

# Massachusetts Toxics Use Reduction



## TURA Advisory Committee January 29, 2026



# Format for Questions and Discussion

- Advisory Committee members may ask questions at any time by raising hand
- Non-Advisory Committee members will be given an opportunity to participate **after** the Advisory Committee member discussion at the end of each agenda item; comments limited to 3 minutes if any other attendees are waiting to speak
- Raise hand function will be used
- If we run out of time for attendee questions, please email questions to the TURA Program Administrative Council Executive Director, Tiffany Skogstrom ([tiffany.skogstrom@mass.gov](mailto:tiffany.skogstrom@mass.gov))

# How to Ask Questions

Use Zoom function to raise your hand for comments or questions.

To access the "Raise Hand" function, click "Participants" at the bottom of your screen, and then click the "Raise Hand" button that appears under the list of participants. This will notify the host that you have a question or comment.

# Agenda

- Welcome and Introductions
- Vote to Approve April 17, 2025 Meeting Minutes
- PFAS Added to US EPA Toxics Release Inventory (TRI)
- Carbon Nanotubes and Carbon Nanofibers Policy Analysis Presentation
- TURA Program Update
- Adjourn

Note: Public comments/questions will be held until opened for general discussion

# Welcome and Introductions

# **What Makes Participating in the TURA Advisory Committee Important to Your Work?**

# April 17, 2025 Meeting Minutes Vote



Approval of April 17, 2025  
meeting minutes

# **PFAS Added to US EPA Toxics Release Inventory (TRI)**

# Latest TRI Additions

- An amendment to add [nine recent TRI PFAS additions](#) to the TURA list was promulgated at the end of 2025 for Reporting Year 2026, with reports due in 2027.

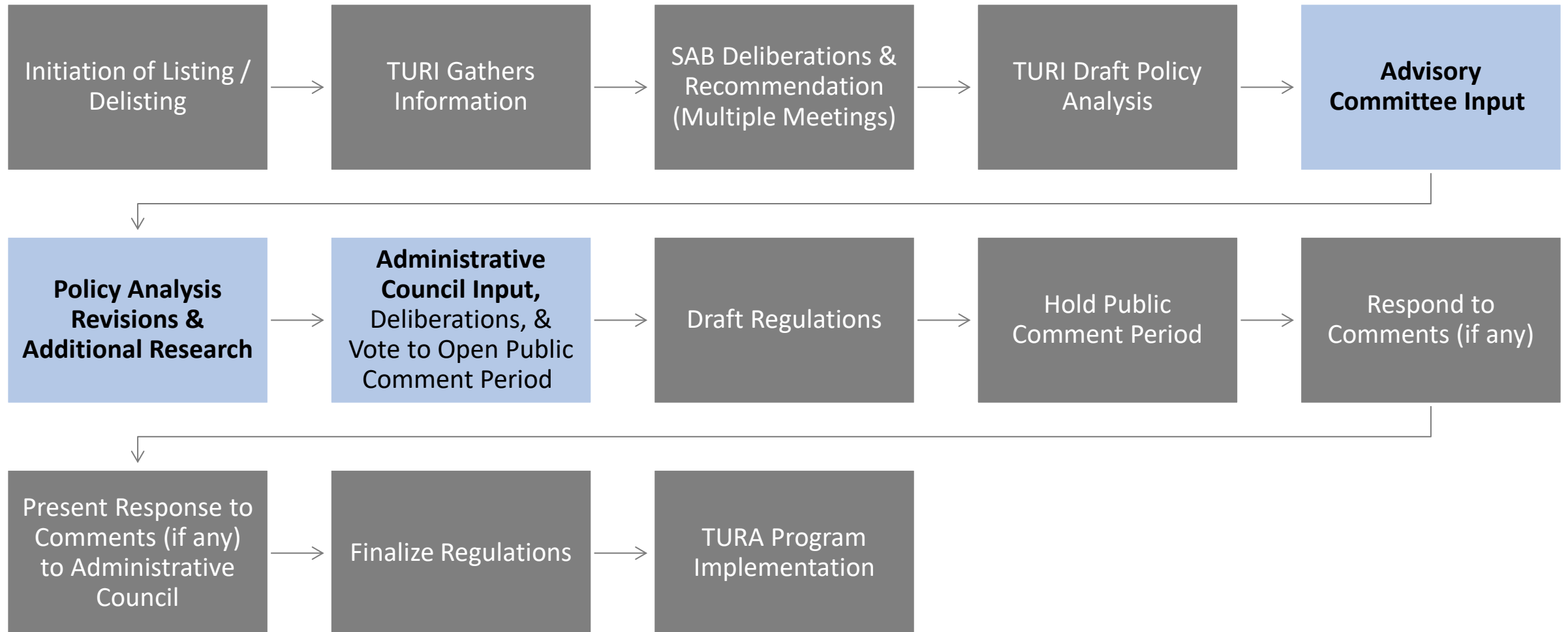
## [Nine PFAS](#) (100 lb. threshold)

