

Phthalates :

Environmental Health Issues & Reduction Strategies



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ACWA Water Quality Committee
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DEQ

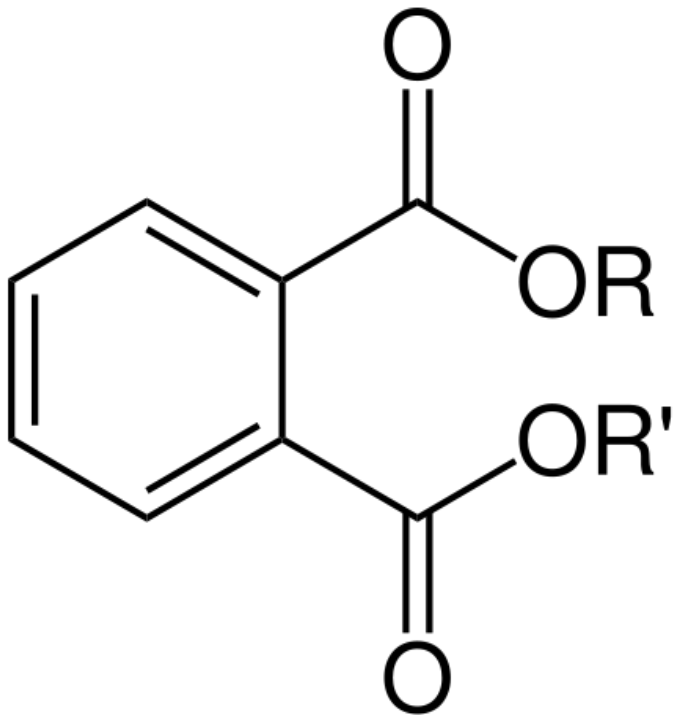
State of Oregon
Department of
Environmental
Quality



Overview

- What are Phthalates, Uses and Environmental Health Concerns?
- Oregon and Northwest Environmental Regulations and Monitoring for Phthalates
- Phthalates-in-Products Regulations
- Oregon's Non-Regulatory Efforts and Partnerships with Other States
- On-Going Phthalate Reduction Initiatives

What are Phthalates?

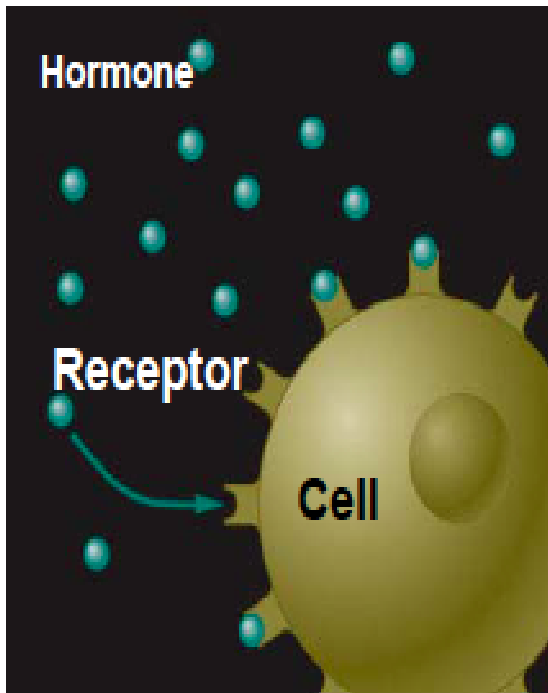


- Plasticizer
 - Increases flexibility
 - Transparency
 - Durability
 - Longevity
- Used primarily in polyvinyl chloride (PVC)
- Allow fragrances in personal care products to last longer

