



Toxics Use Reduction Institute

Update on Cold Solvent Regulations & Technical Help Available

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Presentation Overview

- OTA – How They Can Help & Cold Solvent Metal Cleaning Regulation
340 CMR 7.18(8)
 - Rich Bizzozero – Director OTA
- TURI Lab – What We Do & Alternatives
 - Heidi Wilcox – Field Specialist & Lab Tech
- **Questions, Show & Tell, Networking**



Now Here is RICH.....



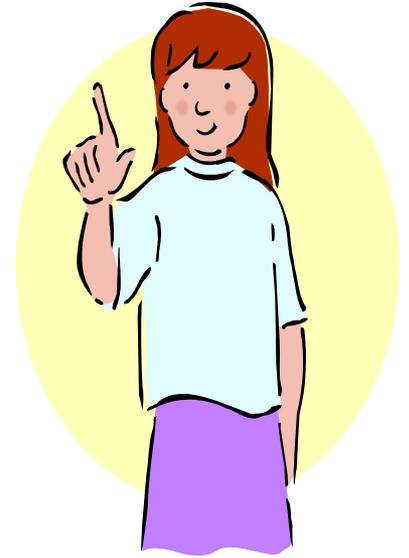


MassDEP Contact Information

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617-574-6801
 - MassDEP Regional Offices for Compliance and Facility-related Issues
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TURI Laboratory



- Who Knows What We Do????
- Don't be Shy, Shout it Out
- Raise Your Hand

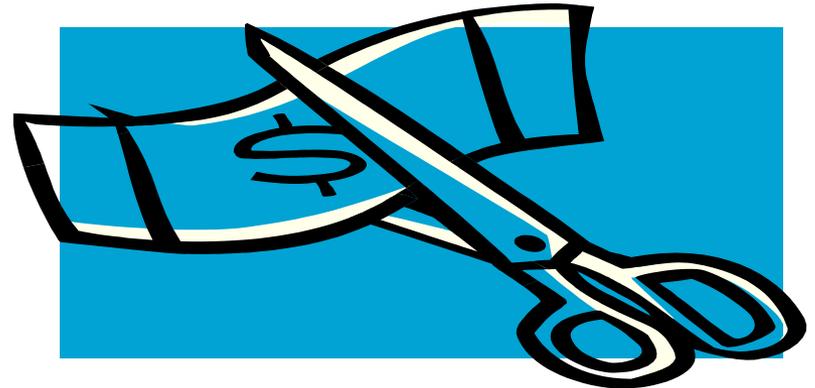




The TURI Laboratory



- TURI established the Surface Cleaning Laboratory
 - Now known as the **TURI Laboratory**
 - Evaluate effectiveness of cleaning chemistries and equipment
- **Free Services to Massachusetts Companies**
 - On-site walk through
 - Laboratory Testing
 - Piloting
 - Lab & on site
 - Follow Up Assistance





