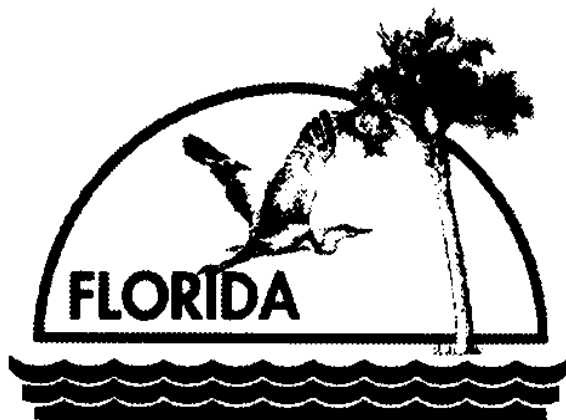

REPORT TO THE GOVERNOR AND LEGISLATURE
NEEDS ASSESSMENT REPORT
FOR HAZARDOUS WASTE MANAGEMENT



January, 1998

Florida Department of Environmental Protection
Division of Waste Management
Hazardous Waste Management Section

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INTRODUCTION

In order to protect Florida's water supply, the Legislature has established local, regional, and state responsibilities for proper hazardous waste management. One of the Department's responsibilities is to estimate the amounts and types of hazardous waste generated by large and small businesses, government facilities, and households and to assess the need for proper collection, storage, treatment, and disposal of these wastes. A report to the Governor and the Legislature on the State's hazardous waste management facility needs is required annually as indicated in Section 403.7226(2), Florida Statutes(F.S.).

This report summarizes the progress of each of the Department's programs that address hazardous waste generation and the need for proper management of these wastes. Included in this year's report is a discussion of the management of mercury and cadmium-containing wastes such as fluorescent lamps and rechargeable batteries that were addressed by the 1993 Legislature. It also reviews the Department's recent collection and analysis of the 1995 Biennial Hazardous Waste Report data submission to the United States Environmental Protection Agency (EPA) as required by the federal Resource Conservation and Recovery Act (RCRA). To begin this report, however, an overview of the history of Florida's statutory requirements is given.

OVERVIEW OF FLORIDA'S STATUTORY REQUIREMENTS

The Water Quality Assurance Act of 1983 required the Department of Environmental Protection to coordinate with the Regional Planning Councils (RPCs) and county governments in conducting county and regional hazardous waste management assessments (403.7225, F.S.). The Legislature appropriated 2.16 million dollars for this program. The assessments were phased in over a three-year period. Work was completed on all the counties' initial assessments on July 31, 1987.

The 1985 Legislature, recognizing the need for the local collection and temporary storage of small quantities of hazardous waste, established the Local Hazardous Waste Collection Center Grant Program (403.7265, F.S.), as a strategy for setting up a local hazardous waste collection center network statewide.

The 1986 Legislature amended Section 403.7234, F.S., and authorized the Department to regulate small quantity generators (SQGs) to ensure proper hazardous waste management in a manner consistent with federal requirements. The counties were given authority to collect fines from any small quantity generator that did not disclose information to the counties as to the types of, quantities of, and management practices of hazardous waste generated. Fines collected are to be used for the annual verification process and for local hazardous and solid waste management programs.

The 1987 Legislature amended Section 403.7265, F.S., to direct the Department to recommend a site for a state multipurpose hazardous waste treatment facility by May 1, 1988. An assessment of the suitability of the storage facility sites selected by the Regional Planning Councils was also required.

The 1988 Legislature initiated new programs for waste elimination and reduction of hazardous waste (403.7223, F.S.); the establishment of used oil recycling centers (403.763, F.S.); and reauthorized the local hazardous waste collection center grant program by providing up to \$100,000 to each grant recipient (403.7265, F.S.).

The 1989 Legislature expanded the use of the 3% tax on the gross receipts of a privately owned hazardous waste facility by the host local government (403.7215, F.S.). It also recognized the designation of the Union County site for constructing and operating a multipurpose hazardous waste facility. In order to establish a centralized and coordinated permitting process for the siting, construction, and operation of a multipurpose hazardous waste facility, the Legislature passed the "Statewide Multipurpose Hazardous Waste Facility Siting Act" (Chapter 89-285, Laws of Florida, codified as Sections 403.78-403.7893, F.S.). In addition, during the 1989 Legislative Session, Senate Concurrent Resolution No. 1146 was passed. The Resolution, in summary, states that there is a need for a comprehensive waste management system including a multipurpose hazardous waste treatment facility; that the Legislature has not and does not intend to enact barriers to the movement of hazardous waste or the siting of hazardous waste facilities for the proper storage, treatment and disposal of hazardous waste; and that the State will work diligently and expeditiously with the private sector toward the siting, construction and operation of such a facility. The 1989 Legislature also amended the strict prohibition on hazardous waste landfills. Untreated hazardous waste is still prohibited from being landfilled in Florida, but if the hazardous waste has undergone treatment, it may be disposed of in a permitted hazardous waste landfill.

The 1990 and 1991 Legislatures again appropriated 1 million dollars to continue the household hazardous waste collection center grant program. The 1991 Legislature also provided for additional uses of the 3% tax levied on the gross receipts of certain hazardous waste facilities (403.7215, F.S.) to strengthen local environmental programs. An amendment was also made to 403.7225, F.S., which authorized counties to impose a small quantity generator notification and verification surcharge (up to \$50.00) on the business or occupational license or license renewal of any firm that is identified as a small quantity generator of hazardous waste.

The 1992 Legislature again appropriated 1 million dollars to continue the Local Hazardous Waste Collection Center Grant Program.

The 1993 Legislature directed the Department to conduct a Hazardous Waste Needs and Capacity Study under 403.7895(5), F.S., to evaluate the current and future need for hazardous waste incineration capacity, including boilers and industrial furnaces burning hazardous waste fuel, in Florida.

In 1993, the Florida Legislature adopted provisions for the environmentally sound management of mercury-containing lamps, such as fluorescent lamps, and mercury-containing devices, such as

mercury thermostats and thermometers (403.7186, F.S.). Incineration of such lamps from commercial and institutional sources was prohibited after July 1, 1994, and both incineration and landfill disposal of devices were prohibited after January 1, 1996. Additionally, the Department was directed to develop rules to provide criteria for the permitting of mercury reclamation facilities and to set standards for such facilities and associated collection centers. The Department was further directed to conduct demonstration projects to study the collection and recycling of these mercury-containing materials. The Department was also directed (403.7061, F.S.) to fund a pilot project, to be conducted in a local government jurisdiction served by a waste-to-energy facility, that would include: the design, implementation and evaluation of programs for removing toxic materials from the waste stream prior to incineration; and an evaluation of the effectiveness of the pilot program including analyses of air emissions from the waste-to-energy facility. A letter report on this study was submitted to the Governor and the Legislature on December 1, 1995.

In addition, the Legislature enacted new requirements for consumers, manufacturers, and sellers of batteries (403.7192, F.S.). The principal provisions were aimed at reducing mercury and cadmium in municipal solid waste (MSW). They included mercury content limitations on household alkaline-manganese and zinc-carbon batteries sold in Florida as verified through annual mercury content certifications from manufacturers and importers of those types of batteries, a sales ban for mercuric-oxide button cell batteries, and mandatory unit management programs sponsored by marketers for the collection and proper disposal of larger mercuric-oxide batteries sold or distributed in Florida. Other provisions included design, labeling, and unit management (collection) program requirements for nickel-cadmium and non-vehicular sealed lead acid rechargeable batteries and/or the products containing these batteries which are sold in Florida.

The 1993 Legislature amended 403.7265, F.S., giving the Department authority to use grant funds to assist local governments in carrying out the responsibilities of the SQG Assessment, Notification and Verification Program and to promote the continued development of the local government hazardous waste management programs.

The 1994 and 1995 Legislature appropriated 2.8 million dollars to continue the Local Hazardous Waste Collection Center Grant Program and to initiate the use of grant funds to assist local governments through the SQG Assessment, Notification and Verification Program Grant and the Expanded Local Hazardous Waste Management Programs Grant.

