protect the health of our most vulnerable citizens while spurring innovation, creating niche markets and growing jobs.

The Oregon Environmental Council (OEC) urges you to support HB 3162 as a step toward reducing preventable exposures to toxic chemicals and improving the health of all Oregonians.

Thank you again for the opportunity to testify before this Committee.

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[i] Centers for Disease Control and Prevention. *National Report on Human Exposure to Environmental Chemicals* http://www.cdc.gov/exposurereport/
[ii] http://www.cdc.gov/exposurereport/faq.html
[iii] http://deainfo.nci.nih.gov/advisory/pcp/annualReports/pcp08-09rpt/PCP_Report_08-09_508.pdf
[iv] https://fortress.wa.gov/ecy/cspareporting/default.aspx
[v] http://www.deq.state.or.us/toxics/docs/ToxicsFocusList2010-2011.pdf
[vi] http://www.ecy.wa.gov/programs/swfa/cspa/chcc.html
[vii] NEWMOA: IC2 Fact Sheet. http://www.newmoa.org/prevention/ic2/about/factsheet.cfm
[viii] United States Environmental Protection Agency, Design for the Environment (DfE) http://www.epa.gov/dfe/alternative_assessments.html; Washington Department of Ecology, Alternatives Assessment Guidance Document http://www.ecy.wa.gov/programs/hwtr/ChemAlternatives/altAssessment.html
[ix] http://www.safetyandcarecommitment.com/

Basis for Oregon's List of High Priority Chemicals of Concern for Children's Health, as established under HB 3162

The chemicals that make up Oregon's List of High Priority Chemicals of Concern for Children's Health, as established by HB 3162, are defined as those currently included on **both** of the following:

1) Oregon DEQ's Toxics Focus List, and
2) Washington's Chemicals of High Concern for Children

How did the chemicals get on the two lists? What was the scientific review process?

Oregon: The **DEQ Toxics Focus List** was developed using existing Oregon-based chemical and pollutant priority lists for regulatory, pollution prevention and monitoring programs that DEQ's Air, Water and Land Quality Divisions implement. The initial Toxics Focus List DEQ represents priority chemicals for multiple programs that address multiple environmental media (air, water, land). Specifically, a chemical was placed on the Toxics Focus List if it has been designated as a priority by at least two DEQ divisions and three (3) individual programs. Additional information on the DEQ process can be found here: http://www.deq.state.or.us/toxics/

Washington: The process to identify the 66 chemicals on **Washington's Chemicals of High Concern for Children** was a multi-step prioritization process. First, the Washington Dept. of Ecology in consultation with the Washington Dept. of Health identified more than 1800 high priority chemicals of concern based on the criteria defined in statute (CSPA 76.240.010 (6)):

"High priority chemical" means a chemical identified by a state agency, federal agency, or accredited research university, or other scientific evidence deemed authoritative by the department on the basis of credible scientific evidence as known to do one or more of the following:

a) Harm the normal development of a fetus or child or cause other developmental toxicity;
b) Cause cancer, genetic damage, or reproductive harm;
c) Disrupt the endocrine system;
d) Damage the nervous system, immune system, or organs or cause other systemic toxicity;
e) Be persistent, bioaccumulative, and toxic; or
f) Be very persistent and very bioaccumulative.

Sources used to identify this initial list of chemicals included authoritative lists such as the following:

- U.S. EPA PBT Program PBT characteristics
- U.S. EPA Integrated Risk Information System (IRIS)

- U.S. EPA National Waste Minimization Program
- U.S. Department of Health and Human Services National Toxicology Program
- Washington State's PBT Program
- California's Proposition 65 list
- World Health Organization (WHO): International Agency for Research on Cancer
- European Union (EU) Substances of very high concern (SVHC) program
- EU Endocrine Disruptor program Endocrine disrupters
- EU PBT program PBT characteristics
- EU Chemicals for risk assessment
- Oslo-Paris Convention (OSPAR) Priority Chemicals
- Canadian EPA PBiT
- Grandjean & Landrigan (2006). Developmental neurotoxicity of industrial chemicals – a review. *The Lancet*, 368 (9553): 2167-2178.

Once a chemical was determined to have the characteristics of a High Priority Chemical, it was next determined if that chemical is potentially of high concern for children to develop the Chemicals of High Concern for Children (CHCC) list.