Uses of Phthalates

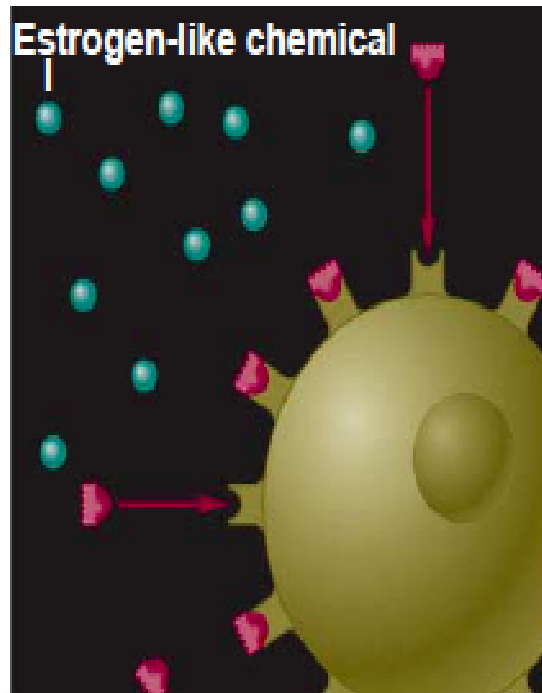
- Wood finishes
- Detergents
- Adhesives
- Lubricants
- Medical tubing
- Insecticides
- Medical devices
- Building material
- Food packaging
- Flooring
- Solvents
- Medications
- Personal care products
- Cosmetics
- Toys
- Paints
- Printing inks
- Food products
- Textiles
- Shower curtains
- Clothing
- Cable wiring