377-73-1	Perfluoro-3-methoxypropanoic acid
3108-42-7	Ammonium perfluorodecanoate (PFDA NH <sub>4</sub> )
3830-45-3	Sodium perfluorodecanoate (PFDA-Na)
27619-97-2	6:2 Fluorotelomer sulfonate acid
425670-75-3	6:2 Fluorotelomer sulfonate anion
59587-38-1	6:2 Fluorotelomer sulfonate potassium salt
59587-39-2	6:2 Fluorotelomer sulfonate ammonium salt
27619-94-9	6:2 Fluorotelomer sulfonate sodium salt
3030471-22-5	Acetic acid, [(γ-ω-perfluoro-C8-10-alkyl)thio] derivs., Bu esters

- One additional PFAS substance was recently added to TRI. We expect to add this to the TURA List for Reporting Year 2027, with reports due in 2028.
- [PFAS tracking guidance for TURA and TRI](#)

# **Carbon Nanotubes and Carbon Nanofibers Policy Analysis Presentation**

# TURA Program Consideration of Carbon Nanotubes and Nanofibers: Decision-making Steps for Additions to TURA List



# TURA Program Consideration of Carbon Nanotubes and Nanofibers: Petition

## **June 2020**

Petition filed by Clean Water Action (CWA) and Public Employees for Environmental Responsibility (PEER) to list Carbon Nanotubes (CNT) and Carbon Nanofibers (CNF) under TURA

- Requested to list Carbon Nanotubes and Carbon Nanofibers as Higher Hazard Substances
- Proposed to include CNTs and CNFs on TURA list as a group
- Requested 100g reporting threshold

# TURA Program Consideration of Carbon Nanotubes and Nanofibers: Recommendation from the TURA Science Advisory Board (SAB)

TURA Science Advisory Board recommends Multi Walled Carbon Nanotubes, Single Walled Carbon Nanotubes, and Carbon Nanofibers be **added as three distinct categories** to the TURA List of Toxic Substances

- Recommended MWCNT category be listed as HHS with lower threshold
  - Evidence of pulmonary toxicity, lung cancer, mesothelioma and environmental persistence. Concerns for genotoxicity and toxic environmental degradation products.
- Recommended listing SWCNT and CNF as standard categories
  - **SWCNT** - evidence of pulmonary toxicity and environmental persistence. Concerns for reactive oxygen species (ROS) production and DNA damage.
  - **CNF** - evidence of pulmonary toxicity.

# TURA Program Consideration of Carbon Nanotubes and Nanofibers: CNT/CNF Hazards Focused on by SAB

## Pulmonary Toxicity

- Extensive evidence of pulmonary toxicity including pulmonary inflammation and fibrosis for MWCNT, extending to evidence of carcinogenicity (IARC 2B) and mesothelioma. Solid evidence for SWCNT and CNF.

## Genotoxicity

- MWCNT showed DNA damage and/or micronuclei formation
- SWCNT showed DNA damage and/or Reactive Oxygen Species (ROS)