To be listed as a CHCC, the chemical needed to meet one or more of the following criteria:

a) The chemical has been found through biomonitoring studies that demonstrate the presence of the chemical in human umbilical cord blood, human breast milk, human urine, or other bodily tissues or fluids;
b) The chemical has been found through sampling and analysis to be present in household dust, indoor air, drinking water, or elsewhere in the home environment; or
c) The chemical has been added to or is present in a consumer product used or present in the homes.

Additionally, the list needed to be reduced to a number consistent with the Governor's direction to keep the list to approximately 50 chemicals and to "focus on the highest priority chemicals, considering good science on the effects of chemicals on the health of children and those chemicals likely to be found in children's products."

The agencies consulted with University of Washington Pediatric Environmental Health Specialty Unit (PEHSU) to determine what types of information about toxicity and exposure would be evaluated and what specific criteria would be used to select the chemicals for the final reporting list. The final Chemicals of High Concern for Children (CHCC) list is comprised of chemicals that are:

a) Chemicals that have been demonstrated by multiple government agencies to be of concern for human health, and
b) Chemicals likely to be in environments or in products used by children.

A full description of the Washington process can be found here:
http://www.ecy.wa.gov/programs/swfa/rules/pdf/CSPAexsum.pdf

All of the chemicals on the Washington Chemicals of High Concern for Children list have been identified by federal and international agencies as either suspected carcinogens, reproductive toxicants, or neurological toxicants. The toxic endpoints that were considered as part of the development of Washington's list included cancer, and adverse effects on reproduction, fetal/child development, and the endocrine system.

What are the specific chemicals on the two lists? Where are they documented?

- The 134 chemicals on the DEQ Toxics Focus List can be found here: http://www.deq.state.or.us/toxics/docs/ToxicsFocusList2010-2011.pdf
- The 66 chemicals on Washington's Chemicals of High Concern for Children (CHCC) can be found here: http://www.ecy.wa.gov/programs/swfa/cspa/chcc.html

Which chemicals would be on Oregon's list, as established by HB 3162?
There are 19 chemicals that appear on **both** Oregon DEQ's Toxics Focus List and Washington's Chemicals of High Concern for Children. These 19 chemicals would be defined as High Priority Chemicals of Concern for Children's Health under HB 3162:

1. Arsenic & Arsenic compounds including arsenic trioxide (1327-53-3) & dimethyl arsenic (75-60-5) 2. Cadmium & cadmium compounds 3. Mercury & mercury compounds including methyl mercury (22967-92-6)	Heavy metals
4. Benzene 5. Ethylbenzene 6. Formaldehyde 7. Hexachlorobenzene 8. 4-Nonylphenol; 4-NP and its isomer mixtures including CAS 84852-15-3 and CAS 25154-52-3 9. Perchloroethylene 10. Toluene	Volatile organic compounds (VOCs)
11. Dibutyl phthalate (DBP) 12. Diethyl phthalate (DEP) 13. Di-2-ethylhexyl phthalate (DEHP) 14. Diisodecyl phthalate (DIDP) 15. Diisononyl phthalate (DINP) 16. Di-n-hexyl phthalate (DNHP) 17. Di-n-octyl phthalate (DnOP)	Phthalates
18. 2,2',3,3',4,4',5,5'6,6'-Decabromodiphenyl ether (decaBDE or BDE-209)	Flame retardants
19. Bisphenol A (BPA)	Bisphenols

2013 Toxics Disclosure for Healthy Kids Act

HB 3162

Endorsements

Chemical ingredients are not fully disclosed to consumers or health officials. To understand and address rising rates of disease, public health experts need to know where and how people are exposed to toxic chemicals. The Toxics Disclosure for Healthy Kids Act takes an important step by establishing an efficient system to identify, collect and share information about toxics when they exist in children's products sold in Oregon.

Toxics Disclosure for Healthy Kids Act

- Creates a science-based "High Priority Chemicals of Concern for Children's Health" list.
- Requires manufacturers to notify Oregon public health officials when their children's products contain these chemicals.
- Has manufacturers develop plans to replace harmful chemicals with safer alternatives.

