

FOREWORD

The 2000 Air Toxics Inventory for Pinellas County, Florida has been prepared and submitted to both the Florida Department of Environmental Protection (FDEP) and United States Environmental Protection Agency (EPA). Air toxics, also known as hazardous air pollutants (HAPs), are generally defined as those pollutants that are known or suspected to cause serious health problems, including cancer. Section 112(b) of the Clean Air Act currently identifies a list of 188 pollutants as HAPs. Rule 62-210.370 (3), Florida Administrative Code (F.A.C.), the Annual Operating Report for Air Pollutant Emitting Facility (DEP form number 62-210.900(5)), requires facilities to report HAP emissions for reporting year 2000 and at five-year intervals thereafter. Thus Pinellas County Air Quality Division has to review and compile these data to satisfy the regulatory requirements, and, in addition, submit data for EPA's 1999 National Toxic Inventory (NTI).

The Tampa Bay Region Air Toxics Study (TBRATS) was an EPA sponsored pilot project for identifying ambient air toxics and associated health risks in the Tampa Bay Region. This emissions inventory also fulfills the commitments of this joint project between Pinellas County and Hillsborough County, and is used as an assessment tool.

This emissions inventory report includes inventory of point sources, area sources, non-road sources, and on-road sources. Inventory tools used in this report include EPA models Speciate Version 3.1, Fire Version 6.23, AP-42, EIIP documents, Locating and Estimating Document, and 1999 National Toxic Inventory Documents.

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1.0 Introduction

According to rule 62-210.370 (3), Florida Administrative Code (F.A.C.) (Annual Operating Report for Air Pollutant Emitting Facility (DEP form number 62-210.900(5)), permitted major HAPs facilities are required to report HAPs emissions for the year 2000 when exceeding certain thresholds. The Pinellas County Department of Environmental Management, Air Quality Division (AQD) as an approved local air program is responsible for reviewing and reporting the data to DEP.

EPA has published the 1996 National-Scale Air Toxics Assessment (NATA) in 2000. There are 32 core air toxics in addition to diesel particulate matter that are identified as significant risks to public health. The air toxics levels and associated risks are published by county levels in the 1996 NATA report, Figure 1 shows the NATA lifetime cumulative cancer risk by county for the State of Florida. Pinellas County is in the greater than 90th percentile for cumulative cancer risk. The risk levels of 12 air toxics have exceeded benchmark concentrations¹ in Pinellas County. These estimates are based on EPA's 1996 National Toxic Inventory (NTI). In 2000, EPA started the 1999 NTI and encouraged local and state air agencies to submit an area source air toxics inventory. The 2000 NATA is scheduled to be released to the public in 2004. The Pinellas County Air Quality Division prepared a countywide area source air toxics inventory for the calendar year 2000 in an effort to be proactive to provide accurate local data to EPA for the next NATA release.

The Tampa Bay Region Air Toxics Study (TBRATS) measured HAPs at six monitoring locations in Pinellas County and Hillsborough County during 2001(as shown in figure 2). This inventory report is used to identify the sources of TBRATS pollutants, and assist with future air toxics planning issues in the region. When assessing risk, the only exposure pathway considered was inhalation. There are 15 identified air toxics with concentrations above benchmark concentrations and were not the same as the 12 air toxics of concern from 1996 NATA. The differences in the compounds of concern may be that the 1996 NATA used older (historical) emission inventory data and assumed uniform background concentrations to model for all areas.

The 2000 Air Toxics Emission Inventory is a detailed and comprehensive inventory of hazardous air pollutants (HAPs) emissions. It contains a summary of HAP missions for the 2000 calendar year. Annual emissions are reported in tons per year. The four major source categories identified in this inventory are:

- \$ Stationary Point Sources;
- \$ Stationary Area Sources;
- \$ On-Road Mobile Sources;
- \$ Non-Road Mobile Sources.

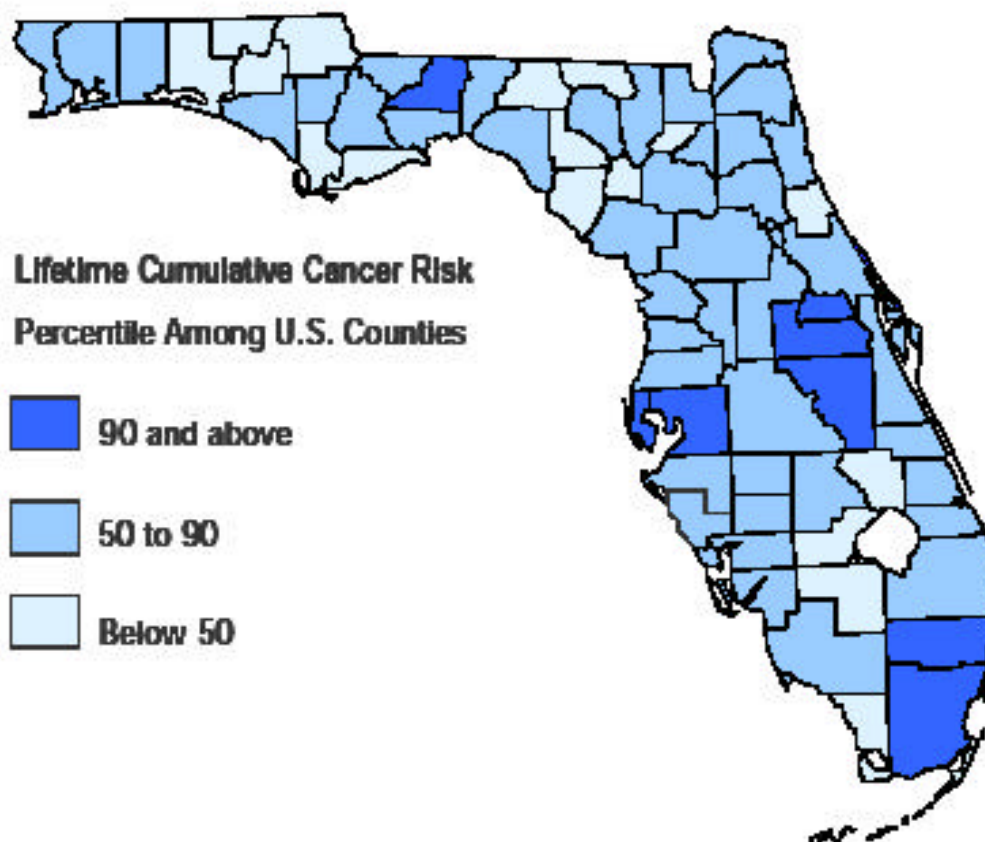
¹ A benchmark concentration is the amount of a pollutant below which there is likely no public health concern. For example, the benchmark concentration for a carcinogen is the probability that one individual in a million population will develop cancer as a result of being exposed to an air toxic over a 70-year lifetime. EPA does not use benchmark concentrations for regulatory purposes.

Inventory methods, and approaches are described for each major category and example calculations are provided.

The official contacts for the 2000 Air Toxics Inventory for Pinellas County, Florida and their inventory contributions are listed below:

Contact	Inventory Area
Peter A. Hessling, Administrator Air Quality Division	Overall Inventory Report, Review Final Report
Gary Robbins, Environmental Program Coordinator Air Permitting & Compliance	Coordinate Inventory, Stationary Point Sources, Review Point Sources Contribution, Review Final Report
Bob Soptei, Program Manager Air Quality Planning and Analysis	Review Final Report
Pwu-Sheng Liu, Ph.D., P.E. Senior Environmental Specialist Air Quality Planning and Analysis	Stationary Point Sources Emissions Calculation, Stationary Area Sources, Organize Data, Report Writing

Estimated Air Toxics Levels in Eight Florida Counties Were Among the Highest in the Nation in 1996



Source: Department of Environmental Protection.

Figure 1 Florida 1996 National Scale Air Toxic Assessment

Source: Office of Program Policy Analysis and Government Accountability, Justification Review, Report No. 02-29, May 2002.

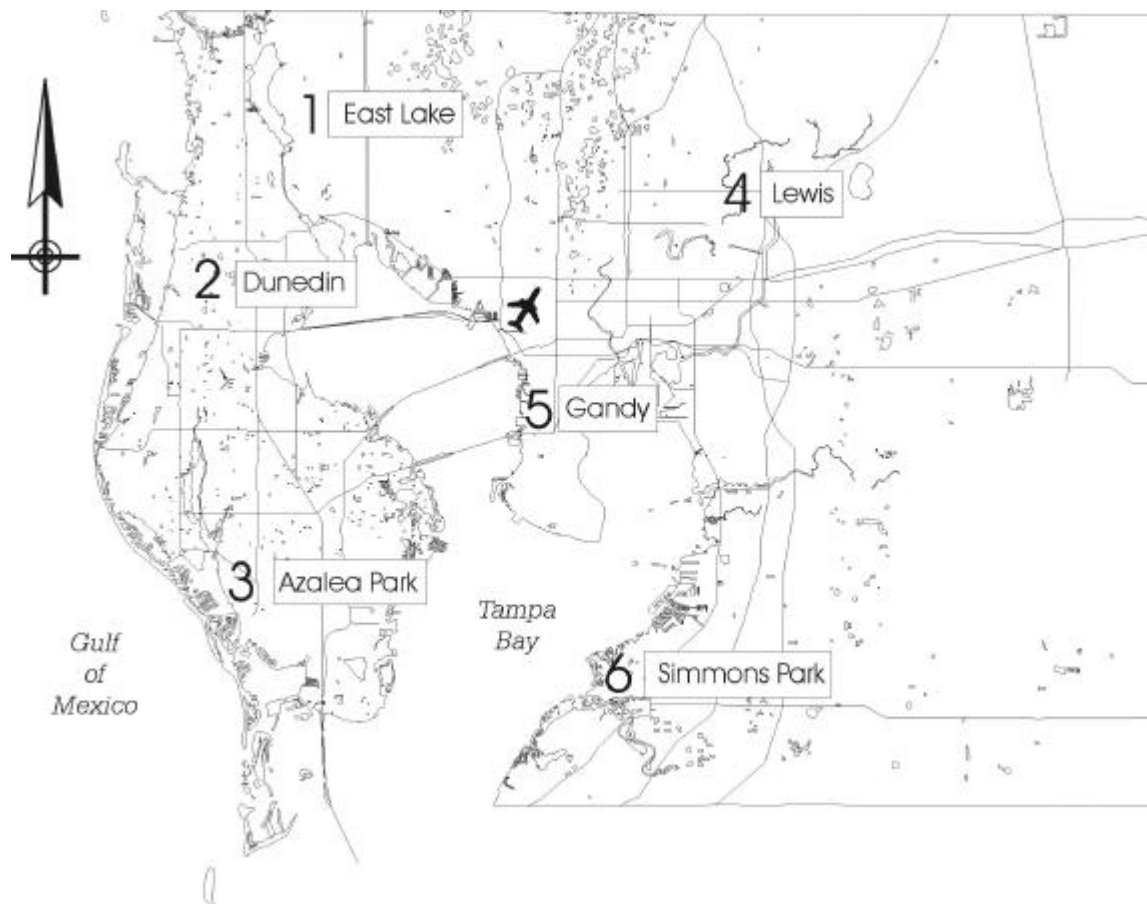


Figure 2 Tampa Bay Region Air Toxics Study (Monitoring Locations for CY 2001)
Source: Tampa Bay Region Air Toxics Study (TBRATS) Risk Assessment Report, Pinellas County Environmental Management Department, Air Quality Division, 2002.

1.1 Geographic and Demographic Description

Pinellas County is a peninsula located along the west central coast of Florida and is bordered by the Gulf of Mexico on the west and by Tampa Bay on the east. Pinellas County is approximately 38 miles long and is 15 miles across at its widest point. The total land area covers approximately 264 square miles. Since the County is located in a subtropical zone, the area remains quite heavily vegetated despite the significant population growth over the past few decades. With an estimated permanent population of 921,482 for 2000, the County remains the most densely populated in the State of Florida, with over 3,290 people per square mile.

The predominant land use throughout Pinellas County is residential. Commercial and industrial facilities are concentrated primarily in the center of the County with smaller areas located in the northeast and southeast sections. The industrial base of the County consists primarily of light manufacturing and high technology.²

1.2 Inventory Methodology

This inventory includes the 188 HAPs listed in the Section 112(b) of Clean Air Act as shown in Appendix A. It also considers subsets of the HAPs such as those listed in the NATA study (32 air toxics and plus mobile diesel particulates) and HAPs above EPA benchmark concentrations from 1996 NATA and 2001 TBRATS data (table 1).

The 2000 Emissions Inventory is the first comprehensive and detailed air toxics inventory for Pinellas County that calculates the HAP emissions for point sources, area sources, on-road sources, and non-road sources. This report has used the most up to date methodologies and has spent every effort in reporting accurate individual HAP emissions. The point source and area source emissions data are analyzed and maintained in the Air Quality Access Database (AQ Access).

The point sources inventory methods included: applying mass balance, utilizing HAP emission factors from AP-42, FIRE 6.2, air permit information, and stack test data; and using the Annual Operating Reports (AORs) submitted by permitted facilities. Pinellas County AQD reviewed the annual and process rates and applied adequate emission factors and/or pollutant fractions for different hazardous air pollutants. Whenever total HAPs were reported by a facility, AQD staff would gather more information from facilities such as Material Safety Data Sheets (MSDS) to identify the possible individual HAPs and estimate the emissions.

Area source HAPs emissions are estimated by using emission factors from AP-42, FIRE 6.2, 1999 National Toxic Inventory Documents³, speciation of HAPs from the inventoried volatile organic compounds using EPA SPECIATE 3.1 model⁴, and other available local specific data⁵.

² Pinellas County Emergency Management Plan. Pinellas County Board of County Commissioners: Pinellas County, Florida, 1995

³ Documentation for the 1999 Base Year Nonpoint Sources National Emission Inventory for Hazardous Air Pollutants, U.S. Environmental Protection Agency, September 28, 2001

⁴ SPECIATE is EPA's repository of Total Organic Compound (TOC) and Particulate Matter (PM) speciated profiles for a wide variety of sources. June 2000

⁵ Gasoline composition information from Ms. Lori Tilley, Environmental Engineer, City of Jacksonville.

On-road mobile sources are on-highway vehicles. Emissions are estimated by using a computer model for emission factors and vehicle miles traveled (VMT) by transportation facility type. EPA used the most current model (MOBILE6.2), for estimating on-road mobile air toxics. This inventory adopted 1999 NEI results for 2000 on-road mobile sources emissions. Pinellas County AQD staff reviewed the MOBILE6.0 input file in February 2002. The VMT data are listed in the chapter of On-Road Mobile Sources.

Non-road mobile sources include non-road engines and equipment such as lawn and garden, recreational, construction, logging, agricultural, industrial, light commercial, airport service and recreational marine equipment, as well as commercial marine operations, aircraft and locomotives. With the exception of aircraft, marine vessels, and locomotives, emissions from non-road mobile sources can be estimated with EPA's NONROAD model. This inventory also adopted the non-road emission results from the 1999 NEI inventory. A more detailed description is contained in the chapter of Non-Road Mobile Sources and the Appendix section.

The thresholds for reporting individual HAP for point sources was 0.02 tons per year. Blank spaces in the tables mean the emissions are zero or not applicable in those instances.

Historically criteria pollutant emission inventories have concentrated on reporting total classes of chemicals (e.g. total VOC's). When calculating and inventorying HAPs it is necessary to consider each individual chemical species because they can impact human health differently (e.g. carcinogen versus non-carcinogen) and at very low levels. In order to consider individual and cumulative risk one must know the level of the chemical no matter how small it is. As a result some HAPs are reported out to as many as ten decimal places. Please note, however, when calculating totals, the numbers are rounded up or down to two decimal places. This may result in minor rounding errors (e.g. +/- .01 tons/year) when viewing table totals.

Table 1 Important Subsets of HAPs

Air Toxics Studies	HAP Names
33 NATA HAPs	Acetaldehyde, acrolein, acrylonitrile, arsenic compounds, benzene, beryllium compounds, 1,3-butadiene, cadmium compounds, carbon tetrachloride, chloroform, chromium compounds, coke oven emissions, 1,2-dibromoethane (ethylene dibromide), 1,2-dichloropropane (propylene dichloride), 1,3-dichloropropene, ethylene dichloride (1,2-dichloroethane), ethylene oxide, formaldehyde, hexachlorobenzene, hydrazine, lead compounds, manganese compounds, mercury compounds, methylene chloride(dichloromethane), nickel compounds, polychlorinated biphenyls (PCBs), polycyclic organic matter (POM), quinoline, 1,1,2,2-tetrachloroethane, tetrachloroethylene (perchloroethylene), trichloroethylene, vinyl chloride, diesel particulate matter
Pinellas County's Above Benchmark Concentration HAPs from 2001 TBRATS	Acetaldehyde, Arsenic, Benzene, Carbon Tetrachloride, Chloroform, Chloromethane, Chromium, 1,2-Dichloropropane, 1,1,2-trichloroethane, Ethylene Dibromide, Ethylene Dichloride, Formaldehyde, Hexachlorobutadiene, Perchloroethylene, 1,1,2,2-Tetrachloroethane
Pinellas County's Above Benchmark Concentration HAPs from 1996 NATA	Acetaldehyde, Acrolein, Benzene, 1,3 Butadiene, Carbon Tetrachloride, Chloroform, Chromium, Ethylene Dibromide, Ethylene Dichloride, Formaldehyde, Perchloroethylene, Polycyclic Organic Matter

2.0 Pinellas County Emissions Summary

This inventory focuses on the contribution of emission sources to the different subsets of HAPs as shown in table 1 for Pinellas County. The important subsets of the 188 HAPs are associated with the National-scale Air Toxics Study (NATA) and TBRATS. There were 12 HAPs identified as above benchmark concentrations among 33 NATA urban toxics as modeled by EPA in the 1996 NATA. In 2001 TBRATS, the monitored results showed 15 HAPs have exceeded the EPA benchmark concentrations. HAPs with concentrations above EPA's benchmark concentrations are those HAPs for which the local public is at risk for contracting cancers or incurring other chronic health problems.

Table 2 shows HAPs (tons/year) for the different emission source categories. The inventoried emissions decrease with the subsets as with the number of HAPs decreases. In table 3, the percent contributions of different source categories are presented. These tables show on-road mobile sources are the most significant contributor to toxic air emissions and risk in Pinellas County. Stationary area sources are numerous and the emission inventory estimation is greatly influenced by population. Since Pinellas County is the most densely populated county in Florida, the emissions contribution of stationary area sources are the next significant source category. Non-road mobile sources including lawn mowers, construction equipment, and other non-road engines and equipment, are the third most significant contributor to HAPs emissions. Stationary sources are the smallest HAPs emissions contributor.

