

Washington Toxics Reduction Strategy Group Meeting

Draft White Paper - ~~12/17/12~~1/9/2012

This version shows major changes from the 12/17/2012 draft TRS white paper in track changes. Some more minor proofreading and editorial corrections were made in the final draft clean version are not reflected here. Graphics and tables, added to the final draft clean version, also are not reflected here.

Toxics Policy Reform for Washington State

Although much progress has been made to address toxic chemicals in Washington State, both through state regulations and through other public and private action and investments, Washington residents, people and the environment in Washington continue to be exposed to harmful toxics from a variety of sources, including ordinary consumer products. This problem has real consequences both for the health of Washington citizens and environment, and or the health and viability of Washington businesses. We need to stop pecking away at the issue of toxics reduction through individual chemical-specific efforts and attempts to make sense of a regulatory system that was not designed to address the sources of toxic chemicals we now face. We need the ability and commitment to bring common sense, intention, and smart prioritization to toxics reduction efforts, both to better protect people and the environment and to better support the success and expansion of Washington business and industry.

This paper gives an overview of the problems we face, outlines some principles for action, and makes twelve recommendations to improve toxics reduction efforts in Washington. It is by no means a comprehensive description of the issue nor a comprehensive set of recommendations. We set out to test the idea that a small group of people with expertise and experience in toxics reduction efforts and a deep commitment to the welfare of people, the environment, and the economy in Washington State could come together around some new, creative solutions to toxics reduction. We found that not only are new ideas badly needed – new ideas are possible. We are hopeful that this work, completed quickly over four months, will serve as a foundation for future efforts.

The Problem of Toxics

Our current system of toxic chemical regulation ~~fails us-falls short~~ in ~~two-a number of~~ ways. ~~On one hand, under the current regulatory system~~

- ~~F~~far too many toxic chemical releases and exposures still occur—many of which are avoidable.

- While they have yielded significant gains in reducing releases from wastewater and air emissions, existing regulatory tools can result in requiring dischargers to take costly source reduction actions to address toxics they did not produce, manufacture, or even use; these actions can extract a large economic toll without providing commensurate environmental or human health benefits.
- Laws like the Clean Water Act and the Clean Air Act have enabled great progress and real protections over time; however, relying on statutes designed to address end of the pipe “point-source” pollution to reduce toxic releases from distributed and diffuse “non-point” pollution is inefficient and has limited our ability to fully protect against many toxic exposures.
- Toxics in products, if they are addressed at all, are regulated un-evenly and by different statutes and different agencies at different stages in a product’s life cycle, and can result in exposures to toxics during product use even when products are used as intended. When products are used in unforeseen or unintended ways the risk of exposure can grow.
- Incentives to design toxic chemicals out of our manufacturing and industrial processes are often weak or non-existent.
- The regulatory process fails to address some significant sources of concern.
- Information on toxics can be lacking in general – and understandable, actionable information for the public and consumers is almost entirely lacking. Incentives to design pollution out of our manufacturing and industrial processes are often weak or non-existent, the regulatory process fails to address significant sources of concern
- F, and federal law underpinning toxic chemicals management is outdated and deficient and unable to keep pace with the development of new chemicals. At the state and local level, As a result, we are forced to make the most of a broken-dysfunctional system at the state and local level.

~~On the other hand, relying solely on existing regulatory tools can sometimes result in requiring dischargers to take costly actions that take an economic toll without providing meaningful environmental or human health benefits. Laws like the Clean Water Act and the Clean Air Act have enabled great progress and real protections over time, but relying on statutes designed for single “point source” pollution to reduce toxic releases while distributed and diffuse “non-point” pollution often goes unchecked has limited our ability to protect against toxic exposures.~~

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~~As a result of these shortcomings, tToxic chemicals continue to be released into the environment and people continue to be exposed to potential harmful chemicals in Washington.~~

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Over time we find ourselves unsuccessful in completely cleaning up the toxic chemicals that have existed historically (legacy pollutants), and playing catch up as the number of new chemicals and releases grow~~ss~~.

People and the environment continue to be exposed to a wide variety of toxic chemicals. For example, people in the United States have 10 to 100 times more polybrominated diphenyl ethers (PBDEs), a group of chemical flame retardants, in their bodies than people in other countries. EPA negotiated a voluntary agreement with domestic manufacturers of PBDEs to cease production, yet it appears that manufacturers have shifted to flame retardants that are also harmful, rather than safer alternatives.¹ After almost \$100 million was spent to clean up toxic chemicals in Commencement Bay, it is being re-contaminated with chemical plasticizers called phthalates. There are no direct discharges of phthalates to the Bay; rather it appears that the source of these chemicals is consumer products. Similarly, decades after the ban on PCBs, and after millions have been spent on cleanup of PCB contaminated sites, ~~new~~ sources of this ~~very~~ toxic chemical in un-regulated products or as byproducts of manufacturing continue to pollute-contaminate our environment.

In the face of uncertainty or lack of information about the toxicity of a chemical or its cause-and-effect relationship, the current system places undue-the risk and burdens of potential harm on the public and the environment.

Children are especially prone to ill effects because even small exposures during early childhood development can result in negative effects that can cause lifelong damage. In addition, children eat and breathe more than adults per pound of body weight, so the effects of exposures are more severe. Trends in children's health are concerning. The following information is summarized from Focus Sheets prepared by the Washington State Department of Health, available at:
<http://www.doh.wa.gov/DataandStatisticalReports/EnvironmentalHealth/ChemicalsandChildren.aspx>.

Asthma. Asthma is the most common chronic disease in children, affecting nearly 1 in 10 US children under age 18.² Almost 110,000 children in Washington have asthma³, and it is the leading cause of hospitalization for children under 15.⁴ Estimates are that 10 to 35 percent of asthma attacks can be attributed to outdoor environmental pollutants such as those in car

¹ A recent study of PBDE use in couches, for example, found that as PBDE was phased out TDCPP and Firemaster 550 increased. TDCPP is a halogenated flame retardant and listed for carcinogenesis in California. Other organophosphate flame retardants such as TPP and TBPP also were found. Stapleton, HM et. al. Novel and High Volume use Flame Retardants in US Couches Reflective of the 2005 PentaBDE Phase Out. Environ Sci Technol. 2012 Dec 18; 46(24):13432-9. Epub 2012 Nov. 28.

² Centers for Disease Control. 2010 National Health Interview Survey: Current asthma prevalence percents by age. January 3, 2012. www.cdc.gov/asthma/nhis/2010/table4-1.htm

³ Centers for Disease Control. National Asthma Control Program. Asthma in Washington. Child current asthma prevalence by age, 2007 NSCH data. www.cdc.gov/asthma/stateprofiles/Asthma_in_WA.pdf

⁴ WA State Department of Health, Comprehensive Hospitalization Abstract Reporting System (CHARS), 2010.

exhaust or industrial emissions.⁵ Asthma attacks also can be triggered by known indoor chemical causes such as second-hand smoke and formaldehyde. In 2002 the total cost of asthma in Washington was estimated at \$406 million, \$240 million of that in direct medical costs.⁶ In 2008, indirect costs of asthma include 14.4 million missed school days for children and 14.2 million lost work days for in- adults due to asthma in 2008.⁷ Rates of asthma in children and adults continue to rise.