Alima Pure
Andy Harris, MD
Beyond Toxics
Brew Dr. Kombucha
Cascadia Green Building Council
Coalition for a Livable Future
Columbia River Inter-Tribal Fish Commission
Confederated Tribes
of the Umatilla Indian Reservation
Earth Mama Angel Baby:
Pregnancy, Postpartum & Breastfeeding Products
Eco Tots Children's boutique
Ecumenical Ministries of Oregon's
Interfaith Network for Earth Concerns
Engaging Press/Engaging Every Student LLC
Environment Oregon
Family Forward Oregon
Finnegan's Toys & Gifts
Hispanic Metropolitan Chamber
Josiah Hill III Clinic
Metro
Milkies, LLC: Happy Moms, Healthy Babies
Mother PAC, The
ODS Companies
Oregon Center for Christian Voices
Oregon Latino Health Coalition
Oregon League of Conservation Voters
Oregon League of Minority Voters
Oregon Medical Association
Oregon Nurses Association
Oregon Pediatric Nurse Practioner Assoc.
Oregon Public Health Association
Oregon's Health CO-OP
Papa Don's Toys
Physicians for Social Responsibility,
Oregon Chapter
Planned Parenthood Advocates of Oregon
Polliwog
Rachel's Friends Breast Cancer Coalition
Townshend's Tea Company
Upstream Public Health
Wee Can Too: Baby and Toddler Art Supplies
Zero Waste Alliance

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Oregon's List of High Priority Chemicals of Concern for Children's Health
HB 3162

Summary of Toxicity and Exposure in Children's Products by Chemical

Toxicity and exposure information is excerpted from a 2011 document prepared for Washington Ecology by Barbara Morrissey, M.S. and Jim White, PhD. of the Office of Environmental Health, Safety, and Toxicology, Washington Department of Health. The full document is available here: http://www.ecy.wa.gov/programs/swfa/cspa/pdf/CHCCrationale.pdf

Arsenic (CAS 7440-38-2)

What is it? A chemical that occurs naturally in many minerals.

Toxicity

Arsenic is classified as a carcinogen by a number of authoritative sources.[1-4] In humans, arsenic exposure has been linked to lung cancer, bladder cancer, skin cancer, and cancers at several other sites in the body. The state of California has identified it as a reproductive toxicant.[4]

Exposure

Historically inorganic arsenic compounds were used in wood preservatives, other pesticides, medicines, metal alloys, and paint pigments.[5,6] The Danish EPA found arsenic in children's products including 3 of 4 pencil cases and 5 of 7 school bags.[7]

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Benzene (CAS 71-43-2)

What is it?

A liquid that can be formed naturally, through volcanic activity and forest fires, but the majority of exposure is anthropogenic. Benzene is also a natural part of cigarette smoke, crude oil, and gasoline.

Toxicity

Benzene is considered a known human carcinogen by authoritative sources.[1,2,3] All routes of exposure are considered carcinogenic based on convincing occupational evidence and supporting evidence from animal studies.[4] Benzene is toxic to blood cells. Evidence in animals suggests that exposure to benzene *in utero* can alter fetal maturation of lymphocytes, erythrocytes, and granulocytes and that the damage to the hematopoietic system during development can last into adulthood.[5]

Exposure

Biomonitoring by the CDC shows that benzene exposure is widespread in the U.S. population.[6] Vehicle exhaust and cigarette smoke are common sources of exposure. Benzene is also used in the manufacture of plastics, synthetic rubber, dyestuffs, resins, raw materials for detergents, and plant protection agents.[3] Testing by the Danish EPA found quantifiable benzene in one out of four balloons tested and in two scented children's toys.[7] Benzene was found infrequently in a large study of common household products in the USA.[8]

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Bisphenol A (BPA) (CAS 80-05-7)

What is it?
An organic compound produced for use primarily in polycarbonate plastics and epoxy resins.

Toxicity
Bisphenol A causes reproductive and developmental toxicity in laboratory animals at high doses.[1,2,3] At low doses that are similar to estimated exposures in people, bisphenol A can affect the developing rodent brain and behavior, prostate and mammary gland development, and cause early onset of puberty in females.[1] There is wide variability in reported results from studies at low doses.[1,2,3]

Exposure
Bisphenol A is used to manufacture polycarbonate plastics which are used in many children's toys, dishware, and bottles. BPA is also used in epoxy resins used in food can liners and dental sealants.[4,5] Consumer product testing by the Danish EPA found BPA in polycarbonate components of pacifiers, in infant baby bottles, and in plastic spoons.[6] In a large biomonitoring study in the USA, BPA was detected in 92.6% of the general population aged 6 years and older. Children had higher levels than adults. This indicates widespread exposure to children and adults.[7]

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Cadmium (CAS 7440-43-9)

What is it? A naturally occurring metal that is most often obtained by zinc, copper, and lead ore refining operations.

