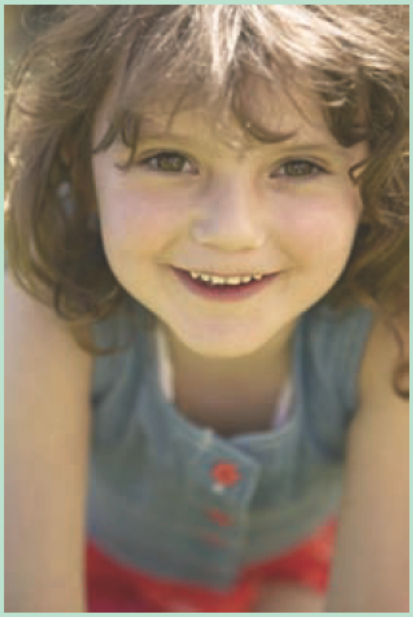
MAINE GOVERNOR JOHN E. BALDACCI'S

Task Force to Promote Safer Chemicals in Consumer Products



Final Report

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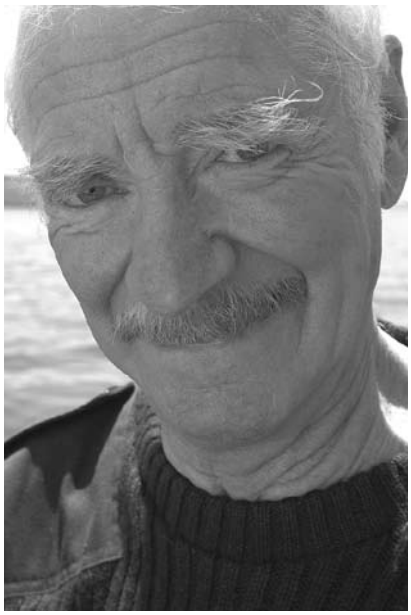

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Executive Summary: Key Conclusions

There is inadequate federal regulation to assure that consumer products are safe.
The 1976 federal Toxic Substances and Control Act (ToSCA) was intended to provide a framework for federal regulation of chemicals found to present an unreasonable risk of injury to health or the environment. It was meant to encourage industry to develop adequate data with respect to the effect of chemical substances and mixtures on health and the environment.

The Task Force to Promote Safer Chemicals in Consumer Products agrees with the U.S. Government Accountability Office (GAO) and others that ToSCA does not provide sufficient chemical safety data for public use by consumers, businesses and workers; is inadequate to ensure the safety of chemicals in commerce in the United States; and fails to create incentives to develop safer alternatives. Even considering ToSCA combined with the federal Occupational Safety and Health Act (OSHA), federal regulation fails to provide health and ecotoxicity information regarding the safety of chemicals that have the potential to harm workers and the public at large.

There are real concerns regarding pesticides found in consumer products.
Pesticide products are registered by the EPA for use in the U.S. under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) of 1972, and there are additional requirements for pesticide safety testing and risk assessment under the 1996 Food Quality Protection Act. Nonetheless, shortcomings in the pesticide regulatory process still remain. There are flaws in the testing process for pesticide approval, and not all pesticide-related consumer products are regulated under FIFRA. Furthermore, pesticides must be used exactly as directed on the label in order to prevent unintended human and environmental exposure. Instructions for use, storage and disposal on many product labels are difficult to read and understand, and they are printed in very small type. Improvements in pesticide label requirements are needed.

The health costs of toxic chemicals in consumer products are significant.
Toxic chemicals in consumer products present significant risk of adverse health consequences ranging from subtle cognitive development to chronic disease and premature death. The Task Force concludes that substantial human and societal costs of disability, birth defects and disease, including health care, educational and employment-related costs, may be attributable to increasing exposures to toxic chemicals. Reducing or eliminating exposures to these chemicals by shifting to use of

safer alternatives may significantly reduce these costs.

Businesses want and need better information on the health impacts of chemicals in their workplace and in their products to help them create more sustainable workplaces and safer products.

Lack of comprehensive and standardized information on the toxicity and ecotoxicity of most chemicals has presented challenges for companies that have developed profitable lines of safer consumer products. Material Safety Data Sheets (MSDS) are the most common available source of chemical information. The primary purpose of an MSDS is to communicate hazards and protective measures to workers, but, in the absence of alternative resources, an MSDS also serves as a major source of information for businesses wishing to produce safer products and institute safer processes. For consumers, an MSDS can provide information on products. Efforts to improve MSDS would benefit many sectors.

The State of Maine leads by example: "environmentally preferable" is also proving effective and affordable.

Maine's government agencies are playing a leadership role through purchasing and using safer chemicals in product areas that are commonly used by consumers. These practices have produced cost savings and improved performance. The State should continue to purchase additional environmentally preferable products.

Growing markets for safer products will encourage innovation and provide economic opportunity for Maine.

Technological innovation is one of the keys to both the development of safer alternatives to toxic chemicals and to allowing our companies to maximize the value of Maine's rich natural resource base. Green Chemistry, including the development of bio-based products from Maine agricultural and forest resources, offers the potential for substantial economic growth and job expansion in this state. This innovative technology will supply a demand that already exists on the part of successful Maine businesses committed to sustainable materials, processes, and products. Becoming preeminent in the field of Green Chemistry is a natural for this state and its businesses.

Key Recommendations

Comprehensive Chemicals Policy

- Adopt and publicize a list of chemicals of high and moderate concern, based on inherent properties of concern (such as toxicity, persistence or bioaccumulation), identified on previously published lists by authoritative government or scientific bodies;
- Establish the authority to require consumer product manufacturers to report which chemicals of high and moderate concern are present in their products, in what amounts and for what purpose;
- Develop a publicly accessible (web-based) database of readily available information that informs consumers about: the chemicals of high concern identified by the state; which products contain such chemicals; and actions consumers can take to purchase safer alternatives or reduce exposure; and
- Establish the authority to restrict the use of chemicals of high concern in consumer products when safer alternatives are available, effective and affordable.

Expanded Consumer and Retailer Education

- Secure adequate funding for Board of Pesticides Control for education and outreach, pesticide use tracking, and compliance visits (with mandated IPM requirements) to educational, governmental, commercial and institutional operations
- Expand the amount of information available on MSDS that are provided to state. county, and municipal organizations under the existing authority of the Board of Occupational Safety & Health.

Maine Innovation Economy Advisory Board

With the State, consider supporting expanded efforts of the University of Maine System and private industry to become leaders in the field of Green Chemistry and the emerging potential of bio-based products.

I. Introduction

The Governor's Task Force to Promote Safer Chemicals in Consumer Products was created by Executive Order 12 FY 06/07 dated February 22, 2006. The Task Force was authorized to meet and produce a report for Governor John E. Baldacci. Task Force duties included an Interim Report that was released in January 2007 (*http://www.maine.gov/dep/oc/saferchemintrpt.htm*). This Final Report incorporates the substantive elements of the Interim Report as well as updated and new elements.

The 13 member Task Force includes: the commissioner, Department of Environmental Protection, who chairs the Task Force; the deputy commissioner, Department of Economic and Community Development or designee; the State Toxicologist or designee; an IPM Council Coordinator (a single position shared by the Department of Agriculture IPM Coordinator and the Cooperative Extension IPM Coordinator); three members from the environmental public health community including a representative from the Alliance for a Clean and Healthy Maine, a Maine environmental policy organization and a Maine public health organization; three members of the business community including a representative from a Maine manufacturer that practices environmentally sustainable production, a Maine business association and one other Maine business; one representative from a University in the University of Maine system who is involved in research and development; one representative of a Maine labor organization; and a public member (see Appendix A).

The Task Force was established to identify and promote the use and development of safer alternatives to hazardous chemicals in consumer goods and services made, provided or sold in Maine so as to benefit public health, the environment and the economy for all Maine people. Specifically, the Task Force was charged with the following four duties:

1. Survey relevant knowledge and activities related to promoting safer alternatives to priority chemicals in the areas of environmental public health policy development, green chemistry research and development, and economic incentives;
2. Develop recommendations for a more comprehensive chemicals policy that requires safer substitutes to priority chemicals in consumer products and creates incentives to develop safer alternatives, on a state and regional basis;
3. Develop recommendations on expanded consumer education, retailer education and training, supply chain information and public right-to-know in order to promote markets for safer alternatives; and
4. Develop recommendations for submission to the Maine Science and Technology Advisory Council (now the Maine Innovation Economy Advisory Board) on expanded research and development of safer alternatives to priority chemicals in consumer products, including investment in green chemistry research and development and the possibility of developing bio-based plastics from Maine-based agricultural and forest products.

II. Survey of Relevant Knowledge and Activities Related to Promoting Safer Alternatives to Priority Chemicals

The Current Federal Chemical Safety System

Chemicals in Commerce (ToSCA)

The Task Force reviewed the current system of federal regulation of chemicals in commerce under the Toxic Substances Control Act (ToSCA), 15 U.S.C. secs. 2601 et seq.[1] This regulatory framework has been described in an environmental law textbook as "perhaps the most complex, confusing, and ineffective of all of our federal environmental protection statutes."[2]

ToSCA's passage in 1976 was intended to provide a framework for federal regulation of chemicals found to present "an unreasonable risk of injury to health or the environment," and to encourage industry to develop adequate data with "respect to the effect of chemical substances and mixtures on health and the environment." ToSCA has, however, fallen far short of its objectives.

As further described below, ToSCA creates a "Catch 22": the USEPA has to already *have* data in order to require testing to *develop* data to determine the safety of chemicals. There is no requirement, however, that these data be generated. ToSCA provides penalties against manufacturers for failure to disclose information regarding toxicity, but not for failure to gather it. Very little information exists regarding the toxicity or ecotoxicity of the majority of chemicals in commerce.

With the exception of one class of chemicals (PCBs) of particular concern at the time ToSCA was enacted, ToSCA does not require the USEPA to review the risks of existing chemicals in commerce. The USEPA has the discretionary authority to issue "testing orders" to manufacturers, but only after the USEPA has met the significant burden of finding "substantial evidence" that the chemical may present an "unreasonable risk." Over the 30 years since ToSCA was enacted, the USEPA has issued testing orders for fewer than 200 of the 62,000 chemicals that were in production in 1979.

In 1994, the GAO found that the USEPA had managed to review the risks of about 1,200 (2%) of the 62,000 "existing chemicals." The USEPA reported, however, that about 16,000 (26%) of these chemicals were potentially of concern on account of their production volume and chemical design.[3] This body of 1979 existing chemicals "continues to constitute the great majority of chemicals in commercial circulation in the U.S. (by volume), many of which have reached high levels of use despite very little information about their toxicity or ecotoxicity."[4]

While the USEPA's record of reviewing *new* chemicals developed since 1979 is somewhat better, there is similarly no requirement in ToSCA that these new chemicals be tested for safety. ToSCA simply requires that manufacturers submit Pre-market Notifications (PMNs) to the USEPA, to which the USEPA must normally respond within 90 days. Only half of PMNs submitted under ToSCA contain any toxicity information, and less than 20% include data on long-term toxicity.[5]

The USEPA has acknowledged that 85% of PMNs lack data on chemical health effects, and 67% lack health or environmental data.[6] The "Catch-22" that providing any data suggestive of toxicity issues might lead to an USEPA testing order has led some environmental lawyers to conclude that testing one's new chemical under ToSCA is "like volunteering for an IRS audit.

Understandably, no one does."[7] Noting that approximately 2000 new chemicals enter the market each year, the 2006 California Policy Research Center 2006 Framework for Leadership in Chemicals Policy and Innovation report (hereinafter California Report) observed that "[t]he result is an enormous lack of information on the toxicity and ecotoxicity of chemicals in commercial circulation."[8]

Even where data exist demonstrating the need for regulation of a specific chemical, substantial regulatory hurdles result in few regulatory actions. Since ToSCA's enactment in 1976, the USEPA has only taken final regulatory action restricting the use of five chemicals or classes of chemicals (PCBs, CFCs, dioxins, asbestos, and hexavalent chromium), and the USEPA has banned no chemical in the last 16 years. The USEPA's regulation of asbestos, promulgated after the agency spent ten years gathering evidence, was overturned by the federal court because the USEPA failed to meet its burden of proof under ToSCA.[9]

Unlike other major environmental statutes, regulatory action under ToSCA must be predicated upon an analysis of the economic consequences of the action "after consideration of the effect on the national economy, small business, technological innovation, the environment and public health." Additionally, before the USEPA can ban a chemical,

it must conduct a full risk analysis of the costs and benefits of all less burdensome regulatory alternatives, demonstrating that the risk presented by these alternatives is unacceptable; it must also conduct an analysis of the risks of all substitute chemicals for the banned product. These hurdles act as an effective roadblock to most agency action.

This Task Force concurs with the findings of the California Report that the regulatory inadequacies of ToSCA at the federal level "have created a broad set of problems for public and environmental health, industry, business and government in California."[10] These problems are summarized into three gaps in the ToSCA regulatory framework: a "Data Gap," making it "very difficult even for large firms to identify hazardous materials in their supply chains;" a "Safety Gap," meaning that government agencies "do not have the information they need to systematically identify and prioritize chemical hazards, nor the legal tools to efficiently mitigate known hazards;" and a "Technology Gap," meaning that the lack of both market and regulatory drivers "has dampened motivation on the part of U.S. chemical producers and entrepreneurs to invest in new green chemistry technologies."

DATA GAP
Lack of comprehensive and standardized information on the toxicity and ecotoxicity of most chemicals

TECHNOLOGY GAP
Lack of both market and regulatory drivers to motivate US chemical producers and entrepreneurs to develop green chemistry technologies

SAFETY GAP
Government agencies do not have the information they need to systematically prioritize chemical hazards nor the legal tools to efficiently mitigate known hazards

Pesticides

Pesticides comprise a group of chemicals found in a variety of consumer products that deserves special scrutiny. Common consumer products containing pesticides include insect sprays, ant cups, mouse poisons, lawn and garden care products, and household disinfectants and sanitizers. Residential use of pesticides has risen dramatically in recent years. For example, distribution of lawn and garden pesticides in Maine increased more than three-fold from 800,000 pounds (total product weight) in 1995 to 2.9 million pounds, in 2004 (the most recent year these data are available).[11]

Tens of thousands of pesticide exposure incidents are reported in the US each year. In 2005, 93,532 people reported unintentional exposure to pesticides (not including disinfectants) in the U.S. Twenty percent of these self-reported cases required treatment in health care facilities and 48% involved children under 6 years old. Follow-up of these reports determined that 20,287 cases (19.9%) showed clear poisoning symptoms or signs.[12] The Northern New England Poison Center reported 431 human exposures to pesticides in 2005 in Maine.

Children are particularly at risk of effects resulting from both direct exposure and through paternal and maternal exposure during gestation or even preconception.[13,14] Malignancies linked to parental exposure to pesticides in case reports or case-control studies include leukemia, neuroblastoma, Wilms' tumor, soft-tissue sarcoma, Ewing's sarcoma, non-Hodgkin's lymphoma, and cancers of the brain, colorectum, and testes.[15] A 2006 analysis concluded that pesticides and other common pollutants might be causing a 'silent pandemic' of neurological disorders impairing the development of fetuses and infants, potentially resulting in lower IQ scores and conditions such as autism, attention deficit disorder, and cerebral palsy.[16]

Chronic illnesses resulting from pesticide exposure are also of serious concern. Recent studies indicate pesticides may play a role in increasing rates of cancer and other diseases. For instance, The Agricultural Health Study conducted by the National Institutes for Health, National Cancer Institute and the USEPA *(http://aghealth.nci.nih.gov/)* studied 90,000 pesticide-using farmers and their families. This study found that farmers who apply pesticides are 27-41% more likely to be diagnosed with prostate cancer. This study also found increased rates of degenerative eye disease among orchard fungicide users and data suggestive of increased liver, kidney, lung, thyroid, and nervous system diseases, asthma, Parkinson's disease, and rheumatoid arthritis among pesticide users.[17]

Notably, pesticides must be used exactly as directed on the label in order to prevent human and environmental exposure. Toxicity is indicated on the label by a 'signal word' ('caution', 'warning' or 'danger') without accompanying explanation. Many labels do include precautionary or environmental statements. Unfortunately, instructions for use, storage and disposal on most product labels are difficult to read and comprehend and are printed in very small type.

Federal regulation of pesticides is authorized under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) of *1972, 7 U.S.C. § 136 et seq*. Under FIFRA, all pesticides are required to be registered by the Environmental Protection Agency. During the registration process, USEPA evaluates the pesticide to ensure that it will not have unreasonable adverse effects on humans, the environment and non-target species. Currently there are about 8,989 pesti-

cide products registered for use in Maine.

