



The Massachusetts Toxics Use Reduction Institute (TURI): A Resource You Should Know About

2018 TURA and TRI Reporting Workshops

Massachusetts
Toxics Use Reduction



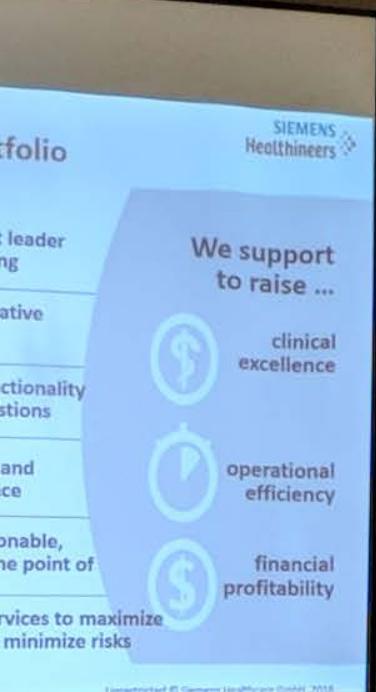
TURI Resources and Activities

- Training
 - Planner certification and continuing education
 - Demonstration sites
- Grants
 - Large and small businesses
 - Municipalities, regional governments and community organizations
 - University research on safer alternatives
- Laboratory performance testing
- Library/Research services
- Policy analysis

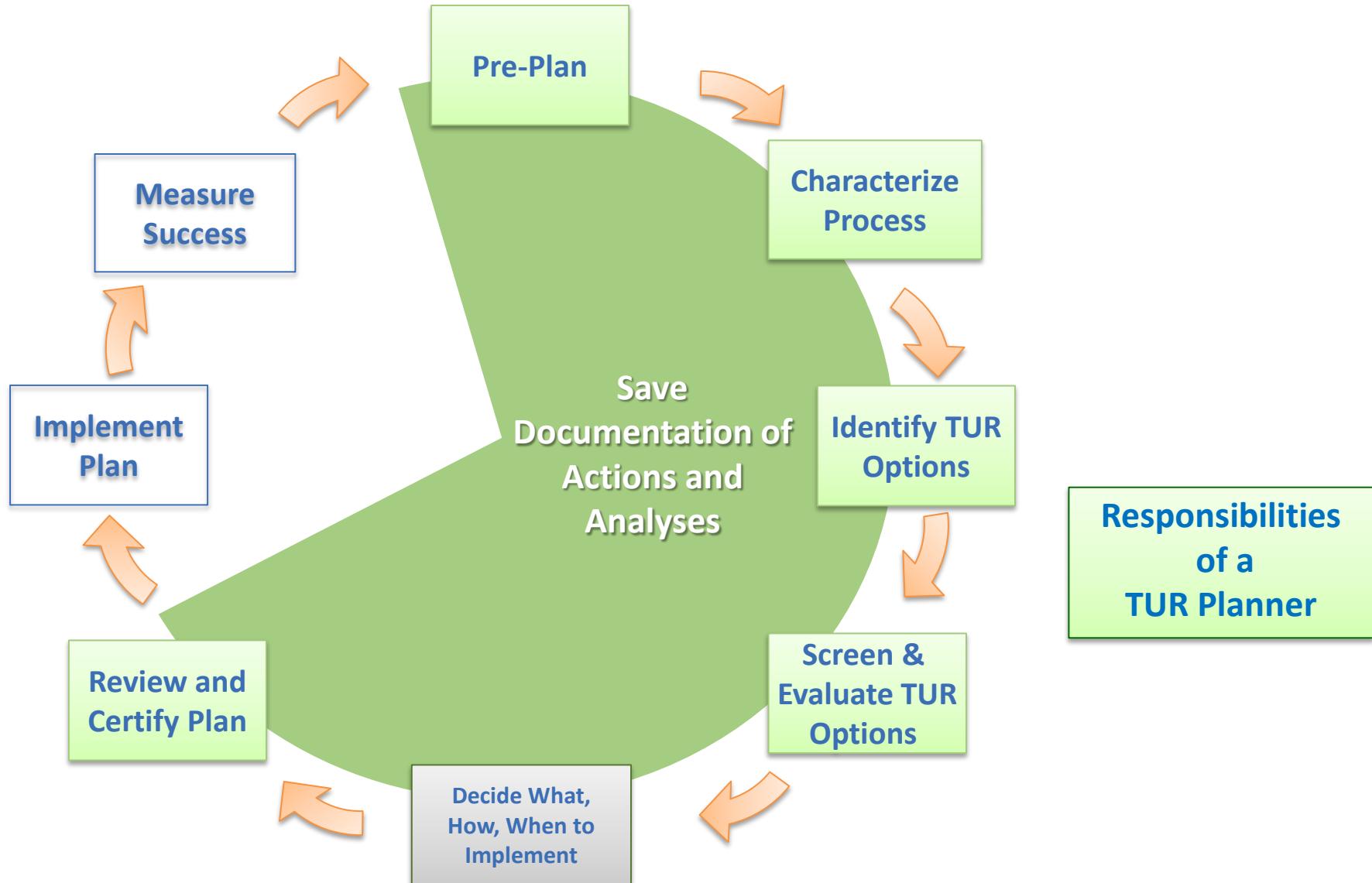


Training

- Professionals with current knowledge of opportunities and techniques, dedicated to continual improvement
- Certification authority to assure good faith effort