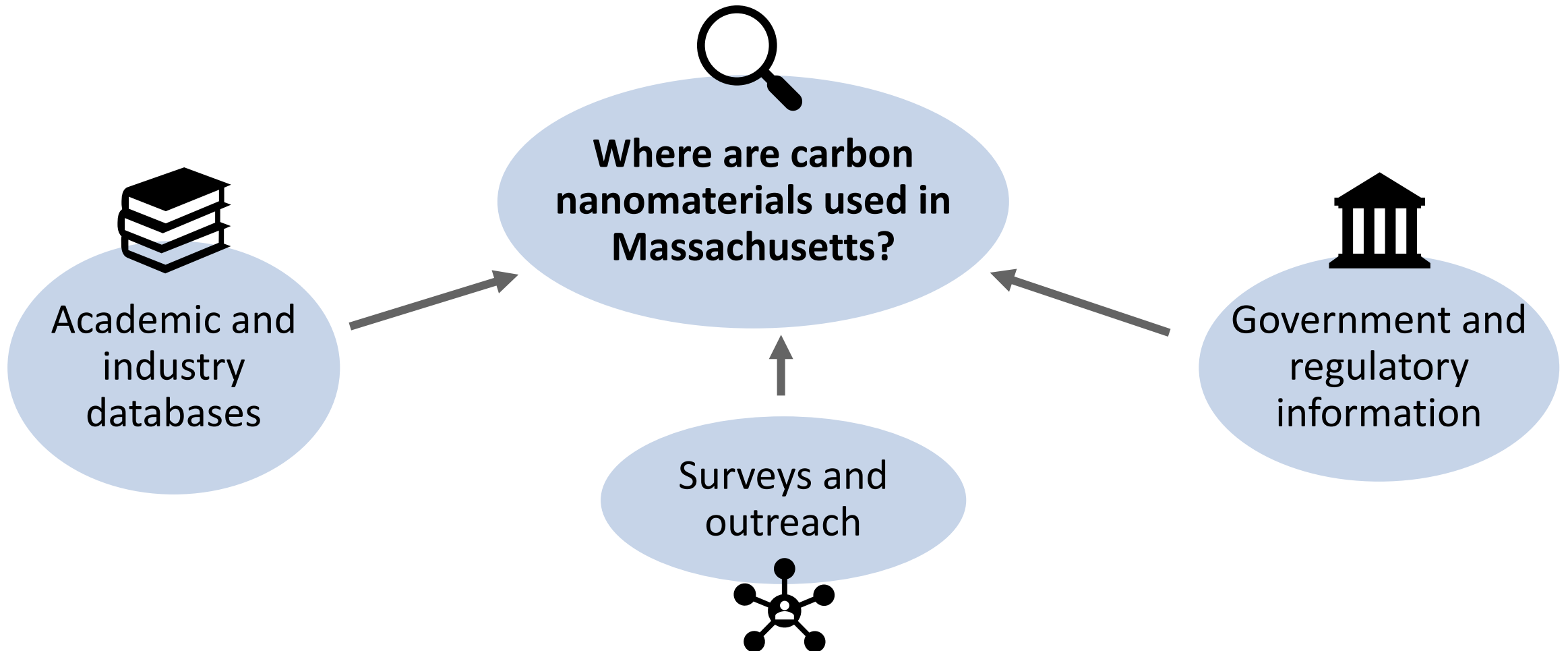
## Environmental Persistence

- Solid evidence for MWCNT and SWCNT. CNF lacks studies.

# Key Studies Reviewed during SAB Discussions

End Point	MWCNT	SWCNT	CNF
Pulmonary toxicity	Beard (2018), CDC/NIOSH (2013), Dong (2015), Donaldson (2006), Fatkhutdinova (2016), Knudsen(2019), Mercer (2007,2010&2013), Pauluhn (2017), Poulsen (2015), Vietti (2016), Vlaanderen (2017)	CDC/NIOSH (2013), Ema (2016), Honda (2017), Maynard 2003, Pacurari (2011), Park (2011,2016), Shvedova (2005,2008,2014), Teeguarden (2011), Vietti (2016), Zhang (2011)	CDC/NIOSH (2013), DeLorme (2012), Murray (2012), Shvedova (2014)
Lung cancer /Mesothelioma	Chernova (2017), Fukushima (2018), Kasai (2016), IARC/ WHO (2017), Rahman (2017)		
Genotoxicity	Aschberger (2019), Fraser (2020), Kuijpers (2018), Nahle (2020), Scala (2021)	Jiang (2020)	Kisin (2011), Fraser (2020)
Persistence	DeMarchi, (2019), Greenscreen (2021), Hartman (2014), Wu(2020)	Greenscreen (2021), Parks (2013)	Gomes (2021), Greenscreen (2021)
Toxic environmental degradation products	Peterson (2011)		

# TURA Program Consideration of Carbon Nanotubes and Nanofibers: Potential Use in Massachusetts



# TURA Program Consideration of Carbon Nanotubes and Nanofibers: Potential Use in Massachusetts

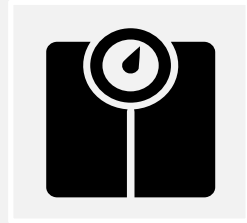
*Excerpt of Table 2 from TURA Policy Analysis*

**36 companies identified as potential carbon nanomaterial users across a range of sectors and applications**

Industry	# companies (likely / possible)	Nanomaterial	Uses (*definitive applications in MA)	Estimated Use Volume (per facility)
Electronics & Computing	4 / 3	CNT, CNF	Electronics (semiconductors, *memory RAMS, *optical devices); computers (*semiconductors, computer chips, *quantum computers, display panels)	1-100 lbs.
Advanced Materials	1 / 3	CNF	Carbon fiber flywheel: storage of kinetic energy (composite rim core); protective equipment; aerospace (*thrusters); specialty paper manufacturing (activated carbon and filter paper)	500-5,000 lbs.
Biopharmaceutical	0 / 4	CNT	Chromatography columns; spectroscopy (1 dimensional systems), pharmaceuticals (sustained-release drugs)	Unknown
Nanomaterial Manufacturing	2 / 0	SWCNT, MWCNT	*these facilities manufacture carbon nanotubes	1,000-5,000 lbs.