~~**Obesity.** In 2010, 10 percent of tenth grade students in Washington were obese and another 14 percent were overweight.⁸ Adult obesity has more than doubled, increasing to 26 percent in 2010.⁹ Obesity is estimated to account for 17 percent for all US medical costs each year.¹⁰ There is growing evidence that exposure to environmental chemicals could be contributing to the obesity epidemic. Medical costs associated with adult obesity were estimated at 1.3 billion in 2003 dollars.¹¹ Environmental chemicals thought to be associated with obesity include bisphenol A (BPA), perfluorooctanoic acid (PFOA), and organophosphate insecticides. There is suggestive evidence that phthalates, PBDEs, DDT, and PCBs may contribute to obesity as well.¹²~~

Reproductive health. Exposure to BPA may be linked to early puberty in girls, which is associated with an increased risk of breast cancer, infertility, and menstrual problems, as well as psychological difficulties that can lead to behavioral problems such as alcohol and drug use.¹³ Hypospadias (a birth defect in which the opening of the urethra in boys is on the underside of the penis instead of the tip) has been linked to exposure to phthalates and other chemicals; it is one of the most common birth defects, affecting about 1 in 200 boys in Washington, or about 215 boys each year.¹⁴ In 2003, more than \$162 million in hospital charges were associated with about 13 thousand cases of hypospadias in the U.S.¹⁵

Learning and brain development. Environmental chemicals thought to be associated with impaired brain development include lead, methyl mercury, polychlorinated biphenyls (PCBs),

⁵ Landrigan et al. (2002) Environmental pollutants and disease in American children: estimates of morbidity, mortality, and costs for lead poisoning, asthma, cancer, and developmental disabilities. *Environmental Health Perspectives*. 110 (7): 721-728.

⁶ WA State Department of Health, Washington State Asthma Plan, 2005. Pub No 345-22.

⁷ American Lung Association. Trends in Asthma Morbidity and Mortality. September 2012.

<http://www.lung.org/finding-cures/our-research/trend-reports/asthma-trend-report.pdf>

⁸ ~~Washington Department of Health, Washington State Healthy Youth Survey: 2010 Analytical report. DOH 210-084. June 2011.~~

~~<http://www.doh.wa.gov/Portals/1/Documents/Pubs/210-084-WashingtonStateHYS2010.pdf>~~

⁹ ~~WA Dept of Health, Obesity in Washington State. DOH 245-291. February 2009.~~

¹⁰ ~~Cawley and Meyerhoefer (2010) The medical care costs of obesity: an instrumental variables approach. National Bureau of Economic Research.~~

¹¹ ~~Centers for Disease Control and Prevention: Washington State Nutrition, Physical Activity, and Obesity Profile.~~

~~www.cdc.gov/obesity/stateprograms/fundedstates/Washington.html~~

¹² ~~Thayer, KA et al. (2012) Role of environmental chemicals in diabetes and obesity: a National Toxicology Program workshop review. *Environmental Health Perspectives* 120(6): 779-789.~~

¹³ Golub, MS et al. (2008) *Pediatrics* 121 (suppl): S218-S230

¹⁴ Porter, MP et al. (2005) *Pediatrics* 115(4): e495-e499.

¹⁵ Based on a birth rate of about 86,000 births per year from Washington Department of Health vital statistics: <http://www.doh.wa.gov/DataandStatisticalReports/VitalStatisticsData/BirthData.aspx>

¹⁶ Robbins, JM et al. (2007) *Morbidity and Mortality Weekly Report* 56(2): 25-29. <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5602a1.htm>

manganese, organophosphate insecticides, arsenic, BPA, PBDEs, and phthalates.¹⁷ Autism and ADHD appear to result from a complex interaction between genetics and environmental factors. In Washington State, than 75,000 children (1 in every 14 kids) ages 3-21 were receiving special education services through school districts for learning disability, emotional or behavioral disability, autism, intellectual disability, developmental delay.¹⁸ Based on national data, an estimated 900-1000 children will be diagnosed with autism every year in Washington.^{19 20} [Researchers have estimated that \\$74.3 billion in annual U.S. costs are attributable to childhood impairments caused by environmental chemicals.](#)²¹ [Lowered intelligence from early childhood exposure to lead alone was estimated to result in about \\$675 million per year in income lost to those affected in Washington State.](#)²²

Cancer. Childhood cancers account for about 2 percent of all cancer cases in the US; however, except for injuries, it is the most common cause of death in children age 1 to 14 years.²³ Exposure to carcinogenic chemicals is thought to play an important role in development of many cancers. [In 2009, U.S. hospital costs related to pediatric cancer were about \\$1.9 billion, and The average cost for these hospitalizations was 5 times higher than for other conditions, \(\\$40,400 per stay versus \\$8,100\).](#)²⁴ Known human carcinogens that are found in [and around](#) many homes include: tobacco smoke, arsenic (from drinking water and treated wood), benzene (from vehicle exhaust), formaldehyde ([from](#) furniture and cosmetics), and radon.²⁵

[Adults also are impacted by exposures to toxic chemicals. Approximately 400,000 adults in Washington State have asthma, and adult asthma rates have increased nearly 40% since 1999.](#)²⁶ [According to the Washington State Cancer Registry there were about 37,000 new cases of adult cancer diagnosed in Washington and almost 12,000 adult deaths from cancer in 2009.](#)²⁷ [Of course, these diseases are influenced by a complex set of genetic, behavioral, and environmental factors, and we do not assert that exposures to toxic chemicals are solely responsible for all these outcomes; but, we know they play a role.](#)

¹⁷ Amir Miodovnik (2011) Environmental neurotoxicants and Developing brain. Mt Sinai J Med 78:58-77.

¹⁸ State of Washington Superintendent of Public Instruction, Special Education. Individuals with Disabilities Education Act (IDEA) Part B, November 2010 child count report.

¹⁹ [Bajo, Jon et al. \(2012\) Prevalence of Autism Spectrum Disorders — Autism and Developmental Disabilities Monitoring Network, 14 Sites, United States, 2008. MMWR March 30, 2012 / 61\(SS03\):1-19.](#)

²⁰ [Based on a birth rate of about 86,000 births per year from Washington Department of Health vital statistics: <http://www.doh.wa.gov/DataandStatisticalReports/VitalStatisticsData/BirthData.aspx>](#)

²¹ Trasande, L. and Y. Liu (2011) Reducing the staggering costs of environmental disease in children, estimated at \$76.6 billion in 2008. Health Affairs 30 (5):1-8.

