



Toxics Use Reduction Program Activities and Accomplishments, 2009

Report to the Governor of the Commonwealth of Massachusetts

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Prepared for:

**The Governor of the Commonwealth of Massachusetts
The Commonwealth of Massachusetts House of Representatives
The Commonwealth of Massachusetts Senate**

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Massachusetts Department of Environmental Protection (MassDEP)
Toxics Use Reduction Institute (TURI)

Introduction

This report is submitted by the Administrative Council of the Toxics Use Reduction Act to the Governor of Massachusetts pursuant to Chapter 21I, Section 4(D). It summarizes program activities and results during calendar year 2009.¹

The Toxics Use Reduction Act (TURA) was enacted in 1989 and amended in 2006. TURA requires Massachusetts companies that use listed chemicals above specified thresholds to report their chemical use annually and pay a toxics use fee, and to examine ways to decrease their use of toxic chemicals and wastes generated, with the goal of protecting public health, the environment, and workers, while helping businesses to become more competitive. TURA is implemented by the Massachusetts Department of Environmental Protection (MassDEP), the Office of Technical Assistance and Technology (OTA), and the Toxics Use Reduction Institute (TURI) at the University of Massachusetts at Lowell, and is overseen by an six-member Administrative Council.

From its inception the TURA program has developed innovative policies and projects to promote a preventive approach to pollution, workplace exposure, chemical accident risks, and toxic exposures from products. The 2006 Amendments expanded the focus of the program to water, energy, and solid waste, leading the program to broaden its assistance and educational activities and develop options for evaluating resource conservation and for integrating toxics use reduction in environmental management systems. Despite reductions in staff and fiscal instability, in 2009 the TURA program continued to prompt reductions in water, energy, and solid waste, as well as toxics use, through individual assistance, general education and outreach, and the enforcement of planning and reporting requirements. The program also completed a major review of and updating of chemicals regulated by the act, as required by the 2006 amendments; continued to designate chemicals into higher hazard and lower hazard categories; and developed new program initiatives.

With funding from the Centers for Disease Control, the program held a symposium and conference marking the 20th anniversary of TURA on November 4. The symposium included speakers Marjorie Alt from Environment America who also participated in the early negotiations in her role at MassPIRG, a public interest group, and Paul Schulte from the National Institute of Occupational Health and Safety who described a new federal program called "Prevention by Design" that follows the path pioneered by TURA. The Symposium was a day of looking back as well as forward, with more than a dozen sessions on science, pollution prevention, policy, and community and environmental health.

¹ Some information /activities are provided for fiscal year 2009. For information **about** the TURA program before 2009, see the *Progress Report on Toxics Use Reduction in Massachusetts, a report to Governor Patrick*, November, 2008. http://www.turi.org/policy/ma_tura_program/tura_report_to_governor_patrick.

Administrative Council

CERCLA Chemicals Review. As directed by the 2006 amendments, the Administrative Council completed its review of whether chemicals listed pursuant to the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) should remain on the TURA list; delisting seven chemicals from the list. The Council's decision was based on a review by the Science Advisory Board, at TURI's direction, of the scientific information relating to more than 600 CERCLA chemicals.

Lower Hazard Designations. The Council designated six chemicals as lower hazard substances: butyl acetate, iso-butyl acetate, ferric chloride, ferrous chloride, ferric sulfate, and ferrous sulfate. (Two forms of ferrous sulfate, anhydrous and hydrated, have been listed). Companies using lower hazard chemicals do not pay a fee for those chemicals.

New Chemical Listing. The Council added one chemical (N-propyl bromide) to the Toxic or Hazardous Substances list due to its potential use as a substitute for trichloroethylene (TCE) and perchloroethylene (PCE) that were designated as Higher Hazard Substances in 2007 and 2008 respectively. This listing demonstrates the program's commitment to ensuring that when a chemical is designated as a Higher Hazard Substance, it is important to review likely substitutes in order to prevent substitutions that do not produce health, environmental or safety benefits.

The regulations implementing the Council's actions regarding the Toxic or Hazardous Substance list (301 CMR 41.00) were promulgated on December 11, 2009 and can be found at <http://www.lawlib.state.ma.us/source/mass/cmr/cmrtxt/301CMR41.pdf>.