# MWCNT Threshold Determination: Overview

*“Upon recommendation of [TURI] and the [SAB], the council shall have the authority to lower the facility-reporting threshold on a higher hazard substance below [1,000 pounds]” – TURA Statute, Section 9A*

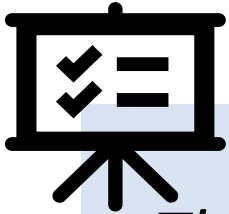


Original petition requested 100-gram reporting threshold for CNTs and CNFs  
Regular TURA reporting thresholds are 25,000 or 10,000 lbs.



Higher Hazard Substances have a reporting threshold of 1,000 pounds  
MWCNTs originally recommended by SAB to be listed as an HHS

# MWCNT Threshold Determination: Science Advisory Board (SAB) Recommendation



*The SAB recommends lowering the reporting threshold for MWCNT below the 1,000-pound threshold because many companies handling these materials use less than 1,000 pounds per year. The SAB recognizes the carcinogenicity of MWCNT and our previous recommendation to designate MWCNT as a Higher Hazard substance.*

*The SAB notes that the exposure and potential associated hazard may be similar across the range of use volumes from grams to 1,000 lbs.*

# MWCNT Threshold Determination: Policy Considerations

TURI agrees with the SAB recommendation to lower the MWCNT reporting threshold and suggests a **one-pound threshold**.

## Use Research

- Suggested facilities use MWCNTs at quantities far below the 1,000-pound HHS threshold
- Global inventories, regulatory databases, market research, interviews

## Precedence

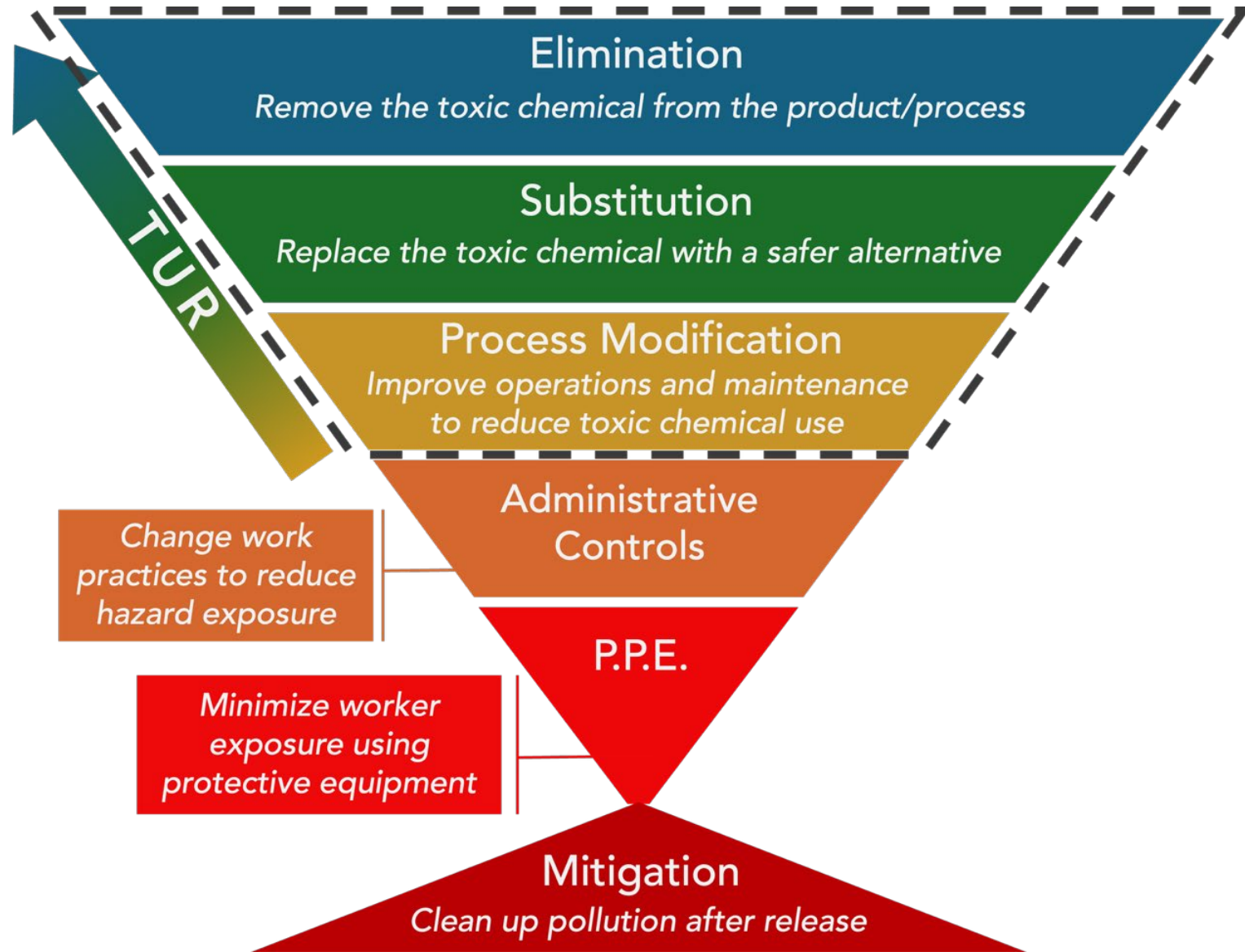
- EPA rule on lower reporting thresholds for Persistent, Bioaccumulative, Toxic Substances.
- French and Belgian inventories with 100-gram mandatory reporting thresholds