²² Washington State Departments of Ecology and Health. State Lead Chemical Action Plan: Appendix E – Income Effects from Reduced IQ. Sept 2009. <http://www.ecy.wa.gov/biblio/0907008e.html>

²³ Washington Tracking Network – Cancer: https://fortress.wa.gov/doh/wtn/WTNPortal/Content/Tier2_SharedLandingPage.aspx?Topic=6&Subtopic=

²⁴ Anhang Price, R. (2012) Pediatric Cancer Hospitalizations, 2009.

www.hcup-us.ahrq.gov/reports/statbriefs/sb132.pdf

²⁵ International Agency for Research on Cancer. <http://monographs.iarc.fr/ENG/Classification/>

²⁶ [Washington State Department of Health, Health of Washington State 2012, Asthma Chapter.](#)

²⁷ [Washington State Department of Health, 2009 Cancer in Washington Annual Report of the Washington State Cancer Registry, January 2012.](#)

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There are troubling ~~trends~~ toxics releases in the environment as well. More than 1,700 water body segments in Washington are impaired due to high levels of toxic chemicals or metals. The Puget Sound Toxics Loading Assessment found that the vast majority of toxic chemicals in Puget Sound come from non-point sources through stormwater including:

- Copper, cadmium, zinc, and phthalates, from roofing materials
- Copper from pesticide and fertilizer use in urban areas, brake pads in vehicles, and boat paint
- Polycyclic aromatic hydrocarbons (PAHs) from wood smoke, creosote-treated wood, and vehicle exhaust
- Petroleum-related compounds from minor fuel and oil spills, and drips and leaks from personal vehicles.

Other pathways of concern include direct air deposition (where chemicals fall directly into the water; this is the most common pathway for PBDEs and some PAHs), and wastewater treatment plants, which often are not able to treat the pharmaceuticals and endocrine disruptors present in wastewater. Although the study focused on Puget Sound, it gives an indication of the types of toxic substances and pathways that may be present in other areas of the state.

The people or organizations who one might expect to “fix” these problems often lack the ability or influence ~~authority or resources~~ to do so fully. Wastewater treatment facilities may typically do not generate toxic chemicals, but they are tasked with treating contaminants that enter the plants as a consequence of ~~consumer products~~, stormwater, ambient deposition, contaminants in the water that enters the facilities (legacy compounds and naturally-occurring elements), and consumer products that contain toxic constituents. Once in wastewater, these chemicals can be difficult or impossible to remove and very costly to treat using best available control technologies. In many cases, non-point sources such as (runoff from agricultural, urban, construction, mining and forest lands containing fertilizers, herbicides, insecticides, oil, grease, and toxic chemicals in from consumer products. Such non-point sources can be a significantly greater contributor of toxic contaminants to our watersheds, but the Clean Water Act is not designed to address pollution from ~~does not adequately provide for control of~~ non-point sources and so is difficult and inefficient to use to address these problems.

Like many other problems we face, the problem of toxic chemicals contains within it a set of opportunities. There are opportunities to help ensure Washington children have the chance to reach their full potential by preventing harmful exposures to toxic chemicals. There are opportunities to save healthcare costs by reducing unhealthy impacts of exposure to toxic chemicals. There are opportunities to build Washington industries, and recast Washington as a global leader in developing innovative green technology, including to be leaders in design and production of safer alternatives to toxic chemicals in products and manufacturing. There are opportunities to prevent future problems through the development and use of safer chemicals and green design. And there are opportunities to create incentives and improve the regulatory

system to ~~create~~ discover better solutions for industry, better information for consumers, and ~~and~~ more effective and economical protections for all Washington citizens.

Our Principles for Action

The challenges we face from unintended consequences of widespread use of toxic chemicals are not new, and there are a variety of principles for toxics reform that have been developed by different entities including states, industry, and NGOs. We did not try to duplicate that work or create a comprehensive set of principles for chemical reform. Rather, we sought to articulate our common understanding and perceptions of what it would take to address this problem in a fair and robust way. The principles are intended for Washington State decision-makers as guidelines to identify and implement strategies and actions to reduce toxic exposures in the State.

- 1. Shared Responsibility:** Government, industry, non-governmental organizations, and individual consumers share responsibility for addressing toxics.
 - Government's role includes protecting people and the environment from harmful exposures to toxic chemicals by establishing priorities based on chemical hazards, setting and enforcing standards, regulatory reforms, educating consumers and businesses, and providing public access to chemical safety and health information.
 - Industry's role includes addressing chemical safety concerns through product design, providing information to the government to support chemical safety claims and chemical health and safety information, disclosing information about chemicals in products and potential hazards, taking responsibility for cleaning up toxic releases, and using safer chemical alternatives when available.
 - The role of other non-governmental organizations, such as environmental organizations and research institutions universities, includes developing safer alternatives, conducting research, and educating the public about toxics and alternatives.
 - Individuals' responsibilities include considering chemical safety and health information when choosing products, and using products containing potentially harmful ingredients as directed.
- 2. Prevention:** It is cheaper, more efficient, and safer to use less toxic or non-toxic alternatives when they are availableviable, rather than to rely on regulating waste streams or cleaning up contaminants after people or the environment are exposed to them.
- 3. Set Priorities:** We cannot do everything at once, so we should tackle the biggest problems first. prioritize chemicals of concern.
- 4. Chemical Safety:** Products should be safe for people and the environment. The unknowns and the complexities in understanding chemical exposures and the effects on human health and the environment warrant a precautionary approach. A precautionary approach is not

meant to ~~stifle innovation or~~ eliminate all risks; rather it is meant to say that when a ~~chemical or product threatens~~ there is credible evidence that a chemical or product may harm to humans or the environment, precautionary measures should be taken even if some cause-and-effect relationships or toxicity levels are not fully established scientifically. Precaution should encourage innovation and development of safer alternatives. It is intended to reinforce that the producer or manufacturer of a chemical or product, rather than the public, should have the responsibility to ensure that the chemical or product is safe and that toxicity (if present) is effectively communicated.

5. **Chemical Information:** ~~The public has~~ People have a right to know what is in the products they buy. The public should have access to clear, transparent, and actionable information about chemical and safety hazards associated with chemicals in all products; this should be presented in a careful way to avoid information saturation and fatigue.
6. **Disclosure:** Producers and manufacturers have a responsibility to provide hazard, exposure, and use data about chemicals in products and processes to government and to companies in their supply chains so that safety can be demonstrated or enhanced through redesign. Government agencies and manufacturers should share responsibility for providing public access to chemical health and safety information.
7. **Lifecycle Costs:** The full lifecycle costs of toxic chemicals should be internalized so that prudent financial decisions may be made they are more fairly shared across the value chain by the people who profit from producing chemicals and manufacturing and selling products that contain chemicals rather than borne by external parties and taxpayers.—The responsibility for the costs of toxics in products should be shared by producers, manufacturers, and consumers and not generally borne by external parties and taxpayers.—
- 7.8. **Regulatory Reform:** The current systems have made great gains in reducing toxic chemical releases from discrete sources, but they were not designed to address more distributed sources of toxic chemicals or to address the results of increasing dispersion of toxics present in and released from consumer products. Often, the burden of removing or treating toxics is placed on wastewater treatment plans, even if plant operators did not produce or even use the toxic in question and have little or no control over the source. This occurs, for example, when toxics from consumer products become a source of stormwater contamination. This places an inequitable economic burden on cities, counties, ports and others and threatens the economic viability of business in Washington. We need to identify where the current environmental programs and regulations are failing and implement reforms accordingly.