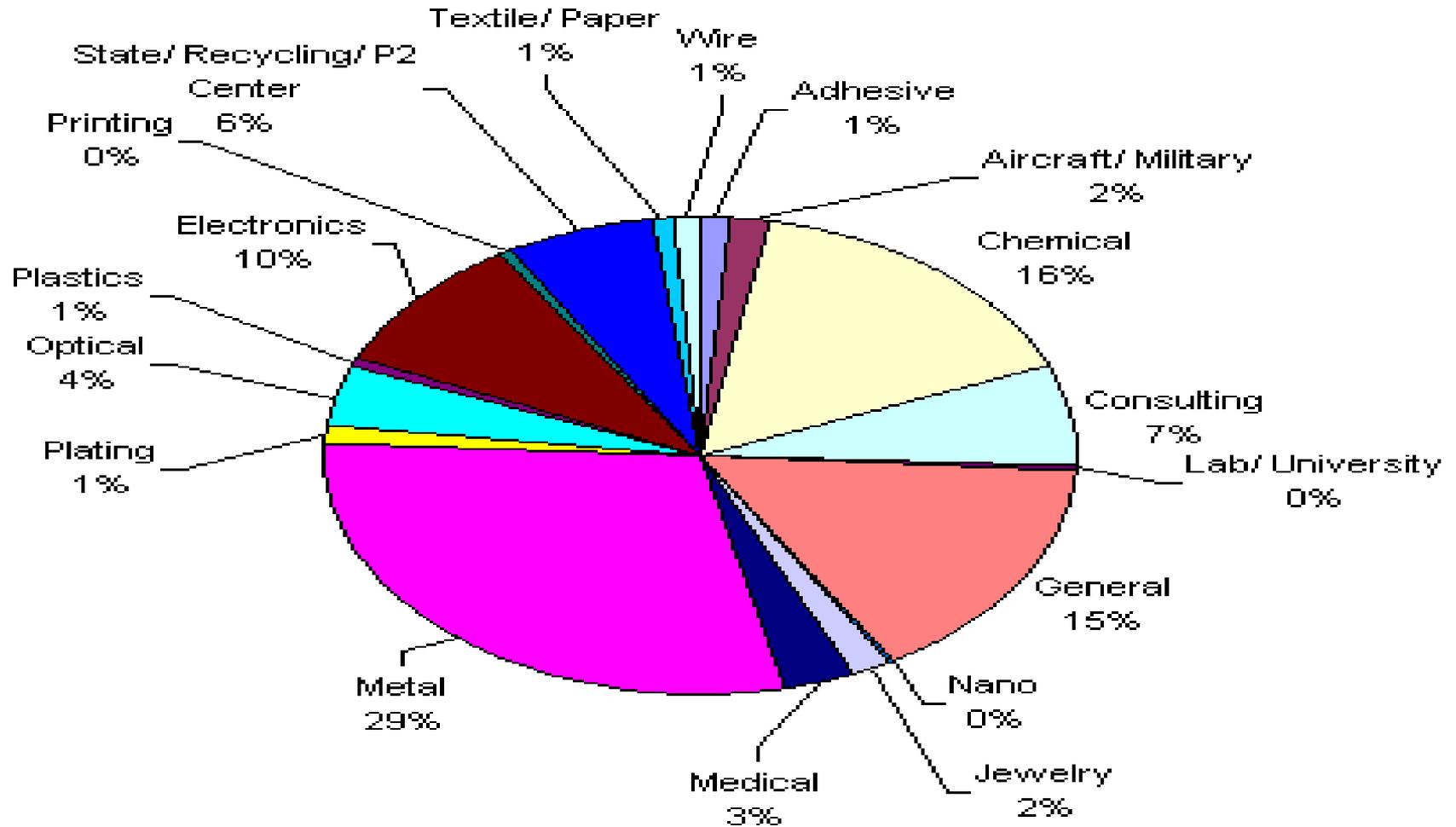
TURI Laboratory Goal

- To assist industry in the search for cleaning processes that are:
 - Economically feasible
 - Have as good or better cleaning performance
 - Improve the EH&S profile





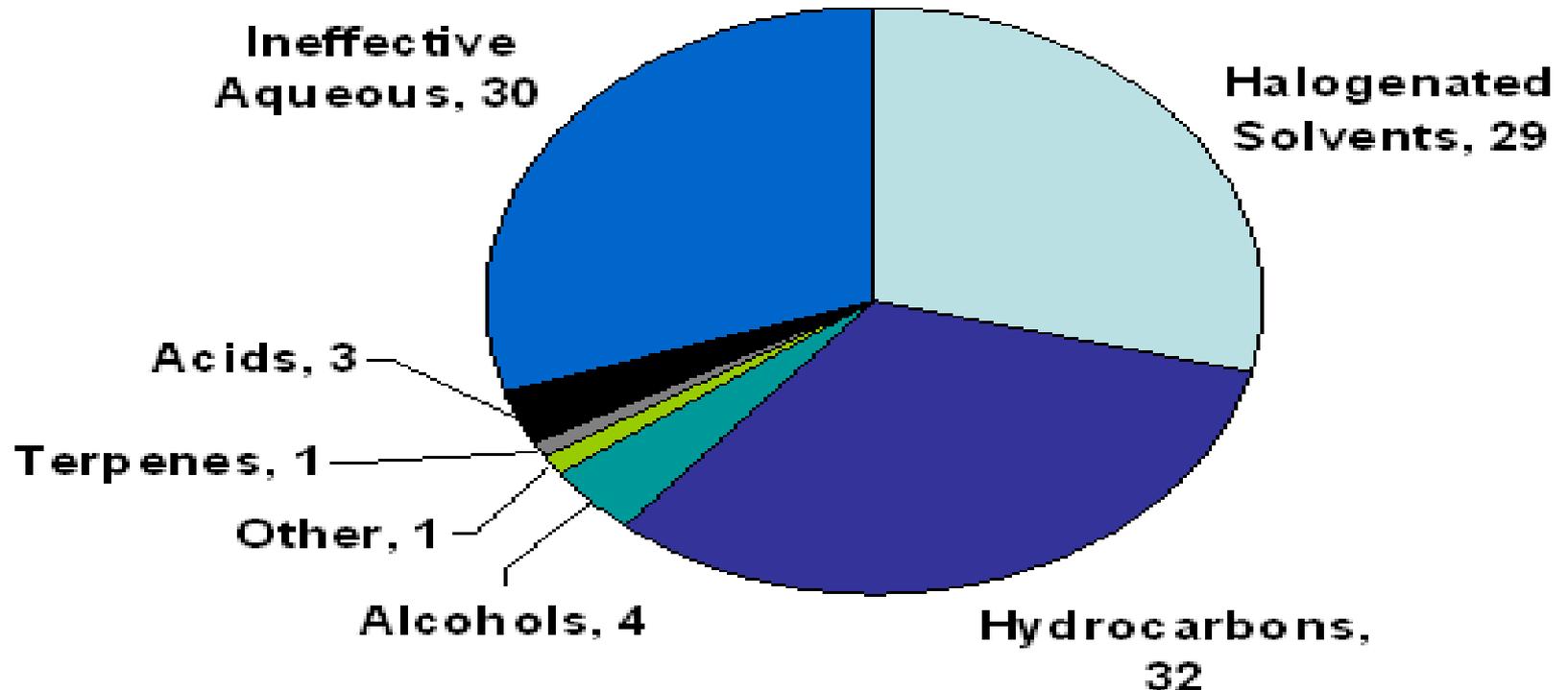
TURI Lab Work by Industry (1994-2008)