Toxicity

Cadmium and cadmium compounds are classified as carcinogens by authoritative sources.[1-4] Cadmium produces lung and other cancers in laboratory animals by multiple routes of exposures.[1] Studies of people exposed to cadmium have reported excess lung and prostate cancers although co-exposures to other carcinogens often limit the human evidence.[1] It appears that ionic cadmium is genotoxic.[1] Cadmium accumulates in liver and kidney and can cause kidney damage if the levels in the kidney are high enough.[3,5] Cadmium damages male and female reproductive organs and tissues in rats and mice and is classified as a reproductive hazard by the European Union and the state of California.[4,7] Young animals exposed to cadmium before birth have shown impaired growth and neurobehavioral effects.[4,5,7]

Exposure

Cadmium is used primarily in the manufacture of nickel-cadmium batteries. It is also used as pigments for plastics, ceramic, and glass; as a stabilizer for polyvinyl chloride (PVC); and in alloys and coatings on steel and other non-ferrous metals.[4,5] The Danish EPA detected cadmium in children's school supplies, such as pencil cases and school bags.[6] A Danish investigation of jewelry from south Asia detected significant amount of cadmium in some "silver" items and demonstrated that cadmium could migrate out of these items in artificial sweat.[4]

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Diethyl phthalate (DEP) (CAS 84-66-2)

What is it?

A man-made colorless liquid that is used in the production of many plastics.

Toxicity

Diethyl phthalate has been classified as a Category 1 endocrine disruptor by the European Union based on reproductive effects.[1] In a multi-generation mouse study, epididymal sperm concentration in second generation offspring of the group treated with diethyl phthalate was reduced by 30 percent compared to controls.[2] Human studies show an association between increased prenatal urinary concentrations of MEP, the primary urinary metabolite of DEP, and changes in hormone concentrations and anogenital distance in male infants. They also report decreased sperm concentrations and decreased sperm motility associated with higher urinary MEP in adult males.[3-7]

Exposure

The Danish EPA found diethyl phthalate in plastic components of baby carriers,[8] in activity carpet,[9] and in 4 out of 5 PVC soap containers.[10] Monoethyl phthalate, a metabolite indicative of diethyl phthalate exposure, was found in most of the U.S. population sampled in the NHANES survey.[11]

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Dibutyl phthalate (DBP) (CAS 84-74-2)

What is it?
A solvent often used to soften hard plastics and is used in many consumer products.

Toxicity
Dibutyl phthalate has been classified as a developmental and a reproductive toxicant by the National Toxicology Program Center for the Evaluation of Risks to Human Reproduction[1] and by the state of California.[2] The National Toxicology Program concluded that there is clear evidence of developmental and reproductive toxicity.[1] Adverse effects in animals included reduced fetal survival, reduced birth weight, reduced fertility in females, and damage to the developing male reproductive tract.[1] Dibutyl phthalate has been classified as a Category 1 endocrine disruptor by the European.[3]

Exposure
The Danish EPA found dibutyl phthalate in numerous children's products including clothing (infant), foam toys, a fluorescent light stick, school supplies, and coatings on wood toys.[4] A Dutch study found dibutyl phthalate in a wide range of plastics in children's products.[5] Mono-n-butyl phthalate, a metabolite indicative of dibutyl phthalate exposure, was found in >99 percent of the U.S. population sampled in the NHANES survey.[6]

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Di-n-Hexyl Phthalate (DnHP) (CAS) 84-75-3

What is it?
An ester used in many PVC-based products.

Toxicity
Di-n-hexyl phthalate is considered a reproductive toxicant by the state of California and the National Toxicology Program.[1,2] Di-n-hexyl phthalate reduced fertility in both male and female rodents, reduced survival of offspring after birth, and caused severe degenerative changes in the seminiferous epithelium of male rats.[1,2] There is also evidence that exposure *in utero* can damage the male reproductive system, cause fetal growth retardation, malformations, and fetal loss.[1,3]

Exposure
Di-n-Hexyl phthalate is mainly a component of other phthalates. Phthalates are used primarily as plasticizers to add flexibility to plastics. Available information indicates that DnHP is manufactured in relatively small amounts but occurs in industrially important phthalates such as diisohexyl phthalate (up to 25%).[1] Commercial phthalate substances containing DnHP may be added to the polyvinyl chloride (PVC) utilized in the manufacture of notebook covers, toys, and shoes.[1,4] We did not locate biomonitoring data nor could we find testing results that reported its presence in children's products.

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Di-2-ethylhexyl phthalate (DEHP) (CAS 117-81-7)

What is it?

The most commonly used phthalate, used as a plasticizer for PVC.

