State of Connecticut
Department of Environmental Protection

Protecting and Restoring our Environment

Annual Report 2002

Arthur J. Rocque, Jr.
Commissioner

Cover Photograph by Albert Obue

Holcombe Property in Marlborough
158 acres acquired through the Department's Open Space Aquisition Program
and added to the Salmon River State Forest

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Contents

It is the mission of the Department of Environmental Protection to conserve, improve, and protect the natural resources and environment of the State of Connecticut; to control air, land and water pollution in order to protect the health, safety and welfare of the people of Connecticut; and to preserve and enhance the quality of life for present and future generations.

Introduction

The mission of the Department of Environmental Protection ("Department") remains constant. However, the approaches employed by the Department to meet its mission and report on its performance continue to evolve. Past annual reports placed great emphasis on agency activities and processes and, as a result, drew rigid distinctions between the Department's various bureaus and programs. Last year's report initiated the departure from this method of reporting. This year's report moves even further toward identifying and reporting meaningful performance measures that are reflective of the State's environmental quality.

Performance reporting focuses on changes in environmental conditions flowing from the efforts of the Department and its many partners.[1] An example of a changed environmental condition is an increase in the number of river miles supporting aquatic life, as defined in the State's water quality standards. Another aspect of performance reporting involves presenting outcomes that the agency expects will lead to improved environmental conditions. Reduced air emission levels from industrial sources and higher compliance rates with water discharge limits contained in permits are examples of outcome-focused reporting. The Department intends to measure progress over time toward stated goals and to use that information to guide agency resource allocation and program implementation strategies.

The blueprint for change can be found in the Department's March 2002 Environmental Quality Branch Strategic Plan ("strategic plan"), available on our website at: http://www.dep.state.ct.us/cmrsoffc/strategicplan/eqplan.htm.

[1] The Department acknowledges that its activities may be but one factor among many that produces changed environmental conditions. For example, ozone exceedances are inextricably linked to regional transport of air pollutants and to meteorological conditions - when temperatures rise above 90 degrees, the likelihood of health standard exceedances for ozone is much greater. Despite these limitations, the Department is moving ahead with performance reporting because it represents the most meaningful way to measure the accomplishments of the agency.

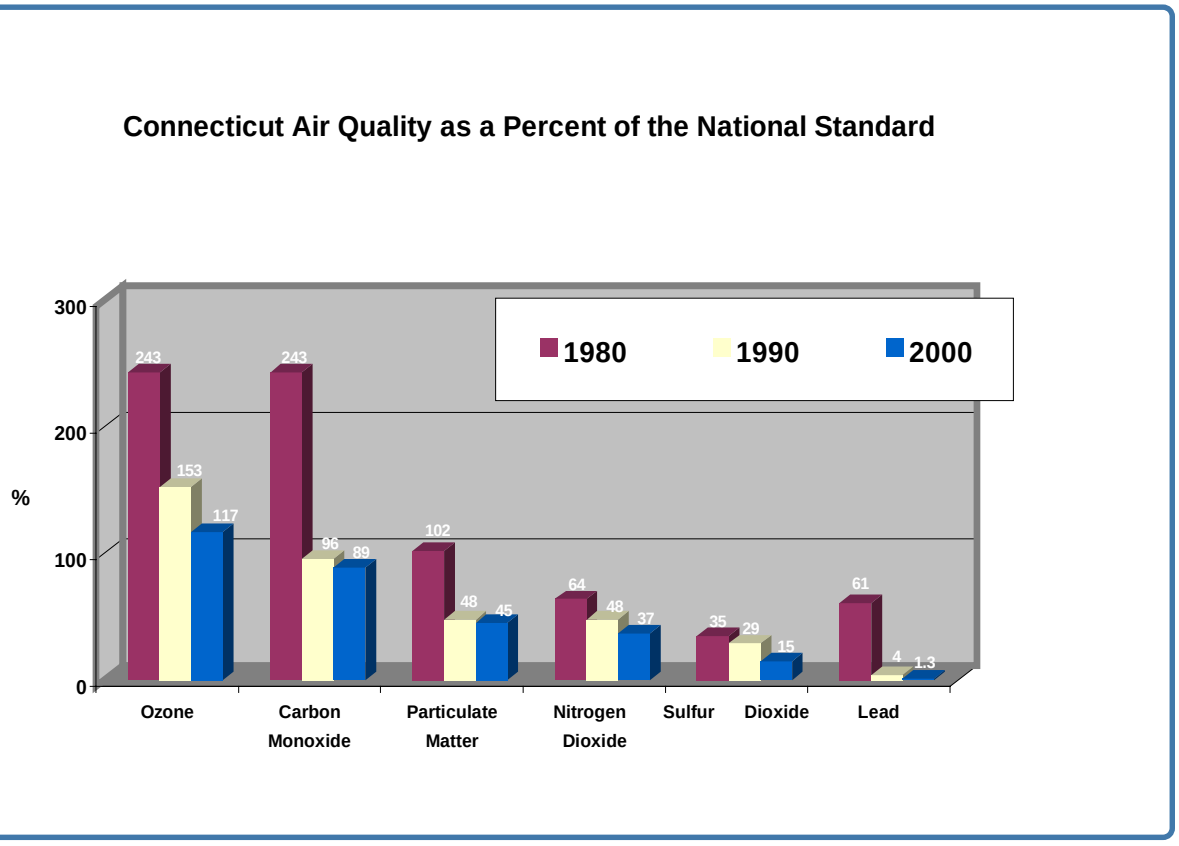
The strategic plan identifies nine agency priorities and associated strategies needed to solve important environmental problems. The nine strategic priorities are: Air Quality Management; Watershed Management; Long Island Sound; Conservation and Development Planning and Management; Management of Toxic Pollutants; Materials Management; Emergency Response; Managing Environmental Compliance; and Promoting Environmental Stewardship.

As in our strategic plan, we remind our readers that ensuring environmental equity is a priority that is served by all others. Each priority is embued with principles of environmental equity. It is the policy of the Department that no segment of the population should, because of racial or economic make-up, bear a disproportionate share of the risks and consequences of environmental pollution or be denied equal access to environmental benefits.

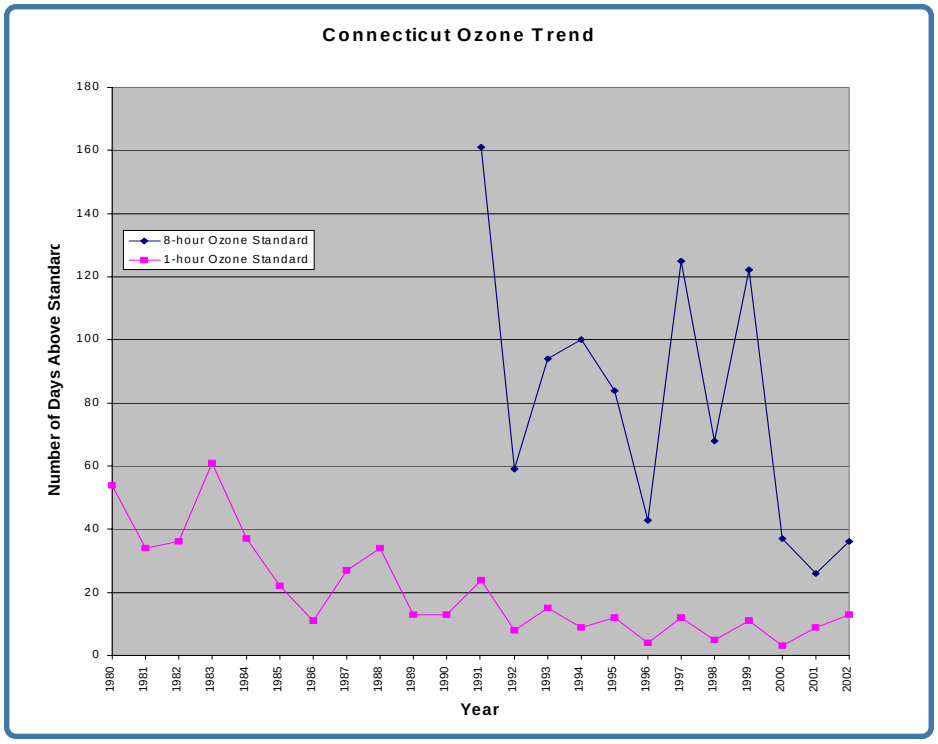
Air Quality Management

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 attainment[1] with National Ambient Air Quality Standards ("NAAQS") for carbon monoxide, lead, nitrogen dioxide, particulate matter ("PM10") and sulfur dioxide. Connecticut has not yet reached attainment for the ozone standard; as explained below, that is due in large part to out of state emissions impacting Connecticut's air quality. Connecticut's success in attaining NAAQS is attributable to the implementation of a wide variety of emission reduction strategies over the past thirty years. These strategies have included requirements for stationary and area sources and an effective permitting and enforcement strategy to assure compliance. Additionally, motor vehicles are engineered to produce significantly less pollution than in the past. Today, the average new car is 40% cleaner than the average new car manufactured in 1990, and more than 30% of the nation's gasoline is a cleaner burning blend designed to reduce emissions and health risks. Recently issued standards for diesel trucks, the continued implementation of the motor vehicle emissions testing and maintenance program, and other innovative strategies that target reductions from mobile sources will help Connecticut achieve further improvements in air quality.



[1] 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.



Connecticut uses several indicators to monitor ongoing improvements to air quality. One key indicator is the declining trend in ozone exceedances during the summer over the past twenty years. Since the 1980's, the number of "unhealthy" ozone days for the one hour standard in Connecticut has been cut in half. However, with 26 exceedances of the eight hour standard in 2001 and 36 exceedances in 2002, challenges clearly remain in reducing emissions of the precursors to ozone formation, nitrogen oxides ("NOx") and volatile organic compounds ("VOCs").

Air Pollution Transport

As illustrated below, Connecticut's air quality is substantially impacted by NOx emissions from upwind sources. These out-of-state emissions dwarf any NOx emission source located within the regulatory jurisdiction of the Department. In fact, advanced air quality computer models have consistently shown that even if all NOx emission sources in Connecticut were merely "turned off," the air quality in Connecticut would still exceed the federal health-based standard for ozone on days when the prevailing winds are out of the south and west.

Air pollution in the form of NOx transport from other states has persistently undermined Connecticut's ability to provide cleaner, more healthful air to the State's residents and to mitigate the nitrification of Long Island Sound. In response, as chair of the Ozone Transportation Commission (established in 1990 to coordinate efforts to control ground-level ozone in the Northeast and Mid-Atlantic States), Commissioner Rocque spearheaded the development of a five-year strategic plan to integrate air pollution transport policies into federal policies. Further, Connecticut has taken several unprecedented administrative and legal actions in an attempt to gain relief from the overwhelming effects of transported air pollution. Current efforts include:

Petitioning EPA for Relief from Transported Air Pollution

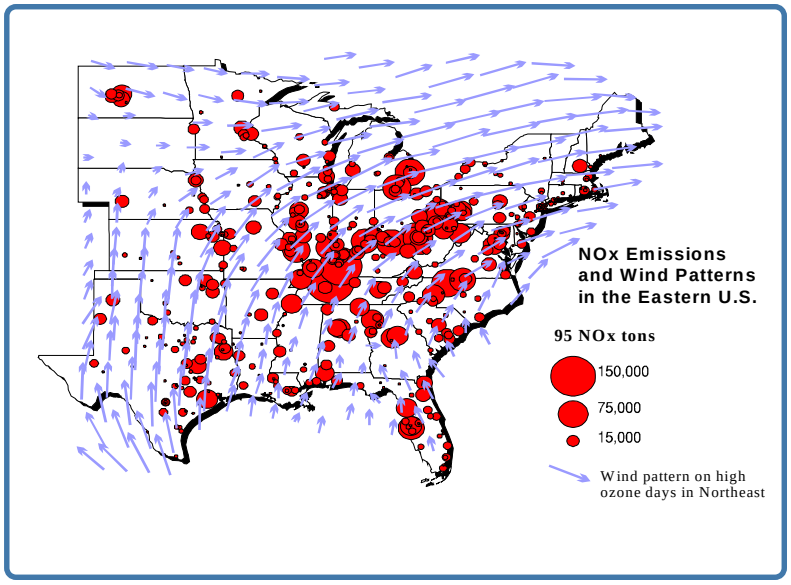
In August 1997, the Department and environmental agencies representing seven other Northeastern states filed petitions with EPA requesting it make a finding that certain upwind sources were emitting air pollution in violation of the Clean Air Act. EPA subsequently approved the petition, and, after litigating various industry challenges to their regulations, EPA is set to implement remedial regulations on May 31, 2004.