Agency Coordination. According to TURA, one of the purposes of the Administrative Council is to "promote increased coordination of efforts to enforce (toxics) laws and regulations and also determine how state programs should be coordinated to promote most effectively toxics use reduction in the commonwealth." Each Council member provided updates on activities and priorities in their agencies, including: MassDEP's conference on pharmaceutical and personal care product discharges and impacts on waters of the Commonwealth and its interagency workgroup on nanotechnology (which includes OTA, TURI, Division of Occupational Safety, and Department of Public Health); the Department of Public Health's publication of an advisory on Bisphenol-A and its current focus on lead in children's products; the Department of Fire Services's draft regulations on storage of hazardous chemicals, and the Division of Occupational Safety's new nanotechnology webpage and focus on fluorosilicic acid.

TUR Advisory Committee. The committee reviewed and provided comment on all Science Advisory Board (SAB) and program recommendations concerning chemicals prior to presentation to the Council. Members reiterated support for a focus on worker protection, specifically noting the importance of incorporating the evaluation of irritants, sensitizers and asthmagens into the SAB's chemical hazard evaluation.

Considerable time was dedicated to evaluating and suggesting modifications to the current fees paid by TURA regulated companies. The committee emphasized the importance of reducing adverse impacts to small business, and deemphasizing the importance of the number of employees has on the fee paid by a

company. The committee recommended that greater emphasis be placed on the quantity of chemical used and the inherent hazards associated with the chemical in an alternate fee structure. They also recommended that the program seek stable funding, such as a reinstatement of the dedicated fund for TURA fees.

Revenues and Appropriations. Reporting year 2007 toxics use fees (due in FY09) totaled \$3,347,955. FY09 TURA program appropriations totaled \$2,819,182 including \$831,182 for MassDEP, \$1,300,000 (from federal education stimulus funds) for TURI, and \$688,000 for OTA.

MassDEP

MassDEP implements the regulatory components of the TURA program, including ensuring that facilities comply with their TURA obligations. In fiscal year 2009 MassDEP:

- Received Toxics Use Reports (due July 1, 2009) from 521 facilities. These facilities will pay approximately \$3.2 million in toxics use fees.
- Initiated 10 enforcement actions for missing or incomplete Toxics Use Reports and Toxics Use Reduction (TUR) Plans.
- Conducted multi-media inspections at 115 TURA facilities, using a whole-facility approach to simultaneously check for compliance with regulations for air, industrial wastewater, hazardous waste, and toxics use reduction. The inspections resulted in 11 enforcement actions for TURA violations.

In addition to ensuring facilities comply with TURA reporting and planning obligations, MassDEP is responsible for ensuring that the Toxics Use Reduction Planners who certify TUR Plans are qualified to review and sign-off on the plans. MassDEP took enforcement actions against 4 individuals who had improperly signed TUR Plans.

MassDEP certified 8 new Toxics Use Reduction Planners and recertified 66 planners (planners must renew their certification every two years). The department also certified 4 planners as eligible to sign Resource Conservation Plans and 14 planners as eligible to certify Environmental Management Systems (companies that have been doing TUR planning for several years can choose to do Resource Conservation Plans every other planning cycle or incorporate TUR planning into established Environmental Management Systems). MassDEP collected \$14,825 in planner certification fees.

MassDEP worked with OTA and TURI in providing training to TURA filers at several training sessions and participated in the fall 2009 toxics use reduction planner course. The department also annually administers the planner certification exam. Thirteen individuals passed the exam, and one individual failed the exam.

OTA

During 2009 OTA visited 57 facilities in the paper, plastic, instrument manufacturing, coating, graphics, metal finishing, and other industries, as well as some noncommercial facilities such as educational, medical, research and public works. Staff developed over 200 energy recommendations, about 75 toxics use reduction or pollution prevention recommendations, nearly one hundred recommendations pertaining to workplace safety or environmental compliance, and nearly fifty water conservation recommendations. Staff determined that more than fifty of these recommendations were implemented, with more still being actively considered at the time of follow-up.

Energy Focus. Specific OTA assistance to companies included recommendations for:

- Increasing the efficiency of steam systems (e.g., increasing boiler combustion efficiency, heat recovery from boilers, steam trap maintenance, insulating steam and condensate lines);
- Heat recovery from ovens and other process heating systems;
- Improving the efficiency of compressed air systems (e.g., fixing leaks, heat recovery from air compressors);
- Improved space heating;
- Installing energy efficient lighting (including the use of occupancy sensors and daylighting controls); and
- Optimizing the efficiency of refrigeration and chiller systems.

