



Massachusetts Toxics Use Reduction Program Success Stories

Indiana P2 Conference
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Mark Myles
Toxics Use Reduction Institute



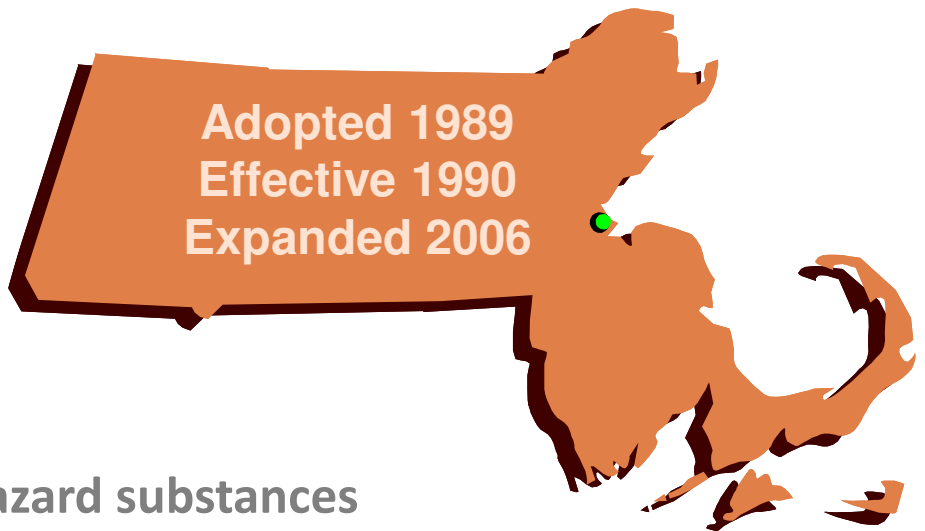
Toxics Use Reduction Act (TURA)

- Users of large amounts of toxics must:

- **Report** toxics use
- **Pay** fees
- **Plan** toxics reduction

- 2006 Amendments:

- Designates **higher** and **lower** hazard substances
- **Resource Conservation Planning** – energy, water, materials
- Integrates **Environmental Management Systems** into TUR