Seeking to Enforce Federal "New Source Review" Regulations on Upwind Sources

On behalf of the Department, the Attorney General has intervened in a number of federal lawsuits and has also filed several lawsuits jointly with the State of New York to enforce federal New Source Review ("NSR") requirements on large power plants located upwind of Connecticut. Connecticut asserts that a significant number of power plants were modified and failed to install modern air pollution control equipment as required by the Clean Air Act. Very significant reductions of both NOx and sulfur dioxide may result from these lawsuits. Settlement negotiations with the defendant companies is ongoing and the State hopes to reach a favorable conclusion to each action as quickly as possible.

Responding to Changes to Federal "New Source Review" Regulations

Current federal New Source Review ("NSR") regulations require that industrial plants add modern air pollution controls when they are upgraded or modified and substantially increase air pollution. Under the NSR program, the State has required older facilities to comply with new pollution control standards that are among the most stringent in the nation. On December 31, 2002, EPA announced a series of changes to the NSR regulations that could endanger Connecticut's air quality by exempting up to 50 percent of industrial air pollution sources from current NSR requirements. Prompted by the State's inability to meet the nationwide ozone standard as a result of windborne transport of ozone and ozone precursors, on December 12, 2002 Governor John G. Rowland wrote to EPA Regional Administrator Christine Todd-Whitman to formally express his concern with the proposed changes. While Connecticut supports reforms to the NSR regulations that would make them more understandable and streamlined, the announced changes would effectively diminish state's authority and allow facilities to continue to operate longer with outdated and inadequate air pollution controls.



Reducing Sulfur Dioxide Emissions in Connecticut

While meeting and exceeding NAAQS, sulfur dioxide ("SO_2") continues to be a concern as a contributor to acid rain and fine particulate pollution. Connecticut has made in-state emission reductions a priority by adopting regulations to reduce SO_2 emissions from power plants. The standard currently in place is estimated to reduce 1999 baseline emissions by approximately 19,000 tons per year. This represents a 43% reduction of annual SO_2 emissions from 1999 levels. Actual emission reductions achieved will be verified once emission statements are submitted to the Department this spring (see also, Managing Environmental Compliance).

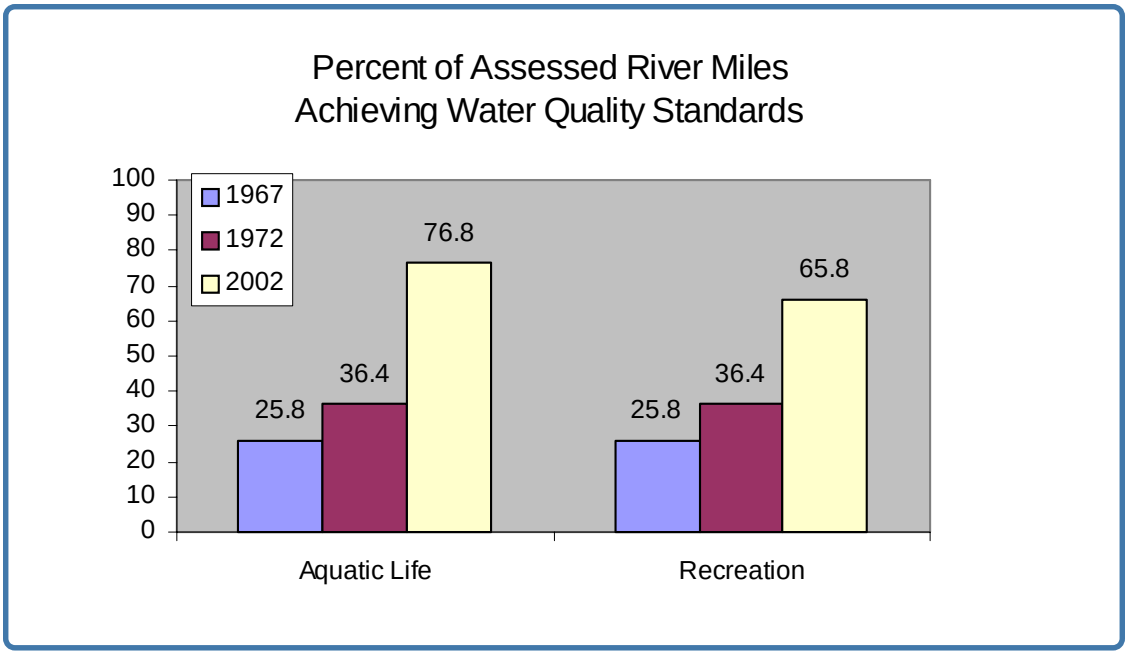
Watershed Management

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.

Watersheds are geographic areas defined by natural drainage divides. They vary in size from drainage for backyard ponds to the 11,000 square miles that comprise the Connecticut River Watershed. Watershed management considers the quality of the water resources within an entire watershed, identifies opportunities to improve or protect the quality of these resources, and implements strategies to achieve those ends. To address growing concerns over non-point source[1] pollution and water allocation, while continuing to address point source pollution, the Department is placing greater emphasis on a watershed management approach that involves various government, public and private interests within a given watershed.

Water Quality in Rivers and Streams

The water quality of Connecticut's rivers and streams has improved dramatically since the passage of the State's Clean Water Act in 1967 and the Federal Clean Water Act in 1972 (see figure below). The gains are principally due to the execution of permitting and enforcement programs that address site-specific discharges throughout the state. While the approach has produced positive results, there remain many unresolved problems related to non-point source pollution from an array of routine human uses of land and water.



[1] Non-point sources are diffuse pollution sources (i.e., without a single point of origin or not introduced into a receiving stream from a specified outlet). The pollutants are generally carried off the land by stormwater. Common non-point sources include city streets, parking lots, industrial yards, construction sites, and agriculture.

Water Quality Objective: By 2007 increase by 10% over the 2002 baseline the mileage of assessed rivers and streams achieving aquatic life uses and recreational uses.

Major Initiatives Directed Toward This Objective:

Capacity Building

The Department is preparing "basin overview reports" for each of Connecticut's seven major drainage basins that will summarize current water quality within each basin and highlight key resource management issues. In related capacity building efforts, the Department continued support for the UCONN Cooperative Extension Service NEMO (nonpoint source education for municipal officials) and, in December 2002, revised regulations governing Connecticut's soil and water conservation districts to orient the districts by watershed rather than by county.

Monitoring and Assessment

A fundamental building block for watershed management is the availability of adequate water quality information. To increase knowledge of water quality conditions, the Department completed the first cycle of a five-year "rotating basin" monitoring strategy, continued a long term cooperative monitoring program with the US Geological Survey, initiated a two year statewide stream monitoring project with EPA, and continued to support volunteer monitoring activities.

Funding for Surface Water Quality Improvements

During the past two State fiscal years the Department helped finance thirteen lake watershed projects, fourteen river watershed projects, four fish habitat restoration projects and numerous other non-point source control and prevention projects. The watershed initiatives included major new initiatives involving monitoring and assessment of nutrient enrichment problems in the Thames River and Broad Brook watersheds.

Stormwater Discharge Focus

Better stormwater management is critical to the Department's success in addressing non-point source pollution. Issuance of a new general permit governing such discharges in most of Connecticut's municipalities and improving compliance with existing stormwater general permits, particularly with the industrial stormwater general permit, are key objectives. Training programs involving the proper use of Connecticut's revised "Erosion and Sediment Control Guidelines" will increase.

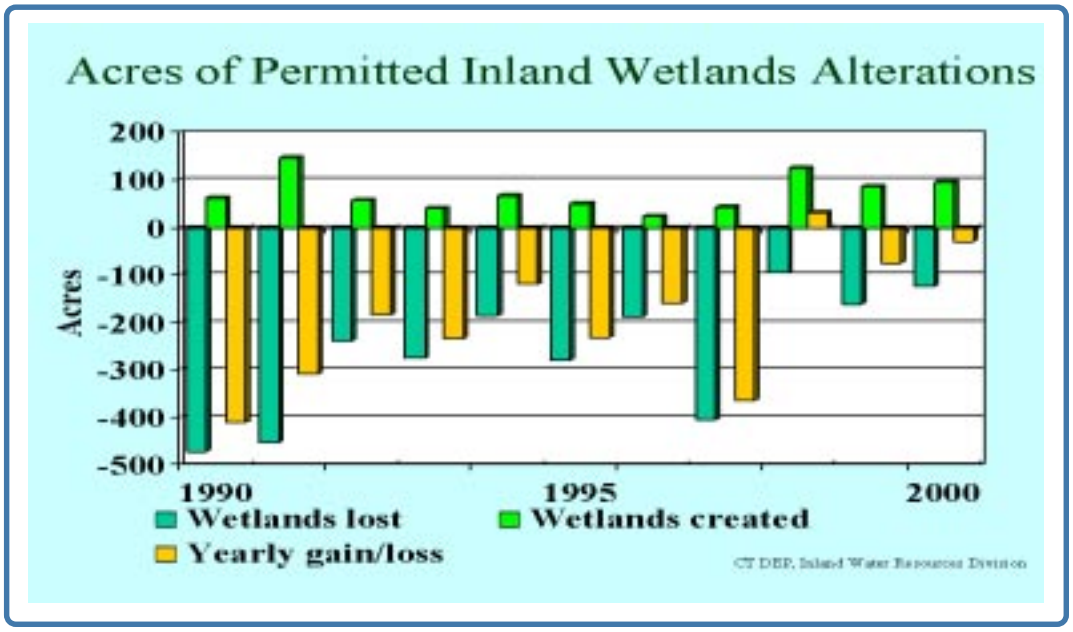
Water Resource Management

In some State waters, diversions have reduced natural flows to levels below that needed to sustain healthy communities of fish and aquatic life (see http://www.dep.state.ct.us/wtr/div/divrptsum.htm, the Department's January 2000 *Report to the General Assembly Regarding State Water Allocation Policies*). In 2002, the General Assembly enacted requirements for persons or municipalities who divert greater than 50,000 gallons in a twenty-four hour period and are otherwise covered by a diversion permit or other legal authorization to file a water use report with the Department by January 23, 2003. The Department received hundreds of submissions and is now assembling the data by watershed and use types. The data will

contribute to the future development of a comprehensive water allocation system to protect and preserve the integrity of water resources while providing for public drinking water needs (see also Conservation and Development strategy).

Wetlands

There are approximately 510,000 acres of freshwater wetlands and non-tidal watercourses in Connecticut, roughly 16 percent of the state's surface area. Wetlands and watercourses play a major role in hydrological stability (moderating impacts of peak and low flows), recharging and purifying groundwater, and in

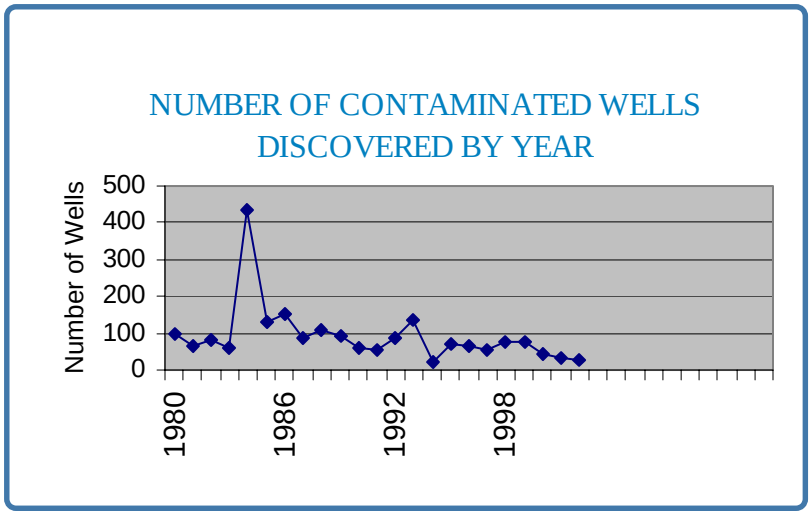


providing habitat for many species of plants and wildlife. Inland wetlands serve a valuable function by attenuating pollution and thereby improving surface water quality. The Department's objective related to wetlands is to ensure that by 2007, wetland losses no longer exceed the amount of wetlands created. Over the last eleven years wetland loss has outweighed the amount of wetlands created (see figure above). However, permitting trends also show that wetland alterations and loss has consistently declined with wetland creation gaining in recent years.