The 1996 and 1997 Legislature appropriated 600 thousand dollars to continue the Local Hazardous Waste Collection Center Grant Program and assist local governments through the SQG Assessment, Notification and Verification Program Grant and the Expanded Local Hazardous Waste Management Grant. The 1994 through 1997 Legislative session did not pass specific new or amended statutory requirements directed at the Department's hazardous waste management programs. Work conducted under previous Legislative mandates is summarized in the body of the report.

ASSESSMENT, NOTIFICATION AND VERIFICATION PROGRAM

BACKGROUND

Sections 403.7225 and 403.7234, F.S., established the Small Quantity Generator Assessment, Notification, and Verification Program (SQG Program). A small quantity generator (SQG) is defined in the federal regulations (40 CFR Part 260.10) as a generator that produces less than 1,000 kilograms (or approximately 2,200 pounds or about 275 gallons) of hazardous waste in any calendar month. Since the end of 1986, SQGs are in one of two hazardous waste generation categories: 100 - 1,000 kilograms (220 - 2,200 pounds) per month, or 100 kilograms or less of hazardous waste per month. The latter category is referred to as a conditionally exempt SQG (or CESQG).

The goals of the SQG Program are for local governments to inform SQGs of their legal responsibilities in properly managing their hazardous wastes, to protect public health and the environment (e.g., drinking water resources), and to update the original information submitted to the Department in each county's hazardous waste assessment as required in 403.7225, F.S. A county may have additional uses for this program. Knowledge of hazardous materials and wastes stored at a business location can be useful for county departments with responsibility for comprehensive planning, emergency management, fire and police protection, health care, and water quality management.

LOCAL GOVERNMENT ACTIVITIES

Currently, the vast majority of the counties in Florida are conducting the SQG Program. Local governments involved with the SQG Program have organized into informal regional groups and are meeting regularly within the jurisdictions of the Southwest, Southeast, South, Northeast, Northwest, and Central Districts of the Department. The main purpose of these groups is to exchange ideas and share information relative to the SQG Program. A representative from the corresponding District office is present at each meeting. Several of the groups are involved in individual projects to help improve the quality of the SQG program. For example, subcommittees have been formed to help develop standard operating procedures for inspections and data quality; incorporate the regional SQG program groups in a professional county or environmental organization; assist in the organization of the annual SQG Workshop; and make recommendations for program development to increase the overall effectiveness of the SQG program. A secondary benefit is the improved communication between local government and the Department.

TYPES OF FUNDING

After the initial funding for conducting assessments under the Water Quality Assurance Act had run out, local SQG programs had to develop local funding sources to continue the program. In 1991,

the Legislature amended 403.7225, F.S., allowing counties to impose up to a \$50 surcharge on the occupational license fee of a business classified as a SQG. Recognizing the need for increased participation by local governments, the Legislature in 1993 amended Section 403.7265, F.S., giving the Department authority to use grant funds to assist local governments in carrying out the responsibilities of this program. Available money is used for grants to assist smaller counties temporarily in developing their local SQG Programs while they establish permanent funding sources at the local level. The total amount for this one-time grant is \$30,000 per county.

Additionally, the Legislature established the “Expanded Local Hazardous Waste Management Grant Program” (403.7238, F.S.). The Department was directed to establish a grant program to promote the continued development of local government hazardous waste management programs. The objective of this grant is to assist local governments in developing enhanced local hazardous waste management programs and to help establish local pollution prevention programs. The total amount for this one-time grant is \$50,000 per county. A summary of current and proposed SQG grant projects can be found in Appendix 1.

VEHICLE MAINTENANCE FACILITY MULTI-MEDIA SELF-EVALUATION PROJECT

The Department and the North Central Florida Regional Planning Council formed a Technical Advisory Group to develop a compliance assistance manual that can be used by vehicle maintenance businesses to conduct self-evaluations (by using various checklists) on a variety of activities that the business may be conducting (engine repair, body repair and painting, air conditioning work, dispensing gasoline, etc.). The manual will also promote pollution prevention activities and include all the primary environmental regulations that affect small automotive businesses.

FLORIDA PRINTERS COMPLIANCE ALLIANCE PROGRAM

The Department’s Central Florida District Office is working with the Printers Association of Florida to develop and implement a Printers Compliance Alliance Program (CAP), whereby participating printers agree to conduct environmental self-assessments and to self-certify that they are in compliance with the applicable environmental regulations after a certain period of time to the Department. The District office would use enforcement discretion and amnesty for a period of time to allow participants to discover and correct any non-compliance activities, during which they would be put on a non-priority inspection schedule.

ENHANCEMENTS TO THE SQG DATABASE MANAGEMENT SYSTEM

Extensive changes have been made to the SQG database software program that is provided to each County SQG program coordinator. This is part of an effort to improve the quality of data provided

to the Department by each county and to make the database program easier to use and more flexible to accommodate county specific needs. Efforts are ongoing to correct program bugs and to get this program up and running and in use by local programs.

ESTIMATION OF NUMBERS OF SQGS

Based on a recent study by the Center for Hazardous Materials Research, the estimated number of Florida businesses in 1991 ranges from 277,000 to 391,000. Approximately 96,000 (25-33%) businesses produce some form of hazardous waste. This estimate was derived from data collected by local governments as part of the SQG Assessment, Notification, and Verification Program.

Based on the Department's SQG database, 85% of the SQGs would be classified as conditionally exempt small quantity generators (CESQGs) generating less than 220 pounds of hazardous waste per month. These CESQGs account for only 33% of the total waste generated. Sixty-seven percent of the hazardous waste generated are by the remaining 15% of the regulated SQGs (220-2,200 lb./month).

ESTIMATION OF AMOUNTS AND MANAGEMENT OF COMBUSTIBLE AND INCINERABLE (C/I) HAZARDOUS WASTE GENERATED BY SQGS

Using data collected by the local governments, there are approximately 96,000 potential SQGs in Florida. Seventeen percent reported to produce combustible and incinerable (C/I) hazardous waste. These businesses reported generating 24.8 million pounds of combustible and incinerable hazardous wastes. Approximately 65% of the C/I waste is treated to recover the solvents, 33% is blended as fuel or burned to recover the energy, and 2% is treated by incineration. There are 261 3-digit Standard Industrial Classification (SIC) code industries which produce C/I hazardous waste.

Automotive repair and related industries (service stations, car dealers, etc.) in total generate an estimated 43% of the C/I hazardous waste reported to be produced by SQGs in Florida. Special Trade Contractors (construction industry) are reported to generate an estimated 6% of the C/I hazardous waste followed by Trucking and Warehousing (4%) and Personal Services such as dry cleaning and photographic studios (4%).

There are potential opportunities for reducing the quantity of C/I waste produced by SQGs in Florida. Because of regulatory and economic pressures, certain waste streams could be reduced from between 20 and 90%. The greatest pressures will be to reduce the use of halogenated solvents. This type of solvent represents 5% of the C/I waste stream estimated to be generated in Florida. These trends will continue into the next century.

LOCAL HAZARDOUS WASTE COLLECTION CENTER GRANT PROGRAM

BACKGROUND

The Local Hazardous Waste Collection Center Grant Program was established in 1985 to encourage the development of a statewide network of local hazardous waste collection centers. The Legislature initially appropriated \$500,000 to establish local or regional hazardous waste collection centers in Florida. These facilities are intended to provide free collections of non-regulated hazardous waste from households and to provide short-term storage of potentially hazardous waste generated by very small businesses. Also, the public awareness component of a collection not only helps citizens to better understand and manage their household hazardous waste, but may help them to learn to reduce the volume they generate.

Generally, the level of service and technical expertise at permanent collection centers has tended to increase each year the facility is in operation. Centers are being enlarged and upgraded with equipment such as paint can crushers, aerosol can puncturing/draining devices, and antifreeze recycling machines. More counties are hiring chemists to staff the facilities which are open 5-6 days per week and are establishing transfer facilities, open 3-5 days per week for collections. As on-site chemists are able to sort, bulk, or pack the wastes into drums and sub-contract out various waste streams such as used motor oil or lead-acid batteries, the cost of operation has decreased.

Recycling is an important component of operation at collection centers. Several programs have “swap shops” where reusable products such as aerosols, polishes, waxes, paints, lawn care and pool products are given away. Antifreeze is recycled and reused in county vehicles. One county sells old car batteries collected at the center to a recycler for annual revenue of \$10,000. Automotive products, lawn care products and paints are used by county departments.

