Massachusetts
Toxics Use Reduction

TURA Advisory Committee
October 17, 2024

MassDEP

OTA
OFFICE OF TECHNICAL
ASSISTANCE & TECHNOLOGY

Agenda

1. Introductions and Welcome to New Members
2. Approval of June 27, 2023 Meeting Minutes
3. Orientation and TURA Program Strengthening Ad Hoc Committee Review
4. Interagency History of Nanomaterials and Update on TURA Program Consideration of Carbon Nanotubes and Carbon Nanofibers
5. TURA Program Update
6. Adjourn

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

Format for Questions and Discussion

- Advisory Committee members may ask questions at any time during this presentation by raising hand
- If there is time, Non-Advisory Committee members will be given an opportunity to participate **after** the Advisory Committee member discussion

How to Ask Questions

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

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Introductions and Welcome to New Members

Meeting Minutes Vote

Approval of June 27, 2023 meeting minutes

Orientation and TURA Program Strengthening Ad Hoc Committee Review

Goals of TURA

- Reduce toxic waste statewide by 50% through toxics use reduction (TUR)
- Advance innovation in TUR while sustaining and enhancing the competitiveness of MA businesses
- Promote reductions in the production and use of toxic and hazardous substances
- Strengthen enforcement of existing environmental laws and regulations
- Establish TUR as the preferred method of complying with laws and regulations governing toxics and minimizing the risks of toxics
- Promote coordination between all state departments and agencies administering toxics programs

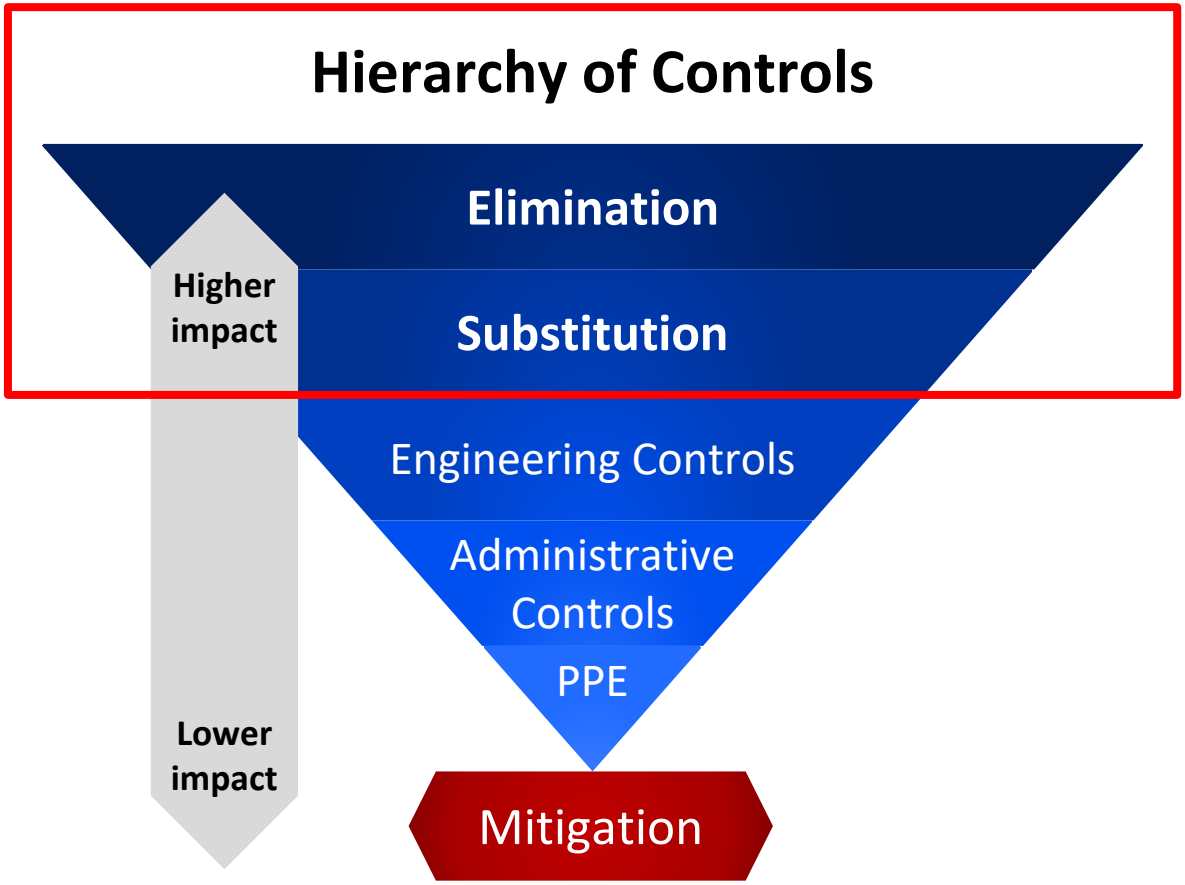
Source Reduction and Pollution Prevention

Source reduction, or pollution prevention:

The reduction, elimination, or prevention of pollution at its source.

Results in less waste to control, treat, or dispose of

Reduces hazard posed to occupational and public health and the environment



MA Toxics Use Reduction Act (TURA) of 1989

Who reports?

Massachusetts *manufacturers* who:

- Operate under certain Standard Industrial Classification (SIC) codes
- Have >10 employees
- Manufacture or process ≥25,000lbs (or otherwise use ≥10,000lbs) of listed substances

Covers a little over 400 MA facilities

What TURA requires

- Report chemical use to the state
- Pay a fee (which funds the program)
- Create a Toxics Use Reduction Plan every two years