Toxicity

Di-2-ethylhexyl phthalate (DEHP) has been listed as a carcinogen by authoritative sources.[1,2,3] It has been found to cause hepatocellular carcinomas in laboratory animals.[1,2] DEHP has been classified as a developmental and a reproductive toxicant by National Toxicology Program Center for the Evaluation of Risks to Human Reproduction and the state of California.[3,4] The National Toxicology Program concluded that there is clear evidence it can cause developmental and reproductive toxicity in laboratory animals.[4] Effects included skeletal and cardiovascular malformations, neural tube defects, developmental delays, intrauterine death and adverse effects on the male and female reproductive tract.[4] DEHP has been classified as a Category 1 endocrine disruptor by the European Union.[5]

Exposure

The Danish EPA found di-2-ethylhexyl phthalate in numerous children's products including clothing (infant), foam toys, pacifiers, school supplies, slimy toys, packaging for cosmetics, a perambulator cover, and the coatings on a wood toy.[6] Dutch studies found it in a wide range of plastics in children's products[7] and in a baby feeding spoon.[8] Several metabolites indicative of di-2-ethylhexyl phthalate exposure were found in the population sampled for the NHANES survey, indicating that >98 percent of the U.S. population is exposed to DEHP.[9]

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Diisodecyl phthalate (DIDP) (CAS 26761-40-0 also 68515-49-1)

What is it? A popular plasticizer used in many consumer products to increase flexibility.

Toxicity

Diisodecyl phthalate has been classified as a developmental toxicant by the National Toxicology Program Center for the Evaluation of Risks to Human Reproduction and by the state of California.[1,2] The National Toxicology Program concluded that there is clear evidence of developmental toxicity.[1] Effects in animals included abnormal development of the fetal skeleton as well as reduced weight gain and survival of the pups.[1]

Exposure

The Danish EPA found diisodecyl phthalate in a foam toy.[3] Diisodecyl phthalate has also been found in teething rings and other toys.[4,5]

Monocarboxyisononyl phthalate, a metabolite indicative of diisodecyl phthalate exposure, was found in 89.9 percent of the U.S. population sampled in the NHANES survey.[6]

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Di-n-octyl phthalate (DnOP) (CAS 117-84-0)

What is it?
A commonly used plasticizer used in a variety of consumer products.

Toxicity
The National Toxicology Program found limited evidence that di-n-octyl phthalate caused adverse developmental effects in laboratory animals.[1] Multiple animal studies have demonstrated that di-n-octyl phthalate can be toxic to the liver, kidney, thyroid, and immune system.[2]

Exposure
Di-n-octyl phthalate is a common plasticizer in plastic production.[2] The Danish EPA found di-n-octyl phthalate in several children's products including foam toys, PVC soap containers, packaging for cosmetics, and a set of marker pens.[3] A Dutch study found di-n-octyl phthalate in several plastics in children's products.[4] Mono-(3-carboxypropyl) phthalate, a metabolite indicative of di-n-octyl phthalate exposure, was found in >60 percent of the U.S. population sampled in the NHANES survey.[5] Although DINP were banned from some children's products at greater than 0.1 percent in 2008[6], they remain on the market in many school supplies such as lunch boxes, backpacks, and binders.

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Diisononyl phthalate (DINP) (CAS 28553-12-0 also 68515-48-0)

What is it? A family of di-ester phthalates widely used as plasticizers.

Toxicity

Diisononyl phthalate has been classified as a developmental toxicant by the National Toxicology Program Center for the Evaluation of Risks to Human Reproduction.[1] The National Toxicology Program concluded that there is some evidence of developmental toxicity in animals including reduced birth weight and abnormal development of the fetal skeleton and kidneys.[1]

Exposure

The Danish EPA found diisononyl phthalate in numerous children's products including pacifiers, mittens, soap containers, school supplies, a slimy toy, packaging for cosmetics, 1 of 2 bath toys, and 1 of 2 nursing pillows.[2] A Dutch study found diisononyl phthalate in polyvinyl chloride in some children's products.[3] Monocarboxyisooctyl phthalate, a metabolite indicative of diisononyl phthalate exposure, was found in 95.2 percent of the U.S. population sampled in the NHANES survey.[4]

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Ethylbenzene (CAS 100-41-4)

What is it?

An organic compound used in the production of polystyrene, a common plastic material in many consumer products.

