State of Connecticut
Department of Environmental Protection

Environmental Compliance Annual Report 2001

Special Feature: Focus on Mercury

Arthur J. Rocque, Jr.
Commissioner

April 2002

Cover photograph: Hammock River, Clinton

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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.

Preface

The Department of Environmental Protection ("Department") is pleased to submit this year's annual report to the joint standing committee of the General Assembly having cognizance of matters relating to the environment. While continuing previous reports' focus on compliance and enforcement activities, this report also includes the Department's report on permitting efforts as required by Conn. Gen. Stat. Section 22a-6r. In general, permitting and enforcement activity remains relatively constant. However, activity-based reporting informs the reader of agency processes, not what was accomplished in terms of environmental protection as a result. Therefore, this report devotes more attention to describing outcomes as they relate to those compliance assistance, permitting, and enforcement activities. Featured at the outset of this report is an outcome-based summary of the Department's recent efforts to eliminate mercury as a public health and environmental threat. It provides an example of what we can and have yet to achieve on a targeted environmental problem.

Next year's report will reflect a much greater evolution in the way the Department reports on its performance. Recognizing that the environmental challenges of the 21st century will require increasingly sophisticated solutions, the Department is undergoing a comprehensive strategic and operational planning effort to integrate and direct its resources in the most efficient and effective manner possible. For much of 2001, the Department worked to develop a single strategic plan for the Air, Water and Waste Management Bureaus and the Office of Long Island Sound Programs that identifies in advance agency priorities and associated strategies needed to solve important environmental problems. More emphasis is being placed on overall program integration. Nine priorities for the Environmental Quality Branch have been identified. These new strategic priorities will focus and coordinate efforts to accomplish objectives identified by environmental and natural resource management needs. The nine Environmental Quality Branch strategic priorities for fiscal years 2002 –2004 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. Next year's report will more fully present the Department's strategic priorities and then update the reader on progress made to date in addressing them. By so doing, the Department expects to convey a more meaningful view of the state of our environment.

State of the Environment

This year's annual report begins by highlighting the Department's ongoing effort to eliminate mercury as a public health and environmental threat. The encouraging news is that meaningful progress has been made -- there is greater public awareness of the dangers posed by mercury, it is being collected and properly managed at ever increasing volumes, sources of mercury contamination are being eliminated and better controls on mercury emissions from trash burning plants are now in place. Despite these and other efforts from both within and outside the Department, much more needs to be done to address those aspects of the problem within our control. Most importantly, we must phase out mercury containing products, eliminate mercury-added products where environmentally preferable alternatives exist, increase the safe collection of mercury-added products and inform the public through labeling requirements that certain common household products contain mercury.

Why the Focus on Mercury?

Like lead and PCBs, mercury has long been known to have toxic effects on humans and wildlife. A persistent, bioaccumulative pollutant, exposure to high levels of mercury can permanently damage the brain, kidneys and developing fetus. Mercury can cause behavioral and physical changes such as shyness, irritability, tremors, changes in vision or hearing and memory problems.

Consumers of fish are at greatest risk. Microorganisms in water help convert mercury to the highly toxic methylmercury. Small organisms and plants take up the mercury as they feed. As animals higher up the food chain eat those plants and organisms, they, too, take in methylmercury. This process of bioaccumulation continues with levels of mercury increasing up the food chain. As a result, fish higher in the food chain such as various bass species, swordfish and shark have much higher mercury concentrations than fish lower on the food chain.

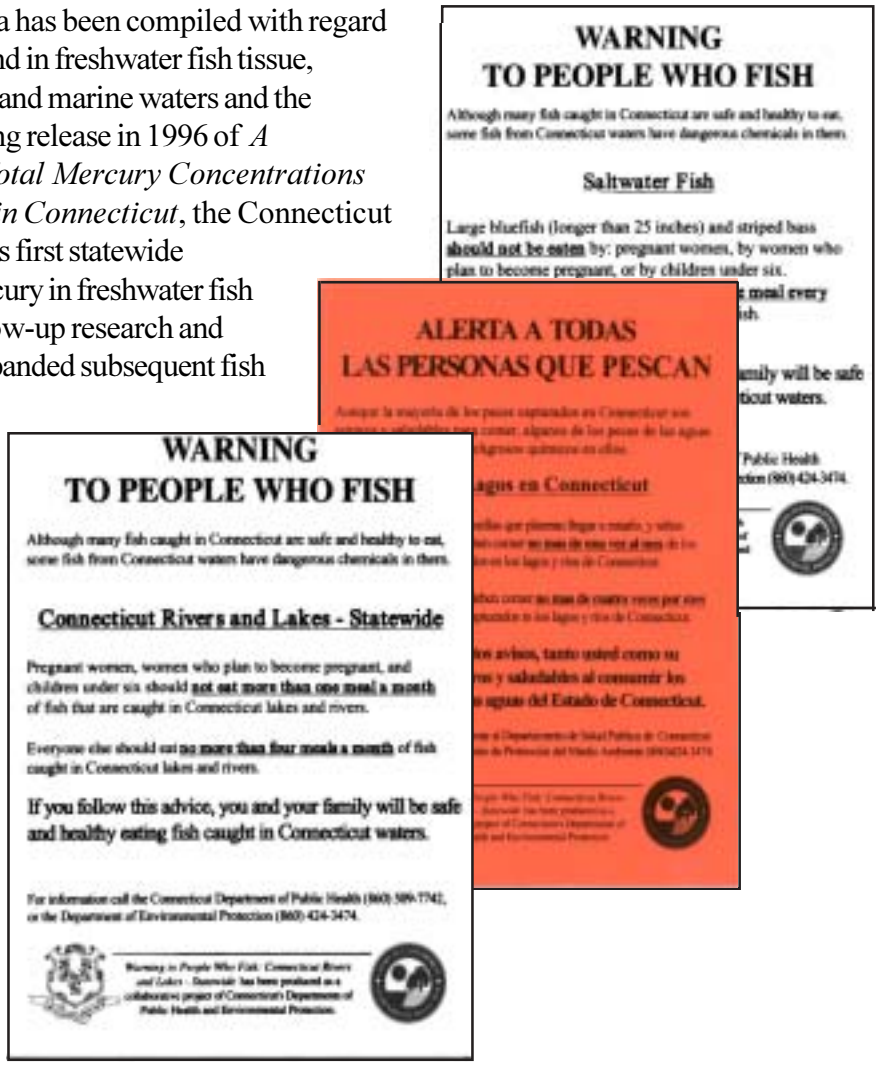
Mercury contamination is the most frequent basis for fish advisories-all six New England states have advisories for mercury in one or more water bodies. In Connecticut, concentrations of methylmercury are high enough in certain fish that the Departments of Public Health and Environmental Protection have issued fish advisories for **all** of Connecticut's freshwater bodies as well for specific ocean fish off our shores.

Where Does Mercury Come From?

A primary source of mercury pollution is mercury released to the air from combustion processes and deposited directly to surface waters and soil. According to a June 2001 EPA fact sheet, solid waste incineration and fossil fuel combustion facilities contribute approximately 87% of the emissions of mercury in the United States. Connecticut has the highest per capita rate of waste combustion in the nation. In 2000, 82% of Connecticut's municipal solid waste that required disposal was combusted at one of the state's six resources recovery facilities. Included in that waste were thermometers, thermostats, fluorescent bulbs, novelty items and a host of other products containing mercury. Additionally, Connecticut lies "downwind" from numerous coal-fired power plants located throughout the midwestern states. Prevailing winds carry mercury and other pollutants from other regions to the northeast, a region that has, according to EPA, among the highest mercury deposition rates in the country. Other sources include industrial activities, wastewater treatment plants and mercury that occurs naturally in the environment.

Mercury Monitoring and Research

In the past six years, much data has been compiled with regard to mercury concentrations found in freshwater fish tissue, aquatic sediments, freshwater and marine waters and the ambient atmosphere. Following release in 1996 of *A Preliminary Assessment of Total Mercury Concentrations in Fishes from Water Bodies in Connecticut*, the Connecticut Department of Health issued its first statewide consumption advisory for mercury in freshwater fish from Connecticut lakes. Follow-up research and monitoring has refined and expanded subsequent fish consumption advisories.



In addition to fish tissue monitoring, from 1996 to 1999 the Department partnered with the University of Connecticut to establish a statewide Atmospheric Mercury Monitoring Network. As a result of this extensive three-year effort, the spatial and seasonal distribution, as well as deposition, of atmospheric mercury in Connecticut is better

understood. Research on atmospheric deposition models for mercury in Connecticut began in April 2000. Atmospheric deposition is a part of the cycling of nutrients and toxic chemicals in the environment, and provides a critical link between air and water quality. Comprehensive, up-to-date databases of mercury emissions as a result of human activity have been analyzed for use in a Connecticut Air Quality Model. The objective of this project is to quantify the atmospheric cycling of mercury in the Connecticut region and to estimate the effects of changes in mercury emission regulations on mercury transport and deposition using simulation models.

Finally, through the State's Clean Water Fund/Long Island Sound Program Projects, the Department has sponsored research concerning mercury in Long Island Sound sediments and Connecticut wetlands. In a final report submitted to the Department in January 2002, researchers indicated that mercury accumulation rates in marshes and Long Island Sound were substantially larger than estimated atmospheric mercury deposition rates. A preliminary estimate of mercury inputs into the Sound suggests that the Connecticut and Housatonic rivers are the main sources of mercury-contaminated sediments into the Sound. The report concludes that on average, about 33% of the mercury in Long Island Sound surface sediment is derived from wastewater inputs prior to the adoption of Connecticut's water pollution control laws and the regulation of wastewater discharges.

Mercury Control Efforts to Date

Legislative and Regulatory Action

Connecticut has made strides in its effort to reduce mercury in the environment. In 1990, the General Assembly adopted the Toxics in Packaging Act that required the elimination of mercury from most packaging within two years. In 1992, Connecticut became one of the first states to pass a law restricting the level of mercury in alkaline batteries. More recently, in 1999, Connecticut adopted a standard more stringent than federal requirements for the control of mercury emissions from solid waste combustors. In October 2001, as part of revisions to its hazardous waste regulations, Connecticut adopted the Universal Waste Rule ("UWR"). In general, the UWR reduces the regulatory burden on handlers of certain hazardous wastes by allowing for longer waste storage, by reducing record-keeping requirements and by sanctioning the consolidation of wastes off-site without a permit. The UWR outlines management practices for four specific waste streams - batteries, certain pesticides, thermostats and lamps. Thermostats and lamps were included in the Universal Waste Rule specifically to reduce the amount of mercury in the solid waste stream.

Voluntary Efforts

In September 2000, Commissioner Arthur J. Rocque, Jr. announced a goal of collecting 2001 pounds of mercury within a year. Thus began a campaign to educate the general public on the dangers of mercury, to collect existing stockpiles of mercury from households, and to partner with schools, household hazardous waste programs, dental offices and auto recyclers to recover additional mercury and mercury compounds. This highly successful effort has resulted in the removal of over 2,020 pounds of mercury from the solid waste stream.

Automotive Switches: In many cars, mercury-containing switches are used to trigger the trunk and hood lights. In 2001, the Department provided mercury education and training to used car dealers, auto recyclers, the State of Connecticut fleet operations, and the City of Hartford fleet operations. Employees were instructed on the removal, proper disposal and replacement of mercury switches with switches that are mercury-free.

Enforcement Actions

The Department uses its enforcement powers against known or suspected dischargers of mercury. For example, the Department recently referred the Mattabassett District wastewater pollution control facility to the Office of the Attorney General for the filing of a civil action. Central to the case are a number of mercury releases from the facility that occurred between 1995 and 1998. More specifically, leaking liquid mercury from the facility's processing equipment passed with wastewater being discharged to the Connecticut River. Realizing other water pollution control facilities might also be a source of mercury discharges, the Department surveyed like facilities in the State to determine if they used mercury-containing equipment. Some did and, with the Department's assistance, water pollution control facilities in the State removed at least 71 pounds of mercury before it could be released to the environment.