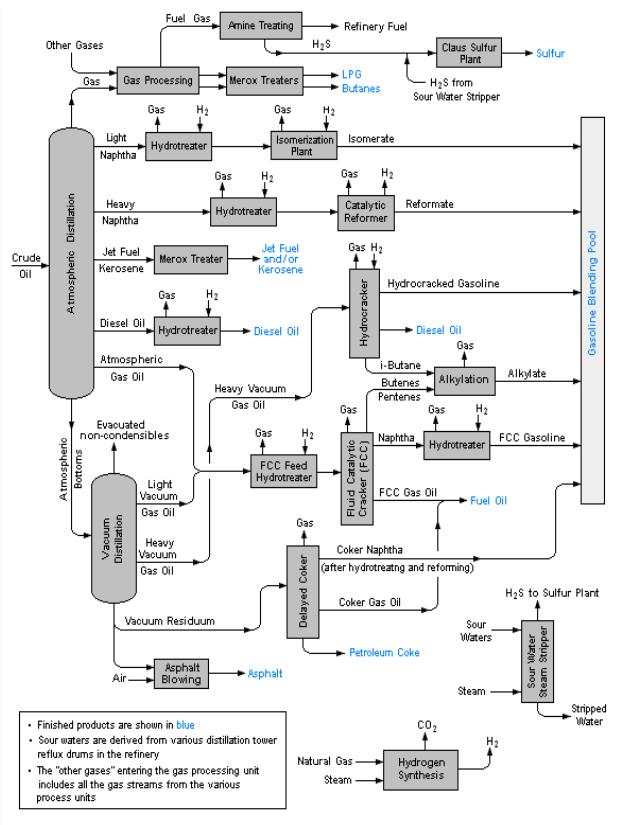


The Toxics Use Reduction Planning Cycle



Key Element: Characterizing the Process

- Tour the site
- Create a process flow diagram
- Account for material inputs and outputs
- Ask the most important question: **Why** are chemicals used?
- Determine the chemical use per unit of product
- Determine the byproduct generated per unit of product
- Evaluate the cost of using toxics



Identifying, Screening and Evaluating Options



TUR OPTION SCREENING MATRIX

COMPANY: XYZ	11 CHEM USE: 16,744 lbs
PRODUCTION UNIT NO: 008	UNIT OF PROD: 9,989 lbs metal product
CHEMICAL: FERRIC CHLORIDE	BYPROD/UOP: 2.391 lbs/ UOP
Use/UOP: 1.68 lbs/UOP	EMISS/UOP: 1.56 lbs/UOP

ITEM NO.	BRAINSTORMING OPTION DESCRIPTION	PRELIMINARY SCREENING EVALUATION COMMENTARY	IMPLEMENT THIS OPTION	FURTHER EVALUATION REQUIRED	OPTION NOT APPROPRIATE BY	TUR TYPE CODE	MEETS DEP TUR DEFN?	TECH FEAS?	ECON FEAS?	PROCESS ENCRNS?	HEALTH/SAFETY ENCRNS?	ENVIRON ENCRNS?	ACTION ITEMS	TTL PTS	IMPLEMENTED? YES/NO DATE
2012															
27	Use waste ferric chloride in cupric chloride etcher	We already use waste ferric chloride in E-10	Already Implemented												
28	Install filters on Etcher # 16	Not that much sludge-would have to fix filter vessel, \$5K. If one bath is saved, would be 2 yr pay back			Yes	RR	PURM	3	3	1	2	1	1	11	No
29	Research an electrolytic process to remove chromium and nickel	Have intern from WPI research			Yes	SR	PURM	3	?	?	?	2	2	Summer 2012 Research	?
30	Allow baths to settle in a separate tank, then pump back into etcher	Discussed with MassDEP and determined that it needs to be permanently attached in order not to be considered treatment. Save possibly 3X200 gallons.		Run treatability test		MM	RR	3	3	2	2	1	2	Run treatability test before June 25th.	13
31	Improve Materials Accounting System	Make sure the data is correct	Already Implemented												

PR - product reformulation	OM - imprvd ops & maint of prod unit equip & methods
PURM - production unit redesign/modification	RR - recycling, reuse, or extended use of toxics
PUM - production unit Modernization	IS-Input Substitution

Recent Small Business Grants

- Eliminating perchloroethylene in dry cleaning
- Replacing caustic sodium hydroxide and acids used for cleaning in breweries
- Eliminating of solvents in printing operations
- Replacing flame retardant laden foam pit cubes in gyms
- Reducing solvent use in technical high school auto shop