Incentives for TUR

Identifies process or chemical inefficiencies

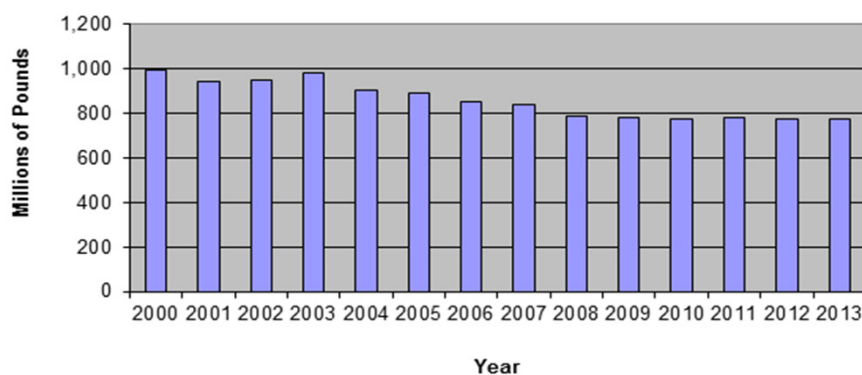
Identifies potential cost savings

Provides a systematic materials tracking program

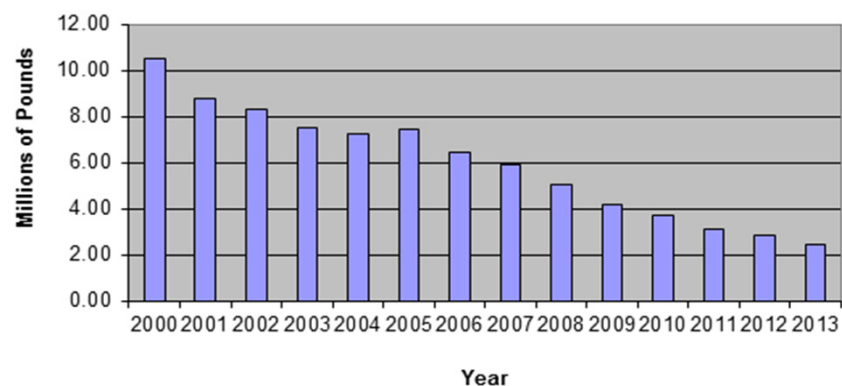
TUR planning methods can provide a foundation for future EMS or ISO programs