School Laboratory Cleanouts: There have been a number of mercury spills in Connecticut schools resulting in children being exposed to mercury, large clean up bills and lawsuits. For example, on January 25, 2001 at the Quirk Middle School in Hartford, a student brought to school a vial of mercury. After children played with the vial, officials shut down the school's air circulation system and evacuated the area. One hundred forty-seven individuals were evaluated for exposure to mercury and hundreds of meter readings were taken throughout the potentially contaminated section of the school. Floors, desks or other flat surfaces were washed clean and contaminated materials that could not be cleaned were discarded. Air sampling was conducted and when the samples tested negative for airborne mercury, the school was allowed to reopen. The incident cost the Hartford school system $50,000. Between February 2000 and February 2001, over 283 pounds of mercury and mercury compounds were removed from school science labs. Some of the cleanouts were included as supplemental environmental

Voltarc Technologies, Inc. is a manufacturer of various mercury-containing lamps. Inspections at the facility by Department staff noted, among other violations, Voltarc's failure to perform hazardous waste determinations for off-specification lamps. Mercury-containing wastes from the production process (broken and intact lamps) were being discarded

in a trash compactor and making their way to the Bridgeport resources recovery facility. As a result, the Department issued a consent order to Voltarc in January 2000. Under the terms of the order, Voltarc committed to correct all known hazardous waste violations, verify proper handling of waste mercury-containing lamps and to investigate and remediate any releases of mercury from the compactor to the environment. In addition, the company paid a $75,000 penalty for past violations.

Thermometer Exchanges: Since September 2000, 70,000 mercury fever thermometers containing over 90 pounds of mercury have been collected statewide through thermometer exchanges sponsored by the Department, hospitals, household hazardous waste collection facilities and private corporations. Over 60,000 new alkaline battery operated digital thermometers were distributed as replacements.

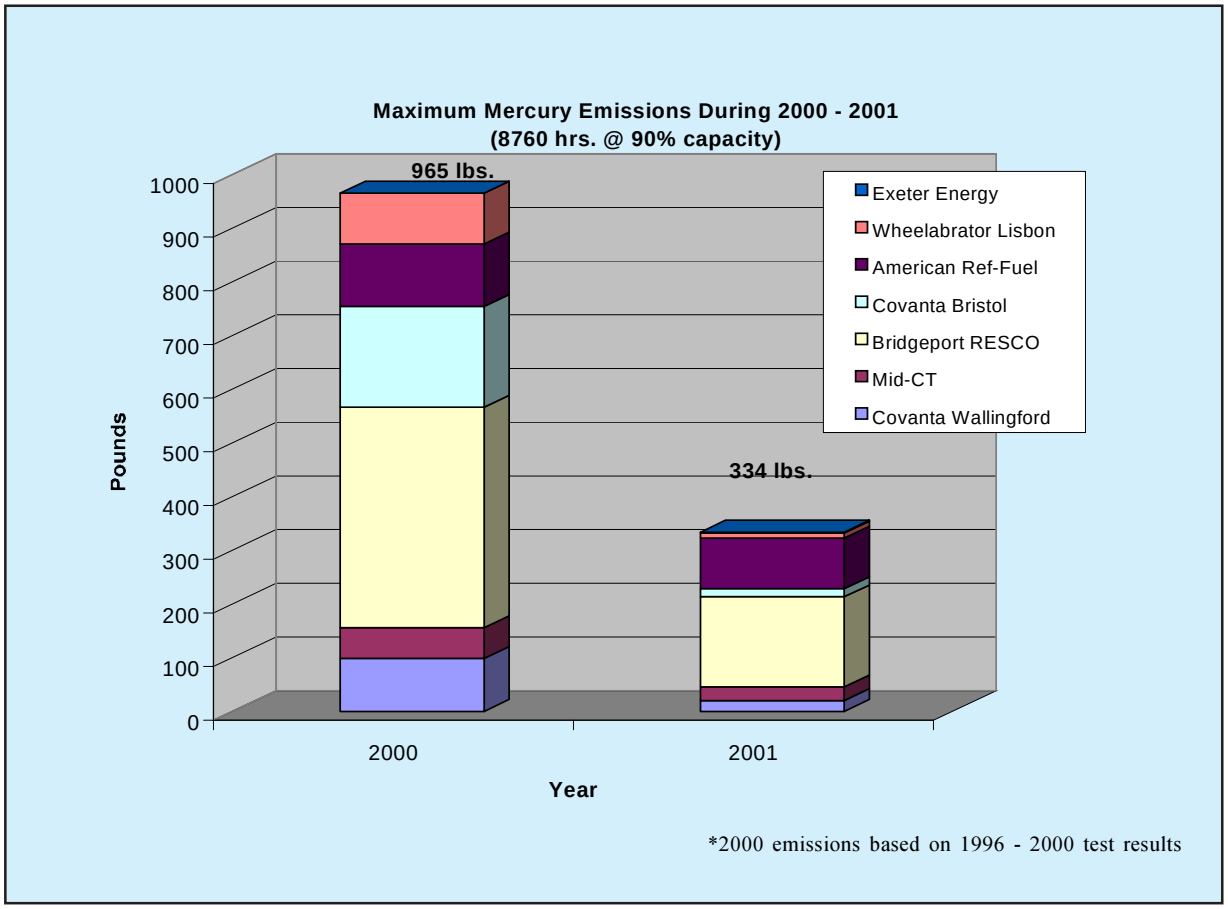
In another case against a lamp manufacturing company, the Department referred Light Sources, Inc. and L. S. Neon ("LSI") to the Attorney General's Office for mismanagement of mercury-containing hazardous wastes. In addition to mercury contamination on three company-owned parcels in Milford and Orange, mercury was transported from an LSI site and polluted wetland sediment associated with the Oyster River and Cascade Brook. A temporary injunction was issued requiring LSI to obtain all necessary permits, investigate all three sites, provide for interim remediation of soil and sediment pollution and undertake interim mitigation measures associated with septic systems.

Mercury Emission Controls

Seven resources recovery facilities house Connecticut's seventeen largest mercury-emitting units. In 1997, an estimated 45% of mercury emissions in the Northeast came from municipal solid waste combustors or resources recovery facilities and 6% was from sewage sludge incinerators. Mercury emissions from these facilities are directly dependent upon the materials being incinerated.

Dental Mercury Collection: The Department's Office of Pollution Prevention partnered with the National Wildlife Federation and the Connecticut State Dental Association ("CSDA") to revise and publish a guide entitled, "The Environmentally Responsible Dental Office: A Guide to Proper Waste Management in Connecticut Dental Offices". Following widespread distribution of the guide, the Department coordinated with the CSDA to collect 412 pounds of bulk dental mercury from dentists around the State.

As a result, in 2000, the Department revised its air regulations to require as stringent as possible controls on mercury emissions from resources recovery facilities. Sources subject to the regulation were required to meet a mercury emission limit of 0.080 milligrams per dry standard cubic meter or an 85% reduction by weight by December 19, 2000. By June 2002, sources are required to further reduce mercury emissions to 0.028 milligrams per dry standard cubic meter or an 85% reduction by weight. The 2002 standard is far more stringent than corresponding federal regulations.



To comply with the new regulatory limits, resources recovery facility owner/operators installed carbon injection mercury control units. As a result of voluntary efforts to remove mercury from the solid waste stream and the installation of new facility controls, mercury emissions at the facilities dropped dramatically. Based on actual stack testing results, mercury emissions from these sources decreased 65% in a single year, from a maximum of 965 pounds in 2000 to 334 pounds in 2001. Facilities had actual emissions well below the allowable rate for 2001. In fact, all but two units are already below the regulatory allowable emission rate scheduled to take effect in June 2002. Controls installed to date have been very effective, with seven of the seventeen units exceeding 90% mercury removal efficiency. The Department expects a further 12% reduction in mercury emissions from the seventeen units operating at the State's resources recovery facilities as these facilities improve their control systems in anticipation of the 2002 standard.

Regarding sewage sludge incinerators, last year the General Assembly passed legislation requiring owners or operators of all sewage sludge incinerators to stack test for "mercury, metals and hydrocarbons" on or before January 1, 2002 and annually thereafter (P.A. 01-204 (13)). Over 90% of the sewage sludge generated in Connecticut is incinerated. Connecticut's sewage sludge incinerators are owned or operated by the City of Waterbury, the Mattabassett District in Cromwell, the Metropolitan District Commission in Hartford, the Naugatuck Treatment Company and the New Haven Water Pollution Control Authority. Testing conducted in 2001 demonstrate that all but one of these facilities are within allowable mercury limits contained in Connecticut's hazardous air pollutant regulations. The Department is currently pursuing through administrative enforcement the sole noncompliant facility.

Future Actions

The Department's decision to focus on mercury is directly related to the unhealthy levels of the pollutant in fish consumed by the people of this State. Strategically, a program that will effectively reduce risk exposure for consumers of fish must be designed using appropriate program measures and indicators of progress. The Department intends to, within available funds, continue to conduct fish tissue sampling to monitor changes in mercury levels over time. In addition, the Department will update its 1998 inventory of mercury sources to assess the level of reductions that have taken place due to prevention and control initiatives. The inventory will then be expanded to include sources that were not covered in the 1998 effort. Between determining the levels of mercury in fish and the introduction of mercury into the environment is a very complicated set of physical and chemical conditions. The current challenge is to design measurement systems such as air and water deposition monitoring and modelling needed to guide the Department's understanding of these intricate connections and to assure realistic rates of risk reduction.

Conclusion

Mercury is a toxic pollutant that poses a real public health and environmental threat. The Department has applied numerous and diverse strategies to reduce the presence of mercury in the environment, including legislative action, regulatory controls, voluntary efforts, and enforcement. The results of these initiatives are uniformly positive. More than 2,020 pounds of mercury were removed from the solid waste stream in a single year and mercury emissions from the State's resources recovery facilities fell from 965 pounds in 2000 to 334 pounds in 2001. But there is a limit as to what can be accomplished through voluntary efforts, enforcement and facility controls. In a State that relies on waste combustion to dispose of 82% of its municipal solid waste, mercury must be removed from products to the maximum extent possible **before** they become part of the waste stream. Only by phasing out mercury containing products, eliminating mercury-added products where environmentally preferable alternatives exist, increasing the collection of mercury-added products and informing the public through labeling requirements can we approach the regional goal of virtually eliminating the discharge of anthropogenic mercury to the environment.

2001 Highlights

While similar in many respects to previous editions, this year's annual report presents several new initiatives and actions that reflect or result in subtle changes to the way the Department pursues its stated mission. Each new permit issuance, compliance assistance effort, regulation or enforcement action has a rich and detailed history that cannot be fully presented here. Instead, the Department provides the following brief summaries of some of the more significant events occurring in 2001 to highlight the dynamic nature of environmental protection.

BEC Corporation v. Commissioner of Environmental Protection, 256 Conn. 602 (2001). This Supreme Court decision established the "responsible corporate officer" doctrine in Connecticut. A corporate officer is personally liable to correct potential sources of pollution to the waters of the state when: (1) the officer is in a position of responsibility that allows that officer to influence corporate policies and activities; (2) there is a nexus between the officer's actions or inactions in that position and the violation of Conn. Gen. Stat. Section 22a-432 such that the corporate officer influenced the corporate action that constituted the violation; and (3) the corporate officer's actions or inactions resulted in the violation.

International Paper Company Consent Order: International Paper Company ("IP") entered into an administrative consent order with the Department for failure to have sufficient nitrogen oxides (NOx) emission reduction credits ("ERCs") on hand to offset 422 tons of excess NOx emissions from its two boilers. Calculations by the Department using IP's continuous emissions monitoring data and actual fuel use records show that the total excess NOx emissions were approximately 646 tons compared to the 224 tons reported to the Department by IP. The consent order required IP to expend not less than $750,000 to acquire and permanently retire as many approved ERCs as possible. IP acquired and permanently retired 1000 tons of approved NOx ERCs on March 16, 2001.

Leydon v. Town of Greenwich, 257 Conn. 318 (2001). The Connecticut Supreme Court overturned on constitutional grounds the town of Greenwich's restrictive, resident-only ordinance involving beach access at Greenwich Point Park. The Commissioner, acting as friend of the court, participated in the action to preserve the public trust doctrine as a separate and important aspect of the Commissioner's regulatory domain. Under the public trust doctrine, the public has the right to gain access to that portion of any beach extending from the mean high tide line to the water, but not through or over land landward of the mean high tide line.