Moving Forward

It is clear that we need new, more thoughtful and innovative approaches to living safely with toxic chemicals address toxic chemicals in Washington State. Our current system both allows release of too many toxic chemicals into the environment and exposure to people to expose

~~people and the environment, and places too much of the burden of reducing releases for-of the toxic chemicals we do regulate on ratepayers and businesses who were not responsible for producing, manufacturing, or using them in the first place. only a few of the actual sources of contamination. It fails to adequately address exposure from toxics in consumer products.~~

We need to take a more holistic approach to addressing toxic chemicals. We make twelve recommendations to reduce exposures to toxic chemicals in Washington. ~~These recommendations range from things that~~ Some recommendations can be implemented now — such as establishing a Green Chemistry Center. Others — such as establishing a statutory liability standard for harm caused by toxic chemicals ~~—to ideas that~~ would need significant further ~~thinking and study~~ and development before a decision to implement them might be made—~~such as establishing a more proactive liability standard for harm caused by toxic chemicals.~~

Many of these ideas would represent big changes in how we deal with toxic chemicals in Washington—and we think big changes are needed. At the same time, we recognize the need to walk before we run, which is why a number of our recommendations are oriented around developing a better understanding of the problems in Washington and of how different ideas and potential solutions might address our challenges. A better system for managing toxic chemicals in Washington will not be built overnight, but we can make important progress now ~~both~~ to address known problems with creative solutions and ~~to~~ put us on the path to fewer toxic problems in the future.

ESTABLISH A POLICY THAT SAFER ALTERNATIVES ARE BETTER

The best, most reliable, and most efficient way to reduce exposures to toxic chemicals is to reduce the use of toxic chemicals in favor of non-toxic or less-toxic alternatives.

Sometimes a potentially harmful chemical is used because its harmful properties are needed in a product, such as pesticides. Other times a potentially harmful chemical is used because a safer alternative isn't readily available or hasn't been developed yet -- for example zinc in tires or, until recently, copper in brake pads. And, still other times, potentially harmful chemicals are used simply because they always have been, and we aren't paying attention to them. For example, when one northwest company decided to evaluate their use of toxic chemicals in their products, they found out they used five high priority toxic chemicals. Of these, four could be replaced with safer alternatives and the other could be dramatically reduced—this is where real gains truly can be made quickly.

There are over 84,000 chemical substances in EPA's TSCA inventory, and new chemicals are introduced into commerce regularly. It is difficult to imagine a regulatory program, such as the one run by the Food and Drug Administration for example, that could ~~both~~ catch up and keep pace with this reality ~~without risking the stifling of innovation~~. At the same time, we must improve our approach. ~~The CDC estimates that 1 in 88 children born today have some sort of autism spectrum disorder. In November, 2010 in Washington State, more than 75,000 children~~

~~ages 3–21 (1 in every 14 kids) were receiving special education services through school districts for learning disability, emotional or behavioral disability, autism, intellectual disability, or developmental delay. Data shows that many of these disorders are correlated with exposure to environmental toxics. The National Academy of Sciences suggests that 3 percent of developmental disorders may be caused solely by a toxic environmental exposure and another 25 percent results from a combination of genetic and environmental factors.²⁸~~

~~Sometimes a potentially harmful chemical is used because its harmful properties are needed in a product, such as pesticides. Other times a potentially harmful chemical is used because a safer alternative isn't readily available or hasn't been developed yet — for example zinc in tires or, until recently, copper in brake pads. And, still other times, potentially harmful chemicals are used simply because they always have been, and we aren't paying attention to them. For example, when one northwest company decided to evaluate their use of toxic chemicals in their products, they found out they used five high priority toxic chemicals. Of these, four could be replaced with safer alternatives and the other could be dramatically reduced — this is where real gains truly can be made quickly.~~

We need a system that encourages and rewards innovators for continuously working to make each product as safe as it can be through design and manufacturing choices.

²⁸ Washington State Department of Health: Impacts of Environmental Chemicals on Children's Learning and Behavior (August 2012), <http://www.doh.wa.gov/Portals/1/Documents/Pubs/334-313.pdf> (downloaded 12/5/2012)

Washington State should establish a clear policy that with respect to toxic chemicals, safer is better. Just as the Washington State waste management hierarchy (established in 1984) has driven waste management policies and behavior towards waste minimization, reuse, and recycling, a state chemical policy that prefers safer alternatives would be an anchoring point for subsequent policy decisions and provide a guiding mechanism for driving ~~establish a clear direction to our state~~ toxics reduction efforts, ~~and could drive~~ program development, state policies, and state purchasing.

A preference for safer alternatives is not intended to say that we can eliminate all toxic chemicals. We recognize that toxic chemicals will continue to be needed when their toxicity is an inherent part of their performance (e.g., pesticides have to have some toxicity to kill pests), or when viable non-toxic alternatives are not available or are not feasible. At the same time, we will only get so far by managing exposures – and we likely will never have the information or understanding needed to predict how multiple exposures to different chemicals over time might interact or add up to create harm. The simplest, most effective and most durable way to reduce exposures to toxics is to use the safest chemicals that can efficiently do the job and to continuously make chemicals safer over time.

SET THE RIGHT PRIORITIES

We need to set priorities ~~both~~ to ensure that we work on the chemicals of most concern in Washington ~~and to ensure we~~ invest in the programs and actions that are most effective at reducing toxics.

Currently Washington sets priorities for toxic chemicals in a variety of ways. There are priorities that flow from traditional state and federal environmental programs such as the Clean Water Act and the Clean Air Act. These are and will remain important foundations to the work of environmental protection, but they do not address the whole picture of toxic chemicals. To begin with, most of these environmental programs address only a subset of chemicals and cannot quickly add new or emerging toxic chemicals to their schemes. In addition, most traditional environmental programs are focused on a single exposure route or impact, generally where chemicals have already been or are being released to the environment. Except in limited cases such as pesticides they do not directly address toxic chemicals that are released from consumer products during product use. This is important enough to reiterate: *there currently is no comprehensive state or federal safety standard for chemicals in consumer products.*

The State also has made strides to identify and address toxic chemicals based on some specific areas of concern for Washington. We have priorities in place to: reduce persistent, bioaccumulative and toxic chemicals; gather information on the use of toxic chemicals in children's products; and reduce key sources of toxic chemicals to Puget Sound. To date this has resulted in:

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- Chemical Action Plans for lead, mercury, polybrominated diphenyl ethers (PDBEs) which are flame retardants, and polycyclic aromatic hydrocarbons (PAHs) which are byproducts of incomplete combustion, and a commitment to complete a CAP for PCBs, which continue to be identified in the environment and in products such as inks and dyes and caulks despite being banned almost 40 years ago.
- A list of 66 chemicals of high concern in children's products and associated disclosure and reporting requirements.
- Initiation of actions to significantly reduce three of ~~seven~~four priority chemicals with basin-wide impacts to Puget Sound: copper, PAHs, and petroleum.

