Florida Department of
Environmental Protection

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

February 25, 1994

Ms. Nancy McCann
City Hall Plaza 5N
Tampa, FL 33602

Dear Ms. McCann:

The City of Tampa Waste-to-Energy Facility is on a priority list from EPA's Office of Air Quality Standards, Emissions Standards Division, for obtaining specific operating information. For the Tampa facility, the following information for each unit, if available, is needed:

a. ESP Design Inlet Temperature

b. ESP Inlet Temperature Operating Data

c. Dioxin/Furan Test Data

Your response must be submitted in writing and is needed by Tuesday, March 1, 1994. The Division of Air Resource Management FAX number is 904/922-6979.

If you have any questions, please call Doug Outlaw or Preston Lewis at 904/488-1344. I have attached a copy of the letter from EPA/Region IV requesting the the Department to provide the ESP and dioxin/furan test data.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

attachment

cc: Bill Thomas, DEP/Tampa
Scott Davis, EPA/Region IV

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

FACSIMILE CORRESPONDENCE

DATE: FEB 24 1994

FROM: Scott Davis
Air Enforcement Branch

TO: Preston Lewis
Air Permitting Branch
Florida Department of
Environmental Protection

The following list of municipal waste combustor facilities are on a priority list from EPA's Office of Air Quality Standards, Emissions Standards Division, for obtaining specific operating information. For these sources, the following data is desired:

-ESP Design Inlet Temperature

-ESP Inlet Temperature Operating Data

-Dioxin/Furan Test Data

As a minimum, the information on ESP Inlet Temperatures (both Design and Operating Data) must be submitted in writing to EPA Region IV from these sources:

1. Hillsborough County Resource Recovery Facility (3 units)

2. Pinellas County Resource Recovery Facility (3 units)

3. Tampa municipal waste combustor (4 units)

4. Bay County Waste to Energy (2 units)

Further information will be relayed to you by telephone, and your questions and comments can be discussed at that time. Thank you for your assistance in this matter.

FAX TRANSMITTAL ▸ 1

Preston Lewis	Scott Davis
FLORIDA DEP	404-347-5014
904-922-6979	404-347-3059

GENERAL SERVICES ADMINISTRATION

Andrews

Needs mercury data and narratives.
ETG 8/15

Editor
7/22/91

Biological Waste Combustion in Florida

Division of Air Resources Management
Department of Environmental Regulation
State of Florida
2600 Blair Stone Road
Tallahassee, Florida
32399-2400

PREFACE

This report has been prepared to provide both summary and detailed answers to frequently asked questions about Florida's air pollution control rules that apply to the combustion of biological and biohazardous waste. This preface and the Executive Summary provide a brief review of the main points that are discussed in more detail in the report.

In 1988, the Florida Legislature passed the Solid Waste Management Act, and instructed the Department of Health and Rehabilitative Services (HRS) and the Department of Environmental Regulation (DER) to adopt specific rules to implement the parts of that Act that establish the State's policy for managing biological waste.

HRS determines what wastes need to be regulated as biological waste and regulates the packaging, storage, and treatment of biological waste which occurs at the generating facility. DER's Division of Waste Management regulates the off-site transport, storage, and disposal of biological waste,--the disposal of sterilized biological waste and the disposal of the ash residue resulting from the combustion of biological waste. DER's Division of Air Resources Management regulates the combustion of biological waste, whether it be on-site or off-site.

Local governments, through their zoning authority, determine where biological waste generating, transfer, storage, and treatment facilities are located. Neither HRS nor DER has zoning or siting authority for biological waste facilities.

State law now prohibits open dumping and the placing of untreated biological waste in landfills. Biological waste must be sterilized and put in a landfill, or incinerated and the ash landfilled. Radiological wastes may not be burned in a biological waste combustor, unless HRS has issued a permit to do so, or the specific type of low-level radiological waste is of such quantity to be exempt under HRS's Rules 10D-91 or 10D-104.003, F.A.C.

This report addresses only the combustion of biological waste. Contact Fran Stanton of HRS at (904) 488-3385 and Tom Moore of the Division of Waste Management at (904) 922-6104 for information on regulations relating to the generation and management of biological and biohazardous waste in Florida.

STEVE SMALLWOOD, .P.E.
Director
Division of Air Resources Management
December 21, 1990

BIOLOGICAL WASTE COMBUSTION IN FLORIDA

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EXECUTIVE SUMMARY

The management of biological waste is a major environmental issue in Florida.

In 1988, the Florida Legislature passed the Solid Waste Management Act and directed the Department of Health and Rehabilitive Services (HRS) and the Department of Environmental Regulation (DER) to take various specific actions to improve the management of this type of waste within the state. Biological waste is solid or liquid waste that has the capability of causing disease or infection. It includes biohazardous waste, diseased or dead animals, and other waste capable of transmitting pathogens to humans or animals. Biohazardous waste is any solid or liquid waste which may present a threat of infection to humans.

August 30, Old vs New Combustors

Prior to the ~~September~~ 1989 effective date of DER's new biological waste combustor rule, there were 260 biological waste combustor facilities located throughout the state. Eighty-five percent (85%) of those were small combustors. Since the effective date of the new rule, the Department has received applications for 62 new biological waste combustor facilities. Sixty-seven percent (67%) of the new facilities are small combustors.

The old units have a total biological waste combustion capacity of approximately 600 tons per day. The Sixty-two new facilities, if they are all approved, would have a total additional usable waste combustor capacity of about 400 tons per day. Most of the capacity for the older units is represented by large off-site commercial units like the MEDX combustors in Miami. Most of the on-site hospital waste is handled by medium-sized combustors located at less than a dozen regional medical centers. All of these combustors are capable of properly incinerating trash and food waste, in addition to biological waste, and are generally permitted to do so. The total hospital waste stream typically is composed of fifteen percent (15%) biological waste and eighty-five percent (85%) trash and garbage. The Waste Management Division is conducting a study to better define the mix of waste that have been burned in the combustors permitted to incinerate biological waste, to help answer the waste management question of how the existing combustor capacity compares with the amount of waste being generated within the state.

The smaller biological waste combustors (for both the old and new facilities) are located at animal and human crematories, smaller medical facilities, laboratories, and the smaller off-site commercial waste combustor facilities.

Eighty-five percent (85%) of the requested new biological waste combustor capacity is off-site. Most of this new off-site capacity is to be provided by nine new large and eight new medium-sized commercial facilities.

For the new large off-site commercial units: 2 are for north Florida, 3 for central Florida, and 4 for south Florida. For the new medium-sized off-site units: 2 are for north Florida, 2 for central Florida, and 6 for south Florida.

Most of the new on-site capacity is to be provided by five new medium-sized combustion facilities to be located at hospitals and medical centers.

For the medium-sized on-site medical facility combustors: 1 is for north Florida, none are for central Florida, and 4 are for south Florida.

On an overall basis, the new small biological waste combustors account for about ten percent (10%) of the new capacity. About half of that is on-site and half is off-site. Seventeen of these new small combustors are for crematories, eight are for smaller medical facilities, and fifteen are for off-site commercial units.

Nine of the new small units are for north Florida, 14 are for central Florida, and 17 for south Florida. The current population in each of those areas is approximately 2.5 million persons, 5.4 million persons, and 5.0 million persons, respectively.

See the tables and graphs on pages 10-13 of this report for a tabular and graphical summary of this information.

In North Florida, a medium-sized combustor facility has been proposed for Bay County (Panama City), and two large off-site commercial combustors have been proposed for Hamilton County (Jasper), which are two of the fourteen counties in North Florida which do not have county-wide zoning (See Appendix F). All of the nine new small combustors proposed for North Florida are for counties that currently have county-wide zoning.

New Rule Requirements

The new rule requires biological waste to be incinerated at or above 1800°F with a gas retention time of 1 second in the secondary combustion chamber. Nationally recognized studies have established that 1400°F is sufficient to destroy the biological activity of the waste, and 1650°F is sufficient to destroy the toxicity of chlorinated organic plastics and solvents that might be included in the waste stream.

All biological waste combustors are required to meet a hydrogen chloride (HCl) emission standard which limits the amount of plastics that can be included in the waste stream that is incinerated in the small combustors. The rule also requires the installation of an acid gas scrubber on the ~~medical~~ medium and large-sized units (to prevent the HCl emissions from causing damage to property or vegetation in the vicinity of the combustors).

The medium and large-sized units are required to be equipped with a baghouse (or other high efficiency particulate collector) to limit the emission of particulate matter which includes both mineral ash and heavy metals. A biological waste combustor that meets the new rule requirements will emit no more than several pounds a day of particulate matter and no more than 100 pounds per day of hydrogen chloride vapor; with no significantly visible emissions (from either smoke or acid mist). The emissions of heavy metals from such a facility would measure in the ten thousandths of a pound per day. Dioxin emissions would be in the billionths of a pound per day range.

Atmospheric dispersion modeling for various typical-sized biological waste combustor facilities has shown that the maximum ground-level concentrations of each of these air pollutants that results from the emissions from the facility is well within the applicable National Ambient Air Quality Standard (NAAQS) or acceptable ambient concentration (AAC) level.

Public Notice

Upon receipt of an application for a new biological waste combustor and when the Department publishes its Intent to Issue or Deny the requested permit, the Department will give special written notice to affected state and local officials in addition to the normal public notice required by law (see Appendix G).

Compliance Inspections

To help ensure a high level of compliance with the new biological waste combustor rule, the Department has requested additional District Office inspectors to conduct quarterly inspections of these units as they become subject to the new rule, and to conduct timely investigations of citizen reports.

If you see significant visible emissions or smell a noticeable odor associated with a biological waste combustor (new or existing), it is not being properly operated and most likely is in violation of the new rule. In such cases, please report your observations to the Distric Air Program Administrator for the appropriate district office listed in Appendix E.

If you do not see visible emissions or observe noticeable odor, it is likely that the waste is being properly incinerated, and the emissions do not pose a threat to public health or the environment.

The Department welcomes suggestions on ways to improve the new rule, the methods of ensuring compliance with the rule, and public information about how Florida is addressing the management and disposal of biological waste within the state.

BIOLOGICAL WASTE COMBUSTION IN FLORIDA

INTRODUCTION

This report provides information on the development of DER's Biological Waste Combustor Rule, which became effective in September 1989, and on the biological waste combustion regulatory situation in Georgia and Alabama. It also provides information on the type, size, and location of the biological waste combustors for which the Florida DER has received applications from the effective date of the new rule through November 1990.

The Appendix contains copies of documents related to the development of the Florida biological waste combustor rule and copies of the corresponding rules of Georgia and Alabama.

BIOLOGICAL WASTE COMBUSTORS IN FLORIDA

Biological waste is solid waste that causes or has the capacity of causing disease and infection. It includes biohazardous waste, diseased or dead animals, and other waste capable of transmitting pathogens to humans or animals.

Biohazardous waste is any solid or liquid waste which may present a hazard of infection to humans.

Biological waste is generated, or originates, at medical facilities (hospitals/clinics and doctors' and dentists' offices) and crematories (funeral homes, animal hospitals, and shelters).

In 1988, there were 260 biological waste combustors in Florida which had been permitted under a general DER incinerator rule, similar to the rules that are currently in effect in Georgia and Alabama. These consisted of crematories, on-site medical facilities, and commercial facilities. All of the crematory units were small (500 pounds per hour or less).

The on-site medical facility combustors ranged from small to medium-sized (500 to 2,000 pounds per hour). The largest of these medium-sized units were located at eight of the state's largest regional medical centers. Some of these larger medium-sized units have heat recovery and good particulate emission control equipment.

The large-sized units (greater than 2,000 pounds per hour) were privately-operated regional units burning waste collected from many generators--like the large MEDX combustors in Miami.

Sixty-seven percent (67%) of the 260 combustors were very small--less than 200 pounds per hour. Eighty-five percent (85%) were less than 500 pounds per hour. None were in the range of 500 - 1,000 pounds per hour.

On a weight basis, most of the biological waste originating at medical facilities in Florida was combusted in the larger medium sized units. However, many of these units were not equipped with all of the currently available combustion or emissions control technology. The total usable biological waste combustion capacity for these 260 combustor facilities (which existed before the new rule became effective in September 1989) is approximately 600 tons per day.