Nitrogen Reduction in Long Island Sound: The Department is making significant progress in implementing a public act designed to reduce nitrogen loading in Long Island Sound. The new law sets up a Nitrogen Credit Exchange for the 79 Publicly Owned Treatment Works ("POTW") in the state that are now required to reduce their nitrogen loads. The law provides for, among other provisions, the development of a nitrogen general permit that establishes individual discharge limits for each POTW based on Total Maximum Daily Load, allows nitrogen credits to be bought and sold among permittees, and the establishment of a Nitrogen Credit Advisory Board.

MacDermid v. DEP, 257 Conn. 128 (2001). MacDermid sought and was denied by the Department an exemption from certain hazardous waste regulations. On appeal, MacDermid claimed that the trial court improperly deferred to the Department's regulatory interpretation. The Supreme Court disagreed, finding that "the application of [the hazardous waste] regulations requires a technical, case-by-case review…that is precisely the type of situation that calls for agency expertise." As a result, certain corrosive liquid wastes recycled at MacDermid's Waterbury facility had to be transported and handled in accordance with the strict requirements of Connecticut's hazardous waste rules.

Hazardous Waste Regulations: The Department issued revised hazardous waste regulations that became effective in October 2001. Included in the new regulations is the federal Universal Waste Rule, a provision that outlines management practices that reduce the regulatory burden for generators of batteries, certain pesticides, and mercury-containing thermostats and lamps.

***Commissioner of Environmental Protection v. Joseph J. Farricielli*:** The Superior Court found Joseph J. Farricielli, owner of a landfill and tire pond located on State Street in Hamden, in contempt of court and ordered him to pay more than $2.3 million in penalties to the state and $1.4 million to the town of Hamden for violating a 1998 agreement that required him to close and cap the tire pond and cease the operation of illegal solid waste facilities. Farricielli is required to pay for the extensive remediation at the site, post bonds to cover the costs of the remediation and is prohibited from engaging in any solid waste activities at the site.

General Permit Compliance: The Department continues to focus resources on assuring compliance with the terms and conditions of general permits. For example, registrants covered under the General Permit for the Discharge of Minor Tumbling or Cleaning of Parts Wastewater ("tumbling general permit") were the subject of intense review. The tumbling general permit requires registrants to monitor for certain pollution parameters at a particular frequency, maintain the analytical results at the facility and make them available to the Commissioner immediately upon request. In 2001, the Department reviewed the compliance status of all 159 tumbling general permit registrants. In addition to providing compliance assistance to all registrants, the Department took formal enforcement action against sixteen companies that failed to conduct any of the required monitoring.

Self-Policing: In 2001 EPA Region I and the New England states launched two initiatives aimed at promoting within the regulated community the self-discovery, disclosure, correction and prevention of violations. The current initiatives are directed at municipal vehicle maintenance facilities and colleges and universities. A participant in the initiative is much less likely to pay a large fine or face formal enforcement action and, for a limited time, is a low inspection priority for both EPA and the State. In Connecticut, twenty-four municipalities and thirty-three colleges/universities are participating in the self-policing initiatives. Through the initiatives, the Department expects that violations that may have otherwise gone undetected will be identified, disclosed and corrected.

Reinspecting Serious Violators: To assure long-term compliance at facilities that have been previously subject to formal enforcement, the Department adopted a *Policy on Inspecting A Facility Previously Subject to Formal Enforcement Action*. Under the policy, the Department will reinspect a facility not more than three (3) years following closure of a formal enforcement action to assure continued compliance with environmental requirements.

Compliance Assurance in the Control of Sulfur Dioxide Emissions: To assure compliance with the new sulfur dioxide emissions standards and fuel sulfur limits, Air Bureau staff provided a comprehensive explanation of regultory requirements and compliance expectations to owners of emission units subject to the new regulation. Staff highlighted in writing the emission standards, monitoring issues, record keeping and reporting requirements and made it clear that full compliance was an enforcement priority. Additionally, the Department addressed issues such as the generation of emissions reduction credits, requests for compliance extensions, and the implications of a fuel emergency. Field staff then performed inspections at the seven largest facilities to assure awareness of and compliance with the regulations. Performed between September 2001 and November 2001, inspections focused on the sulfur content of fuels combusted. The inspectors also reviewed with facility operators the new emission standards and how to conduct the monitoring, record keeping, and reporting necessary to demonstrate compliance with the standards.

Cadlerock Properties Joint Venture, L.P. v. Commissioner of Environmental Protection, 253 Conn. 661 (2000). The Connecticut Supreme Court upheld a pollution abatement order issued by the Department to Cadlerock, as property owner, to remediate contamination on 335 acres of property in Ashford and Willington. The property was contaminated at the time of Cadlerock's purchase. In its appeal of the order Cadlerock argued, among other things, that by issuing an order against Cadlerock but not against prior owners or a former lessee of a portion of the property, the Department had engaged in selective enforcement. The court disagreed, finding substantial evidence in the record to affirm the hearing officer's decision on the order. The court also stated that there was no evidence to suggest that the Department acted arbitrarily or abused its discretion when it issued a pollution abatement order to Cadlerock to remedy pollution on Cadlerock's property.

Air

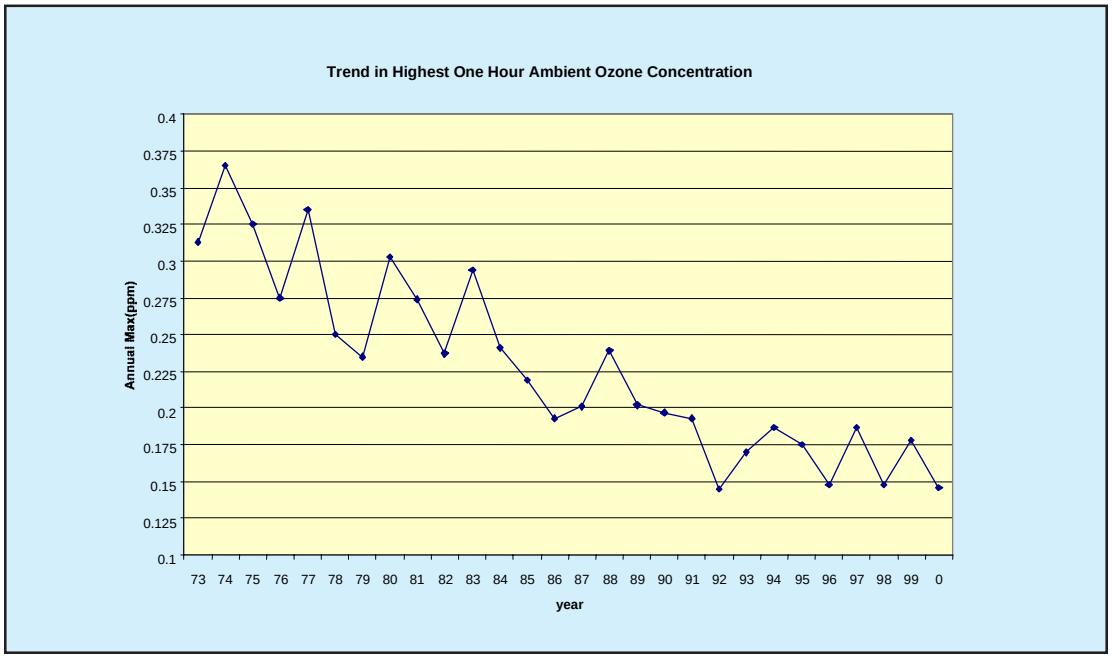
Thirty years ago, the citizens of Connecticut were exposed to a host of air pollution problems. Increases in energy consumption, industrial expansion, population growth, and the increased use of private motor vehicles produced unparalleled levels of air pollution. By the early 1970s, pollutants in Connecticut's air exceeded the health-based standards for particulate matter, sulfur dioxide, nitrogen dioxide, ozone, lead and carbon monoxide. Recognizing the need to clean the air, state and federal administrators began addressing the primary causes of the poor air quality.

Since then, the State has made remarkable progress in improving air quality. Despite continued increases in vehicle miles traveled and business productivity, Connecticut is now classified as "attainment" for carbon monoxide, lead, nitrogen oxides, and sulfur oxides. For these four pollutants, monitoring data from all regions in the State show continued compliance with the applicable ambient air quality standards. Further, only the New Haven area remains classified as "nonattainment" for particulate matter of less than ten microns in size. Available monitoring data indicate that New Haven achieved compliance with the particulate matter standard in 1997. Therefore, the State is currently pursuing redesignation of the New Haven area from nonattainment to attainment.

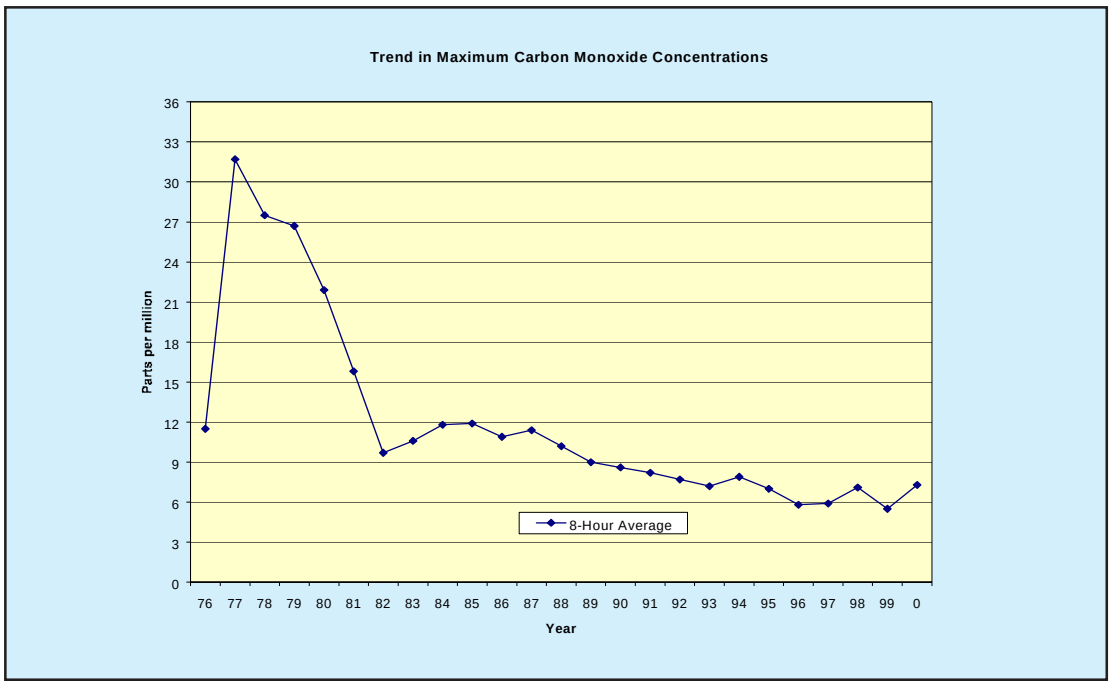
Recent studies link existing levels of particulate matter with adverse health effects such as premature mortality from respiratory and cardiovascular disease and increased incidence of respiratory illness in exposed populations. In one major study, the risk of mortality in cities with the highest levels of fine particulate pollution was approximately 15 to 25% higher than in cities with the lowest particulate levels. *The elderly and children were identified as the most "sensitive" members of the population.* As part of its strategy to aggressively manage particulate pollution, the Department established and operates an extensive ambient air monitoring network. Among other things, the network measures fine particulate (less than 2.5 microns in diameter) and PM10 (greater than 10 microns in diameter) pollution levels in the air. Ambient monitoring data informs Department decisions on current and future reduction strategies employed to reduce air pollution consistent with the National Ambient Air Quality Standard. Other elements of the particulate reduction program include reducing risk exposure to diesel emissions through voluntary strategies designed to eliminate unnecessary idling and through the use of emission reduction technology such as ultra-low sulfur diesel fuels and retrofitting engines with particulate filters or oxidation catalysts.