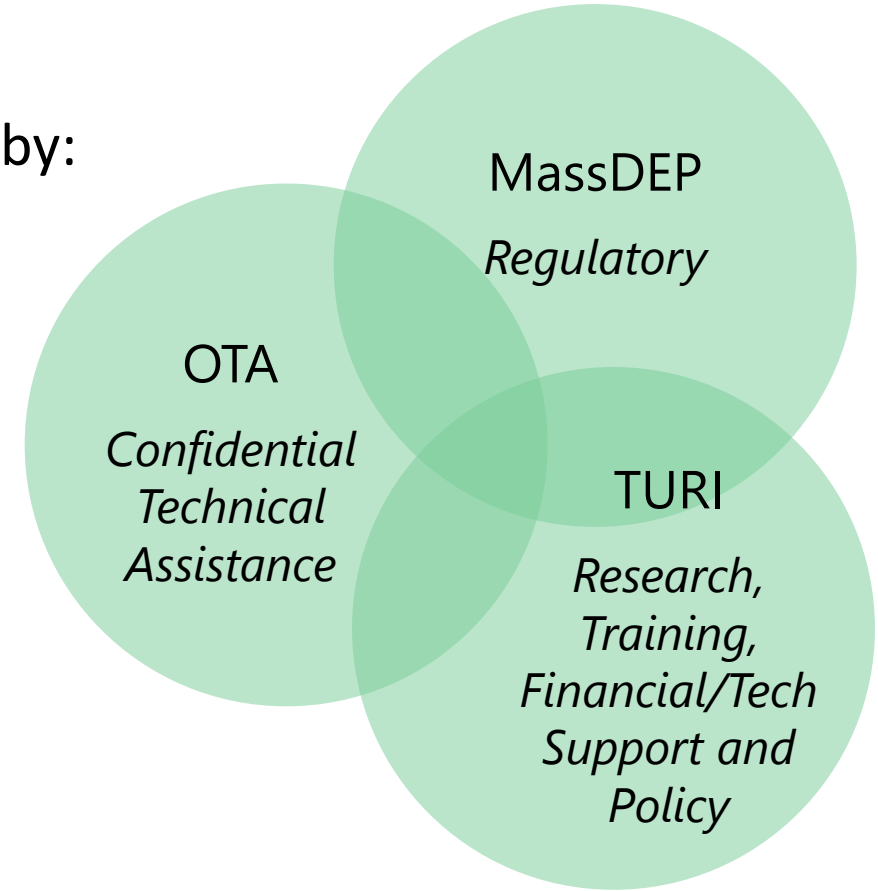
NOT A BAN

TURA does not prohibit companies from using listed chemicals

TURA Program Implementation

The TURA Program is co-implemented by:

- The Massachusetts Department of Environmental Protection
- The Toxics Use Reduction Institute at UMass Lowell
- The Massachusetts Office of Technical Assistance



Massachusetts Dept. of Environmental Protection (MassDEP) - Regulatory Arm

- Writes regulations based on environmental legislation, and policies and procedures to support the regulations
- Inspects regulated facilities to ensure regulatory compliance, and issues enforcement for non-compliance
- Provides outreach and education on regulatory programs
- Certifies TUR planners
- Evaluates program success and provides analysis for program improvement

Toxics Use Reduction Institute (TURI) - Research, Safer Alternatives Implementation and Policy Arm

- Education and training for TUR planners
- Science and policy
  - Science Advisory Board
  - Policy analysis and Data analysis
- Research, development, and assessment of safer alternatives
  - University research grants
  - Laboratory services for industrial and janitorial cleaning
  - Alternatives assessment
- Technical and financial support to businesses and communities
  - Grants and information resources
  - Business supply chain workgroups and research

Office of Technical Assistance (OTA) - Technical Assistance Arm

- **Non-regulatory** agency
- Provides **free, confidential** technical and compliance assistance to MA businesses that use toxic substances
- Gives **concrete recommendations** for toxics reduction and resource conservation

OTA has conducted 3,500 site visits at 1,500 facilities, reducing **millions of pounds** of toxic chemicals and **millions of dollars** in operating costs.

TURA Governing and Advisory Bodies

Science Advisory Board

Managed by TURI

Appointed by Governor

Recommends chemicals

Advisory Committee

Appointed by Secretary

Multi-stakeholder policy input

Advises Administrative Council

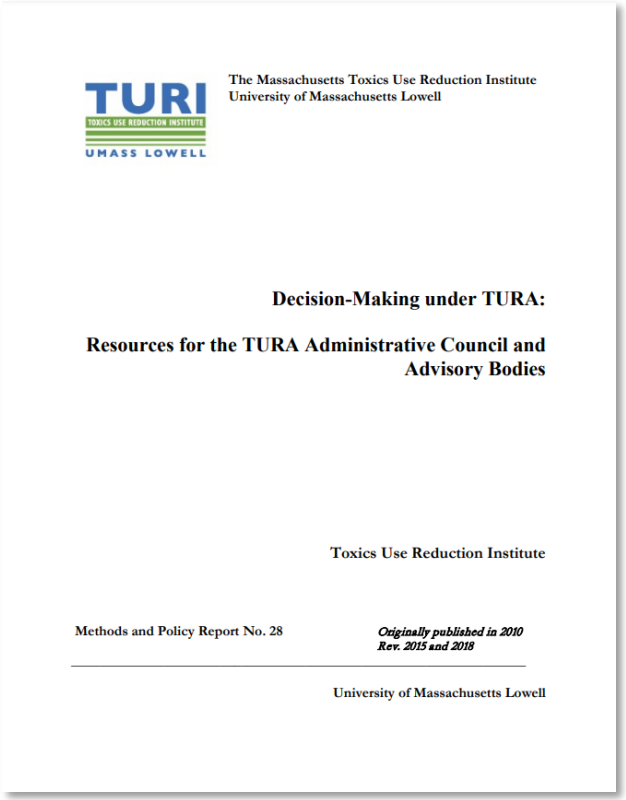
Administrative Council

Chaired by Secretary or designee

TURA governing body

Decision-Making Under TURA: Resources for the TURA Administrative Council and Advisory Bodies

- Origin: The TURA Administrative Council requested this document be created as a reference for decision making processes and roles
- Designed as a resource for members of the TURA Governing and Advisory Bodies
- Resources include:
  - Overview of principles, roles and responsibilities related to TURA program decision making
  - Outline of current practices regarding listing and delisting decisions, chemical categorization, and other TURA program decisions
  - Background information on other topics, such as the role of expert judgment in decision making
- Living document, designed to be updated over time


TURI
TOXICS USE REDUCTION INSTITUTE
UMASS LOWELL

The Massachusetts Toxics Use Reduction Institute
University of Massachusetts Lowell

Decision-Making under TURA:

Resources for the TURA Administrative Council and Advisory Bodies

Toxics Use Reduction Institute

Methods and Policy Report No. 28

Originally published in 2010
Rev. 2015 and 2018

University of Massachusetts Lowell

Discussion

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Ad Hoc Committee Charge

In the interest of continuous improvement, the Council charges the Ad Hoc Committee with reviewing experiences since the 2006 TURA Amendments and discussing possible improvements that would ensure ongoing progress in toxics use reduction.

TURA Program Strengthening Ad Hoc Committee Members

TURA Advisory Committee members noted with asterisks (*)

Name	Affiliation
Tom Estabrook	The New England Consortium (TNEC)
Wendy Heiger-Bernays	TURA SAB / BUSPH
Andy Irwin	Irwin Engineers / TUR Planner / MCTA
Bill Judd*	TUR Planner
Jay Kaufman	Beacon Leadership Collaborative
Terry McCormack	Umicore Electrical Materials, Inc / TUR Planner
Mark Monique*	TUR Planner / Savogran / MCTA
Elise Pechter	MA DPH
Jim Reger	Massachusetts Asphalt & Aggregate Paving Association

Name	Affiliation
Rick Reibstein	Former TURA Program Staff / BU
Robert Rio	Associated Industries of Massachusetts (AIM)
Katherine Robertson	Massachusetts Chemistry Technology Alliance (MCTA)
Cora Roelofs	Worker Health Advocate UMass Lowell
Mark Rossi*	Clean Production Action
Elizabeth Saunders	Clean Water Action
Lucy Servidio*	TUR Planner
Laura Spark*	Clean Water Action
Jodi Sugerman-Brozan*	MassCOSH
Matthew Taylor*	Dupont