Table 2 Pinellas County 2000 HAPs Emissions Inventory in Tons/year

Sources Category	Total HAPs	33 NATA HAPs	15 TBRATS HAPs	12 NATA HAPs
On-Road Mobile Sources	4,692.39	900.21	817.45	887.36
Stationary Area Sources	4,556.36	950.97	355.27	385.25
Non-Road Mobile Sources	2,182.76	392.60	338.05	161.17
Stationary Point Sources	583.36	39.49	20.64	7.89
Grand Total	12,014.87	2,283.27	1,531.42	1,441.67

Table 3 Pinellas County Percent HAPs Contribution from Sources

Sources Category	Total HAPs	33 NATA HAPs	15 TBRATS HAPs	12 NATA HAPs
On-Road Mobile Sources	39.1	39.4	53.4	61.6
Stationary Area Sources	37.9	41.6	23.2	26.7
Non-Road Mobile Sources	18.2	17.2	22.1	11.2
Stationary Point Sources	4.9	1.7	1.3	0.5
Grand Total	100.0	100.0	100.0	100.0

Figure 3 shows the emissions differences between HAPs subsets and the contribution of each emission source category.

HAP Emissions in Pinellas County, Florida CY 2000

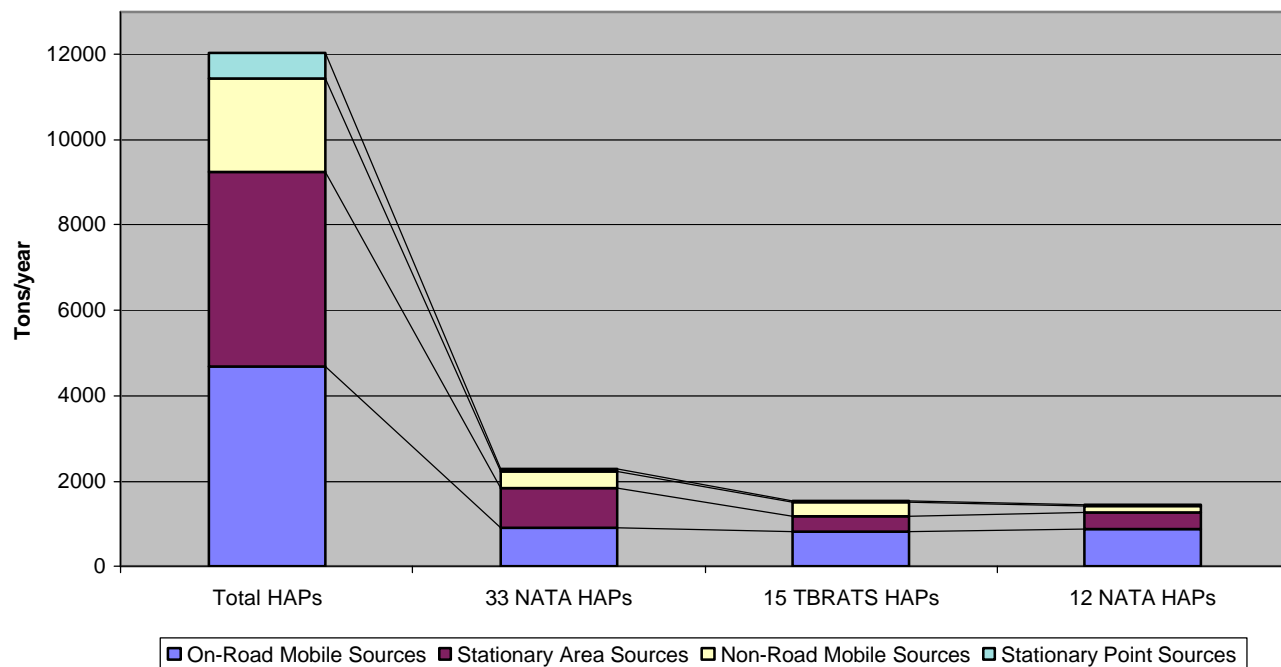


Figure 3 Total HAPs Contribution from Source Categories.

The top ten HAPs inventoried in Pinellas County are shown in figure 4. The emissions sources are also depicted in the graph.

**Top Ten HAPs Inventoried in Pinellas County, Florida
CY 2000**

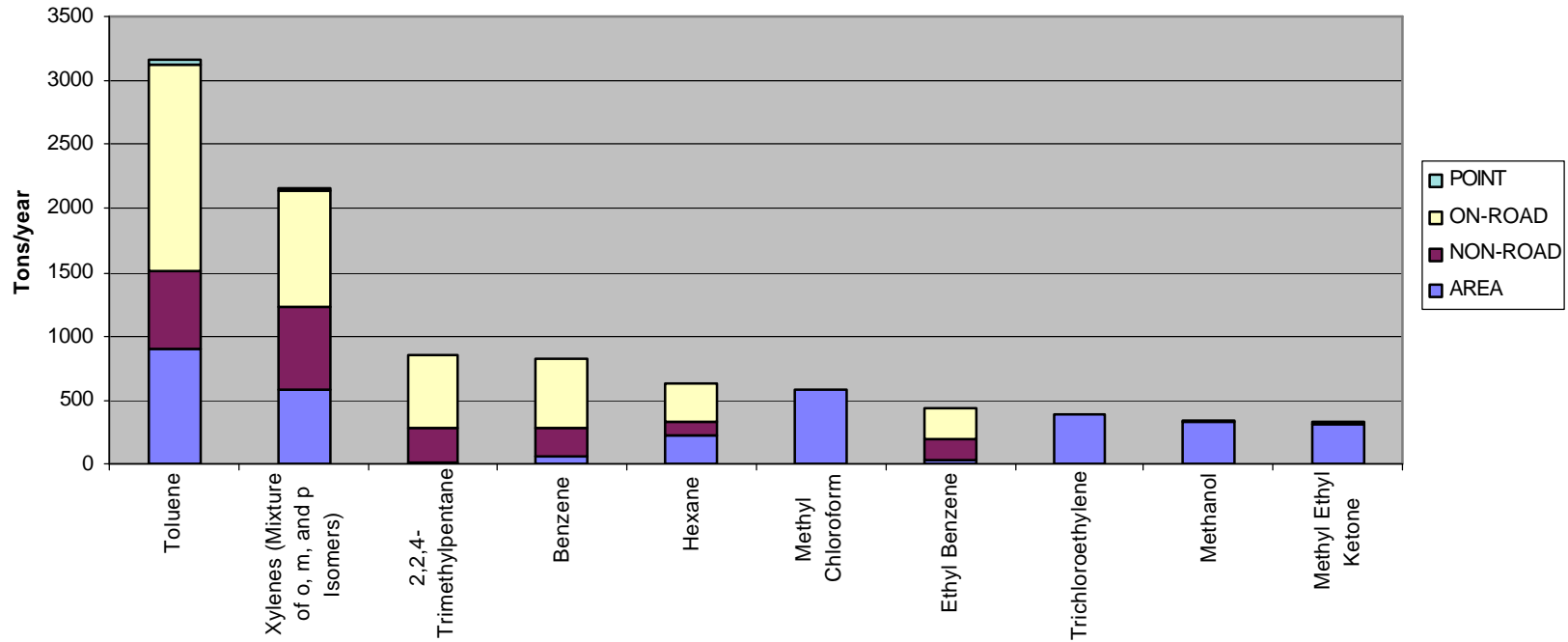


Figure 4 Top Ten HAPs Inventoried in Pinellas County, Florida

3.0 Stationary Point Sources

Stationary point sources are stationary, identifiable sources of emissions that release pollutants into the atmosphere. A single facility may contain many emission units, which fall into several point source categories. For the purposes of this inventory, any permitted facility that was required to submit an “Annual Operating Report”, and emits any single HAP at greater than or equal to 0.02 tons/year is in this report. By state rule,⁶ sources which emit ten (10) tons per year of any listed HAP, or twenty-five (25) tons per year or more of a combination of HAPs, all Title V sources, all synthetic non-Title V sources, all facilities for which an annual operating report is required by rule or permit are required to submit an annual operating report (AOR). The annual reporting rule requires stationary point sources to report HAPs when emitting 5.0 tons/year for any single HAP and/or 12.5 tons/year for total HAPs by Source Classification Code (SCC). These HAP reporting requirements are for year 2000 and at five-year intervals thereafter, and apply only to those HAPs (including total HAPs) for which the facility is defined as major by Florida State regulation FAC 210.370(3). However, as stated above, Pinellas County AQD selected to use 0.02 tons/year single HAP/year as the reporting threshold for all the permitted facilities and not limit HAP reporting to only the major HAPs facilities.

The point source emissions inventory was developed with emissions data from 60 permitted facilities and 15 Toxic Release Inventory (TRI) facilities. Pinellas County AQD reviewed and revised the data from the 60 permitted facilities. In order to estimate individual HAPs, AQD staff obtained additional information such as Material Safety Data Sheets (MSDS) or used emission factors. The emission levels reported are estimates of actual emission based on operating activity during the 2000 calendar year.

EPA incorporated TRI facilities reported data into NEI. The TRI data was not quality controlled by Pinellas County Air Quality Division staff. However, Pinellas County AQD staff reviewed the draft NEI data, and revised it to remove redundant entries.

Seventy-four point source HAPs are inventoried in this report. This is the first comprehensive and detailed inventory for point sources since the 1990 Air Toxics Inventory⁷.

Point sources comprise various combustion, manufacturing and production activities. EPA’s Source Classification Codes (SCCs) contain the primary identifying data elements in Factor Information and Retrieval database (FIRE). In addition to the code number, the file contains all 4 levels of the description for each code. The four levels of source descriptions for SCCs are associated with the first 1, 3, 6, and 8 digits of the codes. The first level (SCC1) uses only the first digit and provides the most general information on the category of the emissions. In this inventory, the stationary point source emissions are grouped according to SCC1 for similar activities or processes, and are identified as follows:

⁶ Rule 62-210.370 (3), F.A.C., the Annual Operating Report for Air Pollution Emitting Facility.

⁷ Matt McCann, Margaret Hennis, and Jose Rodriguez, 1990 Air Toxics Inventory, Pinellas County Department of Environmental Management, Air Quality Division.

- External Combustion Boilers
- Industrial Processes
- Internal Combustion Engines
- Petroleum and Solvent Evaporation
- Waste Disposal
- Waste Disposal, Treatment, and Recovery.

Table 4 summarizes emissions from stationary point sources in the County by source categories. The majority of HAPs emissions in the SCC1 category are the result of Industrial Processes. They constitute 60 % of the total point source inventory. The detailed emissions from facilities are listed in Appendix B.

Table 4 2000 Point Sources HAPs in SCC1 Classification

SCC1_DESC	Tons/year	% Contribution
Industrial Processes	350.77	60.13
Waste Disposal, Treatment, and Recovery	99.44	17.05
External Combustion Boilers	87.46	14.99
Petroleum and Solvent Evaporation	35.04	6.01
Waste Disposal	8.38	1.44
Internal Combustion Engines	2.28	0.39
Grand Total	583.36	100

The top ten inventoried HAPs from point sources are depicted in figure 5. The highest emitted individual HAP from point sources is styrene, which is contained in resins and gel coat used by boat manufacturers and reinforced plastics products manufacturing in the Industrial Processes Category. Hydrogen chloride is mostly emitted from the combustion process from municipal waste disposal, treatment and recovery facilities, (e.g. Pinellas County Resources Recovery), power plants and medical waste incineration facilities. The third highest inventoried HAPs are toluene, emitted from industrial processes such as printing, paper coating, and landfills.

HAP emissions from 33 NATA pollutants were also analyzed. Table 5 lists the emissions in tons per year classified by SCC1. The top three inventoried NATA HAPs are tetrachloroethylene (perchloroethylene), trichloroethylene, and formaldehyde. Tetrachloroethylene was emitted from a chamois manufacturer, landfills and wastewater treatment plants. The sources of trichloroethylene are metal degreasers and landfills. Formaldehyde came from power plants, municipal solid waste incinerators, asphalt plants, and print shops.

Figure 5 Top Ten HAPs Inventoried by Point Sources in Pinellas County

**Top Ten HAPs Inventoried from Point Sources in Pinellas County
CY 2000**

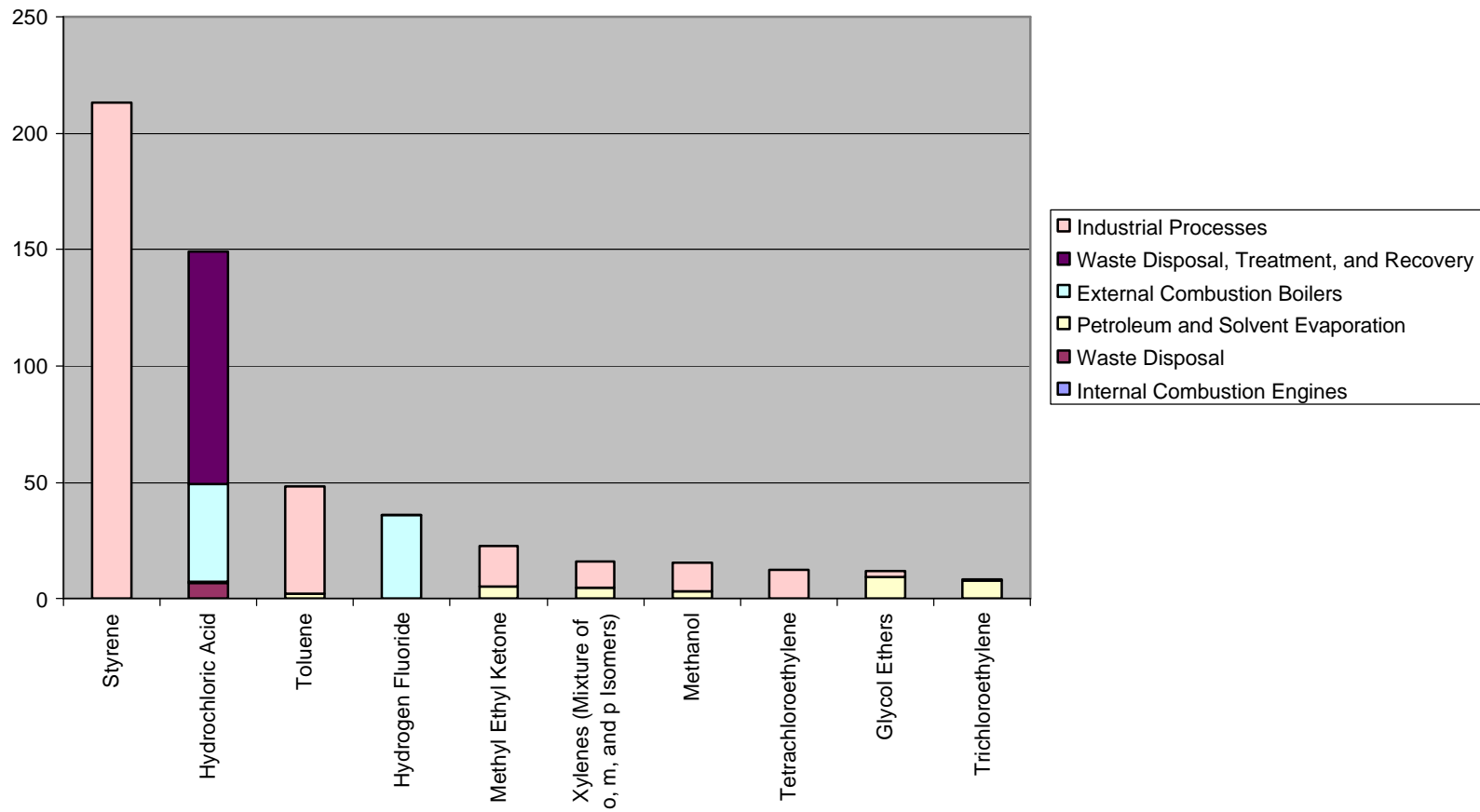


Table 5 NATA HAPs from Point Sources

Sum of TONS/YR	SCC1_DESC						
NATA HAPs	Industrial Processes	Petroleum and Solvent Evaporation	External Combustion Boilers	Internal Combustion Engines	Waste Disposal, Treatment, and Recovery	Waste Disposal	Grand Total
Tetrachloroethylene	12.3624					0.0020	12.3644
Trichloroethylene	0.6205	7.9069					8.5274
Formaldehyde	1.7768	1.74E-07	2.4422	1.2979			5.5169
Nickel & Compounds	0.0089		4.4876	0.0041			4.5006
Methylene Chloride	2.2393	1.1385					3.3778
Benzene	1.7314		0.0180	0.0631			1.8125
Vinyl Chloride	0.7683	0.0485					0.8168
Acrylonitrile	0.5625					0.0011	0.5636
Ethylene Oxide	0.5403						0.5403
1,1,2,2-Tetrachloroethane	0.3120						0.3120
Acetaldehyde	0.2100		4.97E-05	0.0351			0.2451
Lead & Compounds	2.00E-06	0.0060	0.1113	0.0484	0.0561		0.2218
Manganese & Compounds	0.0068		0.1570	0.0345			0.1982
Arsenic & Compounds (Inorganic Including Arsine)	0.0007		0.1079	0.0073			0.1159
Mercury & Compounds	0.0001		0.0047	0.0011	0.0959	0.0019	0.1037
Chromium & Compounds	0.0070		0.0479	0.0098		0.0076	0.0723
Ethylene Dichloride	0.0679						0.0679
Cadmium & Compounds	0.0001		0.0266	0.0052	0.0043	0.0184	0.0546
Propylene Dichloride	0.0341						0.0341
Acrolein	0.0151			0.0085			0.0236
Chloroform	0.0060					0.0084	0.0144
1,3-Butadiene				0.0062			0.0062
Beryllium & Compounds	0.0001		0.0011	0.0003			0.0015
Carbon Tetrachloride	0.0010						0.0010
Polycyclic Organic Matter			8.30E-05	5.39E-04			6.22E-04
Ethylene Dibromide (1,2-dibromoethane)	3.15E-04						3.15E-04
Polychlorinated Biphenyls						1.37E-04	1.37E-04
Phenanthrene			6.43E-05				6.43E-05
Pyrene			1.89E-05				1.89E-05
Fluoranthene			1.13E-05				1.13E-05
Fluorene			1.06E-05				1.06E-05
Manganese		8.82E-10		5.87E-06			5.87E-06
Arsenic		4.73E-07		4.01E-06			4.48E-06
Lead		1.16E-09		3.31E-06			3.32E-06
Chromium		3.25E-09		2.96E-06			2.96E-06
Beryllium				2.96E-06			2.96E-06
Mercury				1.14E-06			1.14E-06
Cadmium				1.14E-06			1.14E-06
Nickel		4.87E-09					4.87E-09
Grand Total	21.2715	9.0999	7.4045	1.5220	0.1562	0.0396	39.5959

The top 20 emitters of HAPs in Pinellas County are listed in Table 6, their emissions account for 91% of total HAPs emissions from point sources.

