



State of Connecticut
Department of Environmental Protection
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Protecting and Restoring our Environment

Annual Report 2005

Gina McCarthy
Commissioner



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Cover Photo: *Wadsworth Falls State Park in Middlefield. The park covers 267 acres and was willed to the State in 1942.*

Introduction

The Department of Environmental Protection is pleased to present its Annual Report for 2005. The report provides a comprehensive look at the work of the Department during the 2005 calendar year, while also satisfying various state and federal requirements to report a variety of information and data.

In reviewing this report, it is important to note that 2005 was a year of great transition at the Department. It marked the first full year that the agency has been under the leadership of its new Commissioner, Gina McCarthy.

During the year, Commissioner McCarthy initiated a process to more clearly define the work of the Department. This resulted in a series of meetings with constituents – from the environmental community as well as the business community – to develop a more proactive agenda for the agency. As a result of this process, the Commissioner unveiled a series of four major initiatives to serve as a focus of the Department’s work.

Under these initiatives, the Department will continue its traditional roles, which include enforcing environmental rules and regulations, administering the state park system and protecting wildlife and natural resources. But, under the framework provided by these initiatives, the Department will make more efficient and effective use of its resources, work more closely with its partners, emerge as a stronger advocate for the environment and have a more influential role in building public awareness of environmental issues and practices.

The Department’s four initiatives are:

Making “Doing the Right Thing” the “Path of Least Resistance”

A number of components designed to achieve regulatory compliance and focus on environmental outcomes including strong enforcement, enhanced decision making and regulatory certainty, and environmental justice initiatives.

Landscape Stewardship

An effort to coordinate and focus the Department’s programs that influence land development to make certain Connecticut grows and prospers while preserving its habitat and natural resources. Through this comprehensive theme, the Department will be able to better offer assistance to municipalities, land trusts and others making land use decisions.

“I have seen the Enemy and It is I” - Pogo

A focus on the environmental impacts that are not typically associated with regulated sources of pollution. As part of this theme, the Department will be working on a range of topics including recycling, climate change, mobile sources, and consumerism, to further resource protection efforts.

No Child Left Inside

A program to reach families throughout Connecticut, especially those in our urban areas, and make them more aware of the varied recreational opportunities available to them throughout our state park and forest system. The initiative is also designed to interest young people in the environment to create the next generation of environmental stewards.

The Department looks forward to reporting on the progress of these initiatives in its next annual report and to demonstrating how this new focus is improving its efforts to protect and preserve the environment and natural resources of this state.

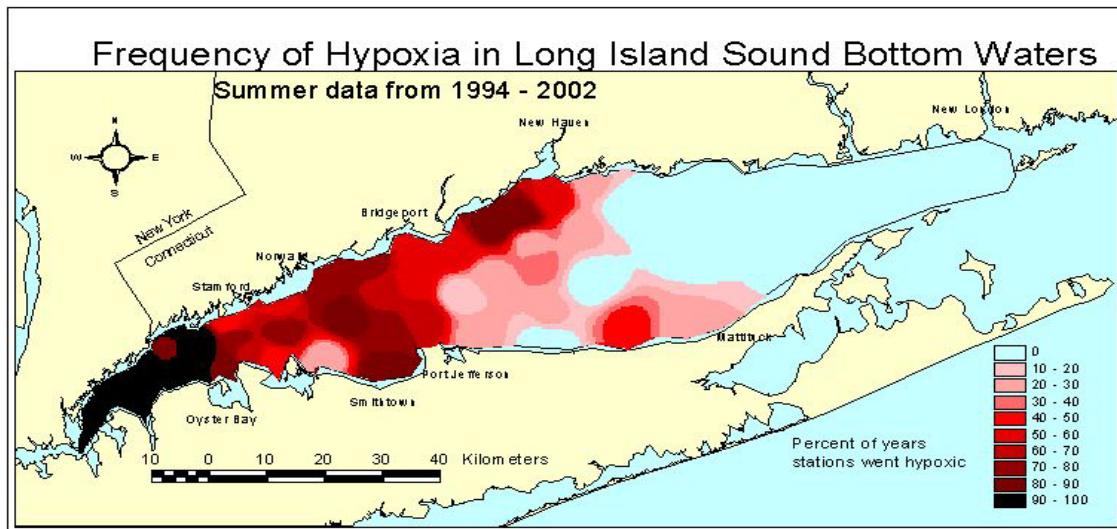
Long Island Sound

Goal: To protect, restore, and enhance the environmental quality of Long Island Sound and its resources and to build capacity among all stakeholders to meet current and future challenges of resource and use management.

Progress on Restoring the Health of Long Island Sound and Removing Nitrogen

This year marked the 20th anniversary of the Long Island Sound Study (“LISS”). Established in 1985, the LISS began as a six-year program to investigate environmental problems in the Sound, including dissolved oxygen concentrations, fish kills and toxic contamination, and to develop an ecosystem-based management plan for the estuary. Funding was provided by the U.S. Environmental Protection Agency with a 25 percent match pledged by Connecticut and New York.

The creation of the LISS was timely as sampling during the summers of 1986 and 1987 revealed the previously unknown extent of hypoxia (severely low dissolved oxygen) in the western Sound, which contributed to unprecedented finfish mortality. In 1987, the federal Clean Water Act was amended to create the National Estuary Program (“NEP”), and in 1988, the Sound was designated an “Estuary of National Significance” under the NEP.

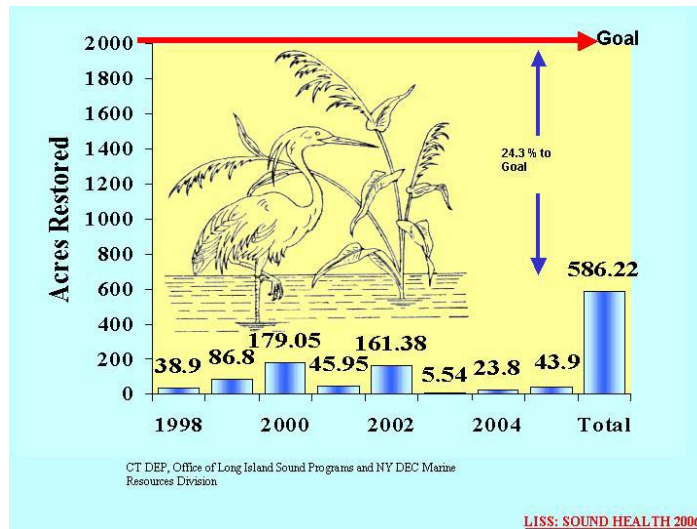


By 1994, many of the study’s initial monitoring and research objectives had been met, enabling the LISS Management Conference to conclusively identify key problems and to establish priority goals for restoring the Sound through development of the Comprehensive Conservation and Management Plan (“CCMP”). The CCMP identifies the specific commitments and recommendations for actions to improve water quality, protect habitat and living resources, educate and improve the long-term understanding of how to manage the Sound. As a result, among other initiatives, a habitat restoration

initiative began in 1998 with goals of restoring 100 river miles of anadromous fish passage and 2,000 acres of coastal, tidal and subtidal habitat by 2008. In 2005 nearly 25 river miles were opened up for fish passage and as of December 2005, over 90 miles of river passage have been restored. The migration from salt to fresh water of anadromous fish such as alewives, blueback herring, American shad, and Atlantic salmon has been limited by physical barriers (including dams, culverts, tide gates, and sections of river with inadequate water volume) that block access to spawning areas. These travel routes are now being made accessible through fishways and bypasses, removal of obstacles, and altering dam releases.



Since 1998, more than 586 acres of coastal habitat have been restored in Connecticut and New York around Long Island Sound. Additional restoration projects are underway.



Hypoxia has been identified as the most serious, unaddressed water quality problem affecting the Sound, and modeling and monitoring identified nitrogen as the pollutant

most responsible for the condition that impacts western LIS bottom layer waters each summer. Approved by EPA in 2001, the Total Maximum Daily Load (“TMDL”) analysis is the central authority under which nitrogen is being regulated and managed.

Point source nitrogen loads have been significantly reduced since 1993 when the first sewage treatment nitrogen removal projects were begun. Through formal agreement with EPA and NYSDEC, the Department adopted a 64% nitrogen reduction target for sewage treatment plants to be attained by 2014. Sewage treatment plant upgrades have resulted in a steady decline in nitrogen loads. This level of progress to date at municipal facilities has been possible because of 1) funding by the Clean Water Fund (“CWF”); 2) a strong state-local partnership to provide technical and financial means to attain the required reduction; and 3) an innovative *Nitrogen Credit Exchange Program* established in 2002 that has allowed a cost-reducing mechanism for nitrogen trading that uses market forces to put the most cost effective projects first. In sum, about 30 nitrogen removal projects of varying scale have been implemented, at a cost of about \$150 million, resulting in more than a 30% reduction in the load of nitrogen to LIS from Connecticut’s municipal facilities compared to 1990 levels.

No Discharge Area Designation for All Connecticut’s Coastal Waters

The Department continues to pursue designation of all Connecticut coastal waters as a no-discharge area (“NDA”). Eliminating the release of sewage from boats will result in reductions of man-made nutrient loading and exposure to bacterial pathogens in swimming areas, shellfish beds and other environmentally sensitive aquatic habitats. At present, the discharge from boats of untreated sewage is prohibited, however treated sewage from Type I and Type II Marine Sanitation Devices may be legally discharged in coastal waters not currently designated as a No Discharge Area. If a No Discharge Area is established, the discharge from boats of treated as well as untreated sewage will be prohibited within the designated area. Instead, boaters will be required to use pumpout facilities or pumpout boats that serve the area.

The initial focus of Connecticut’s NDA designation was the Connecticut portion of the Pawcatuck River¹. The Stonington NDA, extending from the Rhode Island state line to Wamphassuc Point in Stonington Harbor, was approved by the EPA on August 22, 2003. The Department then went on to pursue subsequent NDA designations, with the Mystic NDA, from Wamphassuc Point to Eastern Point in Groton, approved by EPA on September 24, 2004. The Department submitted an application to the EPA in 2005 for an NDA to cover the waters from Eastern Point in Groton through Guilford, and continues to work with the EPA in an effort to get that NDA designation approved. Finally, the Department anticipates submission of an application to the EPA for approval of an NDA to cover the remainder of Connecticut’s coastal waters, from Branford to Greenwich, by summer of 2006. It is anticipated that by the start of the 2007 boating season, all of Connecticut’s coastal waters will be a designated no-discharge area. Information regarding efforts to establish Connecticut’s coastal waters as an NDA can be found at the websites <http://dep.state.ct.us/olisp/NDA/> and <http://www.ctnodischargearea.org/>.

¹ The Rhode Island portion of the Pawcatuck River was designated as an NDA in 1998.

Coastal Land Preservation Efforts

Pursuit of Coastal and Estuarine Land Conservation Program

Connecticut recently prepared a draft state Coastal and Estuarine Land Conservation Program (“CELCP”) Plan pursuant to the national program established by the Departments of Commerce, Justice, and State Appropriations Act of 2002. The Act authorizes federal financial assistance to coastal states with approved CELCP plans to acquire land that will “protect important coastal and estuarine areas that have significant conservation, recreation, ecological, historical, or aesthetic values, or that are threatened by conversion from their natural or recreational state to other uses, giving priority to lands which can be effectively managed and protected and that have significant ecological value.”

The CELCP Plan identifies Connecticut’s priority coastal land conservation needs (e.g., habitat protection for nesting shore birds, shoreline public access for anglers, etc.) and establishes a cooperative process, including stakeholder involvement to identify land acquisition opportunities that address these needs. Additionally, the Plan provides guidance for identifying specific coastal land acquisition project proposals. Once federal funds have been appropriated by NOAA for awards to states through a competitive state grant program, Connecticut will solicit acquisition project nominations from stakeholder organizations. After evaluating project proposals, the Department will nominate Connecticut’s top coastal land acquisition project proposals for consideration by NOAA-OCRM, who will score state project proposals and award program funds.



Bluff Point State Park, Groton

The Coastal Land Assessment Methodology

The Coastal Land Assessment Methodology (“CLAM”) project is a coastal land conservation planning tool to identify the State’s larger remaining unprotected parcels with significant conservation value. This planning tool is being used to evaluate the coastal resource and public recreation value of undeveloped parcels greater than 25 acres near coastal waters. Parcel evaluation criteria include parcel size, presence of coastal resources such as coastal waters or tidal wetlands, and proximity to existing protected open space. These parcels are being further assessed to determine their existing owners and conservation priority. The Department will work with land trusts and municipal commissions to identify possible funding mechanisms, such as CELCP, to acquire those parcels held by willing sellers that offer the most significant coastal land conservation opportunities in the State.

LYNDE POINT MARSH RESTORED

In June 2003 the Department was awarded a grant of \$80,000 from the U.S. Fish & Wildlife Service's ("FWS") National Coastal Wetlands Conservation Grant Program to restore a 13+ acre parcel of the Lynde Point tidal marsh, located in the Borough of Fenwick in Old Saybrook. The construction phase of the project, which commenced in June 2003, was completed in December 2005 and the re-vegetation phase is now beginning. At a total project cost of approximately \$367,000, the Lynde Point tidal marsh restoration represents a significant step toward accomplishment of the Long Island Sound Habitat Restoration Initiative's goal to restore at least 2,000 acres of coastal habitat and 100 miles of riverine migratory corridor by 2008. The balance of the funds for the restoration was provided by a grant from the National Oceanic and Atmospheric Administration (NOAA)/Ducks Unlimited Partnership, and by donations from the Lynde Point Land Trust, the Borough and residents of Fenwick, and the Connecticut Corporate Wetlands Restoration Partnership. Construction activities and post-construction monitoring were provided as in-kind services by, respectively, the Department's Mosquito Management Program and the U. S. Department of Agriculture's Natural Resources Conservation Service.

The Department's tidal wetland restoration procedures typically include excavation of the marsh surface to a target elevation, followed by the re-introduction of tidal waters. These two techniques set a degraded tidal marsh on a long-term trajectory toward restoration. Tidal currents carry the seeds of native wetland plants from surrounding areas, depositing them in a natural pattern onto the excavated marsh. As the wetland plant community matures, it goes through a series of successional stages, eventually taking on the appearance and functions of a natural, healthy, and undisturbed marsh. This methodology serves to minimize total project costs by avoiding the expense of purchasing and installing plants and other necessary materials.