Hormone Disrupting Chemicals

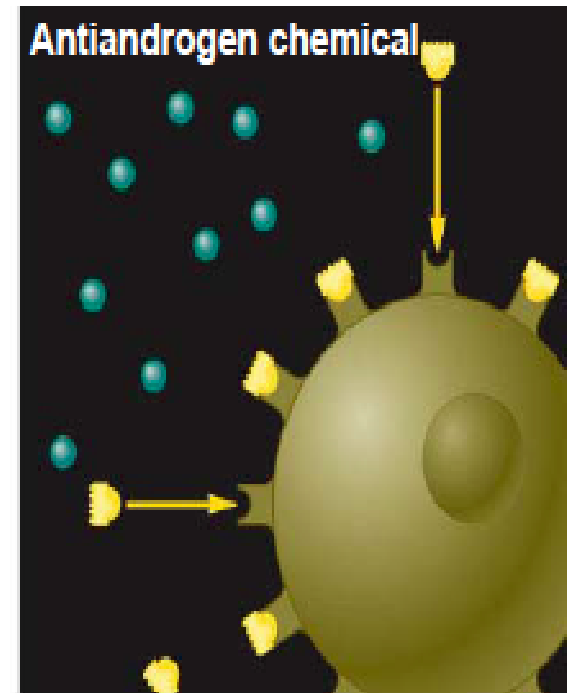


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Normal Hormone Process

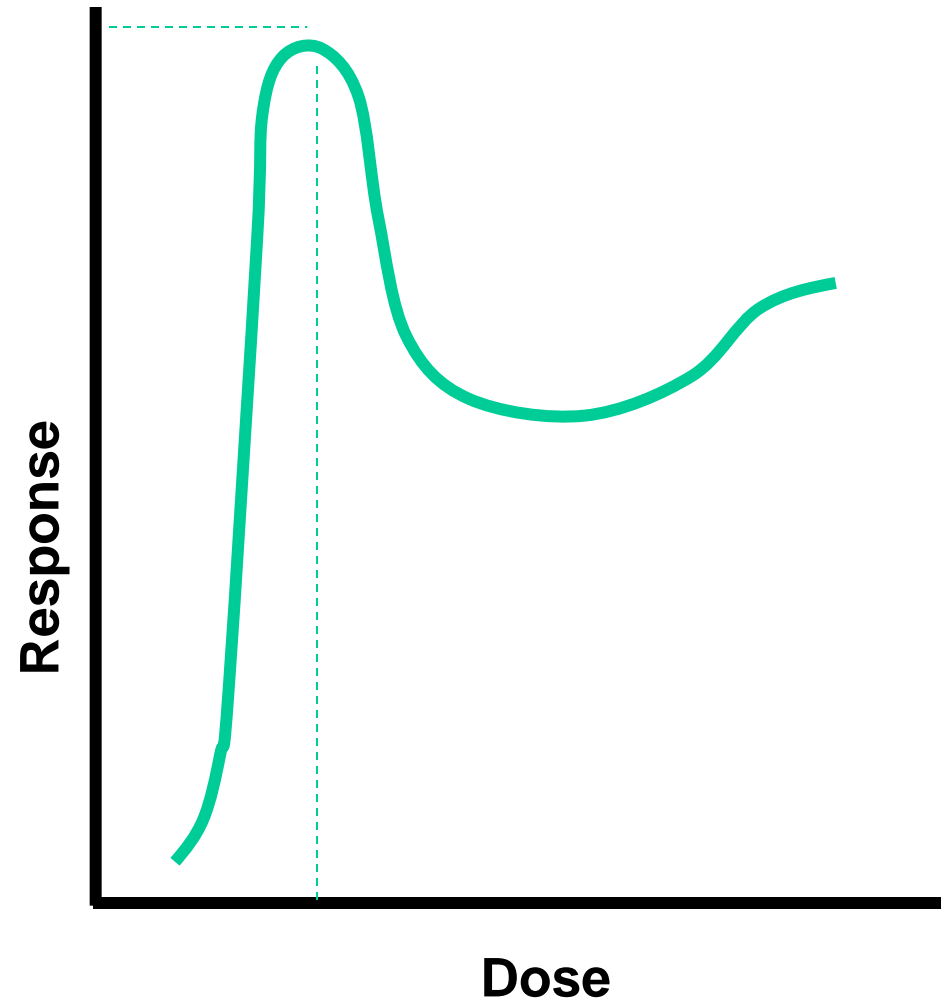
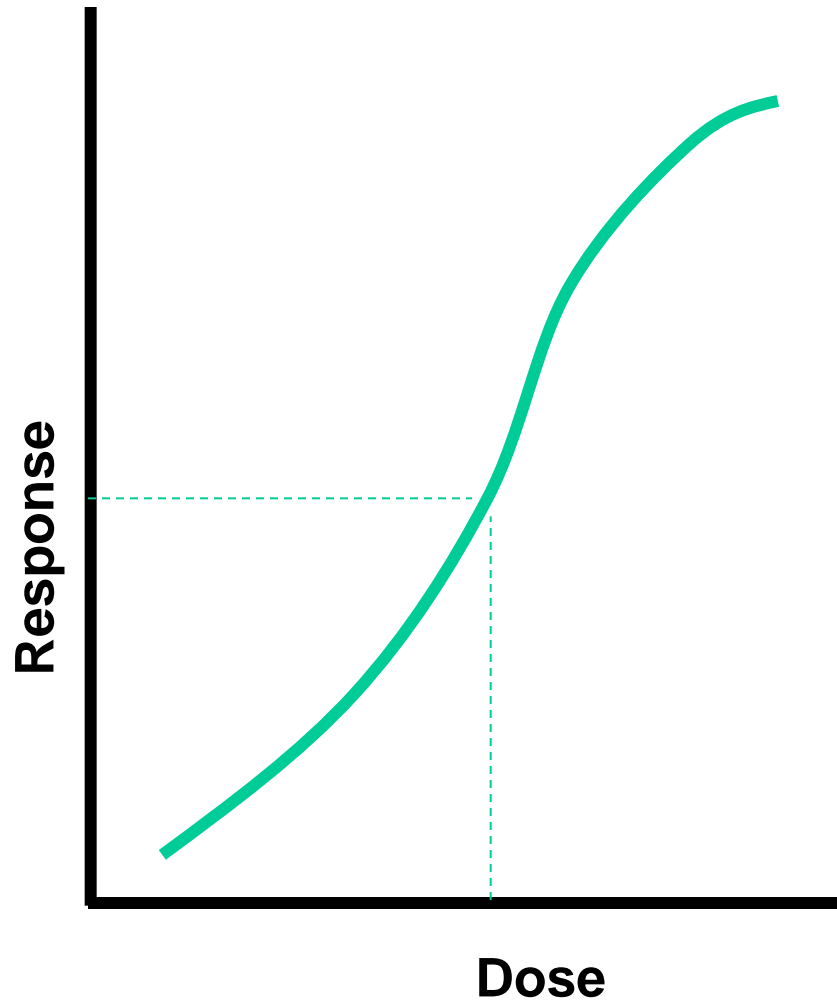


