Action Plan 16 Reducing Toxic Pollution

Problem

Toxics enter Buzzards Bay from many sources and via numerous pathways. The largest single toxic pollution management problem remains the cleanup of the U.S. EPA Superfund site in New Bedford Harbor, which at the current rate of cleanup may take another 40 years to complete. There are 4 additional Superfund sites in the Buzzards Bay watershed, and 102 hazardous waste sites altogether on the state's Chapter 21E list. All these sites may be cleaned up in a timelier manner.

Beside these known hazardous waste sites, there are many past and ongoing inputs and pathways of toxic contamination to Buzzards Bay and its watershed. A number of embayments are identified in the states 303(d) Integrated List, and will require the development of TMDLs to manage chronic inputs. Some of the environmental impacts of these contaminants are not fully understood, and will require further study. The cleanup of the existing hazardous waste sites and controlling the numerous nonpoint inputs to the environment remains one of the most complicated challenges that must be addressed in the Buzzards Bay CCMP.

This action plan focuses on reducing and eliminating toxic inputs into the bay in order to improve bay conditions and minimize the costs of cleanup and mitigation. Both point and nonpoint sources are addressed.

Several other action plans provide recommendations that are directly related to this issue, including those for reducing oil pollution, managing dredging and dredged material disposal, managing wastewater industrial discharges, and managing stormwater runoff.

Goal

Goal 16.1. Protect public health and the bay ecosystem from the effects of toxic contamination.

Objectives

Objective 16.1. To reduce the amount of toxic contamination entering Buzzards Bay and water bodies listed under the 303(d) program.

Objective 16.2. To eliminate hazardous discharges of toxic contaminants from point sources into the bay.

Objective 16.3. To reduce the discharge of toxic contaminants and contaminants of emerging concern into wastewater systems (both septic and sewer).

Objective 16.4. To reduce hazardous discharges from nonpoint sources of toxic contaminants into the bay.

Objective 16.5. To meet all state, federal, and local action levels for water and seafood.

Objective 16.6. To improve local, state, and federal regulation and control of seafood and sediment quality to protect human health and the environment.

Approaches

Implementing this action plan is complex because it involves industry, residential activity, the choice of products and compounds used, and regulated and non-regulated business activities. However, across all these activities and sectors of the economy, pollution prevention is one of the most important actions for achieving the goals of the action plan.

The second most important element is to ensure proper disposal and recycling of toxic materials. For example, fishing vessel owners often discharge oily bilge water because existing collection services are too expensive. In this regards, DEP should fund the construction of a facility to collect bilge oil along New Bedford Harbor that accepts oily bilge water for recycling and treats it at an affordable rate to boaters and the fishing fleet. Expansion of hazardous waste collection days, increased conventional recycling programs, and year round availability of facilities to dispose of waste oil, tires, leads and cadmium batteries and fluorescent tubes will offer proper disposal opportunities. The failure to have a speedy cleanup of hazardous waste sites, especially federal superfund sites, remains an important need, as these cleanups have been unacceptably slow.

Costs and Financing

The costs to implement this action plan are as varied as the sectors and pollution sources that must be managed, and the New Bedford Superfund cleanup dwarfs all others. One non-Superfund need is funding for the design, permitting, and construction, of an oily bilge water-collection and treatment facility in New Bedford, which will likely cost $500,000 to build, and tens of thousands of dollars per year to operate. The construction and operation of this facility could be funded by the Massachusetts Oil Spill Act fund.

There are many other costs associated with this action plan. Hazardous material disposal collections are expensive, and municipalities can often only afford one collection event annually, if at all. There are costs to expand conventional recycling programs as well.

Measuring Success

The success of this action plan can be evaluated by the amount of hazardous materials collected, the concentration of toxic contaminants in wastewater facility discharges, and by various programmatic and management action, measures.