The Lynde Point tidal marsh, which was filled with sediment dredged from the Connecticut River in the 1940s, had lost all of its natural tidal wetland functions and values, and had become dominated by common reed (*Phragmites australis*) and other invasive plants. With the FWS funding and other private donations mentioned above, the wetland was restored in stages. Approximately 60,000 cubic yards of clean, sandy dredged sediments were removed over the past 2-½ years, and several small tidal ponds were created to provide habitat for forage species such as Atlantic silverside, killifish, bay anchovy, grass shrimp and bay shrimp. These species will, in turn, support larger fish, osprey, bald eagle, wading birds and terns.



Air Quality Management

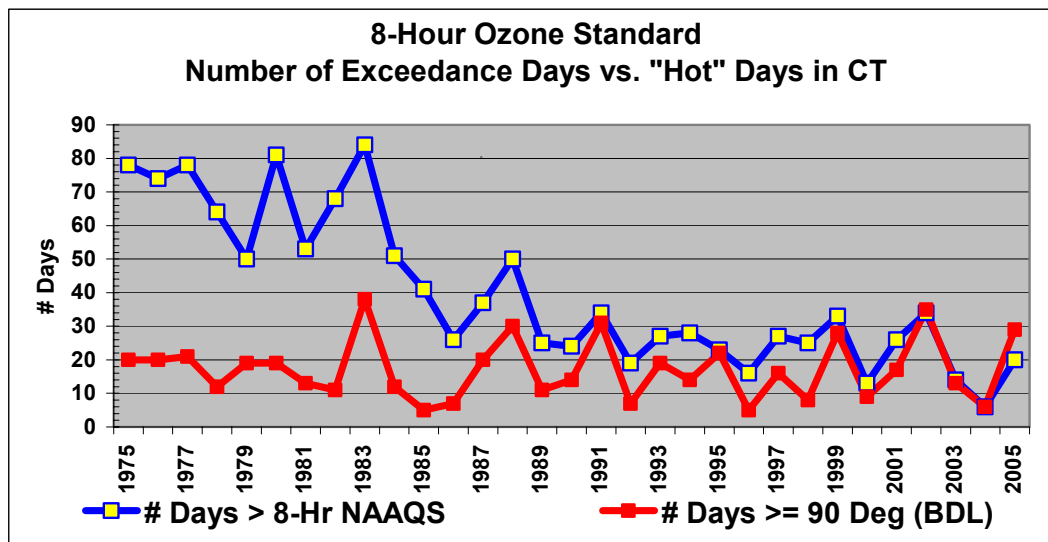
Goal: Protect and enhance ambient air quality to make the air safer to breathe for all citizens and to reduce the impact of air pollution on other environmental media, resulting in many benefits, such as restoring damaged ecosystems and reducing health risks to those whose subsistence depends directly on those ecosystems.

Connecticut has successfully reached attainment² with National Ambient Air Quality Standards (“NAAQS”) for carbon monoxide, lead, nitrogen dioxide, particulate matter (“PM₁₀”) and sulfur dioxide. Recent changes in the NAAQS for ozone (8-hour ozone) and the addition of standards for fine particulate matter (“PM_{2.5}”) presented new challenges for Connecticut’s attainment of those standards. In 2005 there were also new developments in control of mobile source emissions.

Ozone Attainment Issues

While significant progress has been made in reducing ozone, monitored levels continue to exceed NAAQS for 8-hour ozone. This pervasive pollutant is responsible for serious health and ecological impacts. During the summer months, Connecticut typically experiences ten to twenty days when ozone levels exceed federal standards. These days of unhealthy air quality coincide with days of peak energy demand.

As depicted in the figure below, we continue to show considerable progress in reducing the number of instances where the standard is exceeded. This steady decline continues to occur despite an increase in the number of high temperature days. Progress in reducing ozone levels is expected to continue in 2006 because of the many programs implemented over the past several years.



² An area in attainment is considered to have air quality as good as or better than the National Ambient Air Quality Standards as defined in the Clean Air Act. An area may be in attainment for one pollutant and in non-attainment for others.

The Department is currently evaluating, and plans to adopt, additional, local control measures on emissions of the ozone precursors, volatile organic compounds (“VOCs”) and nitrogen oxides (“NO_x”). However, a preliminary modeling run projects that Connecticut will not be able to come into attainment for the 8-hour ozone standard by controlling only local emissions. Significant NO_x reductions from upwind states, going beyond EPA’s recently adopted Clean Air Interstate Rule (“CAIR”), will be needed to meet this goal. Connecticut is particularly concerned about NO_x emissions from power plants on peak electricity demand days, which typically occur on hot summer days when ozone levels are at their highest. Existing regional NO_x control programs, which limit emissions on a seasonal basis, do not adequately address peak day emissions. EPA and states are evaluating this issue and possible appropriate regional strategies to control air pollution during periods of peak demand.

The standards for ozone and fine particulate matter (“PM_{2.5}”) have changed due to a better assessment of health risk. Attaining the new standards will require the Department to implement new approaches recognizing that:

- The development and implementation of strategies should be designed to help reach attainment;
- Federal Clean Air Act mandates have to be met;
- Both local controls and upwind reductions are necessary; and
- Multi-pollutant strategies are needed to address primary and secondary sources.

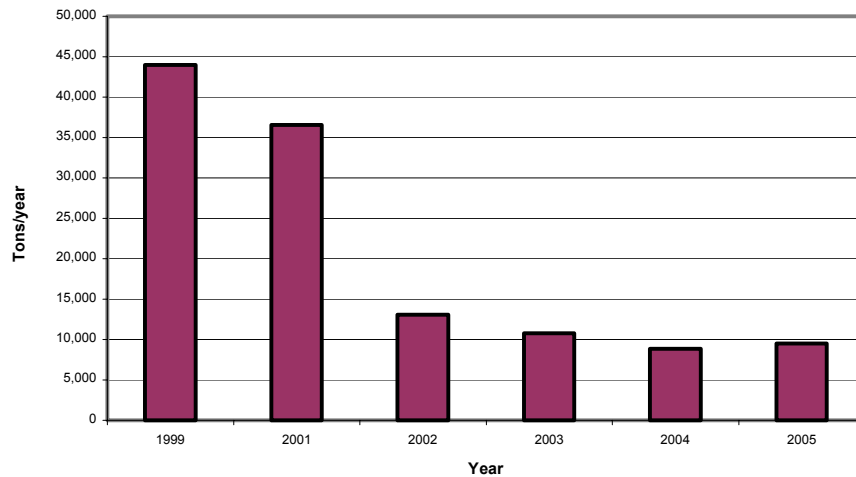
Connecticut's efforts to attain NAAQS have involved a wide variety of emission reduction strategies over the past thirty years including operating requirements for stationary and area sources and an effective permitting and enforcement program to assure compliance. Despite Connecticut’s continued progress, more work is needed to consistently ensure clean, healthy air for our citizens.

Connecticut's SO₂ Reductions Continue to Exceed Expectations

The Governor’s Executive Order 19, issued in 2000, outlined requirements for the Department of Environmental Protection to promulgate regulations that would reduce emissions of SO₂ by 50% of allowable levels in 1999 and 2000. The resulting regulation, Section 22a-174-19a (Section 19a), has enabled Connecticut to reduce annual emissions of SO₂ from nearly 43,949 tons in 1999 to fewer than 10,000 tons in 2005.

The following figure illustrates Connecticut’s reductions in actual emissions of SO₂ achieved, primarily, as the result of the implementation of Section 19a, which exceed the minimum 50% reduction set forth in Executive Order 19.

Section 19a Results - SO2 Emissions Tons



While these reductions are significant, reducing the sulfur content of heating oil from the current statutory limit of 3,000 ppm down to 500 ppm would reduce sulfur dioxide pollution and generate even greater reductions. Emission reductions have been estimated to be 10,000 tons per year and would represent an 83% reduction from current levels. Sulfur emissions contribute to total PM_{2.5} in the form of sulfates and also contribute to regional haze. As a result, reductions in PM emissions are also expected to be significant. The Northeast States for Coordinated Air Use Management (“NESCAUM”) and the Energy Research Center 2005 report estimated that reductions from PM would be 80%.

Emission Benefits of Low Sulfur Heating Oil and Biodiesel Blends³
 (% reduction compared to 2,500 ppm sulfur fuel)

<i>Pollutant</i>	Reduction with 500 ppm Sulfur Heating Oil	Reduction with 500 ppm Sulfur Heating Oil/Biodiesel Blend (80/20)
SO₂	75%	84%
PM	80%	>80%*
NO_x	10%	20%
Hg	N/A	20%**
CO₂	1%-2%	17%-18%

* Additional PM reductions are expected with biodiesel blends, but no known test data exists to substantiate the assumption.

** Value based on the assumption that biodiesel contains no mercury. No known test exists to substantiate this assumption.

³ NESCAUM & The Energy Research Center, “Low Sulfur Heating Oil: An Overview of Benefits, Costs and Implementation Issues,” June 2005, page iv. (PM estimates were derived from data in the report, “Low Sulfur Home Heating Oil Demonstration Project,” Energy Research Center, Inc and Brookhaven National Laboratory, funded by the New York State Energy Research and Development Authority, Final Report, March 2005).

Emission reductions of this magnitude for a single source category are extraordinary. In this instance, reductions would outstrip those made through Connecticut's power plant requirements and would represent a very cost-effective strategy with little to no cost for implementation. Connecticut, along with the other NESCAUM states, will continue to evaluate developments for this emission reduction strategy.

Opacity Enforcement Initiative

Often, visible emissions from smoke stacks with high opacity are the result of PM_{2.5} that scatters or bends light. Techniques to reduce opacity generally focus on reducing the mass and corresponding concentration of fine particles in the exhaust stream by either capturing the particles before they exit the stack or improving process operations to reduce the formation of small particles.

In 2004, the Department revised its regulations regarding the opacity of visible emissions. A variety of stakeholders participated in the effort to draft a regulation that allowed regulated entities a greater measure of operational flexibility while providing adequate safety for the protected community.

In 2005 the Department discovered a high rate of non-compliance with the new opacity regulations in the oil-burning power plant sector. The Department entered into consent orders with three of the State's largest oil-burning power plants requiring evaluation and implementation of corrective action to improve compliance. The data gathered from the evaluation and the subsequent corrective actions are expected to reduce PM_{2.5} emissions from the power plants.

Connecticut Adopts California Low Emission Vehicle II Regulations and Associated Green House Gas Requirements

Controlling air pollution from cars and trucks is a top priority for the Department given that the motor vehicle sector is responsible for more than 40% of our homegrown air pollution. New state regulations will result in significant air quality benefits by requiring the sale of California-certified "low emission vehicles" or "LEVs" in Connecticut beginning with the 2008 model year. Under the Department's clean car regulations, vehicle manufacturers must provide new cars, light trucks and sports utility vehicles ("SUVs") that meet stricter emissions standards than those now required in Connecticut. In addition to making vehicles that meet prescribed tailpipe emission standards, all vehicles sold in a given year must meet an ever-tightening "fleet" emissions standard.

Upon full implementation of the LEV II program, the following benefits should be realized:

- a 25-30% reduction in toxics (including benzene and formaldehyde) resulting in a 137 ton per year reduction in toxics;
- a 15-20% reduction in hydrocarbons resulting in an additional 5 ton per day reduction in hydrocarbon emissions; and
- a 2% reduction in carbon dioxide (CO₂) emissions resulting in a further reduction of approximately 500,000 metric tons per year.

The Department has recently revised its clean car regulations to mirror California's standards as required by the federal Clean Air Act. As a result, the Department's modified clean car regulations will implement California's greenhouse gas ("GHG") emission standards and require 2009 and later model year passenger cars, light duty trucks and medium-duty passenger vehicles to utilize existing technology to reduce emissions of the following greenhouse gases: CO₂, methane, nitrous oxide and hydrofluorocarbons. The Department believes these regulations will reduce GHG emissions in Connecticut by 3.11 million tons in 2020 and by 4.4 million tons in 2030.

Management of Toxic Pollutants

Goal: Reduce toxic emissions and discharges through reduction strategies that include product stewardship, pollution prevention, emission controls and effective waste management.

The Department continues to focus statewide toxic reduction efforts on high priority toxics. For 2005 the Department emphasized reduction strategies for the complex of toxic pollutants in diesel exhaust and for mercury. Particulate matter pollution was addressed as a constituent of both diesel exhaust and wood burning. Regulations to reduce emissions from residential gas cans took full effect in 2005. Development of community-based compliance assurance efforts to reduce toxic emissions from many sources continued.

Diesel Risk Reduction

Diesel exhaust is one of 21 federally listed mobile source air toxics.⁴ In 2005 the Connecticut General Assembly enacted Special Act 05-7 (the Act), which directed the Department to develop a diesel emission reduction strategy to reduce the health risks from diesel air pollution consistent with the reduction targets in the Climate Change Action Plan of 2005. The Act identified the following sectors for evaluation:

- Transit buses: reduce diesel particulate matter from transit buses by not less than 85% by December 31, 2010;
- School buses: maximize diesel particulate matter emission reductions from school buses and prevent diesel particulate matter engine emissions from entering the passenger cabin of the buses by December 31, 2010;
- Construction equipment: maximize particulate matter emissions reductions from construction equipment servicing state construction projects valued at \$5 million by July 1, 2006.



For each sector named in the Act, the Department developed a strategy that would meet the requirements on the specified schedule. Those options are listed in the table on the following page.

⁴ Mobile Source Air Toxics Rule, 66 FR 17230, March 29, 2001.