OTA also connected companies to utility energy efficiency incentive programs (both gas and electric), the deep energy retrofit grant opportunity, the audit services of the Industrial Assessment Center, and the trainings conducted by the Massachusetts Energy Efficiency Partnership. OTA reviewed utility bills to identify opportunities for savings (e.g., reducing demand charges), and educated companies about the opportunities for cost savings through enrollment in the ISO New England demand response program.

For some companies OTA investigated installing solar (photovoltaic and thermal) and wind power systems, providing information on technologies, vendors and contractors, resources for evaluating system feasibility (e.g., wind mapping), rebates (from the Commonwealth Solar and Wind programs), other financial incentives (tax credits, accelerated depreciation, RECs, net metering), and interconnection requirements.

OTA staff also participated in the state's Net Zero Energy Building Task Force, and made presentations on energy reduction options and related financial and tax incentives at several industry-sponsored events including the Mass Biotechnology Council, the Small Business Development Center, the Central Massachusetts Business Environmental Network, and the Regional Technology Council.

Innovative Technology Development: Digital Printing for Textiles.

With funding from the John Adams institute and in collaboration with a consortium of stakeholders led by the Advanced Technology & Manufacturing Center (ATMC) at the University of Massachusetts, OTA completed on-site demonstration of the feasibility of adapting digital printing techniques in textile printing to reduce energy, toxics use, water use, and production costs.



On-Site Trial at Cranston Print Works

Water Conservation. OTA completed ten water audits as part of a project funded by the U.S. Environmental Protection Agency and MassDEP to assess water use and identify opportunities to reduce wastewater loads to the treatment works of the City of Marlborough. Water conservation opportunities were found at all facilities, which represented a variety of dischargers. Thirty six viable water conservation opportunities were analyzed. Of these, nineteen recommendations had a payback period of two years or less and could save an estimated 10,625,191 gallons of water use and reduce discharge by the same amount.

Materials Cost and Tracking Software. OTA helped develop free software entitled Energy and Materials Flow and Cost Tracker (“EMFACT”) to help facilities track their materials use and associated costs. Developed with the Northeast Waste Management Officials Association (NEWMOA), EMFACT is available on NEWMOA’s website for anyone to download and use.

Nanotechnology. OTA provided substantial assistance to MassDEP in organizing the state’s second conference on the topic, which featured training in measurement of nanoparticles in the workplace and the presentation of Best Management Practices.

Green Hotels. In June OTA hosted the first state conference on greening operations in the hospitality industry, which focused on water conservation opportunities in hotels (primarily in laundry, showers, sanitary operations, kitchens, pools, outdoor washing, and heating and cooling systems), but also included substantial information on opportunities for saving energy and reducing toxics and waste.

TURI

In 2009, TURI provided TUR training, held TUR demonstration events, provided grants for TUR research and implementation, assisted companies in evaluating alternatives through laboratory testing, organized and hosted the program’s 20th Anniversary Symposium, carried out and published its own research, and presented on TUR practices and policies at more than a dozen events.

Dry cleaner Outreach. With assistance from OTA and MassDEP, TURI provided three workshops to two dozen dry cleaners newly regulated by TURA as a result of the designation of perchloroethylene (PCE) as a Higher Hazard Substance. Notices were mailed to more than 600 facilities in both English and Korean. TURI held two demonstration events of wet cleaning, considered the least toxic feasible alternative to the use of PCE, drawing 50 attendees. TURI is currently developing an alternatives analysis to assist dry

cleaners and additional training is being planned for those dry cleaners that will report to TURA for the first time.

University Research. TURI sponsored the following projects at the University of Massachusetts Lowell to research alternatives to lead, formaldehyde and brominated flame retardants:

- Nanostructured Surface Finishes for Lead-Free Soldering, Dr. Sanjeev Manohar
- Alternative Formaldehyde-Free Particleboard Compositions, Dr. Emmanuelle Reynaud
- Halogen-free Flame Retardants and Antioxidants Derived from Naturally Occurring Cashew-Nut Liquid, Drs. Ramaswamy Nagarajan and Jayant Kumar

TUR Demonstration Events. TURI's demonstration site program allows companies that have accomplished TUR or resource conservation to share information with interested peers who visit the facility and view relevant equipment and operations. In 2009:

- Bristol Myers Squibb held two events to showcase water conservation techniques.
- Silver Hanger Cleaners in Bellingham and Best Neighborhood Cleaners in Medford, recipients of TURI grants for conversion to wet cleaning technology hosted dry cleaners to learn about wet cleaning technology.