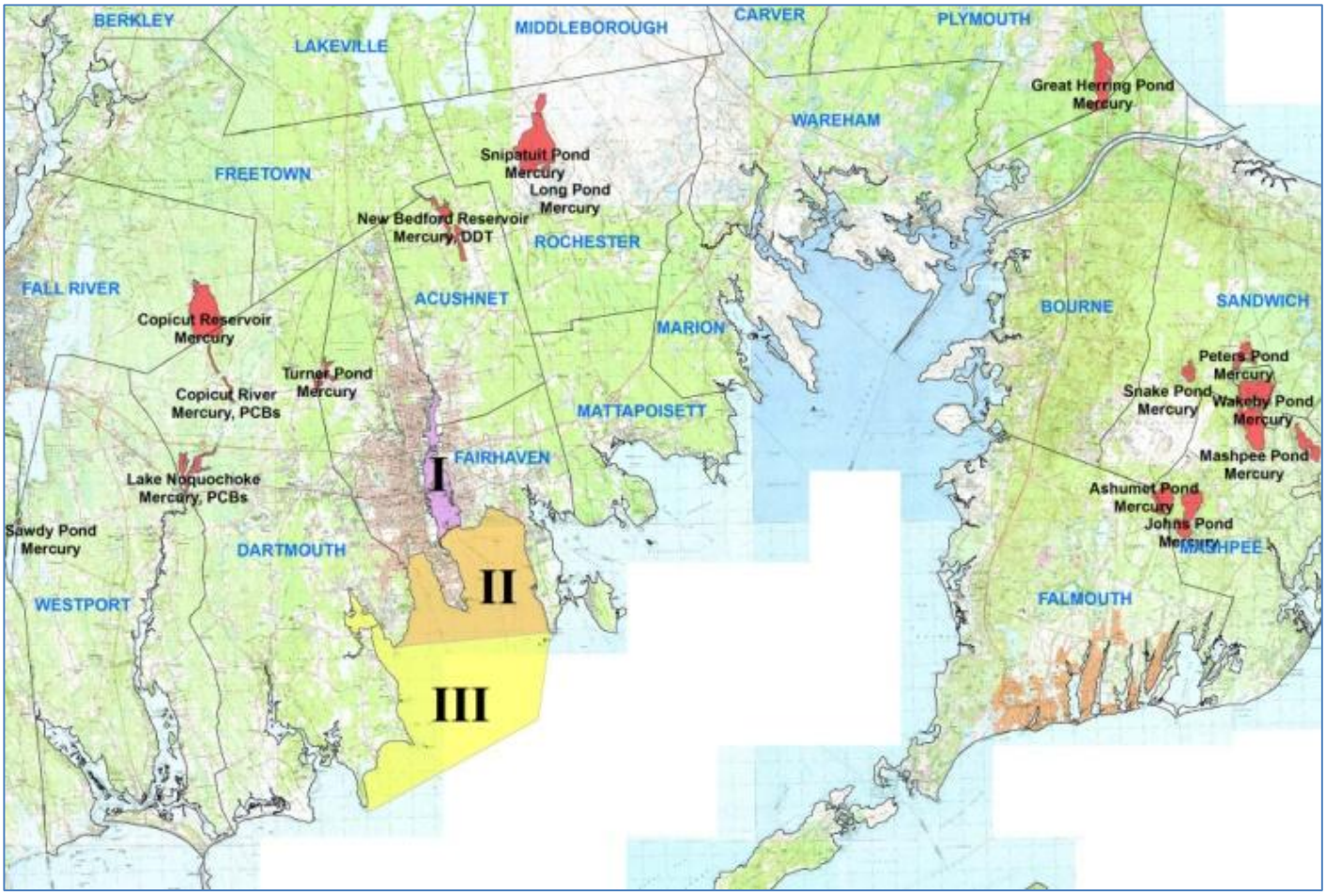

Figure 100. New Bedford area PCB fishing restrictions and fish consumption advisories for freshwater ponds in the Buzzards Bay watershed circa 2011.

The fishing bans in and around New Bedford Harbor were enacted in 1979 pursuant to 105 CMR 260 and remain in effect today.

Background

Although most of Buzzards Bay is less contaminated than many other urbanized estuaries, it has been impacted by one of the few marine Superfund sites in the country. As described in more detail in Chapter 3, this site, consisting of the wide-scale contamination of New Bedford Harbor with PCBs, has not only posed a persistent potential human health risk, but is the basis of an extensive fish, shellfish, and crustacean seafood closure around the harbor (Figure 100). These closures were enacted in 1979 pursuant to 105 CMR 260. This is the only marine fishing area in Massachusetts that is closed due to chemical contamination. This PCB contamination is also believed to contribute to an elevated, but less than action threshold, PCB concentration in seafood and birds in Buzzards Bay. In 2010, EPA recommended modifying these restrictions somewhat, but the state has not yet taken action.

Four other EPA Superfund sites are found in the Buzzards Bay watershed. These are the Atlas Tack site in Fairhaven, the Sullivans Ledge site in the north end of New Bedford, the Re-Solve Inc. site in Dartmouth (various solvents, PCBs, and other contaminants), and the Otis Air National Guard site on Cape Cod (4 plumes, mostly various hydrocarbons from fuel dumping and a landfill, are traveling towards Buzzards Bay through groundwater in Bourne and Falmouth).

While there is sediment and animal tissue testing associated with the New Bedford PCB superfund project, there is not similar testing for toxic metals and organic compounds for most other hazardous waste sites elsewhere in Buzzards Bay. The DEP (O'Brien, K., and A. Langhauser. 2003) report entitled "Buzzards Bay Watershed 2000 Water Quality Assessment Report" details specific watershed and Buzzards Bay impacts due to contaminants, as measured by sediment and water quality testing, fish consumption advisories, shellfish harvesting and shellfish bed closures, primary and secondary contact recreational uses, and aquatic life use impairments. The federal Food and Drug Administration (FDA) has also issued guidance on "action limits" for contaminants in shellfish, fish, and other food animals, based on human health risks.

Under the state's 303(d) program requiring evaluation of water quality in water bodies according to their intended human uses and ecological values, there are 12 freshwater, estuarine and marine water bodies in the Buzzards Bay watershed that are classified as Category 5 (the most severely contaminated) due to either heavy metal and/or priority organic pollutants[187]. These embayments are:

- Acushnet River outlet, Main Street culvert to Coggeshall Street Bridge (priority organics, metals, other pollutants);
- Apponagansett Bay, Dartmouth (priority organics, other);
- Clarks Cove, New Bedford, Dartmouth (priority organics, other);
- New Bedford Harbor, Coggeshall Street Bridge to Hurricane Barrier, Fairhaven/New Bedford (priority organics, metals, others);outer New Bedford Harbor, Buzzards Bay waters landward of a line drawn from Ricketson Point to Wilbur Point (priority organics, non-priority organics, metals, others);
- Cornell Pond, Dartmouth (priority organics, metals);
- Long Pond, Rochester (metals);
- Noquochoke Lake, Main Basin, Dartmouth (priority organics, metals, others);
- Noquochoke Lake, South Basin, Dartmouth (priority organics, metals, others);
- Noquochoke Lake, North Basin, Dartmouth (priority organics, metals, others);
- Snipatuit Pond, Rochester (metals); and
- Turner Pond, New Bedford/Dartmouth (metals, other).