Because of increasing awareness of the health and environmental impacts of some pesticides, Congress passed the Food Quality Protection Act (FQPA) in 1996 which resulted in significant improvements in the USEPA requirements for pesticide safety testing and risk assessment. As a result, the allowed uses of some of the higher risk pesticides have been curtailed, including phasing out residential uses of two moderately toxic pesticides, diazinon and chlorpyrifos, and cancelling the registration of 17 other organophosphate pesticides.

However, even within the regulatory scheme critics point out specific shortcomings. On the one hand, there are concerns that health hazards of pesticides, especially for children, are not adequately tested. Core testing requirements for food-use pesticides include no specific testing for potential toxicity to the brain or nervous system of either adults or children; thus the risks in terms of pesticide use on learning, development and behavioral disabilities are largely unknown. Although the USEPA has validated Developmental Neurotoxicity Testing (DNT) protocol for how to test chemicals for potential toxicity to the developing brain and nervous system, by 2000, only nine out of nearly 900 registered active ingredients had been subjected to these tests.[18]

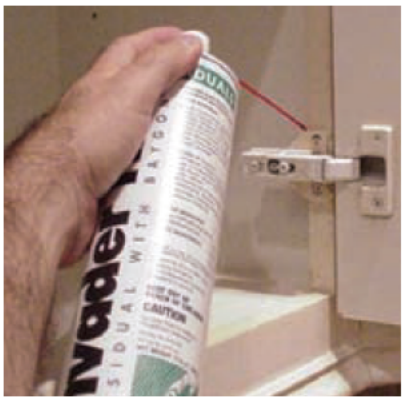
A second concern highlighted by a 2006 USEPA Inspector General's report points to flaws in the DNT testing process itself. This report cites: (1) insufficient evaluation of behavior, learning, or memory effects of mammalian exposure to pesticides; (2) lack of a standard evaluation procedure for interpreting developmental neurotoxicity trials; and (3) insufficient data on aggregate risks of pesticide exposure. It points out that the USEPA has not fully applied the 10-fold margin of safety required to take into account potential pre- and postnatal exposure and toxicity to infants and children. The report recommended that the USEPA take numerous additional steps to improve its cumulative and aggregate pesticide risk assessments for children.[19]

As of October 2007, the USEPA is mandated to utilize a 'weight of evidence' approach to determine which chemicals should be subjected to DNT. However it is should be noted that DNT, and testing for other reproductive effects and adult neurotoxicity are still not universally required.[20] It remains to be seen whether that developmental neurotoxicity testing, which has been little used in the past, will be required for more pesticides in the future.

This is significant because there are consumer products that are pesticide-treated, such as repellent-treated clothing and antimicrobial toys, that are not regulated under FIFRA. Similarly, many common household cleaning products are also not FIFRA regulated. These products are classified according to the claims made by the manufacturer, rather than chemical properties.

For example, cleaning products containing sodium hypochlorite or bleach, a very toxic chemical, are not subject to FIFRA safety-testing requirements unless the manufacturer makes an antimicrobial product claim. By contrast, the European Union has adopted requirements aimed at providing a high level of protection for humans, animals and the environment through their Biocidal Products Directive, effective September 2006. This mandate requires extensive registration of all pesticides for almost all uses, regardless of whether they have been incorporated into products and regardless of whether only product preservation claims are made.[21]

Within the U.S., some states have enacted regulations requiring full tracking of pesticide use. California requires use-reporting for all pesticides applied in agriculture, parks, golf courses, cemeteries, rangeland, pastures, and along roadside and railroad rights-of-way. In addition, all post harvest pesticide treatments of agricultural commodities must be reported, along with all pesticide treatments in poultry and fish produc-



Residential use of pesticides has risen dramatically in recent years.

Cleaning products containing bleach, a very toxic chemical, are not subject to FIFRA safety requirements unless the manufacturer makes an antimicrobial claim.

Photo: Courtesy of the American Association of Pesticide Safety Educators and the Maine Department of Agriculture Food and Rural Resources

tion, as well as some livestock applications. (The primary exceptions to the full use reporting requirements are home and garden use and most industrial and institutional uses.[22]) Oregon has similar reporting requirements for pesticides.[23]

Maine requires only that pesticides applied by 'for-hire' applicators or sold by major wholesalers be reported to the Maine Board of Pesticides Control, the state pesticide regulatory agency charged with enforcement of state and federal pesticide laws. According to distribution reports (estimating pesticide sales), over 1.5 million active ingredient pounds of pesticides were sold for agricultural use in 2003 (most recent data available). But, data on how and where pesticides are used are lacking. The Board of Pesticides Control does not currently have the staffing required for tracking amounts or kinds of pesticides applied for most agricultural or residential uses. In 1997, the Maine legislature mandated the Board of Pesticides Control to summarize and report annual pesticide sales and use data. These data were reported for the years 1998-2001, however, the effort strained available staff time and resources. The reporting requirement was repealed in 2001.

Tom's of Maine is a successful company in Maine founded by Kate and Tom Chappell in Kennebunk.

Photo: Courtesy of Tom's of Maine

Safer Chemicals In Maine businesses

Information from Tom's of Maine,[24] and InterfaceFABRIC, Inc,[25] portrays the challenges facing Maine companies seeking to ensure the safety of the chemicals in their products. These challenges are primarily due to the "Data Gap" and the "Technology Gap" described above.

Natural personal care is a concept under which products are made without artificial or animal ingredients or chemicals. Tom's of Maine has been at the forefront of this innovation since its founding in 1970 in Kennebunk, Maine. The company mission calls for them to be distinctive in products and policies that honor and sustain the natural world. One of the ways Tom's accomplishes this is by following a very strict and explicit set of guidelines (called the Stewardship Model) related to every aspect of product creation and the production cycle.

Without formal regulations or even guidelines within the industry, the company created its own internal "process for assessing vendor total value" (Appendix B) to qualify potential suppliers. The time and costs associated with this added evaluation is a direct result of the "Data Gap" that exists for companies looking to create effective products from plants and minerals instead of artificial chemicals.

InterfaceFABRIC, Inc is a leading manufacturer of fabric for commercial interiors, with six manufacturing facilities including three facilities located in Maine. The company goal is to become a world leader in business sustainability by the year 2020. Twelve years ago, the company began to implement a chemical management system and has since developed extensive experience in chemical assessment and safer chemical substitutions. In doing so, InterfaceFABRIC, Inc has had first hand experience with the impacts of the chemical "Data Gap".

The Material Safety Data Sheets (MSDS) on which companies rely to provide information on the raw materials they purchase are often inaccurate, incomplete, and out of date (see sample MSDS demonstrating these concerns Appendix C). To get information that is not available on the MSDS, the company has to negotiate and implement confidentiality agreements vendor by vendor, before chemical assessments can be completed. As a result, development of safer products takes an extensive amount of time, which translates into labor costs and delays in the introduction of safer products. Furthermore, although market drivers are beginning to improve, the research on safer alternatives to the existing chemicals in the marketplace has not kept pace. Therefore, when concerns are identified for certain chemical classes, the company has to invest time and money to conduct

its own research to develop safer alternatives.

Safer Chemicals and Maine Workers

The "Data Gap" is also evident when reviewing worker safety.[26] Material Safety Data Sheets (MSDS) for the private sector are regulated by the U.S. Occupational Health and Safety Administration for the purpose of communicating to workers on chemical hazards and protective measures. Substitution of a safer chemical is the first step in the OSHA hierarchy of responses to workplace toxic chemicals. However, of the 500 chemicals that OSHA has identified as of concern in workplaces, it has updated and improved standards for only 30. The remaining standards are those proposed by industry in the mid to late 1960s, based on what is now outdated science.

State of Pennsylvania MSDS requirements (Penn Code, Ch. 307, sec. 307.2 (2) are more informative than federal OSHA MSDS. OSHA MSDS regulations do not require listing of all substances. Health hazards must similarly be listed at 1.0% and carcinogens listed when they comprise .1% or more.[27] Pennsylvania requires listing of every chemical in the substance which comprises 3% or more of the substance, listing of hazardous substances comprising 1.0% or more of the substance and special hazardous substances which comprise 0.01% or more of the substance.

Like Pennsylvania, Maine also has the authority to require MSDS information beyond OSHA MSDS. Maine statutes create and empower the Board of Occupational Safety and Health to make rules for safe and healthful working conditions for public employees, which "shall at a minimum conform to federal standards of occupational safety and health." (26 M.R.S.A. sec. 565). The Board has currently incorporated by reference all OSHA regulations applicable to the Maine public sector including MSDS requirements. (Public sector workers including state, county and municipal employees represent approximately 17%[28] of Maine's work force.)

On an international level, the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), including safety data sheets such as MSDS, has been adopted by the United Nations. The goal is for as many countries as possible to implement the GHS by 2008. On September 12, 2006, federal OSHA issued an Advanced Notice of Public Rulemaking (ANPRM) to provide further information about the GHS, including the impact on MSDS.

In the ANPRM, OSHA notes that "(f)irst and foremost implementation of the GHS will enhance protection of people potentially exposed to chemicals and the environment." However, the ANPRM also proposes to continue to characterize persistence and bioaccumulation as optional environmental information rather than required health information. This is a concern because there is ample evidence developed in studies by the Centers of Disease Control, the Environmental Working Group, and others, that certain chemicals are present in the blood tissue, hair, and cord blood of human beings, including workers (see Impacts on Consumers and Public Health for additional information on body burden).

OSHA MSDS required information		Pennsylvania MSDS required information	
no requirement		All chemicals	3.0% or more
Health hazards	1.0% or more	Hazardous substances	1.0% or more
Carcinogens	0.1% or more	Special hazardous substances	.01% or more

Impact on Consumers and Public Health

Exposure and Risks

Toxic chemicals in consumer products present a significant risk of adverse health consequences—ranging from subtle cognitive impairments to chronic disease and premature death.[29] Studies have identified residues of numerous toxic industrial chemicals in the bodies of average Americans. Some of these chemicals have been found to build up in the body (bioaccumulate).

A growing body of evidence suggests that these exposures are of particular concern for fetuses and young children in vulnerable early stages of neurological and hormonal development.[30] As the California Report noted, "In considering health effects in relation to chemical exposures, it is important to recognize that, in the great majority of cases, human *disease* results from a combination of environmental, socioeconomic, genetic, and cultural factors, each of which acts over a lifetime. Chemical exposures represent one of many environmental factors that can induce disease directly and can also influence the initiation, progression, or recurrence of other disease processes."[31]

The federal Centers for Disease Control and Prevention (CDC) has an on-going program to determine levels of industrial chemicals in the U.S. population. The CDC's Third National Report on Human Exposure to Environmental Chemicals is the most extensive biomonitoring study ever conducted on the U.S. population. 148 chemicals or their metabolites were measured in the blood and urine from a random sample of participants in the National Health and Nutrition Examination Survey (NHANES) conducted by the CDC. The study was designed to provide estimates for the general U.S. population.

Chemicals were selected for study based on data suggesting exposure to the U.S. population, and the seriousness of health effects known or suspected to result from the exposure. Among the

chemicals detected were metals, cotinine (a metabolite of tobacco), polycyclic aromatic hydrocarbons (PAHs), dioxins, furans and polychlorinated biphenyls (PCBs), phthalates, phytoestrogens, organochlorine pesticides, organophosphate pesticides, herbicides, pyrethroid insecticides, other pesticides, and carbamate insecticides. For a number of these chemicals, including lead, organophosphate pesticides, organochlorine pesticides, and phthalates, mean levels detected in children were higher than in adults.[32]

Notably rates of childhood illness with potential links to environmental contamination are on the rise. Landrigan, et al. observe in a study published in *Environmental Health Perspectives*,[33] the journal of the National Institute of Environmental Health Sciences, that patterns of illness among children in the United States have changed substantially in the last century. Infectious diseases are no longer the leading cause of childhood illness and death. In their place are a group of chronic conditions of multifactorial origin that have been termed the "new pediatric morbidity," including asthma, childhood cancer, neurodevelopment and behavioral disorders, and certain congenital defects. All of these may be linked in part to environmental pollutants.

The USEPA Report *America's Children and the Environment*) confirms that childhood cancer rates are significantly increasing. The age-adjusted annual incidence of cancer in children increased from 129 to 166 cases per million children between 1975 and 2002.

Similarly, childhood asthma rates are rising. Between 1980 and 1995, the percentage of U.S. children with asthma doubled, from 3.6 percent in 1980 to 7.5 percent in 1995. In 2005, 8.9 percent (6.5 million) of all children had asthma.[34]

The December, 2000 USEPA report America's Children and the Environment: A First View of Available measures describes the potential linkages between childhood cancer and environmental chemical exposures:

"Evidence from epidemiological studies suggests that environmental contaminants, such as pesticides and certain chemicals, in addition to radiation, may contribute to an increased frequency of some childhood cancers. Some studies have found that children born to parents who work with or use such chemicals are more likely to have cancer in childhood. It may be that the chemicals cause mutations in parents' germ cells that may increase the risk of their children developing certain cancers, or perhaps the parental exposure is passed on to the child while in utero, affecting the child directly. Children's direct exposures to such chemicals may also contribute to cancer."[35]

The USEPA Report also observed that "Asthma is the most common chronic disease among children and is a costly disease in both human and monetary terms…Exposure to indoor and outdoor sources of biological and chemical environmental contamination have been shown to cause asthma or exacerbate existing asthma."[36] The National Academy of Sciences reported in 2000 that, although data are limited, there is evidence suggesting that indoor air pollutants such as volatile organic compounds, plasticizers, nitrogen dioxide, and pesticides may play a role in childhood asthma.[37] A 2005 study of 14,000 children reported a dose-response relationship between childhood wheezing and pre-natal exposure to chemical consumer products.[38] Maine has the highest rate of childhood asthma in New England, at over 13%, and Maine's adult population has one of the highest asthma rates in the U.S.[39]

A recent review article in the medical journal *The Lancet*, by physicians at the Harvard School of Public Health and the Mount Sinai School of Medicine, assessed the potential linkages between neurodevelopment disorders such as autism, attention deficit disorder, mental retardation, and cerebral palsy, and industrial chemicals. The review concluded that "(t)he combined evidence suggests that neurodevelopment disorders caused by industrial chemicals has created a silent pandemic in modern society." The report also noted that, because of the lack of testing and toxicity data for many chemicals currently in commerce, "the full effects of our industrial activities could be substantially greater than recognized at present." The authors of The Lancet study concluded that "[a] pandemic of neurodevelopment toxicity caused by industrial chemicals is, in theory, preventable. Testing of new chemicals before allowing them to be marketed is a highly efficient means to prevent toxicity..."[40]

The 2005 study entitled *Body Burden: The Pollution in Newborns*[41] by the Environmental Working Group (EWG) reiterated many of the findings and concerns regarding chemical exposures in the previously described studies. EWG tested for the presence of 413 industrial chemicals in human umbilical cord blood. Researchers found an average of 200 industrial chemicals and pollutants in cord blood from 10 babies born in 2004 in U.S. hospitals. Tests revealed a total of 287 chemicals in the group. Of the chemicals identified in cord blood, 28 were byproducts of energy production and industrial processes, 212 were banned industrial chemicals and pesticides that still persist, years after being withdrawn from production, and 47 were chemicals currently found as ingredients in consumer products.

EWG President Kenneth A. Cook has summarized the findings of the EWG study in these terms: "Industrial pollution begins in the womb" and the health consequences are potentially very serious.[42] 134 of the chemicals identified in the EWG study are associated in peer reviewed research with cancer, 151

with birth defects, 154 with hormone disruption, 186 with infertility, 130 with immune system toxicity, and 158 with neurotoxicity. Although levels of these chemicals in humans may seem very low, in the parts per billion, Dr. Cook noted that levels are sufficient to have significant biological effects. Dr. Cook referenced significant increases in birth defects, disabilities and chronic diseases in recent decades, stating that we need to know whether there is an environmental explanation for these changes: "These are major changes in disease and health that genetics can't explain. We don't evolve over a period of years."

In June 2007 the Alliance for a Clean and Healthy Maine, in conjunction with the University of Southern Maine, released a report entitled *Body of Evidence: A Study of Pollution in Maine People.*[43] The study tested 13 Maine men and women for toxic chemicals commonly found in consumer products; it found a total of 46 different chemicals (of 71 tested) in samples of blood, urine, and hair. On average, each participant had measurable levels of 36 toxic chemicals in his or her body.