BIOLOGICAL WASTE COMBUSTOR RULE DEVELOPMENT

In 1988, the Legislature enacted the Florida Solid Waste Management Act, which prohibits the disposal of untreated biological waste in a landfill or otherwise, and requires that biological waste in Florida be sterilized and properly landfilled, or incinerated and the ash residue properly landfilled. HRS was charged with regulating the generation, on-site management, and sterilization of biological waste. DER's Waste Management Division was charged with regulating the off-site transport, storage, transfer, and landfilling of properly treated biological waste and combustor ash. DER's Division of Air Resources Management was charged with regulating the combustion of biological waste, on-site or off-site. The location of new biological waste management facilities and waste combustors was to be determined by local governments through their zoning and building permit authority.

During 1988, the two state agencies held several public workshops throughout the state. Both agencies and the two DER divisions coordinated their development of the required new rules. Early in 1989, the HRS and DER rules were adopted. The DER Waste Management and Air Rules (Rule 17-712 and several sections of Rule 17-2, respectively) were adopted by the Florida Environmental Regulation Commission (ERC) in February 1989. The ERC is a seven member board which adopts all substantive rules involving standards that are implemented by the DER. The HRS rule (Rule 10D-104) was adopted by the Secretary of HRS about the same time.

In April 1989, a State administrative hearing was held in Tallahassee on MEDX Corporation's challenge to the new biological waste combustor rule adopted by the ERC. Among other things, MEDX alleged that the new rule would lead to a proliferation of small incinerators and, therefore, lead to increased air pollution instead of a diminution of such pollution. The hearing officer, after considering all of the testimony, concluded that

"it cannot be so," and on June 12, 1989, ordered that MEDX's challenge to the rule be dismissed. A complete copy of the hearing officer's final order (DOAH Case No. 89-1452R) is included in Appendix A of this report. The complete transcript of the hearing (which is about 300 pages in two bound volumes) is available for review and photocopying at DER's Tallahassee office (Contact Gary Smallridge or Betsy Hewitt in the Department's Office of General Counsel at (904) 488-9730).

Because of the rule challenge, the stricter standards in the new combustor rule did not go into effect until September 1989. Between February and September 1989 several air construction permit applications were filed with the Department to construct new biological waste combustors. Since the applications were filed before the effective date of the new rule, the applicants were legally entitled to have these units permitted under the old standard and be given three years from the effective date of the new rule to comply with the stricter standards in the new rule. All of the existing 260 biological waste combustors throughout the state were required by the new rule to comply with the new standards within three years or discontinue operation of the old combustors. The 1990 Legislature corrected the interim period issue by an amendment to the statute that required the combustors that were permitted during part of that interim period (June 1 through August 31, 1989) to comply with the new standards by July 1, 1991.

– medium and large offsite

WHAT THE FLORIDA COMBUSTOR RULE REQUIRES

All new biological waste combustors must comply with the new standards and requirements when they first commence operation. Combustors permitted during part of the interim period as discussed in the previous section must comply with the new standards and requirements by July 1, 1991. All combustors permitted before the new rule was adopted must comply by July 1992. No combustor is permanently grandfathered under the old rule. All combustors in operation after July 1, 1992, will have to comply fully with the new rule.

All combustors must meet a 5% opacity standard (essentially no significantly visible emissions). In addition, all must meet a combustion time requirement of one second and a secondary combustion chamber temperature requirement of 1800°F. All combustors must continuously record the secondary combustion chamber temperature while the combustor is charged with waste.

The combustion time and temperature standard and the continuous temperature monitoring requirement are the most important requirements from the point of view of destroying the biological activity of the waste and destroying the toxicity of any chlorinated organic compounds present in the waste. With good

combustion (incineration), pathogens are killed and chlorinated organics are broken down into carbon dioxide, water vapor, and hydrochloric acid (HCl). If the time and temperature requirement is met and there are no significantly visible emissions, the waste has been properly and effectively incinerated and the emissions do not present a threat to the public or the environment.

All biological waste combustors must also comply with an HCl emission standard that is comparable to the standard that applies to hazardous waste incinerators. The HCl standard effectively limits the amount of certain plastic materials and organic solvents that can be part of the waste burned in these combustors. In other words, too much plastic will cause violations and will be detectable. The visible emissions standard also serves as a check on the continuous compliance with the HCl standard--excessive amounts of HCl as well as excessive amounts of unburned carbonaceous material will result in noticeable visible emissions.

There is a greater risk of localized property or environmental damage from a combustion failure in a large unit than in a smaller one. The human health risk from exposure to toxic smoke resulting from overloading a large unit or from a combustion failure in a large unit is also greater than for a small unit. The "dry scrubber" (or other type of acid gas control system) minimizes this otherwise increased risk of using the larger combustors in populated areas. Finally, all biological waste combustors must be operated by properly trained operators. The important air pollution control requirements that are necessary to protect public health apply to all units. The only requirements that are a function of the total biological waste combustor capacity at a given location are: for 500 lb/hr or combustors with capacities greater OXYGEN

(1) Continuous monitoring requirements (for ~~carbon monoxide and for opacity--visible emissions~~) which serve as a double check on the combustion temperature requirement for the larger combustor facilities; and

(2) HCl limits for larger facilities that will require them to have an acid gas scrubber on each combustor to ensure compliance with the HCl standard.

To determine if the size-specific requirements apply, the total biological waste combustion capacity of all of the combustors at each location is used. If an owner adds a new combustor that causes the total biological waste combustion capacity to move from the small combustor facility category to the medium or large-sized facility category, all of the combustors at that location are required to meet the additional requirements for medium or large-sized facilities by the time the new combustor starts operation, even though each of the individual combustors might be of the "small" (less than 500 pounds per hour) size.

For a more detailed account of the technical rationale behind the rule, see Barry Andrews' testimony in the MEDX Corporation Rule Challenge Hearing transcript (about 100 pages). See the Technical Information Section of this report for a discussion of the technical basis of the time and temperature requirement, and of the nature of the type of emissions that can be expected from a biological waste combustor that is operated in compliance with the new rule.

See Appendix B for a complete copy of the Florida biological waste Combustor Rule.

THE GEORGIA AND ALABAMA BIOLOGICAL WASTE COMBUSTION SITUATION

Neither state has yet adopted rules that specifically apply to all types of biological waste combustion. Both have a general incinerator rule, somewhat like Florida's old rule. Georgia's Solid Waste Division has a rule that requires chemotherapy waste to be incinerated in a combustor that must comply with combustion time and temperature requirements similar to Florida's new rule. Although Georgia does not have a specific rule requiring it, the Air Division, through its permitting process, requires new medical waste combustors (but not crematories) to meet time, temperature, continuous temperature recording, and HCl emission requirements similar to Florida's new rule.

Only one commercial medical waste combustor has been permitted in Georgia during the last year (out of about a dozen applications), reportedly because the Georgia Solid Waste Management Act requires local zoning approval prior to obtaining the air permit. Local government is said to have also been pressured by public outcry not to allow local building permits to be issued for these types of facilities.

Alabama is drafting a new medical waste rule that is similar to the new Florida rule. The Alabama rule is to be adopted by May 1991 when the current two-year statewide moratorium on constructing new solid waste disposal facilities (which includes incinerators) ends. No commercial incinerators are being permitted during the moratorium period, but hospitals can accept up to 25% of their combustor's capacity in off-site waste.

See Appendix C for the Georgia rules and Appendix D for the Alabama rules.

BIOLOGICAL WASTE COMBUSTOR PERMIT APPLICATIONS RECEIVED UNDER THE NEW RULE

Under the U.S. EPA and Florida air rules, biological waste combustion facilities are classified as minor facilities. That just means that they emit less than 100 tons per year of any EPA regulated air pollutant. As such, they are not subject to the federal new source permitting requirements that apply to large new facilities, such as power plants and the municipal waste combustors.

Even though they are considerably smaller, the air pollution control requirements for the medium and large-sized biological waste combustor facilities under the new Florida rule are very similar to the state and federal requirements that apply to the very large municipal waste combustors. As a comparison, a large biological waste combustor may incinerate 30 tons of biological waste per day. A small biological waste combustor will typically incinerate about 1-2 tons per day. A typical municipal waste combustor will incinerate 1,000 to 1,500 tons of municipal waste per day.

Being classified as minor facilities also means that, in Florida, the permit applications for biological waste combustors are processed by the Department's District Offices.

There are six DER District Offices--located in Pensacola, Jacksonville, Orlando, Tampa, West Palm Beach, and Ft. Myers. See the map in Appendix E for the counties served by each of these offices.

In the following description of the number, type, size, and location of the new biological waste combustor facilities for which permits have been requested under the new rule, "north or north Florida" means within the DER Northwest and Northeast District area; "central" means within the Central and Southwest Districts; and "south" means within the Southeast and South Florida districts.

The 1990 population for north Florida is approximated at 2.5 million (about 20% of the state's population); central Florida is approximately 5.4 million (about 42%); and south Florida is approximately 5.0 million (about 38%), with a statewide population of approximately 13 million people.

BIOLOGICAL WASTE COMBUSTORS BY TYPE, SIZE, AND LOCATION

Under the new rule that became effective in September 1989, DER has received applications for 62 new biological waste combustors, with a total usable combustor capacity of approximately 406 tons per day. About 70 tons per day of this would be provided by 30 on-site facilities (crematories and medical facilities), and the balance of 336 tons per day by 32 off-site combustors. All crematory combustors are small. All large combustors are at off-site commercial facilities.

Crematories

Seventeen (17) applications have been for small combustors for animal and human crematories. Their average size is 150 pounds per hour. All are batch-type combustors which, at most, will operate 8-12 hours per day -- the waste is placed in the combustor, the combustor charging door sealed, the waste incinerated, the combustor cooled down, the ash removed, then a new batch is charged and the process repeated. Their total capacity is 2,600 pounds per hour (about 10 tons per day). Eight (8) of these are for south Florida (1,450 pounds per hour). Eight (8) are for central Florida (955 pounds per hour). One (1) is for north Florida (200 pounds per hour).

Hospitals/Medical Facilities

Thirteen (13) applications have been received. This breaks down to eight (8) small and five (5) medium-sized combustors for on-site incineration at various governmental and privately-owned medical centers and hospitals. Their average size is approximately 650 pounds per hour. The smaller units are batch type; the medium-sized units are continuously operating units -- waste ~~is~~ continually added to the combustor and ash removed, as the waste is being incinerated. Their total capacity is approximately 8,400 pounds per hour (about 56 tons per day--44 for the medium-sized units; 12 for the small units). Eight (8) of these combustors are for south Florida (6,390 pounds per hour)--four (4) small combustors and four (4) medium-sized ones. Two (2) small ones are for central Florida (525 pounds per hour), and three (3) are for north Florida (1,500 pounds per hour)--two small and one medium-sized unit.

Off-Site Commercial Combustors

Thirty-two (32) applications have been for commercial off-site combustors. Their average size is approximately 1,300 pounds per hour, and the total capacity of all of these combustors is 40,883 pounds per hour. Nine (9) of these applications have been for large combustors. Eight (8) are for medium-sized units, and fifteen (15) are for small batch combustors.

The fifteen (15) small batch combustors have a capacity of about 6,000 pounds per hour (about 30 tons per day). Of the small combustors, five (5) are for south Florida, four (4) are for central Florida, and six (6) are for north Florida.

The eight (8) medium-sized continuous-operation combustors have a capacity of about 9,000 pounds per hour (about 83 tons per day). Six (6) of these medium-sized combustors are to be located in south Florida, two in central Florida, and two in north Florida.

The nine (9) large combustors have a capacity of about 26,000 pounds per hour (about 233 tons per day). Four (4) of these large units are for south Florida (LaBelle, Hollywood, Miami). Three (3) are for central Florida (Lake County, Cocoa), and two (2) are for north Florida (Jasper).

Statistical Summary

According to testimony at a recent administrative hearing involving MEDX, about one-third of waste is, and traditionally has been, incinerated off-site in large commercial combustors like the MEDX units in Miami.