Altogether, approximately 960 acres of fresh water and over 7.6 square miles of marine and estuarine waters are classified as Category 5 due to priority organic pollutants and/or metal contamination (see *Atlas of Stormwater Discharges in the Buzzards Bay Watershed*, Table 3, p. 9-10 for a list of Category 5 waters). Category 5 waters require that a Total Maximum Daily Load (TMDL) be developed which sets a limit on the daily input of pollutants to a water body. The 303(d) program is described further below (see Regulatory Programs), and in the atlas.

There are many potential sources of toxic compounds and chemicals within the Buzzards Bay watershed. These include both point and nonpoint sources. Point-source discharges include sewage treatment facilities, industrial discharges, combined sewer overflows, and storm sewers. Nonpoint sources include atmospheric fallout of contaminated dust particles and precipitation, contaminated groundwater, untreated stormwater runoff from developed areas of the watershed and other sources. Nonpoint sources are numerous, small, and generally unregulated inputs that discharge directly into receiving waters such as wetlands, streams and rivers, ponds and lakes, and the waters of Buzzards Bay itself. Examples of potential toxic pollution sources include, but are not limited to, the following:

- Boats, ships, and other vessels that discharge or spill oil, fuel, wastes, cleaning fluids, and other toxic substances into the waters of Buzzards Bay;
- Marinas, docks, and piers where boat washing, floor drains, refueling, and other activities could cause spills or runoff of toxic substances into Buzzards Bay;
- Contaminated sediments and shellfish from areas of Buzzards Bay that were contaminated through human activities and are awaiting completion of clean-up;
- Stormwater runoff from developed areas of the watershed where toxic substances are used, stored, transported, or fallout from the atmosphere;
- Agricultural activities involving the use of pesticides, fungicides, insecticides, herbicides;
- The use of fertilizers made from sewage sludge (these can contain high concentrations of heavy metals and organic pollutants);
- Landscaped areas, plant nurseries, and landscaping activities where pesticides, lawn care chemicals, and fertilizers are used or stored;
- Contaminated groundwater, surface water, or soils resulting from spills from underground storage tanks (USTs), industrial and commercial facilities and residences that use chemicals and fuel;
- MTBE-contaminated groundwater from service stations and refueling facilities;
- Transportation facilities where spills from fuel storage, refueling, and service activities have occurred or where runoff carries toxic substances into wetlands or water bodies;
- Wastewater treatment facilities that discharge secondary treated wastewater into wetlands or water bodies, and septic systems that discharge wastes containing toxic substances into groundwater;
- Utilities, industries, and vehicles that emit heavy metals, organic contaminants, nutrients, greenhouse gases, and other pollutants into the atmosphere, followed by fallout into Buzzards Bay and its watershed;
- Medical and research institutions that generate hazardous waste that is not properly disposed of;
- Household and institutional hazardous waste that is not properly disposed of;
- Leachate or spills of heavy metals and other contaminants from point sources such as waste management facilities and landfills;
- Explosives, lead, and other contaminants in soil and groundwater at munitions disposal sites and testing

[187] Massachusetts periodically updates the lists which are posted at: www.mass.gov/eea/agencies/massdep/water/watersheds/total-maximum-daily-loads-tmdls.html#2.

ranges (e.g., Massachusetts Military Reservation, Nomans); and
- Illegal dumpsites and discharges.

Studies suggest that toxic contaminants are contributing to the cumulative stress of aquatic and marine ecosystems. Outside of the Superfund sites, the human health and ecological impacts of the contaminants found within the Buzzards Bay watershed are still not well understood. In part, this is because existing data are not readily available and in part, because more information needs to be collected concerning sources, concentrations of contaminants generated by these sources, and the efficacy of existing state programs to mitigate or clean up contaminated materials.

Regulatory Programs

Toxic contamination is regulated through several national and state programs. Severe contamination involving highly toxic materials is regulated by the U.S. EPA Superfund Program (under CERCLIS and RCRA) and the Massachusetts DEP. The U.S. EPA regulates both shallow and deep underground injection wells under the federal Safe Drinking Water Act amendments of 1996 (underground injection control or UIC). Although there are no deep injection wells in Massachusetts, shallow injection wells used for disposal of industrial and commercial wastewater exist. The Massachusetts UIC regulations have been in place since 1982, and among the types of shallow injection wells of concern are floor drain discharges. Floor drain discharges are suspected of contaminating several water supplies in Massachusetts, and illicit floor drain discharges are not uncommon. The MA Division of Water Supply regulates and oversees injection wells, and provides guidance and assistance to owners of facilities with such discharges. The DEP Bureau of Waste Site Cleanup (BWSC) regulates underground storage tanks through its "Leaking UST Release Prevention Program" and requires operators of facilities that handle and store contaminants to prepare Spill Prevention Control Plans (SPCPs).

Point-source discharges above a certain discharge threshold require a permit from EPA's National Pollutant Discharge Elimination System (NPDES). Industrial outfalls require a NPDES permit, but most of these have been eliminated in the past 20 years, and most industrial and manufacturing flows discharge to municipal sewers rather than have their own outfall. The NPDES Phase II program now regulates nonpoint sources including stormwater runoff, and communities must develop and implement stormwater pollution prevention plans (SWPPPs) and other control measures under the Phase II program (see Action Plan 3 Managing Stormwater Runoff and Promoting LID). The U.S. Coast Guard oversees the emergency response to spills occurring on the water, and typically coordinates with local harbormasters, the DEP, and boards of health (see Action Plan 17 Preventing Oil Pollutio).

