Overview of GC3 Project Group Activities
Business / University Partnerships for Safer Chemicals

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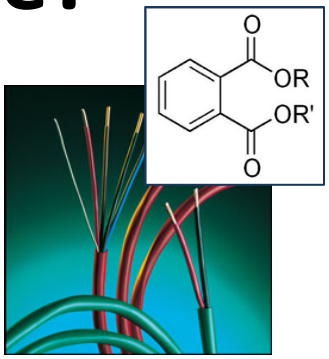
History of the Workgroup

- Started at the GC3 Roundtable in 2010
- Objective: to develop and pilot a new model for business and academia to work together to assess and possibly develop safer alternatives to chemicals of concern

Pilot: Collaborative alternatives assessment (AA) to identify safer alternatives to DEHP (di (2-ethylhexyl) phthalate) plasticizer in wire & cable applications

Why did the GC3 focus the pilot on DEHP phthalate plasticizer & wire and cable?



- Phthalates are of interest to many GC3 members
  - Many are toxic
  - High exposure potential from plastics
  - Used in many different plastic products
  - Focus of numerous regulations
  - Many companies need to eliminate them and find safer substitutes
- Wire & cable is of interest to many GC3 members
- DEHP is the most commonly used plasticizer for wire and cable
- Leverages Univ. of Mass. Lowell's expertise in plastics engineering

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Active Project Workgroup Participants