Despite real progress, ozone exceedances remain a problem in the State. Nitrogen oxide emissions contribute to unhealthy surface level ozone throughout the northeast, including Connecticut. Surface level ozone plays a part in many respiratory health problems including shortness of breath, coughing, nausea, throat irritation and increased susceptibility to respiratory infections. An ozone "nonattainment" classification applied to an area reflects to what degree pollutant measurements have exceeded the ambient air quality standard. For example, the entire State is designated as "nonattainment" for ozone, but the classification varies from serious to severe. The area comprising Fairfield County (excluding Shelton), plus the towns of New Milford and Bridgewater, is classified along with New York City and northern New Jersey as "severe nonattainment" for ozone, while the remainder of the state is classified as "serious nonattainment". Out of state sources are responsible for the higher ozone concentrations measured in the southwest part of Connecticut.

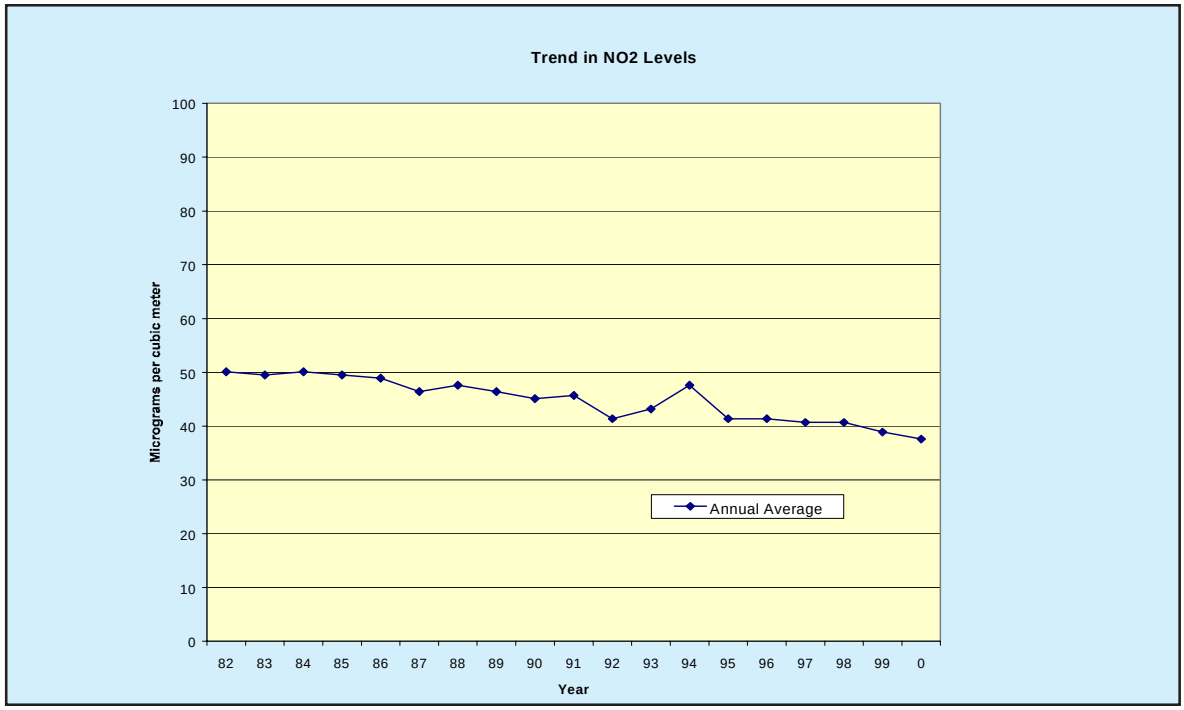
The following pages provide graphic illustration of the long downward trend in ambient concentrations of all six criteria pollutants in Connecticut.



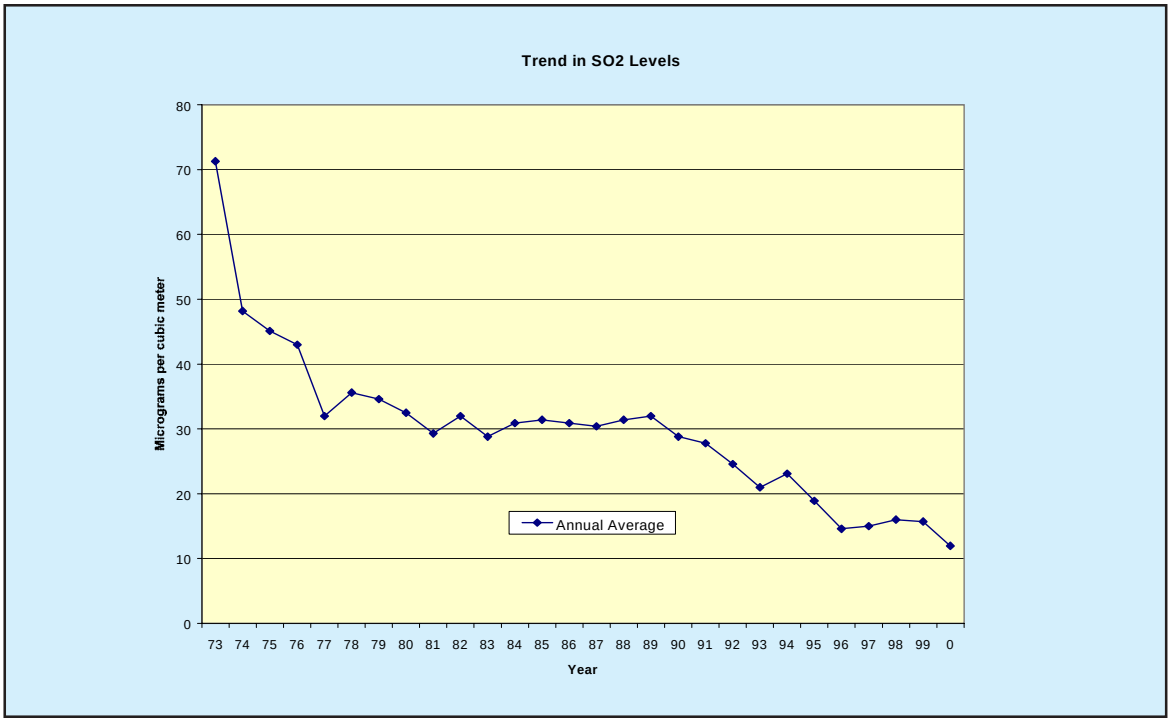
Ozone exceedances have decreased 60% (from .365 to .146 parts per million) since 1974 . In addition to large reductions in the number of unhealthful days due to high ozone, peak ambient concentrations are also declining, which means that the amount by which Connecticut exceeds the ozone standard on unhealthful days has been greatly reduced. Data collected since the 1970's indicates that the number of days on which temperatures exceed 90 degrees has a direct relationship to the number of health standard exceedances. Due to regional transport of air pollutants, Connecticut's highest ozone concentrations occur on days when surrounding states also record high concentrations.



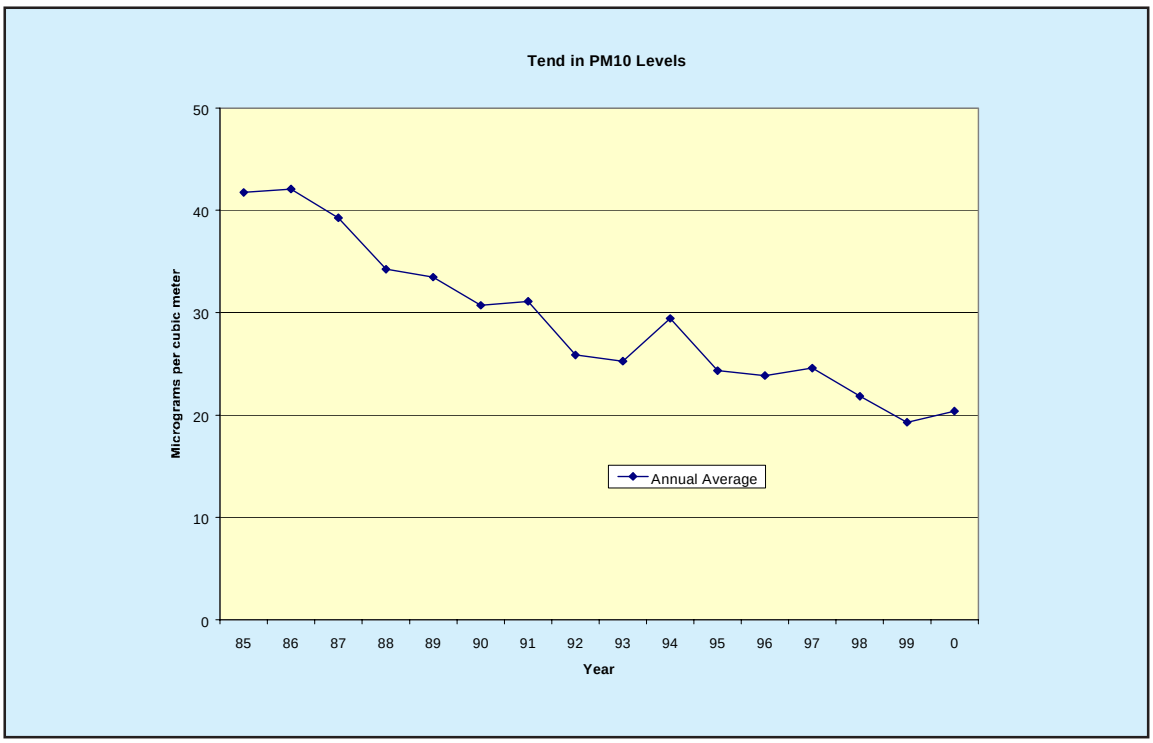
Carbon monoxide levels have dropped by more than 75% (from 31.7 to 7.3 parts per million) since 1977.



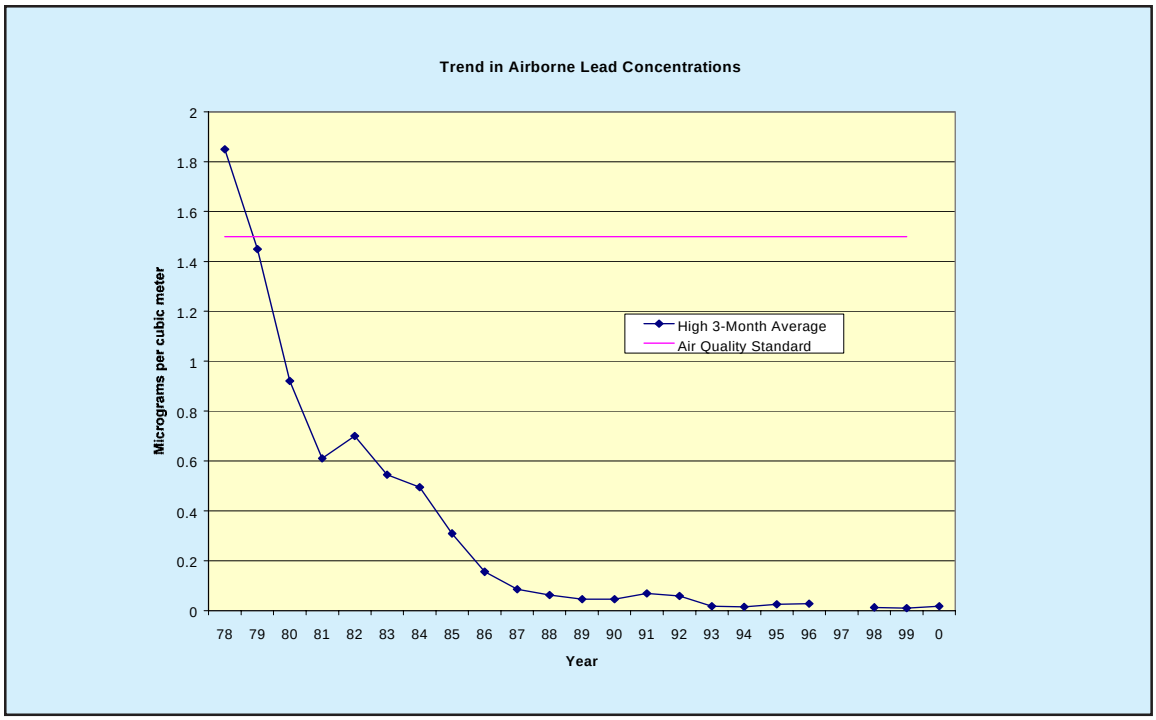
Nitrogen dioxide levels have dropped by 26% (from 50.1 to 37.6 micrograms per cubic meter) since 1982 and are consistently less than half the air quality standard since the late 1980s.