Section 305(b) of the federal Clean Water Act requires states to report to the EPA, Congress and the public on the water quality of freshwater and coastal water resources in terms of whether they support their designated uses such as aquatic life support, fish and shellfish consumption, drinking water supply, and recreation (swimming, boating). Section 303(d) of the Clean Water Act also requires states to list waters that do not meet water quality standards and schedule them for development of a TMDL. A TMDL (Total Maximum Daily Load) establishes the maximum amount of a pollutant that can be introduced into a water body and still allow attainment of water quality standards. A TMDL also allocates acceptable pollutant loads among all potential sources. The sum total of all pollutant load allocations, including point and nonpoint sources, natural background loads and a margin of safety, cannot exceed the total maximum allowable pollutant load calculated for the water body (See DEP's periodically updated Integrated List of Waters). States can submit an integrated list of waters under both Sections 305(b) and 303(d). The five categories of water quality classification are:

1) Unimpaired and not threatened for all designated uses;
2) Unimpaired for some uses and not assessed for others;
3) Insufficient information to make assessments for any uses;
4) Impaired or threatened for one or more uses but not needing a TMDL; and
5) Impaired or threatened for one or more uses and requiring a TMDL.

As mentioned above, Buzzards Bay has 13 freshwater, marine, and estuarine water bodies that are classified as Category 5 waters due to metal and/or organic pollutants.

Reducing the sources and generation of toxic pollutants represents one of the most cost-effective ways to control toxic pollution. Pollution prevention, which is defined as "source reduction and other practices that reduce or eliminate the creation of pollutants through increased efficiency in the use of raw materials, energy, water, or other resources, or protecting resources through conservation." Source reduction allows for the greatest and quickest improvements in environmental protection by avoiding the generation of waste and harmful emissions and discharges. Source reduction makes the regulatory system more efficient by reducing the need for end-of-pipe environmental control.[188] Reduction of toxic

[188] Modified from www.ecy.wa.gov/programs/hwtr/P2/whatisp2.html. See also Pollution Prevention Act of 1990 at: www.epa.gov/p2/pubs/p2policy/act1990.htm.

sources also reduces the need for mitigation of impacts due to toxic pollution.

The Buzzards Bay NEP's work on toxic pollution has been limited to two areas: 1) the indirect benefits of our stormwater remediation program, which, although focused on fecal coliform bacteria, also reduces the discharge of many toxic contaminants. 2) a toxics use reduction program for businesses in the greater New Bedford area.

In 1993, the Buzzards Bay NEP implemented the "Buzzards Bay NEP Toxics Use Reduction Program" (Buzzards Bay NEP/TURP) with four years of funding support from the EPA through the Toxics Use Reduction Act (TURA) program. A steering committee of local and state officials and representatives from volunteer monitoring groups led the effort. The program focused on providing outreach on the availability of technical resources for manufacturing and service sector businesses contributing waste streams to the New Bedford Publicly Owned Treatment Works (POTW), which treats municipal domestic and industrial wastewater. Outreach tools included a monthly newsletter ("Options") and workshops. Fifteen different workshops targeted local industries and their toxic use reduction needs. Topics included Materials Management and Chemical Reporting, Sustainable Manufacturing, Impacting Water Use, Clean Air Conference for Dry Cleaners, Metals Recovery and Abatement, Fats, Oils and Greases in the Waste Stream, Making Compliance Work for You, Pollution Prevention for Marinas and Boat Repair Facilities, Pollution Prevention Day, Solvent Degreasers, Wastewater Treatment in New Bedford, and BOD Discharge into the Waste Stream for Fish Processors.

The Buzzards Bay NEP Toxics Use Reduction Program has helped to reduce toxic pollution in significant ways:

- Businesses in the New Bedford area became aware of state regulations and technical assistance programs, including grant opportunities and awards.
- A pretreatment program for industrial wastewater at the New Bedford POTW and elimination of dry weather discharges was successful, resulting in dramatic reductions of toxic discharges to Buzzards Bay.
- The Buzzards Bay NEP TURP program helped a textile dye facility (Brittany Dye in New Bedford) to obtain a U.S. Department of Energy NICE^3 grant for $425,000 that enabled the business to modernize their textile production process, reduce toxic discharges, increase energy efficiency, and increase production.
- Containment of the PCB hot spot in New Bedford Harbor has helped to reduce dispersal of toxics into Buzzards Bay.
- Companies significantly reduced their toxic waste streams and several were recognized through the Governor's Award for Toxic Use Reduction.
- The program created a repository of useful information from EPA and state environmental agencies.
- The successes in New Bedford have raised awareness of the value of reducing toxics use and the environmental benefits of pollution prevention and waste reduction.

In 1997, the Buzzards Bay NEP ended its Toxic Use Reduction program due to cutbacks in federal funds. Nevertheless, there is a need to continue the Toxic Use Reduction program.

This action plan addresses control, management and reduction of toxic pollutants from a variety of point and nonpoint sources, including Superfund sites (excluding stormwater management, see Action Plan 3 Managing Stormwater Runoff and Promoting LID).

Many kinds of contaminants can harm ecosystems and/or humans. Scientists often divide contaminants into two major classes: 1) metals and other inorganic elements and compounds that lack carbon atoms, and 2) organic compounds characterized by having at least one carbon atom in their structure. Organic contaminants include hydrocarbons, petroleum products, organic solvents, pesticides, PCBs, dioxin, and many other substances that can harm living organisms, humans, and ecosystems through direct toxic effects on physiological functions. Since the 1940s, humans have released over 70,000 synthetic chemicals into the environment. Although there are many beneficial uses for these chemicals, their effects may include cancer, genetic changes, and birth defects in human and marine organisms. The EPA has designated certain contaminants as "Priority Pollutants" due to their toxicity to humans and ecosystems. These chemicals have multiple routes of entry into the aquatic and marine environment, which complicates identification of the relative contribution of toxicants from specific sources.