Chemicals identified in all or most participants included phthalates, polybrominated diphenyl ethers or PBDEs, perfluorinated chemicals or PFCs, and bisphenol A. Phthalates are chemicals added to nail polish and many other beauty products, and to PVC plastic (vinyl); they are hormone-disrupting chemicals that threaten reproductive health, especially in males. PBDEs are a major class of brominated flame retardants added to casings for TVs, computers and other electronics; PBDEs affect thinking and learning abilities, reproductive development, liver tumors, and thyroid function. PFCs are synthetic chemicals, such as "Teflon", designed to repel grease and water used on nonstick cookware and water repellent or stain resistant fabrics. They have been associated with liver damage, immune disruption, endocrine effects, and developmental defects, and were recently identified as a "likely human carcinogen" by the USEPA Science Advisory Board. Bisphenol A is a building block of polycarbonate plastics used in baby bottles, reusable water bottles, and many other products; it is a potent endocrine disrupting chemical at very low doses, suspected of causing reproductive damage and birth defects that may lead to prostate and breast cancer.

Exposures to these chemicals were found even in individuals who generally purchased natural products, ate organic food, and avoided plastic products in their homes—suggesting that individual "life style" choices alone cannot avert the risk of exposures to chemicals that are ubiquitous in commerce.

Costs

The societal and economic costs of chronic disease, neurodevelopment disorders, and other disabilities that are potentially linked to environmental chemical exposures are enormous and increasing. Just one chronic disease with demonstrable linkages to environmental exposures, cancer, has shown a dramatic increase in associated costs in Maine. In 1997, 6,636 hospitalizations occurred in Maine as a result of cancer. Direct and indirect costs of cancer in Maine for that year totaled nearly $440 million. In 2004, seven years later, hospitalizations in Maine as a result of cancer had increased to 7,778, with direct and indirect costs estimated at $700 million. In 2006, cancer became the number one killer in Maine.[44]

The economic impact of learning disabilities and special needs on the Maine educational system is similarly substantial. From 1993 to 2003, Maine public school enrollment declined by 3.1%, while special education enrollment increased by 26.1%. Nationally, Maine is consistently among the top five states in the proportion of students with disabilities. The Maine Department of Education estimated that Special Education expenses statewide increased from $116.4 million in 1992 to $218.1 million in 2001, an 87.4% increase, as compared with a 47.6 % increase in total education expenditures in the state.[45] While state-specific cost data for childhood asthma is not available, a 2005 CDC study found that in the representative year 1996, children treated with asthma had a total of 14.5 million

school absence days nationally, and the total economic impact of asthma in school age children for that year was nearly $2 billion.[46]

In additional to direct health care and educational costs, exposure to neurodevelopmental toxics can have a lifelong impact on IQ, worker productivity, and income. It was estimated that the benefit of a small (1 ug/dl) reduction in blood lead levels in children would have a $7 billion (in 1994 dollars) per year impact in terms of decreased medical costs, compensatory education, and increased wages.[47] Similarly, the benefit of a 1 ug/dl reduction in blood lead levels in adults would result in a $10 billion saving in terms of medical costs and lost wages resulting from hypertension, heart attacks, and stroke. A subsequent analysis estimated the economic benefits in worker productivity resulting from reduction in average childhood blood levels of 12.3 ug/dl between 1976–1980 and 1991–1994 at $110 billion to $319 billion.[48] The economic cost of prenatal exposure to methylmercury was estimated to be $9 billion annually associated with loss of IQ,[49] and $298 million for the associated increase in mental retardation.[50]

Current activities in the U.S., North America and Europe related to chemical policy reform and promoting safer alternatives to priority chemicals.

Strategy for chemicals management has evolved from a historic reliance on disposal and dilution, to waste treatment and pollution control requirements, and then to adoption of toxics policy (or chemical by chemical regulation). The focus is now on chemical systems and product design.

Chemicals policy is management by government or corporations that focuses on the informed selection and sound use of all chemicals. Chemicals policy is hazard-based rather than exposure-based, meaning that it is driven primarily by the inherent properties of chemicals rather than by estimations of exposure and risk. Chemicals policy is intended to transition chemical use from high hazard substances to lower hazard substances, and to promote research and innovation in chemical markets.[51]

With respect to current chemicals policy development in the United States, there has been no initiative on comprehensive chemicals policy reform at the federal level. Marginal related efforts to provide more information on chemicals are underway at USEPA.

The voluntary High Production Volume (HPV) Challenge Program was launched in 1998 whereby companies were challenged to make screening level health and environmental effects data publicly available on chemicals produced or imported in the US in quantities of one million pounds or more annually.

Under the Challenge, industry agreed to sponsor the provision of information on 1900 HPV chemicals. By 2005 USEPA was to have received the information and made all data available to the public. One-third of the initial submissions still lack final data sets, more than one-fifth lack initial submissions and 10% of the chemicals eligible for sponsorship remain unsponsored "orphans" with no near term prospect for hazard data to be developed.[52]

USEPA announced release of the first set of 100 HPV Chemical Hazard Characterizations in September 2007.[53] In August 2007 the USEPA announced two efforts that hold promise if implementation occurs as indicated. One is the ToxCast™ Program to prioritize toxicity testing of environmental chemicals and coordination of efforts to accelerate and strengthen national and regional chemical assessment and management in North America. USEPA also announced their commitment to expand the voluntary hazard characterization effort established through the HPV program to include 9,000 chemicals produced above 25,000 pounds per year by 2012.[54]

At the state level discussions are underway on chemicals policies in several states including California, Maine, Massachusetts and Michigan. Washington State has published a statewide regulation in 2006 to reduce and phase out persistent, bioaccumulative and toxic (PBT) chemicals (Chapter 173-333 of the Washington Administrative Code).

From 1989 to 1994, six states (including Massachusetts and Maine) passed Toxics Use Reduction Acts (TURA). The Massachusetts law was the first and focused on about 190 chemicals and involved more than 1,000 industrial firms. Through mandatory planning requirements, training and technical assistance, the Massachusetts TURA program resulted in significant reductions in toxic chemical use, waste and emissions and helped firms improve efficiencies and save money.[55]

The Massachusetts legislature is now working on broader chemicals policy reform that would expand their TURA focus to include safer alternatives for 10 priority chemicals in consumer products. A step in this broader chemicals policy reform was a legislative mandate to study alternatives to five high priority chemicals: lead, perchloroethylene ('perc', used in drycleaning), formaldehyde, di(2-ethylhexyl) phthalate (DEHP, a softener added to PVC plastic) and hexavalent chromium. This "Five Chemicals Study" was completed in July

2006. For each chemical, it identifies uses, identifies alternatives, prioritizes alternatives and evaluates alternatives based on performance, cost, health and environment. The report concluded that "[I]n every case, at least one alternative was identified that was commercially available, was likely to meet technical requirements of many users, and was likely to have reduced environmental and occupational health and safety impacts compared with the base chemical."[56]

In North America, implementation of a major Canadian chemical categorization and management program is well under way. The Canadian Environmental Protection Act of 1999 required categorization of the 23,000 substances on their Domestic Substances List. Categorization occurred by the September 2006 deadline, and domestic substances were prioritized based on available information on: (1) the greatest potential for exposure; or (2) persistence or bioaccumulation and inherent toxicity to humans or non-human organisms, as determined by lab or other studies.

Canada's Domestic Substances List has identified 4300 substances as requiring further work/action, of which 300 warrant further attention from a human health perspective. Two hundred of the 4300 have been identified as priority substances. As of 2007, information on 15-30 substances is being published every three months with completion targeted within 3 years. The released information will include chemical profiles and complementary mandatory surveys. Industry and other stakeholders will be asked to provide information in their possession pertaining to the questions outlined in the survey. Completed mandatory surveys and questionnaires will be reviewed by Government of Canada scientists to determine what further actions may be necessary to ensure that the health of Canadians and their environment are protected.[57]

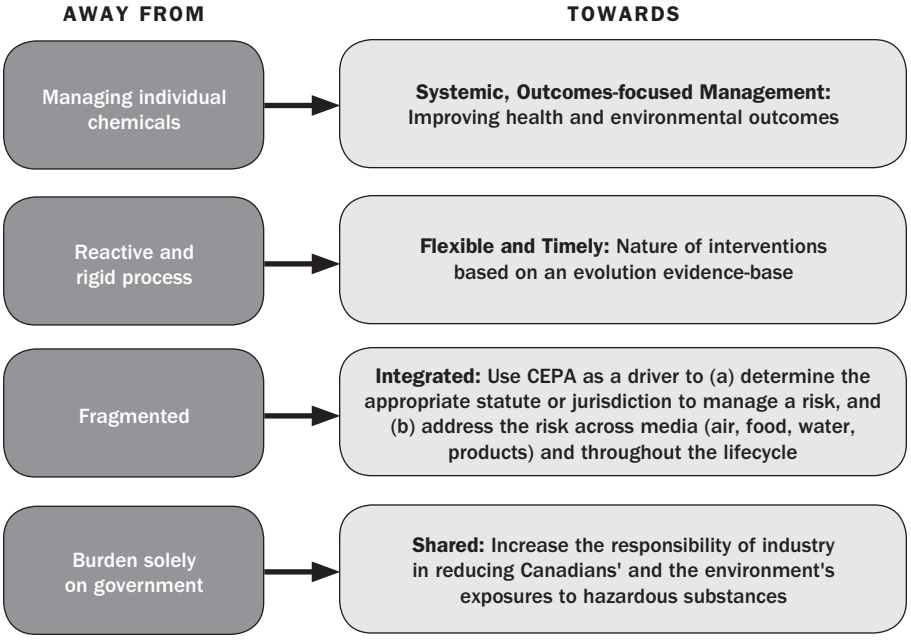
Internationally, there are several new directions in chemicals policy, including new European policies that outpace federal policy action in the United States and Canada's chemical categorization and management work. Chemicals policy development in the European Union directive known as REACH (for Registration, Evaluation and Authorization of Chemicals) is very significant.[58]

REACH, entered into force on June 1, 2007,[59] and will overhaul European chemicals policy and affect about 30,000 industrial chemicals. Its development over the last six years has been followed closely in the United States since it will affect exports into the European market and because it models a modern, systems approach to more effective management of all new and existing chemicals. REACH has four major parts:

- **Pre-Registration.** As a preparatory step, within 18 months after passage of REACH, all manufacturers or importers of chemicals in amounts greater than 1 ton per year (about 30,000 substances) must submit simple technical information on their chemicals to the new European Chemicals Agency.
- **Registration.** Chemical producers and importers must formally register their chemicals and submit specific chemical safety data if manufactured or imported at greater than 10 tons per year. The registration process will be phased in over three years, six years and eleven years. This will close the data gap for larger volume chemicals.
- **Evaluation.** This is essentially a compliance and risk screening process. Chemical safety reports will be scrutinized and additional information can be required. If risks are not adequately controlled, then the restrictions process may be used.
- **Authorization.** This is essentially a ban on chemicals of very high concern with exemptions allowed for

New information will promote an evolution in how chemicals are managed in Canada

With domestic and international programs generating much more information on chemical safety, there can be a shift



Source: Results of DSL Categorization and the Way Forward: Chemicals Management Plan. March 2007 presentation to Task Force To Promote Safer Chemicals in Consumer Products by Environment Canada and Health Canada

specific uses. Once a chemical is selected, a date is set when use will be phased-out. Users who wish to continue use (including in products) must apply for authorization. This presumptive ban will apply to known and probable carcinogens, mutagens and reproductive toxins (CMRs 1&2); persistent bioaccumulative and toxic chemicals (PBTs), very persistent and very bioaccumulative chemicals (vPvBs), and substances of equivalent concern.

Under REACH, a new European Chemicals Agency will be established in Helsinki, Finland, to manage the chemicals database, evaluate chemical submissions and conduct assessments in support of authorizations and restrictions. Member states will provide staff experts, handle enforcement and share information.[60]

The other significant international chemicals policy development is the United Nations SAICM—Strategic Approach to International Chemicals Management. The Dubai Declaration adopted in February 2006 establishes a network of countries with a commitment to the overall goal "[T]o achieve the sound management of chemicals throughout their life-cycle so that, by 2020, chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment." A Global Plan of Action will be developed, with assistance provided to developing countries.

III. Relevant Knowledge on Research and Development of Safer Alternatives to Priority Chemicals in Consumer Products in Maine

Among the primary concerns about the presence of toxic chemicals in consumer products and the environment is the lack of knowledge regarding the toxic properties of the raw materials used in consumer products and the lack of knowledge regarding the eventual degradation products and by-products which may be created in the manufacture of these products. The lack of knowledge comes from the lack, or inadequacy, of evaluation and testing. Additional factors are the lack of an adequate federal chemicals use policy and a regulatory framework to require testing, environmental fate analysis and safer alternatives analysis for existing and new chemicals. The reduction or elimination of toxic chemicals in consumer products can only be achieved after careful analysis of the raw materials used in these products and the identification of safer substitutes. A new approach to the design and manufacture of safer products incorporating principles of pollution prevention, design for energy efficiency, use of renewable feedstocks, and design for degradation, is referred to as "Green Chemistry."[61]

Maine is at the cutting edge of this new approach. The University of Maine is a charter member of the New England Green Chemistry Consortium, which consists of the land-grant universities in New England and which hosted the annual meeting of the Consortium in Orono in June 2006. The University of Maine has taken the lead in trying to promote bio-based raw materials from

InterfaceFABRIC of Maine is a leader in the production of bio-based fabrics.
Photo: Courtesy of InterfaceFABRIC, Inc.

the forest products sector that could be used in the production of safer bio-based products.[62]

A recent industry initiative by InterfaceFABRIC, Inc in partnership with the Alliance for a Clean and Healthy Maine and the University of Maine, has expanded the bio-based products effort to look at the potential of using Maine potatoes and other agricultural products to supply the feedstock for bio-based plastics.(see Appendix D Executive Summary of Seed Grant proposal)[63] The bio-based products initiative is being driven by a market demand for less toxic bio-based products and the business effort to respond to new market demand for safer products. Biobased plastic products production uses renewable resources, does not use antimony or phthalate plasticizers, uses 20 to 50% fewer fossil fuel resources and can result in completely biodegradable consumer products. The goal of this initiative is to find or help create a source of biobased plastic feedstock derived from Maine potatoes or other agricultural products *rather* than corn derived feed stocks from the Midwest.

The research conducted for the initiative concluded that:

1. There is a sufficient supply of starch for Maine's agricultural sector to move forward in pursuit of developing this new opportunity for Maine's potato growers, and;
2. There is sufficient supply for Maine's emerging bio-plastics industry to attract venture capital to build a facility to supply Maine's industry needs with a bio-based plastic feedstock from potatoes for their products.

A Note on Nanotechnology

The Task Force discussed nano-material technology (nanotechnology) and the need to include these materials as "chemicals of concern" subject to the Task Force's assessment and recommendations. The Task Force recognizes that relatively little is known about the potential hazardous and toxics effects of nano-materials on human and environmental health (additional nanomaterial information summarized by Dr. John P. Wise in Appendix E.) In addition, the potential for nanotech to revolutionize many facets of modern life—ranging from energy production and stain-resistant clothing to medicine and materials for golf clubs—is currently receiving much attention, while the need for sound and disciplined research to understand the potential adverse human and environmental health effects of nano materials is understudied—similar to what has occurred for conventional chemicals. In addition, existing environmental regulations and regulatory standards appear inadequate to address nano-materials, even if adverse effects were known.

GREEN CHEMISTRY

design of chemical products and processes that reduce or eliminate the use and generation of hazardous substances.

(Anastas et al. 2000)

Despite these concerns, the Task Force decided that nanotechnology is an issue that is too complex and specialized to address among the other responsibilities of the Task Force; the potential importance of nano-materials warrants comprehensive focus by a follow-up task force. The Task Force recommends that a Nanotechnology Task Force be convened to consider the nanotechnology issues similar to the elements of the Safer Chemicals Task Force, i.e., develop recommendations for protecting consumers and the environment from unwise use of nanotechnology. Recent work by nanotechnology stakeholders[64] and regulatory analysis [65] exist to develop a partial framework for establishing the purview of such a group.

IV. State of Maine Initiatives: Leadership by Example

Environmentally Preferable Procurement

The practice of environmentally preferable procurement has had a strong history under Maine State Government through the Bureau of General Services, Division of Purchases. For several years green procurement strategies have been utilized for acquiring Energy Star® rated equipment and appliances, paper and printing supplies, highway paint, retreaded tires and numerous other products.

With adoption of an Environmentally Preferable Procurement (EPP) Policy in 2004, the Division of Purchases pledged "to purchase products and contracts for services that have a reduced negative impact on human health and the natural environment in comparison to other products and service that serve similar purposes." In keeping with this policy, the Division has undertaken several initiatives in coordination with other agencies. These initiatives include the adoption of Leadership in Energy and Environmental Design standards for Existing Buildings (LEED-EB) and new construction, the adoption of Electronic Product Environmental Assessment Tool (EPEAT) standards for acquiring computer related equipment, green chemical procurement, the procurement of "green" lamps and ballasts, procurement of lead free wheel weights and integrated pest management (IPM).