Toxicity

Ethylbenzene is classified as a carcinogen by authoritative sources.[1,2,3] Evidence is based on liver and kidney toxicity in rodents, kidney tumors in rats, and lung and liver tumors in mice.[4] Ethylbenzene can produce developmental effects in rabbits, mice, and rats although these effects may be secondary to maternal toxicity.[4]

Exposure

Ethylbenzene is a high production chemical used primarily in the production of styrene monomer, with smaller amounts used to make several other chemicals.[4] Ethylbenzene is present at up to 25% in mixed xylenes which are used as solvents in many products.[3] Ethylbenzene was detected in consumer product testing by the Danish EPA in marker pens, slimy toys, and children's tents.[5] It was also listed on the MSDS of lacquer applied to wooden toys at 1-2.5%.[5] Ethylbenzene was detected widely in the blood of the general U.S. population.[6]

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Formaldehyde (CAS 50-00-0)

What is it?
A colorless, flammable chemical that is widely used.

How is it used?
In building materials and many household products such as pressed wood and fuel-burning appliances.

Toxicity
Formaldehyde is classified as a carcinogen by a number of authoritative sources.[1,2,3,4] Inhalation of formaldehyde is associated with cancer in the respiratory tract in humans and laboratory animals. Oral exposures in animals are also carcinogenic. Formaldehyde is a skin, eye and respiratory tract irritant and sensitizer.

Exposure
Formaldehyde is used in the production of resins which are commonly used as adhesives and binders in wood products, pulp and paper, and in the production of plastics and coatings. It is also used in the finishing treatment of fabrics used in clothing and other products.[5] Aqueous formaldehyde (formalin) is used as a preservative and antimicrobial agent in some soaps, shampoos, hair preparations, deodorants, lotions, cosmetics and nail products.[6] Some of these may be marketed to children. Formaldehyde has been detected in a wide range of children's' products including feeding pillows, nursing pillows, glitter glues, infant mittens, infant jackets, disposable diapers, bed linens, children's tents, and glue sticks.[7]

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Hexachlorobenzene (HCB) (CAS 118-74-1)

What is it?

A white crystalline solid that does not occur naturally in the environment

Toxicity

Hexachlorobenzene is classified as a carcinogen by authoritative sources.[1-4] HCB causes liver tumors in laboratory animals. HCB is listed as developmental toxicant by the state of California primarily based on altered neurobehavioral development in offspring of dosed rodents.[5,6] HCB has been shown to induce structural and functional changes in primate ovaries[6] and is listed as a Category 1 endocrine disruptor by the European Union.[4]

Exposure

Hexachlorobenzene is listed as a Persistent, Bioaccumulative and Toxic (PBT) chemical under Washington State's PBT rule (WAC 173-333-320).[7] No current U.S. commercial uses of hexachlorobenzene were identified but HCB is formed as a by-product or impurity in the manufacture of other chlorinated chemicals.[2] The FDA, Cosmetics Office detected HCB in U.S.-certified color additives. Their analysis suggested that the contamination with HCB may be decreased by avoiding use of starting material (tetrachlorophthalic anhydride) heavily contaminated with HCB.[8] Biomonitoring shows widespread but declining detections in the U.S. general population.[9]

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Mercury (and methylmercury) (CAS 7439-97-6)

What is it? A naturally forming metal used in many products.

Toxicity

Mercury exists in three forms that have different properties, usage, and toxicity. The three forms are called elemental (or metallic) mercury, inorganic mercury compounds, and organic mercury compounds. Methylmercury and metallic mercury vapor are well known neurotoxicants. Mercury and mercury compounds are listed as developmental hazards by the European Union and the state of California.[1,2] Animal and human evidence is especially strong for developmental effects of methylmercury and the developing child is considered the most sensitive life stage for exposure.[3] Mercury compounds are listed as possible carcinogens by authoritative sources.[2,4,5]

Exposure

Metallic mercury is used in some thermometers, dental amalgams, fluorescent light bulbs, some electrical switches, mining, and some industrial processes. Inorganic mercury compounds are used in some industrial processes, in the production of other chemicals and in cosmetics in some countries for skin-lightening soap and creams.[3] Organic mercury compounds, such as Thimerosal and phenylmercuric acetate, are used as preservatives in pharmaceuticals.[3] Metallic mercury has been found in imported jewelry marketed to children in WA State. It is also in button-type batteries used in many children's toys.[6] The Center for Disease Control and Prevention found widespread detections of both organic and inorganic mercury in biomonitoring the general U.S. population.[7]

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4-Nonylphenol

(CAS 104-40-5)

What is it?