Hormone Mimic



Hormone Blocker

Low Dose Toxicity





Oregon Phthalate Regulatory Drivers

- 5 Human Health Water Quality Criteria (Table 40)
 - Butylbenzyl Phthalate (BBP), Diethyl Phthalate (DEP), Dimethyl Phthalate (DMP), Di-n-butyl Phthalate (DBP), Bis (2-ethylhexyl) Phthalate (DEHP)
- Safe Drinking Water Act Standards (MCLs)
 - DEHP on regulated contaminant list
 - Many historical MCL exceedences for DEHP in U.S, but plastic lab & field equipment a possible source
- Sediment risk evaluated for site cleanups
 - e.g., Portland Harbor (phthalates not a major risk driver)



Oregon environmental monitoring of Phthalates – examples

- USGS 2008-2010 Columbia Wastewater and Stormwater Study (*#2012-5068*)
 - Either DEP or DEHP detected at 6 of 9 WWTPs
- DEQ Toxics Water Monitoring: 2008-13 Detections
 - 3 phthalates detected
 - Butylbenzylphthalate (BBP) most common with 9 detections statewide
- DEQ Drinking Source Water Monitoring
 - Phthalates detected in raw water from 8 of 18 small surface water systems & some groundwater systems





Monitoring findings for Phthalates

..... generally, very low levels detected, but what about low dose concerns for endocrine disruptors?





Washington State Monitoring Findings

*“The just-out science shows that levels of toxic chemicals in Elliott Bay sediment — including mercury, lead, tin, PAHs and PCBs — are decreasing. Plasticizers (**phthalates**) and zinc are increasing.”*

Department of Ecology [ECOconnect](#) Blog, 2009



European Union banned six phthalates (1999)