A second toxic contaminant category includes naturally formed biological toxins, such as the toxins formed by red tide-causing dinoflagellates, certain blue-green algae, and other harmful algae. For toxic substances, toxicity varies depending on the nature of the toxin or poison and how it affects physiology, the concentration (dose), the exposure mechanism, the species-specific sensitivity, and the speed at which the toxic effects become manifested.

A third contaminant category includes various substances that are not necessarily toxic at low concentrations but which may cause toxic impacts on aquatic ecosystems at higher concentrations or if they are suddenly introduced into an ecosystem. Examples in this category include road salt, de-icing agents, and additives to drinking water or wastewater (e.g., copper sulfate, alum, hydroxides, chlorine, others).

Yet a fourth contaminant category includes so-called "emerging pollutants"; that is, substances suspected of causing biological and/or ecological impacts but needing

further research to confirm the extent of effects in nature (e.g., endocrine disrupting compounds or estrogens, found in many pharmaceuticals, personal care products, organic chemicals and wastewater; surfactants; and others).

Methyl-tertiary-butyl-ether (MTBE): MTBE was a gasoline additive that was required in order to increase fuel efficiency and cut down on internal combustion emissions to the atmosphere. However, the use of MTBE resulted in widespread MTBE contamination of groundwater throughout the nation due to its high mobility in groundwater. This unanticipated effect caused it to be withdrawn from use, but MTBE-contaminated groundwater plumes may exist in the Buzzards Bay watershed since they are common outside the watershed. Typically, such groundwater plumes are associated with refueling stations or activities where MTBE-fuel was formerly sold or utilized. The operation, maintenance, and sale of such facilities is subject to state standards, including the Massachusetts Contingency Plan (MCP) regulations, known as 21E, which require site investigations in the event of a spill or change of ownership.

Regulation of Toxic Contaminants

Broad changes in state policies and stricter state enforcement of discharges of toxic materials have resulted in a tremendous reduction in the use and discharge of toxic materials. In 1989, the Massachusetts legislature enacted the Massachusetts Toxics Use Reduction Act (TURA) to help the industrial and commercial sectors to reduce their use of toxic substances in order to reduce toxic contamination. TURA required Massachusetts companies and industries that use large quantities of toxic chemicals to inventory their toxics and to develop a plan to reduce toxics use and storage. Such companies were also required to evaluate their efforts and update their toxics use reduction plans every other year. TURA set the following goals for users of toxic substances:

- Reduce the generation of toxic waste by 50 percent statewide (this was accomplished in 1998);
- Establish toxics use reduction (TUR) as the preferred means for achieving compliance with federal and state environmental, public health, and work safety laws and regulations;
- Provide and maintain competitive advantages for Massachusetts businesses, both large and small, while advancing innovation in cleaner production techniques;
- Enhance and strengthen environmental law enforcement across the state; and
- Promote coordination and cooperation among all state agencies that administer toxics-related programs.

Toxic compounds regulated under TURA include those compounds listed in Section 313 of the Emergency Planning and Community Right to Know Act (EPCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or "Superfund"), excluding compounds that have been delisted by the Administrative Council on Toxics Use Reduction. There are more than 300 listed compounds (see "Massachusetts Toxics Use Reduction Act, Reportable Chemical List, at www.mass.gov/eea/docs/dep/toxics/laws/turadc.doc.

Other Pollution Prevention Approaches

Other pollution prevention approaches that help to reduce the waste stream of toxics include recycling of reusable solid waste and providing proper disposal facilities for household hazardous waste and used motor oil. Most communities in the Buzzards Bay watershed appear to provide recycling services (both curbside and/or central drop-off facility), which may vary from community to community in the type of recyclables collected. Not all communities provide central facilities for the drop-off of household hazardous wastes and used motor oil; hazardous waste drop-off facilities are located in Acushnet, Bourne, Dartmouth, Fairhaven, Falmouth, Massachusetts Military Reservation, New Bedford, and Rochester. A number of commercial auto service businesses also provide drop-off facilities for used oil, such as AutoZone (East Wareham, Fairhaven), Napa Auto Parts (Wareham, Falmouth), and others.

Major Issues

Some specific toxic contamination issues in Buzzards Bay are being addressed or reviewed by regulatory agencies. These include remediation of the Superfund site in the Upper Acushnet River and attention to sewage treatment problems in New Bedford. The latter includes development and implementation of a plan to better control combined sewer overflows, and aggressive pursuit of a pretreatment program. Ongoing review of NPDES permits allows for incorporation of best available technology or best management practices to reduce wastes in discharges. This technology-based approach must be balanced with water quality-based controls. Sometimes effluent limitations by themselves will not be stringent enough to meet water quality standards. In these cases, pollutant-specific standards will be necessary to achieve or maintain the beneficial uses of the bay.

Once toxic chemicals get into the marine environment, they are difficult to remove. EPA has already spent $250 million dollars on the New Bedford Harbor Superfund site cleanup, and under the current level of funding from the EPA Superfund, roughly, $15 million per year is spent. The cleanup strategy, which includes dredging with off-site disposal, and burying of less contaminated materials in the harbor in what are known as confined disposal facilities (CDFs), could take 30-45 years[189] to

[189] See www2.epa.gov/new-bedford-harbor. Last accessed October 11, 2013.

complete at a cost of $750 million[190] to 1.2 billion dollars[191].

Preventing contaminants from reaching the marine environment is cheaper and more protective. In 1989, Massachusetts passed a Toxics Use Reduction Act that required a 50% reduction of hazardous wastes in discharges by the year 1997 and provided for a funding mechanism to do so. This goal was met and even exceeded. While much of these reductions occurred because industries adapted and implemented water savings and toxics reduction programs, in places like New Bedford, some of these reductions were due to plant closings because of increasing water costs or economic downturns in manufacturing. A pilot project in the Taunton and Fall River areas was successful in reducing metal discharges from jewelry manufacturers. Other areas of the country have implemented toxic audit programs to assist small businesses and industries in reducing both the use and generation of toxic materials.