Paint, the most prolific waste stream collected, is being recycled in a variety of ways. Most of the oil-based products are bulked and shipped off-site to be used for fuel blending. One center blends latex paint and has given as much as 2,000 gallons back to the community within a month. Another mixes the latex it cannot give away with cement to make “paintcrete” in the form of containment slabs, sidewalks, and driveways. Six counties send their paint to three different Florida paint companies where the paint is mixed, re-manufactured and packaged as post-consumer product containing as much as 95% recycled paint.

Five of Florida’s counties are complimenting their permanent collection center operation and periodic amnesty days-type collection events with mobile unit collections. The vehicles being used are trucks, large vans or ambulances that have been customized for the safe collection and transportation of Household Hazardous Waste (HHW). In addition to providing HHW collections at convenient locations, the vehicles’ eye-catching side murals and lettering provide advertising for county HHW management programs. The Martin County Hazmobile has scheduled daily pickups, Monday through Saturday, rotating between six different locations. **The HHW collected an average of 255 participants per month accounts for approximately 52% of the total HHW collected monthly in Martin County.** The Lake County Mobile Unit averaging 75 participants per month, operates half days, Tuesday, Thursday and Saturday, rotating between 14 different locations. If requested, staff will

schedule an additional collection for a town or neighborhood. The Monroe County Mobile Unit has scheduled pick-ups from 10-2, the 2nd and 4th Wednesday of each month for Key Largo. In addition, staff will schedule HHW pickups anywhere in the Florida Keys for the elderly, disabled and for those without transportation. The Marion County Mobile Unit has scheduled monthly pickups, alternating between Tuesday and Saturday, 9:30 - 3:00, at 12 different fire stations throughout the county. Participation averages 42 per month. The Leon County Mobile Unit has neighborhood mini-roundups by request and rotates collections at the County's four rural transfer stations. The approximately two mini-roundups per month average 40 participants per event.

TYPES OF FUNDING

- Hazardous Waste Collection Center Grant

Up to \$100,000 per county for constructing one or more safe, secure, operational hazardous waste collection centers.

- Cooperative Collection Center Arrangement Grant

Up to \$35,000 per grant to reimburse 75% (with a \$25,000 limit) of a smaller county's collection event. The host county, experienced in hazardous waste collections, is reimbursed up to \$10,000 for assisting the neighboring county in holding its collection.

- Unique or Innovative Project Grant

Up to \$50,000 per grant with the county providing a 100% match. Funding is only available to counties that are operating permanent hazardous waste collection centers and is in addition to Hazardous Waste Collection Center Grants and Cooperative Collection Center Arrangement Grants.

- Grants to reimburse expenses associated with local hazardous waste management

Available to counties that have established operational permanent facilities under the Hazardous Waste Collection Center Grant but have received funding less than their \$100,000 limit.

REQUIREMENTS FOR THE HAZARDOUS WASTE COLLECTION CENTER GRANT

- Contracting with a licensed, insured private hazardous waste management company that will be responsible for collecting hazardous waste and assuring the delivery of that waste to permitted recycling, storage, treatment or disposal facilities.
- Guaranteeing operation of the collection center for two years after the facility is constructed, including at least two days per year when household hazardous waste will be accepted at no charge to non-business entities. These "free collection days" will be well advertised to encourage participation.
- Offering at least two advertised collections per year when conditionally exempt small quantity generators can bring their hazardous waste to the collection center in order to obtain a reduced fee for proper management of the waste at permitted facilities.
- Working with a hazardous waste management company to establish expanded collection route services such as a "milk run" pickup service for small quantity generators of hazardous waste.

HISTORY AND AWARDS

1986 The Legislature appropriated \$500,000 to establish local or regional hazardous waste collection centers in Florida. The grant limit per county for capital outlay expenses was \$50,000. In 1987, the following 7 counties took advantage of this opportunity to establish one facility in each county: Brevard, Citrus, Escambia, Indian River, Lake, Marion, and Volusia.

1987 The Legislature reauthorized the Hazardous Waste Collection Center Grant Program and appropriated \$1,000,000 funding. The grant limit per county, again primarily for capital outlay for collection center construction, was raised to \$100,000. Requests for funding exceeded the appropriation and awards were made to the following 11 counties: Alachua, Broward, Charlotte, Collier, Highlands, Hillsborough, Monroe, Orange, Palm Beach, Sarasota, and Seminole. Several of these counties have established multiple collection centers.

1988 The Legislature again appropriated \$1,000,000 for the Grant Program with the limit remaining at \$100,000 per county. Awards for funding were made to the following 9 counties: Clay, Dade, DeSoto, Duval, Lee, Leon, Martin, Pasco, and St. Lucie.

1989 This \$1,000,000 appropriation was used to award grants of \$100,000 each to Hamilton, Manatee, Osceola, Pinellas, Putnam, St. Johns, and Suwannee Counties.

1990 The Legislature again appropriated funding for the Grant Programs. Awards of \$100,000 each were made to the following 6 counties: Hardee, Hendry, Hernando, Madison, Okaloosa, and Polk. The Grant Program was amended to include the Cooperative Collection Center Arrangement Grant to provide some financial incentive for a county with a permanent collection center to assist a smaller county in holding a State-subsidized collection event. Eleven counties have been awarded these cooperative grants.

1991 Funding from this appropriation was used to establish a local hazardous waste collection center in Jefferson County and upgrade permanent facilities in several other counties.

1992 Three counties: Bradford, Okeechobee, and Taylor, received grants for permanent collection center construction. The legislature also provided an additional funding opportunity from the appropriation for the Unique or Innovative Project Grant. This grant is intended for programs or activities that are designed to decrease the generation of household and conditionally exempt small quantity generator hazardous waste and increase the proper management of such wastes.

1993 The appropriation was used to fund grants for permanent collection center construction in Flagler, Levy, and Liberty counties. Ten counties were awarded funding for Unique or Innovative Projects and funding was provided for collections in 14 counties under the Cooperative Collection Center Arrangement Grant.

1994 Funding from this appropriation was used to establish local hazardous waste collection centers in Franklin and Gadsden Counties and to upgrade permanent facilities in 4 counties. Collections were held in 12 smaller counties under the Cooperative Collection Center Arrangement Grant and Unique or Innovative Projects were funded for 8 counties.

1995 This appropriation funded grants for 12 Cooperative Collection Center Arrangements, one Unique and Innovative Project and for hazardous waste management in one county.

1996 It is anticipated that the current appropriation will be used to fund 15 to 18 grants during the 97/98 fiscal year.

A map showing the counties participating in the grant programs can be found in Appendix 2. Appendix 3 lists the Unique or Innovative Projects conducted in fiscal year 94/95, 95/96 and 96/97.

OPERATION CLEANSWEEP

Operation Cleansweep, a pilot program for the collection of canceled, suspended and unusable pesticides (CSUP) which began in 1996, continued with two more collections in 1997 in the Florida Counties of Alachua and Hillsborough.

The program, available free of charge to farmers, golf courses, nurseries, pest control operators and other such generators was a huge success. Over 25,000 pounds of CSUP, including Chlordane, Zineb, Alachlor, Lead Arsenate, DDT and 2,4-D were collected for proper management at a cost of \$40,000.

A brochure was developed and distributed to CSUP generators and, preceding each collection, several meetings were held for potential participants in order to survey the wastes they were storing, advertise the collection events with instructions for safe transportation of the CSUP to the collections, and to provide education on best management practices for the purchase, storage, use and disposal of pesticides.

Operation Cleansweep, funded jointly by a partnership between the Department and United Agri Products, has been an outstanding example of public-private cooperation with the help of the Florida

Department of Agriculture & Consumer Services, Florida Farm Bureau, Florida Fruit & Vegetable Association, Florida Fertilizer & Agrichemical Association and staff from Alachua, Dade and Okaloosa County Cooperative Extension Service and Hazardous Waste Management Departments.