Strategies that Meet the Diesel Particulate Matter Reductions of Special Act 05-07

Diesel Reduction Strategies	Sector	Benefits/Costs
<p>Retrofit all 487 transit buses, model years (MY) 1998 through 2006 with diesel particulate filters by 2010.</p> <p>Replace all 171 of the 1997 MY and older buses with vehicles compliant with the 2007 or 2010 federal standards.</p>	Transit	<p>Benefits: Decreases emissions of PM by 2.88 tpy and the resultant exposure nine years sooner than normal turnover.</p> <p>Costs: It would cost approximately \$4.5 million to retrofit all '98 MY and later transit buses; the '97 and older buses would be replaced at 12-year turnover within normal capital budgets.</p>
<p><i>Mandate retrofit and replacement of the existing school bus fleet by 2010.</i></p> <p>1,200 older Type I diesel school buses would be replaced with 2007-compliant buses under current fleet turnover schedules, and 372 Type I buses are currently being retrofitted; this leaves about 3,400 buses to be retrofitted.</p> <p><i>Focus on retrofits of older buses; selecting emission reduction technologies⁵ that will maximize the reduction of diesel particulate exhaust emissions.</i></p>	School Bus	<p>Benefits: This maximizes reductions of PM_{2.5} from the school bus fleet on the most aggressive schedule.</p> <p>Costs: <i>Concerns have been raised on the viability of this option since 139 school district fleets are subject to existing contract provisions that may preclude contract renegotiation.</i> Costs are estimated at \$6.5 million⁶ if the strategy could be implemented.</p>
<p>Call on DOT, DPW, OPM, DECD, and UCONN⁷ to adopt Clean Air Construction Contract Specifications for state construction contracts greater than \$5 million.</p> <p>The existing DOT contract specification on the I-95 Harbor Crossing Project in New Haven can serve as a model with contract allowances for equipment retrofits.</p> <p>State construction projects employ 15% of the Connecticut equipment inventory, or about 1,617 engines.</p>	Construction	<p>Benefits: Reduces emissions from construction equipment at large sites, especially in urban areas, and helps to build a fleet of cleaner construction vehicles for use throughout the state.</p> <p>Costs: Costs for full implementation are estimated at \$10.5 million for diesel oxidation catalyst technology.</p>

Additional options were identified through the stakeholder process and included in the report to present a comprehensive menu of options and a holistic approach to reducing diesel emissions in Connecticut. While the Act focused on reductions of fine particulate matter (PM_{2.5}), a criteria pollutant, reductions achieve a co-benefit since diesel emissions

⁵In accordance with EPA's verified technologies table, emission reduction technologies can include alternative fuels. See <http://www.epa.gov/otaq/retrofit/retroverifiedlist.htm>

⁶ For purposes of estimating cost, DEP's calculation is based upon installation of diesel oxidation catalysts (DOCs) and crankcase controls.

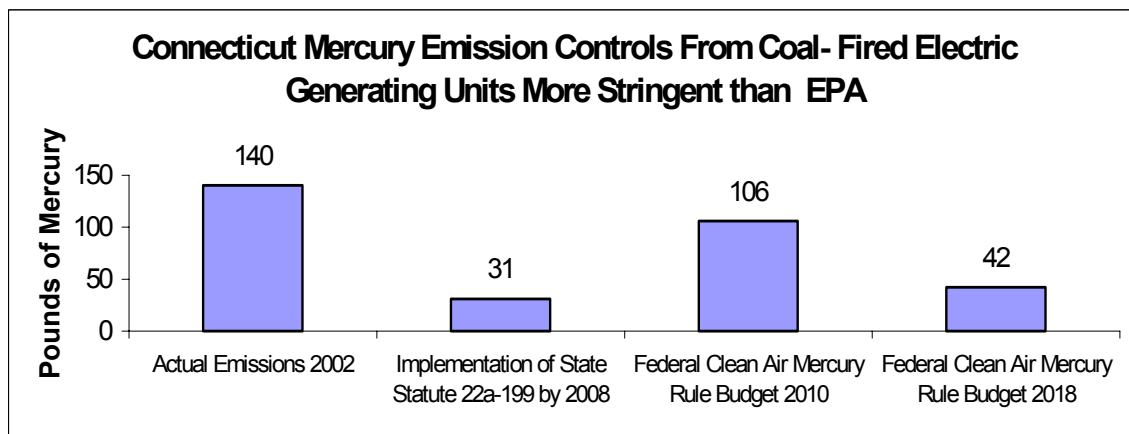
⁷ Department of Transportation, Department of Public Works, Office of Policy and Management, Department of Economic and Community Development and the University of Connecticut.

also contain carbon dioxide (a greenhouse gas), nitrogen oxides (NO_x), which are ozone precursors, and a number of toxic air pollutants. A broader perspective of strategies will help to address components of diesel pollution in addition to particulate matter. Other significant sources of particle pollution, such as idling, heating oil and wood burning, that represent high value/low cost environmental opportunities, were also highlighted.

Connecticut Implements Stringent Mercury Controls for Emissions from Coal-Fired Electric Generating Units

The success of controls to reduce mercury emissions is illustrated by state and federal efforts focused on coal-fired electric generating units (“EGUs”). In 2003, the General Assembly adopted C.G.S. section 22a-199, which required the state's coal-fired EGUs to reduce mercury emissions by 90% or meet a 0.6 lb/TBtu emissions rate by 2008. In 2005, EPA established requirements to limit mercury emissions from coal-fired EGUs. See 70 FR 28606 (May 2005). EPA's rules require each state to meet a mercury budget in two phases. The first phase begins in 2010 and the second phase reduces to a lower level for 2018 and beyond. Each state must ensure that mercury emissions from its coal-fired EGUs remain below the state mercury budget.

Due in part to the General Assembly's actions in 2003, the Department anticipates that by 2008, the mercury emission reductions from the state's three coal-fired EGUs will be ahead of EPA's 2018 Connecticut budget⁸. In response to the adoption of C.G.S. section 22a-199, the state's coal-fired EGUs are already in the process of installing and operating equipment to control mercury emissions and are well on their way to meeting and exceeding the requirements set by EPA in 2005.



⁸ 31 Pounds is based on achieving a mercury emissions rate of 0.6 lb/TBtu under CGS 22a-199 by 2008.

Use of Mercury Amalgams by Dental Practitioners

On April 14, 2005, the Commissioner issued a “Notice of Proceeding for the Issuance of a Declaratory Ruling” regarding the applicability of the Mercury Reduction and Education Act (“Act”) to the use of mercury amalgam by dental practitioners. The Commissioner ruled, on September 8, 2005, that the Act permits dentists to use mercury amalgam for tooth restorations in their practices.

However, the Commissioner also acknowledged concerns over the presence of mercury in the environment and the need for greater public awareness that amalgam fillings contain mercury. To this end, the Commissioner directed the Department to take certain actions which includes:

- Ensuring that dental offices install and properly maintain and operate amalgam separators to capture excess amalgam and the mercury it contains, and
- Amend the department’s “Best Management Practices” (BMPs) by requiring dentists to display printed materials thereby providing patients with information about amalgam fillings and possible amalgam alternatives.

The Department revised the dental BMPs as well as developed a brochure on alternatives to the use of mercury amalgam for tooth restorations. This revised information has been mailed to practicing, licensed Connecticut dentists.

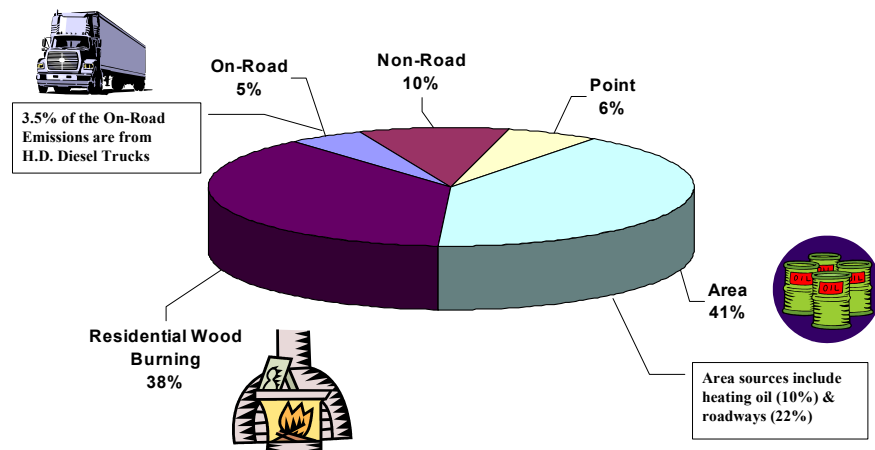
Control of Toxic Emissions from Wood Burning

Wood burning, which can produce high concentrations of particulate matter (“PM_{2.5}”) and toxic air pollutants, raises public health concerns similar to those from diesel particulate matter. As fuel prices rise, more people are burning wood as a primary fuel source. This is particularly troubling considering the localized environmental effects from the emissions from these largely uncontrolled sources. Colder temperatures are associated with both poor dispersion conditions and increased heating demands; local topographical features can enhance the formation of inversions, especially in valley locations. PM_{2.5} and other pollutants are not only increased by wood burning in cold weather but also concentrated as localized emissions are trapped close to the ground.

According to MANE-VU’s⁹ 2002 inventory, the residential wood-burning sector is responsible for 38% or 8,062 tons per year of the PM_{2.5} emissions in Connecticut. Wood burning includes emissions from fireplaces, wood stoves and outdoor wood-burning furnaces (“OWBFs”). All can emit high concentrations of PM_{2.5} and toxic air pollutants in the immediate vicinity and contribute to Connecticut’s regional air quality concerns. OWBFs emit as much as 7 times more particulate matter than the wood stoves that were banned by EPA in 1992. The hourly particulate emissions from a OWBF are up to 12 times higher than those from an EPA-certified wood stove and nearly 20 times higher than those of an idling tractor-trailer.

⁹ The Mid-Atlantic/Northeast Visibility Union (MANE-VU) was formed by the Mid-Atlantic and Northeastern states, tribes, and federal agencies in 2001 to coordinate regional haze planning activities for the region. MANE-VU provides technical assessments and assistance to its members.

Connecticut Emission Inventory PM 2.5 - 21,063 Tons/Year



In 2005, the General Assembly took an initial step forward and passed Public Act 05-227 to address some of the environmental and public health concerns associated with OWBFs. The requirements apply to OWBFs installed after July 11, 2005 and include property setbacks, stack height standards and the use of wood that has not been chemically treated. Over the past year, the number of complaints concerning the installation and operation of OWBFs subject to the statute has increased. The successful resolution of these complaints will help to provide health protection to residents in the neighborhood of the installations and improve air quality in the state; however the tools available to address the high levels of pollution from OWBFs are limited and need further enhancement.

Efforts to Remove Toxic Packaging From Store Shelves

In May 2005, The Department issued a Notice of Violation to a company for having an unacceptable level of lead in its packaging for a dietary supplement commonly found on retail drug and general merchandise store shelves. A blinking red light on the package powered by a battery was attached to a printed circuit board with lead solder.

When notified of the violation, the company immediately halted further use and distribution of the packaging and worked with its distributors and retail customers to replace the non-compliant packaging on retail shelves. Notices of Violation were also issued to individual stores that continued selling the non-compliant packages after they had been recalled.

Connecticut is among 19 states that have toxics in packaging legislation that prohibits the intentional introduction of mercury, cadmium, lead and hexavalent chromium in packaging. The legislation was the result of a multi-state effort to limit the amount of toxic heavy metals entering the solid waste stream. The toxics in packaging laws, most

of which were introduced in the early 1990s, have been instrumental in changing industry practices and removing these persistent bioaccumulative toxins from packaging, and ultimately from entering the environment and adversely impacting public health.

Some examples of changes in the packaging industry include the removal from the market of wine bottle foil wrappers-formerly made with lead, discontinued use of mercury in button cell batteries designed for promotional purposes in soda bottles, the switch to printing inks free of toxic heavy metals and the elimination of lead solder side seams in steel cans destined for non-food applications.

Reducing Emissions from Portable Fuel Containers

Beginning in May of 2005, all gas cans sold in Connecticut were required to meet “no-spill” standards and to be compliant with other standards developed by the California Air Resources Board. Individual portable fuel containers (“PFCs”) may not appear to make great contributions to air pollution, but with an estimated 1.8 million residential PFCs in Connecticut, the total emissions from such containers can be reduced by as much as 15 tons per day. Fuel vapors from PFCs are classified as VOCs, which contribute to the formation of ozone. Ozone damages lung tissue, reduces lung function and sensitizes the lungs to other irritants such as fine particulates. Gasoline vapors also contain numerous toxic air pollutants such as benzene, toluene, ethylbenzene, naphthalene, cumene and all three isomers of xylene.

Revisions to the PFC regulations will be pursued in 2006 to include improvements in the design of the spill-proof spout and to follow California in further restricting the sale of non-compliant containers for use with gasoline and in extending emission control requirements to kerosene containers.

Watershed Management

Goal: To protect and restore the state's surface waters and groundwaters, and water-related resources and habitats; protect the public water supply and human health and safety; and preserve and enhance water-based recreation, propagation of fish and aquatic life.

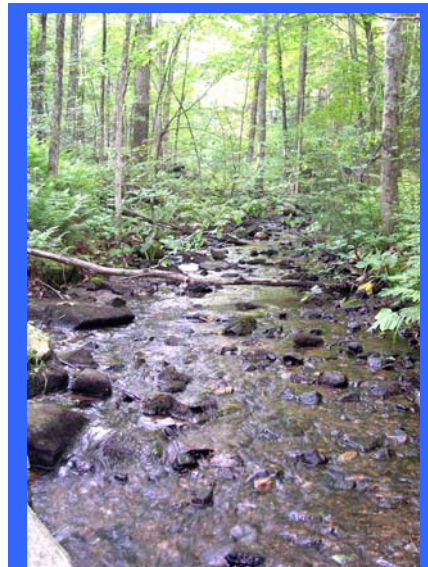
Restoration Efforts on the Shepaug River

This past year, a tentative settlement ending a decade-long dispute over reservoir releases into the Shepaug River was reached. The tentative agreement commits the city of Waterbury to release significant volumes of water during the summer into the Shepaug River from the city's extensive reservoir system in the town of Washington. The releases seek to restore as much of the Shepaug's natural flow as possible, thereby improving river health, aesthetics and recreational opportunities.

