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CENTER for
ENVIRONMENTAL
HEALTH

Exploring Series:

Greener Cleaners and Disinfectants

Presented by CEH & TURI

Featured Speakers

Alicia McCarthy

Senior Safer Chemistry Scientist at the Toxics Use Reduction Institute (TURI)

Jose Aguayo

Senior Program Manager of Green & Clean Procurement at CEH

The Center for Environmental Health (CEH)

- Non-profit organization working to reduce exposure to toxic chemicals in our air, water, soil, food, and the products we use every day.
- Expertise in sustainable non-toxic built environment(BE) products.
- Developed sustainable BE resources to help institutional purchasers select safer products.

Safer Cleaners & Disinfectants

- Important to ensure the health of your workforce as well as that of janitorial and cleaning staff.
- Important topic covered briefly during EPP webinar last year.
- CEH partnered with TURI to bring their expertise in safer cleaning and disinfecting products.

Choosing Safer, Effective Cleaners and Disinfectants

Presented by:
Alicia McCarthy
Senior Safer Chemistry Scientist
Toxics Use Reduction Institute (TURI)

Toxics Use Reduction Act (TURA)

- Massachusetts's Act focused on reducing toxics in manufacturing and business
- Established in 1989

Massachusetts Department of Environmental Protection (MassDEP): planner certification, filings, enforcement, data analysis

Massachusetts Office of Technical Assistance and Technology (OTA): On-site, confidential technical assistance

Massachusetts Toxics Use Reduction Institute (TURI): Training, Grants, Research, Alternatives Assessment, Policy Analysis, Technical Support, Laboratory, Library

The Toxics Use Reduction Institute (TURI)

Analyze	Analyze the policy implications of chemicals used in MA
Train	Train professionals in toxics use reduction planning to help facilities reduce their use of toxics
Provide	Provide technical and financial support to help companies achieve TUR success
Conduct and Enable	Conduct and enable research to develop and assess the performance of safer alternatives
Collaborate	Collaborate with community groups to reduce toxics at the local level

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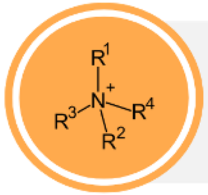
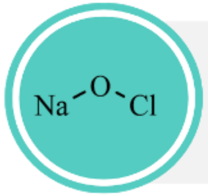
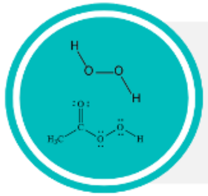
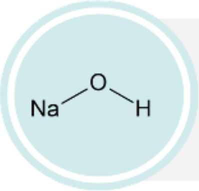
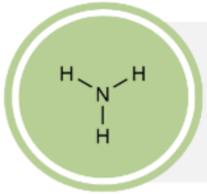
TOXICS USE REDUCTION INSTITUTE

- Industrial Performance Testing
- Janitorial Performance Testing
- Antimicrobial "Proof of Concept" Testing & Other Services
- Safer Alternative Assessments
- Site Visit Evaluation & Technical Assistance
- Formulation & Solubility Testing
- Ingredient Hazard Screening
- Educational Outreach
- Research

KNOW THE DIFFERENCE:

	CLEANING	SANITIZING	DISINFECTION
PURPOSE:	**REMOVES** dirt, dust, and other contaminants from surfaces. Prepares a surface for use of a sanitizer or disinfectant so that it can effectively work as intended. Look for ecolabels like EPA Safer Choice, Green Seal, and ECOLOGO.	**REDUCES** the amount of bacteria on a surface to a safe level. Must follow the product label for required wait times before wiping or rinsing. Contains an active ingredient(s) and must be registered through EPA.	**KILLS** bacteria, viruses, mold, and other microbes based on the product label claims. Must follow the product label for required wait times before wiping. Contains an active ingredient(s) and must be registered through EPA.
EXAMPLE:	 Microfiber cloth with an all purpose cleaner to remove dirt and oils off a countertop.	 Spraying a plastic cutting board with a food-safe sanitizer after cleaning.	 Spraying high-touch surfaces post-cleaning (e.g., light switches, doorknobs).