TURA Progress

Production Adjusted Total Use



Production Adjusted Releases



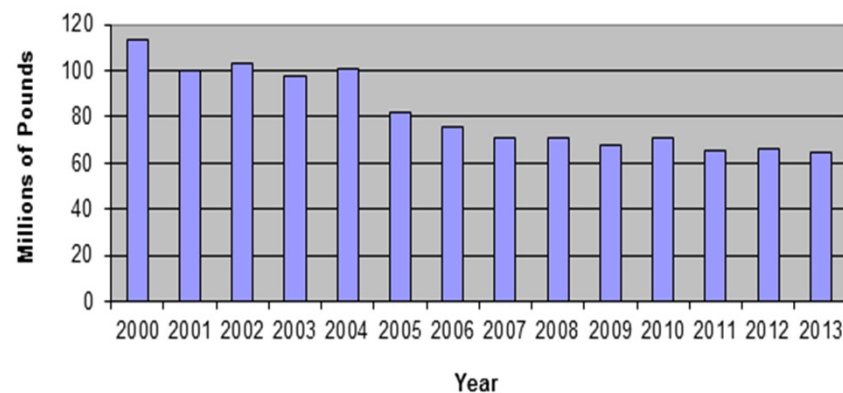
**First decade
1990-2000**

Use: 40%
Byproduct: 58%
Releases: 90%
Shipped in Product: 47%

**Is TURA Still working?
2000-2013**

Use: 22%
Byproduct: 43%
Releases: 77%
Shipped in Product: 15%

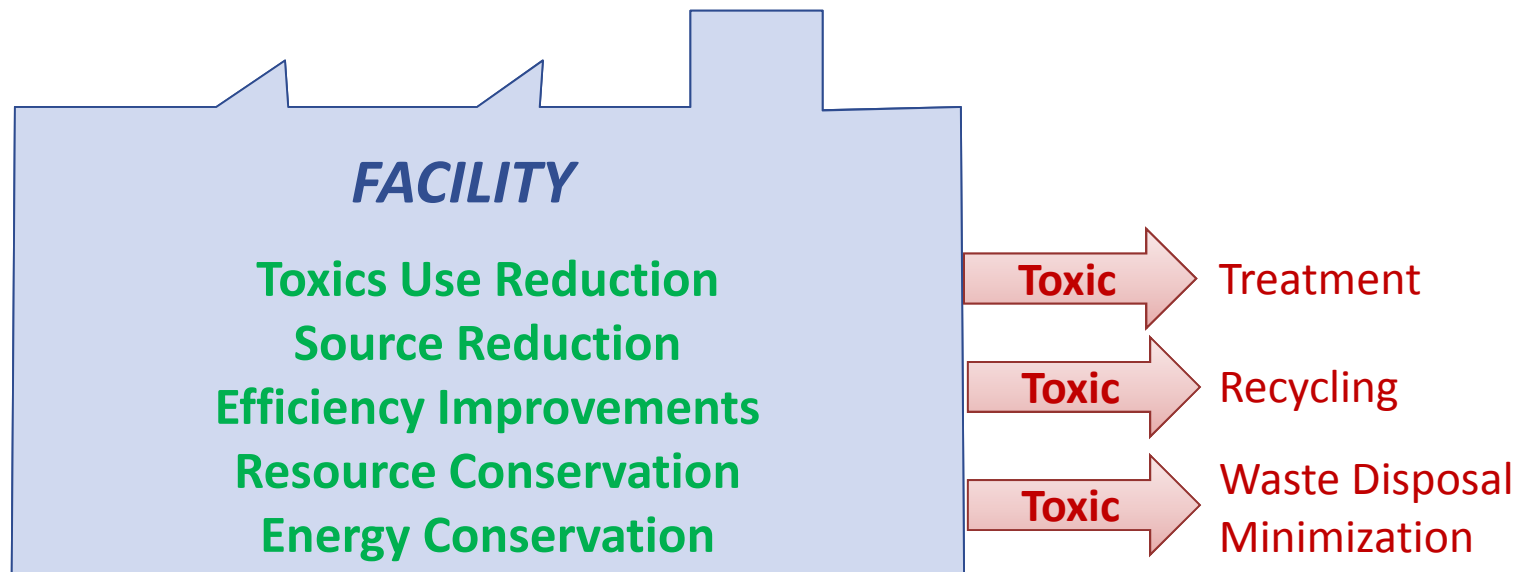
Production Adjusted Byproduct



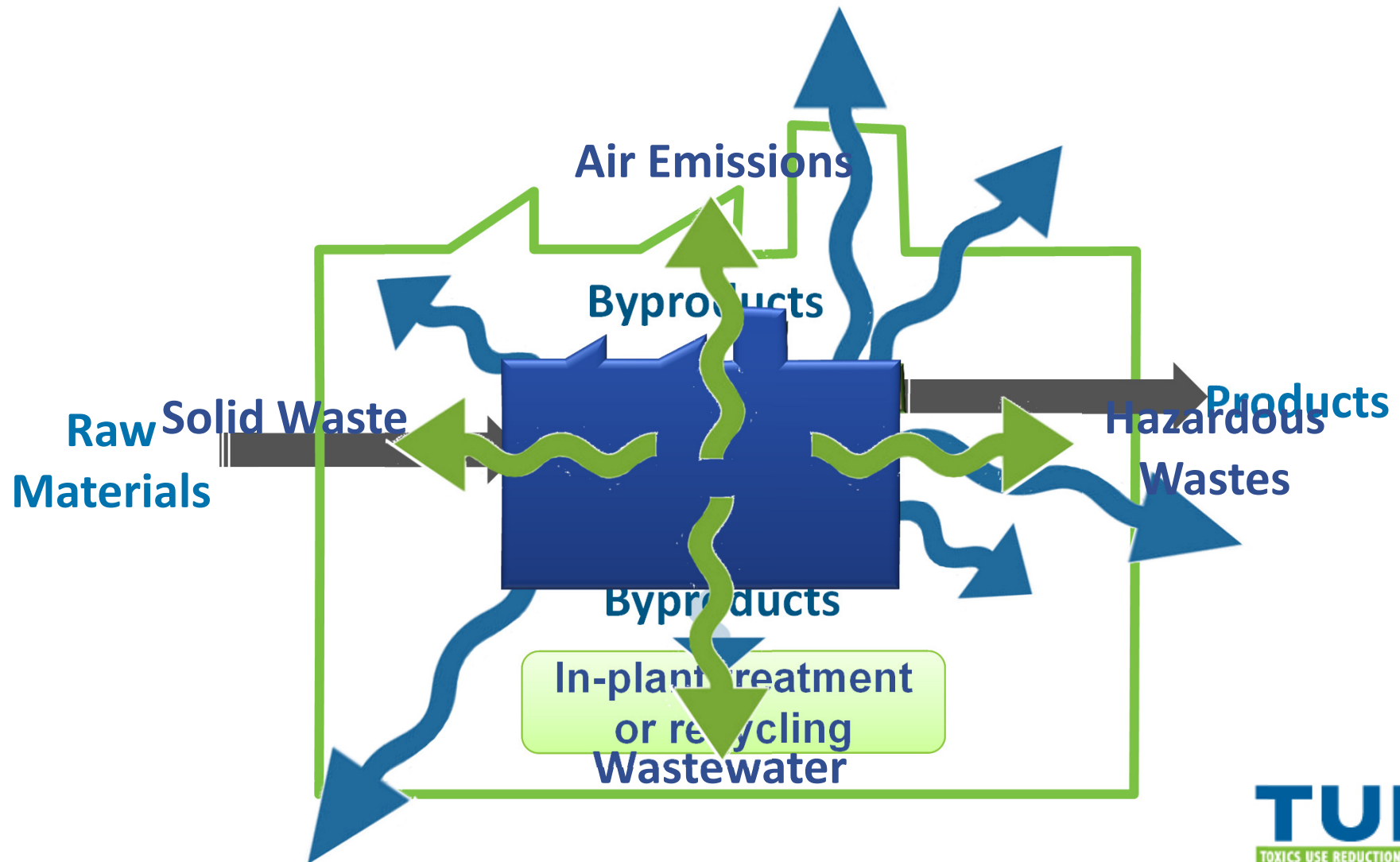
Pollution *Prevention* vs Pollution *Control*