These prioritization efforts represent important progress, but they are not a holistic approach.

In the longer term, *Ecology should work with partners to develop a more comprehensive system for establishing chemical priorities.* This system should both identify high-priority toxic chemicals and should prioritize toxics reduction strategies, in a two-step process.

Text box with Sara's graph (feasibility / potential to make a difference)

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To identify high-priority toxic chemicals it should rely on authoritative evidence of concern and consideration of potential exposure routes, and should consider both the potential level of harm a chemical might create and the potential level of exposure in Washington. Priority should be given to chemicals with high potential for harm and high potential for exposure, and to chemicals, such as endocrine disrupting chemicals ~~as discussed above~~, that can be very toxic at low doses. In addition to PBT chemicals, this priority setting system should focus on other toxic chemicals that people and the environment are most likely to be significantly exposed to, especially those that may impact sensitive sub-populations such as children, and sensitive environmental receptors, particularly those of special importance in Washington, such as salmon. Care should be taken to consider chemicals and exposure routes that might be specific to Washington. This might be done by looking at Washington-specific information about the chemicals people have been exposed to through use of bio-monitoring data to better understand exposures, and by considering looking at chemical use in Washington industries to illuminate opportunities ~~to collaborate to for~~ development safer of safer chemical alternatives that would be relevant here. Prioritization should consider all Washington residents, including populations or cultures that might have more potential for ~~exposure~~ exposure through, for example, consumption of fish.

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In a second step, once the chemicals of highest concern for Washington are identified, Ecology also should prioritize toxics reduction strategies and actions. This effort should consider ~~based on~~ feasibility and effectiveness ~~---~~. Ideally, we

want strategies and actions ~~that are for~~ addressing ~~the~~ chemicals of ~~most-greatest~~ concern in ways that we are confident ~~that~~ we can implement and that will make a difference. It should recognize that, although resources are never unlimited, we do not need to assume a zero-sum game; one outcome of such a prioritization effort for actions could be to identify situations that warrant seeking additional funding or partnerships.

Ecology used a step-wise process like this in its implementation of the PBT program, where they first identified priority chemicals, then identified sources of these priority chemicals, and then concluded with an identified and evaluated edion of potential actions. This is a useful exercise that should be used as a model for evaluating other toxics reduction efforts.

Over time, efforts should be made to improve prioritization through better and more specific data and information both on chemicals of concern and on toxics reduction efforts. For example, broader use of bio-monitoring could help us understand which chemicals Washington residents are most exposed to. Ongoing analysis of the outcomes of toxics reduction efforts could help us improve the focus and performance of those efforts. Later in this paper we make recommendations on evaluating and improving toxics reduction programs that will support improving prioritization efforts.

In the shorter term, as a more holistic system is developed and implemented, Ecology, its partners, and sister agencies should continue to take actions to reduce releases and exposures to priority chemicals that have already been identified, and continue to refine these priority lists and Ecology should add chemicals that are widely distributed and can have toxic effects at very low doses (such as endocrine disrupting chemicals) to its priorities. While it is not a complete approach, we are comfortable with focusing on exposure of children, chemicals of concern to Puget Sound, and the PBT chemicals makes sense in the short term because it they address one of our most fragile and sensitive subpopulations (children), one of our most critical ecosystems (Puget Sound), and the legacy cleanup problems of tomorrow (PBTs). Pursuing these priorities should include the following.

- Assess the information on chemicals of concern present in children's products to identify if there are types of chemicals or types of products that could be improved by identification and use of safer alternatives.
- Accelerate and complete recommended actions identified in existing Chemical Action Plans, complete the PCB chemical action plan, and accelerate additional PBT Chemical Action Plan activity. This includes updating the list of PBT chemicals if needed, and would involve working with stakeholders, reprioritizing the updated list, developing new plans, and communicating PBT recommendations to the public and other actors.
- Continue to develop and implement strategies to reduce key sources of toxic chemicals to Puget Sound, as identified in the Puget Sound Toxics Loading Assessment Report.

CHANGE THE WAY WE MAKE THINGS

We need to build the capacity and expertise to support producers, manufactures, and retailers to identify and develop safer products. Green chemistry— the design of chemical products and processes that reduce or eliminate the use and generation of hazardous chemicals—is an important framework that can support the transition to a less-toxic future.²⁹

The BlueGreen Institute has researched the economics of a green chemistry industry and writes that a shift to the production of chemicals that are safer for workers, the environment and human health, supported by reform of the 1976 Toxic Substances Control Act (TSCA), can create American jobs and new market opportunities. They estimate that if, for example, 20 percent of current production of plastics was to shift from petrochemical-based plastics to bio-based plastics, 104,000 additional jobs would be created in the U.S. economy even if the output of the plastics sector remained unchanged.³⁰ ~~A recent study from Utrecht University in the Netherlands finds that bio-based polymers could technically substitute for up to 90 percent of the polymers currently in use that are derived from petrochemicals and estimates that the production of bioplastics will grow at approximately 37 percent per year until 2013 and at a rate of 6 percent between 2013 and 2020.~~

As a leader in toxics reform efforts, Washington is well positioned to be on the leading edge of growing this economy. We can – and should – become the home for the innovators, inventors, and investors who will create and bring to market safer alternatives to toxic chemicals. Besides saving money now spent on managing the effects of toxic chemicals through pollution control, health care, and special education, better approaches to toxics can improve our economy and add high-quality jobs for Washington residents.

Washington should become a national leader in green chemistry making these innovations a trademark of the State just like apples, wheat, software and airplanes. Ecology should explore strategies for realizing “triple bottom line” benefits for Washington’s economic, environmental and human health with leaders in business, government, academia, and other sectors to investigate how and whether Washington could become a leader in green chemistry. This should build on industries, resources, and expertise we already have in Washington.

Washington State is already moving forward with green chemistry, and recently solicited proposals to establish a Green Chemistry Center. As an initial step towards green chemistry leadership, the State should maximize its support for and investment in the Green Chemistry Center. The roles of this Center should be to:

²⁹ For more information about green chemistry, see EPA’s Green Chemistry website, www.epa.gov/greenchemistry.

³⁰ http://www.bluegreenalliance.org/news/publications/document/Green-Chemistry-Report_FINAL.pdf (Downloaded 12/1/2012)

- Consolidate information about toxics in products and conduct independent testing, verification, and research to help identify priorities for development of safer alternatives.
- Identify barriers to safer alternatives, and work with stakeholders to develop strategies to overcome barriers and to reduce the transaction costs of getting safer alternatives to market.
- Provide ready access to information about safer alternatives in products and supply chains.
- Help producers and manufacturers with green chemistry and green design approaches and promote industry cross-sector collaboration and the development of tools to advance the adoption, implementation, and value of green chemistry.
- Support the design and advancement of new, safer chemicals and manufacturing techniques that are useable by industry and are environmentally benign.
- Convene university researchers and educators, industry, government, and nongovernmental partners to prioritize green chemistry research needs, integrate green chemistry curriculum, and support continued education and student learning opportunities.
- Support toxics-free manufacturing efforts, consistent with cradle-to-cradle approaches and incubate new businesses that can help grow the economy in Washington.