MERCURY-CONTAINING LAMPS AND DEVICES

With the decline of mercury content in batteries and other products and based on estimates by the DEP, mercury containing lamps and devices will be the largest product category source of mercury being discarded into Florida municipal solid waste by the year 2000. See Appendix 4 for the estimated amounts of mercury being discarded into Florida's municipal solid waste stream by product category.

On May 10, 1995, because of the 1993 Legislature's enactment of statutory language, the Department adopted Chapter 62-737, F.A.C., providing standards for mercury reclamation facilities and storage of mercury containing lamps and devices at collection centers. Five facilities have been granted permits under Chapter 62-737, F.A.C, and the sixth facility is well along in the permit review process. Based on throughput capacity as listed in their permits, the five permitted facilities have the capability to recycle every mercury-containing lamp discarded in Florida. Based upon reports from mercury reclamation facilities received in 1996, the recycling rate grew to an estimated 25% for commercial mercury-containing lamps for the State of Florida, up from an estimated 20% in 1995, the first year such facilities were operational in Florida. Chapter 62-737, F.A.C., is currently being modified to true it up to the EPA's Universal Waste Rule (UWR), Title 40 of the Code of Federal Regulations, Part 273 (40 CFR 273) as adopted by Florida on September 7, 1995 as Rule 62-730.185, F.A.C. The target date for adoption of this modified rule is the first calendar quarter of 1998.

The streamlined regulatory structure of the UWR and Chapter 62-737, F.A.C., has also spawned a product stewardship program funded by mercury thermostat manufacturers. Following several years of cooperative effort between the DEP and the thermostat manufacturers, the Thermostat Recycling Corporation (TRC) announced in November 1997 the beginning of a reverse distribution ("take back") program for all brands of mercury thermostats. The TRC is a corporation set up by thermostat manufacturers specifically to collect and recycle mercury thermostats. The program uses the existing new mercury thermometer distribution network of wholesalers and HVAC (heating, ventilation, and air conditioning) contractors to collect thermostats taken out of service. The cost of this program is built into the cost of the product. The mercury reclaimed from old thermostats is used in the production of new mercury thermostats and other products. Without the streamlined regulatory structure provided by the UWR and Chapter 62-737, F.A.C., the manufacturers would not have been able to set up and fund such a program. The TRC program for mercury thermostats, like the RBRC program for nickel-cadmium batteries described below, provide good working models for other manufacturers who wish to establish product stewardship programs for proper disposal or recycling of their products.

RESEARCH AND DEMONSTRATION PROJECTS

Funded by the Florida Legislature, in 1997 the DEP conducted research and demonstration projects in three areas relating to mercury containing devices and other products in Florida's municipal solid waste. Two projects were carried out by researchers from the Florida Center for Solid and Hazardous Waste Management. The first was an investigation into the uses of mercury containing products in medical facilities and the existing waste management of those products when no longer useful. Objectives included developing recommended Best Management Practices to ensure proper management of mercury containing wastes and to reduce the amount of mercury in products and materials used in hospitals by such methods as identifying and purchasing alternative products with less

or no mercury. A small pilot project and several case studies of Florida hospitals were included. The second project (part of a larger study on recycling construction and demolition debris) identified mercury containing products in buildings scheduled for demolition, studied procedures and costs of removing such products prior to demolition and developed recommended Best Management Practices for demolition contractors, local building departments and local solid waste management departments.

A third project was performed by a research team from the Oak Ridge National Laboratory. Mercury emissions from landfill gas and through surfaces of municipal solid waste landfill sites in Martin County and Palm Beach County. Emissions from different ages of landfilled waste, different types of landfills and different landfill gas collection systems were quantified.

Funds appropriated by the Florida Legislature in Fiscal Year 1997-1998 are being used to fund additional research and demonstration projects to follow up on research needs identified in the areas of mercury in medical waste and mercury emissions during solid waste collection, transport and landfilling.

BATTERIES

DRY CELL BATTERY MERCURY CONTENT CERTIFICATIONS AND MERCURIC-OXIDE BATTERY PROHIBITIONS

The Department annually requires mercury analysis and content certifications from all known manufacturers and importers of alkaline-manganese and zinc-carbon batteries as required in Section 403.7192, F.S. Based upon the certifications received by the DEP from 1993 through 1997, it appears that manufacturers, importers and distributors are complying with the statutory mercury ceilings.

In addition, these manufacturers and importers must annually report the concentrations of the eight toxicity characteristic heavy metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver) which are listed in Title 40 of the Code of Federal Regulations (40 CFR, 261.24(b)). Laboratory analyses performed by manufacturers on alkaline manganese and zinc-carbon batteries sold, distributed or discarded in Florida indicate toxicity characteristic concentrations well below the regulatory limits for all eight metals. The Department will not continue to monitor dry cell battery mercury content certifications and toxicity characteristic heavy metal contents since those reporting requirement sunsets on January 1, 1998.

The most significant parts of Florida's battery legislation were the sales and disposal restrictions placed on mercuric-oxide batteries. Effective October 1, 1993, the sale of mercuric-oxide button cell batteries was prohibited. These batteries were commonly used in hearing aids, cameras and watches. In addition, a sales prohibition was placed on larger mercuric-oxide cells unless the manufacturer or distributor set up a "unit management program" to provide for the collection and proper disposal of these batteries when they were discarded. These two provisions, along with the appearance of acceptable substitute batteries, have led to the virtual disappearance of these batteries from Florida's MSW stream.

RECHARGEABLE DRY CELL BATTERIES

The effective dates of the legislative requirements for nickel-cadmium (ni-cd) and small sealed lead acid (SSLA) rechargeable battery manufacturers and marketers to initiate unit management collection programs are being phased in as a result of the Department's adoption of the Universal Waste Rule (UWR). The UWR streamlines regulations governing the collection and management of certain widely generated hazardous wastes (now defined as "universal wastes"). Universal wastes include hazardous waste batteries (including ni-cds and SSLAs), thermostats and certain pesticides.

Under Florida's battery legislation, pilot unit management programs must be in place for covered rechargeable batteries in Florida by September of 1996. By October of 1997, a report is due to the Department on the results of these pilot programs and on plans to implement permanent unit management programs. By April of 1998, these permanent programs must begin. Annual reporting of the results of these permanent programs is required starting in October of 1998, and ending in October of 2000.

The Rechargeable Battery Recycling Corporation (RBRC) is the first organization representing battery manufacturers and marketers. It was established, in part, to set up a pilot unit management program in Florida. The Portable Rechargeable Battery Association (PRBA) and RBRC have cooperated with the Department in recent years to help Florida enact legislation and implement unit management programs for rechargeable batteries. On March 16, 1995, RBRC proposed implementing its National Management Program for Nickel-Cadmium Batteries in Florida as a pilot. On May 24, 1995, the Department accepted RBRC's proposal and designated staff to assist in the implementation details. The Department is working with PRBA to implement a similar industry stewardship program in Florida for SSLAs in the near future. Some battery manufacturers and marketers are initiating or have initiated pilot unit management programs as individual companies rather than as part of an RBRC-type trade group organizational structure.

Passage of the "Mercury-Containing and Rechargeable Battery Management Act", Public Law 104-142, by the U. S. Congress on May 13, 1996 allowed for the immediate management of rechargeable batteries under the streamlined requirements of the UWR nationwide rather than waiting on individual states to adopt the UWR. This federal law should facilitate the implementation of rechargeable battery unit management programs in Florida and nationwide since the recycling infrastructure usually involves interstate transportation.

FLORIDA'S POLLUTION PREVENTION PROGRAM

DEFINITION OF POLLUTION PREVENTION

Pollution Prevention is a process improvement that eliminates, conserves or reuses materials which are the source of pollution. It achieves positive financial, environmental and worker health results.

Pollution prevention increases efficiency of business operations and results in lower raw material and labor costs. It eliminates long-term cradle-to-grave liabilities, hazardous waste management fees, and expenses associated with pollution control. Pollution prevention can also decrease worker exposure to toxins and clean-up costs resulting from improper disposal of hazardous substances.

LEGISLATIVE BACKGROUND

The 1988 Legislature established an assistance program designed to aid in reducing the amount and toxicity of hazardous waste generated in the State. In 1991, the Florida Pollution Prevention Act expanded the original legislation to encourage source reduction (preventing and reducing pollution at its source), waste reduction, resource conservation, and energy efficiency.