Electronic Product Environmental Assessment Tool (EPEAT)

The Maine Office of Information Technology (OIT) is currently drafting a Request for Proposal(RFP) that will require computers and related equipment to meet EPEAT Silver Certification or greater. The majority of major manufacturers have already developed an assortment of available products within their normal production volumes that comply with the requirements of EPEAT certification by incorporating raw materials, production methods, packaging and waste stream solutions into their processes. The OIT bid is expected to be issued in December 2007.

Safer Chemical Procurement

Janitorial Products

In July of 2005, the Maine Board of Pesticides Control in the Department of Agriculture, in concert with the Division of Purchases, the Property Management Division (PMD), and the Department of Environmental Protection established an interagency committee to evaluate the purchase and use of safer cleaners and disinfectants. The scope of this committee was expanded to include "cradle to grave" product characteristics with the issuance of the Governor's Executive Order 12 FY 06/07, *An Order Promoting Safer Chemicals in Consumer Products and Services,* which further directed the creation of improved specifications for the procurement of "green" janitorial products. One major objective of this program is to identify "safer" products that also work effectively and are cost competitive.

In February of 2007 the PMD issued a Request for Quotations (RFQ) for cleaning chemicals that incorporated the Green Seal GS-37 standards. A three month pilot program was initiated in June of 2007 to test products and dispensing systems. In September, a one year contract with the option to renew was executed.

New environmentally preferable cleaning chemicals in State government are effective performers, reducing chemical use and saving money.

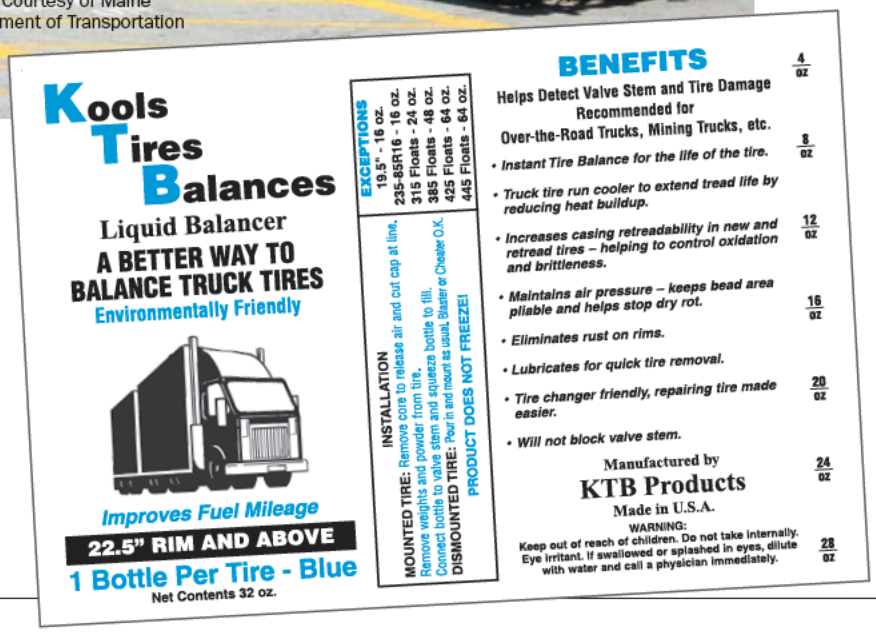
As of the publication of this report, PMD custodial staffs utilize 27 new systems installed throughout the 33 buildings under PMD's management. The new certified system has drastically decreased the consumption of chemicals by custodial staff. Supervisory staff indicate that since July of 2007, there have been documented cost savings. In

MDOT Plow Truck

Photo: Courtesy of Maine Department of Transportation

Bada Steel Wheel Weight.

Photo: Courtesy of Hennessy Industries, Inc.



Maine DOT is the first state fleet in the country to be in active transition to lead free wheel balancing on all size vehicle tires.

Kools Tires Balances Liquid Balancer.

Photo: Courtesy of KTB Products

addition, custodial staff and other state employees have indicated broad approval for the performance characteristics of the new products and systems.

Green Seal Certified Hand Soaps and Dispensing Systems

In November of 2006 PMD extended its EPP chemicals efforts into a second commodity sector, executing a contract for Green Seal Certified foam hand soap and dispensers. Since the contract's execution, over 265 dispensers have been installed in over 36 buildings managed by PMD.

Apart from improving environmental and human health through the use of a Green Seal Certified product, the use of foam soap has also realized tangible cost savings—both in terms of materials cost and in terms of personnel costs associated with clean up and refill of the previous systems. Staff also report improved performance.

Procurement of Lamps and Ballast

The Division of Purchases and Department of Environmental Protection are developing a new Electrical Lamps and Ballasts Request for Quotations (RFQ). The intent is to purchase products that in comparison to other products have a reduced impact on human health and the natural environment when evaluated in terms of price, performance, availability and safety.

In order to reduce mercury content, the Division of Purchases has incorporated standards developed by the United States Green Building Council's Leadership in Energy and Environmental Design with regard to operation and maintenance of Existing Buildings (LEED-EB). Respondents to the RFQ must document the mercury content of all mercury containing light bulbs included in their bid. Vendors will also provide assistance to building managers to ensure conformance with LEED-EB standards.[66]

Lead Free Wheel Balancing

Traditional wheel weights for tire balancing have been made primarily of lead. A 2000 study[67] indicates that approximately 10% of the weights fall off annually, degrade in the environment and contribute both to levels of lead in storm water runoff that is toxic to some aquatic organisms and to ambient lead dust in the urban environment. U.S. Geological Survey estimates lead in wheel weights lost on US roadways at 2000 tons annually.

Use of lead wheel weights was banned in the European Union in July 2005. Ann Arbor, Michigan, and the State of Minnesota are replacing lead wheel weights with non-lead weights. Since July 2006, pursuant to Governor Baldacci's Executive Order, existing lead wheel weights on passenger vehicles and light duty trucks serviced in state agency garages in Maine have been replaced with covered steel wheel weights.

This change out from lead wheel weights occurs during routine tire maintenance, and the transition is going smoothly. State agencies will be requesting the use of steel wheel weights on those passenger and light duty trucks serviced by almost 350 independent auto facilities.

The University of Maine system began converting away from lead wheel weights in spring 2007. The University fleet garage in Orono additionally services Orono's municipal fire vehicles and police vehicles and they are included in the conversion.

In addition, MaineDOT has researched and piloted an internal liquid balancing medium alternative for lead wheel weights on their heavy duty vehicles. MaineDOT staff has indicated improved performance and a cost savings in terms of time as well as money. The pilot project information has been shared with Maine's school bus community and is being shared nationally through Lead Free Wheels. The Maine Forest Service is also piloting the alternative on a tractor trailer vehicle that hauls federal excess surplus property.

Maine's IPM policies for managing State property have been recognized as one of the best in the country in the 2007 report *Ending Toxic Dependency: The State of IPM.*[87]

Integrated Pest Management (IPM)

Pests and pesticides can pose a significant risk to people, property and the environment. A number of well-documented studies have demonstrated the strong link between uncontrolled pest populations and risks to human health.[68] [69] [70] These risks include increased rates of asthma and infant mortality[71] [72] and risk of exposure to infectious diseases such as *Salmonella enteriditis,*[73] West Nile virus,[74] Lyme disease[75] and hantavirus hemorrhagic fever.[76] Likewise, pesticide use and exposure can also pose risks to both humans[77] [78] [79] [80] [81] and the environment.[82] Pesticides have been documented to be pervasively distributed throughout our urban, rural and even pristine natural environments, persisting in some cases for decades after their use.[83]

Integrated Pest Management (IPM) is a widely-accepted approach to protecting people, crops, buildings and other resources while minimizing pesticide risk. Studies have shown that IPM practices significantly reduce pesticide exposure risk and improve health.[84]

IPM minimizes risks associated with pests and pesticides by understanding the system in which the pest exists; by establishing economic or aesthetic injury thresholds and determining whether the organism warrants control; by monitoring pests and natural enemies; by selecting the appropriate system of cultural, mechanical, genetic, biological or chemical prevention or control techniques; by evaluating the pest management approaches used and by selecting, integrating and implementing some or all of these methods.[85] [86]

Although IPM practices are well recognized by agricultural producers and pest control professionals, the general public and retailers are not familiar with the concepts and benefits.

In Maine, the Bureau of General Services (BGS), in consultation with the Maine Department of Agriculture, has drafted an IPM Policy and a Request for Proposals (RFPs) for IPM service bids. As directed by the Executive Order, the Maine IPM Council was asked to evaluate the feasibility of requiring that State of Maine pest management contractors be IPM-certified. The IPM Council determined that such a requirement is feasible for structural pest control contractors and made a formal recommendation to DAFS that priority be given to IPM-certified contractors.

Key elements of the IPM Policy include 1) routine inspection of Bureau of General Service Property Management Division (PMD) managed buildings and grounds; 2) appointment of an IPM Coordinator to oversee the program; 3) assignment of a Building Coordinator to serve as a communication link between occupants, and the IPM Coordinator; 4) IPM training for PMD staff, and 5) establishment of a record-keeping system for tracking pest management actions and evaluating program effectiveness. IPM policy and RFP documents, applicable to office buildings and grounds under the control of PMD, are currently undergoing final review by the Maine Department of Administrative and Financial Services. It is intended that the IPM Policy and the IPM RFP will be implemented upon approval and will serve to establish a formal IPM program for PMD-managed properties.

V. Task Force Early Actions

Letter to OSHA

In conjunction with the reexamination of the OSHA Hazard Communication Standard (HCS) in light of the Global Harmonization System (GHS), the Task Force agreed that OSHA should require disclosure of chemical information on persistence and bioaccumulation. The Commissioner of Environmental Protection and the Commissioner of Labor communicated with OSHA on this subject in May 2007 (provided as Appendix F).

Green Chemistry Summit

Members networking through the Task Force and discussions during Task Force meetings resulted in a recommendation to hold a Green Chemistry Summit. Several environmental and business members of the Task Force, with additional sponsorship from the Departments of Economic Development and Environmental Protection, convened "Growing Maine's Green Economy; Better Living Through Green Chemistry" on October 26, 2007, in Portland, Maine. The purpose was to promote sustainable bioplastics production from Maine natural resources and other green chemistry solutions.

The conference brought together about 170 investors, sustainable business leaders, cutting-edge researchers and policy makers to explore "Green Chemistry" solutions that expand our economy by replacing hazardous materials in consumer products with safer alternatives. Attendees came from Maine, New England, New York, California and Canada. Several Maine businesses attended specifically with the hopes of gaining access to potato-based polylactic acid for use in their business.

VI. Task Force Recommendations

Recommendations on a more comprehensive chemicals policy that requires safer substitutes to priority chemicals in consumer products and creates incentives to develop safer alternatives, on a state and regional basis as required by Executive Order duty IV.b.ii

The outlines of a chemical policy framework were set when the State took effective action to require safer alternatives to mercury in consumer products, arsenic in pressure-treated wood and PBDE brominated flame retardants in electronics and furniture. Now a systemic change is needed to memorialize this approach.

The Governor's Task Force recognizes that full development of a more comprehensive chemicals policy will unfold over a period of many years, given the magnitude of the task. Such a transition will be shaped by the combined forces of federal and state policy actions, business leadership, consumer demand and international markets.

Certain principles should guide state and federal chemical policy development, including:

- Shift the burden of proof away from government to prove harm and onto manufacturers to prove the relative safety of chemicals that they produce or use
- Shift the standard of proof away from having to demonstrate unreasonable risk to acting with foresight to prevent harm
- Ensure that chemical policies protect the most vulnerable populations among us[88]
- Require safer alternatives to hazardous chemicals when available, while phasing out high hazard chemicals such as persistent, bioaccumulative and toxic chemicals (PBTs)
- Honor the public's right-to-know about chemicals hazards, while ensuring that data gaps on chemical safety are closed
- Consider the best of the work of other governments that are developing chemical policies, such as Canada and the European Union, to inform policy making at home

The Task Force further recognizes that the federal government and the states share responsibility for developing and implementing effective chemical policies that fully protect public health and the environment and promote green economic development. In Table 1 below, the Task Force recommends unique state and federal roles that are complementary and build on the strengths and capabilities of each level of government.

Priority Recommendations for the State of Maine

The State of Maine should lead by example by swiftly enacting state legislation to plug gaps in the national safety system for industrial chemicals in consumer products, while working with others to push Congress to overhaul the ineffective and obsolete federal Toxic

Table 1 **Recommendation: Chemicals Policy Action Should Remain a Shared Responsibility**

Policy Action	State Role	Federal Role
General Leadership	Cooperate with other states to establish a model state policy framework and share resources	Reauthorize and strengthen the federal Toxic Substances Control Act, while funding state programs
Close the Safety Gap	Identify chemicals of high concern based on existing lists and select priority chemicals for early action Restrict specific uses of priority chemicals in products when safer alternatives are available, effective and affordable	Categorize all existing chemicals by level of concern based on their inherent properties; update regularly with latest science Restrict use or production of chemicals of concern when safer alternatives are available or when unsafe exposures exist
Close the Data Gap	Use and publicize existing data and published lists of chemicals Require reporting on uses of priority chemicals in products by product manufacturers	Fund research and analysis of all potential inherent properties of concern for existing chemicals Require reporting on chemicals' inherent properties of concern by chemical manufacturers
Close the Technology Gap	Develop capacity to assess and promote safer alternatives to priority chemicals in products Invest R&D funds in green economic development, e.g. sustainable bio-based plastics	Fund research and development of green chemistry, safer chemicals and clean technology Award grants to state-based R&D and demonstration projects that promote safer alternatives

Substances Control Act (ToSCA).

In laying out recommendations for a more comprehensive chemical policy, the Task Force takes a long view. The Task Force recognizes that implementation of the following recommendations over time will require significant new resources. Within the limit of existing resources, however, the State can and should take low-cost, first steps to establish a general chemical policy framework, including pursuit of legislative authority where necessary. To the extent allowable under limited existing resources the State should continue to address high priority chemicals of concern in consumer products, as it has done so effectively in the past with mercury and the deca brominated flame retardant.

The recommendations that follow establish a direction the State should follow to better protect the health of the Maine people, environment and economy. Our collective pace of progress will depend on future work to answer these very real resource questions. To support full implementation of these recommendations, the State should explore new funding opportunities and assess funding options. The State should also seek to leverage other resources in cooperation with other states, the federal government, other national governments, international organizations, and private partners.

Specifically, the Governor's Task Force to Promote Safer Chemicals in Consumer Products recommends as an immediate priority that the State of Maine take policy action to:

1) Adopt and publicize a list of chemicals of high and moderate concern, based on their inherent properties of concern (such as toxicity, persistence or bioaccumulation) as indicated by previously published lists by authoritative government or scientific bodies (see levels of concern in Table 2 and recommended criteria and lists in Table 3);
2) Establish the authority to require consumer product manufacturers to report which chemicals of high and moderate concern are present in their products, in what amounts and for what purpose;
3) Develop a publicly accessible (web-based) database of readily available information that informs consumers about the chemicals of high concern identified by the state, which products contain such chemicals, and actions consumers can take to purchase safer alternatives or reduce exposure; and
4) Establish authority to restrict the use of chemicals of high concern in consumer products when safer alternatives are available, effective and affordable.

The Task Force further recommends that:

5) The Governor and state legislative leaders should request that the Maine Congressional delegation support comprehensive reauthorization of the federal Toxic Substances Control Act (ToSCA) to shift the burden of proof on to chemical manufacturers to demonstrate the safety of their chemicals, especially for vulnerable populations, and to close all data gaps on the health and environmental effects of their chemicals, as a condition to continued marketing of industrial chemicals in consumer products.

Additional Recommendations for the State of Maine

Maine needs to take additional policy actions to support and refine the policy recommendations listed above. These include:

6) Select priority chemicals for immediate action from among the chemicals of high concern used in consumer products taking into account product use by vulnerable populations; presence in humans determined through biomonitoring or in the household environment; high production volume; presence in wildlife or the environment; or other potential for human or wildlife exposure;
7) Participate in an interstate clearinghouse to share information resources among the states on chemical properties of concern and safer alternatives and to coordinate chemical policy program development;
8) Develop expanded capacity to conduct biomonitoring of Maine residents to determine the presence of chemicals of high concern in human umbilical cord blood, blood serum, breast milk, and other appropriate tissues or bodily fluids;
9) Develop incentives, financial assistance, and research and development funding to identify, develop and promote safer alternatives and to build public and private sector capacity to assess alternatives and prepare substitution plans for chemicals of high or moderate concern; and
10) Support federal or cooperative state actions to categorize all existing "grandfathered" industrial chemicals by level of concern based on their inherent properties of concern so as to guide decision making by government, business and consumers (see Table 2 below for recommended categories and appropriate response);

To guide decision making by government, business and consumers over time, the Task Force recommends that actions to improve management of chemicals be calibrated to the level of concern of the chemicals in question. Table 2 contains recommendations regarding general responses to chemicals across four tiers of concern, based on the latest and best science about the chemicals' inherent properties of concern.[89]

Various authoritative government bodies and peer-reviewed scientific literature have identified specific chemicals based on their inherent properties of concern. Table 3 below defines some of the properties of greatest concern and highlights some of the criteria and

The use of safer chemicals and integrated pest management practices will reduce toxic exposures for school children and staff.

lists published by these authoritative sources. Such factors should be considered in determining which chemicals of high concern should be designated by the State of Maine.