Sulfur dioxide levels have declined by more than 73% (from 71.3 to 12 micrograms per cubic meter) since 1973.



Particulate matter (10 microns or less) levels have dropped by 54% since 1986.



Lead levels have declined to nearly non-detectable limits since 1978.

Water

Rivers and Streams

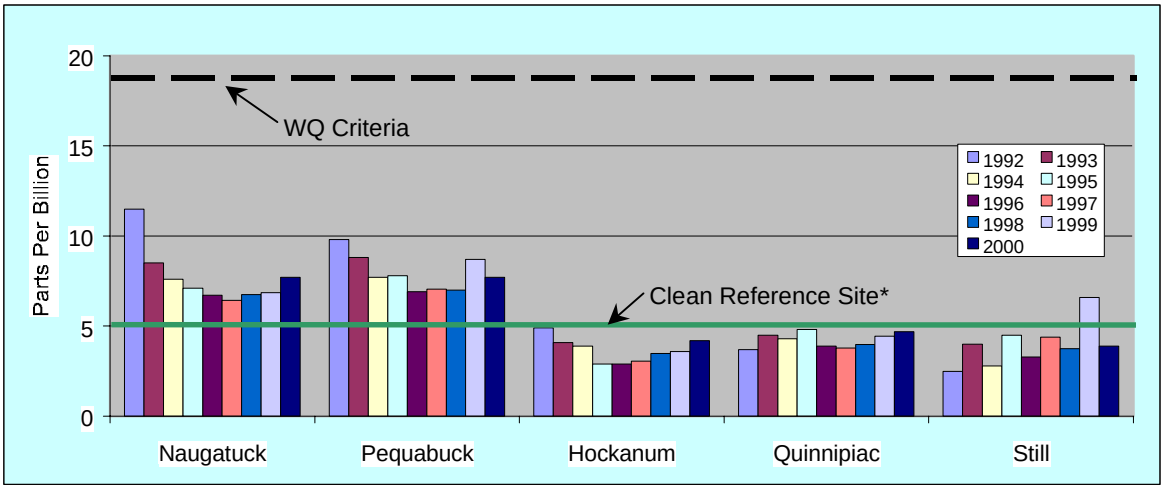
Connecticut's Clean Water Act became law in 1967. In the late 1960's, the Department assessed the water quality of 900 miles of river and concluded that 663 miles did not meet minimum water quality standards. At that time, most impaired waters were "open sewers" that contained significant quantities of raw sewage and untreated industrial wastes. With a focus on untreated sewage and industrial waste discharges, state and federal agencies, municipalities, businesses, environmental groups, and many individuals participated in a massive effort to restore these waters. As a result, by 2002, systemic gross pollution no longer exists in any of the 5,830 miles of rivers in Connecticut.

Since 1967, the public's expectations regarding what constitutes "clean" water has changed significantly. Connecticut's Water Quality Standards ("WQS") have been modified numerous times to account for newly identified problem pollutants such as ammonia and heavy metals. Other pollutants such as PCBs and dioxin were not a concern in 1967 but are now treated as major water quality issues. Also, water quality assessment technology has improved dramatically, especially assessment of biological integrity and sanitary quality. Many waters thought to be "clean" in 1967 would probably not meet the stringent standards of 2002. Conversely, much of the water now considered to be impaired would have been considered unpolluted in 1967.

During the late 1980's and early 1990's Connecticut used a two-phased approach to eliminate the impact of point source discharges of toxic pollutants affecting surface waters in the State. New permit regulations were adopted that required all dischargers to meet strict limitations on whole effluent toxicity ("WET"). WET testing represents direct biological testing in which sensitive aquatic organisms are exposed to samples of a discharge in a laboratory and the effects of the exposure monitored over a specified time period, typically 48 hours. Since 1987, WET limits or monitoring conditions have been a requirement of all National Pollution Discharge Elimination System ("NPDES") permits issued by the Department. Where toxicity is detected, dischargers must identify the cause and provide additional treatment or modify manufacturing processes to eliminate the toxic impact. Today, over 95% of the 94 municipal sewage treatment plant discharges are in compliance with WET limits, up from approximately 76% in 1989. WET testing results from industrial facilities are similarly high.

The second phase of this program involved modifications to Connecticut's Water Quality Standards to include numeric water quality criteria for individual toxic pollutants. This approach addresses the issue of toxicity on a "chemical by chemical" approach and is particularly useful for pollutants that have potential to impact human health either through direct exposure or through consumption of fish or shellfish that bioaccumulate pollutants in their tissue. As discharge permits are reissued every five years, limits are established to reduce concentrations of specific contaminants to levels which can support a healthy aquatic community and do not pose a threat to human health. Existing criteria are updated and criteria for additional pollutants adopted as new information is developed concerning the risk of environmental exposure. To date, criteria have been adopted for over 100 pollutant parameters. Formal review and re-adoption of criteria occur every three years.

Connecticut has focused particular attention on copper because it is highly toxic to aquatic organisms at low concentrations and is a common contaminant in sewage treatment plant and industrial discharges. Management efforts have focused on imposing tighter permit limits on industrial sources, reducing corrosion of household copper piping, and strict enforcement of prohibitions on use of copper-based sewer additives to control root growth. These efforts have resulted in a decrease of approximately one-third of the average concentration of copper in treated municipal sewage discharges since 1993. Efforts to reduce copper concentrations in wastewater discharges are also reflected in a decreasing trend in copper concentrations in several of Connecticut's major rivers. Each stream depicted in the graph below exhibits average concentrations well below the Water Quality Criteria.



*An unpolluted site which serves as a reference point.

Connecticut's NPDES permitting program has greatly reduced the impact of point source discharges on water quality. Future progress will require an equally vigorous effort to address pollutants entering our surface waters from diffuse sources such as atmospheric deposition, stormwater, and groundwater. Reducing the impact of these non-point sources of pollution will require the development of creative approaches that cross traditional program and jurisdictional lines. Mitigating sedimentation, erosion, and pollutants associated with stormwater runoff from impervious areas is perhaps the greatest challenge facing the Department today. Managing stormwater impacts will require Connecticut's towns and municipalities to work in concert with the Department to implement runoff control programs and to better manage development.

Ground Water

Ground water provides drinking water for approximately one million State residents. Of the more than 250,000 private drinking water wells and over 1,600 public water supply wells in the State, fewer than 10% are known to have been affected by pollution. Ground water resources have been affected in very localized areas by a variety of pollution sources, ranging from historic industrial and commercial activities, the use of pesticides and fertilizers, leaking underground storage tanks, unlined landfills, salt storage facilities, road salt application, countless accidental spills of chemicals at commercial, industrial and residential properties, and numerous waste disposal practices including septic system discharges.

Identifying and eliminating sources of ground water contamination, most of which affect only very localized areas of ground water, poses numerous challenges. In order to meet these challenges, the Department has made several major improvements to its remediation programs over the past few years. These improvements are designed to make more efficient all aspects of the remediation process, from investigation to actual remediation. One example is the Licensed Environmental Professional ("LEP") Program. Under this program the Department has expanded the amount of staff resources available to review and approve voluntary remedial action plans for the clean up of polluted sites. There are now over 244 licensed environmental professionals with the authority to approve and oversee the clean up of contaminated sites. As of December 31, 2001, LEPs have been assigned the responsibility for reviewing and approving remediation at 503 sites. These are sites that the Department currently lacks resources to address and which would otherwise not have been cleaned up in as timely a manner.

Long Island Sound

Long Island Sound ("LIS") is an estuary, a place where salt water and fresh water mix. Connecticut's only marine water body, it is a shared resource with the State of New York. LIS has an area of approximately 1,300 square miles of which 600 are under Connecticut's jurisdiction. Home to more than 8 million people, this 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. The health of LIS is impacted by activities within the watershed and events far from it through airborne pollutants.

In 1985, the federal EPA and the States of Connecticut and New York initiated the Long Island Sound Study ("LISS"), a landmark cooperative endeavor designed to analyze and correct the Sound's most pressing environmental problems. Low dissolved oxygen or "hypoxia" in western LIS was identified by the LISS as the most significant unaddressed problem. Details on hypoxia causes, effects and management are available at http://www.dep.state.ct.us/wtr/index.htm and the Department regularly updates its hypoxia maps during the summer at http://www.dep.state.ct.us/wtr/lis/monitoring/monsum.htm. LISS research and planning efforts recently culminated in EPA's approval of a Total Maximum Daily Load ("TMDL") developed by Connecticut and New York to control nitrogen, the pollutant most responsible for hypoxic conditions in LIS. The LIS TMDL is the most extensive and first multi-state TMDL to gain EPA approval to date. It calls for a 58.5% reduction of nitrogen loads from an established baseline to be achieved by 2014. Because of their predominance, nitrogen reductions at sewage treatment plants are emphasized over other sources, although atmospheric deposition and nonpoint source runoff are also important contributors of nitrogen.

The LIS TMDL establishes a 10% nitrogen reduction from urban and agricultural land cover in the two states. Connecticut plans to meet that requirement by using existing state and federal programs to control nonpoint and stormwater runoff throughout the State. This is an ambitious goal because of the inherent difficulty of controlling nonpoint and stormwater sources while also accommodating economic growth. In order to meet the overall 58.5% reduction required by the TMDL, Connecticut's publically-owned treatment works ("POTW") and industrial dischargers of nitrogen will have to reduce nitrogen loads by nearly 64% from the baseline.

Connecticut, in partnership with the LISS, has developed a cost-effective and progressive mechanism for meeting the POTW nitrogen requirement. The Connecticut General Assembly passed Public Act 01-180, which set up a Nitrogen Credit Exchange for the 79 POTWs in the State required to reduce their nitrogen loads. The three key components of implementing the nitrogen reduction program are: (1) the wasteload allocation in the TMDL, which establishes a baseline nitrogen load and a final reduction requirement for each of the 79 POTWs within the program; (2) a nitrogen general permit, which puts all 79 POTWs under one permit, specifies annual discharge limits, and allows nitrogen credits to be bought and sold among the permittees; and (3) establishment of a Nitrogen Credit Advisory Board of relevant government officials and municipal representatives to oversee the mechanics and economics of the Nitrogen Credit Exchange.

The Department took the lead on drafting a Nitrogen General Permit and coordinating the Nitrogen Credit Advisory Board, which began meeting in August 2001. The 12-member board includes nine public members representing municipalities with varying sized POTWs and credit buyer and seller positions. The general permit went through a rigorous public hearing and review process and was adopted in December 2001, setting 2002 as the first year of credit exchanges.

A combination of market forces, the availability of Clean Water Funds, and careful setting of annual nitrogen reduction limits is expected to expedite cost-effective attainment of the TMDL. Connecticut has already made substantial nitrogen reductions as several municipalities have stepped up in advance of the general permit and incorporated nitrogen removal into their upgrade plans. Anticipated reductions during the first five-year cycle of the general permit will also keep Connecticut's progress well in advance of the minimum requirements of the TMDL. An important benefit of staying well ahead of the TMDL minimum requirements is the provision of a margin of safety should a bad operational year occur due to extremely wet or cold conditions, for example.

The combination of a successful nitrogen credit exchange program and aggressive application of nonpoint and stormwater management programs is expected to keep Connecticut well within compliance of the LIS TMDL. Future actions coordinated by EPA to reduce nitrogen loads from northern portions of the watershed and to better control atmospheric sources will yield additional benefits for LIS. In addition, EPA has recently approved Connecticut's revision of LIS dissolved oxygen criteria, which sets a more realistic, yet protective, standard for the Sound.