The settlement strikes a healthy balance between natural resource protection and the use of the state's water resources. The manner in which the settlement balances competing uses of the state's water resources provide an outcome that assures that the residents of this area will have a reliable source of drinking water, live in a healthy environment, and experience the natural beauty of this waterway.

The settlement is contingent upon approval by the legislative bodies of Waterbury, Washington and Roxbury, approval of funding for reservoir improvements by June 30, 2006 and approval of all necessary state and local permits by June 30, 2008. Under the tentative agreement, Waterbury will release 12 million gallons of water a day (MGD) into the river from June 1 until September 30, a figure that drops to 6 MGD if reservoir levels drop below a specified level. From November to April, 1.5 MGD will be released and, in October and May, 6 MGD. Releases would cease during water emergencies.

Historically, in 1921, Waterbury and Washington agreed on the amounts of water to be diverted from the Shepaug River and the conditions governing the diversions. Waterbury subsequently built six dams in Washington and a system piping water to the city. Concerned that the level of water in the river was especially low during the summer months, in 1995, the Shepaug River Association, Inc., the Steep Rock Association and the Roxbury Land Trust began requesting that Waterbury release more water into the river. Waterbury and the towns of Washington and Roxbury went to court in 1997 over the issue. Since 1999 Attorney General, Richard Blumenthal and the Department have sought to mediate a resolution between the parties. The framework proposed by the Shepaug River settlement is relevant to water allocation issues statewide. It underscores the need for the state to continually evaluate and maintain an appropriate



Mattatuck State Forest

balance between providing a reliable source of clean drinking water and protecting the state's natural resources.

State Supreme Court Decision Upholds Protection of Wetlands Along Connecticut River

In 2005 the Department participated in a significant inland wetlands litigation case that was ultimately decided in favor of the town of East Haddam and the Department by the state Supreme Court. The case involved the clear cutting of 340 trees on 2.5 acres of floodplain forest inland wetlands in East Haddam along the Connecticut River. Goodspeed Airport owner Timothy Mellon cut at ground level trees of all sizes, shrubs, and brush on the airport property even though Federal Aviation Association guidelines did not require that extent of cutting. The cut area formed the northerly portion of the Chapman Pond Wildlife Refuge which is the home to the largest wintering ground for American Bald Eagles in the eastern U.S. Mr. Mellon did not own the property where the trees were cut; the owners are the East Haddam Land Trust and The Nature Conservancy.

The clear cutting was done without an inland wetlands and watercourses permit from the East Haddam Inland Wetlands and Watercourses Commission ("Commission") and therefore the Commission took action pursuant to the Inland Wetlands and Watercourses Act, sections 22a-36 through 22a-45 of the Connecticut General Statutes. The East Haddam Land Trust and the Nature Conservancy were additional defendants in the case. The Department filed a complaint pursuant to section 22a-16 of the Connecticut Environmental Protection Act.

The state Supreme Court decision found that the clear cutting of trees from a wetland was a regulated activity that required a permit from the Commission. While the Department and municipal inland wetlands agencies have historically considered the clear cutting of trees to be a regulated activity, it is precedent setting for the state Supreme Court to affirm that interpretation. The court held Mr. Mellon liable for a total of \$17,500 in civil penalties and a \$50,000 contribution for restoration of the affected property. Part of the \$50,000 will be used to fund a study administered by the Department to ensure successful restoration.

Restoration of Fishes to the Shetucket River

The restoration of diadromous (migratory) fishes to the Shetucket River watershed has been a high priority of the Department for many years. Targeted species include American shad, gizzard shad, alewife, blueback herring, sea-run trout, sea lamprey, and American eel. The establishment in 2005 of the Taftville and Occum fishways opens up 9 miles of the mainstem Shetucket River to fish migration as well as an additional 5.5 miles of habitat in tributaries to the Shetucket greatly benefiting these species.

The first fishway on the river was built by the City of Norwich at its Greenville Dam (the first dam on the river) in 1996. It has allowed the passage of fish upstream each spring since that time. Fish were next stopped by the dam at Taftville (also in Norwich). That dam is used to generate hydroelectricity. The owner of the Taftville Dam, Northeast

Generation Company (“NGS”) and the Department signed a Memorandum of Agreement in August of 2000 that committed NGS to build a fish passage at the Taftville Dam. NGS worked with the Department and the U.S. Fish & Wildlife Service (“USFWS”) to determine the best design for such a facility.

The Taftville Dam fishway was opened in April 2005. The fishway allows fish that are attracted to the water issuing out from the base of the hydroelectric powerhouse to swim up an artificial passageway and reach the river upstream of the dam. This Denil style fishway with two resting pools, a viewing window, and a ‘counting house’ where staff and video equipment may count and record passing fish. The Taftville Dam Fishway allows fish to swim an additional two miles upstream before reaching the Occum Dam.

The Occum Dam is used by the City of Norwich to generate hydroelectricity and was licensed by the Federal Energy Regulatory Commission (“FERC”) in 1999. Based on input from the Department and the USFWS, FERC required the City to provide fish passage at the dam as soon as fish passage was provided at the Taftville Dam. An agreement between the City and the Department accelerated the schedule for the construction and it was constructed during late 2004 and early 2005, at the same time the Taftville Fishway was built.

The Occum Fishway which is also a Denil style fishway opened in May of 2005. The operation of the Occum Dam Fishway allows fish to swim an additional seven miles upstream before reaching the Scotland Dam. The Scotland Dam is expected to have fish passage provided within the next 10 years.

These two new fishways at the Taftville and Occum Dams represent tremendous progress towards attaining the goal of restoring migratory fish runs as far upstream as Willimantic and increasing the number of fish in the Shetucket River and Long Island Sound.

Effective Stormwater Management in Residential Development Shown to Greatly Improve Water Quality

The Jordan Cove Urban Watershed National Monitoring Project has generated national interest among water quality management professionals who have waited since 1995, to see if "best management practices" or "BMPs" that were used at the 18-acre Glen Brook Green subdivision significantly reduced the amount of pollution coming from the development through its stormwater discharges.

The one-of-a-kind project involved building two distinct neighborhoods – one with traditional design features built on conventional half-acre lots, the second with clustered housing and numerous BMPs installed to reduce stormwater pollution. Researchers then monitored runoff from the two neighborhoods to compare pollution levels.

Ten years after pre-construction monitoring began at the experimental subdivision and nearby "control" neighborhood and three years after completion of construction at the "green" neighborhood, the results are in. The data prove conclusively that reducing the amount of impervious surfaces such as road and driveway surfaces, and infiltrating the remaining runoff, significantly reduces the amount of polluted stormwater entering local streams and other waterways. In fact, monitoring of rain events after installing the BMPs indicate that the amount of stormwater runoff generated by the green neighborhood is similar to that generated by an undeveloped, forested parcel of land.

The study also examined relative costs of the two different development styles and found economic benefits associated with the "green" development over the "control" neighborhood. The BMP neighborhood designed with less pavement, grass-lined ditches, and infiltration practices was significantly less expensive to construct than the traditional wide roads, curbs and storm drain systems found in the control neighborhood.

The project was funded with \$980,000 in federal grants from the Environmental Protection Agency and was administered in coordination with the Connecticut Department of Environmental Protection. Monitoring and Research for the project was conducted by Professor John Clausen of the College of Agriculture and Natural Resources at the University of Connecticut. The project is one of 25 nationwide approved under EPA's Clean Water Act National Monitoring Program.

"The Jordan Cove monitoring project is a real life example of neighborhood-level environmental stewardship where innovative land use practices have been applied to reduce pollution and improve the quality of life of the residents who live in this urban subdivision," said Commissioner Gina McCarthy. "Not only will the residents of this subdivision benefit from this national project, the ideas and practices utilized at Jordan Cove can be applied across Connecticut and the country to improve water quality, becoming the standard for the design and construction of residential neighborhoods nationwide."

Polluted runoff accounts for over fifty percent of the nation's remaining water quality problems. Runoff from both urban and agricultural land carries with it bacteria and pathogens that cause beach and shellfish bed closures, excess nutrients that cause eutrophication of streams, lakes, and estuaries – including Long Island Sound, and sediment that damage fish habitat and require more frequent dredging of our coastal ports and harbors.

Materials Management

Goal: Minimize impacts to public health and the environment by promoting proper storage, handling and usage of materials and the minimization of waste disposal by the promotion of recycling and beneficial use of waste products.

The proper management of wastes, chemicals and other materials is critical to the protection of our environment, health and safety. The Department has several programs that are dedicated to assuring proper management and control of materials including petroleum products, industrial chemicals, radioactive materials, pesticides, PCBs, and solid and hazardous wastes. Collectively, these programs protect environmental quality and public health and welfare by promoting waste minimization, recycling, beneficial use of solid wastes, and spill prevention and control practices. In addition, increasing attention is being paid to the environmental impacts of our individual choices-the materials and products we consume, the waste we generate and dispose of, the energy we use, the buildings we construct and the transportation choices we make.

Planning for Solid Waste Management

In May 2005, the Department began the task of updating the State's Solid Waste Management Plan ("SWMP"). The Department will look for opportunities to reduce the amount of waste generated in the state and increase the amount of recycling and reuse in an environmentally protective manner.

To ensure that perceptions from a wide variety of stakeholders are included in the development of the SWMP, the Department created several opportunities for stakeholder input. These opportunities for the public to participate in the process include a stakeholder forum, working groups, a series of telephone, personal and on-site interviews with individuals involved in solid waste management in the State of Connecticut, public hearings and a website that provides meeting notices, agendas, handouts, documents, meeting minutes and comments from the stakeholders.

A statewide stakeholder forum was held in June 2005. Approximately 200 representatives from businesses, non-profit organizations, institutions and the public shared their vision and opinions about solid waste issues such as reducing municipal solid waste, disposal of electronics and recycling.

An external stakeholders working group was established to review and comment on the preliminary draft of the SWMP.

Promoting Beneficial Use of Scrap Tires

To promote the beneficial use of scrap tires, the Department issued two new general permits in 2005. The first general permit allows for the storage of both unprocessed and processed scrap tires and the mechanical processing of scrap tires for beneficial use applications. The second general permit allows for the storage, distribution and beneficial use of two inch nominal tire chip aggregate as an approved aggregate in leaching systems in subsurface sewage disposal systems.

The preliminary draft contains eight objectives and related strategies for meeting those objectives. The objectives include: (1) source reduction; (2) municipal solid waste recycling and composting; (3) disposal capacity; (4) other wastes to be managed; (5) education and outreach; (6) program planning, evaluation and management; (7) permitting and enforcement; and (8) funding.

The Department is evaluating the comments received and is currently drafting the plan. The plan will be subject to public meetings and hearings in 2006 with an anticipated adoption date in the fall of 2006. For more information go to www.dep.state.ct.us/wst/solidw/swplan/index.htm.

Increasing Inspection Presence and Measuring Compliance

In last year's annual report, the Department reported on an innovative inspection initiative designed to increase the Department's inspection presence at Small Quantity Generators of hazardous waste ("SQGs") and facilities with underground storage tank systems ("USTs") that failed to meet the 1998 federal deadline for removal or upgrade of non-compliant tank systems. During the summers of 2004 and 2005, Department staff conducted on-site compliance indicator surveys at a total of 1,173 SQGs and 2,168 UST facilities that included 10,562 USTs. The compliance indicator surveys were designed to cover limited regulatory requirements that are indicators of overall compliance.

LQG-generates more than 1,000kg of hazardous waste per month or accumulates more than 1,000 kg of hazardous waste on-site at any time

SQG-generates between 100 and 1,000 kg of hazardous waste per month and accumulates no more than 1,000 kg on-site at any time

CESQG-generates less than 100 kg of hazardous waste per month and accumulates no more than 1,000 kg on-site at any time

This year's report highlights the Department's findings. The data collected has provided valuable information on rates of compliance by identifying areas where the Department can more effectively focus inspection and assistance resources to promote compliance as the path of least resistance. In addition, the Department conducted full inspections at those sites that had problems identified and will conduct follow-up enforcement as necessary.

With regard to compliance at SQGs, the site surveys consisted of 10 questions designed to assess limited areas of compliance considered indicators of overall compliance. The average overall compliance rate for all 10 survey questions was 75% in 2004 and 81% for 2005. The graph on the next page depicts the average compliance rate for active facilities for specific regulatory requirements.

The compliance rates shown correspond to the following survey questions:

Training-Are employees trained to the level of their responsibility?

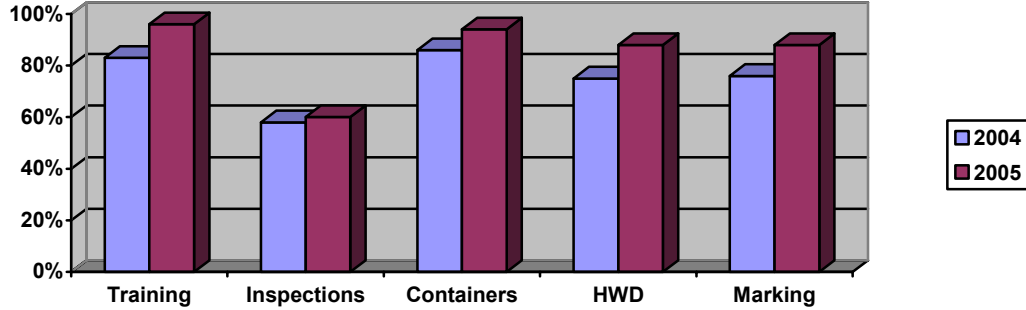
Inspections-Are inspections of hazardous waste storage area(s) being conducted and documented?

Containers-Is the hazardous waste being stored in containers that are closed and free of significant damage and deterioration?

HWD-Have hazardous waste determinations been performed on all waste streams?