Another one-third has traditionally been incinerated on-site at medical facilities or crematories, or landfilled. The amount landfilled will likely decrease, increasing the amount to be treated by medical facilities, as reflected in the applications received. Another third of the total is biological waste that previously was not subject to regulation--primarily individually small amounts from a large number of doctors' and dentists' offices, clinics, and laboratories.

About 60% of the requested new capacity, thus far, is in nine new large off-site commercial units. More than 75% of the requested new capacity is in the nine new large and eight new medium-sized off-site commercial units.

85% of the new capacity is off-site; 15%, on-site. Nearly 70% of the new on-site capacity is in the five new medium-sized medical facility units. The remaining 15% of the new on-site capacity is about evenly split between crematories and small medical facility units.

Overall, small combustors account for about 10% of the new capacity. About half of that capacity is on-site and half off-site. Nine (9) of the new small units are for north Florida, fourteen (14) are for central Florida, and seventeen (17) are for south Florida--roughly proportional to the population in each of those areas.

The following tables and graphs summarize the requested new capacity by unit type and location for the sixty-two biological waste combustor applications received by DER from the time the new rule went into effect through November 1990.

There are fourteen counties in North Florida that do not have county-wide zoning ordinances. See Appendix F, County Zoning in Florida (1990), for a map showing the location of these counties.

One medium-sized and one large biological waste combustor facility have been proposed for two of these fourteen counties (Bay and Hamilton). The Bay County facility consists of two 500-pound and one 150-pound unit that is to incinerate hospital waste in Panama City. The large Hamilton County facility consists of two large commercial combustors to burn biological waste in Jasper in an industrial park. All of the nine new small combustors proposed for North Florida are to be located in counties that have county-wide zoning (St. Johns, Alachua, Bradford, Okaloosa, and Leon).

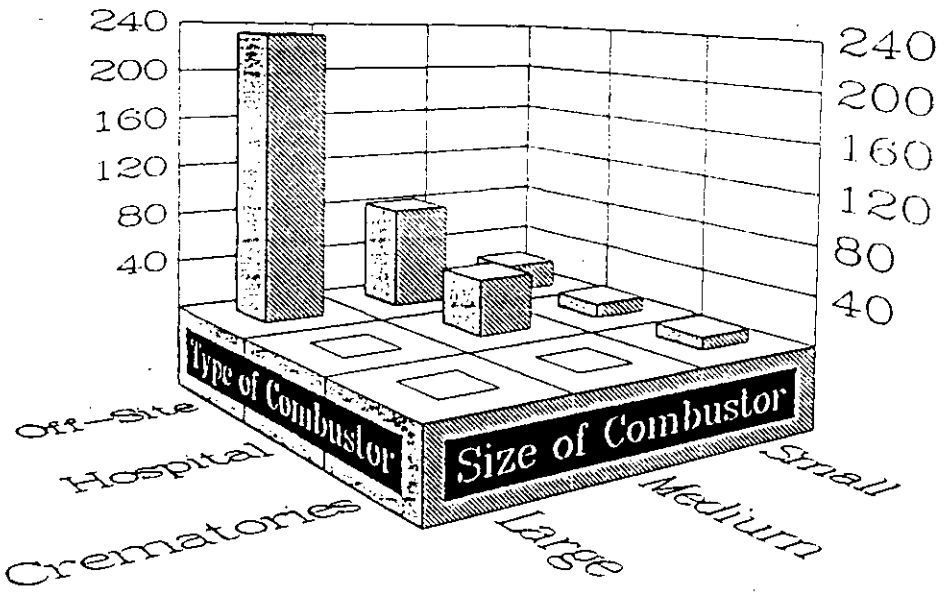
The Department's Division of Waste Management is also compiling information to determine the quantity and types of biological and biohazardous waste generated in Florida. The 260 combustor facilities that existed before the new biological waste combustor rule was effective and the 62 facilities for which permits have been requested under the new rule are permitted to to burn trash and food waste in addition to biological waste. The Waste Management Division's study will help answer the question of how much of the biological waste generated in this state is treated by various methods (including incinerators) and what mix of biological vs non-biological waste has traditionally been burned in these combustors, and what mix of waste is planned for the new combustors.

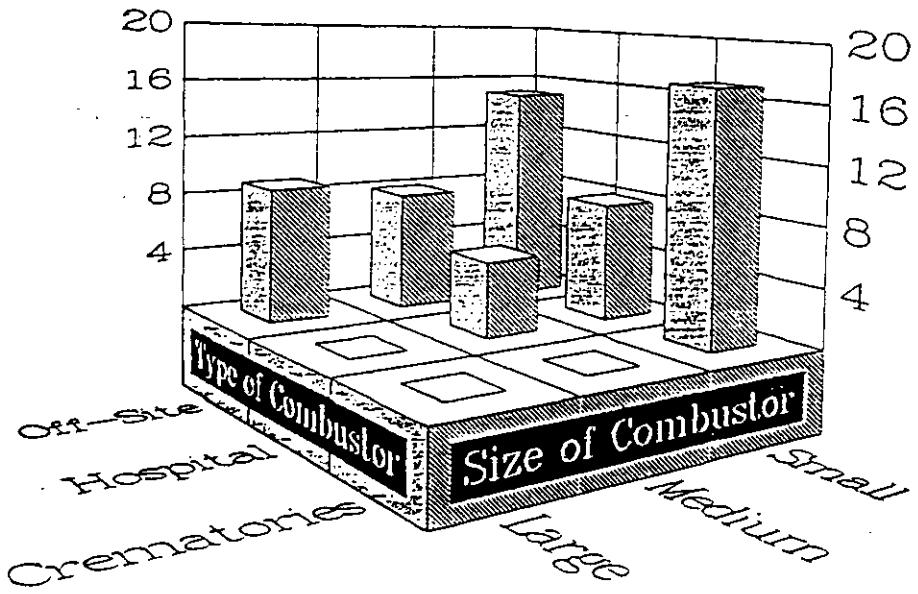
NEW BIOLOGICAL WASTE COMBUSTOR FACILITIES
BY TYPE AND SIZE
(1989-90)

Type of Facility	Total Capacity Tons/Day	No. of Facilities
Off-Site	(339)	(32)
Large Commerical	233	9
Medium Commercial	83	8
Small Commercial	23	15
On-Site	(67)	(30)
Large Medical	0	0
Medium Medical	45	5
Small Medical	12	8
Large Crematory	0	0
Medium Crematory	0	0
Small Crematory	10	17
Total	(406)	(62)

New Biological Waste Combustor Capacity

Tons Per Day by Type and Size





Number of Units by Type and Size

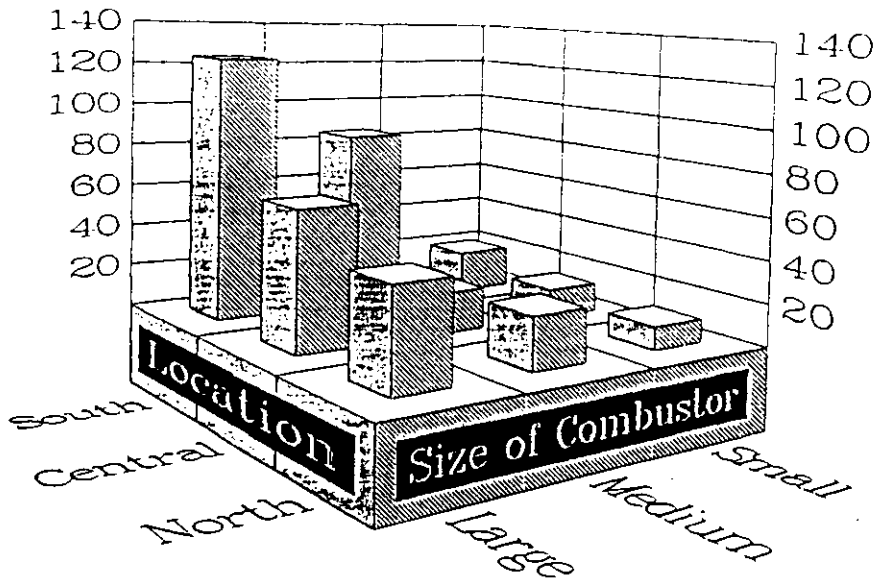
New Biological Waste Combustor Facilities

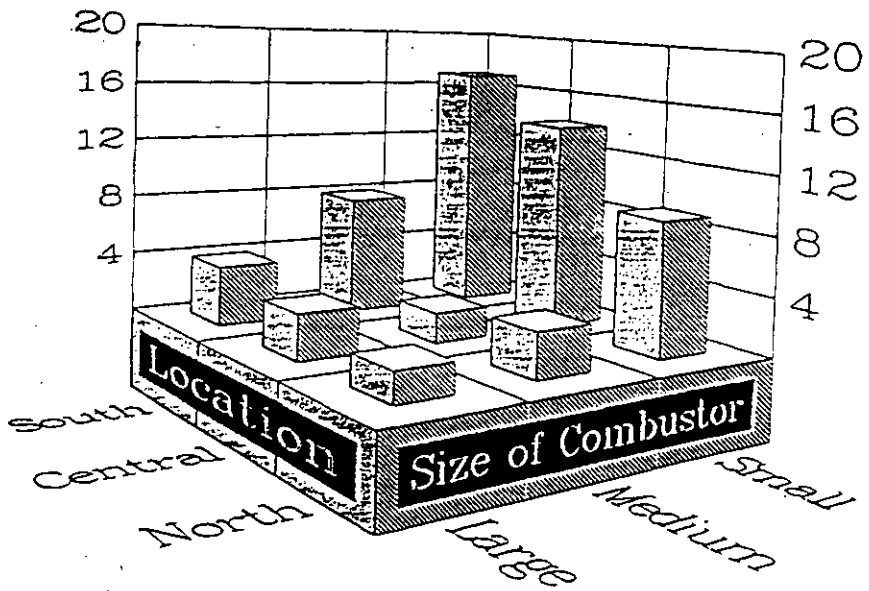
FLORIDA
NEW BIOLOGICAL WASTE COMBUSTOR FACILITIES
BY LOCATION AND SIZE
(1989-90)

Type of Facility	Total Capacity Tons/Day	No. of Facilities
North	(80)	(14)
Large	45	2
Medium	24	3
Small	11	9
Central	(97)	(19)
Large	64	3
Medium	19	2
Small	14	14
South	(229)	(29)
Large	124	4
Medium	85	8
Small	20	17
Total	(406)	(62)

New Biological Waste Combustor Capacity

Tons Per Day by Location and Size





Number of Units by Location and Size

New Biological Waste Combustor Facilities

TECHNICAL INFORMATION ON THE FLORIDA RULE

This section provides a discussion of the technical basis of the combustion time and temperature requirement. It also provides information on the type and amount of air pollutant emissions that can be expected from typical biological waste combustors, when they are operated in compliance with the new rule.

The Time and Temperature Requirement

The requirement to design biological waste combustors with at least a one-second retention time at 1800°F is based on studies that have been conducted by several researchers to determine what conditions are necessary to destroy both pathogens and toxic organic compounds such as dioxins and furans. For pathogens, several studies have been conducted in which the combustor was spiked with certain types of bacteria to determine the extent of destruction. These studies determined that a temperature of 1400°F was adequate to destroy all of the bacteria injected. For toxic organic compounds, the University of Dayton Research Institute determined that even the most stable toxic organic compounds are quickly decomposed at or below 1650°F, once sufficient air has been mixed with the combustion gases. The proper amount of air mixing has generally been provided by establishing a retention time of at least one second in the secondary combustion chamber.

During the rulemaking process, much discussion took place regarding the retention time that should be required. Although some states have established retention times of two seconds, it was the general consensus of the combustor vendors (those who would stand to gain from longer retention times because more expensive units would be necessary) that one second would be adequate for the destruction of pathogens and toxic organic compounds. The one-second retention time has also been adopted by other states, such as New York, which is a recognized leader in the development of regulations for biological waste combustion.