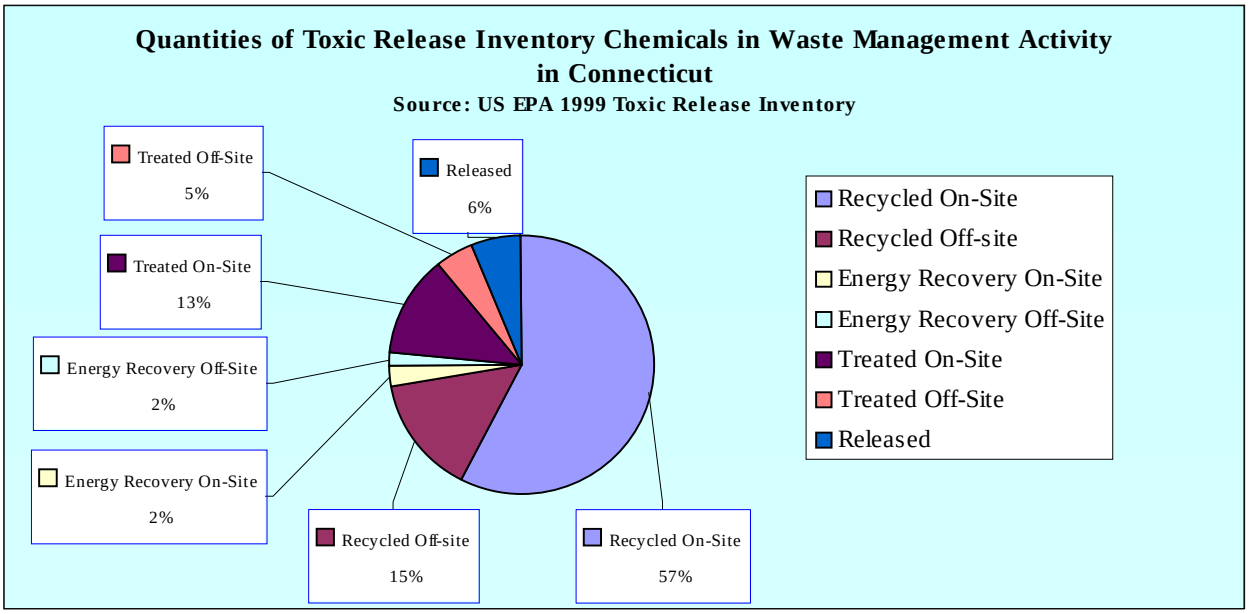
Waste

The Department administers numerous programs related to the management and handling of hazardous materials, the prevention, minimization and reuse/recycling of waste materials, and the cleanup of accidental releases. The overall goal of the State's Waste Management programs has expanded to emphasize waste minimization and pollution prevention.

Pollution Prevention

The focus of this program is to prevent pollution before it is created by encouraging individuals, businesses and government entities to modify purchasing habits and product manufacturing processes in order to minimize emissions, rather than treating and controlling pollution after it has been generated.

Pollution prevention initiatives can help businesses realize economic benefits through reduced raw material and disposal costs, eliminated or decreased clean up liability, improved efficiency, reduced regulatory burden, reduced risks to workers and the surrounding community, and an improved public image. The Department's program emphasizes voluntary participation and technical assistance. Its central aim is to increase awareness of the importance of pollution prevention through education, outreach and the formation of partnerships.



The Toxic Release Inventory ("TRI") is a national database that identifies facilities, chemicals manufactured and used at the facilities and the annual amounts of these chemicals released and otherwise managed on and off-site.

The most recent TRI data indicates that in 1999, 72% of materials required to be reported were recycled as compared to 63% in 1998.

Solid Waste Management

Connecticut's solid waste management system is based on the following descending hierarchy for waste management, as required by Conn. Gen. Stat. Section 22a-228: source reduction, recycling, composting of source separated organic materials, bulky waste recycling, resource (energy) recovery, incineration and landfilling. Nearly all of the state's Municipal Solid Waste ("MSW") landfills have been closed. Connecticut has eliminated most of its illegal dump sites, implemented a statewide mandatory source reduction/recycling program, developed a high reliance on resource recovery for MSW volume reduction, and initiated a program for the beneficial use of special wastes. In 1993, 40 MSW landfills accepted waste for disposal; now only one landfill (Windsor) accepts MSW. The Department has identified the three most critical solid waste actions needed over the next five to ten years. They are:

- To dramatically increase the source reduction and recycling of MSW and the source-separated recycling of organic materials in order to minimize the need for additional MSW disposal capacity as population grows.
- To develop an infrastructure and markets for increased source reduction and recycling of bulky waste and other types of special waste in order to minimize the need for additional disposal capacity for these wastes.
- To develop additional disposal capacity for bulky and other types of special waste because even with aggressive source reduction and recycling there will be a need for additional disposal capacity for these waste streams.

Today, there are no incinerators processing MSW in Connecticut; the vast majority of our 169 municipalities have long-term contracts with one of the State's six MSW resources recovery facilities. Based on reports submitted to the Department, in FY2000 approximately 6% of the MSW generated in Connecticut was disposed of in landfills, 63% was burned at Connecticut resources recovery facilities, 8% was disposed of in out-of-state facilities and 23% was recycled. It is estimated that greater than 1% was source-reduced through backyard composting and grasscycling (leaving grass clippings on the lawn).

Resources recovery facilities with state-of-the-art pollution controls were developed in Connecticut to accommodate the MSW that could no longer be disposed in landfills. The State's six existing MSW resource recovery facilities are permitted to process over 2 million tons of MSW per year. This capacity is sufficient to meet Connecticut's disposal needs through the year 2015, assuming that the State's 40% source reduction/recycling goal is met.

Recycling was a voluntary program in 1986, with infrastructure consisting of one small regional intermediate processing center ("IPC") capable of processing twenty tons of recyclables per day from a handful of towns with voluntary curbside recycling programs. The Department estimates that the recycling rate was well under ten percent of the MSW generated in the State.

Once state-wide recycling became mandatory in 1991, the recycling rate rose quickly to about 19% in 1992. There are now publicly sponsored regional IPC's for recyclables in Berlin, Groton, Hartford, Danbury and Stratford as well as a variety of other private volume reduction facilities that handle recyclables along with other wastes. These regional centers process and market glass and metal food containers, newspapers and corrugated paper containers from their member towns. Some of these facilities also

process and market plastics, paper beverage containers, and magazines. Additional materials commonly recycled by businesses and municipalities include leaves, scrap metal, lead acid storage batteries, discarded mail, anti-freeze, electronics, nickel-cadmium rechargeable batteries, and waste oil. Grass clippings are banned from disposal facilities and generators are encouraged to leave grass clippings on the lawn. The MSW recycling/source reduction rate in fiscal year 2000 was at least 24%, totaling 741,076 tons of material recycled. The 24% recycling rate does not include bottle bill material or much of the material recycled by the commercial sector.

In keeping with the State's solid waste hierarchy, the Department is implementing programs to allow beneficial uses for some special wastes that have traditionally been landfilled but which may be able to be used without adversely affecting human health or the environment. These types of wastes include mixed glass aggregate, sewage sludge incinerator ash, coal ash, water treatment residuals, and municipal waste combustor ash, among others. General permits for the blending and use of mixed glass aggregate have been developed and work is continuing on general permits for the other special wastes mentioned above.

Pesticide Management

The overriding goal of ongoing pesticide management efforts is to prevent adverse human health or environmental effects from the misuse of pesticides. Certification of applicators and enforcement of label use directions are the means used to achieve that goal. Certification of pesticide applicators is required of persons performing commercial application of any pesticide and private application of any restricted use pesticide. The Department requires commercial and private applicators to demonstrate competence with respect to the use of pesticides in order to achieve certification.

The Department also actively promotes Integrated Pest Management ("IPM") as a method to achieve high quality pest control while reducing pesticide use and impacts. Today, there are recognized IPM practices for almost all pests encountered in structural pest control, lawn care, tree care and ornamental plant care. The Department promotes IPM as an effective pollution prevention tool to commercial pest control companies, agriculturists, and households. IPM has been incorporated into written and oral examinations for all categories of pesticide applicator certification and into seminars conducted for the pest control industry. Encouraging the practice of IPM by targeting institutions and public facilities is an effective method of educating homeowners, residents and the business community to the benefits of integrated pest management.

PCB Compliance

From January, 1982 to date, the Department, as part of the cooperative polychlorinated biphenyls ("PCB") compliance program, has conducted more than 2,200 PCB inspections of facilities in Connecticut. During that time, approximately 2,400 samples of suspected or known PCB oils and other PCB-contaminated substances have been taken for analysis. Over its twenty-year life span, the inspections conducted by the Connecticut PCB Program under the Toxic Substance Control Act Cooperative Agreement have generated evidence that has supported numerous enforcement actions but, of much greater importance, these cumulative efforts have:

- Led to successful completion of over 300 PCB clean up/decontamination projects;
- Enhanced statewide awareness of PCB issues and PCB management policies among the industrial and public sector, and
- Provided outreach and assistance to municipalities, recyclers, and shredders regarding the proper handling of household appliances, light ballasts, and other potential sources of PCB as well as to homeowners and plumbers regarding PCBs in submersible well pumps, and finally to gas station owners regarding PCBs in gasoline pumps.

Underground Storage Tank ("UST") Enforcement

The UST Enforcement Program ("USTEP") was developed in 1985. With the advent of regulations for life expectancy, operation and maintenance of underground storage tank facilities, UST owners/operators were required to register their commercial tanks with the Department of Environmental Protection. Through the notification requirements, USTEP has developed and has maintained a database of more than 42,000 commercial underground storage tank facilities in Connecticut.

UST owner/operators faced a December 22, 1998 Federal deadline (established ten years prior) for closures of systems failing to meet increased maintenance and design criteria for pollution prevention. The USTEP developed a list of suspected sites in violation of the December 22, 1998 deadline and has been focusing its UST inspection resources on those locations. An administrative consent order specific to 1998 deadline requirements was developed and has been used to rapidly correct UST violations. In 2001, USTEP conducted 493 inspections and issued 11 notices of violation and 87 consent orders. To date, 24,509 old or unsafe tanks have been closed or removed.

Leaking Underground Storage Tanks

The Leaking Underground Storage Tank Trust Fund Program investigates and assesses the need for remedial action at sites where underground storage tanks are suspected to have leaked. Over the past year the Department received a total of 2,744 reports of leaks from USTs. Of those releases 2,415 were from residential tanks and 329 were from commercial heating fuel and gasoline tanks. The Leaking Underground Storage Tank Trust Fund Program performed detailed assessments at 137 sites where soil and groundwater were impacted by the releases. The investigations resulted in identifying the source and extent of the contamination in anticipation of site clean-up.

Over the past year the Leaking Underground Storage Tank Trust Fund Program identified the precise locations of approximately 6,000 USTs through the use of a sophisticated, satellite-based locator system called "GPS", or Global Positioning System. The location information of the USTs can then be used in conjunction with similar location data for other environmental parameters such as groundwater classification and public water supply well locations. With this information, staff can map UST locations in relation to potential receptors in the event of a leak.

Underground Storage Tank Petroleum Clean-up Account and Residential UST Amnesty

The Connecticut Underground Storage Tank Clean-up Account Program was established in 1989 to provide financial assistance for the investigation and clean-up of sites impacted by commercial leaking underground storage tanks, and to enable commercial petroleum tank owners to meet the financial responsibility requirements of federal regulations. The Underground Storage Tank Petroleum Clean-up Account Review Board ("Review Board") functions to review applicant claims associated with petroleum releases and award payments to eligible applicants. During 2001, the Review Board received 689 reimbursement claims and awarded nearly $8.7 million to applicants.

The Residential UST Amnesty Program, effective July 1, 1999, provided amnesty from civil liability to residential UST owners for tank related spills. Owners who provided to the Department proper notice and documentation of tanks removed and remediation performed between July 1, 1999 and January 1, 2002 were granted amnesty from civil liability. A reimbursement program for contractors (on behalf of the homeowner) for remediations initiated prior to July 1, 2001 and homeowners for remediations after July 2, 2001 was also established. As of December 31, 2001, the Department has received 3,280 residential reimbursement claims and the Review Board has awarded to applicants a total of over $12.2 million.