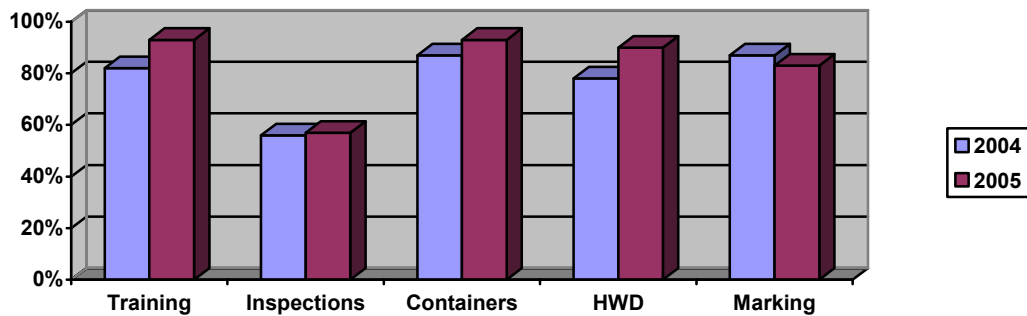
Marking-Are used oil containers and tanks properly marked?

COMPLIANCE RATE AMONG ALL ACTIVE FACILITIES



The Department was encouraged by the finding that those facilities actually operating as SQGs had compliance rates for each survey question greater than 50% and as high as 93%.

COMPLIANCE RATE AMONG ACTIVE SQGS



The sites selected were assumed to be operating as SQGs based on their notification to EPA. Out of the 1,173 sites surveyed, only 869 were active. Out of the 869 active sites, 293 were actually operating as SQGs, 13 were operating as large quantity generators and 563 were operating as conditionally exempt small quantity generators. The amount of hazardous waste generated by a site is an indication of their operating status. Sites that generate more waste are subject to additional regulatory requirements. For both 2004 and 2005, there was a high percentage of active sites, 62% and 72% respectively, that provided the incorrect operating status. The data gathered from the on-site surveys provides valuable information as to the applicable regulatory requirements for the sites surveyed. This data also aided in improving the accuracy of the Department’s database of active SQGs.

Managing Renovation and Demolition Wastes

The Department, along with several other state and federal agencies, non-profit organizations, and private-sector professionals, has put together guidance that summarizes the various environmental, health, and safety requirements that apply to renovation and demolition. The guidance briefly describes each requirement, provides contacts for the agencies involved with each requirement, and lists web site addresses where you may get additional information. The name of the guidance is “Renovation and

Demolition: Environmental, Health, and Safety Requirements You Should Know About,” and copies are available by calling the toll-free hazardous waste compliance assistance line (1-888-424-4193).

Requirements described in the guidance include those relating to asbestos, lead-based paint, fugitive dust and air emissions, wastewaters, sandblasting and power-washing, worker safety, construction and demolition waste, treated wood, land-clearing debris, chemical products, mercury, PCBs, used electronics and batteries, contaminated equipment, structures, and soil, air conditioning equipment and Freon[®], underground storage tanks, site cleanup, spills, and drinking water supplies.

The Department has also developed a companion to the above guidance called the “Red Flag List.” The Red Flag List was specifically designed for local officials who may be out at renovation and demolition sites. It lists several significant violations of environmental, health, and safety requirements that local officials may observe in the field, and indicates the state or federal agencies to which they should report these violations.

The Department has distributed the guidance and the Red Flag List to the local building officials in all 169 Connecticut towns, approximately 400 environmental consultants that serve Connecticut, 324 Licensed Environmental Professionals and over 270 attorneys in the state. In addition, Department staff presented the guidance at six training conference sessions for local health officials involved in lead abatement activities.



Conservation and Development Planning and Management

Goal: To achieve a future for Connecticut that:

- ❑ Conserves and restores the natural environment and traditional rural and urban landscape.
- ❑ Restores and revitalizes the urban environment.
- ❑ Guides future growth in an efficient, cost effective, and sustainable manner fostering diverse, cohesive, walkable communities that respect and preserve their open lands and natural resources.
- ❑ Preserves Connecticut's rich fabric of cultural and historic resources.
- ❑ Promotes and maintains a vibrant and sustainable economy.
- ❑ Affords a high quality of life for all residents.

Two of the four thematic focal points identified under Commissioner McCarthy's environmental agenda for Connecticut come together under the goals outlined here. The "I have seen the Enemy and It is I" initiative, an effort to bring attention to the environmental impacts associated with non-traditional sources of pollution; and the "Landscape Stewardship" initiative, an effort to coordinate and focus the Department's programs that influence land development both contribute to much of the conservation and development planning and management being undertaken by the Department. Through these comprehensive initiatives, the Department will be able to better offer assistance to municipalities, land trusts, and others making land use decisions and will be working on a range of topics including recycling, climate change, mobile sources, and consumerism, to further resource protection efforts.

Progress on the *Connecticut Climate Change Action Plan 2005*

Our consumer habits and lifestyles rely heavily on energy derived from fossil fuel, which contributes to climate change as evidenced by increases in global atmospheric temperatures. The Department is working with all sectors to broaden understanding of the impacts of global climate change and the simple actions we can take to reduce greenhouse gas emissions.

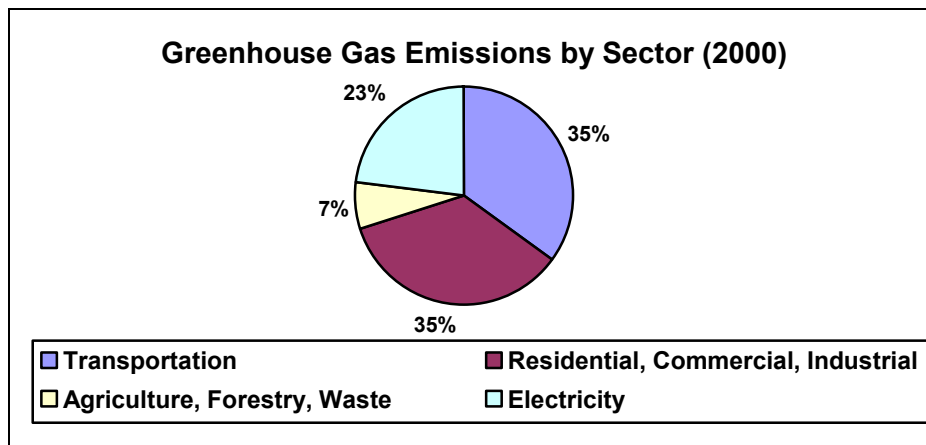
The State of Connecticut has made major strides in implementing many of the recommendations in the *Connecticut Climate Change Action Plan 2005*. The plan recommends 55 actions to reduce greenhouse gas emissions in the state. The target is to reduce emissions to 1990 levels by 2010 and to 10% below 1990 levels by 2020. The actions Connecticut has taken during 2005 to reduce greenhouse gas emissions include the following:

- Connecticut, in collaboration with six other states, agreed to the first greenhouse gas cap-and-trade program in the U.S. The program will stabilize and then reduce by 10 percent carbon dioxide emissions from the region's power plants.
- Committed \$1 billion for an ambitious mass transit program that will improve the quality and quantity of service for commuters.

- Electric consumers were offered the option to buy clean, renewable energy. More than 6,000 customers, 16 cities and towns, and one state agency--the Department of Environmental Protection--have already signed on to obtain electric power from renewable energy sources.
- Passed the Energy Independence Act, putting the state at the forefront of developing many new energy strategies, including more energy efficient on-site electricity generation (combined heat and power).
- Created a permanent fund to conserve farmland and support the purchase of Connecticut grown food.
- Adopted regulations to cut carbon dioxide emissions from cars and light trucks by 30 percent, becoming one of only 10 states to do so.
- Convened the first-ever summit on climate change for the insurance industry in the U.S. Seven of the top 10 insurers were represented at this event, which highlighted both the risks of global warming and the business opportunities.
- Purchased 575 alternative fuel and hybrid vehicles as part of its fleet replacement program.

The DEP is purchasing 100% clean energy for all DEP facilities. The energy comes from wind, landfill gases and small hydroelectric plants. Emissions of carbon dioxide will be reduced by 3.716 tons a year.

The graph below shows the level of greenhouse gas emissions in Connecticut by sector.



Landscape Stewardship Initiative

The pattern of sprawling development that is present in Connecticut is one of the most significant environmental challenges we face. It threatens to fragment the landscape, consume our precious natural resources, waste energy, pollute air and water, overwhelm our local and state infrastructure (sewer, water, energy and transportation) and change forever the character of our communities. The Landscape Stewardship Initiative was established to address this complex issue. This initiative will entail a multi-faceted approach with both internal and external foci. The objective is to promote the conservation and restoration of the natural environment and traditional rural landscapes while simultaneously advocating for the restoration and revitalization of Connecticut's

urban environments and the protection and enhancement of our rich fabric of cultural and historical resources. The ultimate goal is a vibrant and sustainable economy affording a high quality of life for all residents. Coincident with the establishment of this initiative, several plans the Department finalized in 2005 will prove valuable in achieving its lofty goals.

Federal approval of the *Comprehensive Wildlife Conservation Strategy*

The Department received federal approval of a new state *Comprehensive Wildlife Conservation Strategy* (“CWCS”) aimed at reversing the decline of wildlife populations and the loss of key habitats in Connecticut. The CWCS creates a roadmap that will guide the state’s approach to protecting wildlife species and habitats for the next decade. With approval of the strategy, the state remains eligible to receive continued federal funding for wildlife management and conservation projects.

The strategy identifies 475 species of "Greatest Conservation Need," including 27 mammals, 148 birds, 30 reptiles and amphibians, 74 fish, and 196 invertebrates, based on the best available scientific information. In addition, 12 key habitats and 43 sub-habitats related to the species of greatest conservation need were identified as priorities for conservation. These habitats include several types of forest, wetlands, and other unique communities, such as sparsely vegetated areas, caves, and coastal beaches. These wildlife species and habitats will be the focus of conservation efforts guided by the strategy.

Energy Conservation and Efficiency

An Energy Star Label was presented to the State of Connecticut in recognition of the superior energy efficiency at the Department of Environmental Protection headquarters building located at 79 Elm Street in Hartford. The Energy Star Program uses the National Energy Performance Rating Scale to assess energy performance of buildings. Buildings scoring 75 or higher are eligible for the Energy Star Label. The DEP building scored 90 out of 100.

Compared to the average office building, the DEP building uses one third less energy. This translates into avoiding more than 2 million pounds of carbon dioxide emissions per year—the equivalent of taking more than 240 cars off the road or cutting energy consumption by more than 2600 barrels of oil. It also saves taxpayers more than \$300,000 each year. The building, built about 75 years ago and renovated 10 years ago, shows how efficient technologies and good management can combine to help older buildings perform at a high level.

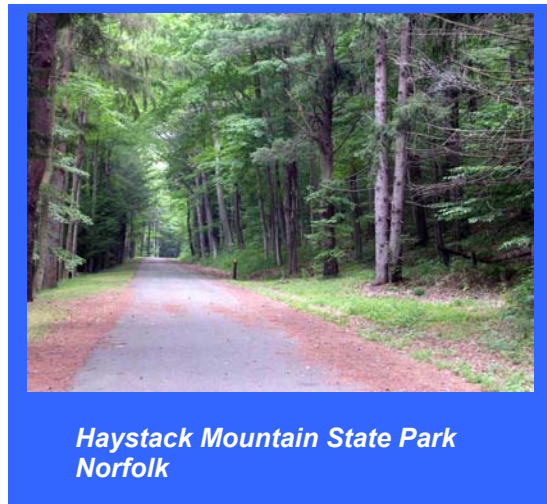


Implementation of the *Connecticut Statewide Forest Resource Plan*

The *Connecticut Statewide Forest Resource Plan* is designed to serve as an overview for planning future activities within the forest community of Connecticut. The plan identifies issues as perceived by various stakeholders regarding the State's forestlands, and provides the basis for putting limited available state and federal funds, as well as participating groups and individuals time, to the best and most urgent uses through a series of action steps. The Connecticut Statewide Forest Resource Plan's action steps can be incorporated into stakeholder's programs and goals where appropriate.

Completion of the State Comprehensive Outdoor Recreation Plan

The preparation of a *State Comprehensive Outdoor Recreation Plan* ("SCORP") is a requirement of the National Park Service ("NPS") in order to be eligible to receive federal Land and Water Conservation Act funding. Connecticut's 2005-2010 SCORP was approved by NPS in September 2005. Prepared in partnership with UConn, the SCORP assessed the supply of all state, municipal and private recreational properties and facilities, and measured public demand for recreation using three surveys of 10,000 households, of municipal officials and of avid recreationists.



Additional access to water-based recreation, additional trails, and improved maintenance of state and local parks are the greatest public needs to be addressed during the five year term of the 2005- 2010 SCORP. The SCORP also identified a critical public need for more information about the availability and location of recreational facilities and programs.

Emergency Response

Goal: To minimize the impact on the environment, and public health and safety that may result from natural and manmade disasters.

Flooding, fire, hurricanes and a range of other natural conditions present threats to public health and the environment for which emergency response capacity is needed. More common are manmade emergency response conditions. The Department has staff available to respond to emergency incidents on a continuous twenty-four hour, seven days a week basis.

Response to Fall Flooding Conditions

During the week of October 8-15, 2005, Connecticut was struck by two very heavy rainfall events. Combined, the rainfall from these two events totaled 9-16 inches across the state. This rainfall resulted in major flooding of several river basins in Hartford and Tolland counties. Widespread moderate flooding occurred across the rest of Connecticut.

A total of 10 dams failed or partially failed in Hartford and Tolland counties. Several bridges failed and several dozen roads were washed out or undermined. Thousands of homes suffered flooded basements and evacuations were conducted in dozens of towns due to severe flooding of urban areas and small streams. Rainfall totals during the first part of this storm ranged from 4 inches in southeastern Connecticut, up to 12 inches in the northwest hills. This extremely heavy rain combined with the total soil saturation resulted in a 100-year flood event in north central and northeastern Connecticut.

The Department's response to the flooding event was a coordinated effort that included staff from the Inland Water Resources Division, Field Support, Parks Division, Dispatch, Stormwater, Wastewater Treatment, Spill Response, Radiation and Environmental Conservation Police Officers. Staff were available twenty-four hours a day for the entire flooding event inspecting dams, assisting municipalities and private dam owners and protecting the public.