Toxic contaminants associate with particles and accumulate in the sediments, where they remain for long periods. Human activity or natural processes may bury, or resuspend these sediments. Marine organisms may eat sediments or contaminants may be absorbed directly across cell membranes with contact with water or sediments.

In 1993, Massachusetts adopted the Massachusetts Contingency Plan (MCP) and supporting regulations (310 CMR 40) to create a regulatory framework for cleaning up existing and future hazardous waste sites in Massachusetts. The purposes of the Massachusetts Contingency Plan are to "provide for the protection of health, safety, public welfare, and the environment by establishing requirements and procedures" for the cleanup and evaluation of hazardous waste sites.

It outlines the schedule and procedures to be followed at disposal sites to undertake necessary and appropriate response actions to provide protection of health, safety, public welfare and the environment. Massachusetts has adopted criteria for sediment contamination under the Massachusetts Contingency Plan. The development of chemical-specific cleanup standards for use under the Massachusetts Contingency Plan (MCP) represents an important piece of the effort to streamline the site assessment and remediation program. The MCP Numerical Standards provide a simple means to determine whether remediation is necessary at a site and when no further remedial response action is necessary.

There are a number of critical unknowns in defining risk to humans from eating contaminated seafood. Based on the conclusions from the Symposium on Chemically Contaminated Aquatic Food Resources and Human Cancer Risk held by the National Institute of Environmental Health Sciences, some basic approaches are available that are more appropriate than our past approaches. The recommendations include, but are not limited to, locating sources of carcinogens in water, suspended and deposited particles; identifying biochemical markers in seafood as indicators of organisms of concern; and pursuing specific research studies that link environmental neoplasms (cancerous tissues) to specific causes. Many of these recommendations require resources at a national level. Nonetheless, some of the actions will be of direct benefit to Buzzards Bay communities and are included in this section.

TURA facilities should continue to be monitored. Regarding statistics on compliance, DEP states[192], "Most TURA enforcement actions are taken out of DEP's Boston Office for failure to file a complete annual Toxics Use Report and/or bi-annual plans update. Below are numbers for the two most recent complete years (state fiscal years 2004 and 2005) for TURA reporting compliance:

For Fiscal Year 2004, 675 reports were reviewed, and 44 enforcement actions were undertaken, including: 35 lower level enforcement actions (i.e., notice of noncompliance); and nine higher level enforcement actions (i.e., administrative consent order with penalty) with $11,250 in penalties assessed.

For Fiscal Year 2005, 647 reports were reviewed, and 46 enforcement actions were undertaken, including: 37 lower level enforcement actions (i.e., notice of noncompliance); and 9 higher level enforcement actions (i.e., administrative consent order with penalty) with $27,250 in penalties assessed."

These statistics indicate that enforcement must continue to be done in order to ensure that companies subject to TURA comply with state and federal regulations.

In addition, TURA only applies to certain types of businesses that use more than threshold amounts of listed toxic chemicals (i.e., companies that manufacture or process 25,000 pounds per year or more of a listed chemical, and companies that use 10,000 pounds per year or more of a listed chemical) and have 10 or more employees. Other businesses or facilities that use less than the threshold amounts of toxic chemicals, particularly small businesses that have fewer than 10 employees, are not subject to TURA, and such types of businesses may be a significant but unknown source of toxics.

Despite the achievements of the Buzzards Bay NEP Toxics Use Reduction Program, federal funding cuts in

[190] 2009 state press release at: www.mass.gov/governor/pressoffice/pressreleases/2009/announcement-of-federal-stimulus-funding-for.html. Last accessed October 11 2013.

[191] 2010 cost estimate report at: www.epa.gov/region1/superfund/sites/newbedford/466839.pdf.

[192] DEP. 2006. Statistics on TURA compliance. DEP, One Winter Street, Boston, MA 02108, June 2006 and Personal communication John Fischer, Branch Chief, Waste and Toxics Planning, DEP.

1997 ended the program. There are many toxics issues that need to be addressed, including:

- Developing comprehensive standards for allowable concentrations of contaminants, including whole fuel mixtures of compounds, in fish and shellfish and in particular developing action levels for mixtures of toxic compounds (i.e., petroleum, fuel, oil, etc.);
- Eliminating boat waste oil;
- Reducing and eliminating hazardous leachate from landfills;
- Improving seafood-testing and regulation at the local, state, and federal levels to address a comprehensive array of toxic compounds;
- Meeting all local, state, and federal action levels for water and seafood;
- Expanding the existing state program for testing fresh water fish to all of the municipalities within the Buzzards Bay watershed in order to develop a regional "Fish Closure Map,"
- Improving enforcement of TURA requirements for inventorying and reporting;
- Inventorying non-TURA toxics sources for the purpose of managing these sources if necessary, and providing outreach and training to the stakeholders involved;
- Expanding the Buzzards Bay Toxics Use Reduction Act (TURA) program to other communities in the Buzzards Bay watershed;
- Ensuring that all communities have comprehensive, user-friendly programs for pickup, recycling, and proper disposal of household hazardous waste;
- Ensuring that all communities have drop-off facilities for residential hazardous wastes;
- Finalizing, adopting, and implementing sediment quality criteria to facilitate cleanup and/or mitigation and to prevent further degradation of sediment quality;
- Inventorying potential groundwater contamination from 21Es and other contaminated sites for evaluating whether remediation activities are helping to protect Buzzards Bay or whether remediation efforts need to be expanded;
- Comparing toxics releases from sources within the watershed and outside the watershed, to determine whether "interwatershed" or interstate actions are needed to address toxic pollution (For example: are activities conducted outside the Buzzards Bay watershed contributing to environmental decline within the watershed? Are emissions from outside the watershed resulting in atmospheric deposition of nutrients and pollutants in the watershed and in the bay?).