Groundwater

Connecticut's ground water resources are the source of drinking water supply for approximately one million residents. Ground water also provides base flow for rivers and streams. Therefore, the quality and quantity of ground water is inextricably linked to that of surface water resources. The quality of Connecticut's ground water is generally very good. The Department estimates that roughly 90% of the State is underlain by ground water suitable for drinking without treatment. However, incidents of ground water contamination have occurred in every municipality due to thousands of sources including historic industrial activities, landfills, underground storage tanks, salt storage facilities, road salt application, application of pesticides and fertilizers and accidental chemical spills. There are currently more than 5,500 contaminated sites identified on the State's data base, 672 sites on the State's inventory of hazardous waste disposal sites, and more than

3,000 underground storage tanks known to have leaked. More than 2,200 contaminated drinking water supply wells have been identified since the 1970's.



The most commonly identified contaminants are petroleum-based compounds from gasoline and fuel oil. In the past three years less than 50 contaminated drinking water supply wells were discovered each year. This decline is most likely attributed to the closure of over 25,000 underground storage tanks since 1985 and greater compliance with enhanced tank program requirements. Halogenated solvents, used for cleaning purposes in many industrial and commercial activities, are the second most common class of ground water contaminants.

Groundwater Objective: Continue the declining trend of the number of contaminated wells discovered each year.

Major Initiatives Directed Toward This Objective:

Pollution Prevention

Improve drinking water source protection programs by implementing Connecticut's Aquifer Protection Area Act and the Federal Safe Drinking Water source water protection program, ensuring full compliance with underground storage tank program requirements, and by phasing out the use of MTBE.

Streamlining

Coordinate remediation activities in a manner that enhances the Department's ability to address site contamination priorities that affect public or private drinking water supplies or otherwise pose a risk to the environment or public health.

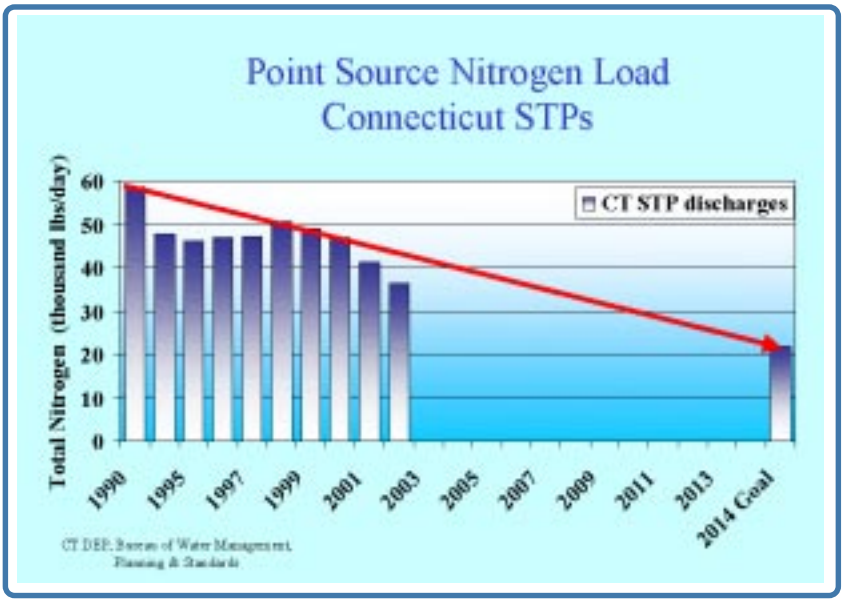
Long Island Sound

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

Long Island Sound ("LIS") is a 1,300 square mile estuary, a place where salt water and fresh water mix. Connecticut's only coastal water body, it is a shared resource with the state of New York. It would be difficult to overestimate the importance of LIS to Connecticut's environment, economy and quality of life. Home to more than 8 million people, its 16,000 square mile watershed drains most of Connecticut and portions of New York, Massachusetts, Vermont and New Hampshire, and even a small portion of Canada.

Water Quality

Hypoxia, the condition of low dissolved oxygen, impacts up to half of the Sound's bottom waters each summer. Hypoxia renders hundreds of square miles of bottom habitat unhealthy to fish and shellfish populations (see http://www.dep.state.ct.us/wtr/lis/hypo2000.pdf). Excess nitrogen from point and non-point sources, including atmospheric deposition, is the predominant cause of hypoxia in LIS. Efforts to reduce hypoxia increased significantly in recent years. The April 2001 adoption of the LIS Total Maximum Daily Load ("TMDL") for nitrogen requires a 58.5% reduction in baseline nitrogen loadings, distributed as a 64% reduction from point sources and a 10% reduction from urban and agricultural land runoff in Connecticut. Major activities to meet the TMDL included issuance of the General Permit for Nitrogen Discharges regulating nitrogen from publicly owned sewage treatment plants ("STPs") (http://www.dep.state.ct.us/wtr/nitrogencontrol/ngpfs.pdf) and implementation of the Nitrogen Trading Program (http://www.dep.state.ct.us/wtr/lis/nitrcrdt.pdf). This approach will save money while accelerating the pace of nitrogen loading reductions. In addition, there are multiple non-point source management needs related to nitrogen, bacteria and mercury that are being addressed through state and federal nonpoint, stormwater and air quality management programs.



Water Quality Objectives: Increase dissolved oxygen in bottom waters to no less than 3.5 mg/l at any time.

Achieve a 58.5% nitrogen load reduction by August 2014 (64% from baseline of point and 10% from baseline nonpoint loads).

Major Initiatives Addressing These Objectives:

Nitrogen TMDL and Credit Exchange

The cornerstone for addressing hypoxia in LIS is the development of a TMDL for nitrogen and the December 2001 issuance of the General Permit for Nitrogen Discharges. The General Permit places 79 sewage treatment plants under one license, facilitating Nitrogen Credit Exchange activities. The first trades will occur in 2003 based on 2002 monitoring results. Pricing and exchange activities are under the guidance of a Nitrogen Credit Advisory Board with Department oversight and regulatory authority.

Monitoring and Assessment

The Department manages an expansive LIS hypoxia and nutrient monitoring program designed to assess water quality improvements derived from nitrogen management within Connecticut and New York. In 2000 the LIS monitoring program was expanded to include sediment and fish tissue quality and monitoring in nearshore locations. These data, along with other data collected by the Department and other state and federal entities, are key to water quality assessment and reporting.

Nonpoint Source Management

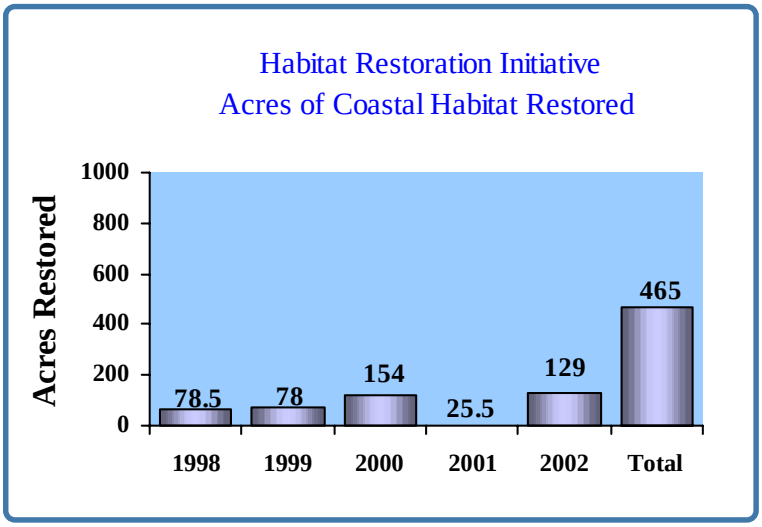
There are over 100 ongoing projects that address all major categories of nonpoint source pollution including demonstration projects, implementation of best management practices, and education and outreach such as the Nonpoint Education for Municipal Officials ("NEMO") program. Added attention to nonpoint and stormwater has resulted from the assignment of additional staff resources to this task and development of the draft Phase II stormwater permit. A key nonpoint source initiative is the Coastal Nonpoint Pollution Control Program. Department staff, in coordination with the Capitol Region Council of Governments, held a series of nonpoint source pollution control workshops for non-coastal municipalities that highlighted stormwater, watershed planning, and other techniques to help municipal land use officials better address nonpoint source pollution throughout the upper Connecticut River basin.

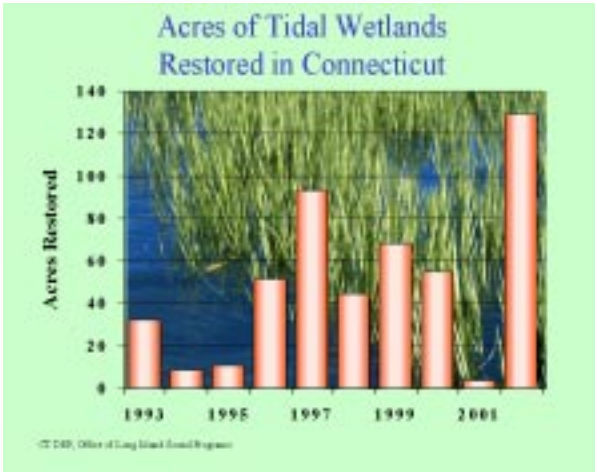
Clean Marina Program

The Department is working with the marina industry to develop a Clean Marina Program. The program encourages Connecticut's 350 inland and coastal marinas to implement pollution prevention techniques beyond compliance through a voluntary certification and education/outreach campaign. The Department, with the assistance of industry volunteers and the Connecticut Marine Trades Association, recently published the *Connecticut Clean Marina Guidebook* and, in the coming year, staff will begin a Clean Boater outreach campaign and host Clean Marina Workshops to introduce the program. A Cost Share Assistance program to fund pollution prevention equipment will help marinas become Clean Marina certified. Certification will begin in 2003, with a goal of 70 certified marinas by 2005.

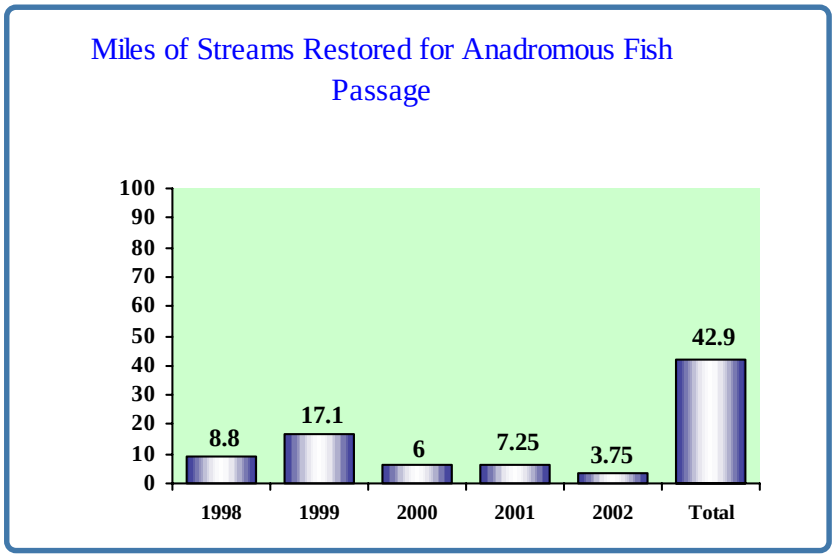
Habitat Restoration

In 1998, the Long Island Sound Study ("LISS") partners (Connecticut, New York and EPA) established the Long Island Sound Habitat Restoration Initiative ("Initiative"). The goal of the Initiative is to restore 2000 acres of coastal habitat and 100 miles of riverine migratory corridors for anadromous fish by 2008. Other important coastal habitats addressed include dunes, tidal freshwater wetlands, coastal and island forests, coastal grasslands, intertidal flats, and submerged aquatic vegetation. In December 2002 the LISS partners reaffirmed their ongoing commitment to habitat restoration in the "Long Island Sound 2003 Agreement". Since 1998 more than 465 acres of LIS coastal habitat have been restored in Connecticut and New York. In Connecticut, this total includes 147 acres of tidal wetland, adding to 1,500 acres previously restored in the state, and over 20 acres of coastal grassland. Connecticut is a leader and pioneer in wetland restoration, having established one of the first dedicated Wetland Restoration Units in the country.





Riverine migratory corridors for anadromous fish are an essential component of a viable LIS habitat. Historically, obstacles such as mill dams, culverts, tide gates, and tidal mill dams blocked access to many anadromous fish spawning areas, including those used by blueback herring, shad, and Atlantic salmon. Fish ladders and other bypass structures, obstacle removal, and dam release alterations have made many areas accessible once again. As of 2002, 41.9 of the 42.9 miles of river restored for migrating and spawning fish are in Connecticut's portion of the LIS watershed.