Pollution Prevention = greater efficiency with less or no toxic material

Pollution Control = end of pipe treatment or remediation



Information collection points



The Six TUR Techniques

1. Input Substitution

2. Product Reformulation

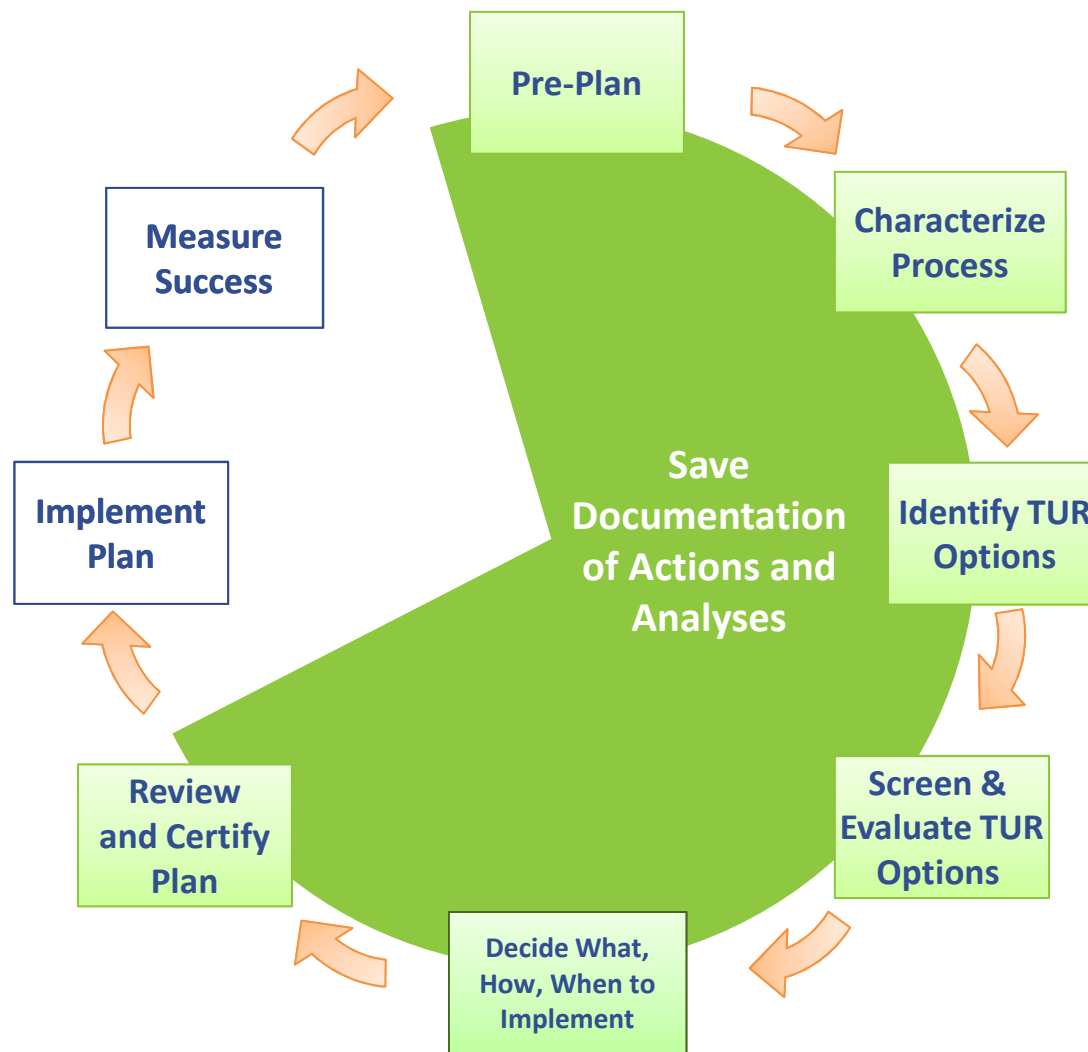
3. Production Unit Redesign/Modification