A synthetic organic chemical used in domestic, agricultural, and consumer products as an emulsifying, wetting, dispersing, and stabilizing agent.

Toxicity

4-nonylphenol has been classified as a Category 1 endocrine disruptor by the European Union.[1] Uterotrophic assays indicate that nonylphenol has estrogenic activity.[2-4]

Exposure

The Danish EPA found 4-nonylphenol in 1 out of 2 nursing pillows.[5] 4-nonylphenol was found in a variety of plastics in a Dutch survey of plastic children's toys.[6] In a large biomonitoring study of the general U.S. population, 51% of people had 4-nonylphenol in their urine.[7]

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Perchloroethylene (PERC, also called tetrachlorethene or tetrachloroethylene) (CAS 127-18-4)

What is it?
A synthetic chemical that is produced in large amounts in the U.S.

Toxicity
Perchloroethylene is a halogenated hydrocarbon classified as a carcinogen by authoritative sources.[1-3] Evidence from laboratory animals shows it can cause liver cancer and leukemia in rodents.[1,2] Human evidence comes from studies of people occupationally exposed to perchloroethylene either through manufacturing or dry cleaning. The most consistent evidence across these studies suggests there may be an association between increased exposure and increased incidence of esophageal and cervical cancer and non-Hodgkin's lymphoma.[2] Conclusions are limited by co-exposures to petroleum solvents and other dry cleaning agents.[2]

Exposure
Perchloroethylene is a high production volume chemical used in dry cleaning garments, metal cleaning and synthesis of other chemicals.[4] It is used in the textile industry for cleaning, processing, and finishing.[1] It has been used in household products like spot removers, lubricants, and water repellents.[4] Consumer product testing by the Danish EPA detected it in children's tents but not in a study of textiles.[5] Biomonitoring of the general U.S. population detected perchloroethylene in about one quarter of the people tested in 2001-02.[4]

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2,2',3,3',4,4',5,5'6,6'-Decabromodiphenyl ether; BDE-209 (CAS 1163-19-5)

What is it? A diphenyl ether compound used as a flame retardant.

Toxicity

BDE -209 is the primary congener found in Deca-BDE. Thyroid and liver appear to be the most sensitive tissues to toxicity of Deca-BDE in animal studies. In 2008, EPA determined that Deca-BDE had "suggestive evidence of carcinogenic potential" in humans.[1] This is based on liver tumors in rats and male mice, and thyroid gland follicular cell hyperplasia and thyroid tumors in male mice in oral studies with Deca-BDE.[1,2] Rats and mice exposed to Deca-BDE in their early postnatal period, were observed to have neurodevelopmental effects as they matured.[3,4,5,6] In the environment, BDE-209 is likely to degrade into less-brominated, more toxic BDEs.[7]

Exposure

Deca BDE is listed as a Persistent, Bioaccumulative and Toxic (PBT) chemical under Washington State's PBT rule (WAC 173-333-320).[7] This chemical is widely used as a flame retardant in high impact polystyrene and other polymers, in coatings and adhesive systems such as the back coatings for carpets, and in non-clothing textiles.[1,7] It is a high production volume chemical that has not been reported directly in children's products but has been found in indoor air and dust and in biomonitoring studies.[1,7,8,9]

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Toluene (CAS 108-88-3)

What is it?
A clear colorless liquid produced during the manufacturing of gasoline.

Toxicity
Toluene is a known neurotoxicant and is listed as a developmental toxicant by the state of California.[1] Studies in laboratory animals indicate that gestational exposure can induce alterations in brain development and result in low birth weight.[2] Studies of human babies born to mothers who abused solvents during pregnancy (e.g., glue sniffers) have reported similar effects: perinatal death, preterm delivery, small brain size at birth, low birth weight, and neurodevelopmental delays.[3,4]

Exposure
Toluene is a high production chemical that is widely used as a solvent in paints, coatings, adhesives, inks, and cleaning agents.[4,5] It is used in the production of other chemicals such as benzene.[3] Toluene is also used in production of polymers to make nylon, plastic soda bottles, and polyurethanes; and in some pharmaceuticals, and dyes.[5] Toluene is listed as an ingredient in hundreds of paints, sealers, strippers, autoshop and cleaning items[6] but few of these products would be marketed to children. Some hobby glues and liquid nails with toluene might be used by children. Toluene was detected in a wide variety of children's products in consumer product testing by the Danish EPA. It was detected in 1 of 5 infant jackets, 2 of 4 infant mittens, 2 of 3 school erasers, 1 or 4 pencil cases, 6 of 6 tents, 14 of 14 slimy toys, and 2 of 15 wooden toys. It was also reported in hobby adhesives.[7]

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Toxics Disclosure and Prioritization in Other States

Minnesota, Washington, Maine and California have all passed some version of a toxics disclosure or children's safe products law in the past 5 years.