## Capturing a Reasonable Portion of Users

- Improved public access to information
- Accelerating TUR innovation and safer solutions

# The Toxics Use Reduction Approach

- TUR opportunities for carbon nanomaterials are unique with many relevant technologies in early research stages.
- Availability of alternatives is not a pre-requisite for addition – TURA listing has proven to accelerate safer solutions.



# TUR Opportunities for CNT and CNF

Opportunities exist for continued research and development of alternatives, and safer by design strategies, which reduce negative impacts without sacrificing their properties and societal benefits



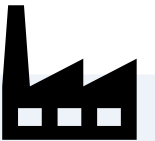
Considering the need



Alternatives to Carbon Nanomaterials



Safer by design CNTs and CNFs



Safer manufacturing and product design

# TURA Program Consideration of Carbon Nanotubes and Nanofibers: Regulatory Review

Overview of regulations, official guidance and initiatives that cover carbon nanotubes and carbon nanofibers

## International

- OECD - Strategic Programme on Safety Eval. & Risk Assessment
- UN - SAICM/GFC Emerging Policy Issue / Issue of Concern
- EU - e.g. REACH, Cosmetics legislation; Nanoform Guidance

## Federal

- TSCA Section 5 (Premanufacturing Notices and Significant New Use Rules)
- EPA Recordkeeping Rule
- NIOSH Recommended Exposure Limit

## State and Local

- California DTSC Formal Request Letters
- Cambridge nanotechnology committee and Berkeley, CA disclosure requirements

# Implications of Category Designation

Defining a category is appropriate in a number of circumstances and can provide several advantages over listing chemicals individually.



**Adverse  
substitutions**



**Incomplete list of  
CAS numbers**



**Similar hazards  
across a group**



**Confidential  
business  
information**

# TURA Program Services



- Academic research grants
- Industry grants
- Laboratory Services



- Free onsite technical assistance

## Fees and Planning-Related Costs

Cost of planning (TURP consultant or certification)

Cost of filing (estimated \$2,950 per filer)

Estimated annual revenue to program (\$14,750-\$106,200)

# Policy Analysis Update: January 2026

Draft policy analysis presented to Administrative Council and stakeholders in May of 2025

## Key comments integrated

- Addressed nomenclature
- Added table mapping key SAB studies to endpoints from the recommendation
- Updated cost of planning and certification

# TURA Program Update

# Public Health Advocate Seat Open

- Recruitment ongoing for one of the Advisory Committee's Public Health Advocacy seats
- Please refer potential candidates to Tiffany Skogstrom
- [Seat description](#)

An aerial photograph of a golf course, showing several green fairways and a large lake in the foreground. The background is a dense forest. The text "OTA Updates" is overlaid in the center of the image.