Documentation and Resources

Background documents prepared for each topic

November 19, 2020
Ad Hoc Meeting 1: Orientation

December 14, 2020
Meeting 2: Compliance & Enforcement

January 13, 2021
Meeting 3: Alternative Planning

March 30, 2021
Meeting 4: Planning and Planners

April 29, 2021
Meeting 5: TURA List

July 22, 2021
Meeting 6: Fees

Synthesis document prepared to summarize committee discussions; presented to Advisory Committee

Outcomes of Ad Hoc Process

Compliance & Enforcement	Planners and Planning	Cross-Cutting
TURA List	Fees	

Actions taken

- Inspector training & assistance
- Increased DEP plan audits and inspections

- Encourage alternative planning for PFAS for 2024 plan cycle
- Assess learning in trainings

- Improve usability of chemical list

Planned or potential future actions

- Sector-focused assistance workshops & resources
- *Evaluate options to streamline TUR plan updates in certain cases (e.g., if TUR implementation is in progress)
- *Consider offering option to skip a planning cycle if no feasible options, based on results of a TURI/OTA plan review pilot program

- Consider streamlining or expediting TURA List updates from authoritative chemical lists
- Require reporting of already-listed CERCLA categories

- *Revisit fee regulations based on 2014 proposal

- †Explore expanding filer universe, beginning with study of chemical use by non-filer sectors

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Interagency History of Nanomaterials and Update on TURA Program Consideration of Carbon Nanotubes and Carbon Nanofibers

What are nanomaterials

- Nanomaterials are defined by size – one nanometer (nm) is equal to one billionth of a meter (10^{-9} meters)
- The width of a human hair is approximately 80,000 – 100,000 nm in diameter; a red blood cell is about 7,000 nm wide
- Nanomaterials can be intentionally engineered for a variety of uses, e.g., consumer products, medical applications, electronics, etc.
- Materials of the same composition may have different properties, behave differently, and pose different hazards and risks at the bulk scale vs. nano scale

Interagency History of Nanomaterials

MA Interagency Nanotechnology Committee (2007 – 2010)

- Representatives from MassDEP, OTA, MDPH, DLS, TURI, and EOHED
- All but 3 members of original Committee now retired from state service
- Workshops held in 2007 and 2009

The Big Picture: Safe Development of Nanotechnology

Proceedings from the workshop held in November 2007

Interagency History of Nanomaterials

2009 Workshop

- Brought together multiple stakeholders for a review of the science, industry, and worker and consumer exposure
- Attendees and presenters from government, academia, industry, law firms, and non-profit groups

2nd ANNUAL MASSACHUSETTS NANOTECHNOLOGY WORKSHOP

PROCEEDINGS FROM THE JANUARY 29, 2009 WORKSHOP

Promoting the Safe Development of Nanotechnology in Massachusetts

OTA 2017 Nanomaterials Survey

Outreach Methods

- Direct email through known contacts / webinar attendees / online searches
- Newsletters: OTA / TURI / MassDEP / New England Biosafety Assn
- Promotion through MCTA and ACC
- Posting in LinkedIn Nano Groups
- Boards of Health

Results

- Survey opened 165 times
- Respondents:
  - 13 Massachusetts
    - 10 current users of nanomaterials
  - 41 out of state

Items to Consider

Toxic Substances Control Act (TSCA): Solely regulates new & existing chemicals in commerce. Does not capture nanomaterial data when a company moves from a micrometer-sized material to nanometer-sized material. For existing chemicals, EPA issued a one-time reporting rule that went into effect on August 17, 2017.

NIOSH: guidelines are recommendations rather than regulations or law.

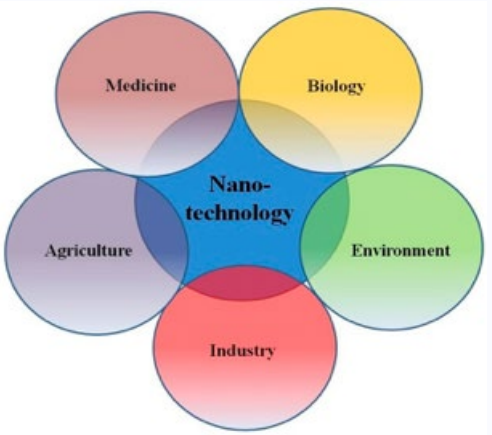
Items to Consider:

- Companies choose nanomaterials based on function rather the chemical composition
- Companies unaware of own use of nanomaterials (not on SDS)
- Break down in communication between chemical manufacturers and users
- EPA premanufacturing best practices for handling nanomaterials may not make it to the shop floor
- TURA Program is unaware of self-identified nanomaterial best management practices role models

Nanotechnology what municipalities need to know

An overview for Boards of Health, community leaders and first responders-2021 training

Nanotechnology sector



- $1 trillion global market, continued growth expected
- 1814 consumer products in 2015
- MA is the **4th largest center** of nano-industry in US
- Nanomaterials made/used in MA:
  - Universities
  - Hospitals
  - Commercial labs and businesses

230 nanotech businesses in 74 cities and towns, Reviewed Nanowerk, Standard and Poors, Internano.

Nano-materials have exciting properties but also present **unique hazards.** Materials act differently at nano-scale and may be more toxic, explosive, flammable, reactive.

Lack of education/training for municipal authorities on identifying addressing hazards or ensuring worker and community safety during routine operations or in event of an emergency

Currently, **no state structure to oversee** sector and make sure that hazard information is conveyed to potential stakeholders.

55% of facilities are located in municipalities with environmental justice communities.
Woburn-21 facilities
Cambridge-37
Billerica-11

CLEAN WATER ACTION

Laura Spark, TURA Advisory Committee Member

Clean Water Fund training

Goal:

Educate local first responders about hazards. Encourages them to obtain data and develop policies that enable them to manage risks.

5 trainings—Presentation, Respondent reaction, open discussion, Winter/spring 2021 Boston University Professor Rick Reibstein, Esq.

Presentation, Respondents, Discussion, 1.5-2 hours/each

Attendees: 84 enrolled, 60 attended. Fire officials and Board of Health staff from 27 communities and 5 state agencies: OTA, Office of Building and Regulatory Standards, DEP, Office of Labor and Workforce Development, Fire Marshall's Office.

- What nano-materials are manufactured, used, released in community
- What the properties of these materials are (toxicity, flammability, explosivity)
- What protocols are in place at the facility or should be in place to ensure worker and community safety

Response: High level of concern. Most attendees had little or no previous exposure to information about nanomaterials. Did not know that facilities making or using nanomaterials were in their community.

Strong interest in continued state/local discussions and education/training. State staff interested in collaborating across departments to bring information to municipalities.