Managing Environmental Compliance

The effective integration of permitting, assistance, and enforcement provides the Department with the greatest capacity to maximize protection of public health and the environment. With this in mind, the Department is currently developing a comprehensive Outreach and Assistance Work Plan that will advance Department priorities and increase its capacity to deliver assistance as part of an integrated approach to assuring compliance. To be developed with significant stakeholder input, the Department's final work plan will include a needs assessment and comprehensive assistance inventory.

Ongoing and project-specific efforts by the Department over the past twelve months include continued collaboration with business and trade groups to provide information at major trade conferences, co-sponsoring workshops and seminars, and encouraging compliance-based environmental management systems through participation in EPA sponsored such as Performance Track. Other media specific initiatives are as follows:

Golf Course Compliance Assistance Initiative - This past year, the Department's Inland Water Resources Division partnered with the Connecticut Golf Course Superintendent's Association to improve compliance rates for golf courses undertaking consumptive water diversions. There are at least one hundred twenty three eighteen-hole golf courses in Connecticut and each course can use up to 300,000 gallons of water per day for irrigation. The Department estimates that 42% are currently out of compliance with the Water Diversion Policy Act. Representatives of the Department provided outreach and education services to Connecticut businesses and golf course industries at several association meetings and annual events. With the assistance of the Institute of Water Resources at UConn, a multi-media stakeholder workgroup participated in the development of best management practices for golf course water. A one-day conference was held to promote the use of the best management practices and to present the compliance assistance initiative to the industry. Over one hundred seventy golf course owners and superintendents, along with many local inland wetland agents, attended the conference. Attendees were provided fact sheets on applying fertilizer via an irrigation system("fertigation") and "How to Hire an Environmental Consultant" as well as training packages regarding applicable statutory requirements. The Water Bureau will continue to provide compliance assistance and outreach over the next two years in order to bring golf courses into compliance with the Water Diversion Policy Act.

Clean Marina Program - The Department's Office of Long Island Sound Programs and Boating Division are jointly developing a Clean Marina Program. The program is a voluntary, incentive-based education and outreach campaign to encourage environmental compliance and the use of best management practices at the State's three hundred fifty coastal and inland boating facilities. Included in the program will be an outreach campaign to educate State boaters on environmentally friendly boating practices.

The Department is also working with Connecticut's recreational boating industry to develop a clean marina guidebook for marina operators that will outline the state and federal legal requirements for common marina activities and present best management practices designed to minimize impacts of nonpoint sources of pollution from marinas and boatyards. The manual will include practical tips for

pollution prevention and waste minimization. Once the manual is finalized in early 2002, the Department plans to host workshops on environmental compliance and pollution prevention. Small grants will be made available to facilities to conduct demonstration projects for best management practices at boating facilities.

In conjunction with the recreational boating industry, the Department is developing a "clean marinas" certification program. Certification as a "clean marina" would afford a marina business benefits such as an improved public image and, possibly, reduced insurance premiums. No marina will be certified as a "clean marina" without full environmental permit compliance and without taking several pollution prevention steps. The Department will provide compliance assistance to marinas as they take steps toward clean marina certification.

General Permit Compliance - With grant funding provided by EPA, the Department objectively assessed industry compliance with a number of its general permits. As part of its analysis, the Department determined a baseline compliance rate, identified root causes of non-compliance with the most significant terms and conditions of the general permits, and developed and employed compliance assistance and enforcement strategies designed to raise compliance rates.

The first project focused on the General Permit for the Discharge of Minor Tumbling or Cleaning of Parts Wastewater ("tumbling general permit"). The tumbling general permit requires registrants to monitor for certain pollution parameters at a particular frequency, maintain the analytical results at the facility and make them available to the Commissioner immediately upon request. Of the 159 tumbling general permit registrants, sixteen companies failed to conduct monitoring and four of those companies failed to respond to the Commissioner's request for the monitoring data. Less extensive non-compliance was evident at 83 additional companies.

All facilities covered under the tumbling general permit were provided compliance assistance materials. The Department took enforcement action against the sixteen grossly non-compliant companies. Fifteen registrants signed administrative consent orders with penalties totaling nearly $103,000. The Department referred the sixteenth company to the Office of the Attorney General for the filing of a civil action.

In a separate initiative, a Department contractor conducted random audits of facilities registered under the Air Bureau's General Permit to Limit Potential to Emit. The audit results reflected high compliance with emission limits and lower compliance with respect to the general permit's record keeping and reporting requirements. Record keeping and reporting requirements were carefully assessed and, where appropriate, made less burdensome in a March 2001 revision to the general permit.

Environmental Equity -The Department's Environmental Equity Program works to ensure that no segment of the public bears a disproportionate share of risks or consequences of environmental pollution or is denied equal access to environmental benefits. Among the issues addressed by staff in the program are illegal dumpsites, environmental hazards related to poorly managed solid waste streams at public schools, and discrimination complaints and violations relating to the Connecticut Beverage Container and Redemption Law. Since its inception in 1993, the Environmental Equity Program has had a lead role in the cleanup of at least 60 public schools and approximately 1000 illegal dumpsites.

Energy Sen$e - Representatives from the Department's Pollution Prevention Office and Air Planning & Standards Division have teamed up with the Office of Policy and Management, the Clean Energy Fund, NESCAUM, Clean Air-Cool Planet, Environment Northeast, the Center for Resource Solutions and Episcopal Power & Light to find opportunities to address climate change on the local level in New Haven and Willimantic. Together, these organizations will coordinate efforts and promote public awareness of energy efficiency and clean energy. Technical assistance and support will be provided to various sectors of the community so that they can take actions to address climate change, improve air quality, incorporate energy efficiency and become a sustainable community.

Energy Star - The Connecticut Climate Wise partnership has transitioned into the Energy Star for Business program. Energy Star promotes energy efficiency, cost savings, and reduction of greenhouse gas emissions primarily through web-based tools. This past year, the Department and its Connecticut Climate Wise partners explored options for the purchase of renewable energy and the voluntary reporting of greenhouse gas emission reductions. Many opportunities for peer networking exist and the Department will, as resources allow, continue to link partner companies with these energy related events.

Recycling Assistance - The Waste Bureau's Source Reduction and Recycling Program continues to promote recycling in the State. The Program has held roundtables/workshops for municipalities on unit based pricing for solid waste disposal costs, also known as pay-as-you-throw ("PAYT") and has hired a consultant to provide PAYT technical assistance to municipalities. PAYT programs require residents to pay only for the trash they generate (as opposed to everyone paying the same unit cost). Four Connecticut communities have successfully launched curbside PAYT. PAYT provides an immediate financial incentive for residents to reduce the quantity of trash they generate.

The Waste Bureau's Source Reduction and Recycling Program also commissioned a study in 2001 that identified over 1,300 large-scale commercial and institutional generators of food waste. Statewide, the 1,300 sources generate an estimated 98,946 to153, 331 tons of food waste per year. The program hopes to use this detailed information to spur interest in developing organic recycling options and infrastructure, such as food-to-animal feed factories and organic fertilizer plants, as well as composting facilities. In addition to the study, the Department has funded four institutional/ commercial food waste recycling pilot projects.

Brownfields - At the September 2001 National Brownfields Conference in Chicago, the Connecticut Department of Environmental Protection and the Department of Economic and Community Development were joint recipients of a national award for the remediation and redevelopment of the former Meriden Rolling Mills site for the Walbro Corporation, an automotive parts manufacturer. This project was particularly challenging as it involved concurrent demolition, excavation, remediation and construction under a very tight time schedule. As a result of this site being redeveloped, more than 215 new jobs were added to the Walbro operations in Meriden.

Remediation Division Outreach Efforts – Several efforts were initiated in 2001 that were designed to improve the understanding of consultants, contractors and others involved in remediation activities. For example, guidance documents were issued for utility company excavation projects and, in coordination with the Waste Bureau, remediating petroleum releases from residential fuel tanks. In addition, with the major changes to the Property Transfer Program that were effective in 2001, all Property Transfer Program fact sheets and forms were revised. A full presentation on the changes to the Property Transfer Law was made at a joint meeting of Environmental Professionals of Connecticut and the CT Bar Association. Also, revisions were made to the Environmental Program Fact Sheet on Environmental Land Use Restrictions.

Hitchcock Chair Company - In 1999, the Department revised regulation section 22a-174-32 ("Section 32") concerning Reasonably Available Control Technology for Volatile Organic Compounds ("VOC"). As a result of the changes, some facilities previously exempt from Section 32 are now subject to it, including aerospace manufacturing and rework operations and wood furniture manufacturers. Furniture manufacturing has been identified by the New England Waste Management Officials' Association as "the largest industrial user of solvents in paints and coatings among original equipment manufacturers in the United States, using twice as much solvent as automobile manufacturers."

This past year the Department issued administrative orders to bring the Hitchcock Chair Company ("Hitchcock") in Riverton into compliance with Section 32. Air Bureau staff has continued to work with the company after issuance of the order to help them find ways to change their manufacturing process to reduce VOC emissions. The company has made strides by changing its coating application equipment from conventional spray guns to more efficient, less polluting, high volume low-pressure spray guns. Hitchcock has also been able to reformulate its topcoats and sealers and its cleaning material to a low VOC solution. The reformulation of cleaning material was not required to assure compliance with Section 32 regulatory requirements. In addition to reducing VOC emissions, reformulating the cleaning material reduced Hitchcock's cost of hazardous waste storage and disposal.

Compliance Profiles by Industry Sector or Facility Type

Since 1997 the Department has memorialized its relationship with the federal Environmental Protection Agency ("EPA") in a Performance Partnership Agreement ("PPA"). The PPA is the product of a process whereby the Department and EPA-New England define environmental priorities and agree upon the best strategies to address them. Among the benefits of this process is the institutionalization of an environmental management approach that more effectively links program activities with improved performance and environmental results.

The Department tracks inspections and compliance by industry sector or facility type, as defined in the Performance Partnership Agreement with EPA. 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.

The tables that follow depict compliance rates for particular industry sectors. The Bureau of Air Management and the Waste Engineering and Enforcement Division of the Bureau of Waste Management tables also include the rates of significant non-compliance. Enforcement cases are initiated by the issuance of a Notice of Violation ("NOV"), 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:

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

Bureau of Air Management

Source Category	Inspections Projected FFY 01	Inspections Conducted FFY 01	# of Facilities by Category if Applicable	# of Sources w/ Non-compliance	Compliance Rate for All Sources	# of sources with SNC [2]	% of sources with SNC
Title V Major Sources[1]	45	71	109	5	93%	1	1.4%
General Permit to Limit Potential to Emit	120	122	332	7	94%	1	0.8%
General Permit for Emergency Engines	50	63	311	10	84%	0	0%
General Permit for Surface Coating	12	34	164	3	91%	0	0%
General Permit for Automotive Refinishing	50	17	571	1	94%	0	0%
New Source Review/ PSD	150	186	471	11	94%	1	0.5%
Gasoline Distribution	10	7	19	1	86%	0	0%
Chemical Preparation	10	9	38	0	100%	0	0%
Metal Finishing	10	22	45	3	86%	0	0%
Stage II	3200	3622	1600	951	74%	0	0
Complaints	500	441	N/A	27	94%	0	0%
Other (Enforcement follow-up, compliance inspections)	100	106					

[1] Major 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] Significant Non-Compliance (SNC) characterizes those violations that could result in significant harm to the regulatory program, to human health, or the environment if not properly addressed through an enforcement action or other compliance mechanism. The criteria that the Bureau of Air Management used to identify a violation as significant noncompliance is based on: the violation being a high priority violation pursuant to the Department's Enforcement Response Policy; the violation resulting in air pollutants being emitted over regulatory thresholds; the violation warranting a formal enforcement action; or the violations is of sufficient duration and nature as to cause harm to the regulatory program. For those violations that were not yet classified under the ERP, the Bureau conducted a cursory review of the nature of the violations to determine whether or not the violations were significant. After obtaining more information, the Bureau may need to revisit its determination.

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

Source Category	# of sources	# of sources w/ non-compliance	Compliance rate for all sources	# of sources with SNC	% of sources with SNC
Title V Major Sources	109	41	62%	14	13%

* 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. Those tools include NOVs, Orders, Title V permit application compliance plans, Title V permit compliance schedules and Title V annual compliance certifications.

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 the most recent year.