Brewery Finds Safer Ways to Clean and Sanitize

<https://www.youtube.com/watch?v=4I4Nfo6IQwE>



Recent Industry Grants

- Optimizing the use of cleaning chemicals at soup processor
- Reducing the use of HF at a fiber optic cable facility
- Increasing efficiency of product usage at aftermarket liquid formulating and packaging facility
- Eliminating the use of TCE in degreasing operations at a liquid cooling systems manufacturer



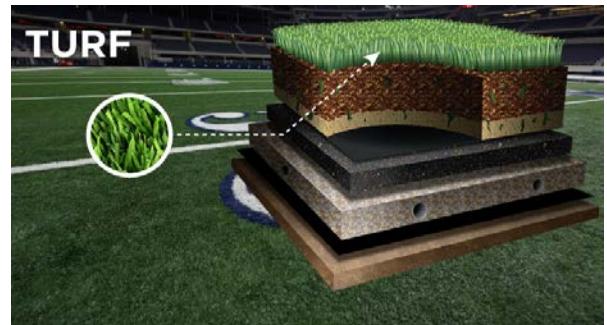
Kettle Cuisine



US Pack, Inc

Recent Community Grants

- Providing safer household cleaners in bodegas
- Educating workers and consumers about BPA exposure in cash register receipts
- Delivering green building educational programs for architects, developers, and homeowners
- Supporting adoption of organic grass fields over artificial turf



Call for Proposals: FY19 Grants

Industry Grants: up to \$30,000 and intended for manufacturing facilities to improve processes or install technology that results in reducing toxics.

Small Business Grants: up to \$10,000 and intended for businesses that provide services directly to consumers. For example, dry cleaners, restaurants, auto repair and tire shops, bathtub refinishers, etc.

Community Grants: up to \$20,000 available for regional or statewide projects and up to \$10,000 for local projects. Municipal governments, environmental and community organizations, youth organizations, housing authorities and school districts are all eligible to apply.

Academic Research Grants: up to \$25,000 and available to UMass faculty and their graduate students to partner with Massachusetts companies on researching safer alternatives to toxic chemicals.

For more information go to:

https://www.turi.org/Our_Work/Apply_for_a_Grant

TURI's Cleaning Laboratory

- Assists industry and communities in the search for safer cleaning processes
 - Tests the performance of alternatives to hazardous solvents
 - Extensive database of results
 - www.cleansersolutions.org
- Industrial parts cleaning
- Janitorial cleaning



Policy

- Science Advisory Board
- Administrative Council and Advisory Committee
- Analysis of state and federal policy initiatives
- Assessments of TURA program results



TURI
Toxics Use Reduction Institute
University of Massachusetts Lowell

The Massachusetts Toxics Use Reduction Institute
University of Massachusetts Lowell

Decision-Making under TURA:
Resources for the TURA Administrative Council and Advisory Bodies

Toxics Use Reduction Institute

Methods and Policy Report No. _____

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Toxics Use Reduction Institute
Policy Analysis

Higher Hazard Substance Designation Recommendation:
1-Bromopropane (n-Propyl Bromide)
CAS 106-94-1

This policy analysis summarizes key scientific information on n-propyl bromide, considers the number of facilities that are likely to exceed the reporting threshold, and provides reporting thresholds, discusses opportunities and challenges that new facilities are likely to experience, and discusses the impacts of new facilities on the environment. Based on this analysis, the Toxics Use Reduction Institute, in consultation with the Science Advisory Board, recommends that n-propyl bromide be designated as a Higher Hazard Substance (HHS).

If nPB is designated as a HHS, the reporting threshold for nPB use would be lowered to 1,000 lb/year for facilities in TURA-covered industry sectors with ten or more full-time employee equivalents (TEQ). Facilities that exceed the threshold are required to file an annual toxics use report, pay an annual toxics use fee, and develop a toxics use reduction plan every two years.

1. State of the Science

n-propyl bromide (nPB) has serious adverse effects on human health, including both acute and chronic health effects. nPB most often enters the environment through fugitive emissions and by spills or accidental releases to air, soil or water. For a list of specific data points considered by TURI, see Appendix A.

Acute toxicity

- Exposure to nPB can cause symptoms including eye, nose and throat irritation, headache, dizziness, nausea, and fatigue.
- ACGIH lists the TWA-TLV as 10 PPM and has published an intended change to 0.1PPM, in order to "provide protection against the risks for neurotoxicity, hepatotoxicity, and reproductive/developmental toxicity in laboratory species and workers" on the basis for the TLV is Central Nervous System impairment, peripheral neuropathy, hematological effects, reproductive toxicity (both male and female), and developmental toxicity.

Chronic toxicity

- The US National Toxicology Program proposes classifying n-propyl bromide as "Reasonably anticipated to be a human carcinogen." NTP states that overall, the available experimental studies demonstrate (1) that 1-bromopropane is carcinogenic in experimental animals causing tumors at multiple tissue sites in two rodent species and (2) that 1-bromopropane causes molecular alterations that are relevant for human carcinogenicity.

May 15, 2014

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TURI's Library

- Extensive collection of materials on chemicals and safer alternatives
- Searchable online library catalog
- Greenlist – weekly sampling of new publications of interest
- Research assistance
- Subject guides
- Research databases



Questions?

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