Washington Toxics Reduction Strategy Group Meeting

Draft White Paper – 12/5/12

This is an initial discussion draft of the White Paper that will capture your observations and ideas and transmit them forward. It would be attached to a short (1 page) letter to the incoming Governor, state Legislative leaders, and the Federal delegation that would identify the issue and reiterate the main points and recommendations.

Toxics Policy Reform for Washington State

Our current system of toxic chemical regulation fails us in two ways. On one hand, under the current regulatory system far too many toxic releases and exposures still occur—many of which are avoidable. 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process fails to address significant sources of concern, and federal law underpinning toxic chemicals management is outdated and deficient. As a result, we are forced to make the most of a broken 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 fix problems from distributed and diffuse "non-point" sources has inherent limits.

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 continue to be exposed to harmful toxics from a variety of sources, including ordinary consumer products, and new toxic chemicals continue to be released to the environment. 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 grows.

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 just as harmful, rather than safer alternatives. 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 in 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 products or as byproducts of manufacturing continue to be found.

In the face of uncertainty or lack of information about the toxicity of a chemical or cause-and-effect relationship, the current system favors the status quo and shifts the risk and burdens of harm to consumers and the environment.

Children are especially prone to ill effects because even small exposures during early childhood development can result in permanent 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.

Asthma. Asthma is the most common chronic disease in children, affecting nearly 1 in 10 US children under age 18. Almost 110,000 children in Washington have asthma, and it is the leading cause of hospitalization for children under 15. Estimates are that 10 to 35 percent of asthma attacks can be attributed to outdoor environmental pollutants such as those in car exhaust or industrial emissions. 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. 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. Adult obesity has more than doubled, increasing to 26 percent in 2010. Obesity is estimated to account for 17 percent for all US medical costs each year. There is growing evidence that exposure to environmental chemicals could be contributing to the obesity epidemic. 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.

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. Hypospadia (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 1in 200 boys in Washington, or about 215 boys each year.

Learning and brain development. Environmental chemicals thought to be associated with impaired brain development include lead, methyl mercury, polychlorinated biphenyls (PCBs), manganese, organophosphate insecticides, arsenic, BPA, PBDEs, and phthalates. 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 districts6 for learning disability, emotional or behavioral

disability, autism, intellectual disability, developmental delay. Based on national data, an estimated 900-1000 children will be diagnosed with autism every year in Washington.

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. Exposure to carcinogenic chemicals is thought to play an important role in development of many cancers. Known human carcinogens that are found in many homes include: tobacco smoke, arsenic (from drinking water and treated wood), benzene (from vehicle exhaust), formaldehyde (form furniture and cosmetics), and radon.

There are troubling trends in the environment as well. At least 1,767 water body segments 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, roofing materials, 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 configured to treat the pharmaceuticals and endocrine disruptors present in intake water. 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 to do so fully. Wastewater treatment facilities may 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 intake water (legacy compounds and naturally-occurring elements), and consumer products that contain toxic by-products. Once in wastewater, these chemicals can be difficult and very costly to treat using available technologies. In many cases, non-point sources (runoff from agricultural, urban, construction, mining and forest lands containing fertilizers, herbicides, insecticides, oil, grease, toxic chemicals in consumer products) are a significantly greater contributor of toxic contaminants to our watersheds, but the Clean Water Act does not provide for direct regulation of non-point sources.

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 to be leaders in design and production of safer alternatives to toxic chemicals in products and manufacturing. And there are opportunities to improve the regulatory system to create better solutions for industry and more effective protections for all Washington residents.

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 actors including states, industry, and NGOs. We did not try to duplicate that work or create a comprehensive set of principles chemical reform. Rather, we sought to test and reflect 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, 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, 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 available, rather than to rely on regulating waste streams or cleaning up legacy contaminants after people or the environment are exposed to them.

3. **Set Priorities:** We cannot do everything at once, so we should 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 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. 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.

5. **Chemical Information:** The public has 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, rather than just in products such as pesticides, paints, or cosmetics.

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. 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 they are more fairly shared by the people who profit from producing chemicals and manufacturing and selling products that contain chemicals rather than borne by external parties. The responsibility for the costs of toxics in products should be shared by producers, manufacturers, and consumers.