Combustor Emissions

The air pollutant emissions from biological waste combustion can be grouped into three separate categories as follows:

- Solid Combustion Products (Particulates and Heavy Metals)
- Gaseous Products of Incomplete Combustion (Carbon Monoxide, Volatile Organic Compounds, and Toxic Organic Compounds)
- Acid Gases (Sulfur Dioxide, Nitrogen Oxides, and Hydrogen Chloride)

often

Particulate matter is incompletely burned solid particles, such as soot, or uncombustible materials, such as glass fragments, which are swept along by hot combustion gases and emitted. The amount of particulate matter emitted is largely dependent upon the type of waste burned. Biological waste combustors which operate at hospitals are used to dispose of the entire waste stream produced by the hospital. Much of the particulate matter emitted from these units is from the paper and packaging waste that is discarded by the hospital. This is also true for commercial biological waste combustor facilities since the biological waste is typically transported or placed in cardboard containers before being incinerated in the combustor. At crematories, a lesser amount of particulate is emitted (provided there is good combustion), since this type of waste has a very low ash content.

Like particulate matter, the quantity of heavy metals emitted from biological waste combustors is directly related to the type of waste being combusted. Some sources of metals in hospital waste include surgical blades, foil wrappers, plastics, and printing inks. Whereas particulate emissions can be several pounds per day, the emission of heavy metals are in the range of several ten thousandths of a pound (for most metals) to just less than a pound per day (for lead).

Carbon monoxide and low molecular weight volatile organic compounds are produced when incomplete combustion of the waste takes place. When chlorine is present in the waste stream from materials such as bleached paper products and plastics, incomplete combustion can also lead to the formation of toxic organic compounds such as dioxins and furans.

The emission of hydrogen chloride from the combustion of biological waste results from the chlorine that is present in the waste. Because plastic items are typically found in biological waste, hydrogen chloride tends to be one of the major pollutants emitted from these facilities.

The quantity of chlorine present depends on the type of plastic being combusted, with polyvinyl chloride (PVC) containing the greatest amount.

Carbon monoxide increases with decreasing combustion efficiency. The amount of carbon monoxide emitted from incinerators does not pose a threat to human health. Carbon monoxide is regulated because it is a good indicator of the combustion efficiency and of the amount of dioxin and other toxic organic compounds emitted. For combustors that are operated in compliance with the new rule, we can expect the total dioxin emission to be in the range of 4 to 20 billionths of a pound per day.

Quantifying Combustor Emissions

During the Spring of 1987, the California Air Resources Board and DER jointly conducted a special dioxin emissions test of Unit #3, Pinellas County Resource Recovery Facility, in St. Petersburg. About that same time, the Department was co-sponsoring dioxin emission testing research with New York state, California, and other interested agencies at the Pittsfield, Massachussetts municipal waste-to-energy (WTE) facility. In May 1988 the EPA and numerous air pollution control agencies co-sponsored a National Workshop on Hospital Waste Incineration and Hospital Sterilization (EPA-450/4-89-002). In December 1988 EPA published additional technical information in a Volume entitled, "Hospital Waste Combustion Study: Data Gathering Phase (EPA-450/3-88-017)".

Based on these references and other information available to the Department, the emission of various air pollutants from three typical-sized biological waste combustors were estimated. For comparison, similar air pollutant emission estimates are given for a medium-sized municipal WTE facility.

The small unit in the example table is typical of a crematory. The medium-sized unit is typical of those used at larger hospitals and medical facilities. The large-sized unit is typical of the larger off-site combustors used by commercial operators.

The municipal WTE facility in the table is similar to the Pinellas County units, which were among the last new WTE facilities not to be equipped with a dry scrubber (to further reduce acid gas emissions). If the unit used as an example in the table were equipped with an acid gas scrubber, the hydrogen chloride (HCl) emissions would be approximately 40 pounds per day instead of the 414 pounds per day. Total particulate emissions would be about the same. The emissions of heavy metals and dioxin would be somewhat less.

Biological Waste Combustor Emissions (pounds per day)
A Comparison

The quantity of emissions per ton of biological waste incinerated is comparable but not exactly the same as for the combustion of a ton of municipal solid waste at WTE facilities. The following table provides a comparison of the typical daily emissions that can be expected from a small (150 pounds per hour) batch combustor at a crematory, a medium-sized (1,000 pounds per hour) continuous feed combustor at a hospital, and a large (3,000 pounds per hour) commercial combustor, all of which comply with the new biological waste combustor rule. These emissions are then compared to those of an existing medium-sized (1,000 ton per day)

municipal WTE facility equipped with an electrostatic percipitator for particulate control, but no scrubber for acid gases.

COMBUSTOR EMISSIONS

Air Pollutants Emitted	Biological Waste Small	Medium	Large	Municipal WTE Medium
	(pounds per day)			
Particulate	4	2	4	~~100~~ 99
HCL	20	~~31~~ 30	~~94~~ 90	~~414~~ 9,936
	(ten thousandth of a pound per day)			
Cadmium	60	~~130~~ 127	~~410~~ 391	667
Chromium	~~10~~ 5	18	~~54~~ 53	382 ?
Lead	640	~~3100~~ 2990	~~9100~~ 8,740	~~1340~~ 13,400
Arsenic	~~8~~ 3	3	8	295
	(billionth of a pound per day)			
Dioxins	~~5~~ 5	~~6~~ 6	~~21~~ 197	~~40~~ 6,736

Because the potential for adverse affects on public health and the environment are different for different types of air pollutants, a comparison of emissions alone does not tell us what kind of risk these emissions pose to our health, property, or the environment. To evaluate the significance of these emissions, we need to know the typical long-term average ambient air concentrations that will occur around these facilities. We need to know the long-term average because the toxic effects of concern from heavy metals and dioxins result from long-term exposure. Due to the very low emission rates, none of the metals or toxic organics that can be emitted from biological waste combustors pose an acute or immediate short-term health threat.

A worst-case estimate of the maximum annual average ambient ground-level concentration for each of the air pollutants shown in the table above was made using an EPA-approved air pollutant dispersion model, assuming the small batch combustor is operated about 10 hours per day, and the other (continuous) combustors run an average of 23 hours per day. The calculated maximum concentrations were then compared with the ambient air quality standard (AQS) or the acceptable ambient concentration (AAC) levels for each pollutant, whichever is applicable.

In general, the taller the stack and the hotter the exit gas, the higher the emissions from the incinerator will rise and the more they will be diluted before they reach the ground level.

Using typical data for stack heights and stack gas temperatures, that are representative of the different sized units in the example table, an atmospheric dispersion model was used to calculate an estimate of the maximum expected annual average concentration for each example facility. The maximum annual average concentration is that which would occur around each facility considering all wind directions and meteorological conditions that typically occur over a period of a year in Florida.

Using data published in the October 26, 1989 Federal Register, page 43736, and data that is included in EPA's computerized Integrated Risk Information System's (IRIS) database, acceptable ambient concentrations were calculated for each of the air pollutants listed in the table. The acceptable ambient concentration for each compound is based on the recommendation of government health scientists and environmental groups that air toxics should be reduced to ambient levels which will not cause a greater than one-in-a-million chance of causing any human cancer after 70 continuous years of exposure. To provide an extra margin of safety, the calculations made to determine the health risks for air toxics use the worst case approach. There is a better than 95% change that the real health risks are much lower than the estimates given.

The following table lists the recommended acceptable ambient concentrations (AAC) for the air pollutants listed in the table for the example biological waste combustors and municipal WTE facility.

ACCEPTABLE AMBIENT CONCENTRATIONS (AAC)

Air Pollutants	AAC(ug/m^3)
Hydrochloric acid (HCl)	7
Cadmium	60×10^{-5}
Chromium	8×10^{-5}
Lead	9000×10^{-5}
Arsenic	20×10^{-5}
Dioxins	0.002×10^{-5}

Air Dispersion Modeling Results

An estimate of the maximum annual average ambient ground-level concentration for each of the air pollutants shown in the above table was made using the EPA-approved air pollutant dispersion model, SCREEN. A factor of 0.025 was used to convert the predicted maximum one-hour average concentration obtained from the model to an annual average value. In making these estimates the small batch combustor was assumed to operate 10 hours per day, while the other combustors were assumed to operate an average of 23 hours per day. The calculated maximum concentrations were then compared with the ambient air quality standard (AAQS) or the acceptable ambient concentration (AAC) level for each pollutant, whichever is applicable.

Typical stack parameter data (stack heights, gas exit temperature, etc.) representative of the different sized units were developed from the Department's database as follows.

	Stack Height (ft)	Stack Diameter (ft)	Stack Exit Temp. (deg F)	Stack Exit Velocity (ft/sec)
Small Combustor (150 lb/hr)	20	1.0	1200	15
Medium Combustor (1000 lb/hr)	30	1.5	1200	15
Large Combustor (3000 lb/hr)	75	3.0	400	45
WTE Facility (1000 ton/day)	150	6.0	450	70

In general, the greatest dispersion of the plume, and consequently the lowest ambient ground-level concentrations of the pollutants, occur for taller stacks, and for greater gas exit temperatures and velocities. Thus, the higher pollutant emission rates associated with the larger facilities may be offset by the greater dispersion characteristics of these facilities. The following table summarizes the estimated maximum annual concentration levels expected from these typical facilities.

Predicted Maximum Annual Average Ambient Air Concentrations

Pollutant	Small ($\mu g/m^3$)	Medium ($\mu g/m^3$)	Large ($\mu g/m^3$)	WTE ($\mu g/m^3$)	AAC ($\mu g/m^3$)
Particulates	0.189	0.0351	0.00657	0.0379	50
HCl	0.945	0.526	0.148	3.81	7
Cadmium	2.84×10^{-5}	2.23×10^{-5}	6.42×10^{-6}	2.56×10^{-6}	6×10^{-4}
Chromium	2.36×10^{-6}	3.16×10^{-6}	8.70×10^{-7}	1.46×10^{-6}	8×10^{-5}
Mercury					0.3×10^{-1}
Lead	3.02×10^{-4}	5.25×10^{-4}	1.44×10^{-4}	5.15×10^{-5}	9×10^{-2}
Arsenic	1.42×10^{-6}	5.25×10^{-7}	1.31×10^{-7}	1.13×10^{-6}	2×10^{-4}
Dioxins	2.41×10^{-9}	1.10×10^{-9}	3.12×10^{-10}	2.58×10^{-9}	2×10^{-8}

The maximum particulate matter ambient air concentrations caused by the biological waste and municipal WTE facilities that meet the Department's rules are well within the national and state ambient air quality standard.

Hydrochloric acid (HCl) emissions from the municipal WTE facility results in ambient concentrations of approximately 50 percent of the AAC level. For the biological waste facilities, predicated maximum concentrations of HCl are less than 15 percent of the AAC level. With the exception of dioxins, all other emitted pollutants listed above result in predicted annual concentrations of less than five percent of each pollutant's respective AAC level for all facilities. Dioxin concentrations are predicted to be less than 15 percent of its AAC for all facilities.

It should be noted that the above estimates of maximum concentrations are based on typical configurations for these types of facilities. The estimates could change significantly for any particular facility whose source and emission characteristics are much different than used here. The results obtained here, however, indicate that each of these types of facilities, if constructed and operated within the Department's rules, can easily comply with the annual ambient air quality standards and acceptable air concentration levels defined for each of the above pollutants.

The overall result of the emissions estimates, modeling, and risk assessment calculations is that if the facilities are operated in compliance with the new rule, there will be no significant visible emissions or noticeable odors, and the annual average ambient concentrations of concern will all be well within the recommended acceptable ambient concentration levels.

Additional information on the technical basis of the Florida biological waste combustor rule is included in the hearing officer's final report which is in Appendix A of Barry Andrew's testimony at the MEDX Corporation rule challenge hearing (see pages 3 and 5), and in an EPA contractor's report entitled "State-of-the-Art Assessment of Medical Waste Thermal Treatment." The contractor's report is available from Energy and Environmental Research Corporation. Call the company at (714) 859-8851 to request a copy of the report.

PUBLIC NOTICE REQUIREMENTS

State law requires the permit applicant to give notice, in a newspaper of general circulation in the area where the project is proposed, of the Department's intent to issue or deny the requested permit.

Because of the heightened public concern about biological waste combustion, the Department, beginning in the early summer of 1990, voluntarily adopted an agency-wide policy of notifying local elected officials and the legislative delegation for the affected area, not only of the proposed agency action on each biological waste combustor application, but also of the receipt of each such application.

That policy, which originally applied only to biological waste combustors, was recently expanded to apply to other types of facilities of heightened public concern. See Appendix G Public Notice, for a copy of the Secretary's policy memo.