OEMs/Retail

Dell

EMC

HP

Staples

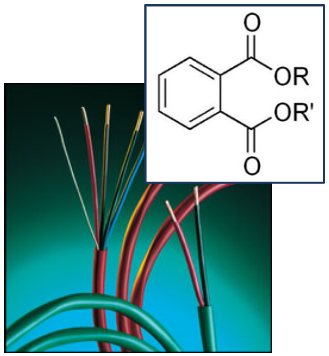
Suppliers

BASF

Dow Chemical

Hallstar

Teknor Apex



University Partners

Lowell Center for Sustainable Production

Faculty of Univ. of Mass Lowell

Government & NGOs

Washington State

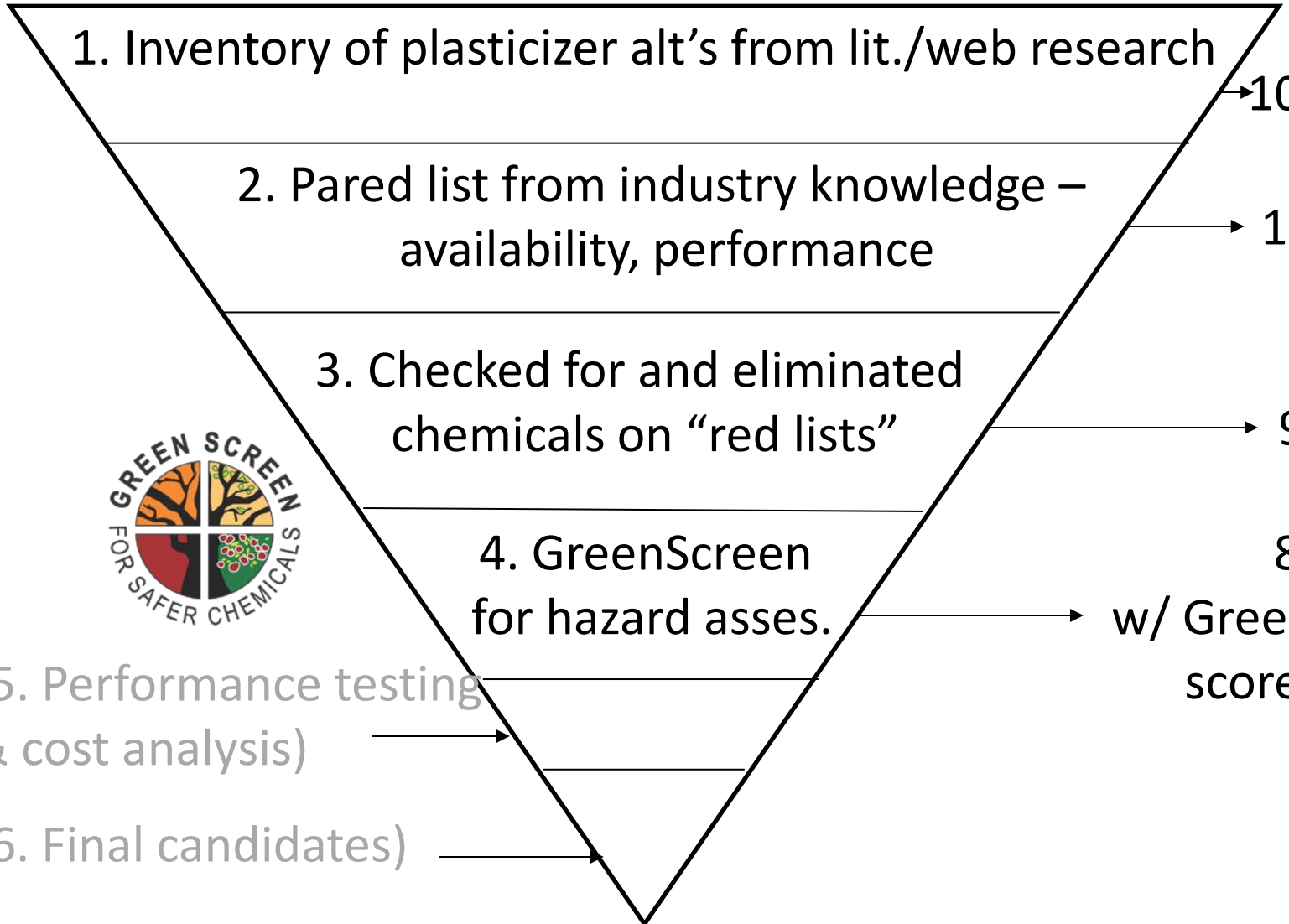
Clean Production Action

Pacific Northwest Pollution Prevention Resource Center

Toxicology Consultant

ToxServices

Project Approach



Collaborative Process

- Protocols were developed collaboratively

- All draft assessments, comments from the workgroup, and call notes were posted on the project webpage and draft results were discussed on calls

7. **TEHTM**
   TEHTM ver. 1 - 12/20/11
   TEHTM ver. 2 - 1/6/12
   TEHTM ver.3 -2/13/12
   Comments:
   BASF comments on GreenScreen™ for TEHTM
   Safety Data Sheet: PALATINOL® TOTM

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Results: Chemical Hazard Assessments

Plasticizer Acronym	Chemical Name	CAS No.	GreenScreen Benchmark (see explanations below)	Notes	Link to GreenScreen Assessments
DEHT (Eastman 168)	Di(2-ethylhexyl) terephthalate	6422-86-2	3_{DG}	Data gaps for neurotoxicity and respiratory sensitization	Verified GreenScreen
Hexamoll® DINCH® (BASF)	Diisononyl cyclohexanedi carboxylate	166412-78-8 (outside the U.S.), 474919-59-0 (inside the	2	Moderate endocrine activity	Verified GreenScreen
DOZ					
TEHTM					