Table 3 includes two important properties related to environmental fate, namely persistence and bioaccumulation. These indicate the likelihood that a chemical will be long-lived in the environment and will build up to high levels in the food web, respectively. The Table also includes just one admittedly incomplete measure of ecotoxicity, namely aquatic toxicity, which is easy to measure in the laboratory for adverse effects on fish, invertebrates and algae.

The rest of the inherent properties of concern described in Table 3 relate to effects on human health (although similar effects are also of concern to wildlife and domestic animals). In general, for a given toxic effect, a substance should be considered a chemical of high concern for human health whenever there is evidence of adverse effects in humans, or whenever the weight of evidence, based on animal studies and other sources of data, demonstrates the potential for adverse effects in humans. For example, in the case of cancer-causing chemicals, a chemical of high concern would include both known human carcinogens and substances that are probable or likely human carcinogens or reasonably anticipated to be human carcinogens, according to the various classifications of federal and international agencies.

Table 2 **Recommendation: The Level of Concern Should Guide Actions to Improve Management of Chemicals**

Tiers	Chemicals of …	Examples	Recommended Action
I	High Concern	PBTs or vPvBs [90] Known human chronic toxicity or high animal toxicity	Avoid use or phase-out in favor of safer alternatives, acting on top priorities first
II	Moderate Concern	Moderate P or B Moderate toxicity based on animal studies or modeling only	Continue use but search for and switch to safer substitutes; Reduce exposures to meet health-based standards where they exist
III	Unknown Concern	Insufficient data to classify based on inherent properties of concern	Fill data gaps to characterize inherent properties of concern, using modeling where necessary to fill gaps in interim
IV	Low Concern	Complete data set demonstrates no evidence of inherent properties of concern	Give preference as safer chemicals

Recommendations on expanded consumer and retailer education to promote markets for safer alternatives as required by Executive Order duty IV.b.iii.

Enhance Current State Safer Chemical Initiatives

Environmental Preferable Procurement

State purchase and use of environmentally preferable janitorial cleaners and hand soap provides a leadership example for others. It also suggests that there are additional sectors for environmentally preferable purchasing. The number of available bio-based products is constantly growing. Bio-based products are less toxic and with their purchase and use we protect the environment, reduce toxic exposures and support Maine's emerging bio-based products industry. Sustainability guidelines for bio-products purchasing are being developed by organizations such as The Healthy Building Network, the Institute for Agriculture and Trade Policy, Clean Production Action and the Institute for Local Self Reliance.

Adopt preferential purchasing requirements for sustainably manufactured bio-based products.

Welcome the offer of the Service Employees International Union Hazard Materials Awareness Training Program to conduct Hazard Materials Awareness training on new janitorial products. The

Table 3 **Recommendation: Rely on Authoritative Sources for Identifying Chemicals of High Concern**

Inherent Properties of Concern	Nature of Concern	Published Lists and Criteria
Persistence (P)	Tendency of a substance to resist degradation, described as the length of time a substance remains in the environment before it is physically removed by chemical or biological transformations	Washington state criteria and list of PBTs[91] USEPA criteria: PBTs[92] EU criteria: PBTs and vPvBs, REACH Annex XIII[93]
Bioaccumulation (B)	An increase in concentration of a pollutant from the environment to the first organism in a food chain, with biomagnification resulting in an increase in concentration of a pollutant from one link in a food chain to another	
Aquatic Toxicity	Adverse effects observed in organisms that typically live in water in the wild such as fish, invertebrates and algae. Aquatic toxicity is often reported both as acute (resulting from short-term exposures) and chronic (resulting from repeated exposures)	GHS[94] Category 1
Carcinogenicity	Ability to cause cancer, which is any growth or tumor caused by abnormal and uncontrolled cell division	California Prop 65[95] IARC[96] Group 1 and 2A GHS Category 1A or 1B USEPA[97] (known/likely) NTP[98] (known/reasonably anticipated to be)
Mutagencity / Genotoxicity	Induction of genetic changes in a cell as a consequence of changes in gene sequence (mutagencity) or alterations in the number or structure of chromosomes	EU[99] Category 1 or 2 GHS Category 1A or 1B
Reproductive toxicity	Adverse effects on the reproductive systems of females or males, including alterations in structure or function of reproductive organs or system, the related endocrine system, mating, fertility or reproductive success	California Prop 65 NTP Center for the Evaluation of Risks to Human Reproduction[100] GHS Category 1A or 1B
Developmental toxicity	Adverse effects on the developing organism (including structural abnormality, altered growth, or functional deficiency or death) resulting from exposure prior to conception (in either parent), during prenatal development, or postnatally up to the time of sexual maturation	California Prop 65
Endocrine disruption	An alteration in the structure or functions of the endocrine (hormone) system that causes adverse effects at the level of the organism, its progeny, populations or subpopulations of organisms. Endocrine disruption can result in a variety of toxicity endpoints, including adverse effects on reproduction, development, immune system, etc.	EU[101] Category 1 or 2 Japan Ministry of Environment[102]
Neurotoxicity	Adverse effects on the central or peripheral nervous system	*Lancet* list of neurotoxicants[103]
Systemic Toxicity / Organ Effects	Adverse effects that are either generalized in nature or that occur at a specific site in the body that is distant from the point of entry of substance. A systemic effect requires absorption and distribution of the substance in the body	GHS Category 1 – organ/ systemic toxicity following single or repeated exposure

ABBREVIATIONS:
PBTs = persistent, bioaccumulative and toxic chemicals; **EU** = European Union; **vPvBs** = very persistent, very bioaccumulative chemicals; **GHS** = the Globally Harmonized System of Classification and Labeling of Chemicals; **IARC** = International Agency for Research on Cancer; **USEPA** = U.S. Environmental Protection Agency; **NTP** = federal National Toxicology Program

SEIU training program would supplement employer provided training and vendor contracted training for Bureau of General Services staff on the safe and appropriate use of new Environmentally Preferable.

Safer Schools

Children are among the most vulnerable populations at risk from exposure to toxic chemicals, and children spend many hours a week in Maine schools. Today's students are tomorrow's consumers and their ability to make informed choices on safer chemicals is enhanced with education.

- Provide adequate funding to the Board of Pesticides Control to monitor and enforce compliance with the

Board's 2002 Standards for Pesticide Applications and Public Notification in Schools regulation.
- Mandate use of safer cleaning and disinfecting products and practices in Maine schools.
- Support K-12 education in Maine schools focused on IPM, environmental health and toxicology and aligned with Maine Learning Results.

Integrated Pest Management (IPM)

The Property Management Division is now working with the Department of Agriculture to implement new (IPM) mandates.

- Provide adequate support and resources to implement the State of Maine Bureau of General Services IPM policy including implementation of an effective record-keeping system to track pesticide use, pest monitoring results, and pesticide- and pest-related complaints.

Promote Safer Use of Chemicals

Provide general education through website and educational materials that provide guidance and education on safer chemicals accompanied by an outreach campaign.

Material Safety Data Sheets (MSDS) are mandated to provide chemical hazard information for worker protection. In the absence of comparable safety data sets for consumers, MSDS serve that role by default. Improving the information content of MSDS would benefit multiple sectors including workers, businesses that wish to become more sustainable and make safer products and consumers who are looking for information often unavailable from the product label. The Maine Board of Occupational Safety and Health has the authority to enhance Maine public sector MSDS.

- Establish threshold cutoff amounts on public sector MSDS for chemicals similar to current State of Pennsylvania law Penn code, Ch 307, sec.307.2 (2) i.e. listing of "every chemical contained in the substance which comprises 3.0 % or more of the substance, except that hazardous chemicals substances shall be listed if they comprise 1.0 % or more of the substance, and special hazardous substances that comprise .01% or more of the substance." Under Pennsylvania law hazardous substances and special hazardous substances are defined by a list published by Pennsylvania.
- Require disclosure of information on persistence and bioaccumulation on public sector MSDS.

Integrated Pest Management has been required since 2002 in Maine schools and went into effect for occupied buildings including governmental, commercial, and institutional buildings in January 2007. A regulatory infrastructure is in place but outreach and education, monitoring and enforcement will be required to ensure initial implementation and ongoing adherence to IPM regulations

- Support development of educational resources to promote implementation of IPM.

Improve the ability to measure the State's compliance with the 1997 Act to Minimize Reliance on Pesticides (22 M.R.S.A. sec. 1471-X)

- Provide funding to the Board of Pesticides Control to monitor and report on trends in pesticides sales and use in Maine.

Homeowner use of pesticides for lawn care is dramatically on the rise in Maine. Consumer education about safe pesticide use and safer non chemical alternative means of pest control is an important tool to protect health and the environment. The Legislature has recognized this and established the Maine Pesticide Education Fund as a vehicle to accept private and public contributions to assist with reducing unsafe

pesticide exposures to consumers.

- Develop a reliable and sustainable funding stream to ensure monies will be available from the Maine Pesticide Education Fund.
- Promote development of a sustainable revenue source, through user fees or other means, to provide for public and retailer education about IPM and safer alternatives to pesticides.

Increase a Safer Chemicals Knowledge Base through Research and Advanced Educational Opportunities

- Support university research needed for the development and application of least-toxic and/or non-chemical alternatives to pesticides and other toxic chemicals used in Maine.
- Provide funding for faculty hires to expand the "Toxicology and Environmental Health" minor within the University of Maine system and dedicate 1-2 fellowships in the Graduate School of Biomedical Sciences to the newly formed Toxicology and Environmental Health track in that program.

Recommendations the Task Force will submit to the Maine Innovation Economy Advisory Board that has replaced the Maine Science and Technology Advisory Council as required by Executive Order Task Force duty IV.b.iv.

Technological innovation is key to both the development of safer alternatives to toxic chemicals, and to allowing Maine companies to maximize the value of state's rich natural resource base. Green Chemistry, including the development of bio-based products from Maine agricultural and forest resources, offers the potential for economic growth and job expansion in this state. Becoming preeminent in the field of Green Chemistry is a natural for this State and its businesses.

Recognizing the allocation of R&D funds among various research initiatives should be done in a peer-reviewed and competitive manner, the Task Force recommends that the State and the Maine Innovation Economy Advisory Board consider supporting the expanded efforts of the University of Maine System and private industry to become leaders in the field of Green Chemistry and the emerging potential of bio-based products.

- Encourage collaboration among research, industry and academic institutions to further develop capacity to:
  - Advance green chemistry and sustainable production across the lifecycle of materials in products;
  - Research, develop and commercialize the production of bio-based products from Maine agricultural and forest resources consistent with the principles of green chemistry; and
- Provide expertise in toxicology, assessment of safer alternatives, and management of data on the uses and hazards of chemicals in order to support State policy efforts and provide technical assistance to industry.
- Provide early support for research and development leading to construction of a PLA (polylactic acid) manufacturing facility in Aroostook County to produce bio-based plastics from potatoes and other agricultural crops to meet growing demand for sustainable bioplastics by Maine-based manufacturers and other companies.
- Increase the amount of research funding in the Maine Economic Incentive Fund (MEIF), and expand its scope to include an increased focus on research in toxicology, environmental health and green chemistry.

Appendix A: Task Force Promoting Safer Chemicals in Consumer Products member roster

State Agency and University positions	Appointed Member
Chair, Commissioner DEP	**David P. Littell**
Deputy Commissioner DECD or **designee** act as Chair in absence of Chair	**Brian Dancause** (through October 07)
State Toxicologist or **designee**	**Deborah Rice**
IPM Council Coordinators (shared position) 1. Agriculture 2.Cooperative Extension	 **1. Kathy Murray** **2. James F. Dill**
Environmental Public Health Nominations by the Governor 7.27.06	
Alliance for a Clean & Healthy Maine	**Sharon Tisher** **Orono**
Maine Environmental policy organization	**Nicholas T. Bennett** **Augusta**
Maine public health organization	**Michael Belliveau** **Old Town**
Business Nominations by the Governor 7.27.06	
Maine manufacturer that practices environmentally sustainable production	**Stacie R. Beyer** **Bangor**
Maine business association	**Steven R. Pinette** **Scarborough**
Other Maine business	**Mark S. Dobrovolny** **Kennebunk**
Other Nominations by the Governor 7.27.06	
University in the University of Maine System who is involved in research and development	**John P. Wise, Sr.** **Portland**
Maine labor organization	**Dana Graham, President** **Augusta**
Public member	**Melinda Davis** (through May 2007) **Augusta**

Appendix B: Tom's of Maine Process for Assessing Vendor Total Value

- ❑ **Ingredient for new product (R&PD)**
- ❑ **Ingredient for existing product (Product Supply)**

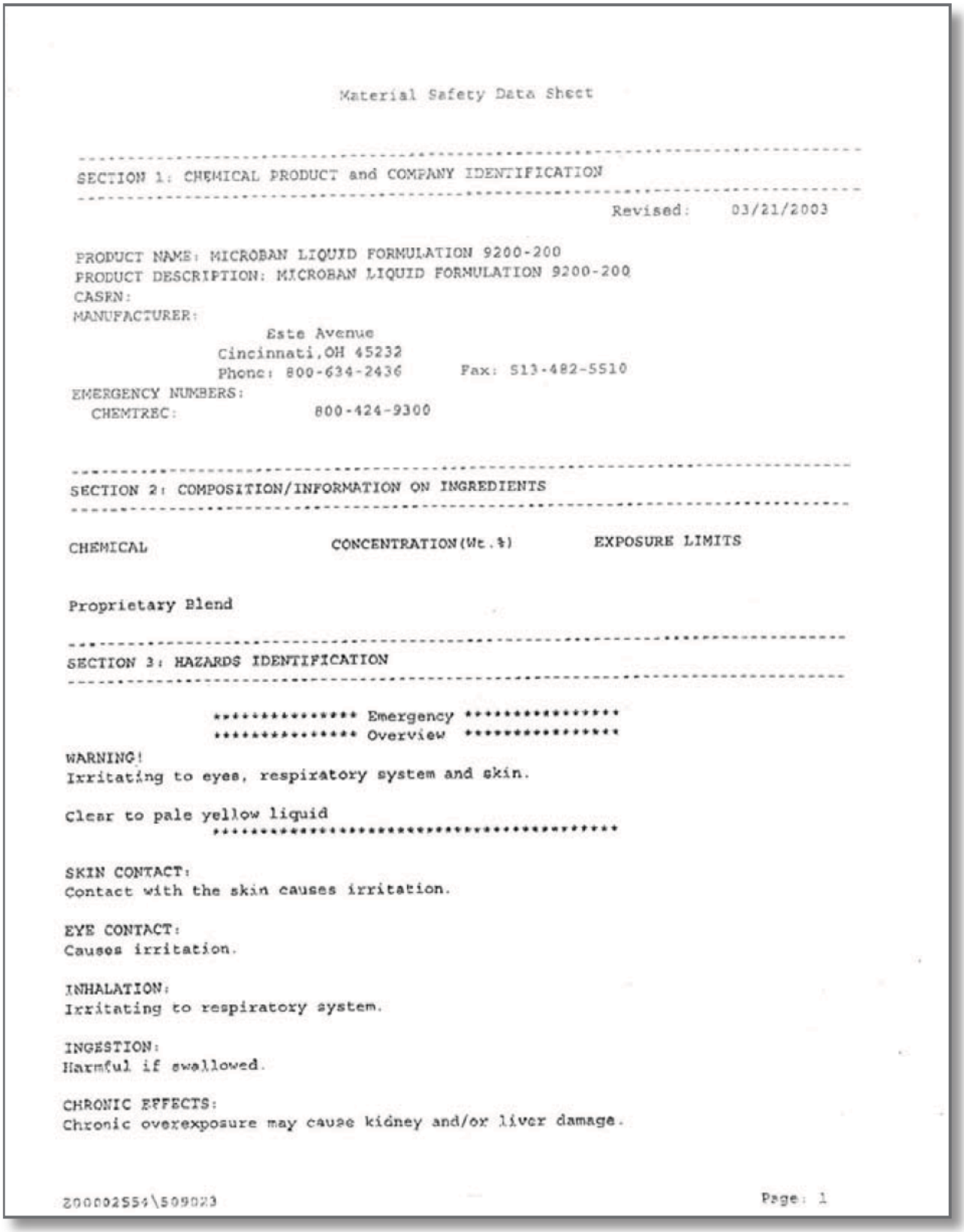
Process for Assessing Vendor Total Value

Vendor Name & Address:	**Ingredient Generic Name, Brand Name, Vendor Part #:**
Vendor Contact Name:	**Ingredient Manufacturer (if different):**
Vendor Contact Title:	**Vendor email:**
Vendor Phone #:	**Vendor Fax #:**

	Criteria	Documentation	Status
For Individual Ingredient		Signed letter	
	Genetically Modified Organism Status	Signed letter or policy statement	
	Kosher Certification	From any certifying agency; if not kosher, why not?	
	Ingredient is safe	Safety Test information, GRAS listing, MSDS	
	Meets Tom's of Maine specifications	Specification sheet	
	Sample meets Tom's of Maine specification	Certificate of Analysis for sample lot	
	Vendor certifies ingredient is naturally derived	Signed letter	
	Vendor's manufacturing process for ingredient is natural, sustainable, responsible, and fulfills the Company Mission	Signed letter describing process, facility, & location.	
	Sources of all ingredients going into vendor's manufacturing process for this item are natural, sustainable, responsible, and fulfill the Company Mission	Signed letter describing ingredients and process for obtaining them	
	R&PD review of ingredient performance within product	Package compatibility, stability, organoleptic evaluation, physical/chemical properties	
	Special R&PD review of ingredient performance within OTC products	Bio-availablility of drug active. Regulatory impact. Additional testing requirements.	
	Lead time, warehouse location, options for vendor managed inventory		
	Storage conditions & Container options		
Vendor		Signed letter	
	Vendor's manufacturing processes and ingredient sources are natural, sustainable, and responsible	Signed letter describing processes, facilities, & locations.	
	Vendor's corporate values/stewardship	Press clippings. Company documents	

	Criteria	Documentation	Status
For Tom's Use Only	Case by case assessment against the Tom's Maine Stewardship model • Natural • Sustainable • Responsible	Tom's of Maine Stewardship Model	
	Impact of changing ingredient on corporate communications • Art or text on carton, tube, label, shrink • Website communications • Collateral material	Design brief	

Appendix C: Sample Material Safety Data Sheet (MSDS) Provided by InterfaceFABRIC, Inc.