CLEAN WATER ACTION

Laura Spark, TURA Advisory Committee Member

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

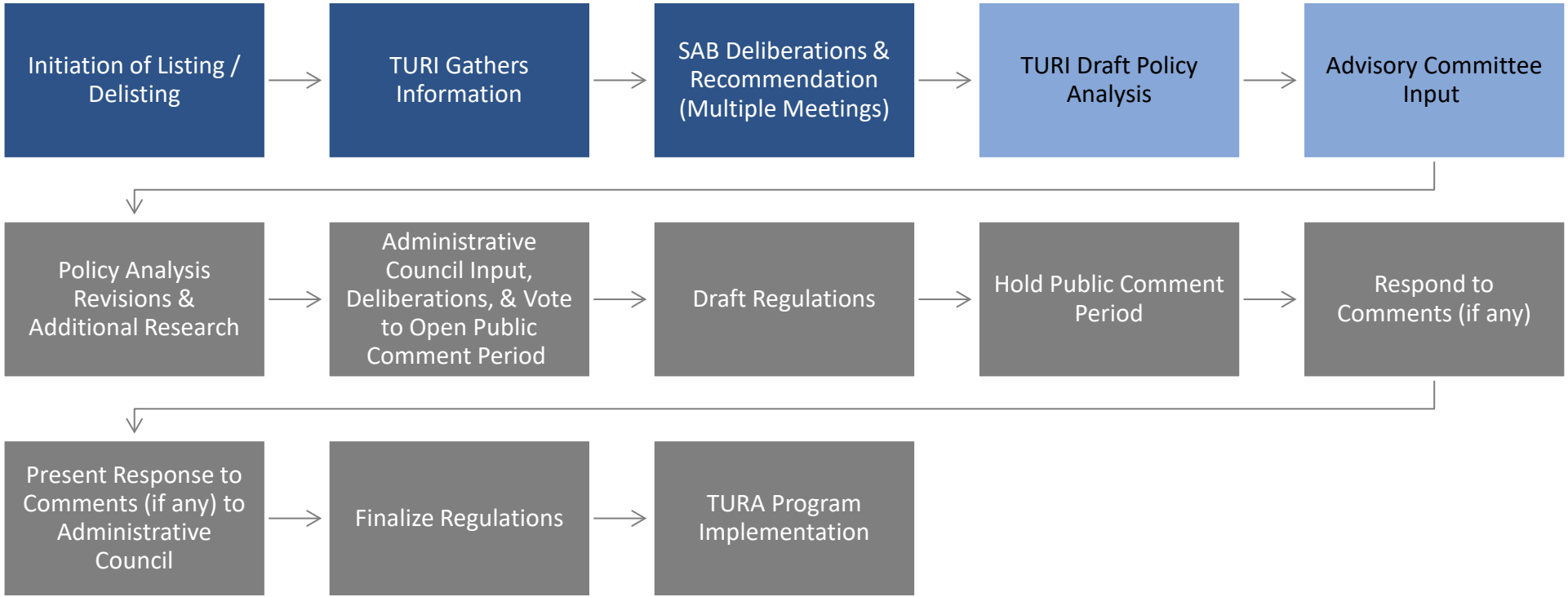
- Requested to list Carbon Nanotubes and Carbon Nanofibers as Higher Hazard Substances
- Proposed to include CNTs and CNFs on TURA list as a group
- Requested 100g reporting threshold

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

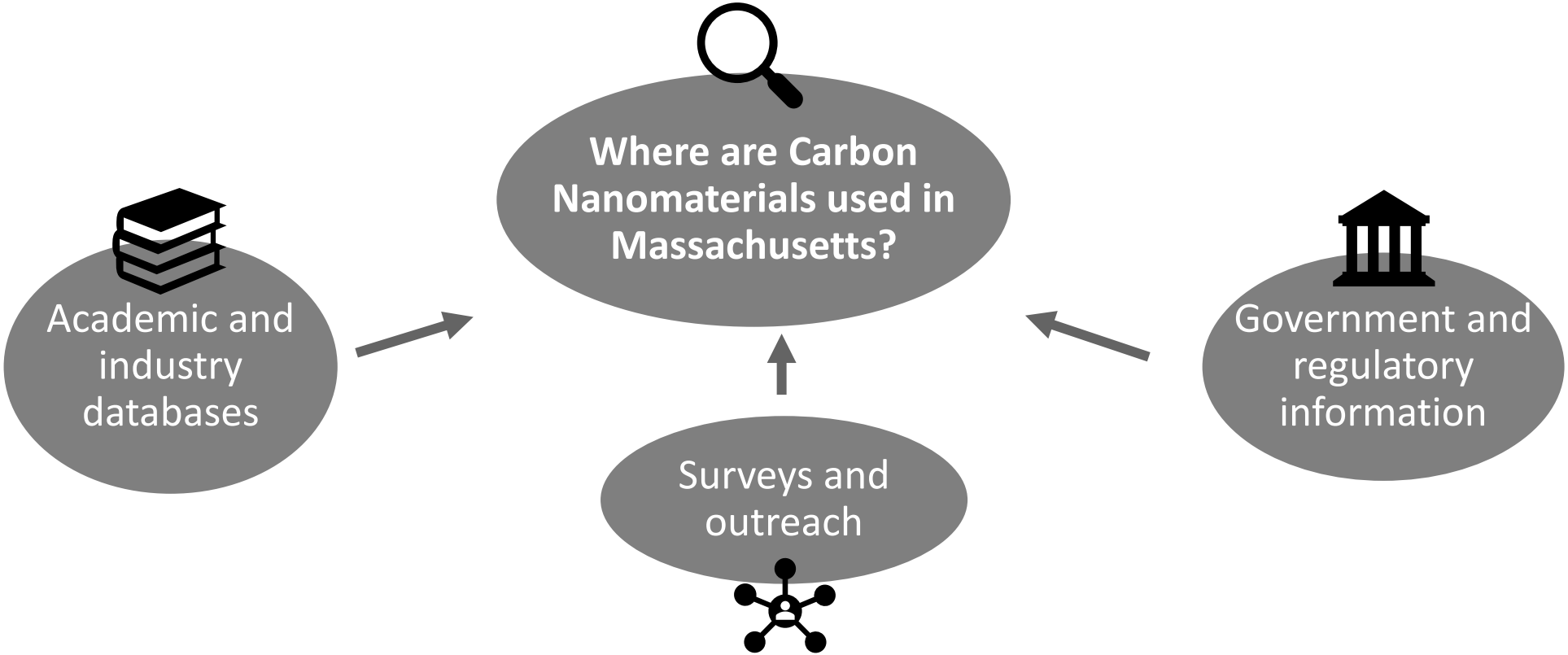
TURA Science Advisory Board recommends Multi Walled Carbon Nanotubes, Single Walled Carbon Nanotubes, and Carbon Nanofibers be **added as three distinct categories** to the TURA List of Toxic Substances

- Recommended MWCNT category be listed as HHS
  - 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: **Decision Making Steps for Additions to TURA List**