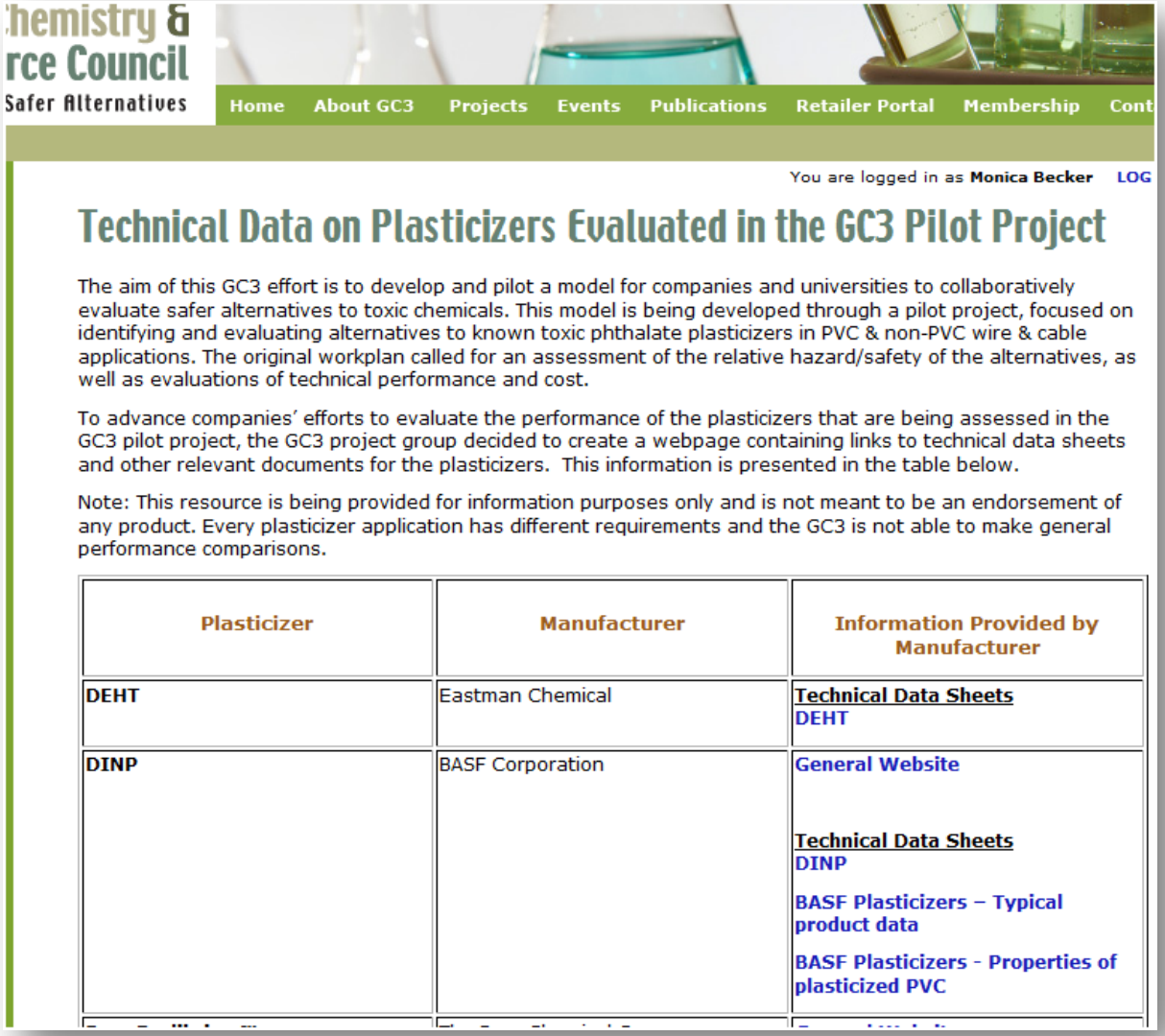
chemical's health effects dataset affects the overall GreenScreen™ score. In a worst-case hazard benchmarking scenario, if DOZ were assigned a High (H) score for C or E it would be assigned a GreenScreen™ Benchmark score of 1 ("Avoid- Chemical of High Concern").

Figure 1: GreenScreen™ Hazard Ratings for Bis(2-ethylhexyl) azelate (DOZ)

Group I Human					Group II and II* Human								Ecotox		Fate		Physical	
C	M	R	D	E	AT	ST		N		SnS*	SnR*	IrS	IrE	AA	CA	P	B	Rx	F
						single	repeated*	single	repeated*										
dg	*L*	L	L	dg	L	dg	L	dg	dg	*L*	dg	*M*	*L*	L	L	vL	vL	*L*	L

Note: Hazard levels (Very High (vH), High (H), Moderate (M), Low (L), Very Low (vL)) in *italics* reflect estimated values and lower confidence. Hazard levels in **BOLD** font reflect values based on test data (See Guidance).