Moving Forward

It is clear we need new, more thoughtful approaches to living safely with toxic chemicals. Our current system both fails to protect people and the environment from toxic exposures and often places the entire burden of reducing releases of toxic chemicals on only a few of the actual sources of contamination. It fails almost entirely to address exposure from toxics in consumer products.

We need to take a more holistic approach to toxic chemicals. We need an approach that:

- Prioritizes chemicals, using more and better information, so we are investing where protection is most needed and where it will make the most difference.

- Provides real incentives and rewards for identification and use of safer alternatives to toxic chemicals throughout the lifecycle: from product inception and design, through production of materials, manufacturing, retailing, consumption, and when products reach the end of their useful life. Everyone has a role—and a responsibility—to reduce the use of toxics.
- Captures more of the costs of toxics in products, and shifts more of those costs back to the individuals and organizations that profit from the production, distribution, and use of toxics in products.
- Gives government the clear authority and responsibility to ban or restrict use of priority toxic chemicals in products to protect people, including sensitive subpopulations, and the environment.
- Recognizes that toxic chemicals are an important and integral part of our lives and economy and makes these changes in a sensible and rational way that improves not only health and environmental outcomes but also creates new opportunities for businesses and increases the competitiveness of our industries and products.

This system will not be built overnight, but we can make important progress now both to address known problems and to put us on the path to fewer toxic problems in the future. We recommend a series of actions that will result in effective prioritization of toxic chemicals, increase incentives for safer alternatives, make our chemicals policies more fair, ensure an effective regulatory backstop to protect Washington residents from priority toxics, and maximize the potential economic gain that can come from these innovations.

Many of these ideas would represent big changes in how we deal with toxic chemicals in Washington—we think big changes are needed. At the same time, we recognize the need walk before we run. To give us a chance to learn more about how best to implement these ideas in an integrated way, we also recommend three specific immediate efforts aimed at three priority toxics from distributed sources: chemical flame retardants, PCBs, and zinc.

PRIORITIZATION

Currently Washington sets priorities for actions to address toxic chemicals in a variety of ways. First, 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. The Clean Water Act, for example, does not regulate most phthalate compounds, even though those chemicals are increasingly being found in water bodies and sediments throughout the state and, in recent years, are re-contaminating sediment cleanup sites in Puget Sound. The source of these phthalates is products containing PVC plastics and that tend to make their way to sediments via surface water runoff and air deposition.

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 through point-source discharges. Except in limited cases such as pesticides, they do not directly address toxic chemicals that are released from consumer products during product use, and only in a limited way do they address toxic chemicals in products when the products are discarded. This is important enough to reiterate: **there currently are no comprehensive state or federal standards for chemicals in consumer products**.

Second, the state has made strides to identify and address toxic chemicals based on some specific areas of concern. Washington has priorities in place to protect children through the Children's Safe Products Act, and priorities for protection of Puget Sound. Ecology also has identified chemicals that are persistent, bioaccumulative, and toxic. To date this has resulted in:

- A list of 66 chemicals of high concern in children's products and associated reporting requirements.
- Four priority chemicals with basin-wide impacts to Puget Sound: copper, PAHs, DEHP (phthalates) and petroleum.
- 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.

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

We recommend moving forward with prioritization in three ways. First, in the short term 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. Focusing on exposure of children, chemicals of concern to Puget Sound, and the PBT chemicals makes sense because they address one of our most fragile and sensitive subpopulations (children), one of our most critical ecosystem endpoints (Puget Sound), and the legacy cleanup problems of tomorrow (PBTs). Pursuing these priorities should include the following.

- Use the information on chemicals of concern present in children's products to identify the 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.

Second, also in the short term, Ecology should add endocrine disrupting chemicals to its priorities. This work should begin by focusing on sources of chemical plasticizers, particularly phthalates, which are re-contaminating areas of Puget Sound such as Commencement Bay that have previously been cleaned up.

Third, in the longer term, Ecology should work with partners to develop a more comprehensive system for establishing chemical priorities. This system should rely on authoritative evidence of concern and consideration of potential exposure routes. Priority should be given to PBT chemicals, and other toxic chemicals that people and the environment are most likely to be exposed to, especially those that may impact sensitive sub-populations such as children, and sensitive environmental receptors such as fish.