All toys and childcare articles

- DEHP
- DBP
- BBP

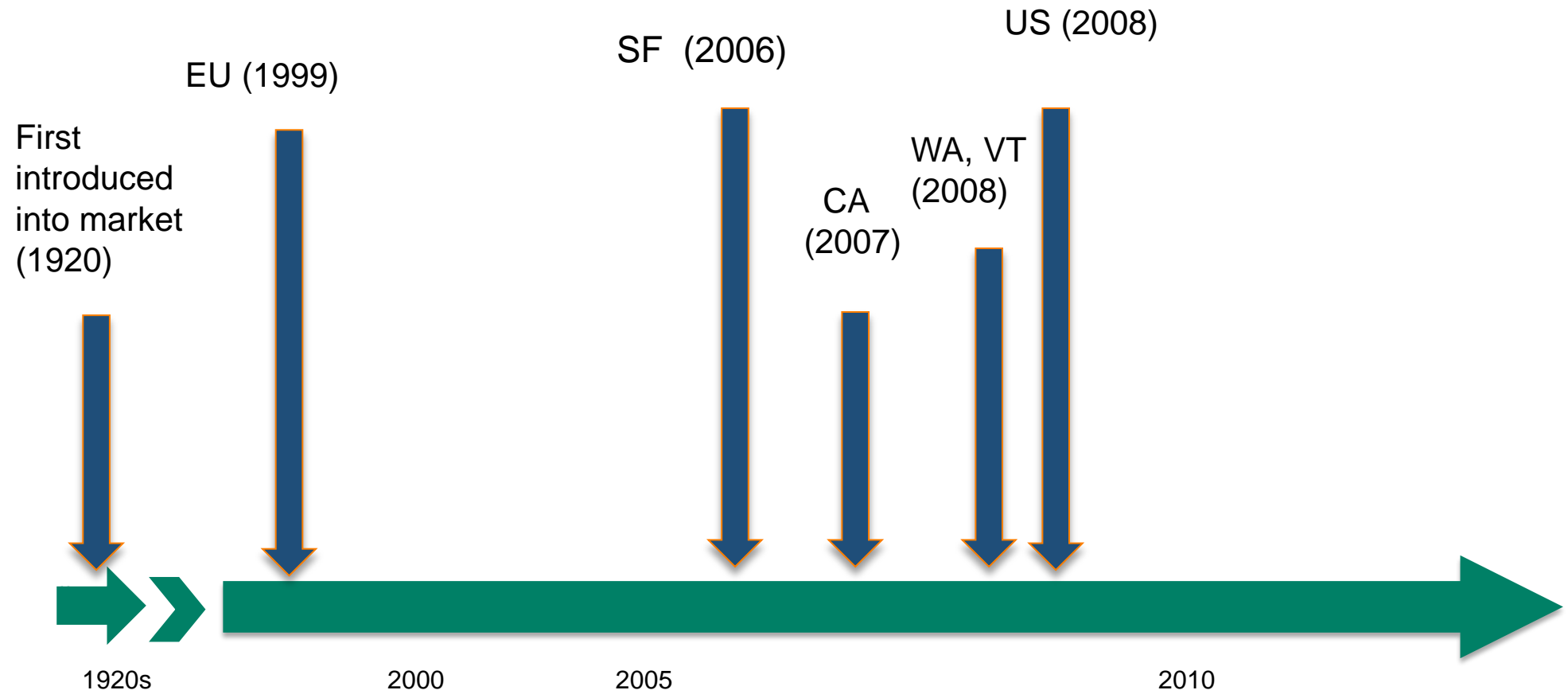
Articles that can be put in mouth

- DINP
- DIDP
- DnOP



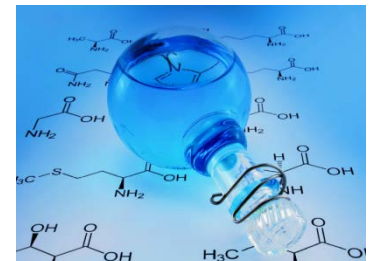
European Commission

Historic Ban of 6 Phthalates in Toys



Regulatory Drivers: 2015 Oregon Toxics-Free Kids Act (SB 478)

- Established **list** of 66 chemicals that must be reported by kids' product manufacturers
 - **Includes 8 phthalates**
- Oregon law goes further than other states by including chemical phase-out requirements
 - Waivers and associated alternatives assessment requirements included in statute
 - Hazard assessment required for substitute chemicals
- Rulemaking currently underway



SF Toy Screening for Parents using XRF

3 testing events

Detected:

- PVC (*phthalates likely*)
- Lead
- Arsenic
- Cadmium
- Mercury





Non-Regulatory Drivers in Oregon

- **Oregon DEQ Toxics Reduction Strategy**
 - 51 chemicals or groups of chemicals on “Focus List”, including **phthalates as a group**
 - 25 actions included in Strategy → emphasis on collaboration & partnerships
 - Advancing informed substitution through assessment frameworks included in strategy
 - 2016: Updating and revising strategy