Coastal Public Access

Securing and promoting public access to Long Island Sound and its tributaries is a major focus of Connecticut's Coastal Management Program. Since 1980, approximately 11.5 miles of new coastal public access dedications have been acquired through the state/local partnership of coastal site plan review. Because the Coastal Management Act gives highest priority and preference to water-dependent uses, including public access, municipal coastal site plan approvals often require a public access component for proposed development of waterfront sites. In 2002, through the Department's technical assistance to coastal municipalities, approximately 2,600 feet of new coastal public access were obtained. The Department is also embarking on several initiatives to publicize coastal public access opportunities, including web-enabling our popular Connecticut Coastal Access Guide. The Guide, last updated in July 2001, details 276 locations where the public can access Long Island Sound.

Future Measures

Further research and development of additional environmental indicators is needed to assess the health of LIS. For example, eelgrass is a vital component of a healthy Long Island Sound, providing food and cover for myriad species, ranging from mudsnails and bay scallops to blue crabs and striped bass. Eelgrass also provides vital food resources to breeding, staging, and wintering waterfowl. The presence of eelgrass in coastal areas is indicative of a healthy marine environment. Connecticut's marine ecosystems have experienced a dramatic decline in the abundance of eelgrass since 1931. Once well distributed throughout Long Island Sound, eelgrass is now found in sporadic beds from Clinton Harbor east to the Pawcatuck River. While the geographic extent of eelgrass is currently quite limited, the Department is mapping eelgrass beds and hopes to use growing eelgrass populations as an indicator of improved water quality in the Sound.

Fort Trumbull State Park, New London

Department staff is working with private and public sector partners on the Long Island Sound Study Stewardship System Work Group. The LIS Stewardship System would involve the creation of a system of sites of scientific, educational or biological value in the immediate coastal upland and underwater areas of Long Island Sound, and the increase in and protection of open space and public access to the Sound through voluntary collaborative partnerships. Assessments are currently being conducted for ecological and scientific values and for open space and public access values to help guide establishment of the System. The Department expects that the sites will be chosen as part of both the ecological assessment and the open space assessment by September 2003. Implementation of the system is expected by February 2004.

Conservation and Development

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.

At the turn of the 21st century, Connecticut is a wonderful place to live, work and recreate. But can we sustain Connecticut's quality of life in the new millennium? Unless we can redirect existing patterns of economic growth and land development, the Connecticut we know today - vibrant town centers, traprock ridges and coastal vistas, abundant watercourses, rolling hills of forest and farmland, a living Long Island Sound - will be endangered. The landscape we have inherited is the framework within which we balance environment, economy, and community to create our quality of life. To sustain this balance, we must take steps now to conserve Connecticut's natural and cultural heritage.

The Department's Strategic Plan calls on us to focus and coordinate agency planning, funding, infrastructure, and regulatory programs with those of other state and municipal agencies in order to support and implement Connecticut's policies for conservation and development. In particular, the recent report of the Transportation Strategy Board and the ongoing update of the State's *Plan of Conservation and Development* have highlighted the Department's critical role in developing a coordinated, statewide approach to protecting the environmental assets on which Connecticut's future economy and quality of life depend. Several key strategic initiatives, discussed below, reflect the Department's commitment to support this objective.

Infrastructure Improvements

Careful planning is critical to assuring that Connecticut's infrastructure is developed in a manner that guides future growth in an efficient, cost effective, and sustainable fashion while conserving and restoring our natural environment. Whether facilitating the construction of new sewer and water facilities or revitalizing contaminated urban sites to foster reuse and redevelopment, the Department plays an important role in the planning process by promoting responsible growth that will protect public health and the environment.

Waterbury Water Pollution Control Facility

Sewers

In 2002, with the Department's technical and financial assistance, more than 30 municipalities actively engaged in sewerage facilities planning. This comprehensive planning process incorporates analysis of town-wide development plans and the State's *Plan of Conservation and Development* to assure that projects are both consistent with such plans and meet the future needs of the municipality. Last year Connecticut invested more than $158 million in sewerage infrastructure to protect and enhance water quality and allowing for future growth in appropriate locations.

Water Planning

In 2001, the General Assembly created a Water Planning Council ("Council") to examine Connecticut's water allocation policies, diversion permitting, water utility regulation, and water supply planning processes. The Department played a key role on the Council by participating in a full evaluation of Connecticut's water resource management needs. Subcommittee reports recognizing the limitations of the state's water supply recommended a comprehensive planning model to allow for appropriate water allocation on a statewide basis. The work of the Council and its subcommittees specifically recognizes the need to plan for sustainable development.

Transportation

During the past year, Commissioner Arthur J. Rocque, Jr. served as co-chair of the Land Use and Economic Development Working Group of the Transportation Strategy Board ("TSB") created by the General Assembly. Under Commissioner Rocque's direction, the working group crafted recommendations to the full TSB that recognized the linkages between transportation planning, economic development and land use. The working group recommendations submitted to the full TSB[1] were in large part incorporated into the final TSB report,[2] including recommendations for enhancing the existing State *Plan of Conservation and Development*.

Brownfields Development

Cleaning up contaminated sites protects public health and safety and provides economic opportunities in our municipalities and alternatives to the development of "greenfields." This past year 2085 sites underwent active investigation and remediation, either through the Department's direct involvement or through the voluntary efforts of others overseen by our Licensed Environmental Professional ("LEP") program. Voluntary site remediation supported by the LEP program encourages redevelopment in areas where the necessary supporting infrastructure already exists and the needs of Connecticut's businesses and economy can be met.

Connecticut's Brownfields Redevelopment Program has twice received national recognition for remediation and restoration projects, including work at the new Pfizer research facility in New London. The Department, in partnership with the Department of Economic and Community Development and Pfizer, received the 2002 Phoenix Award for the New England Region, an award recognizing excellence in the redevelopment of brownfields.

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[1] The *Final Report and Recommendation of the Land Use and Economic Development Working Group*, dated October 2002 can be found at http://www.opm.state.ct.us/igp/TSB/WGLU%20-%20Final%20Report%20Oct%202002.doc.

[2] See, *Transportation: A Strategic Investment, An Action Plan for Connecticut 2003-2023*, dated January 2003, at http://www.opm.state.ct.us/igp/TSB/TSBFIN.htm.

Open Space Protection

Essential to protecting Connecticut's landscape and resources is the acquisition and preservation of open space. Connecticut provides a diverse landscape that offers outdoor recreation, protects water supplies, preserves fragile natural communities for plants and animals, offers green spaces accessible to city residents, and maintains a working natural landscape useful for the harvest of farm and forest products. The goal of the state's open space acquisition program is to have twenty one percent of the state's land area held as open space land by 2023. Ten percent of the state's open space is to be held by the state and not less than eleven percent of the state's land area is to be held by municipalities, water companies or nonprofit land conservation organizations. In 2002, the Department acquired 3,496 acres through purchases in 47 municipalities. The Department, through its Open Space and Watershed Land Acquisition Grant Program, also awarded funds to municipalities and nonprofit organizations that allowed for the additional acquisition of 1,758 acres. Since July 1998, the Department has acquired 20,930 acres and has provided grant funding for the acquisition of an additional 14,000 acres. Overall to date, the State has acquired approximately 230,930 acres as open space land in its system of park, forest, wildlife, fishery and natural resource management areas, representing seven percent of Connecticut's land area. Municipalities, non-profits and water companies hold 225,030 acres of open space, constituting another seven percent of Connecticut's land area.

Coastal Management

For more than twenty years, Connecticut's Coastal Management Program has served as an example of state and local cooperation in balancing appropriate development of the State's shoreline with protection of the State's coastal resources. The program seeks to achieve this balance by applying Coastal Management Act policies to both state and local coastal land and water use permits, by restoring coastal resources and habitats, promoting public access and water-dependent uses, reducing coastal hazards, and revitalizing degraded urban waterfronts.

In 2002, the Department's Office of Long Island Sound Programs was able to revitalize the state-local partnership by offering, for the first time in many years, pass-through federal grants to municipal and regional agencies to update basic planning documents and build local capacity to address new coastal issues. Eleven grants, totaling $250,000, were allocated to municipal and regional agencies to support efforts such as updated municipal coastal plans, revised harbor management plans, and special studies of critical current issues such as waterfront landscape protection, nonpoint source pollution control, public access, and management of residential docks. The Department looks forward to working with our local partners to complete these projects which will bolster our long-term strategic priority to balance resource protection with appropriate waterfront development, preserving coastal resources and maintaining the quality of life on Connecticut's shore.

Hammonasset State Park, Madison

Climate Change and Energy Policy and Planning

The Department has taken a leading role in the Governor's steering committee tasked with the development of a statewide climate change action plan. This committee will recommend strategies to address the State's contribution to greenhouse gases and help mitigate the effects of climate change while maintaining our economic competitiveness. For example, the Department will seek to develop measures similar to those adopted by the City of New Haven when it replaced traffic lights with more efficient LED equivalents. The change will result in savings of $110,000 per year in energy costs, a $120,000 reduction in maintenance costs and will reduce emissions of carbon dioxide by 950 tons per year.

The Department plays a central role in ensuring clean, safe and reliable energy for the State. Strategy related to power plants combines efforts to reduce emission transport from outside our region (see the discussion on air transport in the Air Quality Management section) with reduction strategies targeting emissions generated within Connecticut. Locally, through regulation and Governor Rowland's Executive Order 19, Connecticut sources have reduced emissions of sulfur oxides by 70% since 1999 and emissions of nitrogen oxides by 70 % since 1994. At the same time, to assure uninterrupted availability, the Department has permitted over 2650 megawatts of new clean power generation.

Finally, the Department is working with industry and the US Department of Energy to provide financial support to first-time commercial demonstrations of innovative manufacturing processes that prevent pollution and save energy and money. Since 1995, Connecticut industries have received over $2 million through the National Industrial Competitiveness through Energy, Environment and Economics ("NICE3") program. In late 2001 Acceleron Electron Beam, LLC of East Granby received $525,000 to demonstrate a non-vacuum electron beam welding technology. More information on the NICE3 program is available at http://www.oit.doe.gov/nice3/.

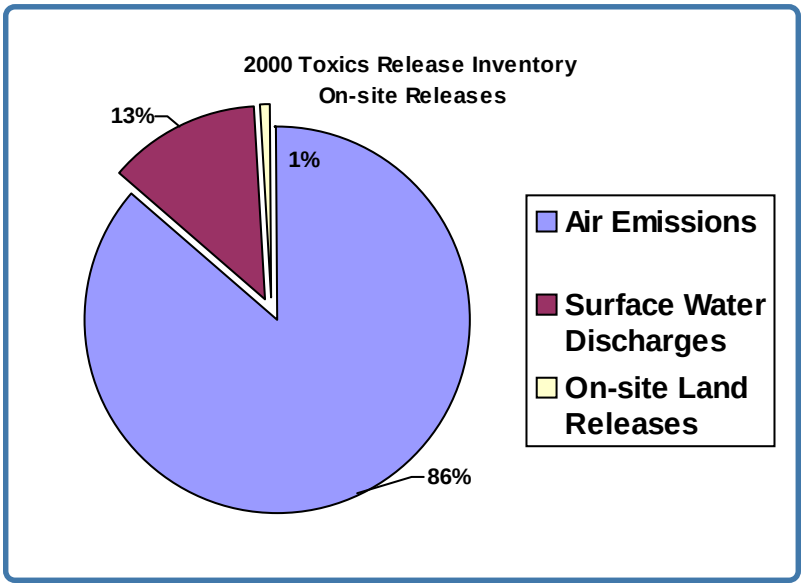
Management of Toxic Pollutants

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

Toxic pollutants are generally defined as those pollutants that are known or suspected to cause a wide variety of serious health effects. Mercury, polychlorinated biphenyls ("PCBs") and some pesticides, among other toxic pollutants, are difficult to control given their ability to travel long distances and transfer easily between the physical and biological environment. Once ingested by fish, birds, or mammals, many of these substances bioaccumulate, leading to body burdens far in excess of levels found in the environment. With frequent exposure over time, the amount present in an organism's tissue can build up and cause toxic effects. In humans, effects may include nervous system abnormalities, reproductive and developmental problems, cancer, and genetic impacts.

