



U.S. EPA Design for the Environment Program *Safer Product Labeling*

Update for NEWMOA
December 17, 2009
10 AM Until Noon Eastern Time
Call in number: 800-299-3188
Pass code: 202-564-3821#

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Suggested Agenda for Call

- Presentation
 - Background on the DfE Safer Product Labeling Program
 - DfE for Pesticide-labeled products
 - Audits
 - Looking forward
- Discussion and Questions

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What DfE is About

- Goals
 - Safer Alternative Chemicals
 - Safer Products
 - Protecting Consumers – Especially Children
- Central Elements
 - OPPT technical tools and expertise
 - Multi-stakeholder participation
- Results
 - Industry partners reduced more than 335 million pounds of chemicals of concern last year



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What We Do

- **Alternatives Assessments**
 - Alternatives Analysis for Flame Retardants
 - Furniture Foam
 - Printed Circuit Boards
 - Life Cycle Assessment – Nano-Enabled Batteries for Electric Vehicles
- **DfE Safer Product Labeling Program**
 - A Stringent Approach
 - Distinguishing Safer Ingredients
 - Becoming a Partner
- **Best Practices for High-Hazard Chemicals**



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Flame Retardants in Printed Circuit Boards

Results: Data Presentation



		Human Health Hazard Concern										Ecotoxicity Hazard Concern			Environmental Hazard Concern		Exposure Considerations
Chemical	CASRN	Human Health Effects										Aquatic Toxicity		Environmental	Availability of flame retardants (FRs) throughout the lifecycle for reactive and additive FRs chemicals and resins		
		Acute Toxicity	Skin Sensitizer	Cancer Hazard	Immunotoxicity	Reproductive	Developmental	Neurological	Systemic	Genotoxicity	Acute	Chronic	Persistence	Bioaccumulation			
Reactive Flame Retardant Chemicals¹																	
Tetrabromobisphenol A (TBBPA) (Albemarle, Chemtura, and others)																	
TBBPA	79-94-7	L	L	L	L	L	M	L	L	L	L	H	H	M	L		
DOPO (6H-Dibenz[c,e][1,2] oxaphosphorin, 6-oxide) (Samko Co., Ltd. and others)																	
DOPO	35948-25-5	L	L	L	L	L	L	L	L	L	L	M	M	L	L		
Fyrolflex PMP (Aryl alkylphosphonate) (Supresta)																	
Fyrolflex PMP	Proprietary	L	L	L	L	L	L	L	L	L	L	L	L	H	L		
Reactive Flame Retardant Resins²																	
Reaction product of TBBPA - D.E.R. 538 (Phenol, 4,4'-(1-methylethylidene)bis[2,6-dibromo-, polymer with (chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol]] (Dow Chemical)																	
D.E.R. 538	26265-08-7	L	M	M ⁰	L	M ⁰	M ⁰	L	L	L	M	L	L	M	L		
Reaction Product of DOPO - Dow XZ-92547 (reaction product of an epoxy phenyl novolak with DOPO) (Dow Chemical)																	
Dow XZ-92547	Proprietary	L	M	M ⁰	L	M ⁰	M ⁰	L	L	M ⁰	L	L	H	L			
Reaction product of Fyrolflex PMP with bisphenol A, polymer with epichlorohydrin (Representative Resin)																	
Representative Fyrolflex PCB Resin	Unknown	L	L	M ⁰	L	M ⁰	M ⁰	L	L	M ⁰	L	L	H	L			

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DfE Safer Product Labeling -- History



1996 - 1997 DfE labels first product – Laundry Detergent

- Safer solvents, surfactants and other opportunities
- Builds on New Chemicals Program Expertise
- Looking for leaders one functional class at a time

2005 DfE labels 100th product

- Retailers create incentive for manufacturers to show leadership
- Demand for partnership accelerates; queue for partnership exceeds one year
- Third-party profiling

2006 Institutional Purchasers include DfE in purchasing specifications

- New Jersey
- Coalition of western states

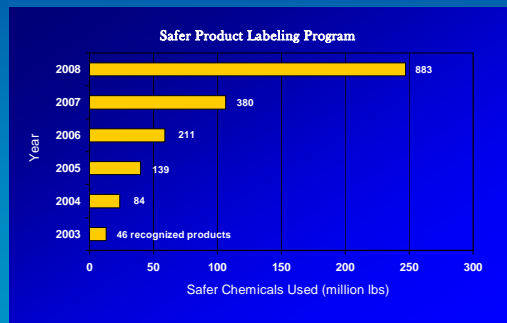
2009 DfE labels 1,000th product

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DfE Safer Product Labeling

- Cleaning products
 - Household
 - Industrial and Institutional
 - Direct release, car-wash, boat wash, graffiti removers, etc...
- Biological-based products
 - Holding tank treatments
 - Bioremediation products
- Deicers
- Aircraft conversion coatings
- Industrial coatings
- Inks
- Odor removal
- Field paint
- Tire balancing liquid



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Review – 3 Basic Components

1) Review every ingredient by functional use class

- To promote green chemistry
- To understand toxicity
 - Lists
 - Literature
 - Analogous chemicals – SAR

2) Review formulation as a whole

- Synergistic effects
- pH
- Performance testing

3) Partnership Agreement



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DfE Criteria (Screens) for Safer Chemicals