Results: Performance Information



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Technical Data on Plasticizers Evaluated in the GC3 Pilot Project

The aim of this GC3 effort is to develop and pilot a model for companies and universities to collaboratively evaluate safer alternatives to toxic chemicals. This model is being developed through a pilot project, focused on identifying and evaluating alternatives to known toxic phthalate plasticizers in PVC & non-PVC wire & cable applications. The original workplan called for an assessment of the relative hazard/safety of the alternatives, as well as evaluations of technical performance and cost.

To advance companies' efforts to evaluate the performance of the plasticizers that are being assessed in the GC3 pilot project, the GC3 project group decided to create a webpage containing links to technical data sheets and other relevant documents for the plasticizers. This information is presented in the table below.

Note: This resource is being provided for information purposes only and is not meant to be an endorsement of any product. Every plasticizer application has different requirements and the GC3 is not able to make general performance comparisons.

Plasticizer	Manufacturer	Information Provided by Manufacturer
DEHT	Eastman Chemical	**Technical Data Sheets** DEHT
DINP	BASF Corporation	General Website **Technical Data Sheets** DINP BASF Plasticizers – Typical product data BASF Plasticizers - Properties of plasticized PVC

Funding for the Project

- Companies in the GC3 Project Group provided cash
  - Plasticizer manufacturers
  - Electronics companies (i.e., users of wire & cable)

- The GC3, Lowell Center for Sustainable Production, and the Toxics Use Reduction Institute contributed cash and in-kind contributions

Benefits of the project

Value of independent assessments

- Plasticizer manufacturers found value in an independent assessment for internal communication and marketing
- Compounders and brands found value in an independent assessment to avoid “regrettable substitutions” and in getting a single score to support decision-making

Value of collaborative process

Pooling knowledge, funds and data to evaluate alternatives is valuable

- Lowers the cost to individual companies to get assessments done
- Creates more robust results
- Can create alignment on safer chemical alternatives within a sector, which can lead to greater demand and lower costs for alternatives

Challenges

Lack of transparency in some formulations

- Some assessments done under NDA -- results reported but not the identity of chemicals used

- Frustrates the efforts of compounders and brands to really know what they are getting

Obtaining complete tox data sets for chemicals

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Current Status of Project

- Just finished the "verification" (i.e., peer review) of the GreenScreens

- GreenScreens will be made public right after the GC3 RT

- Requests from several organizations to include the assessments in their chemical/material databases

- Documented the process in several publications

RSC | Advancing the Chemical Sciences

Chemical Alternatives Assessments

Editors: R M Harrison and R E Hester

How collaboration can lead to better decisions on safer chemical alternatives

By Monica Becker
Published October 26, 2012
Tags: Chemicals, Green Chemistry & Toxics, More...

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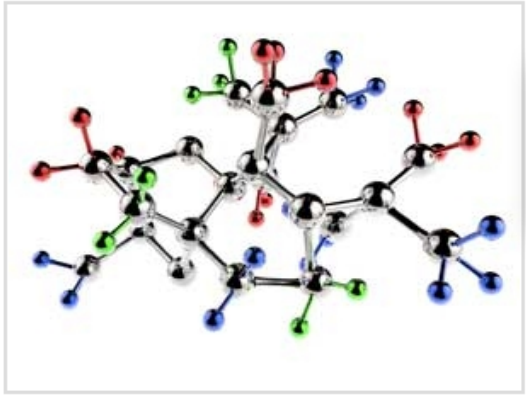

The pressure is mounting on brands to eliminate known chemicals of concern from their products.

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to this list growing interest and pressure from individual consumers, NGOs and retailers for greater safety and transparency.

The path to elimination can be riddled with challenges. Finding a truly safer substitute that