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



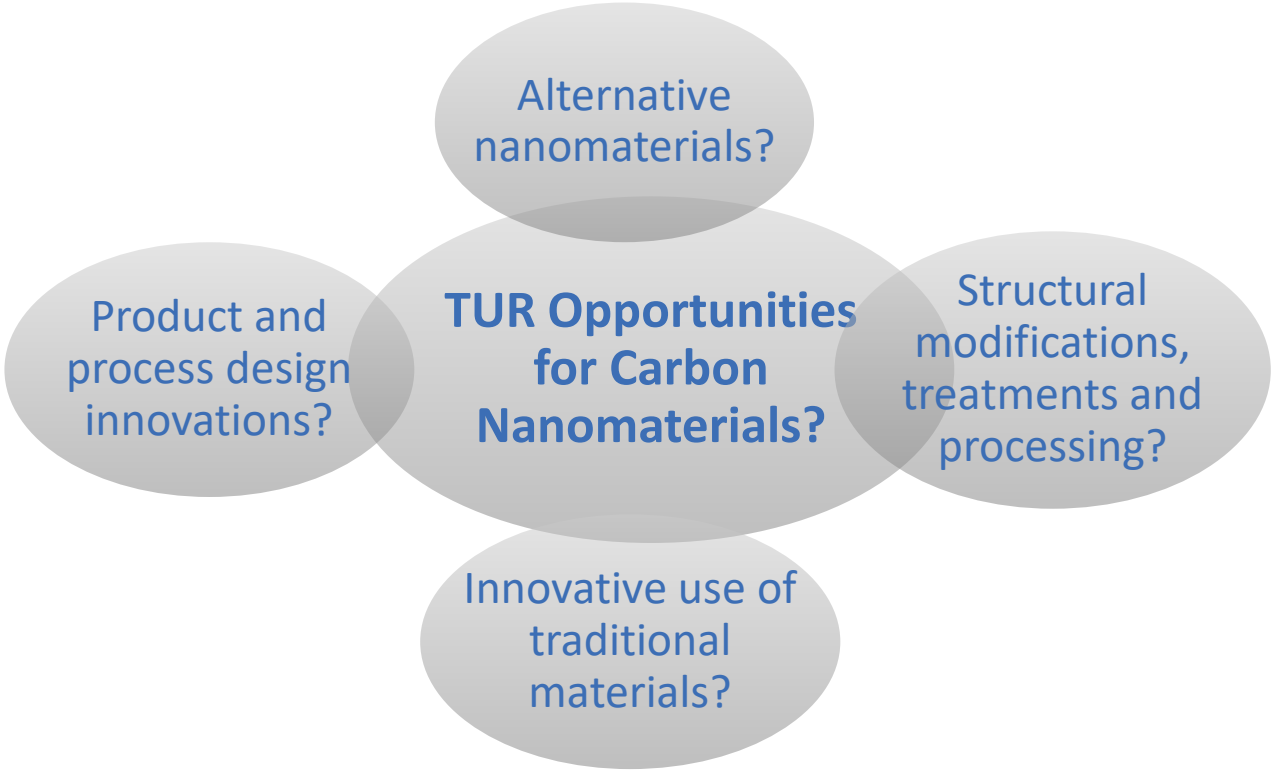
TURA Program Consideration of Carbon Nanotubes and Nanofibers: **Regulatory Review Approach**

Overview of regulations, official guidance and initiatives which cover carbon nanomaterials

International	Federal	State and Local
• 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	• TSCA Section 5 (Premanufacturing Notices and Significant New Use Rules) • EPA Recordkeeping Rule • NIOSH Recommended Exposure Limit	• California DTSC Formal Request Letters • Cambridge nanotechnology committee and Berkeley, CA disclosure requirements

TURA Program Consideration of Carbon Nanotubes and Nanofibers: **TUR Opportunities**

Do opportunities exist to reduce the use of carbon nanomaterials or their associated hazards along the lifecycle without compromising their unique characteristics and potential benefits to society?

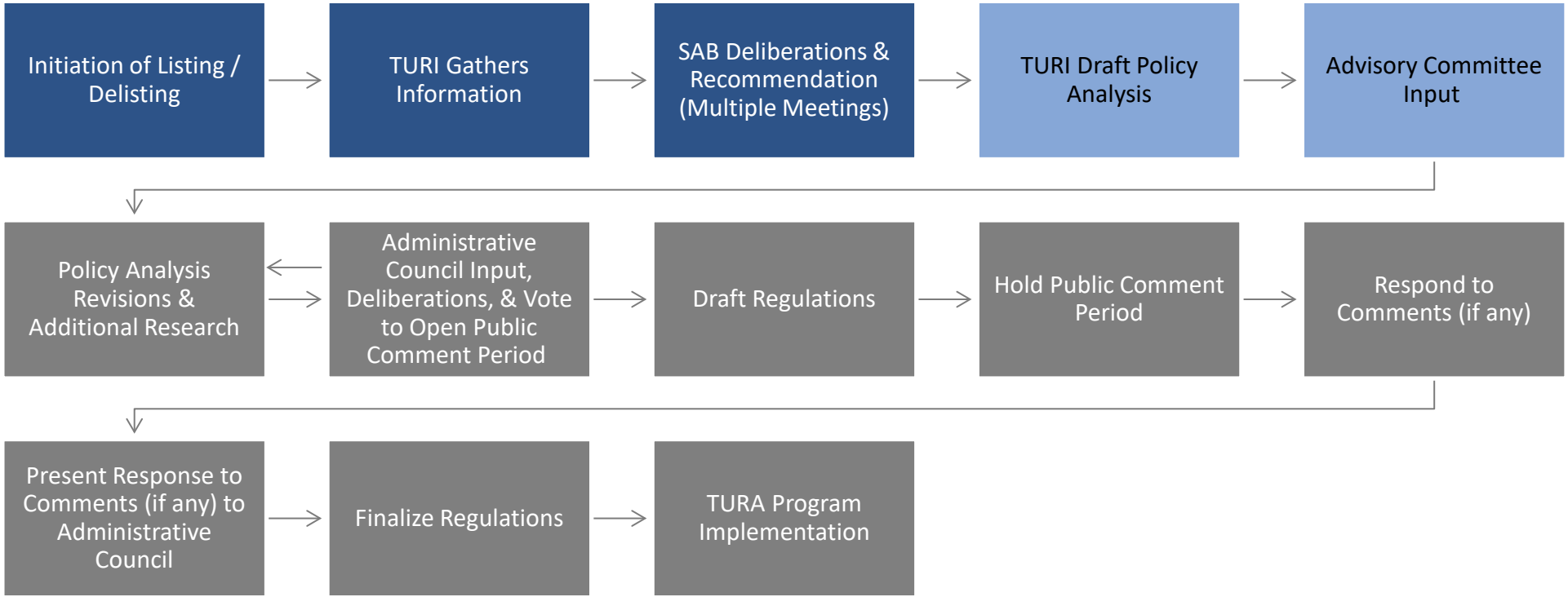


Threshold Considerations

- Petition requested 100g reporting threshold
- Regular reporting thresholds are 25,000/10,000 lbs.
- Higher Hazard Substances (HHS) reporting thresholds are 1,000 lbs.
- HHS thresholds can be further lowered upon recommendation from TURI and Science Advisory Board

We welcome input regarding policy considerations regarding the potential lowering of reporting thresholds below 1,000 lbs.