BIOLOGICAL WASTE COMBUSTOR COMPLIANCE INSPECTIONS CITIZEN OBSERVATIONS

In its 1991 Legislative Budget Request to the Governor's Office, the Department has asked for five (5) new district office positions to allow the Department to conduct quarterly inspections of all biological waste combustors as they become subject to the new standards. The new positions would be funded from the state Air Pollution Control Trust Fund, which is entirely fee supported. The state's air program does not use any general revenue.

Under normal circumstances, major facilities are inspected once a year, and minor facilities once every five years. Any facility may be inspected more frequently if the Department has reason to believe that the facility is not operating in compliance. All citizen complaints are investigated. The Department relies on citizen observations and reports to help identify facilities that need additional investigation. In all cases, the Department takes enforcement action when violations are detected.

If you observe any significant visible emissions for more than a few minutes at a time, or smell any noticeable odor that is clearly associated with a biological waste combustor, the combustor is not being properly operated and the emission standards are most likely not being met. If you observe visible smoke or odor from a biological waste combustor, please report that observation to the appropriate District Air Program Administrator for the district office that serves the county in which the observation is made. See Appendix E for the mailing address and telephone numbers for each DER district office and a map of their service area.

If you observe a visible plume that is being knocked to the ground within several hundred feet of a combustor, then the combustor is located with the respect to other nearby buildings or structures, in such a way as to create a stack downwash problem which can result in periodic, short-term, higher ground-level concentrations than those that will occur if the stack is the proper height with respect to the surrounding buildings and structures. If you observe such an occurrence, report that observation to the appropriate District Air Program Administrator so an investigation of the situation can be conducted. If a down-wash problem is found to exist, the Department will amend the facility's permit to require the stack to be raised to the appropriate height to prevent down-wash. If that is not technically feasible in that location, special modelling will be conducted to determine if the down-wash situation has the potential to cause unacceptably high ambient concentration levels. If the modelling shows this is the case, the combustor will not be allowed to continue operation in that location.

In the case of improper operation, if the investigation establishes that improper operation has resulted in a violation of any of the applicable rule provisions, the Department will initiate appropriate enforcement action against the owner of the combustor.

If biological waste combustors are properly maintained, and operated in compliance with the new rule, you will see no significantly visible emissions nor smell any noticeable odor, and the emissions from the facility are not likely to present a threat to the public or to the environment.

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

FAX TRANSMITTAL SHEET

NAME(S): Jerry Kissel

DEPARTMENT/COMPANY: EPCHC

DATE: 11-19-92

FAX PHONE: 813-272-7144

TOTAL NUMBER OF PAGES, INCLUDING COVER PAGE: 5

****

FROM: Bruce Mitchell

DIVISION OF AIR RESOURCES MANAGEMENT

BUREAU: of Air Regulation

OFFICE PHONE: 904-488-1344 FAX PHONE: (904)922-6979

SENDER: Joan

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Lawton Chiles, Governor

Carol M. Browner, Secretary

November 19, 1992

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Daniel E. Strobridge
Associate
Camp Dresser & McKee, Inc.
One Tampa City Center, Suite 1750
Tampa, Florida 33602

Dear Mr. Strobridge:

Re: City of Tampa Waste to Energy Facility Issues Regarding Waste Oil Firing

The Department has reviewed your August 24, 1992, letter, which requested that a federally enforceable condition, a restriction of firing only waste oil cleaned up by the Port Authority, be deleted from an air operation permit, No. AO 29-206279. Pursuant to Florida Administrative Code Rules 17-212.400(6)(b) and 17-212.500(8)(d), the operation permit shall include all operating conditions and provisions required in the construction permit. Therefore, the condition has to be deleted from the affected construction permit and cannot be processed under the current request. If this is what you desire, please submit the following information and the Department will, again, consider the issue:

o An application for a modification shall be submitted to the Department's Bureau of Air Regulation and the Environmental Protection Commission of Hillsborough County (EPCHC) under a Florida registered Professional Engineer's seal; also, the application package must be accompanied with the appropriate processing fee.

o Besides the Port Authority, identify all of the other potential sources of waste oil that the facility desires to process.

o As part of the application package, propose a protocol that shall be followed for every potential situation where the facility might be involved with the firing of waste oil. Minimally, the protocol shall include the following:

- o the source of the waste oil (i.e., ship's bilge, spill, etc.);
- o the address of the owner/operator of the source of the waste oil;
- o the identity and permit number of the storage tank that will receive the waste oil prior to firing;
- o the quantity of waste oil to be fired;

- an ultimate analysis of the waste oil to be fired, which shall include the Btu content, grade, percent sulfur content (by weight), metals (Cd, Hg, Pb, Cr, etc.), asphaltenes, and volatiles (benzene, toluene, ethyl-benzene, and xylene); and,
- the name and address of the laboratory that will be used for the analyses.

NOTE: Since the facility is not permitted to process any hazardous waste, the waste oil shall not exceed the limitations established in 40 CFR 266.

Once the above information and appropriate processing fee are received, the Department, the EPCHC, the U.S. EPA, and the U.S. Department of Interior's National Park Service will review the request for completeness and issue their findings. Once a complete application package has been received, a notice of complete application and the Department's Intent will each have to be placed on Public Notice. With or without an administrative hearing, the Department will issue a final determination (i.e., issue or deny).

If there are any questions, please call Bruce Mitchell at (904)488-1344 or write to me at the above address.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/BM/rbm

Attachment

cc: B. Thomas, SWD
J. Campbell, EPCHC
G. Kissel, EPCHC
D. Beason, Esq., DER

Attachment

CDM

environmental engineers, scientists, planners, & management consultants

CAMP DRESSER & McKEE INC.

One Tampa City Center, Suite 1750
Tampa, Florida 33602
813 221-2831 Fax 813 221-2279

8/27

Boston
pls advise
Clair

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Division of Air
Resources Management

August 24, 1992

Bruce
What do you
think
Pruett
8/28

Mr. Claire Fancy
State of Florida
Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32301-2400

Re: City of Tampa DER File No: AO29-206279

Dear Mr. Fancy:

Several weeks ago you and I discussed several aspects of the pending City of Tampa Refuse to Energy Facility permit application.

Among the concerns I raised was one dealing with the authorization to incinerate waste oil from spills cleaned up by the Port of Tampa. My concern was that limiting such disposal to wastes cleaned up by a given entity was unnecessarily restrictive and had no bearing on the environmental impact of incinerating the waste material.

It was my understanding that you concurred with the concept that the words "by the Port of Tampa" could be stricken from this permit. It is my further understanding that you indicated that Jerry Campbell could give you a call to confirm our conversation.

If I have misunderstood or misconstrued your meaning, please advise me at your earliest convenience.

As always, it is a pleasure to work with you on these and other issues.

Sincerely,

CAMP DRESSER & McKEE, INC.

Daniel E. Strobridge
Associate

cc: Nancy McCann, City of Tampa
Jerry Campbell, EPC

P 062 921 924

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Camp, Dresser & McKee, Inc
One Tampa City Ctr, Suite 1750
Tampa, Fl 33602

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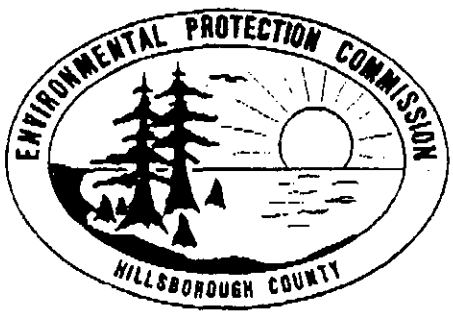

ROGER P. STEWART
EXECUTIVE DIRECTOR
ADMINISTRATIVE OFFICES AND WATER MANAGEMENT DIVISION
1900 - 9TH AVENUE
TAMPA, FLORIDA 33605
TELEPHONE (813) 272-5960

AIR MANAGEMENT DIVISION
TELEPHONE (813) 272-5530

WASTE MANAGEMENT DIVISION
TELEPHONE (813) 272-5788

ECOSYSTEMS MANAGEMENT DIVISION
TELEPHONE (813) 272-7104

ENVIRONMENTAL PROTECTION COMMISSION
of Hillsborough County

FAX Transmittal Sheet

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TO: BRUCE MITCHELL

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- Special Programs	- UST Clean-Up	- Environmental Engineering
- Air Engineering	- Solid/Hazardous Waste	- Environmental Assessment
	- UST Compliance	- Compliance & Enforcement

SPECIAL INSTRUCTIONS: Copy of permits (original), BACT, LAER. 1 year 1983 Issued April 23, 1982 amendments: Nov 7, 1986 Construction of fly ash silo (addition of specific condition 9-through 14 May 20, 1983: Change of specific condition No 2 to allow the burning of infectious waste and waste oil collected from spills cleaned up by the Port Authority.

(File:\work\vms\FAXTrans.frm)

SEP-22-'92 TUE 10:29 ID:EPC TEL NO: #648 P01

ROGER P. STEWART
EXECUTIVE DIRECTOR
ADMINISTRATIVE OFFICES AND WATER MANAGEMENT DIVISION
1900 - 9TH AVENUE
TAMPA, FLORIDA 33605
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AIR MANAGEMENT DIVISION
TELEPHONE (813) 272-5530

WASTE MANAGEMENT DIVISION
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ECOSYSTEMS MANAGEMENT DIVISION
TELEPHONE (813) 272-7104

ENVIRONMENTAL PROTECTION COMMISSION
of Hillsborough County

FAX Transmittal Sheet

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STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

November 7, 1986

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Ms. Nancy McCann
Urban Environmental Coordinator
Office of Environmental Coordination
City Hall Plaza, 5N
Tampa, Florida 33602

Dear Ms. McCann:

Re: Amendment to Construction Permit AC 29-47277

The department is in receipt of your request to amend the above referenced state construction permit to reflect the "as built" construction of the facility. The amendment to the permit allows for the construction of a flyash storage silo. Particulate matter emissions will be controlled by use of a baghouse filter and are in accordance with the department's determination of Lowest Achievable Emission Rate for particulate matter. The department is in agreement with the request and the following shall be added or changed:

Expiration Date:

From: April 30, 1986
To: December 31, 1986

Specific Conditions:

9. Particulate matter emissions from the flyash storage silo shall not exceed 0.025 grains per dry standard cubic foot or 0.36 pound per hour based on a maximum flow rate of 2109 acfm.

10. Visible emissions from the flyash storage silo shall not exceed 5% opacity. Compliance with this limit shall be demonstrated by DER Method 9 in accordance with the requirements of section 17-2.700, FAC.

11. The permittee shall provide HCEPC and SWFDER at least 30 days advanced written notice of the startup date of the flyash storage silo.

12. The visible emissions tests for the flyash storage silo must be accomplished within 5 days of startup of the silo.

13. Should HCEPC or the Department have reason to believe the particulate emission standard is not being met, HCEPC or the Department may require that compliance with the particulate emission standards be demonstrated by testing in accordance with EPA Methods 1, 2, 3, 4, and 5.

14. Within 45 days of initial compliance testing of the source, test results along with 4 copies of a completed Certificate of Completion of Construction form shall be submitted to the HCEPC.

This letter must be attached to your construction permit, AC 29-47277, and shall become a part of that permit.

Sincerely,

Victoria J. Tschinkel
Secretary

VJT/ks

cc: Bill Thomas, SW District
Victor San Augustin, HCEPC

File 4h(2) 7.4c

Final Determination

Amendment to
McKay Bay Refuse-To-Energy Project
Hillsborough County

Permit Number
AC 29-47277

Florida Department of Environmental Regulation
Bureau of Air Quality Management
Central Air Permitting

May 20, 1983

FINAL DETERMINATION

The City of Tampa's request to amend the construction permit of its McKay Bay Refuse-To-Energy Project to allow the incineration of infectious waste and waste oil recovered from oil spills has been reviewed by the Bureau of Air Quality Management. The department's Intent to Issue the permit was published in the Tampa Tribune on April 11, 1983.

Copies of the preliminary determination and technical review were available for public inspection at the Hillsborough County Environmental Protection Commission Office, the DER Southwest District Office, and the Bureau of Air Quality Management office.