Table 6 Top 20 HAPs Emitters in Pinellas County

No.	Facility Names	Total HAPs Tons/year	Major Pollutants
1	Pinellas RRF	98.57	Hydrochloric acid
2	FLORIDA POWER CORPORATION	88.33	Hydrochloric acid; Hydrogen fluoride
3	HYDRO SPA	51.11	Styrene
4	BLUE HAWAIIAN PRODUCTS	45.79	Styrene
5	CATALINA YACHTS, MORGAN DIVISION	45.19	Styrene
6	Toytown SLF	31.62	Toluene
7	FILM TECHS. INTL. INC.	30.24	MEK; Styrene
8	TRADIT'L WATERCRFT DBA ISLAND PACKET	23.34	Styrene
9	INTREPID POWERBOATS INC	14.78	Styrene
10	SHAKESPEARE PRODUCTS GROUP	13.55	Styrene
11	GSP MARKETING TECHNOLOGIES, INC.	12.60	Glycol ethers
12	STAMAS YACHT INC.	11.38	Styrene
13	ACME SPONGE & CHAMOIS CO., INC.	11.33	Tetrachloroethylene
14	QUALITY ACRYLIC BATHS OF CLEARWATER, INC.	11.16	Styrene
15	FLORIDA METAL STAMPING INC	7.87	Trichloroethylene
16	ESSILOR OF AMERICA INC. MFG. DIV.	7.65	Methanol
17	SCHNELLER INC., FLORIDA	7.09	MEK
18	MEDICO ENVIRONMENTAL SERVICES, INC.	6.69	Hydrochloric acid
19	TRANSITIONS OPTICAL, INC.	6.19	Methanol
20	ENDEAVOUR CATAMARAN CORPORATION	6.19	Styrene
	Grand Total	530.67	

3.1 Point Source Inventory Methodology

Pinellas County created a detailed point source database for calculating and reporting emissions for the 2000 Air Toxics Inventory. This AQ ACCESS (Microsoft Access®) database is maintained by the Pinellas County Department of Environmental Management, Air Quality Division. It utilizes the Fire 6.23 emission factor data table from EPA's *Air Chief*, Version 9, as an emission factor look-up table. The data table consolidates emission data from AP-42, XATEF, AFSEF, and special EPA sponsored studies. Since Fire 6.23 does not contain all the emission factors contained in *Air Chief*, Version 9, the other emission tools contained in *Air Chief*, Version 9 was used to supplement the emission factor table. Other emissions factors were calculated, by Pinellas County, when site-specific information, such as stack testing data, was known.

The general methodology for estimating stationary point source emissions is defined by the following formula for calculating annual emissions (tons/year).

$$EMP_{ij} = PR_i \times ef_i \times PRCNT_{ij} / 2000$$

Where;

EMP _{ij}	/	the annual point source emissions of HAP, i, for activity, j, in tons/year;
PR _{ij}	/	the process rate for HAP, i, and activity, j, in Emission Units/year;
ef _i	/	the applicable emissions factor for HAP, i, in lbs/Emission Unit;
PRCNT _{ij}	/	the percentage of HAP, i, per unit of activity, j;
2000	/	conversion factor for lbs/ton.

The applicable emissions factor (ef_i) can be extracted from sources such as FIRE 6.23, AP-42, etc., or developed from available data such as analysis, process mass balance, and stack tests. The following examples are for estimating emissions from fuel analysis and mass balance:

Example 1. Fuel Analysis

Category: External Combustion Boiler
Annual hydrogen chloride (HCl) emissions in tons per year (tpy)

Step 1:

Collect the fuel analysis: The chloric (Cl⁻) content of the fuel oil was 121.3 ppm, and the density (d) of the fuel oil was 8.815 lbs/gal. Assumption: all the chloride (Cl⁻) in the fuel oil is converted into hydrogen chloride (HCl).

Calculation: ef_i in lbs/1,000 gallons fuel oil
 $= \text{ppm} \times 10^{-6} (\text{lb/lb}) / \text{ppm} \times d \text{ lbs/gal} \times (\text{Molecular Weight of HCl}) / (\text{Molecular Weight of Cl}^-) \times 1,000$
 gallons
 $= 121.3 \text{ ppm} \times 10^{-6} (\text{lb/lb}) / \text{ppm} \times 8.815 \text{ lbs/gal} \times (36.5/35.5) \times 1,000$
 gallons
 $= 1.0994 \text{ lbs/1,000 gallons fuel oil}$

Step 2:

Calculate annual emissions where the process rate, $PR_i = 50,844,360$ gallons/year and $PRCNT_{ij}=1$ (100%). Since the SCC calls for the process rate to be expressed in units of 1000 gallons, the process rate is reported at 50,844.36/1000 gallons or 50,844.36.

$$\begin{aligned} EMP_{ij} &= PR_i \times ef_i \times PRCNT_{ij} / 2000 \\ &= 50,844.36 \times 1000 \text{ gallons/year} \times 1.0994 \text{ lbs/1000 gallons} \times 1.0 / 2000 \\ &= 27.95 \text{ tpy} \end{aligned}$$

Example 2. Mass Balance

Category: Industrial Process, Reinforced Plastics
Annual styrene emissions in tons per year (tpy)

Step 1:

Collect the resin data and information for the application process: 45% styrene monomers contained in the resin with spray-on application. From FDEP June 1, 1998 memo, Table 2 Interim Styrene Emission Factors for Reinforced Plastics, the emission rate for spray-on application with 45% monomers is 33.75%.

$$\begin{aligned} \text{Calculation: } ef_i &\text{ in lbs/ton of resin} \\ &= 33.75 \% \times 2000 \text{ lbs/ton} \\ &= 675 \text{ lbs/ton} \end{aligned}$$

Step 2:

Calculate annual emissions where the process rate, $PR_i = 237.83$ tons/year; $ef_i=675$ lbs/ton; $PRCNT_{ij}=0.45$ (45%).

$$\begin{aligned} EMP_{ij} &= PR_i \times ef_i \times PRCNT_{ij} / 2000 \\ &= 237.83 \text{ tons/year} \times 675 \text{ lbs/ton} \times 0.45 / 2000 \\ &= 36.12 \text{ tpy} \end{aligned}$$

4.0 Stationary Area Sources

The estimates for the stationary area source categories reflect aggregate emissions at the county level. They collectively represent individual sources that are small, numerous, and are not inventoried as specific point, mobile, or biogenic sources. This report includes 69 area sources and 185 different HAPs. There are 44 local specific sources inventoried by AQD staff. EPA has added 25 MACT regulated source emissions in the NEI data.

The stationary area source categories are grouped according to similar uses, processes, or estimation methods. The category groupings were determined by methodologies employed in EPA's Sources Classification Codes (SCC1) as explained in section 3.0. The area sources contain the following SCC1 categories:

- Industrial Processes
- External Combustion Boilers
- MACT Source Categories
- Miscellaneous Area Sources
- Petroleum and Solvent Evaporation
- Solvent Utilization
- Stationary Sources Fuel Combustion
- Storage and Transport
- Waste Disposal, Treatment, and Recovery.

The primary estimation methods for most stationary area sources are from EPA's emissions models such as FIRE 6.23 and Speciate 3.1, and documents such as AP-42, Locating and Estimating Document, EIIP Documents and Documentation for the 1999 Base Year National Toxics Inventory for Hazardous Air Pollutants.

This inventory uses the Air Quality Division's AQ Access database for input and calculation of emissions. There are modifications to the input procedures for area sources. Appendix C contains the Pinellas County 2000 Area Sources HAPs Report Plan, explains the procedures and output data extraction tables.

Stationary area source total HAPs emissions are summarized by categories in table 7. The solvent utilization category is the largest contributor to the area source HAPs total (94%). Other trace emission sources are storage and transport, MACT sources, petroleum and solvent evaporation categories, and miscellaneous area sources. The subcategories of solvent utilization are listed in table 8. The major contributors in this category are solvent cleaning, degreasing, consumer and commercial solvent use, graphic arts, dry cleaners, and auto body refinishing and other sources. The emissions from NATA HAPs according to SCC1 description are depicted in table 9. The highest inventoried NATA HAP in Pinellas County is trichloroethylene, which is emitted mostly from the solvent utilization category such as degreasing.

Table 7 Total HAPs Emissions by Area Sources Categories.

SCC1_DESC	HAP Tons/year	% Contribution
Solvent Utilization	4282.46	94.0%
Storage and Transport	63.16	1.4%
MACT Source Categories	60.53	1.3%
Petroleum and Solvent Evaporation	49.02	1.1%
Miscellaneous Area Sources	42.20	0.9%
Stationary Source Fuel Combustion	30.79	0.7%
Industrial Processes	26.30	0.6%
Waste Disposal, Treatment, and Recovery	1.86	0.0%
External Combustion Boilers	0.05	0.0%
Grand Total	4556.36	100.0%

Table 8 Total HAPs Emissions from Solvent Utilization Subcategories.

Emission Process Description	Tons/year	% Contribution
Surface Coatings: All Surface Coating Categories, all coating types	1204.94	28.14%
Consumer and Commercial Products Usage: all products and types	1181.24	27.58%
Degreasing - Auto Repair Services: All Processes, all solvent types	963.82	22.51%
Surface Coatings: Architectural Solvent-based	262.63	6.13%
Degreasing - Misc. Manufacturing: All Processes, all solvent types	227.16	5.30%
Graphic Arts: All types and solvents	118.07	2.76%
Autobody Refinishing Paint Application, all solvents	96.91	2.26%
Degreasing - Electronic and Other Elec.: All Processes, all solvent types	72.12	1.68%
Perchloroethylene Dry Cleaning, all types and sectors	61.55	1.44%
Surface Coatings: Architectural Water-based	36.95	0.86%
Asphalt Paving: Cutback and Emulsified	19.27	0.45%
Surface Coatings: Traffic Markings, all coating types	17.99	0.42%
Surface Coatings: Industrial Maintenance, all coating types	14.55	0.34%
Asphalt Paving	4.79	0.11%
Commercial Asphalt Roofing	0.48	0.01%
Commercial Pesticide Application	1.37E-07	0.00%
Grand Total	4282.46	100.00%

Pinellas County 2000 Air Toxics Emissions Inventory

Table 9 NATA HAPs from Area Sources

Sum of TONS/YR	SCC1_DESC									Grand Total
NATA HAPs	Solvent Utilization	MACT Source Categories	Miscellaneous Area Sources	Storage and Transport	Stationary Source Fuel Combustion	Petroleum and Solvent Evaporation	Industrial Processes	Waste Disposal, Treatment, and Recovery	External Combustion Boilers	Grand Total
Trichloroethylene	387.6385						0.0005	0.0446		387.6836
Tetrachloroethylene	210.3809						0.0005	0.0503		210.4317
Methylene Chloride	119.3620	60.5300					0.0100	0.0374		179.9394
1,3-Dichloropropene	73.7186						3.9298E-05			73.7186
Benzene	28.4207		1.0083	12.6159	8.7622	8.3313	0.6452	0.0410	0.0016	59.8262
Chloroform	0.4561		23.0271				0.0017	0.0374		23.5223
Ethylene Oxide	6.9111		0.8545				0.0011			7.7666
Formaldehyde	0.5990		1.3692		1.0664		0.0095		0.0296	3.0737
Acrolein			1.2960				0.0000	0.0065		1.3025
Polycyclic Organic Matter			0.0229	0.6993	0.0267		0.0002		0.0013	0.7504
Acenaphthylene					0.5919					0.5919
Ethylene Dichloride	0.0022					0.3314	0.0019	0.0259		0.3613
1,3-Butadiene			0.2134				0.0075	0.0611		0.2819
Phenanthrene			0.0228		0.2304					0.2531
Acetaldehyde			0.1760		0.0462		0.0100		0.0053	0.2376
Nickel			0.0005		0.1897		0.0001		0.0005	0.1908
Benz[a]Anthracene			0.0593		0.1126					0.1719
Lead	0.0974		0.0001		0.0170		0.0033		0.0014	0.1191
Pyrene			0.0040		0.0675					0.0715
Carbon Tetrachloride	0.0170						0.0021	0.0510		0.0701
Fluorene					0.0684					0.0684
Anthracene			0.0239		0.0399					0.0639
Vinyl Chloride							0.0026	0.0582		0.0608
Fluoranthene			0.0029		0.0565					0.0594
Ethylene Dibromide (1,2-dibromoethane)						0.0007	0.0001	0.0532		0.0539
Benzo[g,h,i]Perylene			0.0243		0.0133					0.0376
Chrysene			0.0027		0.0347					0.0374
Acenaphthene					0.0291					0.0291
Mercury			0.0031		0.0050		0.0119		0.0005	0.0204
Manganese					0.0180		0.0002		0.0009	0.0191
Benzo[a]Pyrene			0.0071		0.0119					0.0190
Indeno[1,2,3-c,d]Pyrene			0.0163		0.0025					0.0188
Hexachlorobenzene	1.3729E-07						9.1459E-07	0.0187		0.0187
Benzo[k]Fluoranthene			0.0124		0.0056					0.0180
Benzo[b]Fluoranthene					0.0172					0.0172
Chromium			0.0006		0.0153		0.0002		0.0005	0.0165
Cadmium					0.0120		3.9891E-05		0.0005	0.0125
Acrylonitrile							0.0035	0.0086		0.0121
Arsenic			3.7844E-05		0.0095		0.0001		0.0006	0.0102
Benzo[g,h,i]Fluoranthene			0.0022		0.0034					0.0056
Beryllium					0.0029		4.7238E-06		0.0005	0.0033
Benzo[fluoranthenes]			0.0022							0.0022
Propylene Dichloride							7.9307E-04			7.9307E-04
Manganese & Compounds					7.9122E-04					7.9122E-04
Dibenzo[a,h]Anthracene					5.7249E-04					5.7249E-04
7,12-Dimethylbenz[a]Anthracene					4.5420E-04					4.5420E-04
Chromium & Compounds							3.2448E-04			3.2448E-04
Cadmium & Compounds					1.0291E-04					1.0291E-04
Quinoline							9.0714E-05			9.0714E-05
Nickel & Compounds					6.7483E-05					6.7483E-05
Hydrazine							3.7979E-05			3.7979E-05
Benzo[b+k]Fluoranthene					1.1741E-05					1.1741E-05
PAH, Total					4.1796E-06		2.6431E-10			4.1799E-06
1,1,2,2-Tetrachloroethane							3.8139E-06			3.8139E-06
3-Methylcholanthrene					1.0955E-06					1.0955E-06
Grand Total	827.6035	60.5300	28.1518	13.3151	11.4578	8.6634	0.7134	0.4936	0.0430	950.9718

The top ten inventoried HAPs from area sources are depicted in figure 6. The highest inventoried individual HAP from area sources is toluene. Toluene is a solvent emitted from surface coating operations, degreasing, commercial and consumer products, graphic arts, autobody refinishing, and gasoline distribution. Methyl chloroform is the second highest HAP and is emitted from degreasing solvents, and commercial/consumer products. The third highest inventoried HAP is xylene, emitted from surface coating, degreasing, commercial and consumer products, autobody refinishing and gasoline distribution. The species and quantities of the top ten HAPs emitted are dominated by the sources from solvent utilization category

**Top Ten HAPs Inventoried from Area Sources in Pinellas County
CY 2000**

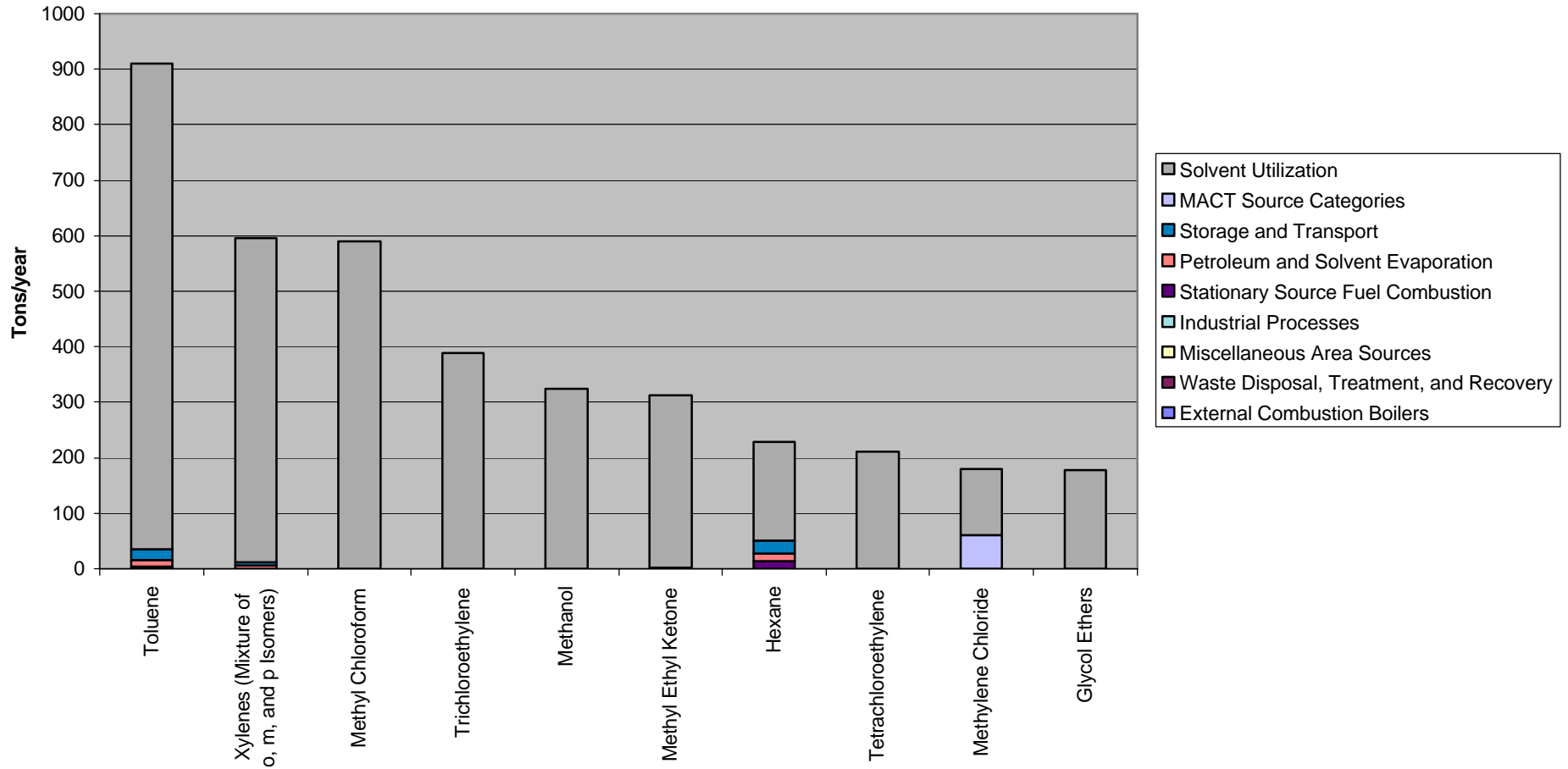


Figure 6 Top Ten Area Sources HAPs

4.1 Methodology for Calculating Area Source Emissions

The methods for estimating HAPs calculating emissions followed the General Equation for Area Source Emissions Calculations:

Annual Emissions in Tons/year

$$EMA_{ij} = PR_{ij} \times ef_i \times PRCNT_{ij} / 2000$$

where;

EMA_{ij}	/	the annual area source emissions of pollutant i, source category, j, in tons/year;
PR_{ij}	/	the activity rate for pollutant, i, and source category, j, in Emission Units/year;
ef_i	/	the applicable emissions factor for pollutant, i, in lbs/Emission Unit;
$PRCNT_{ij}$	/	the percentage of pollutant, i, per source category, j;
2000	/	conversion factor in lbs/ton.