Material Safety Data Sheet

SECTION 1: CHEMICAL PRODUCT and COMPANY IDENTIFICATION

Revised: 03/21/2003

PRODUCT NAME: MICROBAN LIQUID FORMULATION 9200-200
PRODUCT DESCRIPTION: MICROBAN LIQUID FORMULATION 9200-200
CASRN:
MANUFACTURER:
Este Avenue
Cincinnati,OH 45232
Phone: 800-634-2436 Fax: 513-482-5510
EMERGENCY NUMBERS:
CHEMTREC: 800-424-9300

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL	CONCENTRATION(Wt.%)	EXPOSURE LIMITS
Proprietary Blend		

SECTION 3: HAZARDS IDENTIFICATION

********** Emergency **********
********** Overview **********

WARNING!
Irritating to eyes, respiratory system and skin.

Clear to pale yellow liquid
****

SKIN CONTACT:
Contact with the skin causes irritation.

EYE CONTACT:
Causes irritation.

INHALATION:
Irritating to respiratory system.

INGESTION:
Harmful if swallowed.

CHRONIC EFFECTS:
Chronic overexposure may cause kidney and/or liver damage.

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OTHER HEALTH EFFECTS:

PRIMARY ROUTES OF EXPOSURE: Inhalation,Skin,Oral

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:
May aggravate preexisting medical conditions.

ENVIRONMENTAL HAZARDS:
None available. This product is expected to be toxic to aquatic organisms.

SECTION 4: FIRST AID MEASURES

SKIN CONTACT:
Wash thoroughly with soap and water. Remove contaminated clothing and footwear. Wash clothing before reuse. Discard footwear that has been contaminated on the inner surfaces. If irritation should develop, get medical attention.

EYE CONTACT:
Immediately flush with plenty of water for at least 15 minutes holding eyelids apart to ensure flushing of the entire surface. Washing within one minute is essential to achieve maximum effectiveness. Get medical attention immediately.

INHALATION:
Harmful if inhaled. Remove to fresh air. Seek immediate medical attention.

INGESTION:
DO NOT INDUCE VOMITING. Give one or two glasses of water to drink and refer to medical personnel or take direction from either a physician or a poison control center. Never give anything by mouth to an unconscious person.

SECTION 5: FIRE FIGHTING MEASURES

Flash Point: >212 Deg F (Pensky-Martens Closed Cup)
LFL: Not Determined UFL: Not Determined
AUTOIGNITION TEMPERATURE Not Determined

RECOMMENDED EXTINGUISHING MEDIA:
Foam,Water fog

SPECIAL FIRE FIGHTING PROCEDURES:
Perform only those fire fighting procedures for which you have been trained. Firefighters should wear self contained breathing apparatus in the positive pressure mode with a full facepiece when there is a possibility of exposure to smoke, fumes or hazardous decomposition

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products.

UNUSUAL FIRE OR EXPLOSION HAZARDS:
None Known

HAZARDOUS COMBUSTION PRODUCTS:
Decomposition produces oxides of carbon, nitrogen and hydrochloric acid

---

SECTION 6: ACCIDENTAL RELEASE MEASURES

STEPS TO TAKE IN CASE OF SPILL OR LEAK:
Add dry material to absorb spill (if large spill, dike to contain). Using recommended protective equipment, pick up bulk of spill and containerize for recovery or disposal. Flush area with water to remove residues.

ENVIRONMENTAL IMPACT:
This product may be harmful to aquatic life. Do not discharge effluent containing this product in any manner without guidance from your State Water Board or the Regional Office of The EPA.

SECTION 7: HANDLING AND STORAGE

Avoid contact with eyes, skin and clothing. Avoid breathing mist, vapour or dust. Keep container closed. Use with adaquate ventilation. Wash thoroughly after handling.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

EYE PROTECTION:
Tight fitting chemical safety goggles.

SKIN PROTECTION:
Wear appropriate chemical resistant gloves.

RESPIRATORY PROTECTION:
None required under normal conditions of use. NIOSH/OSHA-approved respirator if necessary. Follow manufacturer's recommendations.

ENGINEERING CONTROLS:
None required under normal conditions of use. NIOSH/OSHA-approved respirator if necessary. Follow manufacturer's recommendations.

SECTION 9: PHYSICAL and CHEMICAL PROPERTIES

PHYSICAL STATE: Liquid
APPEARANCE: Clear to pale yellow liquid

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ODOR: Slight
ODOR THRESHOLD: Not Available
pH: 5.1 @ 5 %
MELTING POINT: Not Determined
BOILING POINT: ~258 Deg C
SPECIFIC GRAVITY: 1.1
SOLUBILITY IN WATER: Moderate - (1 to 10 %)
PERCENT VOLATILES(by Wt.): Not Determined
VAPOR DENSITY: Heavier than Air
VAPOR PRESSURE: Not Determined
EVAPORATION RATE(N-BUTYL ACETATE=1): Not determined
VOC CONTENT(EPA Method 24): Not Determined

SECTION 10: STABILITY AND REACTIVITY

STABILITY: Normally Stable

HAZARDOUS POLYMERIZATION: Will not occur.

INCOMPATIBLE MATERIALS:
Strong acids, bases and oxidizing agents.

CONDITIONS TO AVOID:
Not Determined or None Known

HAZARDOUS DECOMPOSITION PRODUCTS:
Decomposition produces oxides of carbon, nitrogen and hydrochloric acid

---

SECTION 11: TOXICOLOGICAL INFORMATION

No toxicity information available or testing conducted on this product.
Any health or toxicological information included in Section 3 was based
on data associated with the components or an analogous product.

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL TOXICITY:
This product may be harmful to aquatic life. Do not discharge effluent
containing this product in any manner without guidance from your State
Water Board or the Regional Office of The EPA.

ENVIRONMENTAL FATE:
Environmental fate has not been evaluated for this product.

SECTION 13: DISPOSAL CONSIDERATIONS

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Dispose of product by incineration at an approved hazardous chemical waste facility (or by other approved methods) in accordance with applicable Federal, State and local regulations. Avoid landfilling liquids. Since emptied container retains product residues (vapor and liquid) all labeled hazard precautions must be observed.

SECTION 14: TRANSPORTATION INFORMATION

INSECTICIDES, FUNGICIDES, INSECT/ANIMAL
REPELLENTS, NOI
NMFC: 102120

The information provided is for domestic highway transportation only. This product may be regulated differently when shipped in other types of containers or by modes other than that addressed by this section of the MSDS. For information, please contact Regulatory Affairs at 513/482-5022.

For RQ applicability, please see Section XV.

SECTION 15: REGULATORY INFORMATION

TSCA INVENTORY STATUS:
This product and/or all of its components are either included on or exempt from the TSCA Inventory of Chemical Substances.

TSCA 12(b) COMPONENTS:
None

SARA 311/312 HAZARD CATEGORIES: Acute

SARA 313 TOXIC CHEMICALS:
None

SARA 302 EXTREMELY HAZARDOUS SUBSTANCES:
Ethylene Oxide(75-21-8) < 0.0011 %
Formaldehyde(50-00-0) < 0.0005 %

CERCLA HAZARDOUS SUBSTANCES:
Ethylene Oxide(75-21-8) < 0.0011 %
Acetaldehyde(75-07-0) < 0.0007 %
1,4-Dioxane(123-91-1) < 0.0006 %
Formaldehyde(50-00-0) < 0.0005 %

CALIFORNIA PROPOSITION 65 COMPONENTS:
WARNING ! This product contains a chemical (or chemicals) known to the State of California to cause cancer, birth defects and/or other reproductive harm.
Ethylene Oxide(75-21-8) < 0.0011 %

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Acetaldehyde(75-07-0)	< 0.0007 %
1,4-Dioxane(123-91-1)	< 0.0006 %
Formaldehyde(50-00-0)	< 0.0005 %

SECTION 16: OTHER INFORMATION

HMIS RATINGS: HEALTH: 2 FLAMMABILITY: 1 REACTIVITY: 0

NFPA RATINGS: HEALTH: 2 FLAMMABILITY: 1 REACTIVITY: 0 OTHER: None

THE FOLLOWING WARNING INFORMATION IS PROVIDED ON THE LABEL FOR THIS PRODUCT:

WARNING!
Irritating to eyes, respiratory system and skin.
FIRST AID - INHALATION:
Harmful if inhaled. Remove to fresh air. Seek immediate medical attention.
FIRST AID - SKIN CONTACT:
Wash thoroughly with soap and water. Remove contaminated clothing and footwear. Wash clothing before reuse. Discard footwear that has been contaminated on the inner surfaces. If irritation should develop, get medical attention.
FIRST AID - EYE CONTACT:
Immediately flush with plenty of water for at least 15 minutes holding eyelids apart to ensure flushing of the entire surface. Washing within one minute is essential to achieve maximum effectiveness. Get medical attention immediately.
FIRST AID - INGESTION:
DO NOT INDUCE VOMITING. Give one or two glasses of water to drink and refer to medical personnel or take direction from either a physician or a poison control center. Never give anything by mouth to an unconscious person.
HANDLING AND STORAGE:
Avoid contact with eyes, skin and clothing. Avoid breathing mist, vapour or dust. Keep container closed. Use with adaquate ventilation. Wash thoroughly after handling.

ABBREVIATIONS USED:

ND or N/D = Not Determined
NA or N/A = Not Applicable or Not Available
NE or N/E = Not Established
N/AP = Not Applicable

All information, recommendations, and suggestions appearing herein concerning our product are based upon tests and data believed to be reliable. However, it is the user's responsibility to determine the safety, toxicity, and suitability for his own use of the product described herein. Since the actual use by others is beyond our control, no guarantee, express or implied, is made by Cognis

Corporation as to the effects of such use, the results obtained, or the safety and toxicity of the product nor does Cognis Corporation assume any liability arising out of use, by others, of the product referred to herein. The information herein is not to be construed as absolutely complete since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations.

PREPARED BY:
Corporation
Product Safety/Regulatory Affairs
Este Ave.
Cincinnati, Ohio 45232

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Appendix D: PLA Seed Grant Proposal Executive Summary

Potatoes to Plastics

Prepared for: InterfaceFABRIC, Inc

Margaret Chase Smith Policy Center
Department of Resource Economics and Policy
Department of Plant, Soil and Environmental Sciences
University of Maine
Kate Dickerson, Jonathan Rubin
Margaret Chase Smith Policy Center

1 June 2007

Funded in part through Maine Technology Institute with contributions in kind by the Alliance for a Clean & Healthy Maine; Green Harvest Technologies; InterfaceFABRIC; Maine Potato Board; University of Maine; and University of Massachusetts, Lowell

Executive Summary

This research project examined the resource and economic viability of Maine potatoes as a source for polylactic acid (PLA) to support InterfaceFABRIC's manufacturing requirements for use in their bio-based fabrics for commercial interiors. As part of this study, the following data was reviewed:

- the amount of acres currently harvested for potato production and the average number of acres in use;
- the average harvest yield of potatoes;
- the average price paid to growers per hundredweight (cwt) of potatoes;
- the raw materials costs associated with collecting, transporting and pre-processing waste potatoes for production of starch in preparation for PLA production;
- the availability of potato starch to meet the needs of InterfaceFABRIC; and
- the comparison of current cultivars of potato vs. one bred to use less fertilizer and fungicide (the Defender, a non-Genetically Modified Organism), both with approximately the same starch content.

The analysis of these data supports the conclusion that it is economically feasible for Maine potato growers to plant and harvest potatoes specifically for the purpose of providing a source of starch to manufacture PLA. It has also been determined that there would be little to no start-up costs to the potato growers themselves to provide potatoes for PLA using the potato cultivars (varieties) that are currently grown, in particular the Russet Burbank and/or Shepody potatoes. The planting, harvesting and pre-processing of these potatoes would be no different than what the growers are currently doing.

The analysis also shows that the cost of processing potatoes for PLA would be similar to that for a small capacity PLA facility that processes corn and the price which potato growers would receive for PLA potatoes would most likely be comparable to the average price paid to all growers for their potatoes. It also appears that the price of PLA from potatoes would be similar to that for PLA derived from corn. The analysis further confirms that the amount of PLA needed by InterfaceFABRIC (13 million pounds per year) could, in principle, be supplied solely by waste potatoes, made up of those left and examine the potential contribution of waste potatoes and processed starch to support a PLA facility and to examine the potential for new more cost effective and environmentally sustainable potato varieties which can be

Appendix E: Nanotechnology— An Emerging Category of Chemicals

Nanotechnology; An Emerging Category of Chemicals
June, 2007
Dr. John P. Wise, Sr. Ph.D
Director, Maine Center for Toxicology and Environmental Health
Professor of Toxicology and Molecular Epidemiology
Department of Applied Medical Sciences
University of southern Maine

Nanotechnology is considered to be the next industrial revolution and to become a 1 trillion dollar industry within the next 10 years. The federal government is already investing $1 billion in nanotechnology development. Nanoparticles are currently in over 300 commercial products including sunscreen, stain-resistant clothing, tires, refrigerators, washing machines and sports equipment. They are in clinical trials for drug delivery in diseases such as pancreatic cancer, and the National Institutes of Health (NIH) has announced 4 new nanomedicine centers. The military is using nanomaterials to develop advances in electronics, munitions, propellants, fuels, nanocomposites, nano-controlled dielectrics and nanoscale photonics. We are at the beginning of the nanotechnology era.

Nanoparticles are defined as having at least one dimension less than 100 nm. They exist in the quantum scale, which means that they don't follow the laws of solids, liquids or gases. Instead, they follow the laws of quantum mechanics, which gives them their value. They exhibit mechanical, magnetic, electronic and color properties unachievable by these chemicals at larger sizes. However, the same properties that make these particles an exciting technology also make them daunting environmental health concerns. Simply put, it is unknown how these new properties will enhance, diminish or otherwise alter the toxicity of the compounds that they are made from because the toxicity of nanoparticles is uncertain and relatively unexplored.

Engineered nanoparticles clearly exhibit toxic effects as rodent studies have shown that inhaled nanoparticles accumulate in the nasal passage, lung and brain where they can cause lesions that interfere with oxygen absorption and cause suffocation due to immune system cells clumping around the nanotubes and blocking bronchial passages. Recently, it has been shown that lower doses also cause respiratory toxicity including proinflammatory and fibrotic responses. Cell culture studies confirm the toxicity of engineered nanoparticles reporting cytotoxicity, decreased cell viability and the production of proinflammatory agents. These cell culture studies indicate that size and particle composition can dramatically modify toxicity, with some sizes and forms being highly toxic and others nontoxic.