One of the initial efforts of the Green Chemistry Center might be to collaborate with 5 or 6 large Washington industries to identify specific opportunities to reduce toxics. This could be based on application of the Green Screen method for comparing hazardous chemicals, and use of lean manufacturing principles and tools.

The Center also might sponsor contests to draw attention to the need for safer alternatives and reward their development. For example, the Center might work with Ecology and the business and academic communities in Washington to identify a product or product ingredient where a safer alternative is needed. The Center might then compile relevant information on the product or product ingredient and the specifications for a successful safer alternative and use that information to create a contest that would reward (with a monetary honorarium or other award) creation of the safer alternative. Such a contest might be aimed at students to reinforce the need for green chemistry expertise.

Ideally, a Green Chemistry Center would be a public/private partnership. The Albany College of Nanoscale Science and Engineering in Albany NY (<http://cnse.albany.edu/Home.aspx>) provides a model of what such a partnership might look like. A ~~\$~~1 billion state investment was used to attract another \$13 billion in investment from the computer industry – to develop a nanotechnology research consortium. The college provides 2,700 local jobs, and statewide it is estimated to support nearly 13,000 jobs. In Washington State we also have models that might serve as a starting place for a Green Chemistry Center. The Washington Stormwater Center (www.wastormwatercenter.org) provides independent support to NPDES permittees and

stormwater managers as they navigate the complexities and challenges of stormwater management. They provide tools for stormwater management by supporting municipalities, stormwater permittees, and businesses in their efforts to control stormwater and protect water quality and carry out independent research on stormwater and stormwater treatment technologies.

GIVE PEOPLE ACTIONABLE INFORMATION TO SUPPORT SAFER CHOICES

Ultimately, people exercise a lot of influence over the types of products that are manufactured through the types of products that they buy. Consumer demand can change retail and manufacturing processes, as was illustrated recently with the switch to non-BPA plastics in baby bottles and other children’s products. But too often information for consumers is incomplete or poorly presented, and results more often only in confusion rather than clarity around choices.

Education

All of the toxics reduction efforts we looked at in other states include within them some emphasis on consumer and public education. In Washington we invest in numerous education efforts around toxics reduction already – from public health-led efforts on reducing exposure to lead and arsenic, to Washington State University Extension led efforts to promote use of less toxic pest management practices and household cleaners, to the Puget Sound Starts Here campaign aimed in part at changing behaviors that contribute to toxics in stormwater runoff. Clearly, education and information are important to any effort to reduce exposures to toxic chemicals in Washington; however, to be effective, education campaigns should be clearly focused on the specific behavior they seek to change. As with labeling efforts, simply providing more information does not always change behavior – the information must be relevant and it must be actionable. ***We recommend development of targeted education campaigns aimed at changing specific consumer behaviors around priority toxics.*** A reasonable starting place for this effort might be around behaviors to reduce use and exposure to PBTs. The existing Chemical Action Plans contain a number of recommendations that rely on behavior change to be successful, including:

- Addressing lead paint in older homes, which is the largest source of ongoing lead exposure for children.
- Reducing engine idling and address woodstoves to reduce sources of PAHs.
- Fixing automobile drips and leaks to reduce contamination to Puget Sound and other waters.
- Reducing use of mercury.

Labeling

Labeling can be informative, trusted, and actionable (e.g., think Consumer Reports, or Energy Star) or obscure, hard to understand, and overwhelming (think food labeling). Ideally, labeling

Comment [EDM2]: Switched order of education and labeling, since labeling is a form of education.

provides consumers with easy-to-use, relevant information that helps them make more informed decisions—but just putting a label on a product doesn't guarantee any of those outcomes. Effective labeling programs are difficult to craft. These programs should not require consumers to achieve advanced levels of understanding of chemistry or toxicology in order to make everyday purchasing decisions; at the same time, labels are only useful when they convey substantial, meaningful information. An effective label should transmit information people actually want, in a way they can understand and act on.

Labeling has the potential to be an important and meaningful element of a toxics reduction strategy. Effective product labeling can encourage consumers to protect themselves from potentially harmful toxic chemicals and, through their actions, influence producers' and manufacturers' behaviors. A positive labeling system that enables consumers to seek out products that are acknowledged as less toxic rewards the use of safer alternatives and encourages innovation.

We recommend further work to evaluate a voluntary, simple, positive label designed to draw consumers' attention to products that are comprised of safer ingredients than comparable alternatives.

It may be fruitful to explore the concept of labeling in the context of specific products or classes of products—for example, children's products and the presence or absence of the identified chemicals of high concern for children.

We acknowledge that establishing a labeling program, even a simple one, is a complex effort. Care should be taken to explore:

- Label focus, including what chemicals, classes of chemicals, and types of products should be highlighted and whether the existing priorities are the right starting place.
- Label design, including assessment of evidence-based information on what types of labels are most likely to influence consumer behavior.
- The labeling process, including identifying the organization or partnership that should administer the label.
- The potential costs of establishing and maintaining a labeling program and potential benefits in terms of toxics reduction.

[Text box with mock up of a label]

We also believe that labeling is an opportunity to work collaboratively with other states in the region— to establish something that would benefit consumers and innovative manufacturers more broadly. Similarly, a labeling effort might focus on existing labeling or third-party certification programs, to take advantage of work that has already been done.

BUILD CONNECTIONS BETWEEN UPSTREAM DECISIONS AND DOWNSTREAM COSTS AND IMPACTS

In our current system, the people who make decisions about toxics in products and manufacturing (producers, manufacturers, and retailers) often are different and disconnected from those who bear the responsibility to manage and clean up toxic contamination in the environment. This is especially true for distributed sources of toxics, those toxics that come from a variety of small individual sources rather than a single discharge pipe or smock stack, such as those toxics in stormwater or consumer products. At least some of the phthalates that are re-contaminating the Thea Foss Waterway in Tacoma are coming from polyvinyl plastics such as car under coatings, PVC pipes, and household shower curtains. The phthalates off-gas into the air from plasticized sources, attach to airborne particulates, fall to earth, and are picked up again by rainwater and deposited to sediments in the waterway through stormwater flows.³¹ The burden for addressing this type of release should not fall only on stormwater or cleanup site managers, it should at least be shared by the people who chose and benefited economically from the phthalates in the first place: producers, ~~manufactures~~manufacturers, retailers, and ~~even~~ consumers.

