Transition to Safer Substitutes in Propyl Bromide Case Study

Liz Harriman

Massachusetts Toxics Use Reduction Institute
University of Massachusetts Lowell
Learning Objectives

**Explore:**
- Traditional transition from problematic chemicals to new, also problematic chemicals
  Using n propyl bromide as a case study

**Understand:**
- n Propyl Bromide, its hazards, its alternatives
- Massachusetts TURA approach to getting companies to transition to safer substances

*and learn from each other, more ways to improve the transition*
Long-term Objective

• What Lizzie Grossman said!
  – Green Chemistry
  – Biocompatible substances
  – Less resource intensive
  – Inherently safer processes
Who influences choice of substitutes?

Chemical Mfr

Formulator

Equipment Mfr

Vendor

Government Regulator

User

EH&S

mgmt

Production workers

Technical Assistance & information (P2, gov’t, consultants, etc)

Customer

Peer Companies
Massachusetts Toxics Use Reduction Act

- Works with businesses and communities to reduce their use of toxic substances
- Right to Know Reporting, Facility Planning, and Assistance
“In a world without Perc, what alternative will you chose?”

“Being “Green” has never been easier with DrySolv. The first environmentally responsible replacement solvent for your dry cleaning machine!”

“In January of 2007, I started using DrySolv in my dry cleaning machine due to my total frustration with all the environmental issues with perc. WOW! What a smart move that was! EPA and KDHE have no regulations on DrySolv. Environmentally, it is perfectly okay and not considered hazardous…” Leroy Riedel, Master Cleaners Inc., Hays, KS

DrySolv Dry Cleaning Solution

- DrySolv is non-flammable, showing no flashpoint in multiple tests and test methods. (ASTM D-56 TCC, ASTM D-92 COC, ASTM D-93 TCC).
- DrySolv is non-chlorinated.
- DrySolv is non-hazardous. (DOT, OSHA, NESHAP, RCRA, Clean Water Act)
- DrySolv is not a hazardous air pollutant, is SNAP approved, and does not contribute to global warming. (NESHAP, Significant New Alternative Program-SNAP approved (Federal EPA).
- The USEPA states that DrySolv’s main ingredient is less persistent in the environment than many other solvents, is of low to moderate concern for movement in soil, does not warrant listing under the Toxics Release Inventory and is not prone to bioaccumulation. (USEPA - Federal Register May 30, 2007)
- DrySolv does not have a hazardous decomposition or hazardous polymerization.

How did we get here?

- Flammable petroleum solvents
- Chlorinated Solvents
  - Carbon tetrachloride
  - CFCs, TCA
  - TCE
- nPB, siloxanes, HFCs, aqueous
How has the system enabled hazardous substitutes?
How do we influence system to promote safer alternatives?
Massachusetts TURA

• 2006 Amendments
  – Focus on reducing use of Higher Hazard Substances

• New addition to process:
  – Evaluate alternatives to HHS for listing and/or HHS designation
N Propyl Bromide and TURA

- TCE and Perc designated as HHS
- Identify Alternatives for primary uses
  - Dry cleaning, solvent parts degreasing
- Challenge with number of distinct chemical alternatives – choose representative chemical for each category
- Science Advisory Board listing review, categorization review
- TURI policy analysis
- Listing recommendations, categorization
TURA nPB Action

• TURA Administrative Council voted to list nPB (1 bromopropane), reporting year 2010

• SAB did not categorize nPB as either more or less hazardous

• Also considering more toxic 2-bromopropane, contaminant in 1-bromopropane
TURA Chemical Prioritization

TURA List of Toxic and Hazardous Substances

SAB More Hazardous Substances

TURA HHS*
TCE, perc

N propyl bromide

SAB Less Hazardous Substances

TURA LHS**

*TURA Higher Hazard Substances have 1000 lb reporting threshold and
**Lower Hazard Substances have no per chemical fee
Questions?

• Contact Info:

Liz Harriman
Massachusetts Toxics Use Reduction Institute
University of Massachusetts Lowell
978-934-3387
harriman@turi.org
www.turi.org