- Every chemical is assessed against criteria
 - Lists
 - Data from studies and modeling
- Criteria is based on endpoints with thresholds corresponding to New Chemicals Program criteria for low concern
 - Acute mammalian toxicity
 - Carcinogenicity
 - Environmental toxicity and fate
 - Genetic toxicity
 - Neurotoxicity
 - Repeated dose toxicity
 - Reproductive and developmental toxicity
 - Respiratory sensitization
 - Skin sensitization

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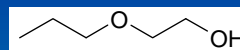


Structure-Activity Relationships (SARs) Identifying Chemicals of Concern



2-Butoxyethanol

- Solvent used widely in cleaning products
- Human health concerns include hemolysis leading to toxicity in kidney, spleen and liver.
- LOAEL (rat, oral, 6 wks): 222 mg/kg/d
- LOAEL (rat, inhalation, 13 wks): 77 ppm (0.37 mg/L)



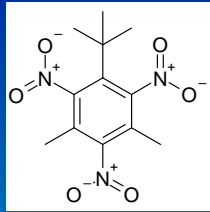
n-Propoxyethanol

- Also can be used as a solvent in cleaning products
- Similar human health concerns including hemolysis leading to toxicity in kidney, spleen and liver.
- LOAEL (rat, oral, 6 wks): 195 mg/kg/d
- LOAEL (rat, inhalation, 14 wks): 200 ppm (0.85 mg/L)

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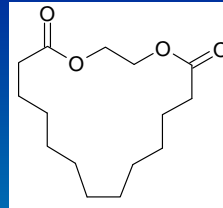
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Suggesting Safer Substitutes (Fragrances)



Musk xylol

- Appears designed for maximum environmental persistence—nitro and t-butyl groups
- May bioaccumulate
- Potentially toxic to aquatic organisms
- May be an indirect toxicant, inhibiting the ability of cells to excrete harmful chemicals

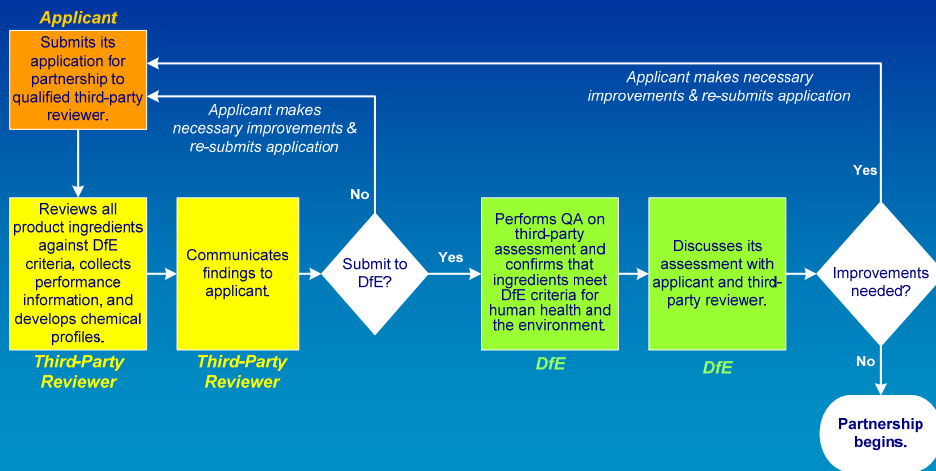


Ethylene brassylate

- Faster biodegradation—ester linkages
- Fragrance houses have worked with EPA's Design for the Environment Formulator Program to replace musk xylol with ethylene brassylate

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Steps to Becoming a DfE Partner



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DfE for Pesticide Products

- Products may bear the logo starting in May
- DfE will begin evaluating submissions
- Pilot will last three years

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DfE for Pesticide Products

- To qualify for the DfE logo a pesticide-labeled product must meet the following conditions:
 - Whole-product Characteristics: Must meet the DfE Standard
 - pH
 - packaging
 - performance
 - auditing
 - Inerts: Every inert must meet the DfE Standard
 - Actives: Every ingredient must meet the DfE Master Criteria for Safer ingredients
- Follow the link for the:
 - DfE Standard for Safer Cleaning Products
 - DfE Criteria (Screen) for Safer Ingredients

<http://www.epa.gov/dfe/pubs/projects/formulat/about.htm>

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Audits – Starting Immediately

- **Annual Desk Audits**
 - Verify contents of recognized products and labels
 - Ensure safer chemistry status (continuous improvement)
 - Review production volumes, use of logo, etc.
- **On-site Audit**
 - Once during 3-yr partnership period -- if more than one facility, two sites selected randomly will be audited
 - Confirms materials usage compared to Partnership Agreement (using batch tickets)
 - Ensures Good Manufacturing Practices (e.g., non-contamination of labeled products)
 - Reviews overall partnership compliance (e.g., documentation of end-user training, packaging)

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Looking Forward

- Transparency
- Potential Future Technical Improvements to the Standard

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Continuous Improvement to Enhance Transparency



- Roles and organization of technical committees
 - Committees and membership on web site
 - Flow chart to illuminate role of third-parties and committees
- We would value your participation

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Continuous Improvement to Enhance The DfE Standard



- Enhance web site list of partners and recognized products
 - date of partnership formation
 - most recent renewal – to clarify the version of the DfE Standard that applies
- Align VOC requirements with the issuance of new air regulations – CARB and EPA
- Ingredient disclosure

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Contact Information



Clive Davies
davies.clive@epa.gov
202-564-3821

<http://www.epa.gov/dfe>