No comments were received regarding this permit amendment. Therefore, it is requested that the permit conditions be issued as indicated in the preliminary determination.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

May 20, 1983

Mr. Dale H. Twachtmann
City of Tampa
McKay Bay Refuse-To-Energy Project
City Hall Plaza, 5N
Tampa, Florida 33602

Re: Modification of Conditions, Permit No. AC 29-47277

Dear Mr. Twachtmann:

We are in receipt of requests for modifications of the permit conditions. The specific conditions are changed as follows:

Specific Condition 2

From: Municipal waste only shall be burned in the facility. Wastewater treatment plant sludges or hazardous wastes shall not be incinerated.

TO: Municipal waste and infectious waste shall burned in the facility. Waste oil collected from spills cleaned up by the Port Authority not exceeding 10,000 gallons per day from tanker trucks or 10 tons per day of fiber drums shall also be burned. Wastewater treatment plant sludges or hazardous wastes shall not be incinerated.

This letter must be attached to your permit and becomes a part of that permit.

Sincerely,

Victoria J. Tschinkel
Secretary

VJT/ks

Issued this 20 day of May, 1983

7.C.8

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301

BOB GRAHAM
GOVERNOR

Victoria J. Tschinkel
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

April 23, 1982

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

RECEIVED
APR 28 1982
H.C.E.P.C.

Dale H. Twachtmann
City of Tampa
306 East Jackson Street
Tampa, Florida 33602

Dear Mr. Twachtmann:

Enclosed is Permit Number AC 29-47277, dated April 23, 1982
to City of Tampa
issued pursuant to Section 403, Florida Statutes.

Acceptance of the permit constitutes notice and agreement that the Department will periodically review this permit for compliance, including site inspections where applicable, and may initiate enforcement actions for violation of the conditions and requirements thereof.

Sincerely,

for C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management

CHF/pa

cc: Dan Williams, FDER, Southwest District
Hooshang Boostani, Hillsborough County Environmental Protection Commission
Joe Murdoch, City of Tampa

DER Form 17-1.122(65)

STATE OF FLORIDA
DEPARTMENT OF
ENVIRONMENTAL REGULATION

CONSTRUCTION
PERMIT

NO. AC 29- 47277

CITY OF TAMPA
MCKAY BAY REFUSE-TO-ENERGY
FACILITY NO. 1

DATE OF ISSUANCE

April 23, 1982

DATE OF EXPIRATION

DECEMBER 31, 1984

Victoria Tschinkel

VICTORIA TSCHINKEL
SECRETARY

Final Determination

McKay Bay Refuse-to-Energy Project
Hillsborough County

Permit Number:

AC 29-47277

Florida Department of Environmental Regulation
Bureau of Air Quality Management
Central Air Permitting

April 21, 1982

The proposed air pollution construction application from the City of Tampa to build a resource recovery facility has been reviewed by the Bureau. The Department's Intent to Issue the construction permit was published in the Tampa Times on March 22 , 1982. Copies of the preliminary determination were available for public inspection at the Hillsborough County Environmental Protection Commission Office, at the Department's Southwest District Office and at the Bureau of Air Quality Management.

Only one letter of comment was received during the thirty day public notice period. The City of Tampa has requested that another specific condition be added that would allow a procedure for adjusting the emission limitations if the estimated emissions were less than the actual emissions. Since this condition is similar to a general condition in the federal permit and follows the Department's policy, the Bureau agrees with the recommendation.

Therefore, it is recommended that the air construction permit be issued with the above mentioned addition.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

APPLICANT: City of Tampa
306 East Jackson Street
Tampa, Florida 33602

PERMIT/CERTIFICATION
NO. AC 29-47277

COUNTY: Hillsborough

PROJECT: McKay Bay
Refuse-to-Energy
Facility No. 1

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2 and 17-4, Florida Administrative Code. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the approved drawing(s), plans, documents, and specifications attached hereto and made a part hereof and specifically described as follows:

Rehabilitation of the three combustion chambers at the Tampa Municipal Incinerator and the construction of a fourth 250 TPD combustion chamber and the modification of the facility to a resource recovery facility.

Attachments:

1. McKay Bay Refuse-to-Energy Project, Application to Construct an Air Pollution Source, July, 1981.

2. McKay Bay Refuse-to-Energy Project, Application to Construct an Air Pollution Source, October, 1981.

3. Letter of Richard Garrity to Steve Smallwood, December 10, 1981, concerning effort to obtain emission offsets.

4. Letter of Richard Garrity to Clair Fancy, February 18, 1982, requesting hourly emission rate changes.

PERMIT NO.: AC 29-47277
APPLICANT: City of Tampa

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions:, and as such are binding upon the permittee and enforceable pursuant to the authority of Section 403.161(1), Florida Statutes. Permittee is hereby placed on notice that the department will review this permit periodically and may initiate court action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations indicated in the attached drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit shall constitute grounds for revocation and enforcement action by the department.

3. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information: (a) a description of and cause of non-compliance; and (b) the period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

4. As provided in subsection 403.087(6), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

5. This permit is required to be posted in a conspicuous location at the work site or source during the entire period of construction or operation.

6. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Section 403.111, F.S.

7. In the case of an operation permit, permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

8. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant, or aquatic life or property and penalities therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, except where specifically authorized by an order from the department granting a variance or exception from department rules or state statutes.

9. This permit is not transferable. Upon sale or legal transfer of the property or facility covered by this permit, the permittee shall notify the department within thirty (30) days. The new owner must apply for a permit transfer within thirty (30) days. The permittee shall be liable for any non-compliance of the permitted source until the transferee applies for and receives a transfer of permit.

10. The permittee, by acceptance of this permit, specifically agrees to allow access to permitted source at reasonable times by department personnel presenting credentials for the purposes of inspection and testing to determine compliance with this permit and department rules.

11. This permit does not indicate a waiver of or approval of any other department permit that may be required for other aspects of the total project.

12. This permit conveys no title to land or water, nor constitutes state recognition or acknowledgement of title, and does not constitute authority for the reclamation of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

13. This permit also constitutes:

[X] Determination of Best Available Control Technology (BACT)
[X] Determination of Prevention of Significant Deterioration (PSD)
[ ] Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)

PERMIT NO.: AC 29-47277
APPLICANT: City of Tampa

SPECIFIC CONDITIONS:

1. The maximum allowable emissions from the resource recovery facility No. 1 shall be:

Pollutant	Emission Limitation	
Particulate	0.025 gr/dscf @12% CO_2	27.9 lb/hr
Sulfur Dioxide		170.0 lb/hr
Nitrogen Oxides		300.0 lb/hr
VOC		9.0 lb/hr

2. Municipal waste only shall be burned in the facility. Wastewater treatment plant sludges or hazardous wastes shall not be incinerated.

3. Hours of operation for the facility shall be 24 hours per day, 7 days per week, 52 weeks per year.

4. An operation and maintenance plan as contained in 17-2.13(7), FAC, shall be submitted with the operating permit applications and be made part of the operating permit.

5. Compliance testing for all criteria shall be conducted in accordance with the methods contained in 40 CFR 60 and 61. A source testing plan shall be submitted to the Department for approval 90 days prior to testing. The Department shall be notified of compliance testing at least 30 days prior to the testing.

6. During the particulate compliance testing, a visible emission standard shall be established by 40 CFR 60, Appendix A, Method 9, as a surrogate compliance method as contained in 17-2.23(3), FAC, and be made a condition of the operating permit.

7. Prior to ninty days before the expiration of this permit, a complete application for an operating permit shall be submitted to the DER Southwest District Office or its designee.

PERMIT NO.: AC 29-47277
APPLICANT: City of Tampa

8. The above stated emission limitations are based upon the best estimates of the permittee. Any change in the information submitted in the application regarding facility emissions or changes in the quantity or quality of materials processed that will result in new or increased emissions must be reported to the permitting authority. If appropriate, the permitting authority may then institute procedures to amend the permit conditions.

Expiration Date: December 31, 1984

Issued this 23 day of Sept, 1982.

_____ Pages Attached.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

Signature

Best Available Control Technology (BACT) Determination

Amendment

Hillsborough County

The City of Tampa proposes to construct a facility to incinerate municipal solid waste and use the resulting heat energy to produce electricity as a saleable by-product. The facility is to be located at the site of a previous incinerator installation which has been inoperative since December 1979. This venture, known as the McKay Bay Refuse-to-Energy project, is tentatively a two phase plan.

Phase one is the renovation and conversion of the three existing mass burn combustion furnaces into a state-of-the-art resource recovery system. A fourth combustion furnace will be installed plus waste heat boilers, electrostatic precipitators and a condensing steam turbine electric generator. When phase one is completed the facility will have the capability to burn approximately 300,000 tons per year of solid waste and generate 21 megawatts of electricity. This BACT determination applies to phase one of this project.

Phase two will be the installation of two new mass burn combustion furnaces, with heat recovery systems, and will be located adjacent to the renovated system. The new system will be capable of processing 1,000 tons per day of municipal solid waste and, in addition, to producing electricity will allow the recovery of recyclable materials, such as ferrous metals and aluminum. A BACT determination, if applicable, will be made when the plans for phase two of the project are finalized.

The McKay Bay Refuse-to-Energy project, when completed, will be capable of processing 2,000 tons per day of solid waste. The facility is scheduled to operate continuously with a 20 percent downtime allowance for maintenance.

Applicant's estimated net increase in air emissions (tons/year):

Pollutant	Phase I
Particulates	133
SO_2	745
NO_x	1314
CO	75
HC	39

had to consider the following:

1) Resource recovery facilities have a high potential for severely and adversely affecting air quality. Pollutants of concern are SO_2, NO_x, particulates, HC, HCL and HF acid gases.

2) The thermal destruction of municipal waste is a recognized method of disposal, and A. reduces landfill area requirements; B. eliminates a breeding ground for rodents; C. reduces possibility of ground water contamination; D. allows for the recovery of various metals for recycle.

3) Air pollution control technology is currently commercially available and capable of achieving the levels of control necessary to reduce most emissions from resource recovery facilities.

4) Calculation of sulfur dioxide emission factors for solid waste based upon the amount of SO_2 generated per million Btu of solid waste burned show the high value of the solid waste SO_2 emission to be slightly higher than the SO_2 emission factor for residual fuel oil containing 0.5 percent sulfur.

5) The technology for controlling NO_x emissions from resource recovery facilities is still in the experimental stage.

6) The land area needed for a landfill (dump) will be reduced approximately 90 percent. The residue (ash) to be disposed of in a landfill will be 15 percent of the mass but only 5 percent of the volume of waste collected and burned.

The applicant stated the SO_2 emissions would be 170 pounds per hour. This is analogous to burning oil with a sulfur content of 0.43 percent, which, in most cases, would be BACT for a boiler of this size not using a flue gas desulfurization system. Atmospheric dispersion modeling predicts no violation of the SO_2 increment at this rate of SO_2 emissions. The SO_2 emission limit of 170 pounds per hour, is therefore, determined to be BACT.

The emission of NO_x is the result of two chemical processes that occur during combustion. In one case the heat of combustion causes the oxidation of nitrogen in the air, called thermal NOx. The second case is when the nitrogen in the fuel becomes oxidized, called fuel NO_x. Some of the factors influencing the amount of

Lowest Achievable Emission Rate (LAER) Determination
Amendment

City of Tampa

Hillsborough County

The City of Tampa proposes to construct a facility to incinerate municipal solid waste and use the resulting heat energy to produce electricity as a saleable by-product. The facility is to be located at the site of a previous incinerator installation which has been inoperative since December 1979. This venture, known as the McKay Bay Refuse-to-Energy project, is a two phase plan.

Phase one is the renovation and conversion of the three existing mass burn combustion furnaces into a state-of-the-art resource recovery system. A fourth combustion furnace will be installed plus waste heat boilers, electrostatic precipitators and a condensing steam turbine electric generator. When phase one is completed the facility will have the capability to burn approximately 300,000 tons per year of solid waste and generate 21 megawatts of electricity. This LAER determination applies to phase one of this project.

