

# **Helsinki Chemicals Forum on Green Chemical Policy**

## **U.S. EPA Green Chemical Policy Approaches**

Tala Henry, Ph.D.

Deputy Director

Office of Pollution Prevention and Toxics  
Office of Chemical Safety and Pollution Prevention  
United States Environmental Protection Agency  
Washington, D.C.



# Markets for Safer Chemical Products - Safer Choice Program



- Stringent product certification requirements; every ingredient is reviewed for human health and environmental endpoints
- Proper ingredient use is confirmed each year by audit
- More than 2,000 certified products from 371 partners
  - ~ **1,000** Retail
  - ~ **1,000** Industrial & Institutional
  - ~ **400** have fragrance-free certification

[www.epa.gov/saferchoice/standard](http://www.epa.gov/saferchoice/standard)

[www.epa.gov/saferchoice/products](http://www.epa.gov/saferchoice/products)

- An EPA consumer survey shows 80% would use the Safer Choice label to inform their purchasing decisions
- Product Types: Cleaning products (e.g., all-purpose cleaners, laundry and dish detergents, degreasers), hand soaps, pet shampoos, athletic field paints, dust control products, and disinfectants (under DfE certification)



# Formulator Palette for Safer Chemicals – Safer Chemical Ingredients List (SCIL)

- Living list of almost **1,000** safer chemicals that meet EPA's Safer Chemical Criteria
- Industry uses SCIL to formulate Safer Choice products
- Sustainable chemistry builds on safer chemistry
- Many companies use the list independently of Safer Choice certification in their sustainable chemistry programs

Solvents			
Note: When a functional use category is selected, the search above will only apply to the chemicals assigned to this functional use. To select a different functional use, please <a href="#">scroll up</a> .			
Show <input type="text" value="25"/> entries			
Code	Common Name	CAS Registry Number	Functional Use
●	(R)-(-)-1,3-Butanediol	<a href="#">6290-03-5</a>	<a href="#">Solvents</a>
●	1,1'-Dimethyldiethylene glycol	<a href="#">110-98-5</a>	<a href="#">Solvents</a>
●	1,2-Butanediol	<a href="#">584-03-2</a>	<a href="#">Solvents</a>
●	1,2-Hexanediol	<a href="#">6920-22-5</a>	<a href="#">Solvents</a>
●	1,2-Propanediol	<a href="#">57-55-6</a>	<a href="#">Enzymes and Enzyme Stabilizers; Solvents</a>
●	1,3-Butanediol	<a href="#">107-88-0</a>	<a href="#">Solvents</a>

[www.epa.gov/saferchoice/safer-ingredients](http://www.epa.gov/saferchoice/safer-ingredients)



# Leveraging Toxics Release Inventory Data

- The TRI annually tracks industrial and federal facility waste management of chemicals included on the TRI chemical list. (<https://www.epa.gov/tri>)
- TRI database includes information on:



Releases



Waste  
Transfers



Pollution  
Prevention

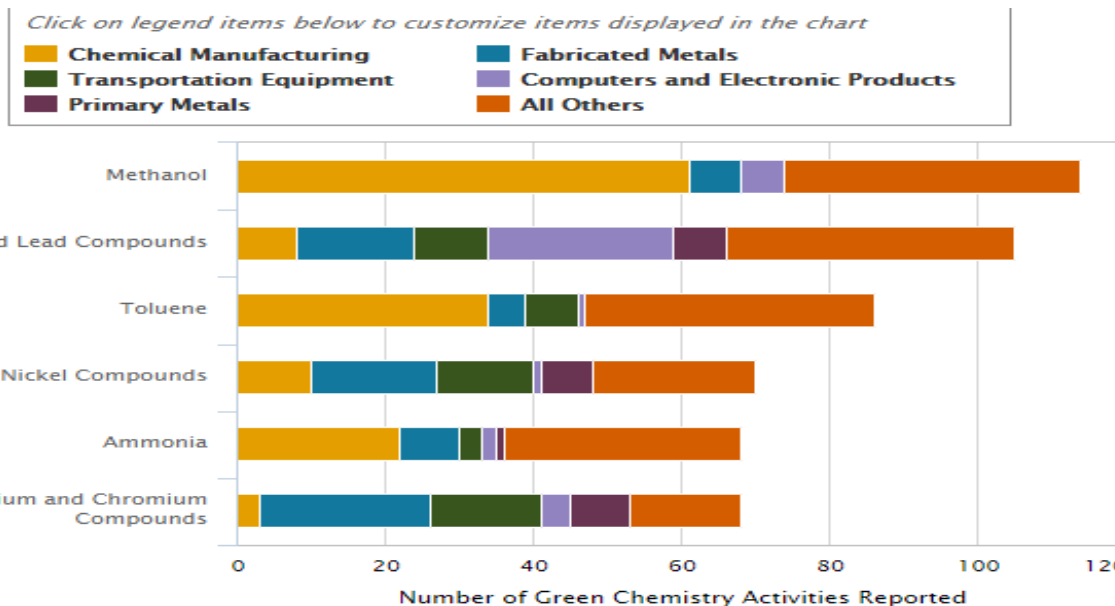
**And  
much  
more!**



# Tracking Green Chemistry Progress and Identifying Opportunities

- TRI tracks the implementation of specific green chemistry activities
- Since 2014, facilities have reported 1,496 green chemistry activities for 130 TRI chemicals and chemical categories ([www.epa.gov/tri/p2](http://www.epa.gov/tri/p2))