Minnesota: Minnesota passed the Toxic Free Kid Act in 2009. The Act required that the MN Dept of Health (MDH) and/or the MN Pollution Control Agency (MPCA) develop a "Chemicals of High Concern" list that was published by MDH containing 1,756 chemicals that are persistent, bioaccumulative and/or toxic. In Dec. 2010, MPCA and MDH submitted a report to the state legislature entitled "Options to Reduce and Phase-out Priority Chemicals in Children's Products and Promote Green Chemistry." The report recommended that manufacturers report if they make products that contain priority chemicals. In Jan. 2011, MDH published a list of 9 priority chemicals that are chemicals of high concern that are found in the human body, in the environment, in household dust and water or in children's products. The list includes 3 phthalates, 2 halogenated flame retardants, lead, cadmium, formaldehyde and BPA.

Washington: In 2008, Washington passed the Children's Safe Products Act. This Act does the following:

- Requires manufacturers of children's products to report what chemicals their products contain to the Department of Ecology.
- The Department of Ecology (Ecology) is required to publish this information on a website along with information on available safer alternatives to the chemical.
- The Department of Health must educate parents, child care providers, and health professionals about toxic chemicals in infant and children's products.
- Requires Ecology to identify chemicals that are of high concern for children and the children's products or product categories that may contain them. These chemicals are those linked to developmental toxicity, cancer, reproductive harm, or hormone disruption that are present in our bodies, our homes, our drinking water, or our consumer products.
- Ecology must report its findings on the chemicals and products, along with policy recommendations.

Washington has listed 66 chemicals as "chemicals of concerns for children" and has completed the first 2 rounds of the disclosure phase, requiring manufacturers to report on a staggered basis. First round reporting is limited by requiring only products intended to be put in a child's mouth, applied to a child's body, or any mouthable children's product intended for children age three or under. Second round reporting is limited by requiring only products intended to be in prolonged (more than one hour) direct contact with a child's skin. Information collected to date is now available on a public website: http://www.ecy.wa.gov/programs/swfa/cspa/search.html.

Maine: In 2008, Maine passed An Act To Protect Children's Health and the Environment from Toxic Chemicals in Toys and Children's Products (Kid-safe Products Act). This bill does the following:

- Identifies - and prioritizes for action - the most problematic toxic chemicals in consumer products that threaten children's health;
- Requires manufacturers to disclose which prioritized, dangerous chemicals are in everyday consumer products; and
- Phase out specific uses of hazardous chemicals if safer alternatives are found to be available, effective and cost comparable, with legislative approval.

Progress and action to date:

- 2009: List of approximately 1,700 Chemicals of High Concern adopted
- 2010, June and September: First two priority chemicals proposed for action (BPA and Nonylphenol).
- 2010: BPA and Nonylphenol rules adopted to require manufacturer disclosure of use of BPA and Nonylphenol in products.
- 2011: BPA phase out (all reusable food and beverage containers) authorized by Legislature and finalized by agency.
- 2011, October: reports due from manufacturers that use BPA (in infant formula and baby food packaging, toys, child care articles, or tableware) or Nonylphenol (household and commercial cleaning products; cosmetics and personal care products; home maintenance products sold, marketed to or intended for use by consumers). Reports must include number of units sold, amount of the chemical in the product, and the function of the chemical in the product.

California: The least focused on children's products, but a comprehensive approach to chemical management.

Two laws passed in 2008 and 2009 as the foundation for advancing the California Green Chemistry Initiative. Chapters 559 and 560 are first steps in developing the information needed to protect Californians from the adverse effects of toxic chemicals, by providing information about chemicals in consumer products.

Chapter 559 directs the Department of Toxic Substances Control (DTSC) to develop regulations that create a process for identifying and prioritizing chemicals of concern, and to create methods for analyzing alternatives to existing hazardous chemicals. It also allows DTSC to take certain actions following an assessment that range from "no action" to "restrictions or bans."

The law also establishes a Green Ribbon Science Panel made up of experts to provide advice on scientific matters, chemical policy recommendations and implementation strategies. The Panel will ensure that implementation efforts are based on a strong scientific foundation.