Phase two will be the installation of two new mass burn combustion furnaces, with heat recovery systems, and will be located adjacent to the renovated system. The new system will be capable of processing 1,000 tons per day of municipal solid waste and, in addition, to producing electricity will allow the recovery of recyclable materials, such as ferrous metals and aluminum. A LAER determination, if applicable, will be made when phase two plans are finalized.

The McKay Bay Refuse-to-Energy project, when completed, will be capable of processing 2,000 tons per day of solid waste. The land area needed for a landfill (dump) will be reduced approximately 90 percent. The residue (ash) to be disposed of in a landfill will be 15 percent of the mass but only 5 percent of the volume of waste collected and incinerated. The facility is scheduled to operate continuously with a 20 percent dowtime allowable for maintenance.

Applicant's Estimated net increase in air emissions (tons/year):

Pollutant	Phase I
Particulates	133
SO_2	745
NO_x	1314
CO	75
HC (VOC)	39

area requirements; B. eliminates a breeding ground for rodents; C. reduces possibility of ground water contamination; D. allows for the recovery of various metals for recycle.

3. Air pollution control technology is currently commercially available and capable of achieving the levels of control necessary to reduce most emissions from resource recovery facilities.

4. The construction of a new source, or modification, in a nonattainment area shall apply to the Department for a determination of the Lowest Achievable Emission Rate (LAER) that is applicable to the affected pollutant, which, in this case, is particulate matter (17-2.17(6)(a)FAC).

The Department has determined LAER for particulate matter to be 0.025 grains/DSCF, corrected to 12% CO_2. The emission limit is deemed to be achievable based on test data from a similar operating facility located in Nashville, Tennessee.

Details of the Analysis May be Obtained by Contacting:

Edward Palagyi, LAER Coordinator
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, FL 32301

Recommended By:

for Steve Smallwood, Chief, BAQM

Date:

March 19, 1982

Approved:

Victoria Tschinkel, Secretary

Date:

March 23, 1982

DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTHWEST DISTRICT
7601 HIGHWAY 301 NORTH
TAMPA, FLORIDA 33637-9544
813-985-7402
SunCom - 542-8000

PERMITTEE:
Ms. Nancy McCann
Urban Environmental Coordinator
Office of Environmental Coordination
City of Tampa
City Hall Plaza, 5N
Tampa, Florida 33602

PERMIT/CERTIFICATION
Permit No.: A029-114760
County: Hillsborough
Expiration Date: 2-11-92
Project: McKay Bay Refuse-to-Energy Facility Units 1 thru 4

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rules 17-2 & 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents, attached hereto or on file with the department and made a part hereof and specifically described as follows:

For the operation of four 250 TPD municipal waste incinerators designated as Units 1, 2, 3, and 4, respectively, from west to east. Each incinerator is equipped with a 37,430 dscfm F. L. Smidth Model F300, 2-field electrostatic precipitator to control particulate emissions. Units 1 and 2 share the same stack exhaust. Units 3 and 4 share the same stack exhaust. Each stack exhaust is equipped with a certified opacity monitor.

Location: 107 North 34th St., adjacent to McKay Bay, Tampa

UTM: 17-360.0E 3091.9N NEDS NO: 0127 Point ID:
01-Unit No. 1
02-Unit No. 2
03-Unit No. 3
04-Unit No. 4

Replaces Permit No.: AC29-47277

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the department will review this permit periodically and may initiate the enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the department.

3. As provided in Subsections 403.087(6) and 403.712(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, unless specifically authorized by any order from the department.

6. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized department personnel, upon presentation of credentials or other documents as maybe required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purposes of;

a. Having access to and copying any records that must be kept under the conditions of the permit:

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information:

(a) a description of and cause of non-compliance; and

(b) the period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Section 403.73 and 403.111, Florida Statutes.

10. The permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

11. This permit is transferable only upon department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

(X) Determination of Best Available Control Technology (BACT)

(X) Determination of Prevention of Significant Deterioration (PSD)

( ) Certification of Compliance with State Water Quality Standards (Section 401. PL 92-500)

(X) Compliance with New Source Performance Standards

14. The permittee shall comply with the following monitoring and record keeping requirements:

a. Upon request, the permittee shall furnish all records and plans required under department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the department, during the course of any unresolved enforcement action.

14. (con't)

b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

15. When requested by the department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the department, such facts or information shall be submitted or corrected promptly.

SPECIFIC CONDITIONS:

1. Total maximum allowable emissions from all four process lines shall be:

Pollutant	Emission Limitation
Particulate	0.025 gr/dscf, corrected to 12% CO2 and 27.9 lbs./hr.
Sulfur Dioxide	170.0 lbs./hr.
Nitrogen Oxides	300.0 lbs./hr.
VOC	9.0 lbs./hr.
Lead	3.1 lbs./hr.
Fluoride	6.0 lbs./hr.
Mercury (vaporous and particulate)	0.6 lbs./hr.
Beryllium	5 grams/24 hour period and 0.00046 lbs./hr.

2. Visible emissions from each exhaust stack shall not exceed 15% opacity.

3. Compliance with the emission limitations of Specific Conditions Nos. 1 and 2 shall be determined using EPA Methods 1, 2, 3, 5, 6, 7, 9, 12, 13A/13B, 25A/25B, 101A, and 104 contained in 40 CFR 60, Appendix A and/or adopted by reference in Section 17-2.700, F.A.C. The minimum requirements for stack sampling facilities, source sampling and reporting, shall be in accordance with Section 17-2.700, F.A.C. and 40 CFR 60, Appendix A.

4. Test the emissions for the following pollutant(s) at intervals of 12 months from the date September 18, 1986 and submit 2 copies of test data to the Air Section of the Hillsborough County Environmental Protection Commission Office within fourty-five days of such testing (Section 17-2.700(2), Florida Administrative Code (F.A.C.)). Testing of all four units for each pollutant shall be conducted in a consecutive five day period.

(X) Particulates
(X) Opacity*
(X) Sulfur Dioxide
(X) Nitrogen Oxides
(X) Lead

* The visible emissions test for each unit shall be at least 60 minutes in duration and shall be conducted simultaneously with the particulate stack test. Both units which share a common stack shall be in operation during the visible emission test.

5. Test the emissions from each unit for the following pollutant(s) six months prior to the expiration date of this permit and submit 2 copies of test data to the Air Section of the Hillsborough County Environmental Protection Commission within forty five days of such testing (Section 17-2.700 (2), Florida Administrative Code (F.A.C.)). Testing of all four units for each pollutant shall be conducted within a consecutive five day period.

(X) Volatile Organic Compounds
(X) Total Fluorides
(X) Mercury (vaporous and particulate)
(X) Beryllium

6. The Hillsborough County Environmental Protection Commission shall be notified in writing 15 days prior to compliance testing.

7. Testing of emissions from each unit must be accomplished within ±10% of the maximum charging rate of 10.5 TPH of municipal waste. The actual charging rate during each test run shall be specified in each test report. Failure to submit the input rates or operation at conditions which do not reflect actual operating conditions may invalidate the data (Section 403.161(1)(c), Florida Statutes).

SPECIFIC CONDITIONS (con't):

8. Submit for this facility, each calendar year, on or before March 1, an emission report for the preceding calendar year containing the following information as per Section 17-4.14, F.A.C.

(A) Annual amount of materials and/or fuels utilized.
(B) Annual emissions (note calculation basis).
(C) Any changes in the information contained in the permit application.

Duplicate copies of all reports shall be submitted to the Hillsborough County Environmental Protection Commission.

9. Pursuant to 40 CFR 60.7, a written report of excess emissions shall be reported in a quarterly report. For purposes of this report, excess emissions shall be all air pollutant emissions in excess of the permitted levels stated in Specific Conditions 1 and 2 of this permit. Quarterly reports shall be submitted no later than 30 days from the end of each calendar quarter.

10. Four applications to renew this operating permit shall be submitted to the Hillsborough County Environmental Protection Commission 60 days prior to expiration date of this permit.

11. Pursuant to 40 CFR 60.53, Subpart E, the permittee shall record the daily charging rates and hours of operation of each unit.

12. A continous monitoring system to determine in-stack opacity from each exhaust stack shall be calibrated, operated, and maintained in accordance with Section 17-2.710(1), F.A.C.

13. All reasonable precautions shall be taken to prevent and control generation of unconfined emissions of particulate matter in accordance with the provision in Section 17-2.610 (3), F.A.C.. These provisions are applicable to any source, including, but not limited to, vehicular movement, transportation of materials, construction, alteration, demolition or wrecking, or industrial related activities such as loading, unloading, storing and handling.

14. Pursuant to Section 17-2.250(1), F.A.C., excess emissions resulting from start-up, shutdown, or malfunction of any unit shall be limited to a total of 2 hours in any 24 hour period provided best operational practices are adheared to and the duration of excess emissions are minimized. Best operational practices shall include but are not limited to :

SPECIFIC CONDITIONS (con't):

B. Pollution Control Equipment Parameters:
1. Control Equipment Type: 4 Electrostatic Precipitators
2. Model Name and No.: F. L. Smidth Model F300
3. Design Flow Rate: 37,430 dscfm/line, 75,000 dscfm/stack
4. Primary Voltage: 480V
5. Primary Current: 89A
6. Secondary Voltage: 25,000-45,000 VDC
7. Secondary Current: 800 mA
8. Design Collection Efficiency: 99.45%
9. Stack Height Above Ground: 160 ft/stack
10. Stack Diameter: 5.75 ft. each stack
11. Exit Gas Temperature: 540°F each stack
12. Exit Gas Moisture: 14%

C. The following observations, checks, and operations apply to this source and shall be conducted on the schedule specified.

Continuously Monitored
1. Opacity
2. Temperatures- a. ESP Inlet and Outlet
b. Furnace
c. Bypass
d. Kiln Outlet
e. Boiler Outlet
f. Primary and Secondary Superheater
3. Pressures- a. Primary Superheater Steam
b. Secondary Superheater Steam

Every Two Hours
1. Monitor/inspect fly ash removal equipment
2. Read Instruments on Automatic Voltage Controllers (A.V.C.)
3. Observe rapper operation
4. Observe pressures and temperatures throughout system
5. Observe visual emissions
6. Observe all fans for proper operation
7. Inspect precipitator externals for hot spots, air infiltration, etc.
8. Observe fly ash silo operation if in use.
9. Monitor ash temperature
10. Primary voltage
11. Primary current
12. Secondary voltage
13. Secondary current
14. Spark rate rapper frequency
15. Rapper vibrator frequency
16. Rapper vibrator duration

SPECIFIC CONDITIONS (con't):

(1) Using the least pollution causing material available on site to charge the furnace on start-up.
(2) Turning on the electrostatic precipitator as soon as possible but no later than two hours after the furnace is ignited.

The permittee shall maintain a log detailing the following information on every start-up of a unit:

(1) Time (to the nearest minute) at which the furnace is ignited.
(2) Time (to the nearest minute) at which the electrostatic precipitator is turned on and operational.
(3) Temperature of the flue gas at the electrostatic precipitator inlet when it is turned on.
(4) Six minute opacity reading taken from the opacity monitor strip chart beginning at two hours following the ignition of the furnace.

These records are to be maintained for a period of two years and shall be accessible to representatives of the Department and the Environmental Protection Commission of Hillsborough County for their inspection.

15. Operation and Maintenance Plan for Particulate Control (Section 17-2.650(2), F.A.C.)

A. Process Parameters:

1. Source Designator: Units Nos. 1-4
2. Maximum Charging Rate: 250 tons per day per unit, 1000 tons per day total
3. Maximum Heat Input Rate: 2,500 MMBTU/day/line, 9,000 MMBTU/day total
4. Permitted Operating Schedule: 24 Hrs/day, 7 days/wk., 52 wks/yr.
5. Furnace Temperature: 2200-2400° F
6. Fuel Type: Unsorted Municipal Waste
7. Design Fuel Analysis: Carbon-25.6%, Nitrogen-0.58%, Hydrogen-3.7%, Sulfur-0.3%, Oxygen-22.75%, Moisture-30.0%, Non-combustibles-18.0%
8. Combustion Conditions: 50-80% excess air 7-11% O_2 in flue gas
9. Steam Pressure: 650 psig
10. Steam Temperature: 700°F
11. Steam Production: 208,400 lbs/hr. total normal flow rate
12. Maximum Permitted Electrical Output: 25 MW

PERMITTEE:
City of Tampa

Permit/Certification No.: A029-114760
Project: McKay Bay Refuse-to-Energy Facility Units 1 thru 4

SPECIFIC CONDITIONS (con't):

D. Records:

Records of inspections, maintenance, and performance parameters shall be retained for a minimum of two years and shall be made available to the Department or the Hillsborough County Environmental Protection Commission upon request (Subsection 17-2.650(2)(g)5., F.A.C.)