Using diverse strategies, Connecticut has made considerable progress in reducing toxic releases. Based on the Toxics Release Inventory ("TRI") data, between 1988 and 2000 manufacturers in Connecticut reduced the releases of air toxic emissions by 10,615 tons, an 84% decrease; releases to water by 2,632 tons, an 87% decrease; and releases to the land by 819 tons, a 97% decrease. Stricter water quality standards have resulted in substantial progress toward eliminating adverse impacts posed by toxic pollutants on aquatic life. Discharge permit limits and monitoring requirements for toxic pollutants and general effluent toxicity have been established to protect aquatic life from the discharge of cooling water, treated industrial process wastewater, municipal sewage treatment plant effluent, and regulated stormwater discharges.

Air emission of toxic pollutants makes up 86% of on-site toxic releases. The management of toxic pollutants, and especially air emission of toxic pollutants, will continue to be one of the Department's greatest challenges. The Department is in the process of implementing a multi-media toxics reduction strategy that will focus on managing toxic pollutants through prevention, reduction and recycling practices. Research is also needed to further understand the nature and extent of priority toxics within Connecticut. The availability of such information is critical to regulators and the community at large to determine policy direction and preventive measures to be taken.

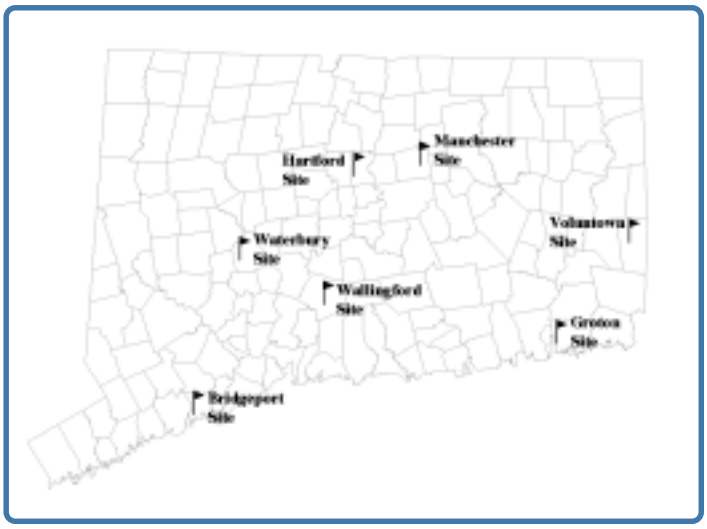


Toxic Pollution Control Strategies

The many types and sources of toxic pollutants make regulation in this area particularly difficult. For example, the Clean Air Act mandates regulation of 188 toxic pollutants and EPA has identified 174 categories of industrial and commercial sources that emit these pollutants. The Department has focused

data collection and other resources needed to identify control strategies to address toxic pollutants of priority to Connecticut. They include:

Air Toxics Monitoring: With support from EPA, the Department has just completed a three-year statewide air toxics monitoring study. The primary goal of the study was to characterize air toxics in the vicinity of major stationary sources. The Department established monitoring sites in Wallingford, Hartford, Bridgeport, Groton, Waterbury, and Manchester. Voluntown served as a background site. The next phase will entail making the data available in a format usable by the health and research communities and accessible by the public, possibly through the internet. Analysis of the data will follow to help guide policy development and future air emission reduction efforts for stationary sources within the state.



Clean School Bus Program: Every school day in Connecticut some 6,137 school buses transport nearly 387,000 children to and from school. For one child, a half-hour ride to school and a half-hour ride home amounts to 180 hours per school year spent on the bus. Collectively, Connecticut school children spend 50 million hours on buses each year. Diesel fuel powers 99% of these buses. Diesel exhaust contains fine particulate matter and forty chemicals that are classified as hazardous air pollutants under the Clean Air Act. Classified as a probable human carcinogen by EPA, diesel emissions are a likely contributor to the prevalence of childhood asthma in the State. According to a 1999 survey by Environment and Human Health, Inc., 44,571 (one in eleven) children who attended public schools in Connecticut were reported by school nurses to have been prescribed medication for asthma.

The Department's Clean School Bus Program ("program") is a pilot project designed to reduce diesel emissions from school buses and other sources. Relying on cleaner fuels and new bus retrofit technology to significantly cut harmful bus emissions, the program is expected to reduce risk exposure to children and improve air quality. Currently focused in Norwich, the pilot program has resulted in emission control equipment being installed on all 42 school buses in the Norwich system. In addition, in September 2002 the fleet began using ultra low-sulfur diesel fuel to further reduce tailpipe emissions. These changes are expected to result in a reduction of particulate matter of up to 90% and approximately a 70% reduction in hydrocarbon and carbon monoxide emissions. The Department's objective is to at least double every year the number of children and drivers on clean school buses. A critical component of the Department's current effort is to ensure the transferability of the success expected in the Norwich system to other cities and towns within Connecticut.

Mercury Action: In the 2001 annual report, available at http://www.dep.state.ct.us/enf/rpt/2001rpt.pdf, the Department featured its ongoing effort to eliminate mercury as a public health and environmental threat. Mercury is toxic to humans and wildlife and exposure to high levels of mercury can cause brain damage, behavioral changes, changes in vision or hearing and memory problems, among others.

A year later, the Department continues to make progress in its mercury control efforts, the most significant being the passage of Department-sponsored mercury legislation. Public Act 02-90, "An Act Concerning Mercury Education and Reduction" is a far-reaching bill that, among other things, requires the phase-out of certain mercury-containing products such as fever thermometers and mercury-added novelties, and the labeling of products containing mercury, and further requires that manufacturers establish collection plans for their mercury products. As part of implementation efforts, the Department established a mercury hotline (1-877-537-2488) and created fact sheets to assist businesses in complying with the new law. More information on the Department's mercury reduction efforts is available at http://www.dep.state.ct.us/wst/mercury/mercury.htm.

In action related to earlier mercury legislation, the Department addressed an air toxics violation identified at the Mattabassett District as a result of annual sewage sludge incinerator testing required by Public Act 01-204. By administrative consent order, the subject facility operator agreed: to study sources that may contribute mercury to the facility's waste stream; to develop and implement a pollution prevention plan to further reduce internal sources and practices that may contribute to the facility's mercury emissions; and to perform stack tests on a more frequent basis than required by law. In a separate action, the facility was required to install new air pollution control technology designed to further reduce mercury emissions. Initial testing indicates that the new technology is reducing mercury emissions by 97% and should provide the technical basis for reducing mercury emissions from all sewage sludge incinerators. In addition, the facility operators paid a cash penalty, provided thermometer exchanges and fluorescent light bulb disposal for businesses and residents, and funded the printing and distribution of publications that describe the dangers of mercury.

Use of Chlorine at Municipal Sewage Treatment Plants: For decades, chlorine has been the principal disinfectant used at sewage treatment plants. Residual chlorine in treatment plant effluents can be toxic to aquatic life, and accidental release of chlorine gas can pose significant human health risks. The *Pollution Prevention Plan for Connecticut*, published by the Department in 1996, established the reduction of chlorine use at sewage treatment plants as a management priority. To date, twenty-three of the State's one hundred municipal sewage treatment plants have converted to a newer, safer disinfection technology, ultraviolet radiation ("UV"). Today the use of UV technology equates to a reduction of roughly 1,600 pounds per day of chlorine use statewide. Presently, several existing municipal sewage treatment plants (e.g., Stamford) are being reconstructed and, as a result, will be incorporating UV technology in place of chlorination.

Managing toxic pollutants promises to be a focal point of Department efforts for many years to come. See the sections on Materials Management and Emergency Response, among others, for more information on this topic.

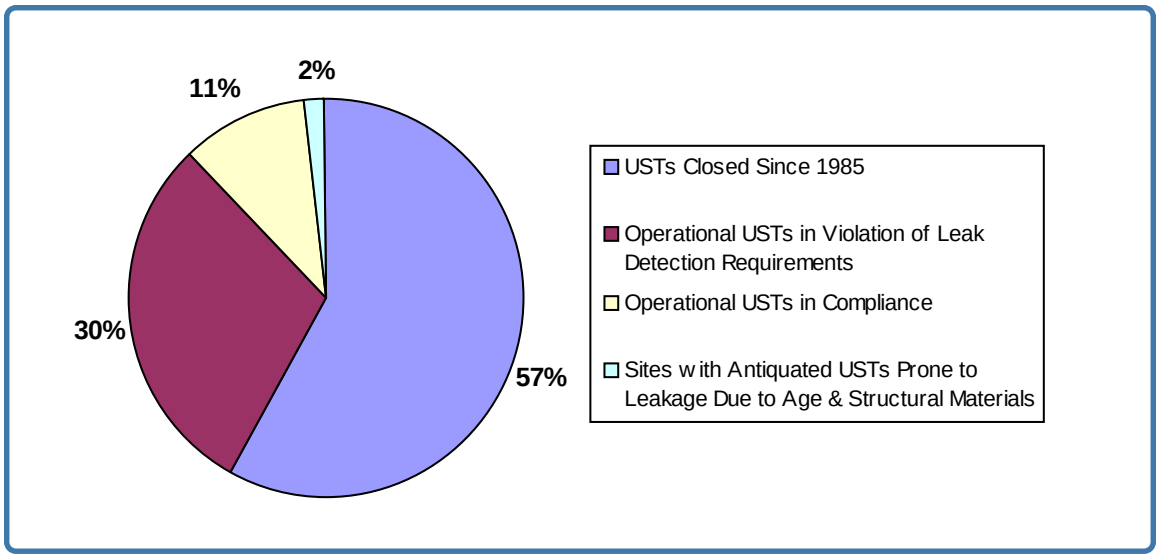
Materials Management

Goal: To 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 products, wastes, chemicals and other materials that, if mishandled, could pose a significant threat to public health and the environment is critical to the protection of our environment, health and safety. Materials management is the concern of numerous Department programs, including efforts in the areas of waste minimization, release control and prevention, controls for the use and handling of pesticides, PCBs, petroleum products, industrial chemicals, radioactive materials, and the beneficial use of solid wastes.

Petroleum Products

The Department has engaged in a sustained effort to minimize environmental harm associated with the storage of petroleum products, including gasoline and heating oil. Due to the nature of the product they contain, large tank capacities and the sheer number of tanks, underground gasoline storage tank systems ("USTs") pose one of the most pervasive threats to our natural resources. Since 1985, the Department has successfully overseen the closure of more than 25,000 USTs which now no longer pose a risk of release. In addition to dedicating resources to ensure compliance with facility operational requirements, the Department will continue its aggressive effort to close the remaining USTs that do not meet current State standards designed to prevent releases. Finally, the Department has proposed legislation to require double walled UST systems for new installations. Connecticut is the only state in the northeast that does not currently require double walled construction. A double wall requirement for new UST systems will reduce the number of petroleum releases in the future.



Radioactive Material

The Division of Radiation conducts inspections and sets standards for safe use and storage of radioactive material and equipment that produces ionizing radiation. Efforts are underway to develop a comprehensive regulatory program for radioactive materials use in the State that improves both public safety and protection of the environment from the harmful effects of ionizing radiation. This past year the Department worked closely with the Department of Public Health to finalize development of a comprehensive radiological remediation criterion applicable to facilities that are ceasing use of radioactive material. In addition, this year the Department is undertaking the important task of updating the State's ionizing radiation regulations to include federally regulated radioactive materials. The updated regulations are intended to be a single set of requirements applicable to all radioactive material use in the State, thereby simplifying compliance for the regulated community.

Pesticide Management

The Pesticide Management Program works to assure the proper handling of pesticide products by requiring applicators to engage in an extensive certification program. The certification process requires pesticide applicators to pass examinations demonstrating competence in handling pesticide products. A recent major enforcement action led to the establishment of enhanced best management practices for pesticides control businesses. In addition, efforts continue to reduce the application of pesticides through the use of Integrated Pest Management ("IPM"). These efforts originally focused on agricultural use and have expanded into areas such as structural pest control, lawn care, tree and ornamental care. This past year the Department worked closely with the Department of Administrative Services to revise state contracts to include IPM at state-owned facilities.