An example calculation is given below.

Graphic Arts

$$\begin{aligned} &\text{Total VOC Emissions from Graphic Arts} \\ &= \text{Population of the County} * 0.00065 \text{ tons VOC per capita} \\ &= 921,482 * 0.00065 \text{ tons/person} \\ &= 598.96 \text{ tons/year} \end{aligned}$$

One item of concern in emission inventory preparation is the possible double counting of emissions. This may occur when sources are counted in both the point and area source categories. In order to correct for this error the area source activity is adjusted by subtracting point source emissions from the calculated area source emissions.

For example according to the Pinellas County Air Quality Division's database, there were 160.80 tons VOC emissions from the permitted point source facilities in 2000.

$$\begin{aligned} &\text{Graphic Arts Area Sources VOC Emissions} \\ &= \text{Total emissions} - \text{Point Sources Emissions} \\ &= 598.96 \text{ tons/year} - 160.80 \text{ tons/year} \\ &= 438.17 \text{ tons/year} \end{aligned}$$

Individual HAP fractions are then calculated using the VOC emissions and EPA Speciate 3.0. Speciate 3.0 has the HAP percents for this industry profile under: Graphic Arts - Composite of Lithography, Rotogravure, Letterpress and Flexography. Toluene is 11.28% of the total VOC emissions.

Toluene Emissions from Graphic Arts
= 438.17 tons/year * 11.28%
= 49.43 tons/year

4.2 Rule Penetration

Rule penetration is the percentage of the area source category that is covered by an applicable regulation or is expected to be complying with that regulation. In this inventory specific regulations apply to the area source categories for open burning, architectural coating, and traffic marking. Rule penetration is calculated as:

$$\text{Rule Penetration} = \frac{\text{Uncontrolled Emissions Covered by Regulation}}{\text{Total Uncontrolled Emissions}} * 100$$

Examples of this adjustment are discussed below.

Open Burning

Open burning includes the burning of land clearing material, yard trash, and agricultural wastes. In Florida the open burning of yard waste is prohibited under Florida Administration Code Rule 62-256.700(2) in urbanized counties/areas where there is regular refuse service. Pinellas County ordinances prohibit the open burning of land clearing debris. In addition most of the municipalities ban all kinds of open burning except campfires, bonfires, and fires for cooking.

EPA however has estimated the emissions from land clearing for Pinellas County based on open acres burned using assumed surrogates. These surrogates include housing start data, construction cost for non-residential structures, and roadway construction expenditures. Pinellas County is the most densely populated county in Florida (3,289 persons per square mile⁸) and undeveloped land is limited to less than 5% of the current land use plan. Much of the undeveloped land is dedicated to parks, conservation easements, etc. New housing starts do not always involve land clearing operations, as some is done through demolition and renovation of existing structures.

The Pinellas County Air Quality Division performed a phone survey of 19 fire departments and the Division of Forestry, Florida State Department of Agriculture. The results showed that most of the local fire departments do not allow any open burning. Agricultural burning is also regulated by the Division of Forestry. Only one fire department in the northern part of the county has issued six land clearing open burn permits during 2000 to 2001. Usually vegetation is removed and hauled for mulching/recycling or taken to landfills. As a result, Pinellas County Air Quality Division elected to use a rule penetration of 95% to adjust the final emissions for open burning.

⁸ University of Florida, Bureau of Economic and Business Research, 2000.

$$\begin{aligned}\text{Tons burned} &= \text{EPA estimated acres} * (1 - \text{Rule Penetration}) * \text{EPA loading rate} \\ &= 1,454.15 \text{ acres} * (1 - 95\%) * 9.86 \text{ tons/acre} \\ &= 716.92 \text{ tons/year}\end{aligned}$$

From EIIP VOL III Chapter 16 Table 16.4-3, the emission factor for phenol is 0.13 lbs/ton.

$$\begin{aligned}\text{Phenol Emissions from Open Burning} \\ &= 716.92 \text{ tons/year} * 0.13 \text{ lbs/ton} / 2000 \text{ lbs/ton} \\ &= 0.0466 \text{ tons/year}\end{aligned}$$

Architectural Coating

According to the final rule in 40 CFR 59, National Volatile Organic Compound Emission Standards for Architectural Coatings, dated September 11, 1998, EPA has stated in the general preamble that a 20 percent decrease in VOC emissions from architectural coating would be achieved. Manufacturers were to comply with this rule by no later than March 2000. FDEP has acknowledged the new standards and their impact, and projected a 20 % reduction for year 2000 in the Tampa Bay area maintenance plan⁹. Thus the rule penetration for architectural coating is 20%.

$$\begin{aligned}\text{VOC Emissions from Solvent Based Architectural Coating} \\ &= \text{Pinellas County Paint Usage} * \text{Emissions Factor for solvent based paint} * (1 - 0.2) \\ &= 423085.6 \text{ gallons/year} * 3.87 \text{ lbs/gallon} / 2000 \text{ lbs/ton} * 0.8 \\ &= 654.9 \text{ tons/year}\end{aligned}$$

From EIIP Chapter 5 Table 5-4, the emission factor for n-Hexane is 0.2070 lbs/lb.

$$\begin{aligned}\text{n-Hexane Emissions from Solvent Based Architectural Coating} \\ &= 654.9 \text{ tons/year} * 0.2070 \text{ lbs/lb} \\ &= 135.56 \text{ tons/year}\end{aligned}$$

⁹ State of Florida Department of Environmental Protection Proposed Revision to State Implementation Plan Number 2000-02 Removal of Motor Vehicle Inspection Program Reduction Credits from the Tampa bay Area Ozone Maintenance Plan, August 29, 2000.

5.0 Non-Road Mobile Sources

The non-road mobile sources consist of transportation vehicles such as aircraft, locomotives, marine vessels, and non-road engines and equipment. The non-road engines and equipment include source categories such as agricultural equipment, airport equipment, commercial equipment, construction and mining equipment, industrial equipment, lawn and garden equipment (commercial and residential), logging equipment, pleasure craft, railroad equipment, and recreational equipment.

EPA developed the NONROAD Emissions Model to estimate county-level emissions for non-road engines and equipment. This inventory incorporated the EPA's NEI non-road mobile emission data. EPA developed a county-level HAP inventory based on the local/state submitted VOC and PM data of non-road mobile emissions.

5.1 Aircraft, Locomotives, and Commercial Marine Vessels

Pinellas County AQD has inventoried VOC emissions for this category. The detailed methodology and data are included in the report - 2000 Ozone Precursor and Carbon Monoxide Emissions Inventory Update for Pinellas County, Florida, August 2003. EPA developed the organic HAPs by applying speciation profiles to the County-level VOC estimates. The emission estimates for metals were developed by applying speciation profiles to particulate matter (PM) emissions. The methodologies and speciation data are included in EPA documents.^{10, 11} The total HAP emissions in tons per year and their contribution from aircraft, locomotives, and commercial marine vessels are depicted in table 10.

Table 10 Total HAPs Emissions by Aircraft, Commercial Marine Vessels, and Railroad Equipment

Emission Process Description	Tons/year	% Contribution
Aircraft, Commercial Aircraft, Total	4.8376	32.58%
Aircraft, General Aviation, Total	4.5916	30.92%
Commercial Marine Vessels, Diesel, In Port emissions	3.4093	22.96%
Aircraft, Air Taxis, Total	0.9383	6.32%
Commercial Marine Vessels, Residual, In Port emissions	0.9310	6.27%
Commercial Marine Vessels, Diesel, Underway emissions	0.0600	0.40%
Railroad Equipment, Diesel, Line Haul Locomotives: Class I operations	0.0479	0.32%
Railroad Equipment, Diesel, Yard Locomotives	0.0182	0.12%
Commercial Marine Vessels, Residual, Underway emissions	0.0165	0.11%
Grand Total	14.8503	100%

¹⁰ Documentation for the 1999 Base Year National Toxics inventory for Aircraft Sources, U.S. EPA, October 2001.

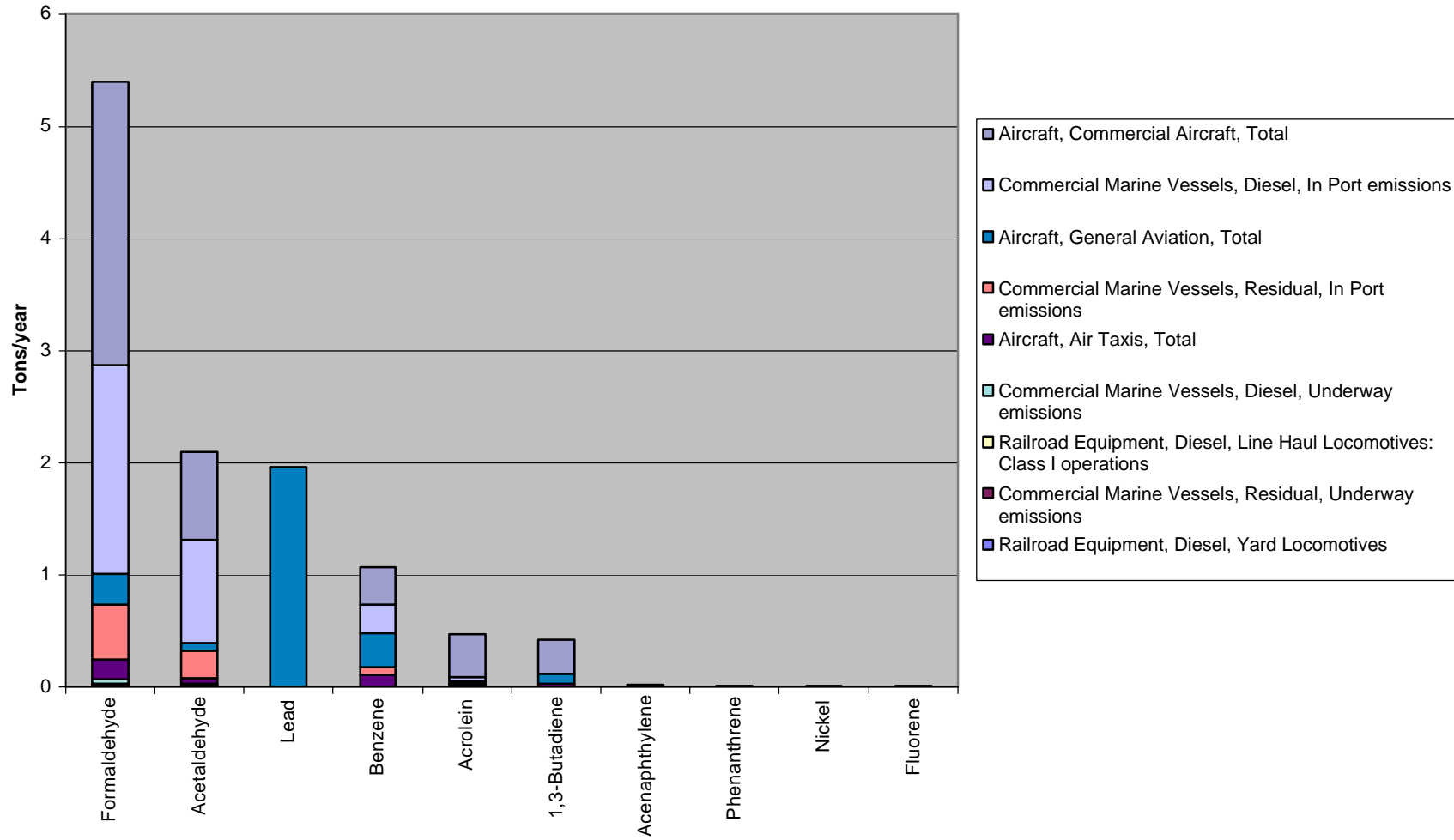
¹¹ Documentation for the draft 1999 Base Year Non-road National Emission Inventory for Hazardous Air Pollutants, U.S. EPA, October 2001.

The NATA HAPs emissions from this category are depicted in table 11. Pinellas County does not have major emissions from this source category. The top ten HAPs inventoried in this category are depicted in figure 7. The highest emitted HAP is formaldehyde from aircraft and commercial marine vessels.

Table 11 NATA HAPs from Non-road Aircraft, Commercial Marine Vessels, and Locomotives.

NATA HAPs	Tons/year
Formaldehyde	5.397029
Acetaldehyde	2.101376
Lead	1.961349
Benzene	1.066465
Acrolein	0.472592
1,3-Butadiene	0.419941
Acenaphthylene	0.024475
Phenanthrene	0.017361
Nickel	0.012678
Fluorene	0.009497
Pyrene	0.007712
Anthracene	0.005602
Fluoranthene	0.005559
Acenaphthene	0.004427
Benzo[g,h,i]Perylene	0.00153
Benzo[a]Anthracene	0.001239
Benzo[b]Fluoranthene	0.00084
Benzo[k]Fluoranthene	0.000833
Benzo[a]Pyrene	0.000747
Chrysene	0.000701
Manganese	0.000475
Indeno[1,2,3-c,d]Pyrene	0.000434
Mercury	0.00033
Arsenic	0.000203
Chromium (VI)	6.25E-05
Cadmium	5.86E-05
Lead & Compounds	3.54E-05
Cadmium & Compounds	1.18E-05
Beryllium & Compounds	1.18E-05
Mercury & Compounds	1.18E-05
Beryllium	4.19E-06
Nickel & Compounds	2.95E-06
Manganese & Compounds	9.18E-07
Arsenic & Compounds (Inorganic Including Arsine)	1.61E-07
Grand Total	11.51359

Figure 7 Top Ten HAPs Inventoried from Aircraft, Commercial Marine Vessels, and Railroad



5.2 Non-Road Engines and Equipment

EPA used the NONROAD Emission Model version 2.1 to estimate VOC and PM emissions at the county level. Organic HAPs were identified by speciating VOC data. The metals and some species of POMs are estimated by speciating PM data. The significant source categories include gasoline 2-stroke engines, gasoline 4-stroke engines, diesel engines, pleasure craft and railroad equipment (table 12).

Table 12 2000 Non-Road Engines and Equipment Emissions

Source Category	Tons/year	% Contribution
Off-highway Vehicle Diesel	90.5460	4.18%
Off-highway Vehicle Gasoline, 2-Stroke	674.0577	31.09%
Off-highway Vehicle Gasoline, 4-Stroke	582.3058	26.86%
Pleasure Craft	820.3254	37.84%
Railroad Equipment	0.6719	0.03%
Grand Total	2167.9068	100%

Pleasure craft contributed the highest HAP percentage in emissions. The pleasure craft subcategories include gasoline 2-stroke outboard, gasoline 2-stroke personal watercraft, and gasoline 4-stroke, inboard/sterndrive boats and other types. Major off-highway 2-stroke gasoline vehicles including lawn and garden equipment and off-roadway recreational vehicles, emitted the second highest amount. The third highest inventoried source is off-highway 4-stroke gasoline vehicles that include mostly lawn and garden equipment. The detailed emission data is included in Appendix D. Figure 8 illustrates the top ten HAPs inventoried with associated top 10 emitted sources.

The NATA HAPs inventoried in this category are depicted in table 13. The emissions from off-highway gasoline 4-stroke vehicles become significant when considering the NATA HAPs. Pleasure craft and off-highway diesel vehicles are other sources that contribute to this HAPs group.

Table 13 NATA HAPs Inventoried in Non-Road Engines and Equipment

Tons/year	SCC3_DESC					
NATA HAPs	Off-highway Vehicle Gasoline, 4- Stroke	Pleasure Craft	Off-highway Vehicle Diesel	Off-highway Vehicle Gasoline, 2- Stroke	Railroad Equipment	Grand Total
Benzene	117.5771735	63.98268101	8.282010171	37.20361617	0.077915673	227.1234
Formaldehyde	24.15899555	6.755837126	44.26313013	8.812498106	0.258646422	84.2491
Acetaldehyde	8.456370222	4.091658563	19.88484325	2.771736304	0.115568902	35.3202
1,3-Butadiene	19.63488079	5.398400731	0.697392548	3.816275433	0.009102683	29.5561
Acrolein	1.443559273	0.71574055	1.135715355	0.759067946	0.006851494	4.0609
Phenanthrene	0.048362539	0.027544371	0.078560499	0.019649259	0.000465347	0.1746
Acenaphthylene	0.078446323	0.012510278	0.025525013	0.007085069	0.000168847	0.1237
Fluorene	0.028750958	0.030088487	0.030191857	0.022577754	0.000181699	0.1118
Pyrene	0.023610058	0.039136392	0.000876025	0.030040693	1.16806E-05	0.0937
Fluoranthene	0.017326736	0.0327843	0.005155124	0.025222846	3.45184E-05	0.0805
Acenaphthene	0.01389947	0.001046443	0.030795835	0.000188935	0.000180994	0.0461
Anthracene	0.016184314	0.008722707	0.000131448	0.006329328	5.30972E-06	0.0314
Benzo[g,h,i]Perylene	0.004950496	0.014118408	5.87885E-05	0.01095824	1.73099E-06	0.0301
Arsenic & Compounds (Inorganic Including Arsine)	0.00259407	0.000744308	0.010724366	0.000440507	6.23973E-05	0.0146
Mercury & Compounds	0.0007895	0.000266086	0.008936066	0.000134067	5.16064E-05	0.0102
Benz[a]Anthracene	0.001904037	0.004158826	0.000215168	0.003211898	1.77301E-06	0.0095
Indeno[1,2,3-c,d]Pyrene	0.00152323	0.004261166	2.38766E-05	0.003306366	5.65894E-07	0.0091
Benzo[a]Pyrene	0.001904037	0.003558616	0.000105861	0.00273956	1.14447E-06	0.0083
Chrysene	0.001904037	0.00260288	0.000590468	0.001983819	3.93106E-06	0.0071
Benzo[b]Fluoranthene	0.002284844	0.002016564	0.00014819	0.001511481	1.49502E-06	0.0060
Benzo[k]Fluoranthene	0.002284844	0.001776486	0.000105419	0.001322546	1.24908E-06	0.0055
Lead & Compounds	0.000322501	0.00204439	0	0.001600067	9.07437E-08	0.0040
Nickel & Compounds	0.001625918	0.000427682	0.001152913	0.000276102	7.08699E-06	0.0035
Manganese & Compounds	0.000747092	0.000198234	0.000776163	0.000126866	4.67331E-06	0.0019
Chromium (VI)	0.000758966	0.000195926	5.77873E-06	0.000128882	2.46783E-07	0.0011
Dibenzo[a,h]Anthracene	0	0.000119896	8.74409E-07	9.44676E-05	5.02804E-09	0.0002
Grand Total	171.5212	81.1326	74.4572	53.5021	0.4693	381.0824