Report Review Activity Summary (FFY 2001)

Report Type	Reports Received	Violations Discovered	% Compliance
General Permit to Limit Potential to Emit	259	20*	92%

*16 NOVs were for failure to submit the annual emissions summary.

Radiation Division

Inspection Category	# Inspections Conducted 2001	Total # Facilities Inspected	Total # Facilities By Category	# of NOV's 2001	Estimated % Compliance	
					By Total # of Inspected Facilities	By Total # of Inspections
Medical Facilities	514	500	3264	31	94%	94%
Industrial & Radioactive Materials Facilities	46	37	539	9	76%	81%

Bureau of Waste Management

Pesticide Program

Inspection Category	Inspections Projected FFY 01	Inspections Conducted FFY 01	# of Facilities By Category if Applicable	# of Enforcement Cases Initiated in FFY 01	% Inspected Facilities in Compliance
Agricultural Use & Complaint Follow-Up	15	27	N/A	6	78%
Non-Agricultural Complaint Follow-Up & use investigation	75	98	N/A	56	43%
Producer Establishment	10	15	N/A	1	93%
Market Place	100	137	N/A	44	68%
Certified Applicator Records	142	200	N/A	80	60%
Restricted Use Dealers	15	29	N/A	4	86%

PCB Program

Inspection Category	Inspections Projected FFY 01	Inspections Conducted FFY 01	# of Facilities By Category if Applicable	# of Enforcement Cases Initiated in FFY 01	% Inspected Facilities in Compliance
Neutral Scheme	20-35	36	N/A	2	94%
Complaints and Referrals	10-20	13	N/A	3	77%
Clean-up Sites	10-25	15	N/A	4	73%

UST Enforcement Program

Inspection Category	Inspections Projected FFY 01	Inspections Conducted FFY 01	# of Facilities By Category if Applicable	# of Enforcement Cases Initiated in FFY 01	% Inspected Facilities in Compliance
"98" Deadline Target List/Complaints	375	515	N/A	92	81% /65%*

***81 % are compliant with the 1998 federal deadline for tank upgrades, 65% are compliant with current leak detection requirements

Waste Engineering and Enforcement Division

Inspection Category	Inspections Projected FFY 01	Inspections Conducted FFY 01	Total # of Facilities By Category	# of NOVs FFY 2001	% Inspected Facilities in Compliance	# of Inspections with SNC	% of SNC* Non-compliance
TSF	14	12	120	9	25%	1	8%
LQG	50	57	552	25	56%	8	14%
SQG	30	18	2038	7	61%	5	28%
Transporter	5	1	202	70+	0++	1	100%
Volume Reduction	N/A	20	32	5	75%	5	75%
Resource Recovery	N/A	4	7	0	100%	0	0
Transfer Stations	N/A	55	129	14	75%	3	6%
Land Disposal Facilities /Solid	N/A	46	48	7	85%	7	15%

* 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.

+ Includes 69 NOVs issued to transporters for transporter permit violations (pursuant to CGS 22a-454)

++ % Does not include 69 NOVs issued to transporters that were not issued in response to an inspection

Bureau of Water Management

Inspection Category	# of Facilities	Annual Compliance Inspections Projected FFY 01	Actual Inspections FFY 01	% of Facilities in Compliance*
National Pollution Discharge Elimination System ("NPDES") Industrial –Majors	**47**	**47**	**46**	**81%***
NPDES Sewage Treatment Plant ("STP") –Majors	**67**	**67**	**21**	**88%***
State Pollution Discharge Elimination System ("SPDES") – Significant Industrial User ("SIU") – Pretreatment (Sanitary Sewer)	**241**	**192**	**195**	**72%****
NPDES Industrial - Minors	**66**	**7**	**19**	**74%****
NPDES STP- Minors	**33**	**3**	**8**	**97%****

*Determined by either review of Discharge Monitoring Report using Significant Non-Compliance criteria or whether an NOV was issued following inspection.
**Based on whether an NOV was issued following inspection.

Summary of Enforcement Statistics

Enforcement Statistics 1997-2001
Air Management Bureau

Program Activity	1997 CY	1998 CY	1999 CY	2000 FY	2001 FY	Five Year Average
Warning Notices						
Notices of Violations	290	338	429*	292	**218**	313
Orders	32	27	35	48	**40**	36
Referrals(AG/EPA/CSA)	5	10	7	6	**4**	6

*Includes Radiation Division NOVs for the first time.

Enforcement Statistics 1997-2001
Waste Management Bureau

Program Activity	1997 CY	1998 CY	1999 CY	2000 FY	2001 FY	Five Year Average
Warning Notices	19	23	27	24	**20**	23
Notices of Violations	514	461	501	524	**492**	498
Orders	32	36	61	127*	**119***	75
Referrals(AG/EPA/CSA)	46	40	42	38	**35**	40

* Includes expedited consent orders for Underground Storage Tank violations and expedited consent orders in the Pesticides Program for practicing arboriculture without a license

Enforcement Statistics 1997-2001
Water Management Bureau

Program Activity	1997 CY	1998 CY	1999 CY	2000 FY	2001 FY	Five Year Average
Warning Notices	3					
Notices of Violations	441	477	486	356	**350**	422
Orders	42	54	39	41	**51**	45
Referrals(AG/EPA/CSA)	20	17	17	14	**10**	16

Department-Wide Enforcement Statistics 1997-2001

Activity	1997 CY	1998* CY	1999* CY	2000* FY	2001* FY	Five Year Average
Referrals(AG/EPA/CSA)	73	67	66	63	**53**	64
Orders	115	124	146	230	**224**	168
Notices of Violation	1247	1293	1439	1258	**1108**	1269
Total Enforcement Actions**	1435	1484	1651	1551	**1385**	1501

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

Enforcement Statistics - FY 2001

Actions	Air Management Bureau	Water Management Bureau	Waste Management Bureau	Office of Long Island Sound Programs	Total for Year (10/01/00-9/30/01)
Warning Notices Issued under CGS Sec. 22a-6s	N/A	N/A	20	N/A	20
Notices of Violation Issued	218	350	492	48	1108
Consent Orders Issued	37[1]	36	114[3]	13	200
Administrative Penalties Assessed (# cases)	$303,537(13)	$227,572(13)	$402,385(109)	$22,500(9)	$955,994(144)
Supplemental Environmental Projects (# cases)	$852,026(6)	$420,384(7)	$179,254(7)	$22,000(4)	$1,473,664(24)
Unilateral Orders Issued	3	15[2]	5	1	24
Attorney General Referrals	3	10	27	2	42
Judicial Settlements					
Penalties	$522,000	$846,000	$982,192	$0.00	$2,350,192
Supplemental Environmental Projects	$450,000	$0.00	$125,000	$20,000	$595,000
Chief State's Attorney Referrals	1	0	3	2	6
Referrals to EPA	0	0	5	0	5
Inspections Conducted	5530	1093	2191	272	9086

[1] Includes 16 trading orders.
[2] Includes 6 orders issued as a precondition to obtaining bond funds.
[3] Includes 87 expedited consent orders to address UST non-compliance and 8 expedited consent orders to address unlicensed arborists

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.

Permit Application Statistics

The following tables summarize application and permit activity, as recorded in the Permit Application Management System (PAMS), for both the state (SFY = July 1, 2000 - June 30, 2001) and federal (FFY = October 1, 2000 -September 30, 2001) fiscal years, for all applications received since January 1, 1996.

State and Federal Fiscal Year 00/01 Statistics

Bureau		Applications Received		Permits Issued		Applications Closed[1]		Pending	
		SFY	FFY	SFY	FFY	SFY	FFY	6/30/01	9/30/01
Air	GenPt[2]	801	847	526	599	583	658	334	291
	Indiv.	327	322	189	194	298	295	537	542
Office of Long Island Sound Programs	GenPt	32	28	36	25	44	30	8	9
	Indiv.	144	132	109	104	125	121	199	195
	COP[3]	138	158	117	128	147	165	37	30
Water	GenPt	820	747	624	645	726	744	294	239
	Indiv.	347	337	235	238	301	325	715	689
Waste		846	827	801	815	859	861	259	210
All DEP		**3455**	**3398**	**2637**	**2748**	**3083**	**3199**	**2383**	**2205**

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 GenPt = General Permit registrations

3 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**	
	SFY	**FFY**	**SFY**	**FFY**	**SFY**	**FFY**	**SFY**	**FFY**	**SFY**	**FFY**	**SFY**	**FFY**	**SFY**	**FFY**
Air	81	80	26	32	281	271	96	92	129	119	123	119	168	160
OLISP	55	60	25	22	62	57	62	59	100	95	97	93	152	144
Water	33	42	12	15	356	316	95	90	144	133	155	206	238	293
Waste	21	20	13	11	294	296	46	45	56	57	62	65	80	82
All DEP[1]	48	50	20	22	220	200	77	74	109	103	114	131	165	182

Timeliness

Bureau	On Schedule (vs. Plan)		On Schedule (vs. Revised)	
	SFY	FFY	SFY	FFY
Air	69%	74%	80%	83%
OLISP	60%	61%	82%	80%
Water	82%	80%	91%	90%
Waste	90%	90%	96%	97%
All DEP	79%	79%	88%	89%

Permit Related Revenue Information

CGS Section 22a-6r requires 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.

[1] All DEP averages are weighted averages.

Revenues Received from Permit Application Fees and Any Revenues Derived from the Processing of Such Applications*	
7/1/00 - 6/30/01	$2,015,979
10/1/00 - 9/30/01	$1,957,239

* Figures represent permit application, processing and public notice 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*	
7/1/00 - 6/30/01	$939,266

* 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*
Application Fees Refunded for a Total of $34,433

* Refunds reflect withdrawn applications, duplicate fees, etc.

Glossary of Terms

Attainment Area- An area 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 an attainment area for one pollutant and a non-attainment area for others.

Best Available Technology ("BAT")-The Best Available Technology that is economically achievable.

Enforcement Response Policy- Department policy adopted June 1, 1999 that guides the enforcement process by establishing a violation classification system, enforcement response procedures and recommended timelines for issuance of enforcement actions.

LDF- A hazardous waste land disposal facility.

LQG- Large quantity generator of hazardous waste. An LQG generates greater than 1000 kilograms (2200 pounds) of hazardous waste per month.

Market Place - Designation in the Pesticide Program for businesses that sell pesticides to the general public.

Mercury-added product- a product or a product with a component that contains mercury or a mercury compound intentionally added to the product or component in order to provide a specific characteristic, appearance, or quality or to perform a specific function or for any other reason.

Mercury containing product - any product or any product with a component that contains mercury or a mercury compound from any source or cause, whether intended or unintended, including, but not limited to, a mercury-added product and a product manufactured using mercury.

Neutral Scheme- Strategy for inspection targeting in the Department's PCB program.

NOV- Notice of Violation- An informal enforcement tool used by the Department to address non-compliance.

NPDES- National Pollution Discharge Elimination System- A provision of the Clean Water Act which prohibits the discharge of pollutants into waters of the United States unless a permit is issued by the State or EPA.

Point Source- A stationary location or fixed facility from which pollutants are discharged or emitted, or any single identifiable source of pollution.

PSD- Prevention of Significant Deterioration- Program that requires permits intended to restrict emissions for new or modified major sources in places where air quality is already better than required to meet ambient air quality standards.

Publicly Owned Treatment Works ("POTW")- A system used for the collection, treatment and/or disposal of sewage from more than one lot, and which discharges to the waters of the state and which is owned by a municipality or the State.

SIU- Significant Industrial User- An industry which is subject to federal pretreatment standards, or that either discharges an average of 25,000 gallons per day or more of process wastewater to a POTW, contributes a process wastestream composing 5 percent or more of the POTW's average dry weather hydraulic or organic capacity, or has a potential to adversely affect the POTW's operation.

SQG- Small Quantity Generator of hazardous waste. A SQG generates between 100 and 1000 kilograms (220 and 2200 pounds) of hazardous waste per month and cannot accumulate greater than 1000 kilograms of hazardous waste on-site at any one time.

Supplemental Environmental Project ("SEP") - An environmentally beneficial project undertaken by a defendant or a respondent in settlement of a judicial or administrative enforcement action.

TSF- A hazardous waste treatment or storage facility.