Waste Management

Wastes and waste materials that are not reused or recycled must be handled safely to prevent their release to our land, air and waters. Comprehensive waste management permitting, assistance and enforcement programs are in place to ensure safe storage, treatment, transportation and disposal. These programs continue to provide the foundation for initiatives that promote reuse and recycling. An important safe waste management initiative concluded this year with the extensive revision of the state's hazardous waste management regulations. This update will allow expansion of the state's federally-authorized program and provide more flexibility for recycling and waste handling. The updated regulations are located on the Department website at: http://www.dep.state.ct.us/wst/hw/hwregs.htm

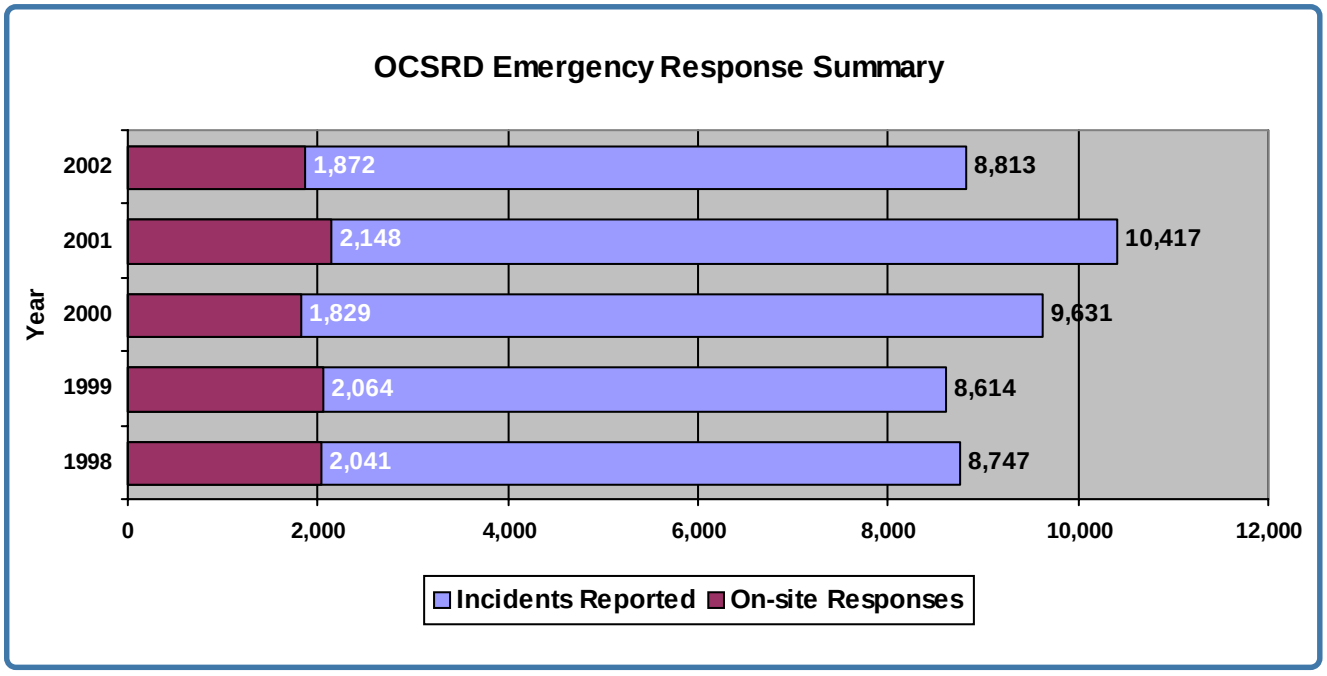
Regarding solid and bulky waste, the Department continues to collect detailed information about current waste management practices in the State. Source reduction has not achieved the expected result in terms of reducing waste generation rates. Waste generation rates are rising while the recycling rate remains unchanged at approximately 24% for the past three years. The information being gathered will be used to evaluate alternative or additional approaches to source reduction in the future.

Emergency Response

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

The goal of the Department's emergency response units is to minimize potential impacts on the environment and public health and safety that may result from natural and manmade disasters. Flooding, fires, hurricanes and a range of other natural conditions present threats to public health and the environment for which a capable emergency response capacity is needed. More common are manmade emergency response conditions. Americans routinely use over 60,000 chemicals that are often mishandled or accidentally released, creating the risk of harmful exposures. Risk to public health and the environment can also occur from radiological and biologically hazardous materials. The Department has staff dedicated to minimizing the potential harm to public health and the environment from uncontrolled releases of these materials and others like them.

The Department's Oil and Chemical Spill Response Division ("OCSRD") and Division of Radiation work to support the agency's core mission, goals and objectives. They also play a critical support role for the State's Homeland Security Division. Both Divisions are available to send responders to emergency incidents on a continuous twenty-four hour, seven days per week basis. Focusing on disaster preparedness and improving response capabilities, the Divisions frequently partner with other federal, state and local agencies. OCSRD responds to many different threats, including threats of biological and chemical terrorism. In calendar years 2001 and 2002, the Department responded to over 700 incidents suspected to be acts of bio-terrorism. OSCRD investigates all incidents reported to determine whether an on-site response is warranted. The number of on-site responses is depicted in the chart below. Incidents not requiring on-site response are often resolved by providing technical assistance to the responsible parties and coordinating with local response agencies.

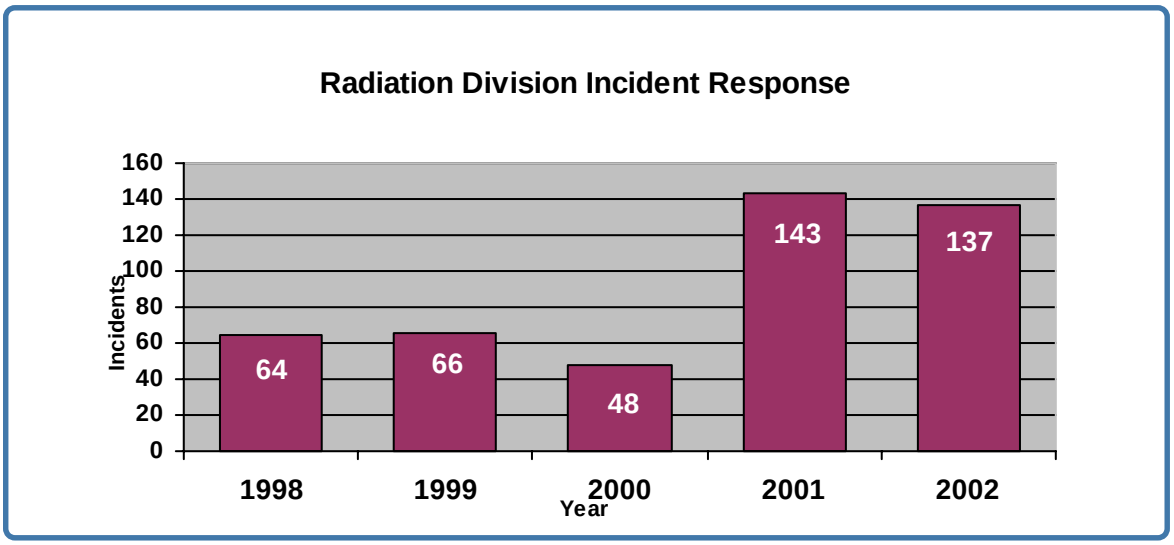


In addition to its core emergency response function, OCSRD performs other valuable services needed to minimize potential impacts on the environment and public health and safety from natural and manmade disasters. They are:

- Ongoing review and improvement of agency response procedures, contingency plans and emergency response plans;
- Providing technical assistance to other state and federal agencies as required to support and improve the homeland security effort;
- Promoting staff training and providing training for other state and local emergency response agencies;
- Developing and participating in exercise scenarios and partnering with the emerging local hazardous materials regional response teams;

- Where necessary, funding the emergency clean up of hazardous chemicals and petroleum spills, leaks or deliberate release events involving hazardous materials and the collection of these expended state funds

The Division of Radiation ("Division") is prepared to respond immediately to all radiological incidents that may occur in Connecticut. Since September 11, 2001, the Division has been much busier, responding to approximately 140 calls per year. This represents an increase of over 200% from previous years. The following table highlights the increased awareness in radiological issues. A significant drop in the number of incidences from 1999 to 2000 was the result of Division efforts to educate the public on how to prevent radioactive material from common activities such as medical procedures from getting into the environment.



In addition to its core emergency response function, the Division performs other valuable services needed to minimize potential impacts on the environment and public health and safety from natural and manmade disasters. They are:

- **Emergency Response Training**

Through increased participation in emergency drills, exercises, and training with both the public and private sectors, the division has enhanced its emergency response capability to radiological incidents. On average the Division participates in at least one exercise each month with the nuclear power plants in Connecticut. In addition, work is presently underway to add training opportunities with other organizations with interests in Connecticut such as the U.S. Navy, U.S. Department of Energy, and private industry.

- **Emergency Response Plans**

Efforts are underway to both improve existing emergency response plans and develop new plans to address new threats. Cooperatively working with other state and federal agencies, nuclear power plants, hospitals and other private organizations, the Division is improving or developing emergency response plans in several areas, including: the State of Connecticut Radiological Emergency Response Plan; the Transportation Emergency Response Plan to address U.S. Department of Energy movement of radioactive material through Connecticut; the New England Interstate Radiation Assistance Plan; and the Hospital Response to Weapons of Mass Destruction events.

- **Response Capability Improvements**

Through equipment upgrades and increased resources, the Division has improved analytical capabilities related to the impact of radiological events on Connecticut's citizens and the environment. Resource efforts have focused on access to other national and regional assets to improve incidents assessment, including participation in a federal program to evaluate an advanced plume modeling computer program for radiological events such as a dirty bomb.

Flood Management and Drought Preparedness

The Department operates and maintains the State's Automated Flood Warning System ("system") consisting of rainfall, river, and weather monitoring gauges that provide automated early flood warnings and real-time weather information during weather related emergencies. The system enables State and Federal agencies and local communities to recognize and respond more rapidly to flash flooding and other weather related emergencies in Connecticut. In addition, the system provides data for drought and forest fire monitoring. During the short but intense droughts of 1988 and 2002, the system consistently provided valuable rainfall and river flow data which was used to identify areas susceptible to forest fires.

The Department also participated with other state agencies in drafting the Connecticut Drought Preparedness and Response Plan and is working to complete a State Hazard Mitigation Implementation Plan ("SHMIP"). As part of the SHMIP, the Department is engaged in two major projects designed to improve Statewide response to natural disasters. It is creating a digital inventory of all 253 high hazard dams in Connecticut and mapping critical facilities (hospitals, airports, schools, oil and natural gas facilities) in each of Connecticut's 169 towns. Once completed, the digital inventory of dams and critical facilities maps will be distributed to local towns and State agencies with the goal of improving emergency response.

Gillette Castle State Park, East Haddam

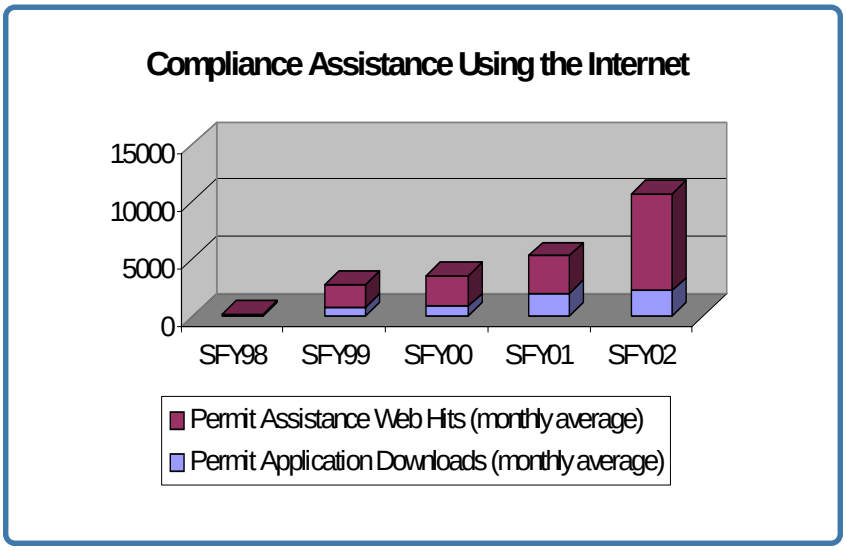
Managing Environmental Compliance

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.

Through the issuance of regulations, permits and other licenses, the Department establishes boundaries within which activities that have the potential to negatively impact the environment may be safely conducted. The Department then monitors compliance with regulatory standards and standards established in permits. Where there is significant noncompliance with permit terms or there is a failure to obtain a required permit, the Department relies on its enforcement authorities to compel compliance. In recent years, the Department has augmented its permitting and enforcement efforts with extensive compliance assistance and outreach to the regulated community. The Department is also working to use its limited enforcement and assistance resources more strategically by focusing on underperforming industry sectors and facility types. It is the effective integration and targeting of the Department's permitting, assistance and enforcement efforts that will provide Connecticut with the greatest degree of environmental protection.