Top Ten HAPs Inventoried in Non-Road Vehicles and Equipment

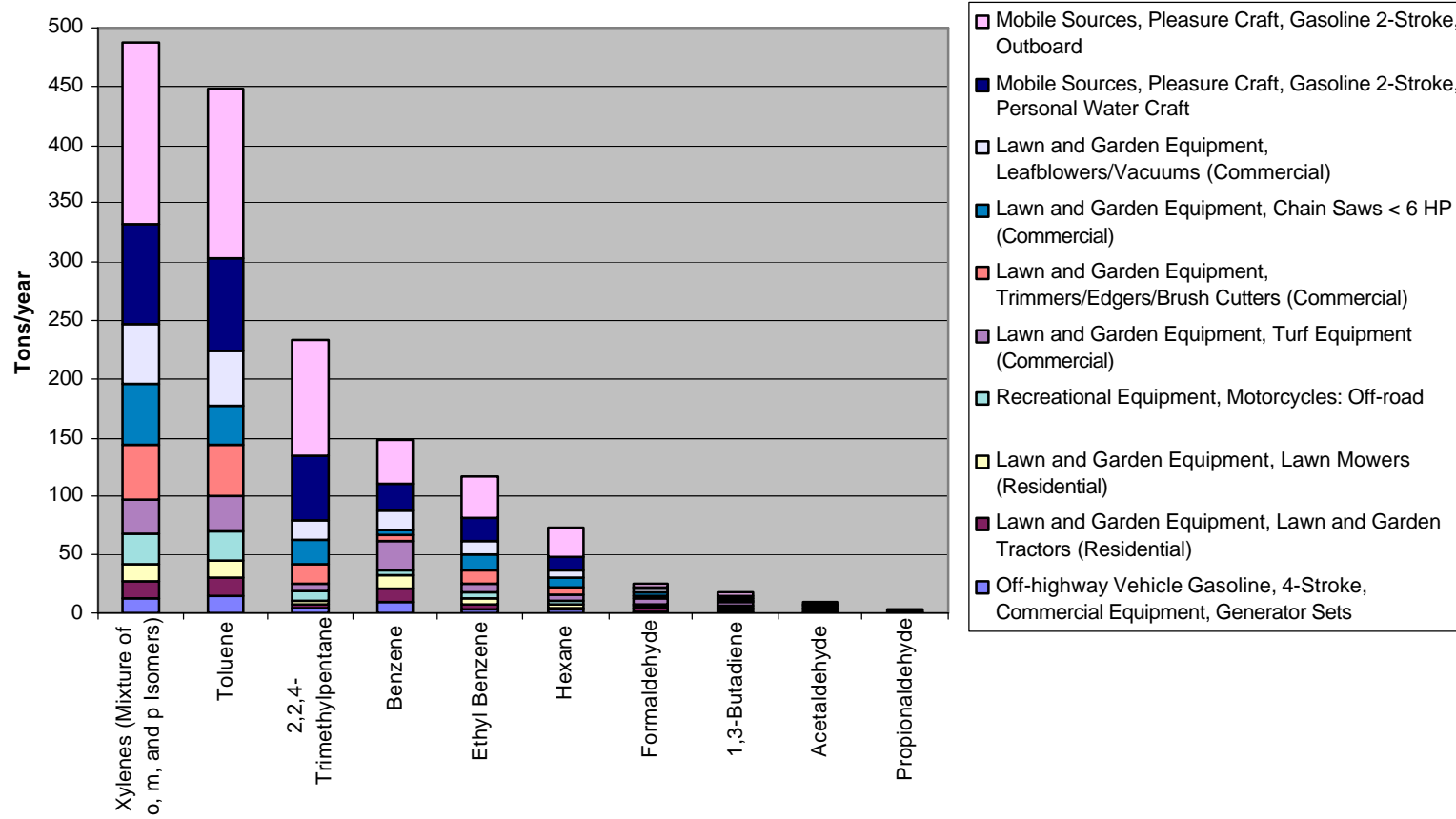


Figure 8 Top Ten HAPs Emitted by Non-Road Engines and Equipment

6.0 On-Road Mobile Sources

EPA developed MOBILE6.2 for estimating highway vehicle air toxics emissions for benzene, 1,3-butadiene, formaldehyde, acetaldehyde, acrolein, and MTBE¹². The draft 1999 NEI for HAPs version 3, uses MOBILE6.2 to further estimate 29 more HAPs from the speciation of total organic gases (TOG) and PM. The detailed methodology is in EPA documents.^{13, 14}

This inventory adopted the results from EPA's on-road emissions estimates for Pinellas County. The methodology of estimating VOC and NO_x for year 2000 is in the Division's Ozone Precursor report.¹⁵ Emission estimates for on-road mobile sources were developed by an area-wide analysis of the annual average daily vehicle miles traveled (AADVMT) by highway vehicles. The estimates of AADVMT for Pinellas County were compiled by the Florida Department of Transportation, Highway Performance Monitoring System (HPMS).

On-road mobile sources constitute motor vehicles traveling on the County roadway network. Pinellas County is an urban area with urban highway classification for all major facilities and local roads as defined by the Federal Highway Administration (FHWA). Summary of these emissions is included in table 14. The highest emitter in this source category is light duty gasoline vehicles that contribute 55 % of total HAPs. Emissions from light duty gasoline trucks are the second and third highest contributors in Pinellas County. Figure 8 illustrates the top ten HAPs inventoried in this category.

Table 14 2000 On-Road Mobile Source Emissions

Vehicle Types	Tons/year	% Contribution
Light Duty Gasoline Vehicles (LDGV)	2582.6377	55.04%
Light Duty Gasoline Trucks 1 & 2 (M6) = LDGT1 (M5)	1126.1080	24.00%
Light Duty Gasoline Trucks 3 & 4 (M6) = LDGT2 (M5)	591.5213	12.61%
Heavy Duty Gasoline Vehicles 2B thru 8B & Buses (HDGV)	268.8366	5.73%
Heavy Duty Diesel Vehicles (HDDV) Class 8A & 8B	67.1177	1.43%
Motorcycles (MC)	24.2641	0.52%
Heavy Duty Diesel Vehicles (HDDV) Class 6 & 7	15.8234	0.34%
Heavy Duty Diesel Vehicles (HDDV) Class 2B	5.2220	0.11%
Heavy Duty Diesel Vehicles (HDDV) Class 3, 4, & 5	3.6186	0.08%
Heavy Duty Diesel Buses (School & Transit)	2.9697	0.06%
Light Duty Diesel Trucks 1 thru 4 (M6) (LDDT)	2.5122	0.05%
Light Duty Diesel Vehicles (LDDV)	1.7572	0.04%
Grand Total	4692.3885	100.00%

¹² Methyl Tert-Butyl Ether

¹³ Documentation for the draft 1999 Base Year Onroad National Emission Inventory for hazardous Air Pollutants, U.S. EPA October 2001.

¹⁴ County-Specific Fuel Parameters for 1990, 1996, and 1999 Toxic Emissions Modeling preparation for MOBILE6.2 Model Runs), U.S. EPA October 2002.

¹⁵ 2000 Ozone Precursor and Carbon Monoxide Emissions Inventory Update for Pinellas County, Florida, October 2002.

Table 15 illustrates the VMT data by facility types. A detailed summary of the on-road mobile source category is included in appendix E. The NATA HAPs inventoried in this category is depicted in table 16.

Table 15 Pinellas County 2000 HPMS Data

Facility Class	Rural	Large Urbanized	County Total
Interstate	0	2,032,853	2,032,853
Turnpike/Freeway	0	229,080	229,080
Other Principal Arterials	0	4,968,094	4,968,094
Minor Arterials	0	5,139,516	5,139,516
Urban/Major Collectors	0	3,175,895	3,175,895
Rural/Minor Collectors	0	0	0
Locals	148,830	3,932,448	4,081,278
Total	148,830	19,477,886	19,626,716

Table 16 NATA HAPs from On-Road Mobile Vehicles

NATA HAPs	Sum of TONS/YR												Grand Total
	SCC6_DESC												
	Light Duty Gasoline Vehicles (LDGV)	Light Duty Gasoline Trucks 1 & 2 (M6) = LDGT1 (M5)	Light Duty Gasoline Trucks 3 & 4 (M6) = LDGT2 (M5)	Heavy Duty Gasoline Vehicles 2B thru 8B & Buses (HDGV)	Heavy Duty Diesel Vehicles (HDDV) Class 8A & 8B	Heavy Duty Diesel Vehicles (HDDV) Class 6 & 7	Motorcycles (MC)	Heavy Duty Diesel Vehicles (HDDV) Class 2B	Heavy Duty Diesel Vehicles (HDDV) Class 3, 4, & 5	Heavy Duty Diesel Buses (School & Transit)	Light Duty Diesel Trucks 1 thru 4 (M6) (LDDT)	Light Duty Diesel Vehicles (LDDV)	
Benzene	300.3136	138.4153	64.4174	26.3824	4.6571	1.0994	2.0896	0.3632	0.2516	0.2054	0.4138	0.2873	538.8963
Formaldehyde	69.2192	39.8648	25.4210	22.0245	34.6848	8.1881	1.5013	2.7045	1.8733	1.5299	0.7987	0.5545	208.3646
Acetaldehyde	25.1808	13.7770	7.8470	4.4596	12.7736	3.0156	0.3951	0.9960	0.6900	0.5634	0.2545	0.1767	70.1292
1,3-Butadiene	34.7779	15.8861	10.0504	4.4586	2.7055	0.6387	0.6017	0.2110	0.1461	0.1194	0.1862	0.1293	69.9108
Acrolein	3.4992	1.7934	0.9332	2.5680	1.5521	0.3665	0.0387	0.1211	0.0839	0.0685	0.0724	0.0503	11.1473
Acenaphthylene	0.2192	0.1014	0.0624	0.0939	0.0061	0.0015	0.0028	0.0005	0.0003	0.0006	0.0034	0.0041	0.4963
Phenanthrene	0.1352	0.0626	0.0385	0.0579	0.0092	0.0023	0.0017	0.0008	0.0004	0.0008	0.0038	0.0045	0.3177
Fluorene	0.0806	0.0373	0.0230	0.0345	0.0081	0.0020	0.0010	0.0007	0.0004	0.0007	0.0014	0.0016	0.1912
Pyrene	0.0662	0.0307	0.0189	0.0284	0.0064	0.0016	0.0008	0.0006	0.0003	0.0006	0.0024	0.0029	0.1598
Fluoranthene	0.0485	0.0224	0.0138	0.0208	0.0036	0.0009	0.0006	0.0003	0.0002	0.0003	0.0019	0.0023	0.1156
Anthracene	0.0451	0.0209	0.0128	0.0193	0.0061	0.0015	0.0006	0.0005	0.0003	0.0006	0.0006	0.0008	0.1090
Acenaphthene	0.0389	0.0180	0.0111	0.0167	0.0040	0.0010	0.0005	0.0004	0.0002	0.0004	0.0003	0.0004	0.0917
Arsenic & Compounds (Inorganic Including Arsine)	0.0143	0.0054	0.0018	0.0007	0.0138	0.0049	0.0001	0.0036	0.0021	0.0006	0.0001	0.0001	0.0475
Mercury & Compounds	0.0044	0.0016	0.0006	0.0002	0.0221	0.0079	0.0000	0.0058	0.0033	0.0010	0.0001	0.0001	0.0470
Benzofg,h,i]Perylene	0.0137	0.0063	0.0039	0.0059	0.0015	0.0004	0.0002	0.0001	0.0001	0.0001	0.0002	0.0002	0.0325
Nickel & Compounds	0.0179	0.0067	0.0023	0.0009	0.0007	0.0002	0.0001	0.0002	0.0001	0.0000	0.0000	0.0000	0.0292
Benz[a]Anthracene	0.0055	0.0025	0.0015	0.0023	0.0066	0.0016	0.0001	0.0006	0.0003	0.0006	0.0002	0.0002	0.0220
Benzo[k]Fluoranthene	0.0065	0.0030	0.0018	0.0028	0.0018	0.0005	0.0001	0.0002	0.0001	0.0002	0.0003	0.0003	0.0175
Benzo[b]Fluoranthene	0.0065	0.0030	0.0018	0.0028	0.0018	0.0005	0.0001	0.0002	0.0001	0.0002	0.0003	0.0003	0.0175
Chromium (VI)	0.0098	0.0037	0.0013	0.0005	0.0001	0.0000	0.0001	0.0000	0.0000				0.0156
Benzofa]Pyrene	0.0055	0.0025	0.0015	0.0023	0.0022	0.0005	0.0001	0.0002	0.0001	0.0002	0.0002	0.0002	0.0154
Chrysene	0.0055	0.0025	0.0015	0.0023	0.0012	0.0003	0.0001	0.0001	0.0000	0.0001	0.0002	0.0002	0.0141
Manganese & Compounds	0.0082	0.0031	0.0011	0.0004	0.0002	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0132
Indeno[1,2,3-c,d]Pyrene	0.0041	0.0019	0.0012	0.0017	0.0002	0.0000	0.0000	0.0000		0.0000	0.0001	0.0001	0.0093
Grand Total	433.7260	210.0722	108.8698	60.1873	56.4689	13.3359	4.6353	4.4107	3.0530	2.4935	1.7411	1.2165	900.2103

Top Ten HAPs Emitted by On-Road Mobile Sources

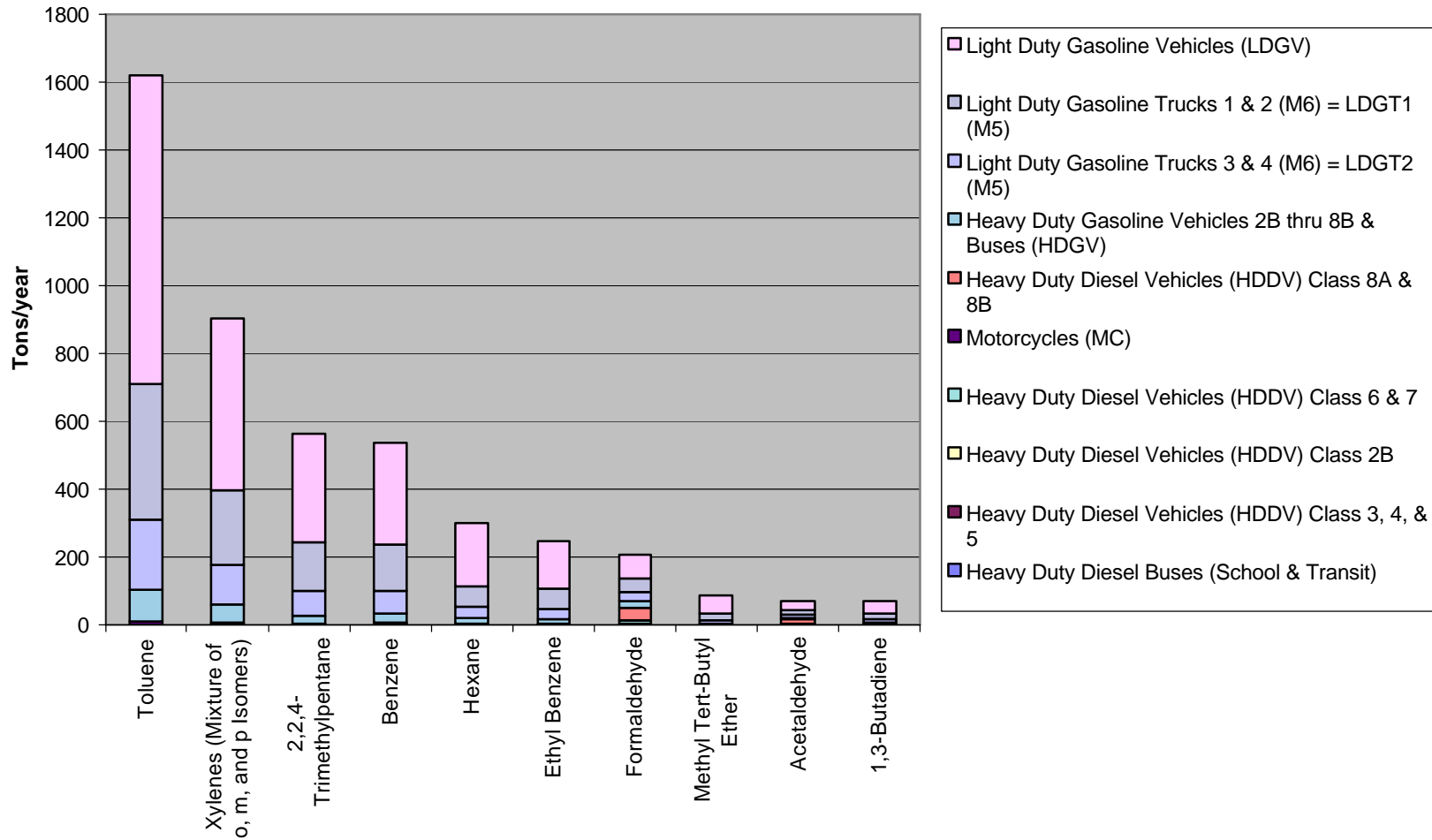


Figure 9 Top Ten HAPs Emitted by On-Road Mobile Vehicles

Technical Appendix

APPENDIX A: Lists of Hazardous Air Pollutants

APPENDIX B: Point Sources HAPs Emissions by Facilities

APPENDIX C: Pinellas County 2000 HAPs Area Source Report Plan

APPENDIX D: Non-Road HAPs Emissions by Sources

APPENDIX E: On-Road HAPs Emissions by Sources

Appendix A: Lists of Hazardous Air Pollutants

See Florida Administrative Code (FAC) 62-210.200 Definitions (130)

<http://www.dep.state.fl.us/air/rules/fac/62-210.pdf>

Or <http://www.epa.gov/ttn/atw/188polls.html>

The modification of the 188 HAPs can be found at:

<http://www.epa.gov/ttn/atw/atwsmmod.html>

CAS Number	Chemical Name
1	75070 Acetaldehyde
2	60355 Acetamide
3	75058 Acetonitrile
4	98862 Acetophenone
5	53963 2-Acetylaminofluorene
6	107028 Acrolein
7	79061 Acrylamide
8	79107 Acrylic acid
9	107131 Acrylonitrile
10	107051 Allyl chloride
11	92671 4-Aminobiphenyl
12	62533 Aniline
13	90040 o-Anisidine
14	0 Antimony Compounds
15	0 Arsenic Compounds (inorganic including arsine)
16	1332214 Asbestos
17	71432 Benzene (including benzene from gasoline)
18	92875 Benzidine
19	98077 Benzotrichloride
20	100447 Benzyl chloride
21	0 Beryllium Compounds
22	92524 Biphenyl
23	117817 Bis (2-ethylhexyl) phthalate (DEHP)
24	542881 Bis (chloromethyl) ether
25	75252 Bromoform
26	106990 1, 3-Butadiene
27	0 Cadmium Compounds
28	156627 Calcium cyanamide
29	133062 Captan
30	63252 Carbaryl
31	75150 Carbon disulfide
32	56235 Carbon tetrachloride
33	463581 Carbonyl sulfide
34	120809 Catechol
35	133904 Chloramben
36	57749 Chlordane
37	7782505 Chlorine

CAS Number	Chemical Name
38	79118 Chloroacetic acid
39	532274 2-Chloroacetophenone
40	108907 Chlorobenzene
41	510156 Chlorobenzilate
42	67663 Chloroform
43	107302 Chloromethyl methyl ether
44	126998 Chloroprene
45	0 Chromium Compounds
46	0 Cobalt Compounds
47	0 Coke Oven Emissions
48	1319773 Cresols/Cresylic acid (isomers and mixture)
49	95487 o-Cresol
50	108394 m-Cresol
51	106445 p-Cresol
52	98828 Cumene
53	0 Cyanide Compounds (X' CN where X = H' or any other group where a formal dissociation may occur. For example KCN or Ca (CN) 2.)
54	94757 2, 4-D, salts and esters
55	3547044 DDE
56	334883 Diazomethane
57	132649 Dibenzofurans
58	96128 1, 2-Dibromo-3-chloropropane
59	84742 Dibutylphthalate
60	106467 1, 4-Dichlorobenzene (p)
61	91941 3, 3-Dichlorobenzidine
62	111444 Dichloroethyl ether (Bis (2-chloroethyl) ether)
63	542756 1, 3-Dichloropropene
64	62737 Dichlorvos
65	111422 Diethanolamine
66	121697 N, N-Diethyl aniline (N, N-Dimethylaniline)
67	64675 Diethyl sulfate
68	119904 3, 3-Dimethoxybenzidine
69	60117 Dimethyl aminoazobenzene
70	1119937 3, 3-Dimethyl benzidine
71	79447 Dimethyl carbamoyl chloride
72	68122 Dimethyl formamide
73	57147 1, 1-Dimethyl hydrazine
74	131113 Dimethyl phthalate
75	77781 Dimethyl sulfate
76	534521 4, 6-Dinitro-o-cresol, and salts
77	51285 2, 4-Dinitrophenol
78	121142 2, 4-Dinitrotoluene
79	123911 1, 4-Dioxane (1, 4-Diethyleneoxide)
80	122667 1, 2-Diphenylhydrazine
81	106898 Epichlorohydrin (1-Chloro-2, 3-epoxypropane)
82	106887 1, 2-Epoxybutane
83	140885 Ethyl acrylate
84	100414 Ethyl benzene

CAS Number	Chemical Name
85	51796 Ethyl carbamate (Urethane)
86	75003 Ethyl chloride (Chloroethane)
87	106934 Ethylene dibromide (Dibromoethane)
88	107062 Ethylene dichloride (1, 2-Dichloroethane)
89	107211 Ethylene glycol
90	151564 Ethylene imine (Aziridine)
91	75218 Ethylene oxide
92	96457 Ethylene thiourea
93	75343 Ethylidene dichloride (1, 1-Dichloroethane)
94	50000 Formaldehyde
95	0 Glycol ethers (includes mono- and di- ethers of ethylene glycol, diethylene glycol, triethylene glycol R-(OCH ₂ CH ₂) _n -OR' where n =1, or aryl groups, and R' = R, H, or groups which, when glycol ethers with the structure: R-(OCH ₂ CH ₂) ₂ -OH. excluded from the glycol category.)
96	76448 Heptachlor
97	118741 Hexachlorobenzene
98	87683 Hexachlorobutadiene
99	77474 Hexachlorocyclopentadiene
100	67721 Hexachloroethane
101	822060 Hexamethylene-1, 6-diisocyanate
102	680319 Hexamethylphosphoramide
103	110543 Hexane
104	302012 Hydrazine
105	7647010 Hydrochloric acid
106	7664393 Hydrogen fluoride (Hydrofluoric acid)
107	123319 Hydroquinone
108	78591 Isophorone
109	0 Lead Compounds
110	58899 Lindane (all isomers)
111	108316 Maleic anhydride
112	0 Manganese Compounds
113	0 Mercury Compounds
114	67561 Methanol
115	72435 Methoxychlor
116	74839 Methyl bromide (Bromomethane)
117	74873 Methyl chloride (Chloromethane)
118	71556 Methyl chloroform (1, 1, 1-Trichloroethane)
119	78933 Methyl ethyl ketone (2-Butanone)
120	60344 Methyl hydrazine
121	74884 Methyl iodide (Iodomethane)
122	108101 Methyl isobutyl ketone (Hexone)
123	624839 Methyl isocyanate
124	80626 Methyl methacrylate
125	1634044 Methyl tert butyl ether
126	101144 4, 4-Methylene bis (2-chloroaniline)
127	75092 Methylene chloride (Dichloromethane)
128	101688 Methylene diphenyl diisocyanate (MDI)
129	101779 4, 4-Methylenedianiline

CAS Number	Chemical Name
130	0 Mineral fibers (fine), includes mineral fiber emissions from facilities manufacturing or processing glass, rock, or slag fibers (or other mineral derived fibers) of average diameter 1 micrometer or less.
131	91203 Naphthalene
132	0 Nickel Compounds
133	98953 Nitrobenzene
134	92933 4-Nitrobiphenyl
135	100027 4-Nitrophenol
136	79469 2-Nitropropane
137	684935 N-Nitroso-N-methylurea
138	62759 N-Nitrosodimethylamine
139	59892 N-Nitrosomorpholine
140	56382 Parathion
141	82688 Pentachloronitrobenzene (Quintobenzene)
142	87865 Pentachlorophenol
143	108952 Phenol
144	106503 p-Phenylenediamine
145	75445 Phosgene
146	7803512 Phosphine
147	7723140 Phosphorus
148	85449 Phthalic anhydride
149	1336363 Polychlorinated biphenyls (Aroclors)
150	0 Polycyclic organic matter (includes organic compounds with more than one benzene ring, and which have a boiling point greater than or equal to 100° C)
151	1120714 1, 3-Propane sultone
152	57578 beta-Propiolactone
153	123386 Propionaldehyde
154	114261 Propoxur (Baygon)
155	78875 Propylene dichloride (1, 2-Dichloropropane)
156	75569 Propylene oxide
157	75558 1, 2-Propylenimine (2-Methyl aziridine)
158	91225 Quinoline
159	106514 Quinone
160	0 Radionuclides (including radon), a type of atom which spontaneously undergoes radioactive decay
161	0 Selenium Compounds
162	100425 Styrene
163	96093 Styrene oxide
164	1746016 2, 3, 7, 8- Tetrachlorodibenzo-p-dioxin
165	79345 1, 1, 2, 2- Tetrachloroethane
166	127184 Tetrachloroethylene (Perchloroethylene)
167	7550450 Titanium tetrachloride
168	108883 Toluene
169	95807 2, 4-Toluene diamine
170	584849 2, 4-Toluene diisocyanate
171	95534 o-Toluidine
172	8001352 Toxaphene (chlorinated camphene)
173	120821 1, 2, 4-Trichlorobenzene

CAS Number	Chemical Name
174	79005 1, 1, 2-Trichloroethane
175	79016 Trichloroethylene
176	95954 2, 4, 5-Trichlorophenol
177	88062 2, 4, 6-Trichlorophenol
178	121448 Triethylamine
179	1582098 Trifluralin
180	540841 2, 2, 4-Trimethylpentane
181	108054 Vinyl acetate
182	593602 Vinyl bromide
183	75014 Vinyl chloride
184	75354 Vinylidene chloride (1, 1-Dichloroethylene)
185	1330207 Xylenes (isomers and mixtures)
186	95476 o-Xylenes
187	108383 m-Xylenes
188	106423 p-Xylenes

Appendix B: Point Sources HAPs Emissions by Facilities

Facility Names	HAP Names	Tons/year
Pinellas RRF	Hydrochloric Acid	97.6000
	Formaldehyde	0.7972
	Mercury & Compounds	0.0851
	Manganese & Compounds	0.0373
	Lead & Compounds	0.0300
	Nickel & Compounds	0.0074
	Arsenic & Compounds (Inorganic Including Arsine)	0.0046
	Chromium & Compounds	0.0042
	Cadmium & Compounds	0.0012
	7-PAH	3.99E-05
	2,3,7,8-TCDD TEQ	1.38767E-07
Pinellas RRF Total		98.5670
FLORIDA POWER CORPORATION	Hydrochloric Acid	42.4800
	Hydrogen Fluoride	35.8500
	Nickel & Compounds	4.4837
	Formaldehyde	2.5896
	Hexane	1.0905
	Phosphorus	0.4050
	Antimony & Compounds	0.3004
	Toluene	0.1661
	Lead & Compounds	0.1597
	Manganese & Compounds	0.1541
	Propylene Oxide	0.1218
	Arsenic & Compounds (Inorganic Including Arsine)	0.1106
	Xylenes (Mixture of o, m, and p Isomers)	0.0853
	Benzene	0.0704
	Chromium & Compounds	0.0533
	Naphthalene	0.0507
	Ethyl Benzene	0.0450
	Cadmium & Compounds	0.0317
	Acetaldehyde	0.0260
	Selenium & Compounds	0.0256
	Methyl Chloroform	0.0094
	Acrolein	0.0085
	1,3-Butadiene	0.0062
	Mercury & Compounds	0.0058
	o-Xylene	0.0016
	Beryllium & Compounds	0.0014
Polycyclic Organic Matter	8.3E-05	
FLORIDA POWER CORPORATION Total		88.3325
HYDRO SPA	Styrene	36.1200
	4,4'-Methylenediphenyl Diisocyanate	7.0875
	Methylene(B)4-phenylisocyanate	7.0875
	Dimethyl Phthalate	0.8112
HYDRO SPA Total		51.1062

Pinellas County 2000 Air Toxics Emissions Inventory

Facility Names	HAP Names	Tons/year
BLUE HAWAIIAN PRODUCTS	Styrene	45.7900
BLUE HAWAIIAN PRODUCTS Total		45.7900
CATALINA YACHTS, MORGAN DIVISION	Styrene	45.1950
CATALINA YACHTS, MORGAN DIVISION Total		45.1950
Toytown SLF	Toluene	20.9459
	Xylenes (Mixture of o, m, and p Isomers)	1.7699
	Methylene Chloride	1.6736
	Benzene	1.1947
	Tetrachloroethylene	0.8523
	Hexane	0.7802
	Methyl Ethyl Ketone	0.7045
	Ethyl Benzene	0.6743
	Vinyl Chloride	0.6321
	Trichloroethylene	0.5105
	Acrylonitrile	0.4628
	Ethylidene Dichloride	0.3204
	Methyl Isobutyl Ketone	0.2581
	1,1,2,2-Tetrachloroethane	0.2567
	Ethyl Chloride	0.1111
	Methyl Chloroform	0.0882
	Methyl Chloride	0.0842
	Carbon Disulfide	0.0608
	Ethylene Dichloride	0.0559
	1,4-Dichlorobenzene	0.0425
	Carbonyl Sulfide	0.0406
	Chlorobenzene	0.0388
	Propylene Dichloride	0.0280
	Vinylidene Chloride	0.0267
	Chloroform	0.0049
	Carbon Tetrachloride	0.0008
Ethylene Dibromide (1,2-dibromoethane)	0.0003	
Mercury & Compounds	0.0001	
Toytown SLF Total		31.6190
FILM TECHS. INTL. INC.	Methyl Ethyl Ketone	16.5145
	Toluene	13.7275
FILM TECHS. INTL. INC. Total		30.2420
TRADIT'L WATERCRFT DBA ISLAND PACKET	Styrene	17.2450
	Methyl Methacrylate	6.0924
TRADIT'L WATERCRFT DBA ISLAND PACKET Total		23.3374
INTREPID POWERBOATS INC	Styrene	14.7830
INTREPID POWERBOATS INC Total		14.7830
SHAKESPEARE PRODUCTS GROUP	Styrene	13.5510
SHAKESPEARE PRODUCTS GROUP Total		13.5510
GSP MARKETING TECHNOLOGIES,	Glycol Ethers	7.2000

Pinellas County 2000 Air Toxics Emissions Inventory

Facility Names	HAP Names	Tons/year
INC.		
	Xylenes (Mixture of o, m, and p Isomers)	3.2000
	Methanol	1.6000
	Ethyl Benzene	0.6000
	Hexane	5E-05
GSP MARKETING TECHNOLOGIES, INC. Total		12.6000
STAMAS YACHT INC.	Styrene	11.3790
STAMAS YACHT INC. Total		11.3790
ACME SPONGE & CHAMOIS CO., INC.	Tetrachloroethylene	11.3265
ACME SPONGE & CHAMOIS CO., INC. Total		11.3265
QUALITY ACRYLIC BATHS OF CLEARWATER, IN.	Styrene	10.8998
	Dimethyl Phthalate	0.2471
	Methyl Ethyl Ketone	0.0119
QUALITY ACRYLIC BATHS OF CLEARWATER, IN. Total		11.1588
FLORIDA METAL STAMPING INC	Trichloroethylene	7.8650
FLORIDA METAL STAMPING INC Total		7.8650
ESSILOR OF AMERICA INC. MFG. DIV.	Methanol	7.6500
ESSILOR OF AMERICA INC. MFG. DIV. Total		7.6500
SCHNELLER INC., FLORIDA	Methyl Ethyl Ketone	5.2522
	Toluene	1.8373
SCHNELLER INC., FLORIDA Total		7.0895
MEDICO ENVIRONMENTAL SERVICES, INC.	Hydrochloric Acid	6.6940
MEDICO ENVIRONMENTAL SERVICES, INC. Total		6.6940
TRANSITIONS OPTICAL, INC.	Methanol	4.2891
	Glycol Ethers	1.9020
TRANSITIONS OPTICAL, INC. Total		6.1911
ENDEAVOUR CATAMARAN CORPORATION	Styrene	6.1886
ENDEAVOUR CATAMARAN CORPORATION Total		6.1886
Pinellas County/Bridgeway Acres Phase I Landfill	Toluene	3.9832
	Xylenes (Mixture of o, m, and p Isomers)	0.3366
	Methylene Chloride	0.3183
	Benzene	0.2272
	Tetrachloroethylene	0.1621
	Hexane	0.1484
	Methyl Ethyl Ketone	0.1340
	Ethyl Benzene	0.1282
	Vinyl Chloride	0.1202
	Trichloroethylene	0.0971
	Acrylonitrile	0.0880
	Ethylidene Dichloride	0.0609

Pinellas County 2000 Air Toxics Emissions Inventory

Facility Names	HAP Names	Tons/year
	Methyl Isobutyl Ketone	0.0491
	1,1,2,2-Tetrachloroethane	0.0488
	Ethyl Chloride	0.0211
	Methyl Chloroform	0.0168
	Methyl Chloride	0.0160
	Carbon Disulfide	0.0116
	Ethylene Dichloride	0.0106
	1,4-Dichlorobenzene	0.0081
	Carbonyl Sulfide	0.0077
	Chlorobenzene	0.0074
	Propylene Dichloride	0.0053
	Vinylidene Chloride	0.0051
	Chloroform	0.0009
	Carbon Tetrachloride	0.0002
	Ethylene Dibromide (1,2-dibromoethane)	4.92304E-05
Mercury & Compounds	1.53493E-05	
Pinellas County/Bridgeway Acres Phase I Landfill Total		6.0129
HIT PROMOTIONAL PRODS. INC.	Toluene	5.8910
HIT PROMOTIONAL PRODS. INC. Total		5.8910
SPAULDING CRAFT, INC.	Styrene	4.7390
SPAULDING CRAFT, INC. Total		4.7390
MARINE -INDUSTRIAL PAINT CO.	Xylenes (Mixture of o, m, and p Isomers)	4.7000
MARINE -INDUSTRIAL PAINT CO. Total		4.7000
METAL INDUSTRIES, INC.	Glycol Ethers	2.2139
	Xylenes (Mixture of o, m, and p Isomers)	0.8957
	Methyl Isobutyl Ketone	0.3489
	Ethyl Benzene	0.2892
	Toluene	0.1658
	Methanol	0.1382
METAL INDUSTRIES, INC. Total		4.0518
SPA MANUFACTURERS INC.	Styrene	3.6000
SPA MANUFACTURERS INC. Total		3.6000
APAC - FLORIDA, INC. –TAMPA DIVISION	Formaldehyde	1.3910
	Propionaldehyde	0.7535
	Toluene	0.4347
	Benzene	0.2370
	Ethyl Benzene	0.2202
	Naphthalene	0.1796
	Quinone	0.0927
	Xylenes (Mixture of o, m, and p Isomers)	0.0927
	Acetaldehyde	0.0753
	Phosphorus	0.0319
	Acrolein	0.0151
	Methyl Ethyl Ketone	0.0116
	Nickel & Compounds	0.0087
	Chromium & Compounds	0.0070

Pinellas County 2000 Air Toxics Emissions Inventory

Facility Names	HAP Names	Tons/year
	Manganese & Compounds	0.0064
	Arsenic & Compounds (Inorganic Including Arsine)	0.0006
	Cadmium & Compounds	2.6E-05
	Mercury & Compounds	4E-06
APAC - FLORIDA, INC. –TAMPA DIVISION Total		3.5580
DYCO PAINTS INC.	Xylenes (Mixture of o, m, and p Isomers)	2.9690
	Glycol Ethers	0.0895
	Toluene	0.0725
DYCO PAINTS INC. Total		3.1310
R P SCHERER NORTH AMERICA	Methanol	1.6300
	Xylenes (Mixture of o, m, and p Isomers)	0.3854
	Ethyl Benzene	0.0963
	Hexane	0.0733
	Formaldehyde	0.0031
	Toluene	0.0008
	Nickel & Compounds	0.0005
	Benzene	8.6E-05
	Mercury & Compounds	5.8E-05
	Chromium & Compounds	5.6E-05
	Cadmium & Compounds	4.4E-05
	Naphthalene	2.4E-05
	Manganese & Compounds	1.6E-05
	Arsenic & Compounds (Inorganic Including Arsine)	8E-06
R P SCHERER NORTH AMERICA Total		2.1896
FIBRE TECH. INC.	Styrene	2.0500
FIBRE TECH. INC. Total		2.0500
Life Sciences Inc	Hydrochloric Acid	1.6800
	Lead & Compounds	0.0029
	Mercury & Compounds	0.0028
	Cadmium & Compounds	0.0003
	2,3,7,8-TCDD TEQ	5.58E-09
Life Sciences Inc Total		1.6859
CITY OF LARGO – WWTP	Chlordane	1.2651
	Hydrochloric Acid	0.3370
	Cadmium & Compounds	0.0184
	Toluene	0.0153
	Chloroform	0.0084
	Chromium & Compounds	0.0076
	o-Xylene	0.0034
	Tetrachloroethylene	0.0020
	Mercury & Compounds	0.0019
	Ethyl Chloride	0.0018
	Methyl Bromide	0.0017
	Acetonitrile	0.0017
	Bis(2-Ethylhexyl)Phthalate	0.0015
	Acrylonitrile	0.0011
	1,4-Dichlorobenzene	0.0010