Flooding from the first rainfall event was minor across most areas with flood frequencies of less than 5-years in most areas. Flooding was minor during the October 7-9 event due to very dry soil conditions and low river levels prior to the storm. However, this first event set the stage for the second event leaving saturated soils and river basins at $\frac{1}{2}$ to $\frac{3}{4}$ bank full conditions.

On Friday, December 16, 2005 President Bush declared Litchfield, New London, Tolland and Windham counties disaster areas as a result of the October flooding. Statewide flooding resulted in an estimated \$42 million in damage. More than 5,200 homes and 355 businesses were affected.

Assuring Proper Clean-up of PCB Release

The Department responded to a significant polychlorinated biphenyl (“PCB”) release in 2005. PCBs are a suspected human carcinogen and a known animal carcinogen. The manufacture of PCBs was banned at both the national and state level in 1976.

A commercial van traveling on Rt. 67 in Seymour was cutoff by another vehicle. The driver, in order to avoid a collision with the other vehicle, swerved and ended up impacting a utility pole. The impact was enough to bring the pole-top transformer crashing to the



sidewalk in front of where the van had come to a stop. The transformer oil spilled onto the van, pole, lawn, shrubs, sidewalk, curb, and road. It ran down the edge of the road along the curb for about 35 feet and entered a catch basin. The oil contained more than 1000 parts per million of PCBs.

The cleanup response included shutting down Route 67; roadway washing; sampling to confirm applicable cleanup levels for PCBs; cleaning and sampling of the catch basin; removal and proper disposal of the impacted lawn, shrubbery, sidewalk, and utility pole; and removal of an 18-inch wide, 35-foot long strip of roadway along the curb for PCB disposal. In addition, due to extensive PCB contamination of the various components of the van, decontamination was not possible, therefore, the cleanup contractor needed to shrink-wrap the van in plastic to prevent spilling and dripping of PCB oil from the van during transport. The vehicle had to be disposed of at an out-of-state landfill.



In order to complete the cleanup operation, more than 60 samples of the spill site were taken for PCB analysis and total restoration was required, including repaving of the road, installation of more than 30 feet of curbing and sidewalk, top soil and reseeded lawn areas, and replanting shrubbery. These efforts needed to be coordinated between the utility, their contractor, the State Department of Transportation (due to the impact to a state roadway), the Town of Seymour due to impacts to the public sidewalk, private property owners of the van and lawn area, and the Department. The total

costs of these efforts approached \$100,000 when all cleanup, analytical, disposal, and restoration costs are combined with the value of the loss of the van.

Managing Environmental Compliance

Goal: Maintain and further enhance environmental protection in Connecticut by using permitting, assistance and enforcement resources in an integrated manner to solve the environmental problems identified as priorities.

The goal identified for Managing Environmental Compliance supports Commissioner McCarthy's theme of "Making Doing the Right Thing" the "Path of Least Resistance". This theme includes a number of components designed to achieve regulatory compliance and focus on environmental outcomes. By expanding compliance assistance and outreach opportunities while maintaining a strong enforcement presence, the Department is able to achieve environmental improvements and promote compliance as a path of least resistance.

The Department continues to use a broad range of regulatory, permitting, assistance and enforcement tools to maximize protection of public health and the environment, maintain a strong, credible enforcement presence and minimize the potential impacts that regulated activities can have on the environment. Through its efforts in developing, implementing and maintaining regulatory standards, licensing requirements, and permit limits and guidelines, the Department manages activities such as air emissions, wastewater discharges, solid and hazardous waste disposal, pesticides use, stream encroachments, tidal wetland disturbances, dam alterations and water diversions in a manner and degree that is protective of the environment and of human health. Further, the Department employs a range of compliance tools, including data tracking and monitoring, facility and site inspection, compliance assistance and administrative enforcement, to verify and enhance the regulated community's understanding of and compliance with environmental requirements and, where needed, to compel compliance.

Enforcement of Significant Environmental Violations

Wal-Mart Required to Pay \$1.15 Million Penalty for Violations at 22 Stores

In September 2005, a stipulated judgment was granted against Wal-Mart Stores, Inc. to resolve environmental violations at 22 Wal-Mart and Sam's Club stores across Connecticut. The Department initiated the enforcement action after determining that Wal-Mart had been operating without wastewater discharge permits required for discharges generated from photographic processing and vehicle maintenance activities. The Department also learned that the company had failed to comply with stormwater management requirements at numerous stores and, in particular, maintained unauthorized discharges from several dumpsters and garden centers. Wal-Mart was also found to have illegally offered for sale at several of its stores a root-killing sewer additive containing a toxic pollutant. Collectively, Wal-Mart's violations threatened to expose the environment to sediments, fertilizers, oil and other pollutants. Much of this exposure originated from products stored outdoors and then carried by rain into nearby waterbodies.

The judgment requires Wal-Mart to pay a civil penalty of \$600,000 and \$550,000 as a Supplemental Environmental Project to fund stormwater management outreach for municipalities under the Small Municipal Separate Storm Sewer Systems (MS4) program

and for other environmentally beneficial projects. Wal-Mart is also required to correct its improper discharges, cease further sale of the banned sewer additive, develop and implement plans to correct stormwater management problems at various store locations, perform 7 biannual stormwater compliance audits to assure permit compliance and implementation of updated stormwater management plans, and hire an environmental consultant to address stormwater management issues at all Wal-Mart construction sites.

Department Action for Mercury Contamination Upheld by Connecticut Supreme Court

In September 2005, the Connecticut Supreme Court ordered Light Sources, Incorporated (“LSI”) and its affiliates LS Neon, Incorporated (“LS Neon”) and LCD Lighting, Incorporated (“LCD Lighting”) to pay a civil penalty of \$857,000 and clean up two sites in Milford and one in Orange, which were contaminated with mercury¹⁰. The Department initiated the enforcement case against the defendants in March 1998 in response to numerous violations of water pollution control and hazardous waste management laws at the three sites.

Since 1983, LSI and its affiliates have engaged in the manufacture of mercury containing lamps in Milford at 11 Cascade Road and 70 Cascade Road. In May 1997, the companies relocated some lamp manufacturing operations to a third site located at 37 Robinson Avenue in Orange. The lamp manufacturing process used by LSI and its affiliates has involved coating the insides of the light bulbs with phosphor and injecting the bulbs with mercury. A byproduct of the manufacturing process is the generation of off-spec mercury containing bulbs, which the companies began sending to a lamp recycling company for disposal in 1996. Prior to that date, however, the companies disposed of off-spec bulbs either as municipal solid waste or by crushing the bulbs on-site using glass compactors.

In 1998, following a reported release of mercury to a catch basin at the 70 Cascade Boulevard facility in Milford, the Department investigated all three company locations and found the sites and surrounding areas to be contaminated with mercury. In particular, mercury contamination was found in a tributary of Oyster River that receives stormwater discharges from the 37 Robinson Boulevard site in Orange. The Department also found mercury present in wetland and stream sediments surrounding the 70 Cascade Boulevard and 11 Cascade Boulevard sites, both of which are located within surface and groundwater areas designated as class A. Sediment collected from an unnamed stream near 70 Cascade Boulevard contained a mercury level over 3,500 times greater than sediment upgradient of the site. Further, concentrations of mercury bearing sludge nearly 10,000 times greater than background were found in septic systems at both Milford sites, threatening pollution of potable groundwater.

In addition to mercury contamination, LSI and its affiliates had other water pollution control and hazardous waste violations including failure to have a stormwater pollution prevention plan, failure to perform stormwater discharge monitoring, failure to perform

¹⁰ Mercury is a toxic metal that can build up in the body and damage the nervous system. Symptoms of short-term exposure can include headaches, lung damage, nausea, and increased heart rate and blood pressure. Long-term exposure can cause permanent damage to the brain, kidneys and developing fetus.

hazardous waste determinations, unpermitted treatment and disposal of hazardous waste, and improper management and disposal of hazardous waste.

In 1998, the Department referred these violations to the State Attorney General for civil action in Superior Court. Following a 1999 hearing, the trial court issued a temporary injunction against the defendants requiring remediation of mercury contamination on all three sites and ordering that all mercury discharges be ceased. In April 2003, the trial court issued a permanent injunction directing the defendants to remediate all contaminated soil and sediment, and to pay a \$1,059,902 civil penalty. Later in 2003, the trial court modified its decision in order to clarify requirements for mercury clean up and to adjust the civil penalty to \$904,000.

The defendants subsequently appealed the trial court's decision up to State Supreme Court. At issue before the Supreme Court was whether the trial court had acted properly in assessing certain penalties, imposing more stringent mercury clean up criteria in a modified judgment, and determining without direct evidence that the defendants violated water pollution control laws for certain periods. In its September 2005 decision, the State Supreme Court concluded that the trial court had acted properly in clarifying the criteria for mercury clean up, and in determining when the defendants had violated water pollution control laws. Further, the Supreme Court largely affirmed the trial court assessment of civil penalties, except that it agreed with the defendants that certain penalties assessed for violations at the 11 Cascade Boulevard site should be made consistent with those assessed for violations at the 70 Cascade Boulevard site. The State Supreme Court's decision effectively upheld the decision of the trial court, except that the total civil penalty assessment was adjusted to \$857,000.

Notwithstanding the defendants' appeal of the trial court's 2003 decision, LSI and LCD Lighting submitted a formal proposal to the Department in June 2003 to study the extent and degree of mercury and other contamination at the Milford and Orange sites. The proposed scope of study, including several modifications to the study submitted in 2004 and 2005, has been conditionally approved by the Department. Once the companies have performed the approved scope of study and have characterized the extent and degree of onsite contamination, alternative proposals for short and long-term remediation will be evaluated and implemented.

Settlement With Industrial Laundry Results in Discontinued Use of Toxic Detergent

In 2005, Cintas Corporation of Branford agreed to pay a \$450,000 to the state to settle several water pollution violations going back a decade. As part of the monetary fine, Cintas is spending \$93,500 to fund the company's switch from laundering chemicals containing alkylphenol ethoxylate (APE) to more environmentally safe chemicals. APE, which is already banned in Europe and also being phased out in Canada, is harmful to fish life.

In addition to monetary fines, Cintas has agreed to conduct spill control training to all employees and maintain a spill team member at the facility during all work hours. The company has also agreed to restrictions on its policy for transporting soiled textiles in the state to provide better protection for drivers.

This is the first time that a commercial laundry in Connecticut has agreed to use a detergent that does not contain APes. This product substitution will protect the quality of our water and the presence of fish and other important wildlife in Long Island Sound.

Environmental Improvements Using Supplemental Environmental Projects

Consistent with the policy on Supplemental Environmental Projects (“SEP”), the Department continues to negotiate case settlements that produce important benefits to the environment and public health and welfare that go above and beyond normal environmental requirements.

Recent SEPs that have received funding through Department enforcement actions include:

- Armoloy of CT, Inc. in Bristol has agreed to purchase and install an evaporation system for wastewater generated from its chrome plating operations. The proposed system will reduce water usage by an estimated 90% at a cost of at least \$18,200.
- Clean Venture, Inc. of Elizabeth, New Jersey, which operates a hazardous waste collection, transport & disposal business in CT, contributed \$10,000 to the ReCONNstruction Center in New Britain. The ReCONN Center is a not-for-profit business that promotes environmental and social sustainability by acquiring and salvaging useful building material for resale or reuse, thus removing the material from the solid waste stream.
- Advanced Adhesive Systems, Inc. in Newington has agreed to purchase and install a new solvent distillation system for solvent waste generated from its manufacturing process. The proposed system will reduce the company’s production of acetone waste by an estimated 80% and is expected to cost approximately \$14,900.
- The Connecticut Natural Gas Corporation in East Hartford has agreed to purchase and install carbon pretreatment units on vehicles that collect contaminated drip water from the gas utility system. The carbon units will remove problem pollutants, such as benzene, from the waste stream at a cost of at least \$9,275.
- Redland Brick, Incorporated in South Windsor has agreed to provide \$31,564 to the Town of South Windsor’s Open Space Acquisition and Improvement Fund. Money from the fund is used to acquire property within the Town for open space, hiking trails, wildlife viewing and other recreation.
- The Town of Putnam and the Putnam Water Pollution Control Authority have agreed to perform a leak detection survey of the Putnam water distribution system and repair any leaks and malfunctions identified at an estimated cost of \$50,000. This system-wide survey will examine pipe sections and access points, including fire hydrants, gate valves, curb valves and sillcocks, to identify and correct leaks and improve water conservation.

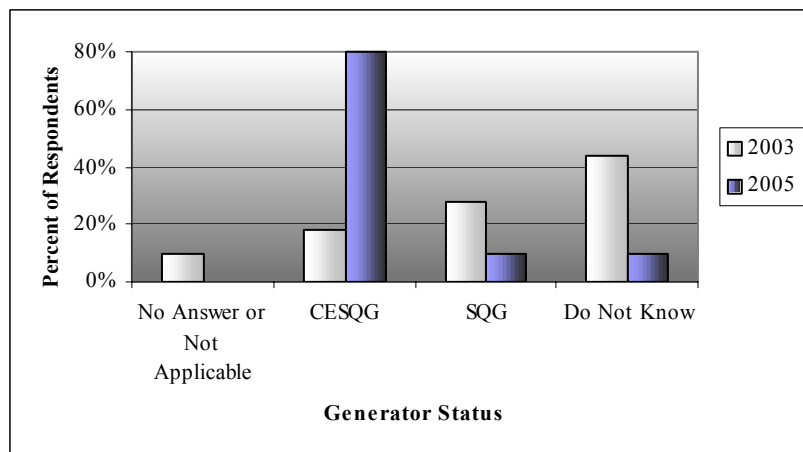
- TA Operating Corporation, also operating as Travel Centers of America, in Milldale has agreed to develop a pilot program for assessing compliance with operation and maintenance requirements for underground storage tank systems (“USTs”). The program will be designed for UST operators statewide and will be composed of audit protocols for monthly inspections of UST systems and procedures for reporting on deviations from regulatory requirements and verification of corrective actions. Pilot inspections will be performed at three Travel Centers of America facilities to determine program effectiveness and to enhance compliance at these facilities.