Public Outreach and Assistance

The Department provides compliance assistance in many forms, including one-on-one meetings, public presentations to trade groups and other stakeholders, and through various information hotlines. Indirect assistance is provided through the development and distribution of newsletters, fact sheets, permit application packages and other outreach materials. Additionally, in September 2002, the Department began publishing a quarterly electronic newsletter designed to provide regular updates on current Department outreach and compliance assistance initiatives, permitting approaches and enforcement actions. *Managing Environmental Compliance in Connecticut* is available at http://www.dep.state.ct.us/enf/newsletter/envcompliance.htm



There has been a noticeable shift to increased reliance by the public on Internet-based compliance assistance. While not easily quantified, the "e-delivery" of information represents both a significant cost savings to the agency and an efficient means to distribute permit, assistance and enforcement-related information. For permit seekers, the Department maintains and makes available all necessary application materials at http://www.dep.state.ct.us/pao/download.htm.

General Permit Compliance

The Department uses general permits to cover certain commonly regulated activities. Each general permit sets terms and conditions applicable to such regulated activities that are protective of the environment. A description of each general permit and registration forms for most are now available at the Department's web site at http://www.dep.state.ct.us/pao/listgen.htm. At last count, the Department had accepted more than 9000 registrations for activities covered by general permits, representing more than fifty percent of active permitted actions. The growing reliance on general permits and the potential for cumulative impacts resulting from noncompliance with them dictates that the Department commit greater resources to assuring general permit compliance. The Department is currently focusing on industrial stormwater (see watershed priority), the discharge of minor tumbling or cleaning of parts wastewater, and the discharge of minor printing and publishing wastewater.

Last year's annual report provided details on the Minor Tumbling or Cleaning of Parts Wastewater General Permit compliance initiative. Follow-up on that work is continuing. Another general permit initiative deals with the General Permit for the Discharge of Minor Printing and Publishing Wastewater ("printing general permit"). The main objective of this initiative is to increase registrations under the printing general permit. At the time this initiative began, the Department had record of less than 60 printing general permit registrants. In January 2002, the Department mailed to printers in the state a copy of the general permit, a general permit registration form, printing and publishing environmental fact sheets and a questionnaire to be returned to the Department. Unpermitted dischargers of printing and publishing wastewater were offered a limited time to register for the printing general permit or to apply for an individual permit, as necessary, without fear of enforcement for not having obtained a permit in a timely manner. Current Department records indicate180 registrants under the printing general permit with an additional 72 pending approval. The Department will conduct site inspections during 2003 for a portion of those printers that failed to register for the printing general permit during the correction period and enforcement action will be taken against sites found to be discharging printing and publishing wastewater without a permit.

Targeting Industries with Known High Noncompliance

In addition to the general permit compliance initiatives referenced above, the Department continues to direct greater resources to sectors where noncompliance is known to be high. Enforcement against underground storage tank owners and operators that failed to bring their facilities into compliance with 1998 tank standards continued at a brisk pace in 2002, with formal actions taken in 55 cases. In a similar initiative, the Department identified a pattern of non-compliance related to failure to test Stage II vapor recovery systems at fuel dispensing facilities. The Department has taken 38 actions in 2002 against facilities found out of compliance with Stage II requirements. To view summaries of these and other formal enforcement actions taken by the Department, go to the Department's web site at http://www.dep.state.ct.us/enf/scripts/enfform.asp.

Sleeping Giant State Park, Hamden

Finally, in partnership with the Connecticut Auto Recyclers Association, the Department has launched an initiative to elevate compliance and reduce pollution from auto recycling activities. The initial focus of the project is to provide all auto recyclers in the State with the information and education needed to operate their businesses in accordance with regulatory requirements and best management practices. The compliance assistance phase of this initiative will be followed by a compliance assessment element and if necessary, an enforcement component.

Compliance Rate Analysis

The Department tracks compliance rates by industry sector or facility type (see appendix A). Further refinement in the Department's compliance rate methodology is needed and EPA has provided the Department with some funding to do so. Compliance rate analysis moves the agency one step away from output measures (i.e., numbers of department actions) and toward outcome measures (i.e., environmental benefits assumed through compliance) by reflecting behavioral changes within specific industrial sectors or facility types within the regulated community at large. Data reflecting the underlying rate of compliance by sector and facility type will allow the Department to make better, more effective use of existing resources. Inspection resources (and the enforcement and assistance resources to follow) can be focused on areas where compliance is lowest and attention is most needed. When resources are effectively targeted at lower performing industrial sectors or facility types, the expectation is that compliance rates in those areas will rise and environmental harm related to non-compliance will be reduced.

Reduced Sulfur Dioxide Emission Standards

The Department conducted extensive outreach efforts to ensure that the State's largest emissions sources, including power plants, are aware of and compliant with new reduced sulfur dioxide (SO_2) emission standards. Before the reduced SO_2 emission standards went into effect in January 2002 and January 2003, the Department mailed detailed information to each affected facility to make sure that it was aware of the new SO_2 standards and the associated regulatory obligations. Immediately after the new emission standards took effect, the Department performed timely inspections of the facilities to confirm that each had implemented a strategy that would result in compliance and was maintaining the records necessary to demonstrate compliance. Where a facility had problems or questions, Department staff provided the necessary assistance. These sources are now achieving significant SO_2 emission reductions and are contributing to improved air quality.

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.

Creating the cleanest and safest community for every Connecticut resident requires businesses and individuals alike to consider the environment in daily decision-making. The concept of environmental stewardship is embedded in lifestyle choices, product design, pollution prevention and sustainability, among others, all of which influence the quality of Connecticut's environment.

Department strategic planning to advance environmental stewardship is focused on three essential stakeholder groups. Education strategies target *individuals* so that they may more fully understand the impact that their personal choices have on our environment. Stewardship strategies targeted at the *regulated community* are intended to heighten understanding of the actual and potential impacts of their actions as well as highlight the opportunities for improved environmental performance. These efforts will aid in the inevitable shift toward sustainable business practices. Looking inward, the Department's management and staff must fully appreciate that it is the *regulator's* role and responsibility to foster environmental stewardship in the community at large. The Department will advance environmental stewardship in the State by promoting communication between it and *all* stakeholders, increasing public access to information, and by providing appropriate outreach and assistance. A complete discussion of the Department's stewardship strategies and objectives is contained in the strategic plan and is available at http://www.dep.state.ct.us/cmrsoffc/strategicplan/eqplan.htm.

Measuring Success

While some stewardship initiatives count activities, such as the number of companies with an Environmental Management System[1] in place, the Department is developing several broad indicators that focus more directly on overall results. The benefits of many stewardship strategies are best measured in terms of resources saved, emissions or discharges eliminated and reduced waste generation. To help assess whether Connecticut companies are, as a whole, incorporating sustainable business practices, the Department must rely on outside data sources. For example, using EPA's Toxic Release Inventory ("TRI") and the Connecticut Manufacturing Production Index ("CMPI')[2], the Department is comparing waste generation to

Recent Stewardship Actions

- Seventeen Connecticut companies have certified to the ISO 14001 environmental management system standard
- The Connecticut Green Building Council now has 110 active members
- DEP/CONNSTEP partnership has provided 30 business with direct pollution prevention assistance
- The Department trained 20 DMV inspectors to provide pollution prevention assistance
- More than 2300 pounds of mercury were collected through Department initiatives
- The Department, assisted by the Connecticut Marine Trades Association, kicked off the "Clean Marina" certification program.

1 An Environmental Management System is a continual cycle of planning, implementing, reviewing and improving the processes and actions that an organization undertakes to meet its business and environmental goals.

2 CMPI is reported monthly in The Connecticut Economic Digest, a joint publication of the Department of Economic and Community Development & Department of Labor. The Digest is available on the Internet at http://www.state.ct.us/ecd/research/digest/index.html. A detailed description of how the CMPI was derived can be found in the June 1999 issue; see http://www.state.ct.us/ecd/research/digest/99archive/cedjun99.pdf

manufacturing production. TRI tracks the total waste managed[3] by Connecticut companies reporting TRI data while statisticians track CMPI as an economic indicator. As a business incorporates sustainable practices, manufacturing efficiency improves and the amount of waste managed should decline. In fact, this has been the trend in the State. The Department has begun tracking this relationship and will, as more data is collected over the next few years, report on the trends in total waste managed as a unit of production.

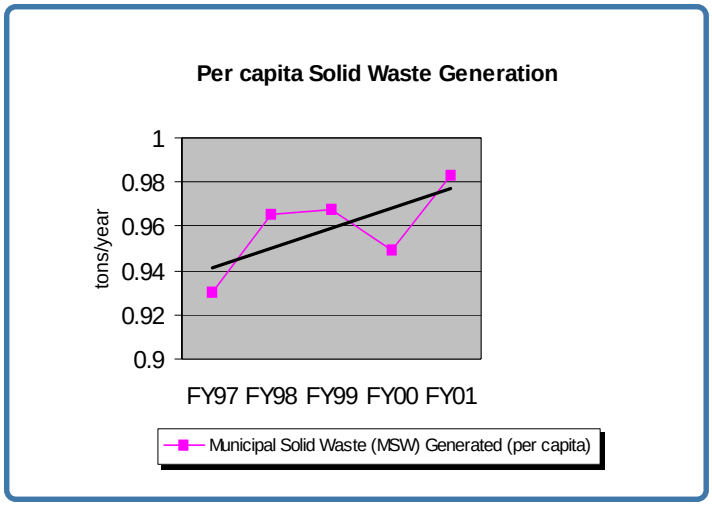
The GreenCircle Award

The GreenCircle Award Program recognizes businesses, institutions, individuals and civic organizations that have undertaken pollution prevention, waste reduction or other projects promoting natural resource conservation and environmental awareness. These efforts have:

- Saved more than 575,000,000 gallons of water;
- Eliminated approximately 10,800,000 pounds of harmful emissions to the air;
- Prevented the generation of over 550,000 pounds of hazardous waste;
- Removed 750 pounds of mercury from the environment
- Recycled 600,000 pounds of solid waste.

Personal Choices

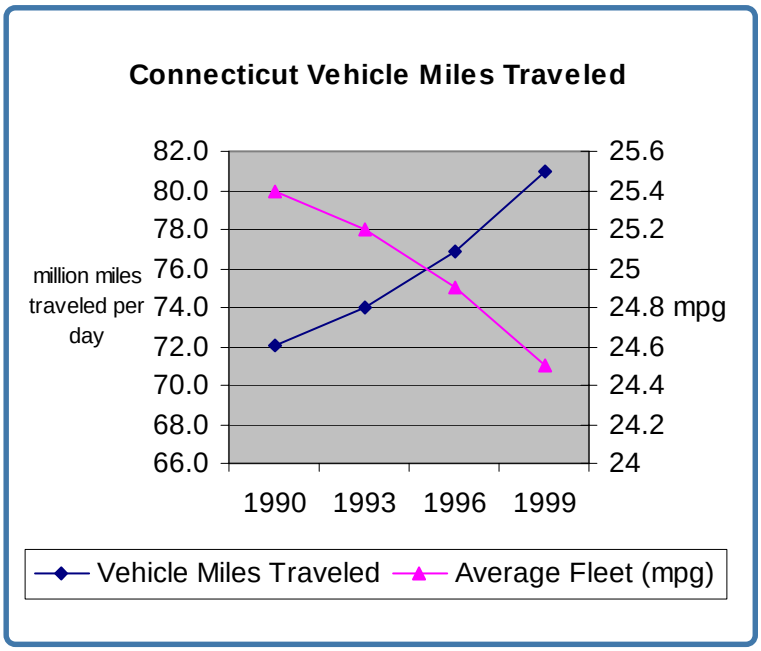
Individual choices greatly impact environmental quality. The amount of solid waste each of us generates and the number of miles we travel each day in our vehicles are examples of the many personal choices we make as consumers. In the past few years the percentage of the waste stream being recycled has remained relatively constant while the amount of solid waste generated has continued to increase. This stresses our ability to dispose of this waste within the state. Source reduction efforts to date have not been able to solve this problem. The growing solid waste disposal problem requires each of us to more carefully consider the choices we make as consumers. To better understand how you can generate less waste, use fewer chemicals and pesticides, and consider a host of other ways to engage in environmentally sensitive decision-making on an individual level, go to http://www.dep.state.ct.us/wst/p2/individual/indiv&fam.htm.