Pinellas County 2000 Air Toxics Emissions Inventory

Facility Names	HAP Names	Tons/year
	Ethylidene Dichloride	0.0008
	Polychlorinated Biphenyls	0.0001
	2,4,6-Trichlorophenol	7.9E-05
	Vinylidene Chloride	4.5E-05
CITY OF LARGO - WWTP Total		1.6688
ANVIL PAINTS & COATINGS	Xylenes (Mixture of o, m, and p Isomers)	1.4070
ANVIL PAINTS & COATINGS Total		1.4070
CHARIOT MANUFACTURING	Styrene	1.3544
CHARIOT MANUFACTURING Total		1.3544
ESSILOR OF AMERICA, INC.	Methylene Chloride	1.1385
	Chromium & Compounds	2.0000E-06
ESSILOR OF AMERICA, INC. Total		1.1385
City of Tarpon Springs Landfill	Toluene	0.4323
	Xylenes (Mixture of o, m, and p Isomers)	0.0365
	Methylene Chloride	0.0345
	Benzene	0.0247
	Tetrachloroethylene	0.0176
	Hexane	0.0161
	Methyl Ethyl Ketone	0.0145
	Ethyl Benzene	0.0139
	Vinyl Chloride	0.0130
	Trichloroethylene	0.0105
	Acrylonitrile	0.0096
	Ethylidene Dichloride	0.0066
	Methyl Isobutyl Ketone	0.0053
	1,1,2,2-Tetrachloroethane	0.0053
	Ethyl Chloride	0.0023
	Methyl Chloroform	0.0018
	Methyl Chloride	0.0017
	Carbon Disulfide	0.0013
	Ethylene Dichloride	0.0012
	1,4-Dichlorobenzene	0.0009
	Carbonyl Sulfide	0.0008
	Chlorobenzene	0.0008
	Propylene Dichloride	0.0006
	Vinylidene Chloride	0.0006
	Chloroform	0.0001
	Carbon Tetrachloride	1.74978E-05
	Ethylene Dibromide (1,2-dibromoethane)	5.34237E-06
Mercury & Compounds	1.66567E-06	
City of Tarpon Springs Landfill Total		0.6525
OVERSTREET PAVING COMPANY, INC.	Formaldehyde	0.2486
	Acetaldehyde	0.1346
	Toluene	0.0777
	Benzene	0.0425
	Ethyl Benzene	0.0394
	Naphthalene	0.0321

Pinellas County 2000 Air Toxics Emissions Inventory

Facility Names	HAP Names	Tons/year
	Xylenes (Mixture of o, m, and p Isomers)	0.0166
OVERSTREET PAVING COMPANY, INC. Total		0.5914
COOPER COIL COATING INC.	Naphthalene	0.2835
	Glycol Ethers	0.2810
COOPER COIL COATING INC. Total		0.5645
MAXXIM MEDICAL	Ethylene Oxide	0.5403
MAXXIM MEDICAL Total		0.5403
CATALINA YACHTS	Glycol Ethers	0.4850
	Toluene	0.0021
	Ethyl Benzene	0.0002
CATALINA YACHTS Total		0.4873
CARPENTER TECHNOLOGY CORPORATION	Hydrogen Fluoride	0.4367
CARPENTER TECHNOLOGY CORPORATION Total		0.4367
CLEAR COTE CORPORATION	Methanol	0.1265
	Toluene	0.1155
	Methyl Ethyl Ketone	0.1145
	Styrene	0.0305
	Xylenes (Mixture of o, m, and p Isomers)	0.0105
CLEAR COTE CORPORATION Total		0.3975
TSE INDS. INC.	Toluene	0.3750
TSE INDS. INC. Total		0.3750
P L BARTOW	Formaldehyde	0.2795
	Benzene	0.0080
	Naphthalene	0.0023
	Phenanthrene	6.43114E-05
	Acetaldehyde	4.96845E-05
	Pyrene	1.89151E-05
	Fluoranthene	1.13491E-05
	Fluorene	1.05924E-05
P L BARTOW Total		0.2899
GRAVES SPRAY SUPPLY	Styrene	0.2500
GRAVES SPRAY SUPPLY Total		0.2500
US DEPT. OF ENERGY-GRAND JUNCTION OFFIE	Methylene Chloride	0.0552
	Vinyl Chloride	0.0485
	Trichloroethylene	0.0419
	Toluene	0.0122
US DEPT. OF ENERGY-GRAND JUNCTION OFFIE Total		0.1578
CELOTEX CORPORATION	Methylene Chloride	0.1500
CELOTEX CORPORATION Total		0.1500
126th Avenue Class III Landfill	Toluene	0.0962
	Xylenes (Mixture of o, m, and p Isomers)	0.0081
	Methylene Chloride	0.0077
	Benzene	0.0055
	Tetrachloroethylene	0.0039

Pinellas County 2000 Air Toxics Emissions Inventory

Facility Names	HAP Names	Tons/year
	Hexane	0.0036
	Methyl Ethyl Ketone	0.0032
	Ethyl Benzene	0.0031
	Vinyl Chloride	0.0029
	Trichloroethylene	0.0023
	Acrylonitrile	0.0021
	Ethylidene Dichloride	0.0015
	Methyl Isobutyl Ketone	0.0012
	1,1,2,2-Tetrachloroethane	0.0012
	Ethyl Chloride	0.0005
	Methyl Chloroform	0.0004
	Methyl Chloride	0.0004
	Carbon Disulfide	0.0003
	Ethylene Dichloride	0.0003
	1,4-Dichlorobenzene	0.0002
	Carbonyl Sulfide	0.0002
	Chlorobenzene	0.0002
	Propylene Dichloride	0.0001
	Vinylidene Chloride	0.0001
	Chloroform	2.26618E-05
	Carbon Tetrachloride	3.89345E-06
Ethylene Dibromide (1,2-dibromoethane)	1.18874E-06	
Mercury & Compounds	3.7063E-07	
126th Avenue Class III Landfill Total		0.1452
SUNCOAST PAVING, INC.	Formaldehyde	0.1373
	Naphthalene	0.0019
	Manganese & Compounds	0.0004
	Nickel & Compounds	0.0002
	Chromium & Compounds	3.8E-05
	Cadmium & Compounds	3.6E-05
	Arsenic & Compounds (Inorganic Including Arsine)	2.8E-05
	Mercury & Compounds	1.9E-05
	Selenium & Compounds	4E-06
SUNCOAST PAVING, INC. Total		0.1399
NTU ELECTRONICS, INC.	Hydrochloric Acid	0.0885
	Lead & Compounds	0.0060
NTU ELECTRONICS, INC. Total		0.0945
MORTON PLANT MEASE HEALTH CARE	Hexane	0.0730
	Formaldehyde	0.0030
	Toluene	0.0001
	Nickel & Compounds	8.5E-05
	Benzene	8.5E-05
	Manganese & Compounds	6.1E-05
	Chromium & Compounds	5.7E-05
	Cadmium & Compounds	4.5E-05
	Naphthalene	2.4E-05
Arsenic & Compounds (Inorganic Including Arsine)	8E-06	

Pinellas County 2000 Air Toxics Emissions Inventory

Facility Names	HAP Names	Tons/year
	Mercury & Compounds	7E-06
	Selenium & Compounds	1E-06
MORTON PLANT MEASE HEALTH CARE Total		0.0765
BAYBORO	Formaldehyde	0.0316
	Acetaldehyde	0.0042
	Benzene	0.0004
	Polycyclic Organic Matter	0.0001
BAYBORO Total		0.0362
FPC-BARTOW PLANT	Formaldehyde	0.0306
	Acetaldehyde	0.0040
	Benzene	0.0004
	Polycyclic Organic Matter	0.0001
FPC-BARTOW PLANT Total		0.0351
LIFE-LIKE PRODUCTS,LLC	Hexane	0.0306
	Formaldehyde	0.0013
	Toluene	5.8E-05
	Nickel & Compounds	3.6E-05
	Benzene	3.5E-05
	Chromium & Compounds	2.4E-05
	Cadmium & Compounds	1.9E-05
	Naphthalene	1E-05
	Manganese & Compounds	6E-06
	Arsenic & Compounds (Inorganic Including Arsine)	6E-06
	Mercury & Compounds	4E-06
LIFE-LIKE PRODUCTS,LLC Total		0.0321
Medico Environ. Services, Inc.	Lead & Compounds	0.0202
	Mercury & Compounds	0.0080
	Cadmium & Compounds	0.0028
	2,3,7,8-TCDD TEQ	6.15211E-08
Medico Environ. Services, Inc. Total		0.0310
BAYFRONT MEDICAL CENTER	Naphthalene	0.0088
	Hydrochloric Acid	0.0035
	Lead & Compounds	0.0030
	Cadmium & Compounds	5.2E-05
	Mercury & Compounds	8E-06
	2,3,7,8-TCDD TEQ	9.15624E-09
BAYFRONT MEDICAL CENTER Total		0.0154
THERMOTECH DIVISION OF MENASHA CORP.	Styrene	0.0061
	Phenol	0.0006
	Ethyl Benzene	6.3E-05
	Toluene	2.4E-05
	Formaldehyde	1.4E-05
	Acetophenone	1.3E-05
	Cumene	6E-06
	Methylene Chloride	2E-06
	Benzene	1E-06

Pinellas County 2000 Air Toxics Emissions Inventory

Facility Names	HAP Names	Tons/year
THERMOTECH DIVISION OF MENASHA CORP. Total		0.0068
FPC-HIGGINS PLANT	Formaldehyde	0.0040
	Acetaldehyde	0.0005
	Benzene	4.80122E-05
	Polycyclic Organic Matter	8.50648E-06
FPC-HIGGINS PLANT Total		0.0046
HCI CLEARWATER CHEMICAL CORP.	Chlorine	0.0030
HCI CLEARWATER CHEMICAL CORP. Total		0.0030
LORAD CHEMICAL CORPORATION	Hydrochloric Acid	0.0010
	Hydrogen Fluoride	0.0007
LORAD CHEMICAL CORPORATION Total		0.0017
SONNY GLASBRENNER, INC.	Benzene	7.5200E-04
	Toluene	2.7100E-04
	Xylenes (Mixture of o, m, and p Isomers)	1.8600E-04
	Naphthalene	1.5700E-04
	Acetaldehyde	1.3200E-04
	Formaldehyde	7.6000E-05
	Acrolein	7.0000E-06
SONNY GLASBRENNER, INC. Total		1.5810E-03
Pinellas County Utilities South Cross Bayou WRF	Benzene	5.2639E-04
	Polycyclic Organic Matter	2.4454E-04
	Acetaldehyde	1.5309E-04
	Formaldehyde	6.0730E-05
	Manganese	3.6005E-06
	Arsenic	2.4590E-06
	Beryllium	1.8147E-06
	Chromium	1.8147E-06
Pinellas County Utilities South Cross Bayou WRF Total		9.9444E-04
ACRE IRON & METAL	Benzene	1.3594E-04
	Polycyclic Organic Matter	6.3153E-05
	Acetaldehyde	3.9536E-05
	Formaldehyde	1.5684E-05
	Lead	1.3579E-06
	Manganese	9.2985E-07
	Arsenic	6.3506E-07
	Mercury	4.6899E-07
	Beryllium	4.6867E-07
	Chromium	4.6867E-07
	Cadmium	4.6867E-07
ACRE IRON & METAL Total		2.5912E-04
McKay Creek Wastewater Treatment Facility	Benzene	7.0989E-05
	Polycyclic Organic Matter	3.2978E-05
	Acetaldehyde	2.0646E-05
	Formaldehyde	8.1900E-06

Pinellas County 2000 Air Toxics Emissions Inventory

Facility Names	HAP Names	Tons/year
	Lead	7.0909E-07
	Manganese	4.8556E-07
	Arsenic	3.3162E-07
	Mercury	2.4490E-07
	Beryllium	2.4473E-07
	Chromium	2.4473E-07
	Cadmium	2.4473E-07
McKay Creek Wastewater Treatment Facility Total		1.3531E-04
Northwest Reclamation Facility	Benzene	7.0989E-05
	Polycyclic Organic Matter	3.2978E-05
	Acetaldehyde	2.0646E-05
	Formaldehyde	8.1900E-06
	Lead	7.0909E-07
	Manganese	4.8556E-07
	Arsenic	3.3162E-07
	Mercury	2.4490E-07
	Beryllium	2.4473E-07
	Chromium	2.4473E-07
	Cadmium	2.4473E-07
Northwest Reclamation Facility Total		1.3531E-04
ENVIRONMENTAL RESOURCE RECOVERY, INC.	Benzene	5.3914E-05
	Polycyclic Organic Matter	2.5046E-05
	Acetaldehyde	1.5680E-05
	Formaldehyde	6.2201E-06
	Lead	5.3854E-07
	Manganese	3.6877E-07
	Arsenic	2.5186E-07
	Mercury	1.8600E-07
	Beryllium	1.8587E-07
	Chromium	1.8587E-07
Cadmium	1.8587E-07	
ENVIRONMENTAL RESOURCE RECOVERY, INC. Total		1.0276E-04
HONEYWELL INTERNATIONAL	Beryllium & Compounds	8.8000E-05
HONEYWELL INTERNATIONAL Total		8.8000E-05
CONTOUR FABRICATORS OF FLORIDA, INC.	Ethylene Oxide	4.0000E-06
CONTOUR FABRICATORS OF FLORIDA, INC. Total		4.0000E-06
VAL-PAK DIRECT MARKETING SYSTEMS, INC.	Lead & Compounds	2.0000E-06
VAL-PAK DIRECT MARKETING SYSTEMS, INC. Total		2.0000E-06
Interprint, Inc.	Arsenic	4.7300E-07
	Formaldehyde	1.7383E-07
	Toluene	7.8825E-09
	Nickel	4.8695E-09
	Chromium	3.2471E-09
	Naphthalene	1.4143E-09

Pinellas County 2000 Air Toxics Emissions Inventory

Facility Names	HAP Names	Tons/year
	Lead	1.1589E-09
	Manganese	8.8215E-10
	Cobalt	1.9393E-10
Interprint, Inc. Total		6.6648E-07
Grand Total		583.3618

Appendix C: Pinellas County 2000 HAPs Area Source Report Plan

This plan is for reporting the 2000 Area source HAP inventory to EPA's NTI and to create a structure for future HAPs Inventory Reports for Pinellas County. This plan is also suitable for assimilating data for criteria pollutants.

References

- Speciate Version 3.1
- Fire Version 6.23
- AP-42
- EIIP documents
- Locating and Estimating Document
- 1996 National Toxic Inventory Document

Data Handling

AQ Access, Excel Spreadsheets.

Input to AQ Access

Facility Information

- Facility Names (Source Categories)
- Employee Name: Pwu-Sheng Liu
- Section: Planning
- Status: a (Area Sources)
- AOR: 2 (SIP inventory)
- County: 103; Federal Information Processing Standards (FIPS) code for Pinellas County.

Permit Information

- Source Names (Subcategories' names)
- Permit# (Number of Days per Week)
- Comments (Seasonal Activity Factor)

AOR/SIP Input Form

- SCC Search: Source Classification Codes for Area Sources
- POL Code: Pollutant Codes from AQ Access Database
- Employee: Liu, Pwu-Sheng - 31196
- Inv Year: 2000
Calendar Year for Inventory
- Inv. Type: 2
2 (SIP Input)
- AQD EF SRC
Air Quality Division Emission Factor Sources: Include Fire, Mass Balance, CEMS (Continuous Emission Monitoring System), CFA, UEF, Permit, Styrene Spreadsheet, Stack Test, and other.

- AnnProcRate
Annual Process Rate: Area Source Activity Levels
- %PollFtr
Pollutant Fraction
- EF Current
Emission Factor Used for Calculation
- Comments
Description of the emissions calculation, and references.

Output Format

Query data from AQ Access; make table, then import to Excel Spreadsheet

The linked tables and field names from the Microsoft query are shown on the next page.