The Pollution Prevention Act of 1991 also expanded the Department's technical assistance activities, directed all state and local agencies to pursue prevention strategies, allowed financial and proprietary data collected during on-site technical assistance visits to be kept confidential, and created the Florida Pollution Prevention Council. The Council met for two years and its final report contained recommendations for a voluntary, statewide 50% reduction goal, small business loan programs, voluntary multimedia inspections, pollution prevention projects in enforcement, and increased technical assistance

POLLUTION PREVENTION PROGRAM

The Pollution Prevention (P2) Program is a technical assistance program which addresses toxic releases to air, land and water. It provides non-regulatory, free support to help citizens, businesses, and industries to reduce the generation of solid and hazardous waste and prevent pollution at the source. The Program's many outreach efforts include response to direct inquiries, collaboration with trade organizations and local governments, participation in workshops and conferences, and publication of a pollution prevention newsletter. The P2 Program also coordinates regulatory integration of pollution prevention throughout the Department.

STATEWIDE P2 SPECIALISTS

Florida's P2 Program employs six P2 specialists (retired engineers and individual experts) on a part-time basis, who provide pollution prevention technical assistance to Florida businesses and citizens.

POLLUTION PREVENTION RESOURCE CENTER

The Resource Center contains tip sheets, industry articles, and case studies which illustrate economic and environmental benefits of pollution prevention. Documents can be obtained by telephone (850-488-0300) or through the P2 Program's Website at: <http://www.dep.state.fl.us/waste/programs/p2/index.htm>.

POLLUTION PREVENTION EDUCATION

A network of educators has been established to provide multimedia worker education in the responsible use of chemicals and in pollution prevention opportunities. The Community College Consortium for Pollution Prevention Education has created a 5-year Education Action Plan to help industries at risk of enforcement. Environmental curriculum for universities, colleges, and vocational/technical schools with an emphasis on pollution prevention are being developed and tested in the classroom.

ADDITIONAL FUNDING AND GRANTS

In 1991, the first U.S. Environmental Protection Agency Pollution Prevention Incentives for States (PPIS) matching grant received by the State was awarded to the P2 Program. From a cooperative demonstration project, Dade County Environmental Resources Management (DERM) established an ongoing local government program which trains environmental permitting staff to integrate source reduction into approximately 4,000 facility inspections each year. DERM also presents pollution prevention workshops, produces a quarterly newsletter, and interfaces with trade associations and local community groups.

Funds from two additional PPIS grants received in 1993 and 1994 were used to support two Pollution Prevention District Coordinators. The coordinators in the pilot projects worked closely with all programs in the district offices. Their successes prompted other districts to request coordinators, however, there are no funds available to continue the projects.

Funds from the 1995 US Environmental Protection Agency Pollution Prevention Incentives for States (PPIS) grant are being used to assist and train local governments interested in setting up a

pollution prevention program. Economically disadvantaged counties can receive some financial help for travel and organization of pollution prevention workshops.

The 1996 PPIS grant funds are being used to develop and implement measurement systems to track the effectiveness of pollution prevention activities. These findings will assist the P2 Program to quantitatively evaluate the success of services offered to Florida businesses.

The 1997 grant, now underway, encourages and expands pollution prevention partnerships with the Florida Manufacturing Technology Centers, the John F. Kennedy Space Center, and NAS Whiting Field, among others.

USED OIL PROGRAMS

BACKGROUND

Florida's comprehensive, statewide Used Oil Program has received national recognition from such groups as the 10th Annual National EPA Conference on Hazardous Material Management for Household, Small Business and Universal Waste and The North American Hazardous Materials Management Association (NAHMMA), the Motor and Equipment Manufacturers Association (MEMA), and the Filter Manufacturers Council (FMC). The FDEP has implemented a Used Oil Management Program under Sections 403.75 through 403.769, F.S., since 1984.

The used oil statutes were amended by the 1993 Legislature. The majority of these amendments were made to make Florida law consistent with the federal used oil regulations, especially in the use of terms and definitions. A major change required retailers who sell over 500 gallons of oil annually to post signs which display the State's toll free 1-800 number (1-800-741-4DEP[4337]). This number uses a voice mail system to provide the locations of all public used oil collection centers in Florida, indexed by post office zip code.

Florida law contains several bans on the disposal of used oil. As of October 1, 1988, used oil may not be discarded into sewers, drainage systems, septic tanks, surface or ground waters, watercourses, or marine waters. It cannot be mixed or commingled with solid waste to be disposed of in landfills, except for those instances wherein the disposal occurs unknowingly, or is approved by the Department (such as in the case of emergency clean-up of accidental oil spills). Used oil cannot be mixed with hazardous substances or hazardous wastes that make it unsuitable for recycling or beneficial use. It cannot be used for road oiling, dust control, weed abatement, or other similar uses that may release used oil into the environment.

Chapter 62-710 of the Florida Administrative Code (F.A.C.), addresses used oil management and implements the provisions of State law. It establishes a program for registration, record keeping and reporting by handlers of used oil; certification of used oil transporters; and permitting of used oil processing facilities.

Section 403.756, F.S., requires the Department to "submit an annual report to the Legislature which summarizes information on used oil collection and recycling, analyzes the effectiveness of this act, and makes recommendations for any necessary changes". This report addresses the progress of Florida's Used Oil Recycling Program during calendar year 1997. The data used is from calendar year 1996.

Also described in these statutes are the used oil management programs authorized by the Legislature. These include the registration, certification and permitting of particular used oil handlers.

Department Rule 62-710, F.A.C., Used Oil Management Standards, contains the standards for meeting the used oil management programs authorized by statute. This rule was amended in 1995, to adopt, by reference, the federal used oil management regulatory and technical standards found in

Chapter 40, Part 279 of the Code of Federal Regulations. A ban on the landfill disposal (household exempt) of used oil filters, along with used oil filter management standards were also added to the amended rule.

In November 1995, the Department filed a notice for adoption of rule amendments to Chapter 62-710, F.A.C. These amendments addressed discrepancies, which unfolded as the federal standards were incorporated into this rule in June, 1995. Along with some clarifying language regarding transporter requirements, the most substantive change involved the requirement of Used Oil Processors to apply for a Used Oil Processor Permit (62-710.800, F.A.C.). This permit, specific to used oil processing facilities, replaces the old General Permit Notification Form (deleted, effective March 25, 1997). This new Used Oil Processing Facility Permit Application and Instructions (DEP Form 62-710.901, F.A.C.), the result of three technical advisory work group meetings, six months of staff development and a public workshop, incorporates the used oil management standards for processors, found in 40 CFR Part 279, Subpart F. The requirements of the permit cover general information concerning facility ownership as well as process descriptions and operating information; preparedness and prevention, analysis and contingency plans; tank management; closure requirements; and employee training. The permit fee was set at \$2,000 and some portions (storage tank integrity, adequacy of secondary containment, and certain portions of the closure plan) require certification by an engineer registered in the state of Florida. The amended Rule was effective on December 23, 1996.

Another rule amendment was published in January of this year. These amendments deleted certain obsolete and redundant sections of Rule 62-710, F.A.C., and moved others (prohibitions, definitions and forms) into the rest of the solid waste management standards found in Rule 62-701, F.A.C., to meet the requirements of the Governor's Rule Reduction Initiative. These amendments were effective March 25, 1997.

FUNDING FOR PUBLIC EDUCATION AND LOCAL GOVERNMENT GRANTS

In 1988, the Legislature appropriated \$2.5 million for public education materials and local government used oil program grants. These funds were expended during the production of award winning education and awareness materials, and the creation of a statewide network of public used oil collection centers. The Department is currently distributing the last few posters and brochures as new education materials are being developed through a partnership initiative between the Department and the United Association of Used Oil Services, a trade association representing about one-third of the regulated oil handlers in the state. Of the almost 20,000 curricula materials developed by teachers and placed in every public elementary, secondary and post-secondary school in the state, about 40 remain in stock. The Department is pursuing incorporating some of these tested materials into other education programs, currently under development, aimed at vocational and technical studies students.