# OTA Updates

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Tabletop Chemical Preparedness Exercises

Chemical Safety & Climate Video Award

Website and Mass Clean Auto Repair (MassCAR) updates

Right from the Start

Staffing updates

# OTA Chemical Safety & Climate Change Resilience Tabletop Exercises (Lawrence and Holyoke), June 2025



# OTA Wins Award for Chemical Safety & Climate Preparedness Video

- OTA won silver medal in the 2025 Digital Health Awards for community preparedness video on Chemical Safety in a Changing Climate
- This video, and its companion for Businesses are featured on [OTA's Chemical Safety & Climate Preparedness website](#)
- Both videos feature versions with translated captions in Spanish, Portuguese, Chinese, Vietnamese, and Haitian Creole

Chemical Safety in a Changing Climate:  
**How OTA Helps Protect  
Massachusetts Communities**



# OTA Website Updates

- Chemical Safety & Climate
- Case Study Library
- MassCAR
- OTA Services




## Chemical Safety & Climate Change Preparedness Tabletop Exercise (TTX) Materials

In June 2025, OTA hosted tabletop exercises on chemical safety & climate change preparedness for businesses, first responders, healthcare facilities, and municipal public health & emergency preparedness officials. Materials from these exercises are below.



[Collapse all](#)

### Tabletop Exercise Materials (21) —

-  [Chemical Safety and Climate Preparedness TTX Situation Manual](#) (English, PDF 623.96 KB)  
[简体中文](#) | [Kreyòl ayisyen](#) | [Português, Brasil](#) | [Español](#) | [Tiếng Việt](#) | [Translate labels](#)
-  [Facility Emergency Plan Summary - Baystate Refrigerated Services](#) (English, PDF 193.19 KB)  
[简体中文](#) | [Kreyòl ayisyen](#) | [Português, Brasil](#) | [Español](#) | [Tiếng Việt](#) | [Translate labels](#)
-  [Facility Emergency Plan Summary - Sticky, Inc.](#) (English, PDF 222.18 KB)  
[简体中文](#) | [Kreyòl ayisyen](#) | [Português, Brasil](#) | [Español](#) | [Tiếng Việt](#) | [Translate labels](#)

### For Your Facility (1) —

-  [Facility Emergency Plan Summary Template](#) (English, DOCX 48.61 KB)

# Mass Clean Auto Repair (MassCAR) Guide

- Updated MassCAR curriculum to reflect changes in law and available resources
- Modernized format by moving curriculum online
- Refreshed printable materials

## The Massachusetts Clean Auto Repair (MassCAR) Guide

The Massachusetts Office of Technical Assistance and Technology (OTA) created the Massachusetts Clean Auto Repair (MassCAR) program to provide environmental training and resources for auto body and repair shops.



### TABLE OF CONTENTS

- ✓ [The Complete MassCAR Guide and Checklist](#)
- ✓ [General Auto Body and Repair Topics](#)
- ✓ [Auto Body Topics](#)
- ✓ [Auto Repair Topics](#)
- ✓ [The MassCAR Training Curriculum](#)

# Right from the Start Revitalization

- Updated materials for OTA's 'Right from the Start' pre-permit assistance program
- Improved cultural relevance of materials to minority-owned businesses and businesses that serve, or are located near, environmental justice populations
- Increasing outreach to above targeted businesses

**RIGHT FROM THE START**

**The Road to a Green Business**

**Brainstorm ways to establish or expand business operations while minimizing local environmental impacts**

Identify areas of interest for possible expansion. Any areas that include toxic chemicals or air pollutants could be subject to Massachusetts regulations and contribute to overburdening environmental justice populations, so OTA is here to help!

**Contact OTA for assistance**

Reach out to OTA for free and confidential assistance. An OTA technical advisor can answer any questions you have about setting up or improving your operations and begin a thorough review of applicable environmental regulations and pollution prevention opportunities.

**Fill out a questionnaire**

Help OTA get to know your business by answering questions about your processes and practices. The questionnaire will help OTA identify what you can do to avoid toxic chemicals, conserve energy and water, and promote environmental health and justice.

**Plan your facility improvements**

Work with OTA to collect information about your facility's operations and impact on the local landscape. OTA will create a report detailing ways to improve your operations. The plan will include important safety and environmental regulatory information, including hazardous materials disposal, air pollutant reduction, and wastewater management, as well as pollution prevention and resource conservation opportunities.

**Lead the way for a healthier, happier community and a cleaner, more competitive business!**

**Contact OTA with questions:**

Email [maota@mass.gov](mailto:maota@mass.gov)  
Call (677) 626-1080  
Visit <https://www.mass.gov/how-to/request-environmental-assistance-for-a-new-or-expanding-business> for more information.