16. Municipal waste and infectious waste ~~shall~~ be burned in the facility. Waste oil collected from spills cleaned up by the Port Authority not exceeding 10,000 gallons per day from tanker trucks or 10 tons per day of fiber drums shall also be burned. Wastewater treatment plant sludges or hazardous wastes shall not be incinerated.

17. Electrical output for sale to Tampa Electric Company (TECO) shall not exceed 25 MW.

Issued this 13 day of Feb 1987.

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

Richard D. Garrity, Ph.D.
District Manager

SPECIFIC CONDITIONS (con't):

Daily
1. Clean opacity monitor lenses
2. Monitor T/R temperature
3. Check gear box reservoir oil levels
4. Monitor charging rate per line
5. Monitor hours of operation per line

Weekly
1. Calibrate opacity monitor
2. Lubricate all external bearings, chains, idlers, sprockets
3. Lubricate fly ash collecting equipment

Quaterly (During Outages)
1. Inspect precipitators internals; observe dust build up, corrosion
2. Check alignment of plates and electrodes
3. Inspect rappers, observe for cracking on rapper frame assembly
4. Clean rapper insulator bushing
5. Clean electrode bushings
6. Check screw conveyor bearings
7. Inspect all field connections, door frames, duct connections for corrosion
8. Replace door frame gaskets as needed
9. Inspect internal structural members for corrosion and integrity
10. Clean relay cabinets, clean motor starter and relay contacts
11. Check hopper heaters for proper operation
12. Check insulator housing heaters for proper operation
13. Lubricate key interlock system
14. Check resistance to ground by meggering
15. Record all control points on AVC Microprocessor

Annual
1. Perform smoke bomb test on housing (optional)
2. Ultrasonic thickness test on hoppers, inlet distribution baffles.
3. Check thickness of inlet electrode wires
4. Check Filter Earth Connection (Ground)
5. Inspect collection plates for corrosion
6. Check external structure members for integrity
7. Scan surfaces with optical pyrometer, checking insulation (running)
8. Run T/R oil analysis

When the Order (Permit) is final, any party to the Order has the right to seek judicial review of the Order pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date the Final Order is filed with the Clerk of the Department.

Executed in Tampa, Florida.

Sincerely,

James Wm. Estler
Air Permitting Engineer

JWE/js

cc: HCEPC

CERTIFICATE OF SERVICE

This is to certify that this NOTICE OF PERMIT and all copies were mailed before the close of business on 2-13-87 to the listed persons.

FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to §120.52(10), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Jean Sebesta — Clerk

2-13-87 — Date

DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTHWEST DISTRICT
7601 HIGHWAY 301 NORTH
TAMPA, FLORIDA 33637-9544
813-985-7402
SunCom - 542-8000

PERMITTEE:
Ms. Nancy McCann
Urban Environmental Coordinator
Office of Environmental Coordination
City of Tampa
City Hall Plaza, 5N
Tampa, Florida 33602

PERMIT/CERTIFICATION
Permit No.: AO29-114760
County: Hillsborough
Expiration Date: 2-11-92
Project: McKay Bay Refuse-to-Energy Facility Units 1 thru 4

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rules 17-2 & 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents, attached hereto or on file with the department and made a part hereof and specifically described as follows:

For the operation of four 250 TPD municipal waste incinerators designated as Units 1, 2, 3, and 4, respectively, from west to east. Each incinerator is equipped with a 37,430 dscfm F. L. Smidth Model F300, 2-field electrostatic precipitator to control particulate emissions. Units 1 and 2 share the same stack exhaust. Units 3 and 4 share the same stack exhaust. Each stack exhaust is equipped with a certified opacity monitor.

Location: 107 North 34th St., adjacent to McKay Bay, Tampa

UTM: 17-360.0E 3091.9N NEDS NO: 0127

Point ID:
01-Unit No. 1
02-Unit No. 2
03-Unit No. 3
04-Unit No. 4

Replaces Permit No.: AC29-47277

File Copy

ROGER P. STEWART
EXECUTIVE DIRECTOR
ADMINISTRATIVE OFFICES
AND
WATER MANAGEMENT DIVISION
1900 - 9TH AVENUE
TAMPA, FLORIDA 33605
TELEPHONE (813) 272-5960

AIR MANAGEMENT DIVISION
TELEPHONE (813) 272-5530

WASTE MANAGEMENT DIVISION
TELEPHONE (813) 272-5788

ECOSYSTEMS MANAGEMENT DIVISION
TELEPHONE (813) 272-7104

October 19, 1992

Mr. Greg Groteclose
Office of Environmental Coordination
City of Tampa
City Hall Plaza, 5N
Tampa, FL 33602

Re: McKay Bay Refuse-to-Energy Facility
Permit No. AO29-205279

Dear Mr. Groteclose:

Per your request, this letter documents our conversation of October 8, 1992 in which I explained that the referenced permit does not allow the acceptance of oily rags from Tampa Electric generating plants.

The permit specifically allows inputs "resulting from the operation of residential, commercial, governmental or institutional establishments" and specifically disallows inputs "from industrial, mining, or agricultural operations." You stated that some aspects of utility regulation exempt utilities from regulations applicable to industries. Although a utility generating plant is not specifically addressed in the categories in this permit, in this air permitting context, a utility generating plant is clearly closer to an industrial category than to a commercial category (e.g., office buildings and retail trade).

Although there are other aspects of the permit we did not discuss, the above factor is sufficient to disallow the category of waste you proposed.

If you wish to apply for a revision to the current permit to allow this sort of input, an initial observation is that this would reopen your original permit and would not be a simple matter. If you wish to pursue this further, please notify us; a preapplication meeting would probably be appropriate.

If you should have any questions, please feel free to contact me at 272-5530.

Sincerely,

Gerald J. Kissel, P.E.
Chief, Air Permitting Section

bm

cc: Bruce Mitchell, DER - Tallahassee

CDM

environmental engineers, scientists, planners, & management consultants

CAMP DRESSER & McKEE INC.

One Tampa City Center, Suite 1750
Tampa, Florida 33602
813 221-2837 Fax 813 221-2279

8/27 Preston pls advise Claire

RECEIVED
AUG 27 1992
Division of Air Resources Management

August 24, 1992

Bruce what do you think Preston 8/28

Mr. Claire Fancy
State of Florida
Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32301-2400

Re: City of Tampa DER File No: AO29-206279

Dear Mr. Fancy:

Several weeks ago you and I discussed several aspects of the pending City of Tampa Refuse to Energy Facility permit application.

Among the concerns I raised was one dealing with the authorization to incinerate waste oil from spills cleaned up by the Port of Tampa. My concern was that limiting such disposal to wastes cleaned up by a given entity was unnecessarily restrictive and had no bearing on the environmental impact of incinerating the waste material.

It was my understanding that you concurred with the concept that the words "by the Port of Tampa" could be stricken from this permit. It is my further understanding that you indicated that Jerry Campbell could give you a call to confirm our conversation.

If I have misunderstood or misconstrued your meaning, please advise me at your earliest convenience.

As always, it is a pleasure to work with you on these and other issues.

Sincerely,

CAMP DRESSER & McKEE, INC.

Daniel E. Strobridge
Associate

cc: Nancy McCann, City of Tampa
Jerry Campbell, EPC

Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

April 28, 1992

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Ms. Nancy McCann
Urban Environmental Coordinator
City of Tampa
City Hall Plaza, 5N
Tampa, Florida 33602

Re: McKay Bay Refuse-to-Energy Facility
Permit No. AC 29-47277 Amendment Request

Dear Ms. McCann:

The Department has reviewed your February 7, 1992, and previous letters requesting several amendments to the above referenced construction permit. The following is our response:

1. **Request to increase maximum charging rate from 1000 TPD to 1065 TPD (7455 tons/wk).**

   Response: Any increase in the operation rate that results in an increase in actual emissions of any pollutant is a modification pursuant to F.A.C. Chapter 17-2 and 40 CFR 52. A modification process establishes federal enforceability through the public notice. Hence, you must submit a modification permit application along with the appropriate processing fee for the Department to consider this request.

2. **Request to change the charging rate from an hourly basis to a weekly basis.**

   Response: Permit applications are reviewed on the basis of the maximum emissions and the operation rate consistent with these emissions. Since the emissions are limited on an hourly basis, the operation rate must also be on an hourly basis. Otherwise the Department would not have reasonable assurance that the source is being operated and maintained as permitted.

3. **Request to conduct compliance testing at ±10% of the maximum charging rate.**

   Response: The Department recognizes the difficulty of a source to be maintained at exactly 100% capacity for the duration of compliance testing, therefore, compliance tests conducted at

the 90 to 100% of the maximum permitted capacity are acceptable. However, the Department considers it to be a violation for any source to operate in excess of the maximum permitted capacity at any time. Special emission tests may be conducted at higher rates only if prior authorization is obtained from the Department.

4. **Request to change the maximum permitted capacity from 20,834 lbs/hr (250 TPD) per boiler to 52,100 lbs/hr of steam per boiler.**

   Response: Your request for this change cannot be granted since the construction permit for each unit was based on a maximum charging rate of 250 TPD of waste stream and not on the amount of steam produced. The waste input rate is directly related to emissions because the combustion of the waste is what generates the pollutant emissions. Although steam production is relevant to the commercial operation of the facility, it is not directly related to the air quality impact of the source.

If you have any questions, please contact Mr. Mirza P. Baig at (904) 488-1344 or write me at the above address.

Your cooperation in this matter will be appreciated.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/MB/plm

c: Bill Thomas, SWD
Jerry Campbell, EPCHC
Jim Pennington, BAR
Brian Beals, EPA

P 710 058 458

Certified Mail Receipt

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to Nancy McCann	
Street & No. UEC - City of Tampa	
P.O. State & ZIP Code Tampa, Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	$
Postmark or Date 4-28-92	
AC 29-47277	

PS Form 3800, June 1990

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt Fee will provide you the signature of the person delivered to and the date of delivery.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Ms. Nancy McCann
Urban Env. Coord.
City of Tampa
City Hall Plaza 5N
Tampa, Fl 33602

4a. Article Number
P 710 058 458

4b. Service Type
☐ Registered ☐ Insured
☑ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
APR 30 1992

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form 3811, November 1990 ☆U.S. GPO: 1991—287-066 **DOMESTIC RETURN RECEIPT**

RESOURCE RECOVERY FACILITIES
1100 TPD AND LARGER

NAME	TYPE	TPD	START	CONTROL
DADE CNTY	MB	3000	1982	ESP
PINELLAS	MB	3000	1983	ESP
HILLSBORO.	MB	1200	1987	ESP
PALM BE.	RDF	2000	1989	ESP/DS
S. BROWARD	MB	2250	1991	DS/BH
N. BROWARD	MB	2250	1991	DS/BH
LEE CNTY	MB	1800	1994	DS/BH/NOX
		-----		
4 FAC. OPER.		9200		
2 FAC. CONST.		4500		
1 FAC. DES/P		1800		

RESOURCE RECOVERY FACILITIES

250 - 1100 TPD

NAME	TYPE	TPD	START	CONTROL
LAKELAND	RDF-S	300	1984	ESP/DS
CITY TAMPA	MB	1000	1985	ESP
BAY CNTY	MB	510	1987	ESP
LAKE CNTY	MB	500	1990	DS/BH
PASCO CNTY	MB	900	1991	DS/BH
		---		
5 FAC. OPER.		3210		

RESOURCE RECOVERY FACILITIES
250 TPD OR LESS

NAME	TYPE	TPD	START	CONTROL
MAYPORT	MB	48	1979	CYCLONE
MIAMI AIRPT	MB	60	1984	AFTERBURN
KEY WEST	MB	150	1987	ESP
		---		
3 FAC. OPER.		258		