Example Chemicals of Concern to Avoid in Products

	Chemical	Institutional Applications	Hazards
	QUATERNARY AMMONIUM COMPOUNDS (QACS) (E.G., BENZALKONIUM CHLORIDE, DDAC)	Disinfecting wipes and sprays in schools, hospitals, offices; janitorial disinfectants; gym cleaners	Asthmagen, skin and eye irritation, potential reproductive and metabolic disruption effects
	SODIUM HYPOCHLORITE (BLEACH)	Restroom and floor disinfectants, hospital-grade cleaner disinfectants, daycare facility disinfectants	Asthmagen; corrosive to skin/eyes, respiratory irritation; highly reactive with other chemicals to form toxic byproducts when mixed
	HYDROGEN PEROXIDE + PERACETIC ACID (PAA)	Healthcare surface disinfectants, food service sanitizers, clean-in-place (CIP) systems	Respiratory sensitizer; combination may increase asthmagenic potential (common in oxidizing disinfectants)
	SODIUM HYDROXIDE	Oven and drain cleaners, degreasers for kitchen hoods and industrial equipment	Corrosive to skin and eyes, causes chemical burns, inhalation hazard
	AMMONIA	Glass/window cleaners for schools and offices, floor strippers, industrial degreasers	Respiratory irritant; moderately reactive with other chemicals to form toxic byproducts when mixed

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Quaternary Ammonium Compounds (QACs)

Functions of QACs

- **Dual role**: Both a **cleaning agent** (cationic surfactant) and a **disinfectant**
- Common ingredients:
  - Benzalkonium chloride (BAC)
  - Didecyldimethylammonium chloride (DDAC)
  - Alkyl dimethyl benzyl ammonium chlorides (various chain lengths)

Reasons for Use

- Cost Effective
- Stable in formulations
- No strong odor
- Residual activity on surfaces

Function in Formulation	CLEANERS	SANITIZERS	DISINFECTANTS
Antimicrobial active		✓	✓
Antistatic agent	✓		
Detergent (Soil Removal)	✓		
Emulsifier/ Dispersant	✓		
Preservative	✓	✓	✓
Wetting agent	✓	✓	✓

BUT…

QACs blur the line between cleaning and disinfection

→Promotes daily overuse without clear microbial need

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What to Consider When Choosing a Product

Key questions:

- Who is using it (staff, custodial team, others)?
- Why is the current product being used and how often?
- For sanitizers and disinfectants
  - What pathogens are of concern?
  - What surfaces?
  - How long do they have to perform the task?

Look for **Ecolabels**

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Safer Cleaners & Active Ingredients

- **Recognized Safer Ecolabels Requiring Performance Testing**
  - EPA Safer Choice – Certified safer cleaners
  - EPA Design for the Environment (DfE) – Certified safer disinfectants
  - Green Seal – Standards for cleaners and disinfectants
  - UL ECOLOGO – Environmental standards for commercial cleaning products
- **Safer DfE Active Ingredients (Sanitizers and Disinfectants)**
  - Hydrogen peroxide
  - Citric acid
  - L-lactic acid
  - Ethanol (Ethyl alcohol)
  - Isopropanol (Isopropyl alcohol)
  - Chitosan (Poly-D-glucosamine) (Added in 2019)
- **Devices**
  - Steam cleaners/Dry steam
  - Electrochemically Activated (ECA) Water Devices - Hypochlorous acid (HOCl)
    - Must use salt and vinegar with water to generate
    - Validated capsule/packet registered with EPA to generate HOCl

Other Things to Consider When Choosing Products

- **Avoid Products without full ingredient disclosure** (e.g., “Proprietary blend” with no transparency)
- **Skip the “2-in-1” cleaner-disinfectants**
  - o Many products have QACs
  - o Some claim a one-step process – goes against cleaning first then disinfecting as needed
    - ▪ Placing burden on consumers/workers regarding training/knowledge
    - ▪ Risk of misuse – contact time and use of non-porous surface products on porous/soft surfaces

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FAC118: Environmentally Preferable Purchasing

Massachusetts (MA) statewide contract for **Environmentally Preferable Cleaning Products, Programs, Equipment, and Supplies**

- **Updated March 2025**, replacing the former FAC85
- Managed by MA **Operational Services Division (OSD)**