COMPLIANCE ASSISTANCE INITIATIVES

Department staff from various programs, including used oil recycling, are coordinating the production of materials aimed at bringing conditionally exempt and small quantity generators into compliance with various environmental programs. Tallahassee and District staff are participating in

workshops aimed at these generators and conducted by various trade and local government associations. Materials developed include fact sheets and multi-media compliance checklists, which can be used to conduct self-audit reports. Currently, input from the used oil staff is being incorporated into the Vehicle Maintenance Industry Multi-Media Self-Evaluation Project, the Florida Printers Compliance Alliance Program and the Clean Marina Project.

PUBLIC USED OIL COLLECTION CENTERS

Florida has a statewide network of 1,151 Public Used Oil Collection Centers (PUOCCs) as of December 1997. All but four (rural) counties have at least two locations where used oil can be taken for recycling. Major oil companies and hundreds of independent service stations and auto repair shops, quick-lube shops and auto parts retailers have volunteered to become PUOCCs. Those businesses participating in the program are awarded certain protections from potential liabilities resulting from spills or mismanagement (provided certain provisions are met). In 1996, these collection centers reported accepting 2,402,959 gallons of used oil from households. This represents almost 50% of the estimated amount generated by households.

ANNUAL REPORTS FOR CALENDAR YEAR 1996

The most current used oil registration database contains 188 transporters, 20 processors and 4 off-specification used oil burners. Used oil handlers are required to report on the types and accumulated quantities of used oil. Transporters and processing facilities are required to submit information on types, quantities, and sources of used oil collected and processed. As of June 8, 1995, Used Oil Filter (UOF) Handlers were required to register with the Used Oil Program. These handlers include 105 UOF Transporters (13 of whom handle used oil filters exclusively), 59 UOF Transfer facilities, 30 UOF Processors and 4 UOF end-users (metal foundries and waste to energy facilities which accept UOFs from non-registered persons). As a Waste-To-Energy facility (WTE) will burn the oil contained within a filter for energy recovery and recycle the metal casing, the Rule allows generators of used oil filters who live in one of the 14 counties serviced by a WTE to commingle their used oil filters with the rest of their solid waste. The WTE, in turn, need not register with the Department to manage commingled filters. Because of this variance over such a large portion of the state, the reporting requirement for UOF Handlers was made optional within the Rule.

Types and Quantities of Used Oil Generated by Source

In calendar year 1996, 118,316,058 gallons of used oil and oily wastes were collected. Automotive used oil and oily waste made up 35.7% of the total amount collected, including 2,402,958 gallons collected from PUOCCs (based on PUOCC reports). Approximately 17.3% of the total was industrial oil collected from bulk petroleum, ship, and other sources. Approximately 10% of the total was of the mixed type, generated by commercial sources (e.g. storage terminals, ships). The remainder was left in on-site, end of year inventory.

Disposition of Used Oil

Approximately 118,316,058 gallons of used oil were reported to have been collected in Florida during 1996. About 32,327,118 gallons of this figure represent a duplication of data which occurs when used oil transporters report their collections to the Department when the oil is not end-used but rather is transferred to a another facility. The receiving facility then also reports this same volume as having been collected at that site. When the transferred quantity is removed from the data, 85,988,967 gallons of used oil and oily wastes are left in the management scheme.

Of this, 43,121,042 gallons (50% of the total amount of used oil collected) were managed as follows:

- 30,915,911 gallons (71.7%) were marketed as an on-specification used oil fuel
- 6,711,712 gallons (15.6%) were marketed as an off-specification used oil fuel
- 4,254,058 gallons (9.9%) were marketed for other industrial uses (e.g. phosphate beneficiation)
- 1,239,361 gallons (2.8%) were counted as end of year, on-site inventory

The remaining 35,935,321 gallons (42% of the total oil and oily wastes collected) ended up as oily wastes. These wastes are primarily condensation water and sediment which are ubiquitous in used oil. These oily wastes were managed as follows:

- 1,527,789 gallons (4.3%) were landfilled (non-liquid sediment)
- 27,668,083 gallons (76.9%) were treated as industrial wastewaters
- 1,797,200 gallons (5%) were incinerated
- 4,942,249 gallons (13.8%) were managed through other methods (e.g. soil farming)

Used Oil Filters

This is only the second year that data on used oil filter management have been reported. The reporting of this information is optional under the Rule. Filters are collected in a number of different ways (e.g. barrels, drums, roll-offs or bins of crushed, uncrushed or shredded filters) and the data are gathered using barrel equivalents (1 barrel equals a certain number of filters) and tonnage conversions (converting weight to numbers of filters). Hence, due to the reporting being optional and the variability within reporting, the numbers generated can only be approximations. Current data indicate that approximately 26,227,620 used oil filters were collected (diverted from landfill disposal). This accounts for over 80% of the approximately 30 million used oil filters that were estimated to have been generated in Florida as this rule was proposed for adoption (a quick and rough estimate of used oil filter generation is to assume two filters per capita). It can be assumed that a majority of the unreported filters are generated by persons served by a WTE facility. About 286,482 gallons of used oil, trapped within the filter, were collected during the management of these filters and handled under the used oil management standards. Of the filters collected, about 37,428 (<1.0%) were managed at waste-to-energy facilities

which are registered with, and report to, this Department as they accept segregated loads of used oil filters. Approximately 11,758,291 (44.8%) were managed at metal foundries where the filters are recycled into steel rebar, manhole covers and other such items. The remaining 14,432,051 filters (55%) were reported as end of year, on-site inventory. It is very common for filter handlers to store large quantities of filters on-site until a large bulk load can be shipped to a final end use. This practice minimizes transportation costs, allows for thorough draining of used oil from the filters and ensures a maximum value for the clean metal. A slight degree of error can be assumed, based on the variety of used oil filter management practices, mentioned at the start of this section.

UPDATE TO FLORIDA'S NEED FOR HAZARDOUS WASTE MANAGEMENT CAPACITY

EPA CAPACITY ASSURANCE PLANS

Florida submitted its first Capacity Assurance Plan (CAP) to the EPA on October 17, 1989. All states are required to submit the CAP by the federal Superfund Amendments and Reauthorization Act of 1986 (SARA). The 1989 CAP was followed by a Capacity Assurance Status Report on February 14, 1992.

On May 19, 1994, the Department transmitted to the EPA a completely revised CAP. The source of this CAP was the 1991 Hazardous Waste Biennial Reports received from all large quantity generators (LQGs) and treatment, storage, disposal and recycling (TSDR) facilities handling hazardous waste in Florida. One of the major differences between the 1989 and 1994 CAPs was there was no longer an emphasis on regional agreements to satisfy needed hazardous waste management capacity on a regional basis. Instead, the EPA focused on whether there was enough commercial capacity at the national level to properly treat and dispose of all the hazardous waste requiring off-site management across the country.

Florida's 1994 CAP estimated that there were approximately 79,000 tons of recurrent hazardous waste sent to both in-state and out-of-state off-site commercial facilities. Of the 79,000 tons of recurrent hazardous waste estimated to be generated and shipped off-site in 1993 (Appendix 5), about 30% (23,157 tons) was demand for organics recovery (e.g. solvent recovery), about 23% was demand for energy recovery and fuel blending (11,963 and 6,660 tons), about 20% (15,683 tons) was demand for metals recovery, about 19% (11,435 and 3,935 tons) was demand for landfill and stabilization, about 5% was demand for wastewater and sludge treatment (3,591 tons), and about 2% (1,643 tons) was demand for incineration. This total recurrent waste demand does not include any potential effects of economic growth or waste reduction.

The total one-time generation demand for off-site commercial hazardous waste capacity over this period was estimated to be about 1,270,000 tons or an annual average of about 58,000 tons per year. Of the 58,000 tons per year average of estimated one-time waste demand for commercial capacity, about 47% (~ 27,000 tons) was projected to go to stabilization facilities (and then to landfills), about 27% (~ 16,000 tons) was projected to go to landfill facilities, and about 26% (~ 15,000 tons) was projected to go to incineration facilities. Since none of these facility types are available in Florida, all of this waste was projected to go to out-of-state commercial hazardous waste incineration, stabilization and landfill facilities.