# OTA Staffing Update



- Welcoming Keyana White, Environmental Analyst
- Recruiting EJ & Toxics Use Reduction Intern for Spring 2026



Keyana White

An aerial photograph of a large green field with a white outline, a river, and a forest. The field is divided into several sections by a white line. A river flows through the middle of the field. The background shows a dense forest and some buildings in the distance.

# DEP Updates



# Staffing Update

MassDEP TURA Program has backfilled two staff members

Lillian Zemba



Megan Keene





## Reporting Year 2024

- In RY2024, there were 425 filers.
- Bills for RY2024 filings have been sent.
- Program has completed QA/QC of the reported data
- We are in the process of preparing the 2024 TURA Information Release



## Enforcement and TURA Program Projects

- RY2024 Enforcement has been sent to facilities
  - Enforcement included: Complete Failure to File, Filers who reported to TRI but failed to report under TURA, Missing and Incorrectly Reported Chemicals, and QA/QC Non-Responders
- Staff began an outreach project aimed at finding new filers subject to TURA reporting



## Reporting Year 2025

- The MassDEP TURA Program sent out a reporting notice to filers and TUR Planners informing that RY2025 is a planning year.
- The Program also notified that additional TRI PFAS chemicals have been added to the TURA chemical list, effective RY2025.
- The Program is updating the TURA chemical list, and the TURA guidance documents for accessibility purposes.



## Reporting Year 2025

- The MassDEP TURA Program completed grading of the TUR Planner Exams and have certified 3 new General Practice TUR planners and 3 new Limited Practice TUR planners.
- The Program is in the process of coordinating the spring TURA Reporting Trainings.
- RY2025 TURA eDEP forms will go live in April.



## Toxics Release Inventory (TRI) Program Updates

- Rebecca Dolan is the new MassDEP TRI contact and is attending Toxics Release Inventory (TRI) Quarterly Call for Headquarters, Region, States, and Tribes to keep the TURA Program apprised of TRI changes.

An aerial photograph of a golf course, likely TURI, showing several green fairways and a large lake in the foreground. The background is hazy, suggesting a distant town or city. The text "TURI Updates" is overlaid in the center of the image.

# TURI Updates

# Overview

- Competitiveness Report



# Competitive Advantages under TURA



## Improved Productivity

A TUR innovation helped an instrument manufacturer increase production capacity and eliminate process bottlenecks



## Stronger Market Position

A signage manufacturer worked with TURI to eliminate a toxic solvent and save over \$8,500/year in regulatory and reporting cost



## Greater Resource Efficiency

A safer chemical innovation supported by TURI saved an electronics sector manufacturer over \$21,500/year on chemical and electricity costs

**\$6  
Million**

Annual savings achieved through TUR implementation in Massachusetts\*

**\$1.20**

Annual savings generated per dollar of TURI industry grant funding †

## Case Study - Eliminating Toxic Solvents and Boosting Efficiency

With support from a TURI grant, an electronics parts manufacturer implemented a safer alternative to a carcinogenic chemical. The new system eliminated 2,000 pounds of air emissions while delivering operational gains.

- **\$46,000** in annual savings
- **1,920 ft<sup>2</sup> reclaimed** manufacturing space
- **68% increase** in throughput
- **33% reduction** in maintenance labor

*\*According to Independent 2016 Survey. Adjusted for inflation using BLS calculator.  
†FY2019 to FY2023 Industry Grants which led to implementation.*

# Collaboration to improve competitiveness and protect workers: A Small Business Case Study

New Method Plating, a family-owned business operating in Worcester, MA for three generations, leveraged TURI technical support and a grant to implement a toxics use reduction innovation – Protecting worker and community health while saving money



Photo from technology demonstration event

**\$57,000** | Annual savings cost savings achieved

**990 lbs.** | Carcinogenic chemical eliminated from the workplace

 **Improved Productivity**

Improved throughput with reduced need for worker training and maintenance

 **Stronger Market Position**

Avoided federal restrictions while strengthening supply chain relationships. Saved on costs related to regulations and hazardous waste management.

 **Greater Resource Efficiency**

Drastically reduced energy use and lowered costs on chemicals and personal protective equipment

## TURI Update: Academic and Industry Grants

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New Method Plating Vacuum Vapor Degreaser to eliminate TCE

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Academic Research Grant for Dept of Plastics Engineering partnering with Haartz on non-halogenated flame retardants for textiles

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Academic Research Grant for WPI Replacing the toxic solvent N-methyl-2-pyrrolidone (NMP) for battery applications

## TURI Update: Vacuum Degreasing Hub EPA Grant



- TURI awarded EPA grant to enhance public health and environmental protection by reducing the use of the toxic solvent trichloroethylene (TCE).
- This grant will establish a Vacuum Degreasing Hub focused on finding safer alternatives to TCE through innovative technology and industry outreach.