Focus of the TURI Laboratory

- To replace hazardous solvents with a special focus on the halogenated hydrocarbons
 - 30% of trials have been to replace halogenated solvents
 - 30% were conducted to replace other hazardous solvents
 - Toluene, MEK, N-methyl-2-pyrrolidone





Our Process - Overview

- Company contacts us
 - Set up site visit to see process
 - Use Database to pick cleaners for testing
 - Test basic chemistries
 - Work with other parameters – TACT
 - Pilot best cleaners on parts in lab
 - Have customer evaluate
 - Do EH&S & Price assessment
 - Pilot cleaner at facility or loan equipment
-



Lab's Current Process

- **Contacted by company**
 - Often referral from consultant or other agency
- **Gather background information on process**
 - The more we know the better
- **TURI Lab's Test Request Form (handout)**
 - Material of parts to be cleaned
 - Contaminants
 - Current Solvent or other alts tested
 - Available Equipment
 - Operating conditions (time, temp, conc.)





Lab's Current Process

- **On-Site visit**

- Meet key players & walk through (overview)
- Complete/collect Test Request form
- Gather samples and MSDS
 - Contaminants
 - Current Solvent
 - Dirty Parts



- **Identify possible adjustments to process & what they will & wont do**

- Talk about costs, if they will change process, time constraints & mil, aerospace specs. etc





Selecting an Alternative

- **Process is Challenging!**
 - Thousands of products ~ 600 in lab
 - What is right for some may not work for others
 - Cleaning Varies from Case To Case, Process Specific
- **The Cleaner(s) MUST be Assessed for;**
 - Ability to remove the contaminants
 - Compatibility with the surfaces to be cleaned
 - Works with equipment that will be used





Our Tool For Alternative Selection

- **Cleaner Solutions Database**

- www.cleanersolutions.org
- TURI Lab Database of Testing & Vendor supplied information (SET UP IN BACK OF ROOM)



- **Used to identify safer & effective products**

- **Safety Scores**
 - VOC, ODP, GWP, HMIS/NFPA, pH
- **Matching Performance**
 - Contaminant, substrate, equipment, current solvent

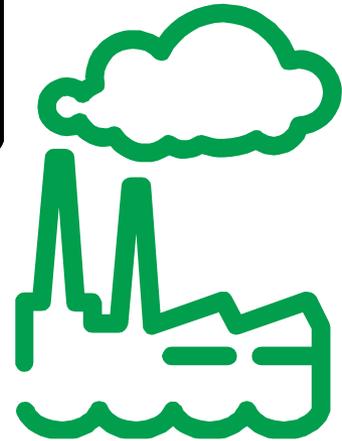


Selecting an Alternative

- **When choosing an alternative – IMPORTANT**

Don't shift the risk!

- From worker to environment
- OR
- From environment to worker



- Want to select a product that is safer for one or the other or both (**best**)
- **New step** – *EH&S & price comparisons to current cleaning system.*
 - **Price as big a concern as performance now**



Testing an Alternative - Phase 1

- **Chemistry is the MAIN Issue**
 - **Basic Chemistry ONLY**
 - Minimal conc. if aqueous
 - Short time
 - Little agitation or mechanical energy
- **Standard steps**
 - Using coupons matching part substrate
 - Using supplied contaminants
 - Compare with current solvent for a baseline (if possible)





Testing an Alternative - Phase 2

- **CLIENT SPECIFIC CONDITIONS**
 - Driven by what client will change or accept
 - **Work with TACT**
 - Time
 - Agitation – match current equipment
 - Concentration
 - Temperature
 - **Then same standard steps as in Phase 1**
-