Liability

~~Currently, chemical producers, product manufacturers, and retailers cannot efficiently be held responsible for toxics in products. This is not to say that potential liability doesn't exist, it is only to observe that there is not an efficient, proactive liability standard that addresses toxics in products. This is true even in the context of Superfund cleanup, where hazardous chemicals from production and manufacturing processes cause strict liability. The broad liability associated with in the Superfund program the concept of joint and several liability caused enormous changes in how companies manage wastes, but it was not designed to reduce the toxicity of products or address exposure and potential harm from exposure to toxic chemicals in products. Legal liability for harm from toxic chemicals in products is largely addressed through the tort system. This system is costly, slow, inefficient and has unpredictable results. Both plaintiffs and defendants complain that the system is subject to abuse.~~

We recommend a Legislatively-directed study of whether there is a more efficient and effective way to more equitably and predictably require to explore a new proactive liability standard that would clearly make some or all of the entities in a product's supply chain (producers, manufacturers, and retailers) to assume responsibility for harm caused by toxic chemicals in products they produce and sell; this study would include review of potential combinations of both statutory liability and reforms to the current tort system. This approach could offer a number of three key advantages: (1) it could apply universally to toxic chemicals, avoiding the need for some kind of chemical-by-chemical review; (2) it could provide a durable

³¹ See, e.g., <http://www.cityoftacoma.org/Page.aspx?hid=9825>

incentive for innovation to make chemicals and products safer; ~~(3) it could protect product manufacturers that are producing products that are do not cause harm from toxic chemicals, based on the best available information, from potentially frivolous, but nonetheless costly, claims;~~ and, ~~(4)~~ when products cause harm to people or the environment it ~~could more equitably and efficiently~~ places the financial responsibility ~~on those more squarely where it belongs — on the people~~ who created and benefited from the product in commerce.

To ~~support efficient operation of a new liability scheme~~ encourage innovation and minimize unnecessary transaction costs, the study should explore creating a safe harbor – where products or classes of chemicals which meet certain safety standards would not be subject to liability. ~~The Green Chemistry Center recommended earlier might have a role in describing, administering, and supporting producers, manufacturers, and retailers in taking advantage of the safe harbor.~~

Establishing a new statutory liability scheme for toxic chemicals in products raises ~~any~~ number of issues that would need to be explored and addressed. These include:

- How would responsibility be aligned distributed between producers, manufacturers, and retailers or others responsible for toxic chemicals?
- Should a mechanism be put in place to trigger action to correct a product with toxics? If so, what standards would be applied to trigger a finding that such action is needed? ~~We note that if such an approach were to make a difference, it will be important not to establish~~ Should such a process require that ~~where~~-specific harm must be proven to a scientific certainty, ~~or should~~ Like other environmental programs, such as Superfund, the presence of a toxic chemical in a product should be enough to establish the potential for harm and trigger evaluation and action?
- What types of actions would producers, manufacturers, and retailers be expected to take – in addition to financial responsibility for any harm that may be caused? We discussed an approach where products containing toxics would need to be recalled by the producer and a safer alternative provided or a refund given (similar to product safety recalls).

Taxes

In situations where safer alternatives are available but a choice is made not to use them, a tax or fee provides an opportunity to re-connect some of the costs of the toxic chemicals in products to producers, manufacturers, retailers and consumers who benefit from the product, and use the revenue to help the people who are stuck with managing the effects of those toxics downstream – through costly spending on pollution control or cleanup, health care, and special education. For example, in the case of PCBs in inks and dyes, if after a reasonable amount of time voluntary efforts to reduce sources of PCBs have not resulted in significant progress, a tax on products-inks and dyes containing PCBs might be imposed and the revenue used to offset some of the cost of waste water treatment plants' and permittees' PCB water quality control and cleanup efforts, and to support continued source reduction programs.

We recommend an independent effort to evaluate the feasibility, potential income generation, opportunities potential to incentivize encourage development and use of safer alternatives, and potential investments in toxic source reductions that could be supported by a tax on priority toxics. This might be carried out in conjunction with the Legislatively-directed study on liability recommended above and should flow, at least in part, from an evaluation of where additional investment would be appropriate to help dischargers address sources of toxics that they did not produce or use.

Relief for Dischargers who are Stuck with Distributed Sources of Toxics

Under the Clean Water Act and state water quality human health criteria, municipal and industrial wastewater treatment facilities are required to meet stringent and often costly discharge limits for toxic contaminants, even when the facilities are not the initial or primary source of the contaminants.

As toxic chemicals have become more common in our economy in society and our economy our tools for preventing releases have not kept pace. We continue to use laws and regulations created to address removal of toxics from wastewater and air emissions (so called point sources) to address a much more distributed problem. W, water quality permittees (dischargers) increasingly find themselves responsible for removing toxics they did not produce, do not use, or otherwise have little or no control over. Dischargers in systems to watersheds regulated by Total Maximum Daily Load water cleanup plans can find that the incoming water they draw from the system can be is at, or sometimes over, the contaminant concentrations

Consumers share responsibility for protecting public health and our environment from chemical hazards in some important ways. First, consumers should use products containing chemicals according to product-safety directions (e.g., avoid over-application) and should recycle or dispose of the products appropriately (e.g., take unwanted electronics to electronics recycling companies, bring unused prescription drugs to pharmacies participating in take-back programs, etc.). Second, consumers can themselves prevent exposures to toxic chemicals and speed the transition to safer alternatives by purchasing toxic-free products when possible. The full cost of products containing toxic chemicals, including externalities such as health and environmental impacts, is not now reflected in most product costs. Over time as taxes and liability are adjusted, people should expect to pay more for products that lead to toxic exposures

established in their discharge permits. Wastewater treatment and stormwater permittees can find themselves faced with responsibility for toxics that come from products that they did not design, or manufacture, or use, and for which safer alternatives may or may not be readily available.

At the Port of Seattle, for example, they are challenged to manage stormwater contaminated with zinc from steel roofs coated with zinc-aluminum alloy, as well as galvanized metal fences and tires used on trucks and other vehicles involved in shipping. At Inland Empire Paper, a paper manufacturer and recycler in Spokane, they are faced with managing PCBs that come from the inks and pigments used to print the newsprint that is their recycled feedstock. Wastewater treatment plants must treat contaminants that enter the plants from other sources, including consumer products, stormwater, ambient air deposition, and water that enters the facility which may contain legacy compounds and naturally occurring elements.

[Inland Empire / PCB Text Box here. Zinc text box here.]

These types situations are untenable for two reasons. First, they illustrate how significant and widespread the use of some toxic chemicals are in our economy and the resulting impacts and accumulation of toxics in the environment. We are not well served by toxics-impaired water bodies, or zinc in Puget Sound, or PCBs in inks and dyes. Second, they place the burden, and sometimes significant financial costs, of dealing with toxics on dischargers who may have very little, if any, control over the contaminant sources and limited ability to effectively remove toxics from the waste stream.

Limitations on the number and types of implementation tools available under the Clean Water Act, which was not designed to address these types of situations, further exacerbate the problems wastewater treatment plans can have meeting stringent water quality standards resulting from TMDLs.