## TURI Update: Community Grants

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The [Berkshire Regional Planning Commission](#) (BRPC) was awarded a grant to reduce plastic use. Targeting alternatives to single-use plastic use in restaurants, a municipal policy tool kit, and public outreach

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The Brazilian Women's Group (BWG) received funding to expand their [Vida Verde Women's Cooperative](#) which educates Brazilian women working in the cleaning service industry about the dangers posed by certain chemicals.

## TURI Update: Laboratory Activities

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Currently working with 5 Companies on TCE replacements

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Also working with 2 Companies on HFE replacements, 2 Companies on MEK replacements and 1 company on DCM replacement

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Currently working with 1 Food and Beverage Manufacturer on cleaning and sanitizing

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Assisting one filer assess safer flame retardants

## TURI Update: Training Program Recent Webinars

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Latest in Safer Product and Process Research webinar (August 2025)

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Determining the Cost of Toxics webinar (September 2025)

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Evaluating Chemicals of Concern webinar (October 2025)

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Implementing Toxics Use Reduction Case Examples webinar  
(November 2025)

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Using Artificial Intelligence to Support Toxics Use Reduction webinar  
(December 2025)

## TURI Update: Training Events

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Fall 2025 TURP Course completed

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New Method Plating Demonstration Event held in December 2025

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Resource Conservation Planning Course (February 17-March 20 Online)

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TUR Planner Conference (April 8 at Umass Lowell)

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# TURI Update: Science to Policy Updates



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The SAB recommended to list a category of aryl phosphate esters to the TURA list in June



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October/January SAB meetings focused on Ultra-short Chain PFAS and the ToxCast tool

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TURI is developing a policy analysis on the aryl phosphate esters



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TURI has developed a PFAS Fact Sheet (available on TURI's website)

# Federal Chemical Policy Update

- Discussion Draft to amend TSCA introduced by House Republicans
  - [Legislative Hearing Memo](#)
- All TSCA risk management rules are facing litigation, with some targeted for change by EPA.
- EPA has proposed changes to TSCA section 8 rule on PFAS reporting
- Appropriations bill passed to set EPA funding at \$8.8 billion (3.5% decrease compared to FY24)

## David Turcotte named as Interim Director of TURI



- Research Professor Emeritus in the Department of Economics and the Principal Investigator/Director of The New England Consortium (TNEC).
- Doctor of Science degree in Work Environment Policy/Pollution Prevention from the University of Massachusetts Lowell.

# Questions for Advisory Committee to Guide TURA program activities

- Which technical assistance gaps can TURA help to fill?
- What information and tools (case studies, cost data, hazard assessment) is most helpful for businesses to take action?
- In the context of a rapidly changing federal and state landscape, what policy updates do businesses need?
- Looking ahead 3-5 years, where can the TURA program have the greatest impact on reducing toxic chemical use and improving competitiveness in Massachusetts?

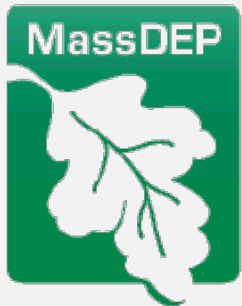
# Contact us any time!



Heather Tenney [heather@turi.org](mailto:heather@turi.org)  
General inquiry: [info@turi.org](mailto:info@turi.org)  
[TURI Team](#) contact information



Tiffany Skogstrom [tiffany.skogstrom@mass.gov](mailto:tiffany.skogstrom@mass.gov)  
*Also contact Tiffany for Administrative Council and Advisory Committee questions*  
OTA Staff: <https://www.mass.gov/service-details/otas-team>



Lynn Cain [lynn.cain@mass.gov](mailto:lynn.cain@mass.gov)  
C&E: Rebecca Dolan [rebecca.g.dolan@mass.gov](mailto:rebecca.g.dolan@mass.gov)  
TURP Certifications: Leoni Desai [leoni.desai@mass.gov](mailto:leoni.desai@mass.gov)

# Adjourn



Next meeting TBD

Direct all questions to  
TURA Administrative Council Executive  
Director

Tiffany Skogstrom:

[tiffany.skogstrom@mass.gov](mailto:tiffany.skogstrom@mass.gov)