TUR Planner Training. Six trainings were provided to a total of 280 attendees in FY09. More than 2000 Continuing Education credits were awarded to TUR Planners. In addition to holding the 42nd basic Toxics Use Reduction Planner 48 hour course for 26 professionals and two Continuing Education conferences for over 100 attendees, the institute provided a two-day workshop on how to work with chemical suppliers to reduce toxic chemical use and waste, and training in Resource Conservation Planning and Environmental Management Systems, for firms who are interested in taking advantage of alternative planning.

Community Grants. \$63,000 was awarded to eight projects:

- Brazilian Women's Group, Allston, \$15,000. Natural Cleaning in the Brazilian Community
- Wampanoag Tribe, Martha's Vineyard, \$15,000. Lead-Free Vineyard Fishing
- School Disinfection Workgroup, statewide project, \$15,000
- Viet-AID, Dorchester and Springfield, \$7,000. Healthy Floor Finisher Project
- Center Pond Weed Project, Becket, \$5,000. Manual Pulling of Invasive Weeds
- Townsend Conservation Commission, \$4,000. Organic Lawn Care
- Northeast Organic Farmers Association (NOFA), Barre, \$1,000. Organic Lawn and Turf Training
- Lowell Green Building Commission, \$1,000. Green Building in Lowell

Laboratory Testing for Safer Cleaners. TURI's laboratory provided testing and assisted with implementation of safer cleaning alternatives for 12 Massachusetts companies. In order to reduce the use of toxic substances in janitorial and home cleaning, the lab tested a number of new "greener" products, as well as Do-It-Yourself cleaners made from ingredients such as vinegar and baking soda.

Science Advisory Board and TURA Policy. The evaluation by the SAB and policy analyses for the more than 400 CERCLA substances on the TURA chemical list was completed. The FY09 focus of this multi-year effort was a more in-depth look at a group of 14 substances that had been reported on by facilities, and for which the SAB originally recommended “no action.”

Alternatives Assessment. In order to more effectively assess alternatives to toxic chemicals, TURI has taken a leadership role among states and other organizations with similar goals, to develop a common methodology. In the fall of 2008, TURI hosted a States Alternatives Assessment Forum in Lowell, which brought together nine states, several NGOs, and USEPA to begin development of a multi-state alternatives assessment protocol. That development has continued via a wiki site.

Presentations. TURI’s presentations in 2009 included switching to safer cleaners, the diffusion of innovations, chemicals in the workplace, chemicals regulation and policy, toxics in the community, and alternatives assessment.

Publications. TURI’s publications in 2009 included:

- *TURA Program Assessment* (June 2009). The assessment, conducted in 2008 and published in June of 2009, presents a review of TURA program activities; a review of prior studies of the TURA program; the results of an online survey and telephone interviews with Massachusetts companies and consultants conducted by the consulting firm Abt Associates; and results from a survey and interviews conducted with organizations served by the Institute’s Community program.
- Molly Jacobs et al., “Asthma-related Chemicals in Massachusetts: an Analysis of Toxics Use Reduction Act Data,” (Report commissioned by TURI and co-published with by the Lowell Center for Sustainable Production).
- Rachel Massey, Janet Hutchins, Monica Becker, and Joel Tickner, *Toxic Substances in Articles: The Need for Information* (Copenhagen: Nordic Council of Ministers, 2008). Findings of this report were presented by Rachel Massey and Monica Becker at a February ‘09 meeting in Geneva of the United Nations Environment Programme (UNEP) on toxic substances in products, attended by government delegates from approximately 80 countries. The report was used as a basis for a several-year work plan on chemicals in products adopted at a March 2009 meeting of the UN’s Strategic Approach to International Chemicals Management (SAICM).
- Feature articles in the newsletter of the interstate organization, the Northeast Waste Management Officials Association, on Massachusetts activities related to reducing the use of perchloroethylene in dry cleaning and other applications.