We recommend Ecology consider the dilemma of distributed sources in developing the Clean Water Act Implementation Tools rule and provide and develop and proactively use a menu of innovative approaches and implementation tools to proactively use- such as compliance schedules, intake credits, phased implementation, phased permitting, variances, straight-to-implementation efforts, and other techniques to protect and clean up water bodies in ways that recognize the difficulty inherent in addressing sources that are not under direct control of permittees. This should acknowledge that, in some situations, such as where a discharger does not have control over the sources of the toxic chemical in question, we should not require dischargers to reduce chemicals as much as possible, at least in the short term, while more collaborative source reduction methods are explored.

We also recommend that dischargers take an active role and use their influence to promote efforts to reduce distributed sources of toxics and to identify and implement safer alternatives.

We believe that full participation and support for source control efforts should be a consideration when determining what sorts of implementation strategies might be made

available to dischargers managing toxics from distributed sources. For example, while a permittee is working productively on source reduction and safer alternatives, they might qualify for a phased-in schedule for discharge limits or some funding to support source reduction efforts for sources that are not under their control. This alternative implementation approach for permittees pursuing source-reduction efforts to address distributed sources would incorporate implementation of available technologies but also recognize the difficulty permittees face in addressing sources that are not under their control and acknowledge the value of the permittee's participation in source reduction. If the source control efforts fail, numeric permit discharge limits could be imposed and efforts made to recoup some of the cost of compliance from producers, manufacturers, and retailers through a fee or tax on products that create these sources.

ENSURE A RELIABLE BACKSTOP OF PROTECTION

We believe strongly in the power of incentives, market forces, and other drivers to shift behavior over time and reduce toxics in Washington. At the same time, we know that sometimes these approaches will not go far enough, or will not achieve results fast enough. It is the responsibility of the Department of Ecology to work to protect people and the environment in Washington, and they need additional tools to do this effectively for toxics.

Many states, including Washington, rely on individual chemical bans to address high-priority toxics. For example, 25 states have laws restricting mercury, 17 states have banned or restricted lead in products, 12 states have laws limiting PBDEs, and 11 states ban BPA in children's or other products. In Washington, Ecology is implementing a variety of chemical-specific bans that apply to particular products, including laws that limit:

- Mercury in thermometers, manometers, thermostats, and automotive switches
- Polybrominated diphenyl ethers (PBDEs) flame retardants
- Lead wheel weights
- Coal tar sealants
- Bisphenol A in baby bottles and cups
- Copper in brake pads and boat paint

~~These individual legislative efforts are resource intensive and their success is uncertain year to year.~~ Because we know that incentives, market signals, and other voluntary efforts to support safer alternatives will not achieve a level playing field and may not always reduce toxic exposures quickly or enough, we need to ensure that the give regulatory agencies charged with the responsibility to protect human health and the environment have the adequate tools they need to get the job done, do so.

We recommend Ecology be given clear authority to ban or restrict priority toxic chemicals in manufacturing and products in appropriate and well-defined circumstances circumstances where voluntary efforts have not resulted in substantial progress. Chemical

bans or restrictions should be part of a comprehensive program that includes establishing priorities and working proactively with producers, manufacturers and retailers on identification and implementation of safer alternatives. Restrictions or bans should be used only for high-priority toxic chemicals, products and/or processes where exposure occurs.

Chemical bans and restrictions~~They~~ should not strand people or businesses by banning or restricting chemicals before safer alternatives are viable, and should include adequate notice, public participation, and lead time so that users have the ability to phase out chemicals and shift to safer alternatives deliberately. In appropriate situations, they should include carefully crafted exemptions to address circumstances where a toxic chemical might be needed for a certain process or product, even as it might be more generally banned or restricted. ~~be undertaken only when voluntary and incentive-based efforts to remove toxics have failed. A Legislative study should be undertaken to more robustly describe the circumstances in which chemical bans or restrictions would be appropriate, so this information can be incorporated into Ecology's authorities.~~

[Text box on PDBE ban:

Washington's 2007 law restricting PBDE flame retardants resulted from the Chemical Action Plan (CAP) for PBDEs published in January 2006. As part of the CAP, Syracuse Research Corporation produced a report on health and environmental impacts of alternatives to deca-BDE. Under the law, which became effective in January 2008, the following restrictions are in place:

- The manufacture, sale, and distribution of products that contain PBDEs is prohibited in Washington. Exemptions include transportation equipment, medical devices, and certain recycled materials, and the law treats deca-BDE differently.
- Deca-BDE is prohibited in mattresses in Washington.
- Beginning in January 2011, deca-BDE is also prohibited in televisions, computers, and residential upholstered furniture.

The law includes an exception for products that contain deca-PBDE, except for mattresses, residential upholstered furniture, televisions and computers. Deca-BDE was prohibited in mattresses right away. Deca-BDE in televisions, computers, and residential upholstered furniture could be restricted only after a determination that safer and technically feasible alternatives that meet fire safety standards were available. Ecology and DOH produced a report, "Alternatives to Deca-BDE in Televisions and Computers and Residential Upholstered Furniture," which describes the findings of that assessment and identifies safer alternatives, and a committee of fire safety experts appointed by the Governor determined the alternatives meet applicable fire safety standards.]

EVALUATING AND IMPROVING TOXICS REDUCTION PROGRAMS OVER TIME

Ecology has more than a dozen separate programs or initiatives that are intended to reduce or control sources of toxics. These have grown up over time and in response to different priorities or imperatives. There also are toxics reduction efforts and responsibilities in the Department of Health and other state agencies. As we work towards a more comprehensive and integrated approach to toxics reduction it will be important to adapt and refine these programs so they work effectively together. ***We recommend an independent inventory and evaluation of toxics reduction program activities, goals, and accomplishments, and identification of recommendations for program improvements.*** This should specifically look at ways to optimize current toxics reduction efforts such as chemical action plans, education efforts, extended producer responsibility efforts, and pollution prevention planning, and to make toxics reduction programs an ongoing center of innovation in Washington State.

This evaluation also should look at the information we have on toxic chemicals in products and toxic chemicals use, release, and exposures in Washington. Very little is known about the vast majority of the tens of thousands of chemicals produced and used in the US. Over the past three decades under Federal chemical laws, the EPA has required testing on just 200 existing chemicals and restricted only five. This lack of information impedes efforts to prioritize toxic chemical reduction efforts, identify safer alternatives, and target public health responses.

Finally, it should identify opportunities for regional coordination and collaboration on toxics reduction efforts. Regional approaches have the potential to increase the amount and speed of toxics reduction, leverage resources, improve consistency, provide economies of scale, and reduce any unintended leakage of our economy to neighboring jurisdictions.

The evaluation should be refreshed regularly, as part of an adaptive management strategy to ensure that toxics reduction programs are well-focused, effective, and improved over time.

Conclusion

The recommendations we have made will help continue Washington's leadership in protecting our communities and ecosystems from toxic chemicals. They address different aspects of the problem—from lack of information about chemical hazards and safer alternatives to inadequate liability schemes and regulations that fail to target the original sources of toxic chemicals. No single action ~~is likely to will~~ completely solve the problem; however, we believe that all of the ideas we've proposed are worthy of serious consideration, both individually and collectively. We deserve to have sensible chemical policy that supports a healthy and thriving economy, and we look forward to continuing to work to achieve that vision.