

# Vacuum Vapor Degreasing Hub at TURI

An EPA BIL funded project for reducing  
hazardous halogenated solvents for New  
England Companies



# TURI Laboratory Research Team

- Jason Marshall – lab director
- Alicia McCarthy – sanitizing performance testing and training
- Amelia Wagner – cleaning performance testing, on-site visit assistance
- Alex Symko – cleaning performance testing, on-site visit assistance
- Gabriel Salierno – green chemist
- Greg Morose – research program manager



# What We Will Be Doing

Identify and support the implementation of opportunities to protect worker health and the environment using safer cleaning chemicals and technologies for New England

We will work with our P2 partners to:

- Provide technical, financial, EHS, and basic regulatory information on alternatives to the traditional cleaners
- Assist in the process of identifying which alternative(s) offer the best fit for their facility
- Coordinate implementation efforts to increase successful adoption

# Vacuum Vapor Degreaser HUB Project Timeline

## Fall 25

- Project set up
- Identify and contact halogenated solvent users in MA
- Recruit additional companies from Region 1

## Winter 25/26

- Hold in-person (or webinar) on the project scope and how companies can utilize the testing center
- Site visits and material collection for process-specific testing

## Spring 26

- Conduct preliminary (solvent) testing for participating companies
- Perform batch production testing (bench scale testing)

## Summer 26

- Equipment installation and training for TURI and P2 regional staff
- Conduct pilot testing on company parts

## Year 2

- Document success of testing, highlighting industry specific results
- Conduct outreach to companies in EPA Region 1 with similar sectors
- Recruit companies from additional EPA regions

## Vacuum Vapor Degreaser HUB

### Assess

Feasibility of alternative cleaning practices

- Relative hazard
- Performance
- Financial impact

# TURI VVD Cleaning Hub



Investing in full size VVD



Conduct lab testing on supplied soils



Identify optimum conditions for each facility



Pilot testing on company parts



Provide resources to travel to TURI to run equipment



Provide incentive stipend for participating companies



Document results for participating companies



Connect with vendors for next steps on purchasing units

# P2OASys Profiles of Modified Alcohols vs TCE, nPB

| Categories                     | Dowclene 1601 | Metalnox M6386 | Dowanol PnBGE | Dipropylene glycol dimethyl ether isomer mixture | Trichloroethylene | n Propyl Bromide |
|--------------------------------|---------------|----------------|---------------|--------------------------------------------------|-------------------|------------------|
| Acute Human Effects            | 8             | 8              | 8             | 4                                                | 8                 | 10               |
| Chronic Human Effects          | 4             | 2              | 3             | 2                                                | 9                 | 9                |
| Ecological Hazards             | 2             | 4              | 2             | 2                                                | 8                 | 6                |
| Environmental Fate & Transport | 4             | 5              | 4             | 7                                                | 9                 | 10               |
| Atmospheric Hazard             | 2             | 2              | 2             | 2                                                | 6                 | 6                |
| Physical Properties            | 5             | 8              | 6             | 4                                                | 10                | 10               |
| Process Factors                | 6             | 4              | 8             | 4                                                | 7                 | 9                |
| Life Cycle Factors             | 4             | 4              | 4             | 4                                                | 10                | 9                |
| Product Score                  | 4.4           | 4.6            | 4.6           | 3.6                                              | 8.4               | 8.6              |

Product

Dowclene 1601

Metalnox M6386

Dowanol PnBGE

Dipropylene glycol dimethyl ether isomer mixture

Trichloroethylene

n Propyl Bromide

CAS#s

5131-66-8 (70-90%); 15821-83-7 (<5%)

5131-66-8 (90%), 111109-77-4 (10%)

5131-66-8

11109-77-4

79-01-6

106-94-5



Hazard level: Low    Moderate    High    Very High

# Benchtop Testing for Vapor Degreasing

Operating in parallel to the existing vacuum vapor degreasing equipment and solvents

The TURI Lab will conduct research into alternative vapor degreasing utilizing safer solvents compared to TCE

Azeotropes   Co-Solvents   Bi-Solvents







# Vacuum Vapor Degreasing Hub Will...

## Expand

- Expand success beyond Massachusetts

## Partner

- Partner with three pollution prevention agencies

## Support

- Support nine manufacturing facilities, three in each of those states

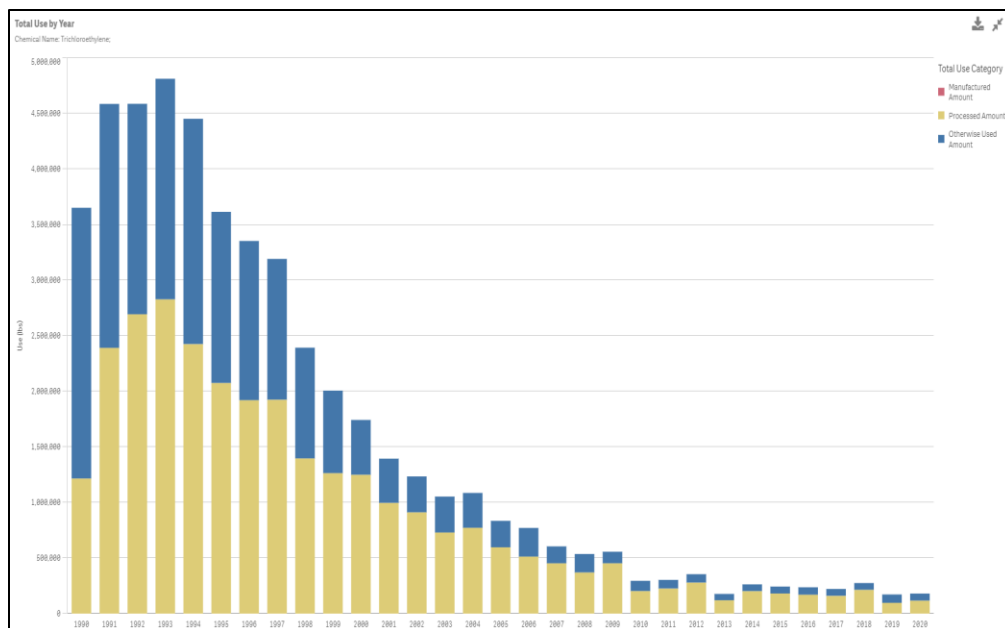
## Design and carry out

- P2 projects to replace halogenated solvent in vapor degreasing applications



- We want to hear from you on what you need
- Because our work is not done in a vacuum...

... it is done in a vacuum vapor degreaser



# Toxics Use Reduction Institute

[www.turi.org](http://www.turi.org)

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