In comparison with the recurrent waste demand for these management capacities, it is seen that the projected one-time waste amounts provide the largest potential source of demand for these facility types including incineration. However, there is a great deal of uncertainty regarding how much remediation waste will be managed off-site. This is due to the development of many new alternative technologies that may be utilized at these sites, through which the cleanup wastes can be treated or immobilized on-site.

The EPA aggregated all of the recurrent waste demand and commercial capacity data from all of the states to come up with national aggregation tables. They show that there is adequate capacity in all categories for recurrent waste demand. On January 15, 1997, the EPA made a final determination that national capacity existed in all hazardous waste management categories and that all states had met the CAP requirements under the federal law of assuring capacity for all hazardous waste being generated. Comparison between Florida and national recurrent hazardous waste demand and commercial capacity projected for 1993 is presented in Appendix 5.

Of particular interest to the capacity needs study are the estimated national capacities for energy recovery and incineration facilities. Energy recovery facilities provide about 2% of the total capacity projected for 1999. Incineration facilities also provide about 2% of the total projected capacity for 1999. Again, according to the EPA's preliminary determination, there is no shortage of national capacity for hazardous waste demand, from both recurrent and one-time hazardous waste generation, at energy recovery or incineration facilities.

FLORIDA'S INCINERATION NEEDS AND CAPACITY STUDY

The 1993 Legislature directed the Department to do a Hazardous Waste Incineration Needs and Capacity Study under 403.7895(5), F.S., to evaluate the current and future need for hazardous waste incineration capacity, including that at boilers and industrial furnaces burning hazardous waste fuel, in Florida. In addition to using the 1994 CAP projections for LQG commercial hazardous waste demand and in-state TSDR capacity, this study also considered the potential effects of economic growth, waste reduction, public health and environmental risks, and the generation of incinerable hazardous wastes by Florida's small quantity generators. **An interim report submitted on November 1, 1994, indicated that there was no justification for additional hazardous waste incineration capacity in Florida.**

ANALYSES OF THE 1995 HAZARDOUS WASTE BIENNIAL REPORTS

For the 1995 biennial hazardous waste reporting cycle, 435 sites reported a total of 184,828 tons, most of which was treated on-site, of Federally regulated RCRA hazardous waste generation. One hundred forty-six thousand seven hundred sixty five tons of this total were treated in a RCRA exempt treatment system that discharges to a deep well underground injection system. In addition, 951,425 tons of RCRA exempt generation was reported, the majority of which were characteristically caustic wastewater treated in on-site exempt neutralization processes.

Approximately 55,000 tons of regulated hazardous waste was sent to off-site commercial treatment and disposal facilities. Most of this hazardous waste (~38,000 tons) was exported to out-of-state facilities, while the rest went to in-state facilities. Approximately 47,000 tons of this total were hazardous waste generated as a result of normal generator activities, while approximately 8,000 tons were one-time hazardous waste and the result of cleanup activities at the generator sites.

Florida facilities reported a total of approximately 262,000 tons per year of hazardous waste treatment capacity in four different areas: metals recovery (~6,000 tons), inorganic recovery (~1,100 tons), organic recovery (~189,000 tons) and fuel blending (~66,000 tons).

These and other Florida storage facilities reported receiving over 16,000 tons of imported hazardous waste from outside the state. Most of this hazardous waste went to organic recovery (~8,000 tons) or to fuel blending (~4,000 tons) facilities.

SUMMARY OF FLORIDA'S HAZARDOUS WASTE MANAGEMENT PROGRAMS

After more than eleven years of working with local governments, Regional Planning Councils and private industry, the Department has identified a number of constraints and opportunities that affect the status of hazardous waste management needs in Florida.

The Local Hazardous Waste Assessment data and reports submitted to the Department from 1986 through 1997 indicate substantial room for improvement in the management and disposal methods used for hazardous waste, since much of the hazardous waste from small quantity generators was reportedly sent to public landfills or discharged into sewer systems or septic tanks. This waste could have been managed in a more environmentally sensitive manner. These studies show a need for consolidation of the hazardous waste stream through local and regional collection and transfer facilities. In addition, this emphasizes the importance of partnering with local government and industry through the Assessment, Notification and Verification Program in its educational outreach to, and the collection of data from, small quantity generators of hazardous waste. Current partnerships are being strengthened to help provide common sense solutions to environmental management problems.

In 1985, the Legislature initiated a grant program designed to establish a statewide network to collect household hazardous wastes at the local level on designated collection days, to provide short-term storage of potentially hazardous waste brought to local landfills and to provide a cost-effective means for proper disposal of hazardous waste generated by small businesses. Hazardous Waste Collection Center Grants have been awarded to 49 counties that have constructed permanent operational collection centers at 62 sites. These facilities provide a network of permanent local hazardous waste collection centers in 72% of Florida's counties. Cooperative Collection Center Arrangement Grants have helped fund 1-day collection events in 12 additional counties. The grant provides the hazardous waste management opportunity for a smaller county that is not ready to construct and operate a permanent facility. Unique and Innovative Project Grants have provided counties the incentive and funding to expand local hazardous waste management operations with new programs, some of which have received national recognition. Annually, hazardous waste management staff from the 61 counties providing collection opportunities are invited to participate in a DEP sponsored meeting. At this time ideas and information are exchanged on personal and site safety, cost-saving strategies and waste stream management.

Grantees have indicated that their permanent hazardous waste collection centers would probably not have been built, nor would they have hazardous waste collections, had it not been for the incentive of the grant. They have also indicated that their collection centers will remain in operation long after county contractual obligations with the State have been fulfilled. Currently, the 49 counties with permanent household hazardous waste collection centers (including those under construction) and the 12 counties holding 1-day collection events, are providing the local hazardous waste management infrastructure covering 91% of Florida.

The Department's proposed battery bill was passed in the 1993 Legislature along with other provisions for mercury-containing lamps and devices. These new laws set standards for reducing heavy metals in these materials to reduce their concentration in the municipal solid waste stream. They prohibited the use of mercuric-oxide button cell batteries that were commonly used in hearing aides and set up mandatory collection and recycling programs for nickel-cadmium rechargeable and

commercial/industrial mercuric oxide batteries. As a result, the state has been in initiation of two extremely successful private corporations collecting rechargeable batteries and mercury thermostats throughout Florida and the nation. (The Rechargeable Battery Recycling Corporation, RBRC and the Thermostat Recycling Corporation, TRC, respectively).

The implementation of the Pollution Prevention (P2) Program is an essential element in Florida's hierarchy of hazardous waste management programs. An effective P2 program must be based on accurate and current information which can be provided by the hazardous waste biennial reports and the ongoing Small Quantity Generator (SQG) Assessment, Notification and Verification Program. Cost effective P2 technologies are being identified and implemented as an established part of a company's management and operation practices. By avoiding the creation of wastes, costs are substantially reduced. Chemical product substitutions, modification of production processes, volume reduction, better housekeeping and inventory management methods, recycling, reuse, and energy recovery are all methods which can be used to reduce the costs of waste management while achieving economic efficiency and environmental protection.

The P2 Program with funding from EPA grants, is laying the groundwork for establishing P2 Programs on a local government level. Through the SQG Assessment, Notification and Verification Program, interested local governments are developing P2 plans that will be instituted at county operated facilities. Local government P2 programs will serve as demonstration projects that can be copied by area businesses. Additionally, the P2 Program is developing measurement tools to track the effectiveness of pollution prevention activities.

Florida's used oil management program has been recognized as one of the most effective in the nation. Sound, practical management standards, at both state and federal levels, and ongoing education efforts contribute to its continued success. The Department is working closely with the regulated community, particularly through the United Association of Used Oil Services, to increase the awareness of the general public and small waste generators through cooperative education and compliance assistance initiatives. The management standards in place in Florida's regulatory program were adopted with the input, cooperation, and approval of the regulated community. They are based on a common sense approach to regulation that is felt to be protective of the environment and human health while assuring used oil will be recycled to the most practical extent possible.

In 1983, the Legislature believed there was a need for a facility to store and treat hazardous waste in Florida. In 1988 and 1989, state-owned land near the Union Correctional Institution in Union County was recommended and designated as a site for a multipurpose hazardous waste treatment facility. Also, in 1989 and 1991, two private companies applied for permits to construct commercial hazardous waste incineration facilities. However, the 1994 Capacity Assurance Plan (CAP) and the Department's Hazardous Waste Incineration Needs and Capacity Study demonstrated that there is more than enough commercial capacity at the national level to handle Florida's off-site demand, and that the need for new commercial incineration facilities in Florida could not be justified.