TURA Program Consideration of Carbon Nanotubes and Nanofibers: **Decision Making Steps for Additions to TURA List**



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Further comments can be sent to heather@turi.org

TURA Program Update

TURI
TOXICS USE REDUCTION INSTITUTE

OTA
OFFICE OF TECHNICAL ASSISTANCE & TECHNOLOGY

MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection

US EPA Eliminates De Minimis Exemption for TRI PFAS

EPA has finalized a rule to eliminate *de minimis* exemption for PFAS reporting and supplier notification requirements under TRI

How will this impact TURA? Likely Increased PFAS Reporting Under TURA:

- For TRI-listed PFAS on the TURA list, the 100 lb. TRI threshold is used
- For other PFAS on the TURA list, the thresholds are 25,000 lbs. manufactured/processed, 10,000 lbs otherwise used, and the de minimis exemption still applies
- May enable facilities to capture more PFAS source information supported by new supplier notification letter

US EPA Changes to TRI Reporting for PFAS

In October 2024, EPA proposed to add 16 individual PFAS and 15 PFAS categories representing over 100 individual PFAS as reportable under TRI

- As proposed – all PFAS in a given category would count towards 100 pound threshold
  - Some previously added PFAS would be reclassified under one of the categories
- 60 day public comment period currently open
- The rule is also clarifying how PFAS are added to the TRI under the National Defense Authorization Act for Fiscal Year 2020

PFAS Tracking and Reporting: TRI and TURA

EPA PFAS Under TRI Guidance

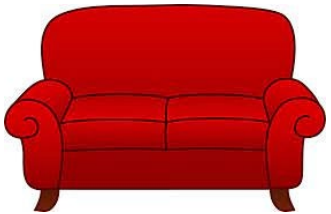
	Report to TRI	TURA tracking starting	Report to DEP	How Reportable	Threshold
TURA Certain PFAS NOL	---------	January 1, 2022	July 1, 2023	As a category	25,000 lbs. mfg'd/ processed; 10,000 lbs. otherwise used
172 TRI/TURA PFAS – 2020	July 1,2021	January 1, 2021	July 1, 2022	Separately	100 lbs. De minimis exemption no longer applies All PFAS in a given category would count towards 100 pound threshold
Four TRI PFAS - 2021	July 1, 2022	January 1, 2023	July 1, 2024		
Four TRI PFAS - 2022	July 1, 2023				
Nine TRI PFAS - 2023	July 1, 2024	January 1, 2024	July 1, 2025		
Twelve TRI PFAS - 2024	July 1, 2025	January 1, 2025	July 1, 2026		
(EPA proposed) **Sixteen PFAS and 15 PFAS categories (TRI) – Anticipated 2025**	Anticipated July 1, 2026	Anticipated January 1, 2026	Anticipated July 1, 2027		

TURI work to implement MA Flame Retardants Law

- Uses the TURA Science Advisory Board (SAB) to review flame retardants every three years
- TURI provides scientific content for the SAB
- Have reviewed 25 analogues to the original 11 flame retardants and provided DEP with advice
- Will review new flame retardants on 3 year cycle for FR law
- Will use science generated to consider FR for TURA

MA Flame Retardants Law




Who:	Manufacturer, Retailer
Cannot:	Sell, manufacture for sale, offer for sale, distribute in commerce, import into Mass.
What:	Product that contains any of the named 11 flame retardants or chemical analogues, the total weight of which is >1000ppm for any component part
In:	Bedding, carpeting, children's products, residential upholstered furniture or window treatments

PFAS Strategic Priority

Academic Research Grants

- Prof. Nagarajan and Fabric Discovery Center – Continued research on Non-PFAS coatings for textiles
- Prof. Sun and Prof. Chow – Research on non-PFAS food packaging

Community Grants

- Silent Spring and Clean Water Fund continue gathering products for testing by UMass Lowell PIGE analytical equipment

Scientific Publications

- A Comparative Study of Alkyl Chain Silanes and Poly Dimethyl Siloxane Liquid-like Brushes as PFAS-Free Liquid-Repellent Fabric Coatings
- Impact of HFOs: PFAS and Global Warming

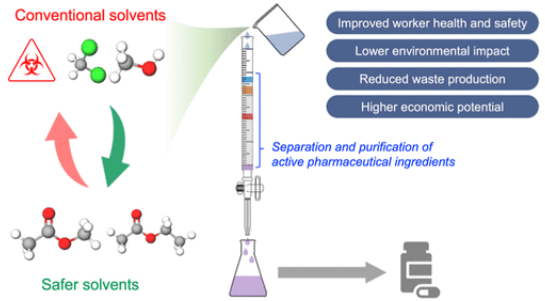
Halogenated Solvents Strategic Priority

2024 Parts Cleaning Conference (PCC) and International Manufacturing Technology Show (IMTC)

RFP is open for next set of grants

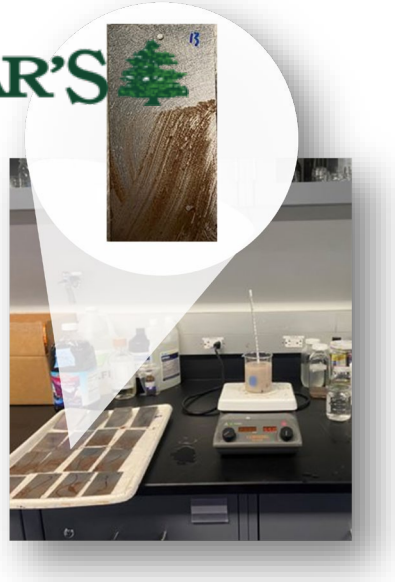
TURI lab is currently working with 9 companies to find alternatives for halogenated solvents

Safer Solvents for Active Pharmaceutical Ingredient Purification Using Column Chromatography



Cleaners and Disinfectants

Conducted trainings to assist craft beverage manufacturers and businesses in identifying and promoting safer alternatives for cleaning, sanitizing, and disinfecting



The Toxics Use Reduction Institute (TURI) is recognized as an outstanding Safer Choice Supporter.

SAFER CHOICE
U.S. EPA PARTNER OF THE YEAR
2024

Training and Education

Toxics Use Reduction Planner Certification Course

14 people in this year's class, predominantly from MA companies

Additional Training Initiatives and Outreach

- Beyond the SDS
- TURI Fall Conference – More Information Here!
- Visit from Korean National Institute of Chemical Safety (NICS)
- Partnered with Beyond Benign for hands-on green chemistry learning experience for elementary students at TURI

TURI Staffing Changes

Deputy Director **Liz Harriman** retired in August

TURI has filled open positions with:

Stephan Anstey, Office Assistant

Agnes Cheng, Training Associate

Katie Daly, Communications and Outreach Manager

Colin Hannahan, Policy Analyst

OTA Update

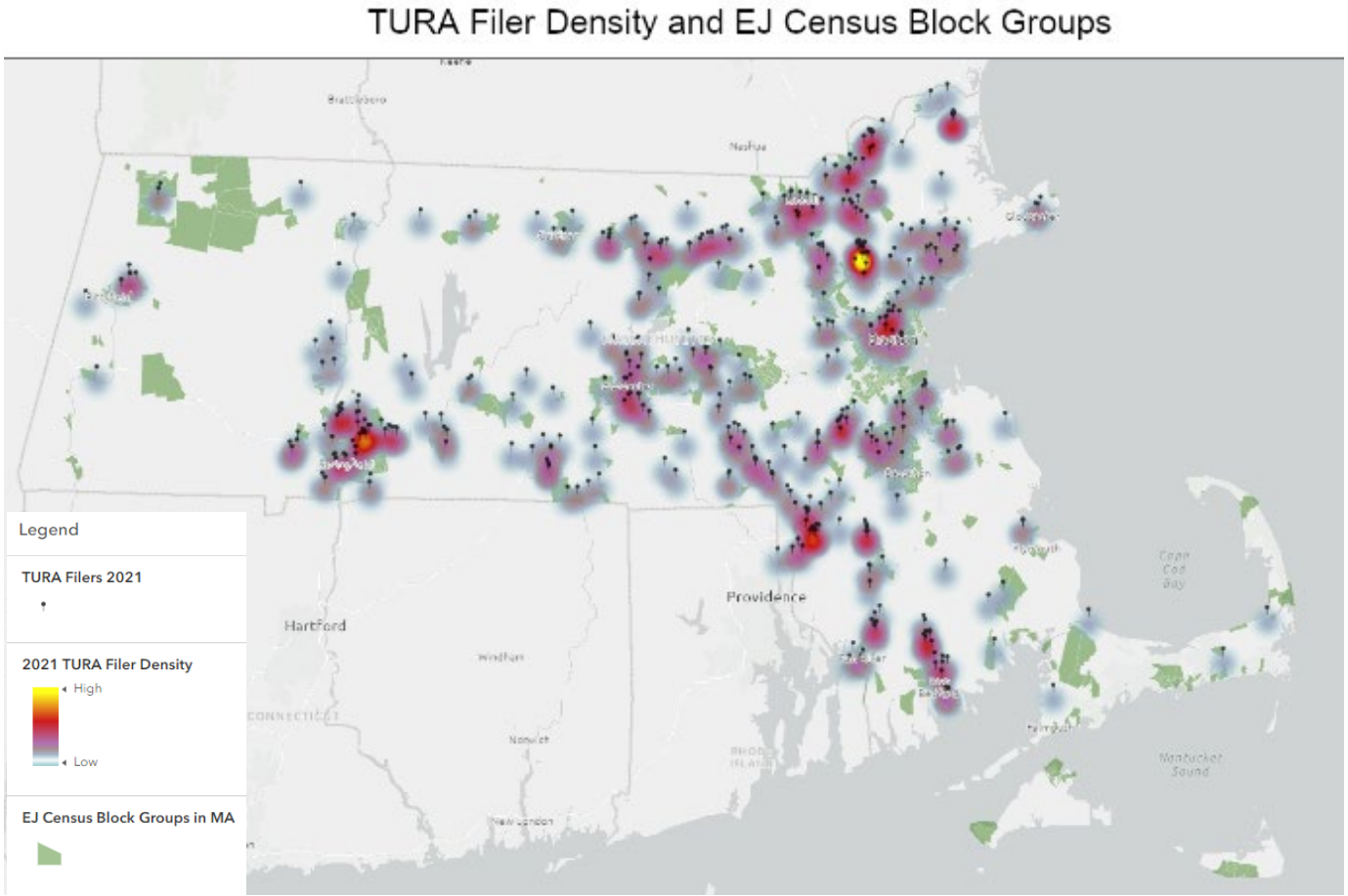
OFFICE OF TECHNICAL ASSISTANCE & TECHNOLOGY

Current Work

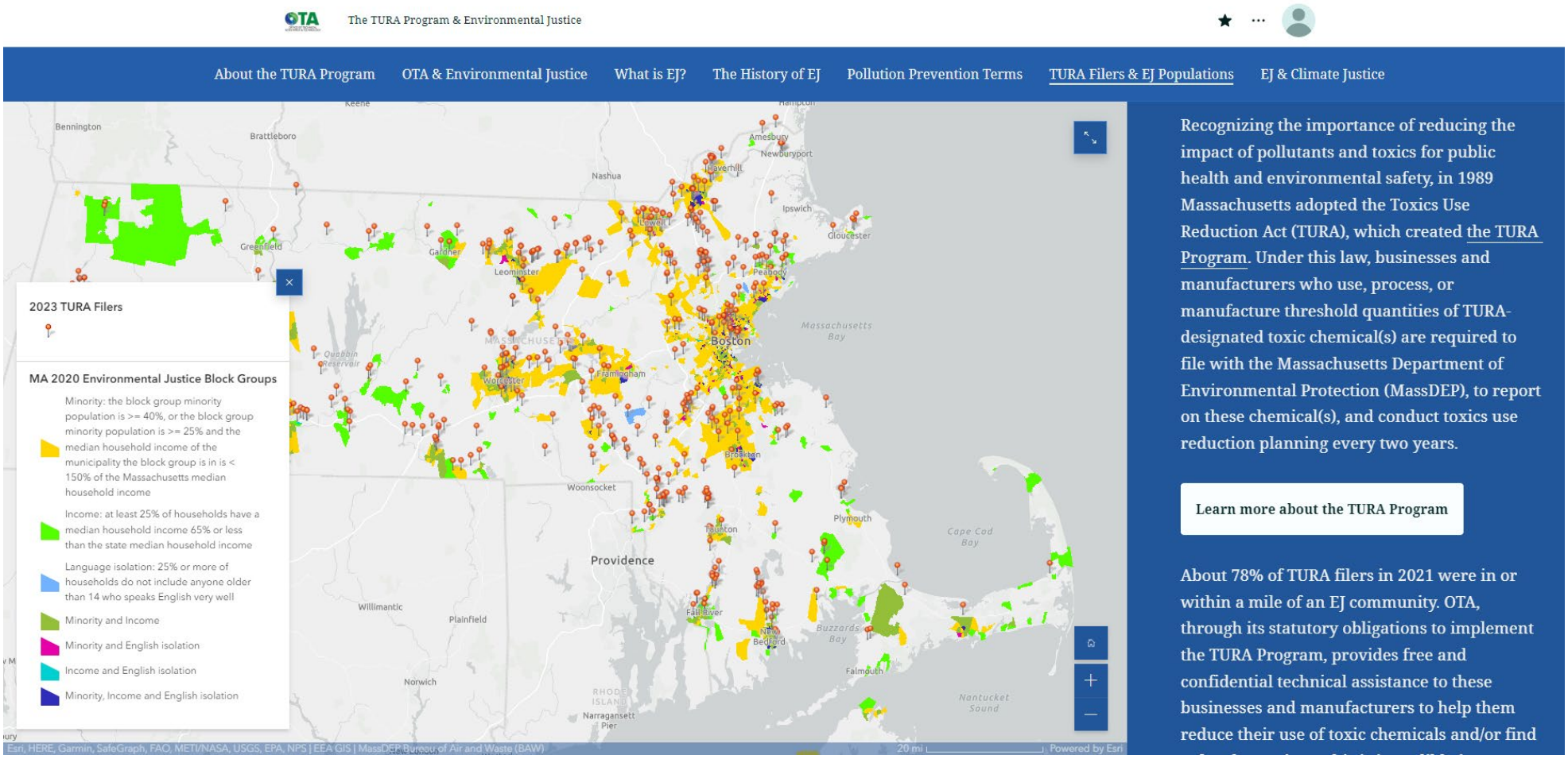
- PFAS (TUR resources from OTA and TURI)
  - Conducted outreach to metal finishers in 2023
  - Survey also available for paper industry
  - Developing new PFAS identification survey tool for coatings
- Chemical safety and climate resiliency
- Environmental justice