REAL INCENTIVES FOR SAFER ALTERNATIVES

We believe firmly that the best, most reliable, and most efficient way to reduce exposures to toxic chemicals is to increase the use of safer alternatives. 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 stifling of innovation.

At the same time, we must do something. The CDC now estimates that 1 in 88 children born today have some sort of autism spectrum disorder—1 in 88 children. In Washington State, in November 2010 more 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, 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.[1]

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.

Sometimes a potentially harmful chemical is used because its potentially harmful properties are needed in a product—think antifreeze or pesticides. Other times a potentially harmful chemical is used because a safer alternative isn't readily available or hasn't been developed yet, for

[1] 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)

example zinc in tires or, until recently, copper in brake pads. And, still other times, potential harmful chemicals are used simply because they always have been there and we aren't paying attention to them. For example when Nike started paying attention they found out they had five very persistent bioaccumulative or toxic chemicals in their rubber and four of those chemicals could be replaced with safer alternatives and the other could be dramatically reduced—this is where gains truly can be made quickly.

We make three recommendations for encouraging safer alternatives: a Green Chemistry Center, exploration of labeling, and public and consumer education.

Green Chemistry Center

First we need to say clearly that safer is preferred, and begin to build the capacity and expertise to support producers, manufactures, and retailers to identify and develop safer alternatives. 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.[2] Washington State is already moving forward with green chemistry, and recently solicited for proposals to establish a Green Chemistry Center. The State should maximize its support and investment in this Center. We believe the roles of this Center should be to:

Comment [EDM1]: Should be a standalone recommendation – something like the waste management hierarchy but for toxics that says that "safer is better" or something like that? A clear statement that could drive state policy and inform state purchasing.

- Consolidate testing 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 and promote green chemistry innovation and commercialization.
- Provide ready access to information about safer alternatives in products and supply chains.
- Assist 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 chemistries that ultimately are useable by industry and that are environmentally benign; minimize waste and energy/resource impacts in chemical processes and technologies.
- 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.

[2] For more information about green chemistry, see EPA's Green Chemistry website, www.epa.gov/greenchemistry.

[Text box with mock up of both labels—using the fire extinguisher idea]

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.

We believe a Green Chemistry Center would function well as a public/private partnership and that the Washington Stormwater Center (www.wastormwatercenter.org) provides a model for how a Green Chemistry Center might be realized.

As part of establishing a Green Chemistry Center, attention should be paid to how producers, manufacturers, and retailers are encouraged to use the Center to help make products and processes safer. We see a role for the market here, through consumer demand for safer alternatives, a role for clarifying responsibility for toxic chemicals in products, and a role for government in regulating priority toxic chemicals and exposures. Each of these ideas is discussed further later in this paper.

Labeling

Labeling can be informative, trusted, and actionable (think Consumer Reports, or Energy Star) or obscure, hard to understand, and overwhelming. Ideally, labeling 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 toxic chemistry in order to make everyday purchasing decisions; at the same time, labels are only useful when they convey substantial, meaningful information. We need a label that transmits information people actually want, in a way that 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, which enables consumers to seek out products that are acknowledged as less toxic rewards use of safer alternatives and encourages innovation.

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

alternatives. A logical starting place for this might be to highlight which products contain (or do not contain) the priority chemicals already identified in Washington—chemicals of high concern to children, PBTs, and chemicals that have basin-wide impacts on Puget Sound. Producers or retailers might submit information to document the absence of these chemicals in their products to an independent review organization which could compile information on products and issue the labels. This might be a role for the Green Chemistry Center, one of the State academic institutions, or a new public/private partnership.

As a starting point, it may be reasonable 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. If there is interest in taking this idea further, we could explore the possibility of requiring that priority products (such as children's products) which have not been evaluated for the presence of toxic chemicals carry a label indicating this lack of information.

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.

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.

Education

All of the toxics reduction efforts we looked at in other states include within them some emphasis on consumer and public education. 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. We recommend development of targeted education campaigns aimed at changing specific consumer behaviors. A reasonable starting place for this effort might be around behaviors to reduce use and exposure to PBTs. The existing chemical action plans outline a number of these behaviors including:

- Addressing lead paint in older homes, which is the largest source of ongoing lead exposure for children.
- Reducing engine idling to reduce sources of PAHs.
- Reducing use of mercury.