**Green Chemistry Activities for Top Chemicals, by Industry, 2014–2018**





# Extending Technical Assistance and Adoption of Sustainable Practices

## EPA Pollution Prevention (P2) Grants

- *P2 Grants* to U.S. states and tribes to provide technical assistance to businesses to help them develop and adopt source reduction practices.
- Target assistance to businesses in 5 industrial sectors: Food and beverage, Chemical, Automotive, Aerospace, and Metal Manufacturing
  - Grants are laboratories of innovation.
  - Facilitate access to information on financing options / innovations for investments in P2
- ([www.epa.gov/p2/grant-programs-pollution-prevention](http://www.epa.gov/p2/grant-programs-pollution-prevention))



# Example: Revitalize Land and Prevent Contamination

- Metal finishers are one of the leading sectors for environmental remediation efforts
- EPA regional offices developed assistance programs and materials to help metal finishers reduce toxics use, improve production processes, and significantly reduce potential for land contamination
- **Results for one region:**
  - 14 Facilities received technical assistance
  - 34 Workshops in two states
  - 2,000 copies of Materials Distributed
    - Raw Materials/Waste: Reductions:
    - Water/Wastewater 12.4 M gallons
    - Process Chemicals 6,450 gal. + 7,980 lbs.
    - Hazardous Waste 200,000 lbs.
    - Metals in Wastewater 56 lbs.
    - VOCs 5,790 lbs.
  - Average Cost Savings to Companies = USD\$12,741/year
  - Average Simple Payback = 1.7 years





# Recognizing Green Chemistry Innovation

## EPA Green Chemistry Challenge Awards (GCCA)

- Recognize and promote innovative chemical technologies that that reduce or eliminate the use or generation of hazardous substances
- Co-sponsorship with American Chemical Society
- Established in 1996

Results through 2020: 123 winning technologies have:

- *Eliminated 830 million pounds of hazardous chemicals and solvents each year.*
- *Saved 21 billion gallons of water each year*
- *Eliminated 7.8 billion pounds of carbon dioxide equivalents released to air each year*



[www.epa.gov/greenchemistry](http://www.epa.gov/greenchemistry)





# Green Chemistry Awards: Searchable by industry/technology/year

Green Chemistry | US EPA x Green Chemistry Challenge Award x +

allenge-award-recipients-industry-sector

## Green Chemistry Challenge Award Recipients by Industry Sector

On this page:

Index of Green Chemistry Challenge Award winners by industry sector.

On other pages:

- [Winning technologies indexed by year](#)
- [Winning technologies indexed by technology](#)

**DISCLAIMER:** The short descriptions provided in this section were derived by EPA from the winning entries received for the Green Chemistry Challenge Awards and other public information. They are not officially endorsed by EPA, nor does EPA endorse any of the products mentioned in them. Claims made in these descriptions have not been verified by EPA. Each description represents only one aspect of the information in an entry and, as such, is intended merely to point users of this Web site to a summary of the winning entry.

Select an Industry Sector:

Industry Subtopics

Agriculture and Agrochemicals, such as fertilizers, plant growth stimulators: 6 technologies  
Also see [Food](#) and [Renewable Resources](#)

Year	Winner	Description of the Winning Technology in Relation to the Topic Area
2016	Dow AgroSciences LLC	An aqueous microcapsule suspension of nitrpyrin, a nitrification inhibitor, that is compatible with common nitrogen fertilizers, decreases fertilizer runoff, decreases solvents usage, and improves crop yields ( <a href="#">summary</a> )
2004	Jeneil Biosurfactant Company	Rhamnolipid biosurfactant: a biobased, biodegradable surfactant to increase penetration and dispersion of agricultural chemicals in soil and foliage; also an active biofungicide ( <a href="#">summary</a> )
2001	Bayer Corporation; Bayer AG (technology acquired by LANXESS)	Baypure™ CX iminodisuccinate: a biodegradable chelating agent that prevents, corrects, and minimizes mineral deficiencies in crops ( <a href="#">summary</a> )

- ### Industry Subtopics
- Agriculture and Agrochemicals
  - Pesticides
  - Automotive and Transportation
  - Broad Applicability
  - Buildings and Architecture
  - Bulk and Commodity Chemicals
  - Electronics and Semiconductors
  - Food
  - Formulation Ingredients
  - Formulated Products
  - Fuels
  - Medical Devices
  - Paints and Coatings
  - Pharmaceuticals
  - Pigments, Dyes, and Colorants
  - Plastics
  - Printing and Imaging
  - Pulp and Paper
  - Safety
  - Soaps and Detergents
  - Textiles and Fibers
  - Water Treatment
- Industry Subtopics



# Collaborating on Sustainability and Encouraging Systems Thinking

- EPA collaborating with OECD to expand systems thinking and green chemistry
  - Studying value chain approaches to determining best available techniques (BAT)
  - Developing general criteria for the sustainable design of plastics
- Collaborating on alternative assessments – OECD Risk Reduction Programme includes work on substitution of harmful chemicals and safer and sustainable chemistry
  - Guidance on Key Considerations for the Identification and Selection of Safer Chemical Alternatives published in March 2021



**BAT** <https://www.oecd.org/chemicalsafety/risk-management/best-available-techniques.htm>

**Plastics** <https://www.oecd.org/environment/waste/global-forum-on-environment-plastics-in-a-circular-economy.htm>

**Alternatives:** <https://www.oecd.org/chemicalsafety/risk-management/>