APPENDICES

Appendix 1, Summary of SQG Grant Projects

FY95/96

Citrus County (HW299)	Base SQG Grant for \$30,000
Gadsden County (HW325)	Base SQG Grant for \$30,000
Gulf County (HW324)	Base SQG Grant for \$30,000
Hillsborough County (HW326)	Expanded SQG Grant for \$50,000

FY96/97

North Central Florida RPC (HW327) (for Bradford, Columbia, Dixie, Gilchrist, Hamilton, Lafayette, Madison, Suwannee, and Union Counties)	Base SQG Grant for \$54,000
West Florida RPC (HW352)(for Santa Rosa, Okaloosa and Holmes Counties)	Base SQG Grant for \$18,000
Leon County (HW354)	Base SQG Grant for \$30,000
Dade County (HW351)	Expanded SQG Grant for \$18,000

Proposed FY97/98

Nassau County (HW381)	Base SQG Grant for \$6,000
Desoto County	Base SQG Grant for \$6,000
Washington County (HW380)	Base SQG Grant for \$6,000
Charlotte County (HW382)	Base SQG Grant for \$6,000
North Central Florida RPC (HW327)(for Bradford, Columbia, Dixie, Gilchrist, Hamilton, Lafayette, Madison, Suwannee, and Union Counties)	Base SQG Grant for \$54,000
West Florida RPC (HW352)(for Santa Rosa, Okaloosa and Holmes Counties)	Base SQG Grant for \$18,000
Dade County (HW351)	Expanded SQG Grant for \$18,000
Escambia County	Expanded SQG Grant for \$25,000

Appendix 2, Florida's Hazardous Waste Collection Center Grant Program Map

Appendix 3, Current Unique Or Innovative Projects for Hazardous Waste Management in Florida

FY 94-95

HW279 Alachua County -- \$15,000

Establish a program for collecting and recycling spent fluorescent lamps from households and CESQGs. Brochures and posters promoting the program will be created and distributed.

HW271 Brevard County -- \$50,000

Develop and construct a “tour-friendly” collection center that is safe and accessible for increased volume of hazardous waste coming to the facility. Also, develop educational materials on hazardous waste management.

HW278 Collier County -- \$50,000

Educate households and businesses on proper management of hazardous waste by creating and distributing bilingual public awareness materials.

HW270 Indian River County -- \$17,000

Develop a program to reclaim and resell refrigerant and to collect and manage fluorescent lamps.

HW269 Lake County -- \$50,000

Establish a mobile household hazardous waste collection (bookmobile concept) to provide collection sites at many locations throughout the county.

HW266 Marion County -- \$17,000

Implement a used oil filter collection program and help reduce CFC release by purchasing aerosol can puncturing/management equipment.

HW265 Martin County -- \$43,141

Develop an annual educational newsletter for citizens on proper hazardous waste management and expand the existing program to provide a self-serve hazardous waste drop-off site.

HW275 Okaloosa County -- \$21,000

A plan to reuse old latex paint by substituting it for water when mixing concrete. The “paintcrete” slabs that will be made will be used in building containment areas at the collection center.

HW280 St. Lucie County -- \$26,000

Develop, in coordination with the Florida Poison Control Center, a public awareness program of household chemical management and to expand the county’s existing HHW management program and HHWCC to accommodate special waste streams (aerosols & freon) and to safely manage HHW that is not readily identifiable.

HW267 Volusia County -- \$46,000

Appendix 3, Current Unique Or Innovative Projects for Hazardous Waste Management in Florida

Implement a home fuel oil restoration/pumping program to manage the numerous abandoned and potentially leaking home fuel oil tanks that are no longer necessary because of conversion to electric home heating. A complete "how-to" on the subject will be created for local government use.

FY 95/96

Martin County (HW294, \$37,573) is implementing a mobile hazardous waste collection vehicle. After a vehicle is purchased and customized, it will follow an established pick-up route. This "Haz-Mobile", similar in concept to a library book mobile, will visit specific locations on a regular schedule.

Brevard County (HW301, \$50,000) is expanding the 4th & 5th grade solid waste and recycling education program to include educational materials promoting recognition and proper management of household hazardous waste. The County is also working with its cities and large employers to organize collection events for targeted areas.

Monroe County (HW302, \$48,000) is expanding a residential curbside household hazardous waste pick-up program in order to accommodate a portion of the population (elderly, disabled and those without adequate transportation) unable to use either of the permanent collection centers.

The Solid Waste Authority of Palm Beach County (HW305, \$21,305) is implementing a program to promote the collection and recycling of used motor oil and filters from residents. Multimedia advertising will be used and reusable containers will be available to residents at below cost.

The Solid Waste Authority of Palm Beach County (HW306, \$11,300) is developing and implementing a household hazardous waste self-service drop-off program using specially marked containers for the temporary storage of such waste. Universal symbols or icons are being developed to easily identify the household hazardous waste for each container.

Alachua County (HW309, \$16,150), **Okaloosa County** (HW322, \$25,000) and **Dade County** (HW318, \$20,000) are each implementing a program to collect canceled, suspended and unusable pesticides. The Counties are working with their agricultural offices, the FL Department of Agriculture and with United Agri Products, an organization that assists farmers in understanding regulatory and environmental issues, in this endeavor.

FY96/97

Leon County (HW359, \$30,000) purchased and customized a vehicle to conduct mobile household hazardous waste collection programs for neighborhoods. Most of the work organizing and advertising the approximately 20 annual collections is done by homeowners' associations as part of their neighborhood improvement projects.

Appendix 4, Estimated Discards of Mercury in Products in the Florida Solid Waste Stream, 1989 and 2000

PRODUCT	1989 (Tons)	1995 (Tons)	2000 (Tons)	1989 (%)	1995 (%)	2000 (%)
Household Batteries	32.30	7.42	1.24	88.1	83.6	28.4
Electric Lighting	1.17	1.11	0.98	3.2	12.5	22.5
Mercury Devices ¹	1.45	1.75	1.94	4.0	19.7	44.5
Other ²	1.73	0.31	0.20	4.7	3.5	4.6
TOTAL	36.65	8.88	4.36	100.0	100.0	100.0

¹Thermometers, thermostats, switches.

²Dental amalgam, pigments, & paper coatings.

Appendix 5, Comparison Between Florida And National Recurrent Hazardous Waste Demand And Commercial Capacity (1993)

HAZARDOUS WASTE MANAGEMENT TYPE	FLORIDA OFF-SITE DEMAND (Tons/Year) ¹	FLORIDA COMMERCIAL CAPACITY (Tons/Year)	NATIONAL OFF-SITE DEMAND (Tons/Year)	NATIONAL COMMERCIAL CAPACITY (Tons/Year)
RECOVERY:				
Metals Recovery	16,000	200	823,000	1,900,000
Inorganics Recovery	1,000	0	96,000	368,000
Organics Recovery	23,000	232,000	590,000	2,430,000
Energy Recovery - Liquids	12,000	39,000 ²	969,000	1,851,000
Energy Recovery - Sludges/Solids	170	0	87,000	368,000
TREATMENT:				
Stabilization	4,000	0	603,000	8,002,000
Incineration - Liquids/Gases	1,000	0	262,000	848,000
Incineration - Sludges/Solids	1,000 ³	0	183,000	750,000
Fuel Blending	7,000	50,000	829,000	4,323,000
Wastewaters & Sludges	4,000	0	3,150,000	42,071,000
DISPOSAL:				
Landfill	11,000	0	1,597,000	49,299,000
Deepwell Injection	6	0	699,000	3,252,000

¹These numbers have been rounded off to the nearest thousand where applicable.

²This is the estimated capacity for Florida Solite, which is currently no longer operating as an energy recovery facility.

³The estimated Florida one-time waste demand (primarily contaminated soils from cleanup sites) for "Incineration - Sludges/Solids" in 1993 was ~ 12,500 tons. Annually thereafter, it is projected to be about 15,000 tons.