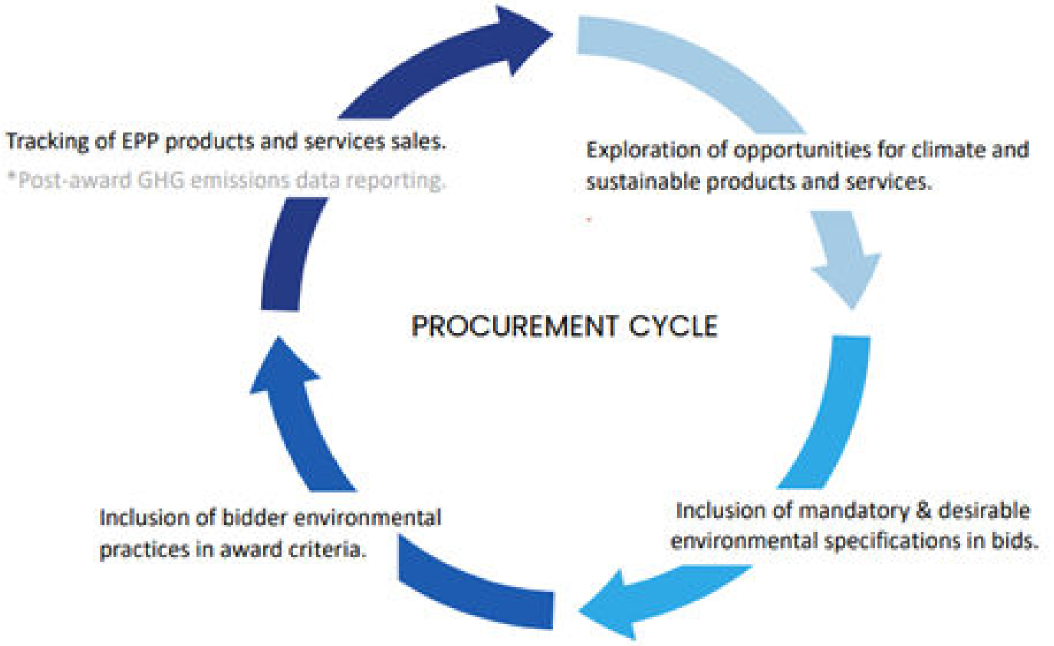
Why it's useful:

- Vetting done **by state experts in procurement, environmental health, and performance testing**
- Products are reviewed for:
  - **Health & environmental safety**
  - **Efficacy**
  - **Cost & availability**

Includes:

- Cleaners, sanitizers, disinfectants
- Floor care products & equipment
- Microfiber cloths, paper products, dilution control systems
- Vendor sustainability programs

Even if you're **not in MA**, it's a model for building or auditing your own list



Environmental considerations integrated throughout the procurement cycle as outlined by the Massachusetts Operational Services Division (OSD). This cycle highlights opportunities to prioritize environmentally preferable products and services at each stage of the procurement process.

Source: Massachusetts Operational Services Division (OSD). (n.d.). OSD's EPP Program – Approach. Retrieved from https://www.mass.gov/info-details/environmentally-preferable-products-epp

Publicly Available Tools to Support Safer Product Selection

CleanerSolutions Database

Lab-tested database of safer cleaning products used by institutions and facilities

Use it to:

- Search by **surface**, **soil type**, and **cleaning method**
- Review **performance data**, **Safety Data Sheets (SDS)**, and **vendor contact info**
- Filter by **ecolabel or certification** (e.g., Green Seal, Safer Choice)
- **FAC118 EPP products listed**
- Integrated hazard screening comes from **P2OASys profiles**

🔗 cleanersolutions.org

P2OASys (Pollution Prevention Options Analysis System)