Targeting Industries with a High Potential for Environmental Problems

The auto recycling industry routinely generates hazardous and non-hazardous materials including engine oil and other automotive fluids, mercury switches, lead batteries, refrigerants and asbestos. If released to the environment, such materials can significantly impact air, land and water resources and, therefore, need to be properly managed.

Due to the high potential of the auto recycling industry to cause environmental problems, in 2004 the Department undertook a coordinated compliance assistance initiative aimed at improving the environmental compliance of this sector. The initiative included development of a compliance guide and a four-part training program provided to owners/operators of auto recycling facilities. The Department developed a voluntary questionnaire to be completed by the facilities to assess compliance rates. The questionnaires were completed by auto recycling facilities prior to and following the training segment of the initiative. The follow-up questionnaire was used to assess the effectiveness of the training provided.

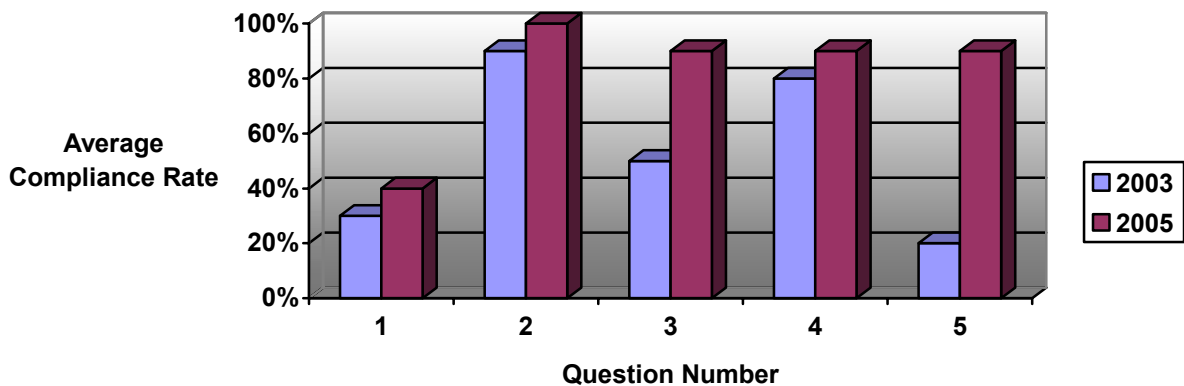
Prior to the training (2003), most of the auto recyclers did not have an understanding of what their operating status was related to their hazardous waste generator status. They did not know if they were operating as a large quantity, small quantity or conditionally exempt generator (“CESQG”). The graph below illustrates how following the training (2005), operators had a better understanding of their operating status and the applicable regulatory requirements. In 2005, 80% of the responders indicated they were operating as CESQGs. This determination is based on the amount of hazardous waste generated at the site. If an auto recycling facility properly manages vehicle fluids, many can be recycled or are non-hazardous, making the facility a CESQG. The regulatory burden for a CESQG is significantly less than for a large quantity generator of hazardous waste.



The following questions were used to determine the compliance rates for specific regulatory requirements:

- (1) Is crushing performed on an impermeable surface?
- (2) Are batteries stored on an impermeable surface?
- (3) Do you have a stormwater pollution prevention plan?
- (4) Are waste fluids stored on an impermeable surface?
- (5) Is waste antifreeze recycled?

The graph below illustrates the compliance rates for those requirements before and after the training. The results show that the compliance rates improved following the training. This indicates that the training sessions were an effective way to provide compliance assistance. As part of the initiative, the Department will pursue enforcement as necessary.



When asked if any changes were made at their facilities or to standard operating procedures as a result of the training, operators offered the following responses on the questionnaire:

- We take a special interest in our 'housekeeping.' We make sure that all wastes are properly containerized and then properly transported and disposed of."
- "Started monthly inspections of required items. New spill containment kit on site by storm drain. Still pulling mercury switches from autos."
- "Marked all storage tanks. Lowered oil storage tanks to 982 gal of total gas, waste oil, diesel, etc. Our yard is almost ½ concrete. We have a drain located at the end of driveway to capture any runoff and goes to a oil water separator."
- "Changes were made as to the way we handle our used oil, batteries, antifreeze and gasoline."
- "Enclosed building for oil and waste materials."
- "We went through our entire facility and made sure all of the good house keeping practices that were discussed at the meeting were up to current standards. We also had our storm water permit looked over by a consultant to make sure it was up to current standards. We also had out storm water run off tested and it passed the test."
- "I visually inspect all parts of our facility more often. Also we purchased a new waste oil burner for less disposal of waste oil off site"

Encouraging Compliance Through Self-Auditing and Disclosure:

Under the Department's self-audit policy, entitled "Policy on Incentives for Self-Policing" (<http://www.dep.state.ct.us/enf/policies/selfpol.pdf>), companies and other regulated facilities are encouraged to proactively evaluate and improve their environmental compliance. A regulated facility that voluntarily discovers and promptly reports and corrects environmental violations may avoid civil penalties provided specific conditions of the policy are also met. Facilities are encouraged to conduct internal environmental compliance audits, independent third party audits, and other voluntary methods for assessing compliance that go beyond legally mandated monitoring, sampling or reporting requirements. In this way, a facility can reduce or eliminate penalties by proactively monitoring its own environmental compliance, promptly disclosing and correcting violations, and acting to prevent future problems.

During 2005, the Department received disclosures from six regulated facilities under the self-audit policy. Memorialized in these disclosures were corrective actions undertaken by the facilities to improve environmental compliance in regulated areas such as water and air pollution control, hazardous waste management, underground storage tanks and water diversions. The Department conducted a comprehensive review and evaluation of the self-disclosures and coordinated with US EPA Region 1.

In addition, the Department has received self-audit disclosures from several Connecticut hospitals pursuant to formal audit agreements entered with US EPA Region 1. The Department is currently reviewing these disclosures and will be providing technical assistance to EPA for any state violations that are disclosed. The Connecticut hospitals that have signed self-audit agreements with EPA are Yale New Haven Hospital, Bridgeport Hospital, St. Francis Hospital in Hartford, and Central Connecticut Health Alliance, which includes New Britain General Hospital and Bradley Memorial Hospital in Southington.

Promoting Environmental Stewardship

Goal: Improve environmental quality in the State of Connecticut by fostering communications between the Department and *all* stakeholders; increasing access to information; and providing appropriate outreach and assistance.

Commissioner McCarthy's "Making Doing the Right Thing" the "Path of Least Resistance" and "I Have Seen the Enemy and It Is I" themes both complement the goal of environmental stewardship. The following initiatives focus on achieving compliance and on the personal choice we make. The cars we drive, how we get to work, the products we buy, how we dispose of household wastes and electronics, the power sources we choose are decisions that impact our lives and our planet.

Removing Toxics From Connecticut's Schools

Removal of PCB-containing products-PCBs continue to plague the environment nearly three decades after their manufacture was banned due to their toxicity, persistence in the environment, and the life expectancy of products manufactured with them. They continue to pose a significant hazard through continued use in electrical equipment such as transformers as well as consumer products and building materials historically manufactured with them prior to the ban. Of particular concern is their presence in time-keeping devices such as time clock tone generators that can be found in school buildings and other institutions.

The Department has accomplished the removal of some PCB electrical equipment through the use of Supplemental Environmental Projects ("SEP"). One such project geared toward removing PCB-containing products before they can create environmental harm, includes the identification of school systems using PCB-laden clock systems and prioritizing those found for possible removal. In 2005, the PCB Program conducted visits to more than 20 schools that had historically used PCB-containing clock systems. Those that haven't already been replaced are being evaluated for their PCB content and appropriate measures will be taken. Expansion of this investigation of schools to other municipalities is planned for the near future.

Anti-Idling Efforts- Implementation of an effective anti-idling program is a high priority because children riding in, or otherwise exposed to, school buses and other commercial motor vehicles are disproportionately affected by these sources. Generally, children are more vulnerable than adults to air pollutants because they have higher inhalation rates, narrower airways, and less mature immune systems. Excessive idling exacerbates exposure to particulate pollutants from many other sources in urban areas.

In 2005, Commissioner Gina McCarthy sent letters to all of Connecticut's public school Superintendents and local Health Directors, inviting each public school district's participation in the Anti-Idling Signs Program. Response was very favorable, with more than half of Connecticut's school districts responding with requests for signs. Throughout the year, the Department provided 929 sign sets to public schools in 71 separate Towns and Districts, representing



approximately 550 schools. The Department continues to provide sign sets to public schools as they request them. The Connecticut Department of Transportation (“DOT”) has assisted the Department by producing the signs and posting additional signs at Connecticut rest areas to help increase awareness and compliance rates among truck drivers and the general public. This effort complements the diesel reduction efforts described in the Management of Toxic Pollutants section of this report.

Compliance Assistance and Training

Training DVD for Municipal Inland Wetlands Agencies

In 2005, the Department produced and began distribution of an interactive DVD that provides information and training for people who serve on municipal inland wetlands agencies. The DVD provides an introduction to the Connecticut Inland Wetlands and Watercourses Act and is part of the Municipal Inland Wetland Commissioners Training Program.

As required by the Inland Wetlands and Watercourses Act, each of Connecticut’s municipalities has established an inland wetlands agency to administer the Act. There are a total of 170 municipal inland wetlands agencies in Connecticut. Section 22a-39(l) of the Act requires that the Commissioner develop a training program for inland wetlands agency members. As a result, the Department provides an annual training program consisting of workshops to educate municipal commissioners and staff on implementation of the Act. The training program covers a broad range of issues encompassing the scientific, administrative and legal aspects of inland wetlands and watercourses regulation and is offered in three segments: introductory, advanced, and specialized.

The DVD presents information from the introductory segment of the training program. It is a 90 minute condensed version of information which is presented in a three hour format in the live training program. The DVD is divided into nine chapters covering:

- History and Definitions of Inland Wetlands and Watercourses
- Three Branches of Government and Other Relevant Laws
- Commissioner and Agent Responsibilities
- Inland Wetlands Agency Jurisdiction
- The Commission Meeting
- Making the Record
- Timelines for Applications and Amendments
- The Fair and Impartial Commission
- Insight and Advice

The new DVD allows the Department to utilize today’s technology to offer a helpful and convenient training tool. In addition, the DVD acts as an advertisement for those who are considering serving on municipal inland wetlands agencies and for towns that have little or no exposure to the training program.

The DVD was made possible due to a grant from the U.S. Environmental Protection Agency and was produced by Middlesex Community College, Middlesex Corporate Media Services.

Connecticut Stormwater Quality Manual

In 2005, the Department partnered with the UConn NEMO Project to develop and provide education and training for key audiences on the 2004 Connecticut Stormwater Quality Manual which was designed to be an up-to-date resource and reference on nonpoint source pollution and stormwater management that is applicable to all of the state's towns. The manual provides guidance on the measures necessary to protect the waters of the State from the adverse impacts of post-construction stormwater runoff. In addition, it is compatible with the goals and objectives of the "6217" Coastal Nonpoint Source Program and the NPDES Stormwater Phase II permitting program. The Department conducted twenty-two training sessions, reaching approximately 800 participants including land use commission members, professional engineers, architects and planners, and state employees as well as other audiences.

The educational modules that were developed for this training will become part of the Department's and the NEMO Project repertoire for future training needs. In addition, the training will likely be expanded to include more hands-on design information.

Pharmaceutical Waste Management

Managing pharmaceutical waste is rapidly emerging as a new regulatory and environmental challenge. The Department sponsored pharmaceutical waste training for DEP staff and a workshop for hospitals this year. The challenges associated with the disposal of pharmaceuticals, including their impact on human health and the environment will continue as an emerging issue into the future.

These hospital workshop covered topics such as how you can begin bringing your organization into compliance; which common drugs, such as epinephrine, are hazardous wastes; and how to implement a hazardous pharmaceutical waste identification and segregation plan at your hospital.

Tracking the Effectiveness of Pollution Prevention Outreach to Small Businesses

The Department is assessing the benefits of outreach and education to small businesses using a new database. The benefits of four recent outreach projects have been tracked--garment cleaners, auto service industry (Pit Stops) shops, the Department of Motor Vehicles ("DMV") inspectors, and a manufacturing assistance organization.

Generally, the data has shown that the environmental performance of the small businesses that have had training improves. Companies with training are more likely to label hazardous waste correctly, be aware of better environmental practices around their place of business, and generally have improved their understanding of environmental requirements. Follow-up phone and written surveys and pre- and post-tests were used to

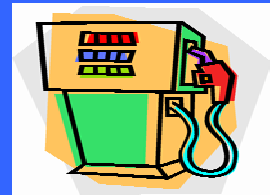
measure improvements in understanding of environmental regulations or change in practices.

Alternate Fuel Vehicles

A consumer factsheet that provides information on purchasing and maintaining a vehicle to reduce your environmental footprint was created this year. It also contains driving tips and options such as alternate fuel vehicles.

An environmental footprint is a measure of how much our individual actions impact the earth. Driving a car has a significant impact on the environment, from the resources used to manufacture the vehicle, how we drive and how much, to the final disposal of the vehicle. You can reduce your footprint by following these tips:

- When you buy your next car, look for the one with the best fuel economy and lowest emissions in its class.
- Buy the smallest vehicle that you feel will meet your needs for comfort, safety and utility.
- Think about the color, darker colors are hotter requiring more air conditioning
- Consider an "advanced technology" vehicle, such as a hybrid or new partial zero-emission vehicles, or PZEVs. These popular cars have great gas mileage, greatly reduced tailpipe emissions, AND can offset their cost with state and federal tax deductions.



The factsheet is available at: <http://www.dep.state.ct.us/wst/p2/individual/envfootprint.htm>

Greening the Department, Joining WasteWise

Commissioner McCarthy announced a renewed effort to green the agency and initiate model programs within the Department to protect the environment in early 2005. As part of this effort the Department joined WasteWise, an EPA program to eliminate costly waste. An inter-bureau Pollution Prevention Work Group (P2 Work Group) is charged with developing and implementing plans for the WasteWise initiative.

The first objective of the initiative was to reduce paper use. Photocopiers were set to copy double-sided as the default. The success of using the double-sided copying whenever feasible will be measured by comparing paper purchases from the baseline 2004 calendar year with purchases from July 1, 2005 through June 30, 2006. Future efforts will focus on enabling printers throughout the agency to print on both sides and purchasing environmentally preferable products and services, such as less toxic cleaners, or organic fertilizers for landscaping.