Pollution from passenger vehicles has an enormous impact on New England's air quality, water quality and climate, accounting for approximately one-fourth of all smog-forming pollution and one-fifth of the nation's emissions of carbon dioxide – a greenhouse gas. As vehicle miles traveled continues to climb at a steady

3 "Total Waste Managed," defined as the sum of recycled on-site, recycled off-site, energy recovery on-site, energy recovery off-site, treated on-site, treated off-site, and quantities released on and off-site, is reported to EPA under the TRI laws. For more info on TRI in Connecticut see http://www.epa.gov/tri/tridata/tri00/state/Connecticut.pdf

rate, approximately 12% in ten years[4] (see graph) -the environmental impact of this growth is exacerbated by a drop in fleet fuel economy[5], due in large part to the increased percentage of light trucks (i.e., SUVs) in the fleet. The light truck share of the fleet has grown from 30% to 44% in the past decade, an increase of nearly 50%. The bottom line is we are driving further in bigger, less energy efficient vehicles. Clean vehicles and clean fuel are critical to achieving a cleaner environment in Connecticut. The Department has adopted a variety of programs, both voluntary and regulatory, to help achieve additional emission reductions.



4 Vehicle miles traveled data from Connecticut Department of Transportation.
5 Automotive Fuel Economy Program Annual Update Calendar Year 2001, U.S. Department of Transportation, National Highway Traffic Safety Administration September 2002

Appendix A

Compliance Profiles by Industry Sector or Facility Type

FFY 2002

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. For most programs, the rate of compliance for each category was calculated as follows:

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

Air Management Bureau

Source Category	Inspections Projected FFY 02	Inspections Conducted FFY 02	# of Facilities by Category if Applicable	# of Sources w/ Noncompliance	Compliance Rate for All Sources	# of Sources with SNC[2]	% of SNC[2] Noncompliance
Title V Sources[1]	70	71	112	7	90%	5	7%
General Permit to Limit Potential to Emit	84	88	332	4	95%	1	1%
New Source Review/ PSD	150	182	471	13	93%		
State of Connecticut Sulfur Dioxide Regulations	10	20	20	0	100%	0	0%
Stage II	1954	2031	1600	1104	31%[3]	58	4%
Complaints	500	555	N/A	23	96%	0	0%
Other (Enforcement follow-up, compliance inspections)	100	580					

[1] Title V sources are those that are subject to the federal Title V operating permit program and have either obtained a Title V permit or are in the process of obtaining a Title V permit. .

[2]SNC (significant non-compliance) Based on information available at this time, the violations are significant enough to warrant a formal enforcement response.

[3]Stage II Compliance rate includes a large number of minor violations of labeling, and record keeping requirements. The SNC noncompliance reflects actual failure of the control equipment to control emissions or failure to test that equipment.

Compliance Profiles for Title V Major Sources based on Enhanced Compliance Analysis

Source Category	# of Sources	# of Sources with non-compliance	Compliance rate for all sources	# of sources with SNC	% of sources with SNC
Title V major sources	112	24	78%	11	9.8%

For Enhanced Compliance Analysis the Department was able to use a wide range of compliance assessment tools to determine the number of major sources potentially out of compliance. These tools include NOV's Orders, and AG referrals.

Report Reviews - The Air Bureau receives, reviews and responds to more than 500 compliance certifications annually. Following is a table summarizing reports received and associated compliance rates for FFY 2002.

Report Review Activity Summary

Report Type	Reports Received	Violations Detected	%Compliance
General Permit to Limit Potential to Emit	413	22*	94.7%

*The 22 NOV's were for failure to submit the annual emissions summary

Radiation Division

Inspection Category	# Inspections Conducted	Total # Facilities Inspected	Total # Facilities By Category	# of NOV's	Estimated % Compliance	
					By Total # of Inspected Facilities	By Total # of Inspections
Medical Facilities	495	495	3067	30	94%	94%
Industrial & Radioactive Materials Facilities	106	83	572	7	91%	93%

Waste Engineering and Enforcement Division

Inspection Category	Inspections Projected FFY 02	Inspections Conducted FFY 02	Total # of Facilities By Category	# of NOVs FFY 2002	% Inspected Facilities in Compliance	# of Inspections with SNC	% of SNC* Non-compliance
TSF	5	5	167	4	20%	2	40%
LQG	95	110	416	61	39%	9	8%
SQG	15	17	1712	35	65%**	3	18%
Transporter	5	5	146	16+	80%++	5	0%+++
Volume Reduction	N/A	25	29	9	64%	1	4%
Resource Recovery	N/A	12	7	1	92%	0	0
Transfer Stations	N/A	45	125	9	80%	4	9%
Land Disposal Facilities /Solid Waste	N/A	57	44	9	84%	6	11%

* SNC (Significant Non-compliance) - The violator/violation is significant enough to require a formal enforcement response. In addition to assessing compliance rates based upon Notices of Violation ("NOVs"), the Waste Management Bureau also chose to provide a noncompliance 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.

** Does not include 29 NOVs resulting from complaint investigations, records review, or prior year inspections.

+ Includes 15 NOVs issued to transporters for transporter permit violations (pursuant to CGS 22a-454)

++ % Does not include 15 NOVs issued to transporters that were not issued in response to an inspection

+++ All transporter SNCs were not issued in response to an inspection.

PCB Program

Inspection Category	Inspections Projected FFY 02	Inspections Conducted FFY 02	# of Facilities By Category if applicable	# of Enforcement Cases Initiated in FFY 02	% Inspected Facilities in Compliance
Neutral Scheme	15-25	6	N/A	0	100%
Complaints and Referrals	10-20	15	N/A	2	87%
Clean-up Sites	10-25	4	N/A	1	75%

UST Enforcement Program

Inspection Category	Inspections Projected FFY 02	Inspections Conducted FFY 02	# of Facilities By Category if applicable	# of Enforcement Cases Initiated in FFY 02	% Inspected Facilities in Compliance
98 Deadline Target List/Complaints	300	347	N/A	64	82%/63%*

*82% are compliant with the 1998 federal deadline for tank upgrades; 63% are compliant with current leak detection requirements.

Pesticide Program

Inspection Category	Inspections projected FFY 03	Inspections conducted FFY 02	# of facilities by category if applicable	# of enforcement cases initiated FFY 02	% Inspected facilities in compliance
Agricultural use & complaint follow up	15	35	N/A	3	91%
Non-agricultural complaint follow-up & use investigation	75	98	N/A	54	44%
Producer Establishment	10	12	N/A	0	100%
Market Place	100	137	N/A	61	55%
Certified Applicator Records	142	228	N/A	83	64%
Restricted Use Dealers	15	15	N/A	2	87%

Note: A common pesticide, chlorpyrifos (Dursban), was discontinued 12/31/2001. The resulting inspections and actions upon finding remaining product in the marketplace was the cause for many of the cases in the marketplace category.

Water Management Bureau

Inspection Category	# of Facilities	Inspections Projected FFY02	Actual Inspections FFY02	%Facilities in Compliance based on inspections*	%Facilities in Compliance based on DMR review (not in SNC)
NPDES Industrial Majors	47	47	41	88%*	89%**
NPDES Sewage Treatment Plant (STP) - Majors	67	67	40	93%***	82%**
Pretreatment SIU-Significant Industrial Users	233	186	197	78%	Not Available
NPDES Industrial-Minors	60	6	20	74%*	Not Available
NPDES- STP- Minors	33	3	20	95%***	Not Available

* Based on whether a NOV was issued from the inspection.
** Only NPDES majors are entered in PCS, therefore SNC numbers are generated for these facilities only.
*** For municipal sewage treatment plants, technical assistance is provided in lieu of NOVs when inspections reveal operational problems.

Summary of Enforcement Statistics
Five Year Average 1998-2002

Air Management Bureau

Program Activity	1998 CY	1999 CY	2000 FY	2001 FY	2002 FY	Five Year Average
Warning Notices						
Notices of Violations	338	429*	292	218	**283**	312
Orders	27	35	48	40	**88**	48
Referrals(AG/EPA/CSA)	10	7	6	4	**1**	6

*Includes Radiation Division NOVs for the first time.

Waste Management Bureau

Program Activity	1998 CY	1999 CY	2000 FY	2001 FY	2002 FY	Five Year Average
Warning Notices	23	27	24	20	**5**	20
Notices of Violations	461	501	524	490	**384**	472
Orders	36	61	127	112	**103**	88
Referrals(AG/EPA/CSA)	40	42	38	35	**28**	37

Water Management Bureau

Program Activity	1998 CY	1999 CY	2000 FY	2001 FY	2002 FY	Five Year Average
Warning Notices						
Notices of Violations	477	486	356	347	**384**	410
Orders	54	39	41	50	**45**	46
Referrals(AG/EPA/CSA)	17	17	14	10	**6**	13

Department-Wide Five Year Average 1998-2002

Activity	1998* CY	1999* CY	2000* FY	2001* FY	2002* FY	Five Year Average
Referrals(AG/EPA/CSA)	67	66	63	53	**35**	57
Orders	124	146	230	215	**244**	192
Notices of Violation	1293	1439	1258	1100	**1073**	1233
Total Enforcement Actions**	1484	1651	1551	1366	**1352**	1481

*Including the Office of Long Island Sound Programs
**Does not include Warning Notices

Enforcement Statistics - FY 2002
(October 1, 2001-September 30, 2002)

Actions	Air Management Bureau	Water Management Bureau	Waste Management Bureau	Office of Long Island Sound Programs	Total for Year (10/01/01-9/30/02)
Warning Notices Issued under CGS ?22a-6s	N/A	N/A	5	N/A	5
Notices of Violation Issued	283	384	384	22	1,073
Consent Orders Issued	82[1]	25	99[2]	7	213
Administrative Penalties Assessed (# cases)	$180,410(48)	$255,495(9)	$365,128.36(77)	$14,750(6)	$815,783.36(140)
Supplemental Environmental Projects (# cases)	$244,118(5)	$910,343(9)	$445,210.68(13)	$0.00	$1,599,671.68(27)
Unilateral Orders Issued	6	20	4	1	31
Attorney General Referrals	1	6	21	0	28
Judicial Settlements					
Penalties	$300,500	$807,186	$2,356,064	$0.00	$3,463,750
Supplemental Environmental Projects	$20,000	$500,964	$127,786	$0.00	$648,750
Chief State's Attorney Referrals	0	0	4	0	4
Referrals to EPA	0	0	3	0	3
Inspections Conducted	4,304	1,418	1,866	186	7,774

[1] Includes 17 Trading Orders and 38 expedited consent orders to address non-compliance with Stage II testing requirements.
[2] Includes 55 expedited consent orders to address UST non-compliance and 7 expedited consent orders to address unlicensed arborists.

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"), for the federal fiscal year (FFY = October 1, 2001 - September 30, 2002), for all applications received since January 1, 1996.

Federal Fiscal Year 01/02 Statistics

Bureau		Applications Received	Permits Issued	Applications Closed[1]	Applications Pending (as of 09/30/02)
Air	General Permits	1102	353	502	541
	Individual	276	184	378	341
	Short Process	51	37	73	20
Office of Long Island Sound Programs	General Permits	32	22	25	16
	Individual	149	100	102	228
	COP[2]	167	140	157	36
Water	General Permits	1255	1096	1114	396
	Individual	103	255	301	627
Waste	General Permits	17	9	27	24
	Individual	63	69	77	116
	Short Process	736	712	729	29
All DEP	General Permits	**2486**	**1480**	**1668**	**977**
	Individual	**791**	**608**	**858**	**1312**
	Short Process	**954**	**889**	**959**	**85**
	Totals All Apps	**4231**	**2977**	**3485**	**2374**

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

Average Time in Days							
Bureau	**Sufficiency Decision**	**Sufficiency After Notice of Insufficiency**	**Tentative Determination** (**N.B.** this statistic only includes individual permit applications)	**Issue Permit DEP Time**	**Issue Permit Total Time**	**Close Application DEP Time**	**Close Application Total Time**
Air	26	12	204	188	238	257	273
OLISP	48	29	65	134	211	153	220
Water	42	30	252	101	127	119	148
Waste	7	20	299	62	77	81	103
All DEP[1]	**40**	**24**	**158**	**110**	**142**	**147**	**186**

Timeliness

Bureau	**On Schedule (vs. Plan)**	**On Schedule (vs. Revised)**
Air	78.90%	83.80%
OLISP	60.15%	79.34%
Water	81.52%	88.17%
Waste	88.21%	97.67%
All DEP	**80.84%**	**88.94%**

[1] 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*	
10/1/01 - 9/30/02	**$1,637,180**

* 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*	
7/1/01 - 6/30/02	**$923,069**

* 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* (7/1/01 - 6/30/02)
Application Fees Refunded for a Total of **$35,296**

* Refunds reflect withdrawn applications, duplicate fees, etc.