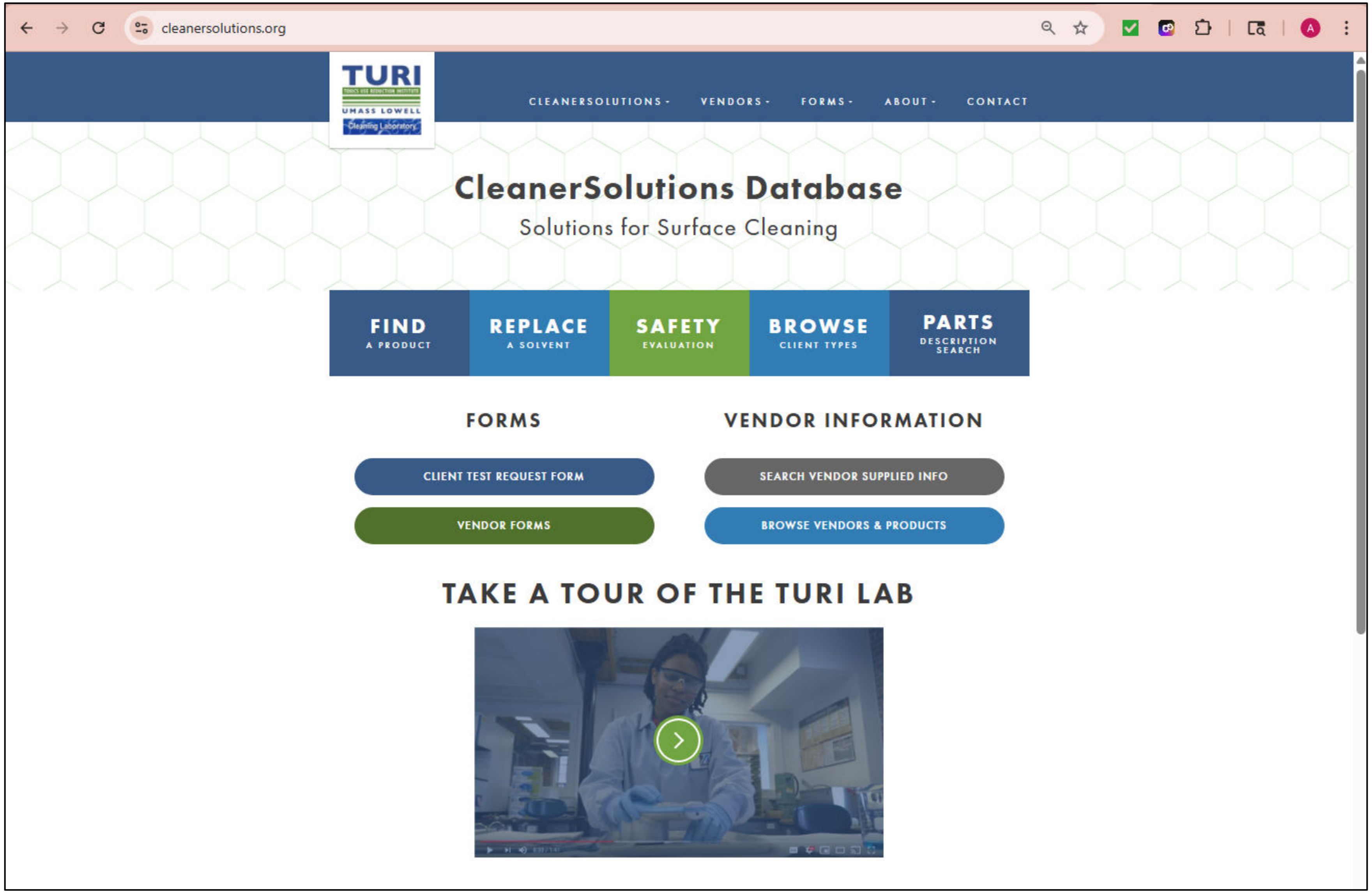
Hazard comparison and decision-making tool for evaluating chemical ingredients

Use it to:

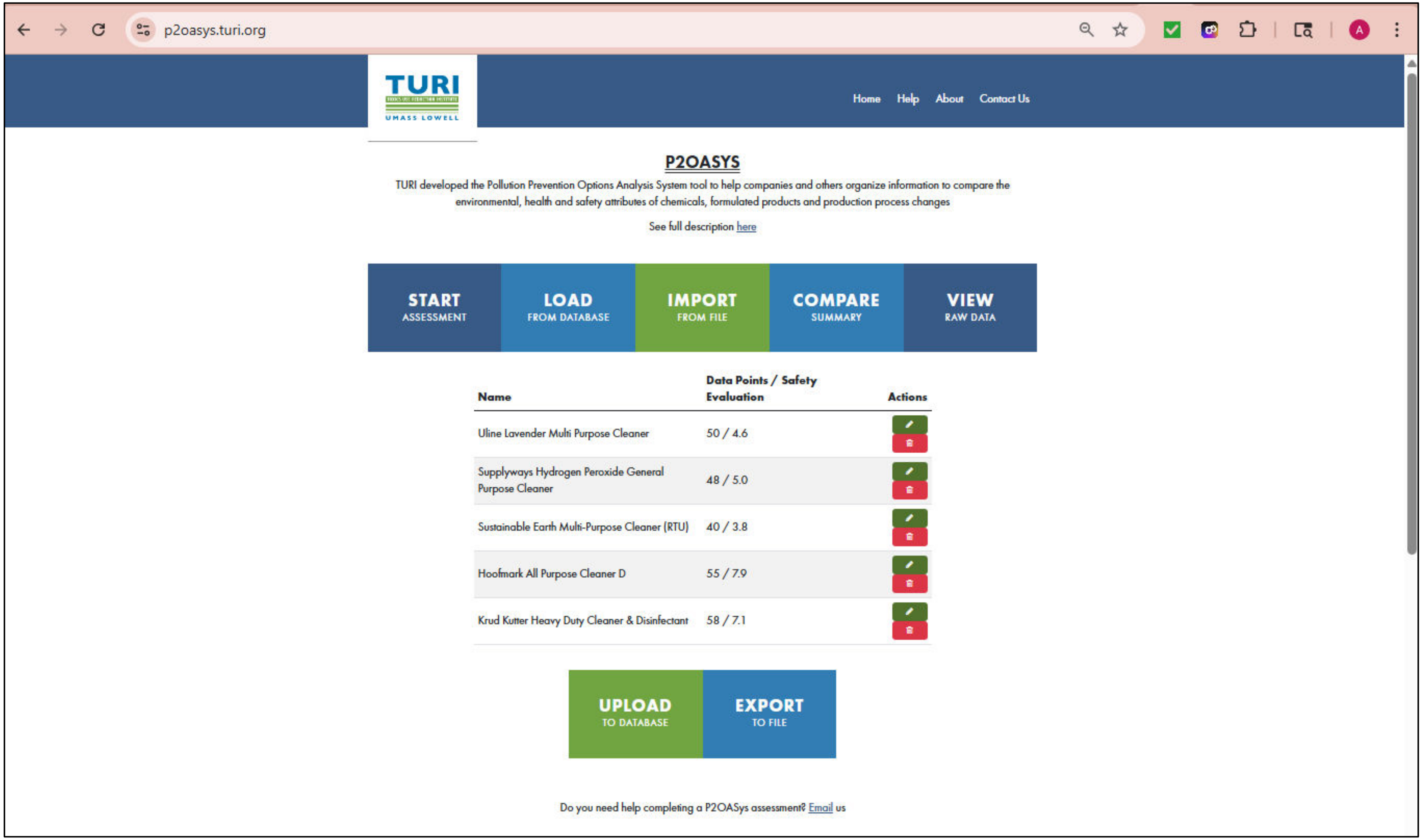
- Score across **13 hazard categories** (toxicity, persistence, flammability, etc.)
- **Supports internal discussion** around substitution or risk reduction
- Considers **process-related factors** (e.g., quantity used, frequency, exposure potential)
- Used alongside CleanerSolutions Database or SDSs to support **safer product comparison and selection**

🔗 turi.org/p2oasys

CleanerSolutions Database



P2OASys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P2OASYS
TURI developed the Pollution Prevention Options Analysis System tool to help companies and others organize information to compare the environmental, health and safety attributes of chemicals, formulated products and production process changes
See full description here
START ASSESSMENT
LOAD FROM DATABASE
IMPORT FROM FILE
COMPARE SUMMARY
VIEW RAW DATA
Name
Data Points / Safety Evaluation
Actions
Uline Lavender Multi Purpose Cleaner
50 / 4.6
Supplyways Hydrogen Peroxide General Purpose Cleaner
48 / 5.0
Sustainable Earth Multi-Purpose Cleaner (RTU)
40 / 3.8
Hoofmark All Purpose Cleaner D
55 / 7.9
Krud Kutter Heavy Duty Cleaner & Disinfectant
58 / 7.1
UPLOAD TO DATABASE
EXPORT TO FILE
Do you need help completing a P2OASys assessment? Email us

Additional Resources for Safer Cleaning & Disinfection

TURI Tools & Programs

- *Clean Break: Removing Toxics in Cleaning, Sanitizing, and Disinfection* (Episode 1): Watch here
- QAC Fact Sheet & Alternatives: TURI Alternatives
- TURI Case Studies & Grant Reports: www.turi.org/casestudies

Additional State and Federal Procurement Tools

- **EPA's Environmentally Preferable Purchasing (EPP) Program** epa.gov/greenerproducts
- **New York State GreenNY Procurement Specifications** (Based on MA FAC118 List)**:** ogs.ny.gov/greenny

Ecolabel Information

- **EPA Safer Choice:** epa.gov/saferchoice/products
- **EPA DfE Disinfectants:** epa.gov/pesticide-labels/dfe-certified-disinfectants
- **Green Seal:** https://certified.greenseal.org/directory
- **ECOLOGO:** spot.ul.com

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Thank you!

Visit our website www.turi.org for Databases and Tools

Alicia McCarthy
Senior Safer Chemistry Scientist
Toxics Use Reduction Institute
P: 978-934-3889
E: alicia_mccarthy@uml.edu

Follow us:

@reducingtoxics

Questions?

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THANK YOU!

Thank you for joining us today. **Thank you to our wonderful speaker.** We will be sharing a copy of the slides and the presentation recording with all attendees by 8/15. Keep the conversation going online using **#CEHGreenerCleaner**

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