Appendix A

Summary of Enforcement Statistics Five Year Average 2001-2005

Air Management Bureau

Program Activity	2001 FY	2002 FY	2003 FY	2004 FY	2005 FY	Five Year Average
Warning Notices						
Notices of Violations	218	233	134	262	262	222
Orders	40	88	111	58	68	73
Referrals(AG/EPA/CSA)	4	1	5	17	10	7
Inspections	5530	4304	3766	4663	3969	4446

Waste Management Bureau

Program Activity	2001 FY	2002 FY	2003 FY	2004 FY	2005 FY	Five Year Average
Warning Notices	20	5	1	2	1	6
Notices of Violations	490	384	355	265	217	342
Orders	112	103	66	72	41	79
Referrals(AG/EPA/CSA)	35	28	34	21	14	26
Inspections	2191	1866	1823	1250	1242	1674

Water Management Bureau

Program Activity	2001 FY	2002 FY	2003 FY	2004 FY	2005 FY	Five Year Average
Warning Notices						
Notices of Violations	347	384	259	228	156	275
Orders	50	45	42	21	23	36
Referrals(AG/EPA/CSA)	10	6	6	3	4	6
Inspections	1093	1418	1242	1236	1005	1199

Department-Wide Five Year Average 2001-2005

Activity	2001* FY	2002* FY	2003* FY	2004* FY	2005* FY	Five Year Average
Referrals(AG/EPA/CSA)	53	35	45	41	28	40
Orders	215	244	236	160	140	199
Notices of Violation	1100	1073	782	778	657	878
Total Enforcement Actions**	1366	1352	1063	979	825	1117
Inspections	9086	7774	7015	7345	6420	7528

*Including the Office of Long Island Sound Programs

**Does not include Warning Notices

Enforcement Statistics - FY 2005
(October 1, 2004-September 30, 2005)

Actions	Air Management Bureau	Water Management Bureau	Waste Management Bureau	Office of Long Island Sound Programs	Total for Year (10/01/04-9/30/05)
Warning Notices Issued under CGS 22a-6s	N/A	N/A	1	N/A	1
Notices of Violation Issued	262	156	217	22	657
Consent Orders Issued	67 ¹	19	40 ²	6	132
Administrative Penalties Assessed (# cases)	\$365,175(45)	\$279,816(12)	\$489,700(35)	\$29,800(6)	\$1,164,491(98)
Supplemental Environmental Projects (# cases)	\$31,564(1)	\$366,960(6)	\$123,420(10)	\$8,000(1)	\$529,944(18)
Unilateral Orders Issued	1	4	1	2	8
Attorney General Referrals	5	4	11	0	20
Judicial Settlements					
Penalties	\$8,780	\$979,000	\$167,850	\$0	\$1,155,630
Supplemental Environmental Projects	\$1,100,000	\$668,500	\$94,750	\$0	\$1,863,250
Chief State's Attorney Referrals	0	0	1	0	1
Referrals to EPA	5	0	2	0	7
Inspections Conducted	3969 ³	1005	1242	204	6420

¹ Includes 17 Trading Orders and 41 expedited consent orders to address non-compliance with Stage II testing requirements.

² Includes 10 expedited consent orders to address UST non-compliance

³ 1820 of the 3969 inspections were Stage II inspections conducted by the Department of Consumer Protection under contract with the Department

Compliance Profiles by Industry Sector or Facility Type

The following tables depict compliance rates for particular industry sectors. An enforcement action is initiated by the issuance of an informal Notice of Violation ("NOV") or a Unilateral Order, Consent Order or Attorney General Referral. Multiple actions issued for the same case (i.e. a consent order issued following issuance of a NOV) are not counted as they will produce a higher rate of non-compliance than actually exists. Unless otherwise noted, the rate of compliance for each category was calculated as follows:

$$\% \text{ Compliance} = 100 - \frac{\# \text{ enforcement cases initiated}}{\# \text{ facilities inspected}} \times 100$$

Water Management Bureau

Inspection Category	# of Facilities	Annual Compliance Inspections Projected FFY05	Actual Inspections FFY05	%Facilities in Compliance based on inspections*	%Facilities in Compliance based on DMR review (not in SNC)
NPDES Industrial Majors	41	41	41	93%*	95%**
NPDES Sewage Treatment Plant (STP) - Majors	67	67	59	93%*	85%**
Pretreatment SIU-Significant Industrial Users	207	167	181	90%*	Not Available
NPDES Industrial-Minors	50	5	13	85%*	Not Available
NPDES- STP- Minors	31	3	20	100%*	Not Available
Stormwater	NA	NA	199	73%***	Not Available

* Based on whether a NOV was issued from the annual compliance inspection.

** Only NPDES majors are entered in PCS-SNC numbers can only be generated for these categories.

***81 NOV's were issued for stormwater violations. 27 out of the 81 were for failure to sample-not based on inspection.

Air Management Bureau

Compliance & Field Operations Division

The Compliance & Field Operations Division conducts source surveillance using various techniques, including on-site inspections report reviews and record requests. The following table depicts compliance monitoring activity and compliance rates tracked by the Bureau of Air Management for key facility categories or industry sectors. Unless otherwise noted below, non-compliance means that an enforcement action (e.g., an NOV, Consent Order, Unilateral Order or AG referral) was taken at a facility during Federal Fiscal Year (FFY) 2005.

Compliance Monitoring Activity – Federal Fiscal Year 2005

Source Category	Reports reviewed FFY 05 ¹	Inspections Projected FFY 05	Inspections Conducted FFY 05	# of Facilities in Category	# of Facilities w/Non-compliance	Compliance Rate ⁵	# of Facilities with Significant Non-compliance (SNC) ⁶	SNC Rate
Title V Major Sources I	50	65	70	105 ²	26	75%	8	8%
General Permit to Limit Potential to Emit	150	92	97	371 ²	52	86%	2	0.5%
Minor Sources	50	150	205	1500	78	95%	4	0.2%
Stage II		1500 ³	2517 ³	1600	513	68%	66	4.1%
Complaints		500	396					
Other (Enforcement follow-up, inspections, routine investigations)		100	372					
Radiation (Federal) ⁵			169		26	84.7%		
Radiation (State) ⁵			331		23	93.1%		
Radiation (combined State & Federal)			500		49	90.2%		

Footnotes:

1. Includes quarterly Continuous Emissions Monitoring reports, semi-annual monitoring reports and compliance certifications.

2. Number of facilities in category means both those who have applied and those who have received permits under the applicable program.
3. Summation of Department of Consumer Protection (DCP) and DEP inspections.
4. Violations comprise DCP red tags, DCP repair orders (multiple repair orders issued to the same station on the same day are counted as a single violation), and NOV's.
5. Compliance Rate Calculation:

$$Compliance\ Rate = \left[\frac{\#\ of\ facilities\ in\ category - \#\ of\ facilities\ w/\ non-compliance}{\# \ of\ facilities\ in\ category} \right] \times 100$$

Compliance Rate Calculation for Radiation:

$$Compliance\ Rate = \left[\frac{\# \ of \ facilities \ inspected - \# \ of \ Notices \ of \ Violations \ issued}{\# \ of \ facilities \ inspected} \right] \times 100$$

6. SNC is defined as follows:

- (a) For Title V, General Permit to Limit Potential to Emit and Minor Sources, SNC means the facility was either a State of Connecticut Definitive HPV or Federal HPV during FFY 2005.
- (b) For Stage II facilities, SNC means there was a violation significant to warrant the issuance of a State Order or a "Red Tag" shutdown order

SNC is calculated as follows:

$$Non-Compliance\ Rate = \left[\frac{\# \ of \ facilities \ w/\ SNC}{\# \ of \ facilities \ in \ category} \right] \times 100$$

Waste Management Bureau

UST Enforcement Program

Inspection Category	Inspections Projected FFY 05	Inspections Conducted FFY 05	# of Facilities By Category if applicable	# of Enforcement Cases Initiated in FFY 05	% Inspected Facilities in Compliance
98 Deadline Target List/Complaints	150	294	N/A	26	99%/70%*

99% are compliant with the 1998 federal deadline for closure of antiquated tank systems; 70% are compliant with leak detection/operational requirements

Pesticides Program

Inspection Category	Inspections Projected FFY 05	Inspections Conducted FFY 05	# of Facilities By Category if Applicable	# of Enforcement Cases Initiated in FFY 05	% Inspected Facilities in Compliance
Agricultural Use & Complaint Follow-Up	22	19	N/A	6	68%
Non-Agricultural Complaint/Concern Follow-Up & use investigation	60	71	N/A	40	44%
Producer Establishment	5	6	N/A	3	50%
Market Place	75	92	N/A	22	76%
Certified Applicator Records	100	108	N/A	38	65%
Restricted Use Dealers	10	17	N/A	0	100%

PCB Program

Inspection Category	Inspections Projected FFY 05	Inspections Conducted FFY 05	# of Facilities By Category	# of Enforcement Cases Initiated in FFY 05	% Inspected Facilities in Compliance
Referrals	10-15	10	N/A	5	50%
Complaints	12-17	12	N/A	2	83%
Clean-up Sites	8-13	9	N/A	2	78%
Other Neutral Scheme	10-15	13	N/A	0	100%

Waste Engineering & Enforcement Division

Inspection Category	Inspections Projected FFY 05	Inspections Conducted FFY 05	Total # Facilities by category	# of NOV's FFY 05 (1)	% inspected facilities in compliance	# of inspections with SNC (1)	% of SNC Non-compliance
Treatment Storage Facility	5	6	160	1	83%	2	33%
Large Quantity Generator	88	92	309	22	76%	7	8%
Small Quantity Generator	25	30	1676	27(b)	10%	8	27%
Transporter	5	4	211	1	75%	0 (c)	0%
Volume Reduction Facility	21	7	31	5(a)	29%	1	14%
Resource Recovery Facility	7	2	7	0 (a)	100%	0	0%
Transfer Station	40	17	126	9 (a)	47%	0	0%
Landfill	41	29	44	7(a)	76%	1	3%

- (a) Does not include 5 NOV's resulting from Toxics in Packaging complaint investigations.
Does not include 4 Recycling NOV's
- (b) Does not include 36 HW NOV's issued to CESQGs and inactive sites
- (c) Does not include 2 HW Transporter SNC complaints or review investigations

SNC (Significant Non-Compliance) - The violator/violation is significant enough to require a formal enforcement response. In addition to assessing compliance rate based upon Significant Non-compliance as defined by the Environmental Protection Agency. This rate is indicative of violations that the Waste Bureau has determined require formal enforcement action in accordance with the Department's Enforcement Response Policy.

Appendix B

Permitting

In accordance with Section 22a-6r of the Connecticut General Statutes, the following section provides information on permit applications received, permit decisions, and permit application fee revenues.

DEP Permit Application Summary Data

The following tables summarize application and permit activity, as recorded in the Permit Application Management System (PAMS),

Federal Fiscal Year Statistics (10/01/04-9/30/05)

Table 1

Bureau	Permit Type	Applications Received	Permits Issued	Applications Closed ¹	Applications Pending (as of 9/30/05)
Air	General Permits	50	21	42	15
	Individual	172	98	116	200
	Short Process	27	24	24	24
Office of Long Island Sound Programs	General Permits	32	19	24	25
	Individual	131	108	115	269
	COP ²	160	156	163	30
Water - Permitting & Enforcement	General Permits	756	687	704	175
	Individual	112	82	107	498
Water - Inland Water Resources	General Permits	53	55	58	47
	Individual	199	171	191	227
Waste	General Permits	19	14	23	17
	Individual	42	50	60	121
	Short Process	688	609	648	99
All DEP	General Permits	910	796	851	279
	Individual	656	509	589	1315
	Short Process	875	789	835	153
	Totals All Apps	2441	2094	2275	1747

¹ Applications Closed represents the total number of applications that were closed including: permits issued; applications which are withdrawn, rejected for insufficiency, or denied on the technical merits of the application; and applications which were received but no permit is required.

² COP = Certificate of Permission

Average Processing Times

Table 2

Average Time in Days							
Bureau	Sufficiency Decision	Sufficiency After Notice of Insufficiency	Tentative Determination <small>(N.B. this statistic only includes individual permit applications)</small>	Issue Permit DEP Time	Issue Permit Total Time	Close Application DEP Time	Close Application Total Time
Air	90	10	224	200	257	235	341
OLISP	101	56	63	68	107	81	119
Water	59	20	426	105	119	162	186
Waste	274	8	523	73	86	79	98
All DEP³	76	28	214	96	116	130	161

Timeliness

Table 3

Bureau	On Schedule (vs. Plan)	On Schedule (vs. Revised)
Air	79.88%	85.37%
OLISP	59.38%	81.94%
Water - Permitting & Enforcement	93.48%	98.08%
Water - Inland Water Resources	39.13%	47.39%
Waste	93.65%	97.51%
All DEP	82.31%	89.49%

³ All DEP averages are weighted averages.

Permit Related Revenue Information

CGS Section 22a-6r states the Commissioner to identify: revenues received from permit application fees and any revenues derived from the processing of such applications as set forth in Chapter 439 of the General Statutes; the Department's appropriation from the general fund for permitting activities; and the number and amount of permit application fees refunded.

Revenues Received from Permit Application Fees and Any Revenues Derived from the Processing of Such Applications*	
10/1/04 - 9/30/05	\$2,444,548

* These figures represent application fees due on submittal and permit issuance fees. They do not include annual fees and other registration fees such as medical and industrial X-ray, pesticide registrations, UST's, property transfer, LEP, etc.

General Fund Appropriation*	
7/1/04 - 6/30/05	\$1,000,405

* There is no specific state budget appropriation for department permit programs. This figure reflects actual expenses, drawn from the general fund, for air, water, and waste permitting and enforcement staff.

Amount of Permit Application Fees Refunded* (7/1/04 - 6/30/05)
Application Fees Refunded for a Total of \$32,930

* Refunds reflect withdrawn applications, duplicate fees, etc.