OTA Environmental Justice (EJ)

- OTA added a new EJ seat on Advisory Committee
- OTA actively involved in EJ and climate justice work
- OTA soon to release a GIS Story Map illustrating toxics use in relation to EJ populations and historical redlining
- OTA has dedicated funding for new EJ internship position
- OTA is working on the first EJ metrics report to be released by EEA early next year



OTA Environmental Justice Story Map



OTA Staffing Changes

OFFICE OF TECHNICAL ASSISTANCE & TECHNOLOGY

Jim Cain retired

Jack Illingworth became the Technical Assistance Supervisor

Massachusetts Dept. of Environmental Protection (MassDEP)

- 2024 was a Planning Year
  - Facilites filed the TUR Report and Plan Summary
  - Their TURA Planner filed a TURA Planner Certification.
  - Facilities had the ability to consider PFAS planning in 2024 as an alternative plan type.

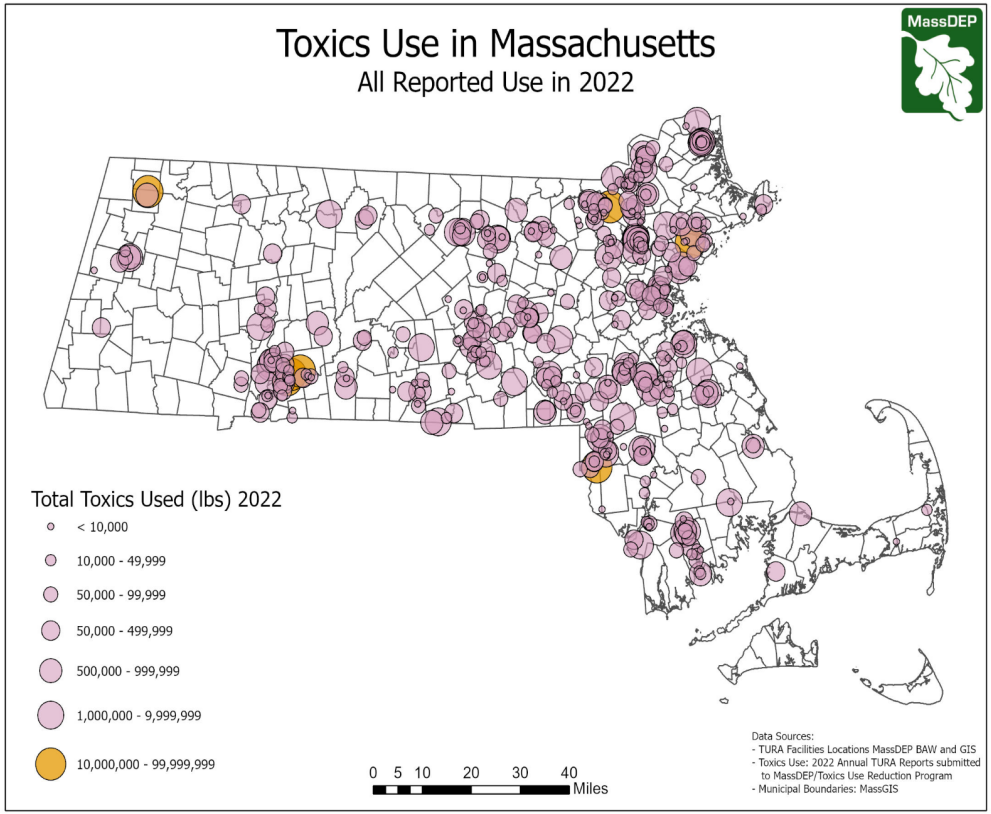
MassDEP Staffing Changes

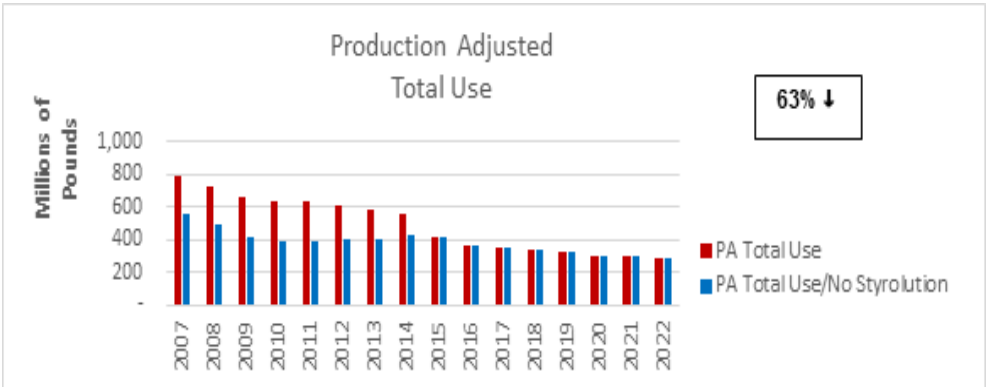
Veronica O'Donnell and Walter Hope retired

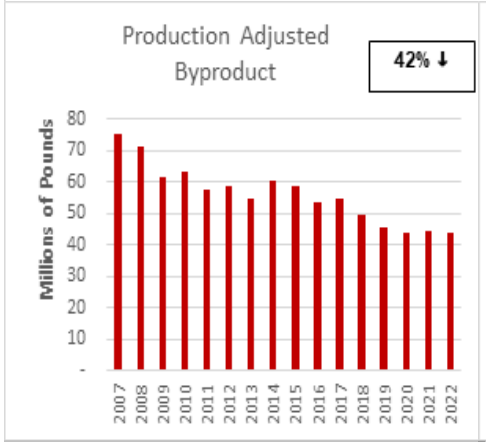
Lynn Cain became the TURA Program Branch Chief

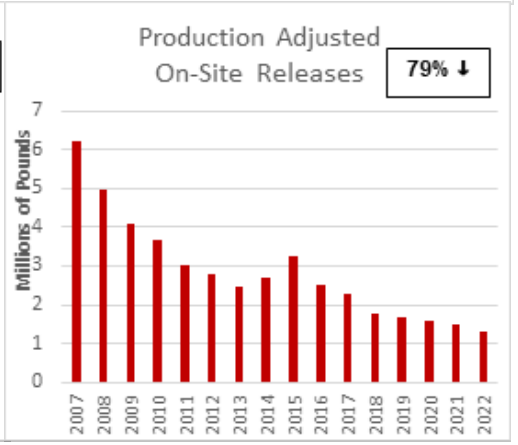
Leoni Desai joined the program

TURA Information Release: Reporting Year 2022 (2007 Core)









Contact us any time!

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Adjourn and Next Remote Meeting Dates

Thursdays, 2pm – 4pm:

- January 16, 2025
- April 17, 2025
- July 17, 2025 (TBD)

Direct all questions to
TURA Administrative Council
Executive Director
Tiffany Skogstrom:
tiffany.skogstrom@mass.gov