The actual dose range of nanomaterials to which the environment is likely to be exposed is currently uncertain as the technology is still very new. However, given the broad spectrum of applications and widespread use, exposure is expected to become common and frequent. For example, considering silver nanoparticles, exposure scenarios are numerous. One population that will certainly be exposed is workers who manufacture silver nanomaterials and who assemble these materials into products. These exposures are expected to be high, though mitigated by personal protective equipment and engineering controls. The nanomaterials are expected to be both agglomerated and monodispersed as the products are made, with the primary exposure route likely to be through inhalation, followed by dermal exposure, with oral ingestion being infrequent.

Another large population to be exposed will be the consumers and users of those products. Silver nanoparticles have a broad spectrum of commercial uses including toothpaste, clothing, washing machines, refrigerators and paints. Thus, consumers will be exposed orally through their direct use in toothpaste, dermally through their direct use in clothing and washing machines and by inhalation through exposure to paint and nanodusts. Given the history of lead in paint, oral exposure in very young children is likely as well.

A third exposure scenario is through an environmental route and will affect the public in general, whether or not they choose to use nanomaterials. Ultimately, these materials will enter the environment though air and water releases such as catalytic converter exhaust and paint chips released from vehicles, and water released from washing machines, among others. These air and water cycles will carry nanomaterials across the globe, in a manner such as that already documented for numerous other chemicals such as mercury. For silver nanoparticles, release into the general environment is direct and virtually assured.

For example, consider just one commercial product with silver or gold nanomaterials. Silver nanoparticles are currently in use in the 'WF300' series of washing machines made by Samsung. This series consists of 6 models each featuring "Silver Care" and currently on sale at your local Best Buy and Lowe's store. "Silver Care" is provided by two plates consisting of 99.9% pure silver nanoparticles and the interior is coated with silver nanoparticles. Samsung reports that in addition to silver ions, each load releases 4 million nanoparticles into the water that penetrate into the laundry. In cold water, the silver nanoparticles can sanitize and kill odor-causing bacteria and continue "shielding them out" by remaining in clothes "for about a month". Thus, the laundry can be cleaned in cold water instead of hot making the machine more energy efficient and since it is competitively priced (currently on sale for $899), it is likely to become a popular machine and to be imitated by other manufacturers.

There are approximately 85 million households with washing machines in the U.S. On average, these households wash 1.07 loads of laundry each day. Given Samsung's statement that each laundry load delivers 4 million nanoparticles, if their new exciting machine captures just 10% of the U.S. market (currently its global market share is 11%, but in the US it is about 4%), that would be 8.5 million households each doing 1.07 loads of laundry per day, each load delivering 4 million silver nanoparticles resulting in the release of about 36 trillion nanoparticles into the waste stream EACH DAY (or about 13 quadrillion per year) from just this one source. Of course this number only considers the potential U.S. market, and thus, the daily release of silver nanoparticles can be expected to be much higher when worldwide markets are considered since Samsung already has 15% of the Indian washing machine market and 47% of the Korean market (19-20). Moreover, these releases will rise dramatically if other manufacturers mimic this technology. The full exposure potential to silver nanoparticles will of course be still higher as this calculation only considers washing machines and excludes the numerous other consumer products containing silver nanoparticles, which will ultimately significantly contribute to any exposure scenario.

There are of course numerous types of nanomaterials. As we push forward, Maine should assume a leadership position and manage the safety of this novel new class of compounds and encourage and stimulate more measures and research to maximize their benefits and minimize their risk. In particular, we should build expertise in the design of more environmentally and health friendly nanomaterials or "green-nano" and in the evaluation of its toxic potential.

Appendix F: Letter from Maine to Federal OSHA

JOHN E. BALDACCI
GOVERNOR

May 18, 2007
Ms. Maureen O'Donnell, Industrial Hygienist
Directorate of Standards & Guidance
Room N3718, US Department of Labor
200 Constitution Ave., N.W.
Washington, DC 20210

Re: Docket No. H-022K, Global Harmonization System ANPRM

Dear Ms. O'Donnell:

These comments are submitted on behalf of the State of Maine's Governor's Task Force to Promote Safer Chemicals in Consumer Products, the Maine Department of Labor and the Maine Department of Environmental Protection.
While we recognize that the comment period of the September 12, 2006 Advance Notice of Proposed Rulemaking (ANPRM) has expired, we have communicated on the subject of this comment with Attorney Ian Moar, of the DOL Office of the Solicitor, and were encouraged to bring our thoughts to your attention earlier rather than later. These comments are responsive to the question to the public in the ANPRM regarding whether there are "any health or physical hazards that aren't covered in either the HCS or the GHS that should be added." (ANPRM, p. 17)

Our Task Force was established by Executive Order dated February 22, 2006, to investigate the adequacy of existing federal and state laws and regulations regarding chemical safety, and to recommend state action to improve the safety of chemicals in consumer products. For background, you may review the Executive Order at www.maine.gov/tools/whatsnew/index.php?topic=Gov_Executive_Orders&id=21193&v=Article and our Interim Report at www.maine.gov/dep/oc/saferchemintrpt.htm. You will note that the Interim Report addresses many inadequacies of the federal Toxic Substances Control Act, and comments on some weaknesses of existing MSDS disclosure requirements. A focus of the Executive Order is concern regarding persistent bioaccumulative toxics (PBTs), such as mercury, and brominated flame retardants.

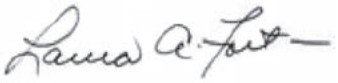
Our concern is related to the assumption made in the September 12, 2006 ANPRM that proposed revisions of OSHA regulations in response to the Global Harmonization System (GHS) would NOT incorporate ecological or environmental fate disclosures, such as persistence and bioaccumulative potential, in the Hazard Communication Standard (MSDS). The comparison chart at Appendix A to OSHA's Guide to The Globally Harmonized System of Classification and Labeling of Chemicals makes it clear that while the GHS, as well as the ISO Safety Data Sheet for Chemical Products, and the ANSI MSDS Preparation z400.0-2004, all require disclosure of "ecological information" including persistence and bioaccumulative potential, the OSHA HCS has "no present requirements" for such disclosure. The ANPRM acknowledges this discrepancy, and does not propose to redress it in proposed rulemaking: "....the GHS safety data sheet format includes a section that addresses environmental information. OSHA would not require inclusion of environmental information for SDSs used in workplaces." (ANPRM p. 9). The ANPRM goes on to note (p. 16) that "OSHA does not preclude such [environmental] information being on a safety data sheet, but will not review or enforce such provisions," for the purported reason that such disclosures are "outside OSHA's jurisdiction to regulate."

In connection with your agency's work on proposed rulemaking to conform OSHA HCS regulations to GHS regulations, we urge you to carefully reexamine the legal conclusion that OSHA does not have jurisdiction to require disclosure of scientific evidence that a chemical persists and bioaccumulates. We suggest that this conclusion be reassessed in view of the ample evidence developed in studies conducted by the Centers of Disease Control, the Environmental Working Group, and others, that certain chemicals are present in the blood, tissue, hair, and cord blood, of human beings, including, of course, workers. These chemicals are a result of a variety of environmental exposures including workplace exposures; they persist for long periods of time in human beings, and are passed on to fetuses in the uterus, with potentially serious toxicological effects. We believe that the fact that many workers carry with them an existing "body burden" of these chemicals is highly material information when assessing the risks of workplace exposures of these same chemicals. The fact that a chemical bioconcentrates implies a long half-life in the body, including the body of workers. That could have implications for the way in which the chemical is handled in the workplace. Given the toxicological perspective that the "dose makes the poison," the fact that workers may already have a body burden of PBTs that they are handling, or of related chemicals with similar toxicological endpoints, may well put the worker at greater health risk. Because PBTs have been found in high quantities in breast milk and to pass through the placenta to affect fetal development, they are of particular concern to female workers and the health of future generations of America's workers. Finally, both male and female workers need to be concerned about bringing these persistent chemicals back to their vehicles and homes on their shoes, clothing, hair and bodies.

The perspective that environmental fate has no relevance to workplace exposures ignores the best of current science; it also defeats the admirable goal of consistency in international and national worker safety and environmental requirements, a goal that OSHA has been a leader in advocating.

Sincerely,

David P. Littell, Commissioner
Dept. of Environmental Protection



Laura A. Fortman, Commissioner
Department of Labor

cc: Karin Tilberg, Office of the Governor, State of Maine
Ian Moar, DOL Office of the Solicitor
Ginger Jordan-Hillier, MeDEP

Endnotes

1 Documents reviewed included:

United States Government Accountability Office. Chemical Regulation: Approaches in the United States, Canada, and the European Union (GAO-06-217R). Washington, D.C.: U.S. Government Printing Office, 2005. [hereinafter, GAO, 2005].

Wilson MP, Chia D, Ehlers B. *Green Chemistry in California: A Framework for Leadership in Chemicals Policy and Innovation,* Special Report of the California Policy Research Center, University of California, to the California Senate Environmental Quality Committee and Assembly Committee on Environmental Safety and Toxic Materials. March, 2006 [hereinafter, "Cal. Report"] (Website: *http://coeh.berkeley.edu/news/06_wilson_policy.htm*) (PDF of full report: *http://coeh.berkeley.edu/docs/news/06_wilson_policy.pdf***)** Dr. Wilson presented information to the Task Force from this report in April 2007.

ToSCA is not the only federal statute concerned with chemical safety, but, with respect to chemicals in consumer products, it is the primary federal regulatory mechanism. Chemicals classified as pesticides are separately regulated under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) which, unlike ToSCA, requires testing, review, and registration of pesticides before they are marketed. Pharmaceuticals are also separately regulated under the Federal Food, Drug, and Cosmetic Act, which also requires pre-market testing. Other federal and state laws that pertain to toxic chemicals are essentially "end-of-pipe" statutes that do not allow review of chemicals prior to their introduction into commerce, and regulate a relatively narrow range of chemicals. See Cal Report. p.20-21: The Consumer Product Safety Commission investigates and institutes enforcement actions against manufacturers of consumer products after reports of injuries or deaths related to those products.

At a total budget of $62 million, with 421 workers, it is one of the smallest federal agencies, though it regulates an industry that sells $1.4 trillion annually. The agency has the capacity to investigate only 10 to 15 percent of the reported injuries or deaths linked to consumer goods. Lipton, E. Safety Agency Faces Scrutiny Amid Changes. The New York Times, September 2, 2007.

2 Plater Z., Abrams, R, Goldfarb, R. Environmental Law and Policy: Nature, Law, and Society, 3rd Edition. New York: Aspen Publishers, 2004. [hereinafter "Plater"] p. 830.

3 GAO, 2005, p. 2; Cal. Report, p. 17.

4 Cal. Report, p. 17.

5 Plater, p. 837; see also GAO, 2005, p. 5, comparing Canada and EU law.

6 Cal. Report, p. 19.

7 Roe D., Pease, W. Toxic Ignorance. In: The Environmental Forum. May/June 1998; 28.

8 Cal. Report, p. 19.

9 Corrosion Proof Fittings v. USEPA. 947F. 2d 1201 (5th Cir. 1991); Cal. Report, p.18; Plater, p.840

10 Cal. Report, p. xiv.

11 Data derived from sales and distribution reports provided by pesticide manufacturers and distributors and commercial applicator summary reports provided to the Maine Board of Pesticides Control annually. *http://www.maine.gov/agriculture/pesticides/turf_bmps/index.htm#3*

12 Watson WA, et al, 2002 Annual Report of the American Association of Poison Control Centers Toxic Exposure Surveillance System. *American Journal of Emergency Medicine,* 2003, 21:353-421.

13 Landrigan, P. J. et at. 1998. Children's Health and the Environment: A New Agenda for Prevention Research. Environmental Health Perspectives Supplements Vol. 106 (S3): 893

14 Flower, K.B., J.A. Hoppin, C.F. Lynch, A. Blair, C. Knott, D.D. Shore and D. P. Sandler. 2004. Cancer risk and parental pesticide application in children of agricultural health study participants. Environmental Health Perspectives. Vol 112(5): 631-635.

15 Zahm, S. H. and M. H. Ward. 1998. Pesticides and Childhood Cancer. Environmental Health Perspectives Supplements Vol. 106 (S3): 893

16 Grandjean and Landrigan 2006. Developmental neurotoxicity of industrial chemicals. The Lancet Online November 8, 2006. *http://leftbrainrightbrain.co.uk/wp-content/uploads/2006/11/chemicallist.pdf*

17 Alavanja, Michael C. R.,, et. al.. 2003. Use of agricultural pesticides and prostate cancer risk in the agricultural health study cohort. *Am J Epidemiol*.; 157:800-814

18 Wallinga, D. 2000. The emperor's clothes: why aren't chemicals tested for their impacts on the developing brain…why is this important? In: Croser and Seiter (eds), Pollution, Toxic Chemicals, and Mental Retardation: Proceedings of a National Wingspread Summit. *http://www.ehinitiative.org/pdf/Toxic_Chemical_MR.pdf*

19 USEPA Office of Inspector General Evaluation Report no. 2006-P-00009, Jan 10, 2006. Opportunities to Improve Data Quality and Children's Health through the Food Quality Protection Act. *http://www.epa.gov/oig/reports/2006/20060110-2006-P-00009.pdf*

20 Pesticides; Data Requirements for Conventional Chemicals. Federal Register: October 26, 2007 (Volume 72, Number 207)] [Rules and Regulations] [Page 60933-60988] From the Federal Register Online via GPO Access [*wais.access.gpo.gov*] [DOCID: fr26oc07-14] [[Page 60934]]

21 Directive 98/8/EC. Published in the Official Journal of the European Communities, *http://ec.europa.eu/environment/biocides/pdf/dir_98_8_biocides.pdf*

22 California Department of Pesticide Regulation. *http://www.cdpr.ca.gov/docs/pur/purmain.htm*

23 *http://www.oregon.gov/ODA/PEST/docs/pdf/purs_brochure.pdf*

24 Task Force member Mark Dobrovolny, Director of Product Supply for Tom's of Maine

25 Task Force member Stacie Beyer Corporate Environmental Manager for InterfaceFABRIC, Inc. (formerly Interface, Inc).

26 Mark Catlin Industrial Hygienist and Haz Mat Project Coordinator for the Service Employees International Union (SEIU) Education and Support Fund. Mr. Catlin is engaged in training workers throughout the U.S. on Hazardous Materials issues.

27 29 CFR 1910.1200 (g)(2)(i)(C)(1)

28 Maine Department of Labor, Center for Workforce Research and Information, Share of Average Annual Nonfarm Wage & Salary Employment by Industry in Maine, 1996-2006

29 See, e.g., for lead: Lanphear, B.P., R. Hornung, J. Khoury, K. Yolton, P. Baghurst, D.C. Bellinger, R.L. Canfield, K.N. Dietrich, R. Bornschein, T. Greene, S.J. Rothenberg, H.L. Needleman, L. Schnaas, G. Wasserman, J. Graziano, and R. Roberts. 2005. Low-level environmental lead exposure and children's intellectual function: An international pooled analysis. Environmental Health Perspectives 113:894-899; Koller, K., T. Brown, A. Spurgeon, and L.Levy. 2004. Recent developments in low-level lead exposure and intellectual impairment in children. Environmental Health Perspectives 112:987-994. For mercury: National Research Council. 2000. Toxicological Effects of Methylmercury. Washington, DC: National Academies Press. Murata, K., P. Weihe, E. Budtz-Jørgensen, P.J. Jørgensen, and P.Grandjean. 2004. Delayed brainstem auditory evoked potential latencies in 14-year-old children exposed to methylmercury. The Journal of Pediatrics 144:177-183; Schober, S.E., T.H. Sinks, R.L. Jones, M.P. Bolger, M. McDowell, J. Osterloh, E.S. Garrett, R.A. Canady, C.F. Dillon, Y. Sun, C.B. Joseph, and K. Mahaffey. 2003. Blood mercury levels in U.S. children and women of childbearing age, 1999-2000. Journal of the American Medical Association 289:1667-1674; Mahaffey, K. 2004. Methylmercury: Epidemiological Update, report presented at the 2004 Fish Forum, San Diego, CA. Washington, D.C.: Environmental Protection Agency; Maine Bureau of Health. 2000. Warning about eating freshwater fish. Augusta, ME: Environmental Toxicology Program, Maine Bureau of Health, Revised August 29, 2000. *http://www.maine.gov/dhhs/eohp/fish/2KFCA.htm* Accessed on May 7, 2007; see generally, Lippman M. Environmental Toxicants: human exposures and their health effects. New York: Wiley Interscience, 2000.