Testing an Alternative - Phase 3

- **Pilot cleaning in lab setting**
 - Client specific operating conditions
 - Client supplied parts
 - Geometry matters
- **Send / bring parts to client for assessment**
 - Client-worker feedback is the ultimate
 - THEY ARE the EXPERTS





Testing an Alternative - Phase 4

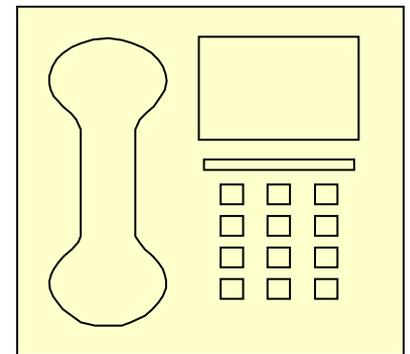
- **Pilot testing at facility**
 - Using best alternative cleaning products found (2-4)
 - Set up piloting off-line from current system
- OR
- **Loan equipment**
 - See results first hand in their process
 - Gives time to research equipment purchases





New Phases to Process

- Average of 4 visits vs.1 previously
- EH&S Comparison
- Cost evaluation
- Loan equipment or pilot onsite with client
- Follow-up & update calls throughout project
- Connect clients with chemical & equipment vendors
- **Increased implementation from 30 to 80%**





Chemicals with < 1 mm Hg VP

Manufacturer	Product	Classification	VP mm Hg
AG Environmental	Soy Clear 1500	Ester	0.6
	Canola Gold	Ester	0.6
Buckeye	Shopmaster RC	Ester	0.2
Inland Tech Inc	EP 921	Biobased	< 1
Savogran	HD 34 Cleaner Degreaser	Semi Aqueous	< 0.1
Tarksol Inc	Tarksol HTF 85 B	Alcohol Organic	< 1
	Tarksol HTF 50	Semi Aqueous	0.1436
	Power Green	Terpene Semi Aqueous	0.0586
United Labs	United 2002	Semi Aqueous	<1
Vertec Bio Solvents	Vertec Bio Gold 3	Biobased	< 1
Solvent Kleene Inc	D Zolve 1012 ultrasonic cleaner	Ester	< 1
Soy Solve Industrial Prod	Soy Solv II	Biobased	< 1
	Soy Solv	Biobased	< 1
	Soy Solv II Plus	Biobased	0.9



Main Options for Meeting Reg

- **New solvent – substitution or drop in**
 - Same process, new chemical
 - **New process**
 - aqueous
 - limit soils coming into shop from suppliers
-



Why Aqueous Cleaners?

Because of the following environmental indicators:

- Low to no-Volatile Organic Compounds (VOCs)
- Non-Ozone Depleting Substances (non-ODSs)
- Zero Global Warming Potential (GWP = 0)
- Low or No Toxicity
- Non-Flammable





Aqueous Pros & Cons

- **PROS**

- Better EH&S Profile
- Regulations
- Disposal
- Chemical cost may be less, dilutable

- **CONS**

- Dry & rinse issues
- New Equipment
- Training
- Water usage





Drop In Solvent Replacements

- **Many companies request direct solvent replacements because;**
 - Use existing equipment with small adjustments
 - Worried about performance of alternatives
 - Part geometry, compatibility, rinsing & drying
 - No money for new equipment





Drop-In Solvent Pros & Cons

- **PROS**

- Easy
- No new equip needed
- Less/no regulations
- Same disposal

- **CONS**

- No real EH&S improvement
- Expensive
- May not work on all soils
- May require more energy





Potential Hazards of Solvents

Acute Issues

- Reactivity such as flammability

Chronic Issues

- May deplete the ozone layer (ODP)
- May add to global warming (GWP)
- May contain toxics
 - Volatile Organic Compounds (VOCs)
 - Carcinogens
 - Reproductive Toxins
 - Neurological Toxins



**See
Chemical Fact Sheets
for PCE & TCE**



Substitution & Implementation

- **IT CAN BE DONE! IT TAKES....**
- A plan specific to your goals & needs
 - Priorities; EH&S, cost, compliance etc.
 - Process changes if any that can be done
 - Capital available
 - Time
- TURI Lab & OTA – We are here to help





Tools & Resources for TUR

- **Call TURI / OTA / DEP**
- **Use online resources & links**
- **Try it on your own**
 - Talk to others in your industry
 - Use supply chain opportunities
 - Use Cleaner Solutions – TURI Lab Database
 - www.cleanersolutions.org





Questions????

THANK YOU

Please Visit Displays

ASK US QUESTIONS !