4. Production Unit Modernization

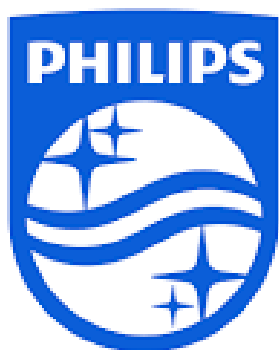
5. Improved Operations and Maintenance

6. Recycling which is integral to the process

TUR & Resource Conservation Planning Cycle



Case Study – Philips Lightolier



PHILIPS
LIGHTOLIER



Water Conservation Initiatives



- Reduce plant booster pump pressure
- Enhance re-use of non-contact cooling water
- Reduce rinse rates at anodizing, powder coating, aqueous wash
- Reduce lawn irrigation water

Water Conservation – Results to Date

- Reduced from an average of 251,000 GPD to 129,573 GPD
- 48 % Reduction surpassed goal of 30 %
- 44 Million Gallons / Year Reduction
- \$ 181,715 / year annualized savings

Challenge – No Contamination of Critical Rinses

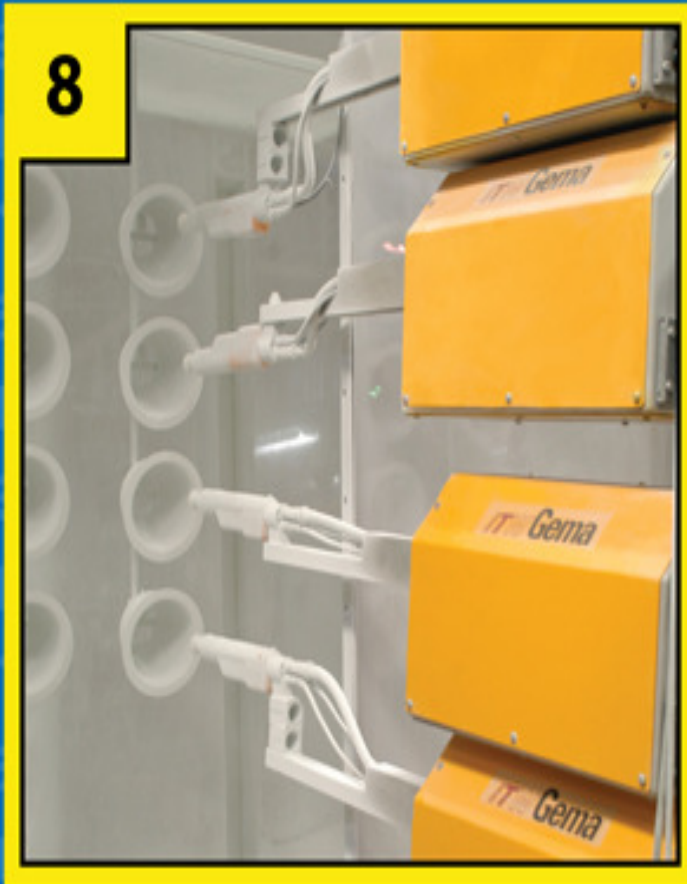
- Flows of up to 60 GPM
- Needed an Innovative and Cost Effective Solution
- ***Solution***...Continuous Oil Monitor Technology as used on submarines can detect ppm
- Alarms will alert personnel to divert water from rinses if heat exchanger failure occurs
- Monitored flow through meter is re-directed to a rinse