OREGON DEQ TOXICS FOCUS LIST

Current as of November, 2012

Combustion & Petroleum By-Products:	Polycyclic Aromatic Hydrocarbons (PAHs)	Dioxins and Furans	Napthalenes		
Consumer Product Constituents:	Phthalates	Triclosan	4-Nonyphenol (and Nonyphenol Ethoxylates)	Bisphenol A	DEET
Current Use Pesticides:	Diazinon	Chlorpyrifos	Atrazine	Trifluralin	Chlorothalonil
	Malathion	Permethrin	Carbaryl	Pentachlorophenol	Diuron
	Glyphosate	Hexachlorocyclohexane (HCH), gamma-(Lindane)	2,4-D	Propoxur (Baygon)	Pendamethalin
Flame Retardants and Industrial Intermediates:	Polybrominated Diphenyl Ethers (PBDEs)	Polychlorinated Biphenyls (PCBs)	Ammonia		
Legacy Pesticides:	Dieldrin	DDT (and metabolites)	Chlordane (and metabolites)	Aldrin	Methoxychlor
	Heptachlor (& Heptachlor epoxide)	Hexachlorocyclohexane, beta-(beta-BHC)	Hexachlorobenzene	Hexachlorocyclohexane, alpha- (alpha-BHC)	
Metals:	Mercury (and methylmercury)	Copper	Cadmium	Chromium	Arsenic
	Lead	Nickel	Manganese	Silver	
Volatile Organic Compounds (VOCs):	Tetrachloroethylene	Benzene	Ethylbenzene	Trichloroethylene	Dichlorobenzene, 1,4-(Dichlorobenzene-p)
	Toluene	Formaldehyde			



Non-Regulatory Drivers: Governor's Executive Order

- “Fostering Environmentally-Friendly Purchasing and Product Design” (E.O. # 12-05)
 - Strengthen demand for safer alternatives through **state purchasing guidelines**
 - Implement business outreach strategy and incentives for accelerating green chemistry
 - Inter-agency approaches to toxics reduction





Janitorial Supplies State Procurement Initiative - 2013

- States of Oregon and Washington & Other Public Entities in the States
 - Represents about \$20 million in janitorial purchases
- Product specifications include:
 - Certified by EPA Safer Choice, Green Seal & Eco-Logo
 - Excludes use of DEQ “Focus List” chemicals – *e.g., **phthalates** in detergents or other cleaners*
 - No antimicrobials, carcinogens, respiratory sensitizers
- Other state/local purchasing opportunities that could focus on phthalates → **building materials**





State and Regional Collaboration: Interstate Chemicals Clearinghouse

- Formed to facilitate information sharing and advance common safer chemistry goals
- Databases or supporting resources for:
 - Chemical hazard assessments
 - Alternatives Assessment Library
 - State chemicals policies
 - Future - chemical use disclosure data
- Alternatives Assessment Guide – comprehensive approach that allows flexibility





State and Regional Collaboration: Regional Initiatives

- **Northwest Green Chemistry**



- Enhance human & environmental health by fostering innovation and economic opportunities through sustainable green chemistry and engineering solutions

- **West Coast States' MOU on Green Chemistry and Safer Products**

- Framework to leverage work and priorities in 3 states
- Identify opportunities to share tools, training, funding sources, data, state procurement and alternatives assessment initiatives

Examples of On-Going Initiatives With Focus on Phthalate Reduction

- **Health Care Without Harm** (<https://noharm.org/>)
 - DEHP in PVC plastic used in hospital medical devices
 - Concerns about leaching of DEHP from plastic materials
- **Healthy Building Network's Pharos Project**
 - Report on Phthalate-Free Plasticizers in PVC
 - ... an analysis of the plasticizers that are replacing phthalates in flexible vinyl building products*
- **Personal Care Product Initiatives**
 - E.g., Campaign for Safe Cosmetics, Environmental Defense Fund, State Organizations

Phthalates: Remaining Challenges

- Getting better data about what products and materials contain phthalates
 - Some disclosure protected by proprietary business information claims
- Getting better data on the environmental and health impact profiles of alternatives
- Scaling up production and availability of safer alternatives for various functional uses