A special concern that was identified in the wastewater facility action plan, that is also relevant to this action plan, is new and emerging pollutants of concern, and the risk they may pose to Buzzards Bay and to humans through contamination of groundwater from septic systems. Examples include estrogen compounds (a.k.a. endocrine-disrupting compounds), surfactants, optical brighteners, drinking water disinfection by-products (e.g., trihalomethanes, other chlorination products), and other wastewater components. These compounds can affect development in both fish and humans. The presence of these contaminants in wastewater will likely become a significant management issue in the coming decades, as the scientific understanding of the impacts of the contaminants on the environment is better understood. EPA and DEP should continue to assemble information and data to better characterize and identify the risks.

In the 1990s, a Buzzards Bay Toxics Action Committee existed to develop strategies to reduce the discharge of toxic materials in the Buzzards Bay watershed. This group could be reconvened to organize this effort and provide outreach to businesses and the public concerning ways to reduce release of toxic materials in the environment, and to promote cost effective toxic material recycling and reclamation. This group could address areas that need more focus such as the hazards of eating contaminated seafood, including the potential hazards related to lack of comprehensive seafood testing for all contaminants of concern.

Management Approaches

Implementing this action plan is complex because it involves industry, residential activity, the choice of products and compounds used, and regulated and non-regulated business activities. However, across all these activities and sectors of the economy, pollution prevention is one of the most important methods for achieving the goals of the action plan.

The second most important element is to ensure proper disposal and recycling of toxic materials. For example, fishing vessel owners often discharge oily bilge water because existing collection services are too expensive. In this regard, DEP should fund the construction of a facility to collect bilge oil in New Bedford Harbor that accepts oily bilge water for recycling, and treats it at an affordable rate to boaters and the fishing fleet.

The failure to have a speedy cleanup of hazardous waste sites, especially federal superfund sites, remains an important need, as these cleanups have been unacceptably slow.

The increased incidence of pesticides in drinking water is a serious concern that needs to be addressed. The ultimate goal of pesticide management efforts should be to develop and implement strategies to minimize the use and potential off-site impacts of pesticides (including insecticides, herbicides, and fungicides) and fertilizers. The use of Integrated Pest Management (IPM) and alternative organic approaches should be encouraged for landscape maintenance for residential homeowners, golf

courses, agriculture, landscapers, and institutional facilities. IPM outreach should focus on the cost benefits of using less fertilizer and pesticide and using appropriate chemicals in sensitive areas. The NRCS has an ongoing technical assistance program to train and help farmers to utilize IPM methods that minimize use of such chemicals.

One special concern in the Buzzards Bay watershed with its large acreage of cranberry bogs is the need to implement BMPs on flow-through cranberry bogs (that is, bogs where pesticide runoff cannot be adequately managed) to better separate and contain pesticide applications from the adjacent natural receiving waters. BMPs include berming and construction of stream bypasses.

NRCS and state environmental regulators should direct more efforts to educate other pesticide users because the use of pesticides and fertilizers is not limited to farmers. Examples include golf courses; landscaped areas of institutions, parks, schools and other public and private facilities; plant nurseries, etc.

MA EEA should coordinate with the Massachusetts Department of Public Health (DPH) to review the current seafood-testing program and develop recommendations for future actions. Other agencies that should participate in this effort include MA EEA, MA DPH, FDA, EPA, and the seafood industry.

The Buzzards Bay NEP can work with Buzzards Bay watershed communities to promote the implementation of industrial water use and toxics reduction programs. These efforts can be encouraged through directed technical assistance to water utilities, boards of health, planning boards, and by promoting a model water savings toxics reduction program. These efforts could also compliment Action Plan 10 Managing Water Withdrawals to Protect Wetlands, Habitat, and Water Supplies.

Watershed and environmental non-profits should help towns implement their outreach campaigns to homeowners to identify common household toxic and hazardous materials and provide guidance on proper disposal and safer alternatives. These efforts might include outreach materials, public service announcements, and website information.

Where requested by municipalities, the Buzzards Bay NEP could develop a detailed GIS database inventory and maps of active 21E, Superfund sites, other regulated sites with contaminated groundwater and surface water, and facilities with underground storage tanks (USTs). Much of this data can be assembled from databases in various agencies like MassGIS, DEP, and EPA. This inventory could be placed on line, which could assist local fire and emergency officials needing information after catastrophic events like hurricanes.

DEP should review opportunities to enforce existing regulations and develop new ones that would more effectively discourage the discharge of oily bilge water from ships and other vessels into the environment. Some consideration should be given to providing sufficient staff to undertake and enforce these requirements in the most polluted harbors of the Commonwealth. Implementation and enforcement may require legislation, but more importantly, DEP must work with municipalities to provide bilge oil collection facilities in each port.

DEP and EPA should require that marinas and other industrial facilities that handle or store hazardous wastes comply with Phase II Stormwater NPDES permits and regulations. Requirements include adopting control measures for nonpoint source pollution, spill prevention plans, and emergency response plans that incorporate spill response and spill control. There should be outreach targeting waterfront facilities that handle and/or store hazardous wastes, especially those without MSGP for stormwater.