Investment \$ 19,000
Savings \$ 46,375

Water Use Reduction:
11,121,000 gallons per year



Process Improvement / Toxics Reduction



Powder Coat

Our powder coating line combines an "environmentally friendly" aqueous cleaning system with powder finish application and curing to provide an extremely durable coating. The application efficiency of 98% is achieved by recirculating powder which is not deposited on parts. This insures that the process is extremely cost effective and has no adverse environmental impact.

LIGHTOLIER



PHILIPS
LIGHTOLIER

Case Study – Stainless Steel Coatings



TUR Goals at SSC

- Reduce Volatile Organic Compounds (VOCs)
- Eliminate Hexavalent Chromium
- Reduce equipment turnovers
- Reduce energy use

SSC Initiatives – product reformulation

- Oxsol 100 (parachlorobenzotrifluoride) replaces Xylenes
 - VOCs reduced 57%
 - Maintained superior product performance
- Magnesium-based to replace zinc-bis-triorthophosphate
 - Eliminates Hex-chrome entirely in product and plant
 - Higher quality performance – 3x salt spray corrosion performance
 - More expensive on per-unit basis
 - BUT less is needed: lower material cost!



SSC Initiatives – process & plant redesign

- Shop floor workers devised new scheduling process
 - Saves cleaning solvents
 - Reduces down time
 - Reduces Haz Waste disposal
- Haz waste drums fitted with new lids for one-hand operation
- New shipping boxes to reduce package waste



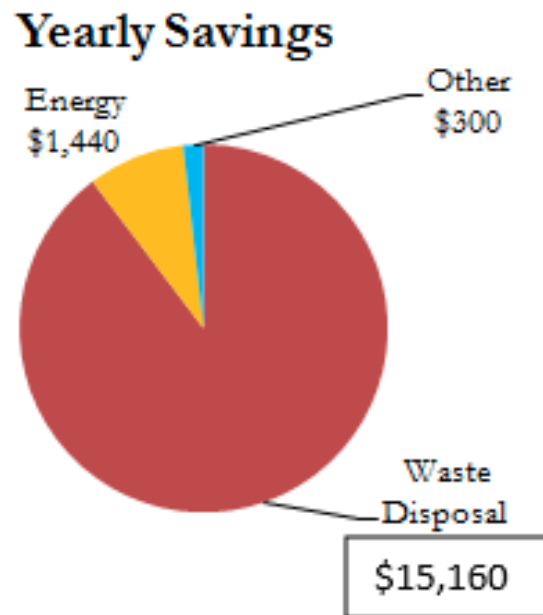
SSC Initiatives – energy conservation

- MassSave Small and Midsize Business Direct Install Program
 - Indoor lighting replaced with T8 + ballasts
 - Parking lot lighting replaced with LED luminaires
- Compressed air system inspected for leaks
 - Saved 120 hrs/yr of unnecessary operation
 - New blow guns regulate unrestricted air pressure to 30 psi



SSC Results

- 14,500 lbs of CO₂ saved per year
- At least a 57% removal of xylenes
- 100% removal of hexavalent chromium
- 52% less hazardous waste production





Mark Myles
mark.myles@turi.org
978-934-3298