30 In May, 2007, the Scientific Committee of the International Conference on Fetal Programming and Developmental Toxicity issued the following recommendation: "The accumulated research evidence suggests that prevention efforts against toxic exposures to environmental chemicals should focus on protecting the fetus and small child as highly vulnerable populations. Given the ubiquitous exposure to many environmental toxicants, there needs to be renewed efforts to prevent harm. Such prevention should not await detailed evidence on individual hazards to be produced, because the delays in decision-making would then lead to propagation of toxic exposures and their long-term consequences." *http://www.pptox.dk/Consensus/tabid/72/Default.aspx*

31 Cal. Report, p. 25.

32 Centers for Disease Control and Prevention, Third National Report on Human Exposures to Environmental Chemicals. Atlanta (GA):

CDC, 2005. *www.cdc.gov/exposurereport*

33 Landrigan, P., C. Schecter, J. Lipton, M. Fahs, J. Schwartz. 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 110:720-728.

34 U.S. EPA. Report on America's Children and the Environment. *http://www.epa.gov/envirohealth/children/highlights/index.htm*

35 U.S. EPA Report on America's Children and the Environment: A First View of Available Measures. *http://yosemite.epa.gov/ochp/ochpweb.nsf/content/download.htm*, at p. 56 (footnotes omitted).

36 Ibid. p. 50.

37 National Academy of Sciences. Clearing the Air: Asthma and Indoor Air Exposures. Washington, D.C.: National Academy Press, 2000.

38 Sherriff A, Farrow A, Golding J, Henderson J. Frequent use of chemical household products is associated with persistent wheezing in pre-school age children. Thorax 60:45-49 (2005).

39 Maine Asthma Control & Prevention Program, *http://www.maine.gov/dhhs/bohdcfh/mat/index.html*.

40 Grandjean, P., Landrigan, P. Developmental neurotoxicity of industrial chemicals. The Lancet, November 8, 2006, *www.thelancet.com*.

41 *http://archive.ewg.org/reports/bodyburden2*

42 Kenneth Cook, President and Co-founder of the Environmental Working Group, February 7, 2007 presentation to the Task Force

43 *http://www.cleanandhealthyme.org/PollutioninMainePeople/tabid/55/Default.aspx*

44 Maine Cancer Consortium, Maine Responds to Cancer, January, 2001; Maine Cancer Plan, 2006-2010, *http://www.mainecancerconsortium.org/welcome.html*

45 Harris W.J., Jain P. Special Education in Maine, Maine Education Policy Research Institute, University of Maine, August, 2002. *http://libraries.maine.edu/cre/White_Paper/082602/White_Paper_Spec_Ed_082602.htm*

46 Wang L, Zhong Y, Wheeler L. Direct and Indirect Costs of Asthma in School-Age Children, CDC Preventing Chronic Disease: January 2005: 04_0053, *http://www.cdc.gov/pcd/issues/2005/jan/04_0053.htm*.

47 Schwartz, J. (1994) Societal benefits of reducing lead exposure. *Environ Res* 66:105-124.

48 Grosse, S.D., Matte, T.D., Schwartz, J., and Jackson, R.J. (2002) Economic gains resulting from the reduction in children's exposure to lead in the United States. *Environ Health Perspect* 110:563-569.

49 Trasand, L., Landrigan, P.J., and Schechter, C. (2005) Public health and economic consequences of methyl mercury toxicity to the developing brain. *Environ Health Perspect* 113:590-596.

50 Trasande, L., Schechter, C.B., Haynes, K.A., and Landrigan, P.J. (2006) Mental retardation and prenatal methylmercury toxicity. *Am J Ind Med* 49:153-158.

51 Ken Geiser, PhD Lowell Center for Sustainable Production, September 29 2006 presentation to the Task Force.

52 Dennison, Richard A. 2007, *High Hopes, Low Marks A final Report Card on the high Production volume Chemical Challenge,* Environmental Defense.

53 *http://www.epa.gov/hpv/index.htm*

54 USEPA News Release Washington, D.C. August 21, 2007, U.S. Canada and Mexico Take Lead to manage Industrial Chemicals

55 From 1990-2004, under the Massachusetts TURA program, toxic chemical use declined by 41%, toxic byproducts (waste) was reduced by 65% and toxic chemicals shipped in products went down by 58%. Among businesses affected by the Massachusetts TURA, 70% of firms identified toxics use reduction options and 81% of those reported implementing at least some of them. Two-thirds of firms reported cost savings and health & safety benefits. From 1990-1997 the reported costs of the program were $77 million and the monetized benefits were $91 million (not including benefits to human health, ecology and non-TURA firms).

56 Toxics Use Reduction Institute, University of Massachusetts Lowell, Five Chemicals Alternatives Assessment Study, June 2006, *www.turi.org*.

57 *http://www.chemicalsubstanceschimiques.gc.ca/categor/index_e.html*

58 The new international chemicals policies include the UN Rotterdam Convention on Prior Informed Consent, UN Stockholm Convention on the Elimination of Persistent Organic Pollutants (POPs), IOMC's "Globally Harmonized System of Classification and Labeling of Hazardous Chemicals" (GHS), and the United Nations Environment Program's SAICM (Strategic Approach to International Chemicals Management). Other new European Union (EU) chemicals policies in addition to REACH are the End of Life Vehicle Directive, Waste from Electronic and Electrical Equipment (WEEE) Directive and the Restriction on Hazardous Substances (RoHS) Directive.

59 European Commission REACH website *http://ec.europa.eu/environment/chemicals/reach/reach_intro.htm*

60 European Commission REACH website *http://ec.europa.eu/environment/chemicals/reach/reach_intro.htm*

http://www.chemicalspolicy.org/, which includes comprehensive resources on REACH and related chemicals policy initiatives.

61 See the University of Massachusetts at Lowell's Center for Green Chemistry, *http://www.greenchemistry.uml.edu/html/ClickablePrinciplesproject_files/frame.htm*, for an expression of the Twelve Principles of Green Chemistry.

62 Presentation by Michael Bilodeau, Associate Director of Forest Bioproducts Research and Director of the Process Development Center at University of Maine at Orono.

63 Presentation on initiative and a Seed Grant Proposal submitted to the Maine Technology Institute by Stacie Beyer, Corporate Environmental Manager for InterfaceFABRIC, Inc, (formerly Interface, Inc). *http://www.umaine.edu/mcsc/reports/potatoesRpt.pdf*

64 Environmental Defense–DuPont Nano Partnership (June 2007), NANO Risk Framework

65 Breggin, L.K., and J.Pendergrass (July 2007), Where Does the Nano Go?

66 Vendors must also meet the following energy efficiency guidelines: lighting, wherever possible, must meet Energy Star lower energy consumption standards; vendors must ship all products with the Energy Star low-power feature activated or enabled; if the product is shipped without the Energy Star low-power feature activated or enabled or without the Energy Star seal, it must include the manufacturer's certification specifying the product is Energy Star compliant.

67 Robert A. Root 2004 Lead Loading of Urban Streets by Motor Vehicle Wheel Weights

68 Platts-Mills, T.A.E. 1994. How environment affects patients with allergic disease: indoor allergens and asthma. Ann Allergy 72: 381-384.

69 Perera FP, et al. 2003. Effects of transplacental exposure to environmental pollutants on birth outcomes in a multiethnic population. Environ Health Perspect., 111:201–206.

70 Schal, C. and R.L. Hamilton, 1990. Integrated suppression of synanthropic cockroaches. Ann. Rev. Entomol. V. 35: 521-551

71 Rosenstreich DL, Eggleston P, Kattan M, Baker D, Slavin RG, Gergen P, et al. The role of cockroach allergy and exposure to cockroach allergen in causing morbidity among inner-city children with asthma. N Engl J Med. 1997;336:1356–1363.

72 Sporik, R., et. al. 1990. Exposure to house-dust mite allergen (Der p I) and the development of asthma in childhood. A prospective Study. N Engl. J med 323: 502-507.

73 Ash, N., and B. Greenburg. 1980. Vector potential of the German cockroach in dissemination of Salmonella enteritidis serotype typhimurium. J. Med. Entomol. 17: 417-23.

74 Michael J. Turell, Monica L. O'Guinn, David J. Dohm, James W. Jones. 2001. Vector Competence of North American Mosquitoes (Diptera: Culicidae) for West Nile Virus. Journal of Medical Entomology 38:130-134

75 Steere, Allen, C. 1991. Lyme Disease. NE J Med Volume 345:115-125

76 Childs, J. E. et al. 1994. Serologic and genetic identification of Peromyscus maniculatus as the primary rodent reservoir for a new hantavirus in the southwestern United States. J. Infect. Disease. 169(6):1271-80

77 Whitemore, R.W., et al. 1994. Non-occupational exposures to pesticides for residents of two US cities. Arch. Environ. Contam Toxicol 26: 47-59.

78 Whyatt R. M., et al. Residential pesticide use during pregnancy among a cohort of urban minority women. Environ Health Perspect. 2002; 110:507–514.

79 Perera F. P., et al. 2003. Effects of transplacental exposure to environmental pollutants on birth outcomes in a multiethnic population. Environ Health Perspect., 111:201–206.

80 Michael C. R., et. al.. 2003. Use of agricultural pesticides and prostate cancer risk in the agricultural health study cohort. *Am J Epidemiol*.; 157:800-814

81 Eskenazi, B., A. Bradman, R. Castorina. 1999. Exposures of children to organophosphate pesticides and their potential adverse health effects. Environ. Health Perspective. v. 107 Suppl 3:409-19

82 Larson, SJ, Capel, PD, Majewski, MS. 1997. Pesticides in surface waters. Distribution, trends, and governing factors. Ann Arbor Press, Chelsea, MI.

83 U.S.G.S. Pesticides in the Nation's Streams and Ground Water, 1992-2001Circular 1291(2006) Robert j. Gilliom, Jack E. Barbash, Charles G. Crawford, Pixie A. Hamilton, Jeffrey D. Martin, Naomi Nakagaki, Lisa H. Nowell, Jonathan C. Scott, Paul E Stackelberg, Gail P. Thelin, and David M. Wolock

84 Landrigan, P. J., et. al. 1999. Pesticides and Inner-City Children: Exposures, Risks, and Prevention. Environ Health Perspectives Suppl. 107 (S3): 431-437

85 Presentation by Dr. Kathy Murray, Entomologist Maine Department of Agriculture and Jeremy Caron Special Assistant to the Commissioner of Maine Department of Administrative and Financial Services.

86 Definition of IPM Maine Statutes Title 7, Chapter 413, INTEGRATED PEST MANAGEMENT (heading: PL 1991, c.609, s2)

87 Ending Toxic Dependency: The State of IPM, A Beyond Pesticides Report, 2007 *http://www.beyondpesticides.org/stateipm/stateipmreport/index.htm*

88 By "vulnerable populations" we mean those groups of people who are most susceptible to the effects of toxic chemicals, including for example the developing fetus, children, the elderly, people whose health has already been compromised by disease and people with specific genetic susceptibility.

89 By "inherent properties of concern" we mean the physical, chemical, biological and other attributes that enable a chemical to exhibit human toxicity, ecotoxicity, persistence in the environment or bioaccumulation or to form breakdown products, i.e. to transform into other chemicals of potential concern through degradation, metabolism or combustion or by other means.

90 PBTs are persistent, bioaccumulative and toxic chemicals; vPvBs are very persistent and very bioaccumulative chemicals without regard to evidence of toxicity.

91 State of Washington. 2006. Chapter 173-333 WAC - Persistent Bioaccumulative Toxins (*http://www.ecy.wa.gov/pubs/wac173333.pdf*—accessed November 15, 2007).

92 U.S. Environmental Protection. 1999. Federal Register, Part VII, 40 CFR Part 372 Persistent Bioaccumulative Toxic (PBT) Chemicals; Final Rule, Vol. 64, No. 209, Friday, October 29, 1999.

93 European Union. 2006. Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (*http://eur-lex.europa.eu/LexUriServ/LexiUriServ.do?uri=OJ:L:2006:396:0001:0849:EN:PDF*—accessed November 15, 2007).

94 United Nations Economic Commission for Europe. 2005. Globally Harmonized System of Classification and Labeling of Chemicals (GHS). (*http://www.unece.org/trans/danger/publi/ghs/ghs_rev01/01files_e.html*—accessed November 15, 2007).

95 State of California, Environmental Protection Agency, Office of Environmental Health Hazard Assessment. 2006. *Chemicals Known to the State to Cause Cancer or Reproductive Toxicity*. (*http://www.oehha.ca.gov/prop65/prop65_list/files/060906p65single.pdf*—accessed November 15, 2007).

96 World Health Organization, International Agency for Research on Cancer. 2006. *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans: Preamble* (*http://monographs.iarc.fr/ENG/Classification/index.php*—accessed November 15, 2007).

97 U.S. Environmental Protection Agency. 2005. *Guidelines for Carcinogen Risk Assessment* (*http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=116283*—accessed November 15, 2007).

98 U.S. Department of Health and Human Services, Public Health Service, National Toxicology Program. 2005. *Report on Carcinogens, Eleventh Edition* (*http://ntp.niehs.nih.gov/ntp/roc/toc11.html*—accessed November 15, 2007).

99 European Union. 2004. CONSLEG: 1976L0769 – 16/03/2004, Council Directive of 27 July 1976 on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations (76/769/EEC), 16 March 2004 (*http://ec.europa.eu/enterprise/chemicals/legislation/markrestr/consolid_1976L0769_en.pdf*—accessed November 15, 2007).

100 U.S. Department of Health and Human Services, Public Health Service, National Toxicology Program, Center for the Evaluation of Risks to Human Reproduction (CERHR). CERHR Chemicals. (*http:// http://cerhr.niehs.nih.gov/chemicals/index.html*—accessed November 15, 2007).

101 BKH Consulting (prepared for the European Commission Directorate-General Environment). 2000. Towards the Establishment of a Priority List of Substances for Further Evaluation of their Role in Endocrine Disruption—Preparation of a Candidate List of Substances as a Basis for Priority Setting (M0355008/1786Q/10/11/00), June 2000 (*http://ec.europa.eu/environment/docum/pdf/bkh_main.pdf*—accessed November 15, 2007).

102 Japan Ministry of Environment. 1998. Endocrine Disrupting Chemicals Database, Table of Chemicals Suspected of Having Endocrine Disrupting Effects (*http://w-edcdb.nies.go.jp/HPEF/sp_Table3.html*—accessed November 15, 2007).

103 Grandjean, P. and Landrigan, P. Developmental neurotoxicity of industrial chemicals. *The Lancet*. 2006. 368: 2167-2178. December 16, 2006. (*http://www.thelancet.com/journals/lancet/article/PIIS0140673606696657/abstract*—accessed November 15, 2007).

VIII. Glossary of Acronyms

BGS	Maine Bureau of General Services
CDC	U.S.Centers for Disease Control
CFC	Chlorofluorocarbons
CMR	Carcinogens, Mutagens and Reproductive toxins
DAFS	Maine Department of Administrative and Financial Services
DECD	Maine Department of Economic and Community Development
DEP	Maine Department of Environmental Protection
DNT	Developmental Neurotoxicity Testing
DOT	Maine Department of Transportation
EPEAT	Electronic Product Environmental Assessment Tool
EPP	Environmentally Preferable Purchasing
EU	European Union
EWG	Environmental Working Group
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FQPA	Food Quality Protection Act
GAO	U.S.Government Accountability Office
GCPSP	Green Chemistry Program for Sustainable Production
GHS	Globally Harmonized System
GS	Green Seal
HCS	Hazard Communication Standard
IPM	Integrated Pest Management
LEED-EB	Leadership in Energy and Environmental Design standards for Existing Buildings
MEIF	Maine Economic Incentive Fund
MSDS	Material Safety Data Sheet
NHANES	National Health and Nutrition Examination Survey
OSHA	Occupational Safety and Health Act
PAH	Polycyclic Aromatic Hydrocarbons
PBDE	Polybrominated Diphenyl Ethers
PBT's	Persistent, Bioaccumulative Toxins
PCB	PolyChlorinated Biphenyls
PLA	Polylactic Acid
PMN	Pre Market Notification
PMD	Maine Bureau of General Services Property Management Division
R&D	Research and Development
REACH	European Union Registration, Evaluation and Authorization of Chemicals
REDs	Registration Eligibility Decisions
RFQ	Request for Quotations
SEIU	Service Employees International Union
SAICM	Strategic Approach to International Chemicals Management
TURA	Toxics Use Reduction Acts
ToSCA	Toxic Substances and Control Act
USEPA	Environmental Protection Agency
USGS	U.S. Geological Survey
vPvB	Very Persistent, very Bioaccumulative

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