Existing sediment quality criteria are varied and not consistently applied. There are currently no sediment quality criteria at the state or national level, despite abundant data concerning existing sediment quality and potential impacts of contaminants in sediments. The lack of criteria makes it impossible to evaluate and improve contaminated sediments outside of Superfund areas. Adoption of final sediment quality criteria, reflecting decades of research by NOAA, EPA, USGS, and others, and incorporating toxicity values and biological impacts of contaminated sediments would be important steps to meet the goals of this action plan.

DEP should establish sediment quality criteria with respect to toxic materials for beach nourishment projects, dredging, and dam removal projects in Buzzards Bay. This is important to prevent the spread of contamination through these projects. A draft policy was developed by CZM more than a decade ago, but was not implemented. There is sufficient guidance and science now to identify suitable sediment quality criteria, based on NOAA, EPA, USGS and other states' and other nations' draft and interim sediment quality guidance. These efforts also relate to seafood quality criteria for toxics.

In the face of limited staff resources and funding, DEP could evaluate and prioritize risks from point sources of pollution (e.g., waste handling facilities, discharges, landfills, etc.) to determine if measures are needed to manage these sources to protect water supplies, or to direct limited resources for enforcement and technical assistance.

NRCS and EPA should expand education and outreach programs to minimize the use of pesticides and fertilizers to reduce offsite impacts. Numerous entities are or can be involved with these efforts including UMass Extension, NRCS, lawn care products vendors and manufacturers, golf course managers, qualified consultants in IPM, BBAC (for municipal users), gardening clubs and associations, etc. For resource management areas, an implementation strategy might involve forming a steering committee composed of representatives from

these sectors. An outreach strategy could be used to target and educate all pesticide users. Examples of outreach programs that encourage minimizing pesticides and fertilizers include Greenscapes (Massachusetts Bays Program), Falmouth Friendly Lawns, and programs developed by the Massachusetts Audubon Society and others.

All municipalities in the Buzzards Bay watershed should establish and implement a program of toxic-waste reduction for all industries and facilities that discharge directly into receiving waters (NPDES permits) or sewage treatment facilities, regardless of whether or not they meet TURA threshold criteria for regulation. Typically, public works and wastewater facility staff are involved in these projects, but other departments, like boards of health could be involved.

All municipalities in the Buzzards Bay watershed should ensure that facilities exist for the pickup and recycling of boat waste oil. Generally, private marinas provide this service, and municipalities should take steps to discourage any illicit disposal at public facilities. This problem is also mitigated when municipalities should have a program for collection and proper disposal of household hazardous waste on a continual basis. Most towns now have periodic toxic waste pickup days but funding for program expansion has not appeared. Many municipal waste transfer stations have permanent waste oil and fluorescent light collection facilities provided with no fee, and all municipalities should consider implementing such programs.

All watershed municipalities should adopt recycling programs that will reduce the amount of all recyclables sent to landfills and incinerators. Recycling programs help reduce the volume of materials sent to landfills and toxic materials recycling reduces the risks of toxic contamination of the environment.

DEP and EPA, with technical guidance from USGS regarding groundwater pathways, should periodically inspect all facilities that are required to prepare and implement Spill Prevention Control Plans, Spill Response Plans, Stormwater Pollution Prevention Plans, or NPDES Multi-sector General Permits in order to validate implementation of these various plans. Having up-to-date inventory of these facilities in GIS databases would help the agencies with these efforts. Local municipalities (boards of health, building inspectors) are trained to recognize facilities requiring such plans, and local regulations may also require spill prevention and response plans.

The Buzzards Bay NEP could work with state and federal agencies to better characterize and develop inventories of toxic contamination throughout the Buzzards Bay watershed to assist these agencies. As noted in the issues section, there is a need for water quality monitoring of streams, rivers, ponds and lakes and groundwater in the Buzzards Bay watershed for a wide range of toxic contaminants and those of emerging concern.

EPA, DEP, and the Buzzards Bay NEP should continue to assemble information and data to better characterize and identify the risks from new and emerging pollutants to determine if there is a need for managing them in Buzzards Bay based on risk of harm to ecosystems and/or humans. In the coming years, scientists and other experts must evaluate these issues and provide recommendations, including measures for incorporating and addressing new information.

A Buzzards Bay Toxics Action Committee could be reconvened to organize this effort and provide outreach to the public concerning the hazards of eating contaminated seafood, including the potential hazards related to lack of comprehensive seafood testing for all contaminants of concern.

Financial Approaches

The costs associated with implementing this action plan are as varied as the sectors and pollution sources that must be managed. One particularly expensive need is funding for the design, permitting, and construction, of an oily bilge water-collection and treatment facility in New Bedford, which will likely cost $500,000 to build, and tens of thousands of dollars per year to operate. The construction and operation of this facility could be funded by the Massachusetts Oil Spill Act fund, which collects fees on barge oil deliveries to fund spill response and oil spill prevention activities. With coordination between DEP and the New Bedford Harbor Development Commission and the City of New Bedford, this facility could be built within five years. Construction of this facility has long been recognized as an important need by the fishing vessel operators in New Bedford Harbor.

There are many other costs associated with this action plan. Hazardous material disposal collections are expensive, and municipalities can often only afford one collection event annually, if at all. There are costs to expand conventional recycling programs as well.

Monitoring Progress

The success of this action plan can be evaluated by the amount of hazardous materials collected, the concentration of toxic contaminants in wastewater facility discharges, and by various programmatic and management measures. These programmatic measures include whether public works have pretreatment programs to reduce contaminates from businesses and industries connected to their wastewater facilities, whether the acreage of flow through cranberry bogs is declining, whether the New Bedford Bilge Oil Collection Facility is built, whether sediment criteria for toxics are adopted, and whether there are more hazardous waste collection events.

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