Data needed from AQ Access:

Facility Information

- Facility names (Source Categories)

Permit Information

- Source Names (Subcategories' names)

AOR/SIP Emissions Info

- **Chem Cat: HAPs (Query HAPs only)**
- **SCC Code**
- **CAS No**
Chemical Abstract Service Number
- **POL Code**
- **POL Names**
Pollutant Names
- **AnnProcRate**
- **EF Current**
- **%PollFtr**
- **Tons/year**
Pollutant Emissions in Tons/year
- **Comments**

Report Format

Excel Spreadsheet Subtotals HAPs in tons/year by

- Facility names (Source Categories) – table with total HAPs in tons/year,
- Source Names (Subcategories' names) – table with Source Names SCC, HAPs in tons/year,
- Individual HAPs, Tons/year

Graphs

- Top ten HAPs for the County
- Top ten Source Categories for the County
- Tons/year by NATA HAPs (with dual NATA concentrations)

Microsoft Query - [Query from MS Access Database]

File Edit View Format Table Criteria Records Window Help

SQL [Icons]

Table	Field	Relationship
EFACATOR	EFACT_ID	EFACT_ID (FAC_CHEM)
FAC_CHEM	Fchem_ID	Fchem_ID (FACILITY)
FACILITY	Fac_ID#	Fac_ID# (PERMITS)
FIRE_POL	POL_CODE	POL_CODE (FAC_CHEM)
FIRE_SCC	SCC_CODE	SCC_CODE (FAC_CHEM)

Criteria Field: Status Inv_Yr Urban Toxics
 Value: 'a' '2000' Is Not Null
 or:

Select File Return Data to Microsoft Excel to return data to client application

Start [Icons] 9:48 AM

Appendix D: Non-Road HAPs Emissions by Sources

SCC3_DESC	Emission Process Description	Tons/year	
Pleasure Craft	Mobile Sources, Pleasure Craft, Gasoline 2-Stroke, Outboard	503.4879	
	Mobile Sources, Pleasure Craft, Gasoline 2-Stroke, Personal Water Craft	281.2323	
	Mobile Sources, Pleasure Craft, Gasoline 4-Stroke, Inboard/Sterndrive	34.9043	
	Mobile Sources, Pleasure Craft, Diesel, Inboard/Sterndrive	0.6668	
	Mobile Sources, Pleasure Craft, Diesel, Outboard	0.0341	
Pleasure Craft Total		820.3254	
Off-highway Vehicle Gasoline, 2-Stroke	Lawn and Garden Equipment, Chain Saws < 6 HP (Commercial)	138.4975	
	Lawn and Garden Equipment, Leafblowers/Vacuums (Commercial)	131.0806	
	Lawn and Garden Equipment, Trimmers/Edgers/Brush Cutters (Commercial)	131.0580	
	Recreational Equipment, Motorcycles: Off-road	73.1261	
	Lawn and Garden Equipment, Trimmers/Edgers/Brush Cutters (Residential)	39.4362	
	Recreational Equipment, Offroad Motorcycles/ATVs	31.3191	
	Off-highway Vehicle Gasoline, 2-Stroke, Commercial Equipment, Pumps	29.8705	
	Lawn and Garden Equipment, Leafblowers/Vacuums (Residential)	26.8310	
	Lawn and Garden Equipment, Chain Saws < 6 HP (Residential)	23.0862	
	Construction and Mining Equipment, Concrete/Industrial Saws	19.1683	
	Lawn and Garden Equipment, Rotary Tillers < 6 HP (Commercial)	14.0242	
	Construction and Mining Equipment, Tampers/Rammers	6.8493	
	Off-highway Vehicle Gasoline, 2-Stroke, Commercial Equipment, Generator Sets	3.8946	
	Recreational Equipment, Specialty Vehicles/Carts	2.2043	
	Lawn and Garden Equipment, Rotary Tillers < 6 HP (Residential)	2.1056	
	Construction and Mining Equipment, Paving Equipment	0.5394	
	Construction and Mining Equipment, Plate Compactors	0.4466	
	Industrial Equipment, Sweepers/Scrubbers	0.3070	
	Construction and Mining Equipment, Crushing/Processing Equipment	0.1127	
	Lawn and Garden Equipment, Turf Equipment (Commercial)	0.0597	
	Industrial Equipment, Other General Industrial Equipment	0.0238	
	Off-highway Vehicle Gasoline, 2-Stroke, Commercial Equipment, Air Compressors	0.0123	
	Construction and Mining Equipment, Signal Boards/Light Plants	0.0038	
	Off-highway Vehicle Gasoline, 2-Stroke, Agricultural Equipment, Sprayers	0.0008	
	Agricultural Equipment, Hydro-power Units	0.0001	
	Off-highway Vehicle Gasoline, 2-Stroke Total		674.0577
	Off-highway Vehicle Gasoline, 4-Stroke	Lawn and Garden Equipment, Turf Equipment (Commercial)	116.0238
Lawn and Garden Equipment, Lawn Mowers (Residential)		59.0565	
Lawn and Garden Equipment, Lawn and Garden Tractors (Residential)		55.3483	
Off-highway Vehicle Gasoline, 4-Stroke, Commercial Equipment, Generator Sets		55.1417	
Lawn and Garden Equipment, Lawn Mowers (Commercial)		52.9219	
Lawn and Garden Equipment, Rotary Tillers < 6 HP (Commercial)		32.4746	
Lawn and Garden Equipment, Lawn and Garden Tractors (Commercial)		31.9340	
Off-highway Vehicle Gasoline, 4-Stroke, Commercial Equipment, Pressure Washers		30.8721	
Lawn and Garden Equipment, Leafblowers/Vacuums (Commercial)		22.1529	
Off-highway Vehicle Gasoline, 4-Stroke, Commercial Equipment, Pumps		18.1281	

SCC3_DESC	Emission Process Description	Tons/year
	Off-highway Vehicle Gasoline, 4-Stroke, Commercial Equipment, Welders	13.1226
	Off-highway Vehicle Gasoline, 4-Stroke, Recreational Equipment, Golf Carts	8.9199
	Lawn and Garden Equipment, Other Lawn and Garden Equipment (Commercial)	8.1254
	Off-highway Vehicle Gasoline, 4-Stroke, Commercial Equipment, Air Compressors	8.0658
	Recreational Equipment, Offroad Motorcycles/ATVs	7.5407
	Off-highway Vehicle Gasoline, 4-Stroke, Industrial Equipment, Forklifts	6.0731
	Lawn and Garden Equipment, Chippers/Stump Grinders (Commercial)	5.8803
	Industrial Equipment, Other General Industrial Equipment	4.9082
	Lawn and Garden Equipment, Rotary Tillers < 6 HP (Residential)	4.8670
	Lawn and Garden Equipment, Other Lawn and Garden Equipment (Residential)	4.4392
	Lawn and Garden Equipment, Shredders < 6 HP (Commercial)	4.1506
	Lawn and Garden Equipment, Rear Engine Riding Mowers (Residential)	4.1435
	Lawn and Garden Equipment, Front Mowers (Commercial)	3.1717
	Construction and Mining Equipment, Concrete/Industrial Saws	2.3901
	Lawn and Garden Equipment, Rear Engine Riding Mowers (Commercial)	2.2535
	Off-highway Vehicle Gasoline, 4-Stroke, Industrial Equipment, Aerial Lifts	1.9079
	Recreational Equipment, Specialty Vehicles/Carts	1.8946
	Construction and Mining Equipment, Cement and Mortar Mixers	1.8383
	Industrial Equipment, Sweepers/Scrubbers	1.6718
	Construction and Mining Equipment, Paving Equipment	1.6364
	Construction and Mining Equipment, Trenchers	1.3847
	Recreational Equipment, Motorcycles: Off-road	1.2250
	Construction and Mining Equipment, Plate Compactors	1.1842
	Lawn and Garden Equipment, Trimmers/Edgers/Brush Cutters (Commercial)	0.9336
	Construction and Mining Equipment, Tractors/Loaders/Backhoes	0.7072
	Construction and Mining Equipment, Bore/Drill Rigs	0.7020
	Construction and Mining Equipment, Surfacing Equipment	0.6662
	Construction and Mining Equipment, Rollers	0.6271
	Industrial Equipment, Terminal Tractors	0.6246
	Lawn and Garden Equipment, Leafblowers/Vacuums (Residential)	0.5681
	Construction and Mining Equipment, Skid Steer Loaders	0.5152
	Construction and Mining Equipment, Pavers	0.3631
	Construction and Mining Equipment, Rubber Tire Loaders	0.3282
	Lawn and Garden Equipment, Trimmers/Edgers/Brush Cutters (Residential)	0.2804
	Construction and Mining Equipment, Dumpers/Tenders	0.2308
	Construction and Mining Equipment, Crushing/Processing Equipment	0.1802
	Industrial Equipment, Other Material Handling Equipment	0.1549
	Construction and Mining Equipment, Rough Terrain Forklifts	0.1350
	Construction and Mining Equipment, Other Construction Equipment	0.1179
	Airport Ground Support Equipment, Airport Ground Support Equipment	0.1090
	Construction and Mining Equipment, Cranes	0.0849
	Off-highway Vehicle Gasoline, 4-Stroke, Industrial Equipment, AC\Refrigeration	0.0755
	Construction and Mining Equipment, Signal Boards/Light Plants	0.0439
	Construction and Mining Equipment, Tampers/Rammers	0.0027
	Off-highway Vehicle Gasoline, 4-Stroke, Agricultural Equipment, Tillers > 6 HP	0.0022
	Off-highway Vehicle Gasoline, 4-Stroke, Agricultural Equipment, Sprayers	0.0013

SCC3_DESC	Emission Process Description	Tons/year
	Agricultural Equipment, Irrigation Sets	0.0008
	Agricultural Equipment, Hydro-power Units	0.0007
	Agricultural Equipment, Other Agricultural Equipment	0.0006
	Off-highway Vehicle Gasoline, 4-Stroke, Agricultural Equipment, Swathers	0.0004
	Agricultural Equipment, Agricultural Tractors	0.0004
	Off-highway Vehicle Gasoline, 4-Stroke, Agricultural Equipment, Balers	0.0003
	Agricultural Equipment, 2-Wheel Tractors	0.0001
	Agricultural Equipment, Agricultural Mowers	0.0001
	Off-highway Vehicle Gasoline, 4-Stroke Total	582.3058
Off-highway Vehicle Diesel	Construction and Mining Equipment, Tractors/Loaders/Backhoes	10.6716
	Construction and Mining Equipment, Skid Steer Loaders	8.5577
	Construction and Mining Equipment, Crawler Tractor/Dozers	7.8472
	Construction and Mining Equipment, Rubber Tire Loaders	7.1293
	Lawn and Garden Equipment, Front Mowers (Commercial)	6.2913
	Off-highway Vehicle Diesel, Industrial Equipment, AC\Refrigeration	5.3283
	Construction and Mining Equipment, Off-highway Trucks	5.2179
	Off-highway Vehicle Diesel, Construction and Mining Equipment, Excavators	5.0530
	Off-highway Vehicle Diesel, Commercial Equipment, Generator Sets	4.7821
	Mobile Sources, Off-highway Vehicle Diesel, Commercial Equipment, Welders	3.6609
	Off-highway Vehicle Diesel, Commercial Equipment, Air Compressors	2.3554
	Construction and Mining Equipment, Rough Terrain Forklifts	2.3219
	Mobile Sources, Off-highway Vehicle Diesel, Industrial Equipment, Forklifts	1.8091
	Off-highway Vehicle Diesel, Construction and Mining Equipment, Rollers	1.6958
	Lawn and Garden Equipment, Turf Equipment (Commercial)	1.6953
	Off-highway Vehicle Diesel, Construction and Mining Equipment, Graders	1.6658
	Off-highway Vehicle Diesel, Construction and Mining Equipment, Scrapers	1.5793
	Lawn and Garden Equipment, Chippers/Stump Grinders (Commercial)	1.1038
	Off-highway Vehicle Diesel, Construction and Mining Equipment, Cranes	1.0191
	Mobile Sources, Off-highway Vehicle Diesel, Commercial Equipment, Pumps	1.0114
	Off-highway Vehicle Diesel, Industrial Equipment, Sweepers/Scrubbers	0.9756
	Industrial Equipment, Other General Industrial Equipment	0.9485
	Off-highway Vehicle Diesel, Industrial Equipment, Terminal Tractors	0.9170
	Off-highway Vehicle Diesel, Construction and Mining Equipment, Trenchers	0.9152
	Off-highway Vehicle Diesel, Construction and Mining Equipment, Bore/Drill Rigs	0.8511
	Lawn and Garden Equipment, Lawn and Garden Tractors (Commercial)	0.8420
	Construction and Mining Equipment, Other Construction Equipment	0.7545
	Off-highway Vehicle Diesel, Recreational Equipment, Specialty Vehicles/Carts	0.5508
	Off-highway Vehicle Diesel, Construction and Mining Equipment, Pavers	0.5477
	Construction and Mining Equipment, Off-highway Tractors	0.5464
	Mobile Sources, Off-highway Vehicle Diesel, Industrial Equipment, Aerial Lifts	0.5283
	Construction and Mining Equipment, Crushing/Processing Equipment	0.2537
	Airport Ground Support Equipment, Airport Ground Support Equipment	0.2448
Construction and Mining Equipment, Signal Boards/Light Plants	0.2346	
Off-highway Vehicle Diesel, Commercial Equipment, Pressure Washers	0.1412	
Construction and Mining Equipment, Paving Equipment	0.1392	
Industrial Equipment, Other Material Handling Equipment	0.0926	

SCC3_DESC	Emission Process Description	Tons/year
	Construction and Mining Equipment, Concrete/Industrial Saws	0.0716
	Construction and Mining Equipment, Cement and Mortar Mixers	0.0456
	Construction and Mining Equipment, Surfacing Equipment	0.0447
	Off-highway Vehicle Diesel, Agricultural Equipment, Agricultural Tractors	0.0372
	Construction and Mining Equipment, Plate Compactors	0.0304
	Off-highway Vehicle Diesel, Construction and Mining Equipment, Dumpers/Tenders	0.0173
	Lawn and Garden Equipment, Other Lawn and Garden Equipment (Commercial)	0.0118
	Off-highway Vehicle Diesel, Commercial Equipment, Gas Compressors	0.0038
	Mobile Sources, Off-highway Vehicle Diesel, Agricultural Equipment, Combines	0.0020
	Agricultural Equipment, Other Agricultural Equipment	0.0008
	Off-highway Vehicle Diesel, Agricultural Equipment, Irrigation Sets	0.0006
	Mobile Sources, Off-highway Vehicle Diesel, Agricultural Equipment, Sprayers	0.0004
	Lawn and Garden Equipment, Leafblowers/Vacuums (Commercial)	0.0002
	Mobile Sources, Off-highway Vehicle Diesel, Agricultural Equipment, Swathers	0.0002
	Off-highway Vehicle Diesel, Agricultural Equipment, Hydro-power Units	0.0001
	Mobile Sources, Off-highway Vehicle Diesel, Agricultural Equipment, Balers	3.45E-05
	Off-highway Vehicle Diesel, Agricultural Equipment, 2-Wheel Tractors	1.91E-06
	Off-highway Vehicle Diesel, Agricultural Equipment, Agricultural Mowers	2.88E-08
	Off-highway Vehicle Diesel Total	90.5460
Railroad Equipment	Mobile Sources, Railroad Equipment, Diesel, Railway Maintenance	0.5162
	Mobile Sources, Railroad Equipment, Gasoline, 4-Stroke, Railway Maintenance	0.1557
	Railroad Equipment Total	0.6719
Grand Total		2167.9068

Appendix E: On-Road HAPs Emissions by Sources

SCC3_DESC	SCC6_DESC	SCC8_DESC	Tons/year	
Highway Vehicles – Gasoline	Light Duty Gasoline Vehicles (LDGV)	Urban Other Principal Arterial: Total	761.478	
		Urban Local: Total	682.3744	
		Urban Interstate: Total	374.5293	
		Urban Minor Arterial: Total	360.8475	
		Urban Collector: Total	338.3293	
		Urban Other Freeways and Expressways: Total	63.58794	
		Rural Local: Total	1.491285	
	Light Duty Gasoline Vehicles (LDGV) Total			2582.638
	Light Duty Gasoline Trucks 1 & 2 (M6) = LDGT1 (M5)	Urban Other Principal Arterial: Total	334.9997	
		Urban Local: Total	290.2467	
		Urban Interstate: Total	164.6137	
		Urban Minor Arterial: Total	158.7489	
		Urban Collector: Total	148.8423	
		Urban Other Freeways and Expressways: Total	27.94824	
		Rural Local: Total	0.70856	
	Light Duty Gasoline Trucks 1 & 2 (M6) = LDGT1 (M5) Total			1126.108
	Light Duty Gasoline Trucks 3 & 4 (M6) = LDGT2 (M5)	Urban Other Principal Arterial: Total	176.8467	
		Urban Local: Total	151.1452	
		Urban Interstate: Total	86.14775	
		Urban Minor Arterial: Total	83.80378	
		Urban Collector: Total	78.57408	
		Urban Other Freeways and Expressways: Total	14.62623	
		Rural Local: Total	0.37757	
	Light Duty Gasoline Trucks 3 & 4 (M6) = LDGT2 (M5) Total			591.5213
	Heavy Duty Gasoline Vehicles 2B thru 8B & Buses (HDGV)	Urban Other Principal Arterial: Total	88.54651	
		Urban Local: Total	73.60101	
		Urban Minor Arterial: Total	41.96023	
Urban Collector: Total		39.34204		
Urban Interstate: Total		21.56445		
Urban Other Freeways and Expressways: Total		3.66132		
Rural Local: Total		0.161035		

Pinellas County 2000 Air Toxics Emissions Inventory

SCC3_DESC	SCC6_DESC	SCC8_DESC	Tons/year
	Heavy Duty Gasoline Vehicles 2B thru 8B & Buses (HDGV) Total		268.8366
	Motorcycles (MC)	Urban Other Principal Arterial: Total	7.263745
		Urban Local: Total	6.59117
		Urban Minor Arterial: Total	3.44213
		Urban Collector: Total	3.22729
		Urban Interstate: Total	3.182595
		Urban Other Freeways and Expressways: Total	0.540355
		Rural Local: Total	0.016795
	Motorcycles (MC) Total		24.26408
Highway Vehicles - Gasoline Total			4593.368
Highway Vehicles - Diesel	Heavy Duty Diesel Vehicles (HDDV) Class 8A & 8B	Urban Other Principal Arterial: Total	21.79536
		Urban Local: Total	17.15734
		Urban Minor Arterial: Total	10.32836
		Urban Collector: Total	9.683805
		Urban Interstate: Total	6.889395
		Urban Other Freeways and Expressways: Total	1.169685
		Rural Local: Total	0.093765
	Heavy Duty Diesel Vehicles (HDDV) Class 8A & 8B Total		67.11771
	Heavy Duty Diesel Vehicles (HDDV) Class 6 & 7	Urban Other Principal Arterial: Total	5.14075
		Urban Local: Total	4.04658
		Urban Minor Arterial: Total	2.43607
		Urban Collector: Total	2.284085
		Urban Interstate: Total	1.62565
		Urban Other Freeways and Expressways: Total	0.27598
		Rural Local: Total	0.014295
	Heavy Duty Diesel Vehicles (HDDV) Class 6 & 7 Total		15.82341
	Heavy Duty Diesel Vehicles (HDDV) Class 2B	Urban Other Principal Arterial: Total	1.696915
		Urban Local: Total	1.335585
		Urban Minor Arterial: Total	0.80412
		Urban Collector: Total	0.75395
		Urban Interstate: Total	0.53733

Pinellas County 2000 Air Toxics Emissions Inventory

SCC3_DESC	SCC6_DESC	SCC8_DESC	Tons/year
		Urban Other Freeways and Expressways: Total	0.09123
		Rural Local: Total	0.002875
	Heavy Duty Diesel Vehicles (HDDV) Class 2B Total		5.222005
	Heavy Duty Diesel Vehicles (HDDV) Class 3, 4, & 5	Urban Other Principal Arterial: Total	1.175665
		Urban Local: Total	0.9254
		Urban Minor Arterial: Total	0.55712
		Urban Collector: Total	0.522375
		Urban Interstate: Total	0.37166
		Urban Other Freeways and Expressways: Total	0.063095
		Rural Local: Total	0.003265
	Heavy Duty Diesel Vehicles (HDDV) Class 3, 4, & 5 Total		3.61858
	Heavy Duty Diesel Buses (School & Transit)	Urban Other Principal Arterial: Total	0.96404
		Urban Local: Total	0.758625
		Urban Minor Arterial: Total	0.456855
		Urban Collector: Total	0.428325
		Urban Interstate: Total	0.30593
		Urban Other Freeways and Expressways: Total	0.051935
		Rural Local: Total	0.003985
	Heavy Duty Diesel Buses (School & Transit) Total		2.969695
	Light Duty Diesel Trucks 1 thru 4 (M6) (LDDT)	Urban Other Principal Arterial: Total	0.76293
		Urban Local: Total	0.655235
		Urban Minor Arterial: Total	0.36154
		Urban Collector: Total	0.338945
		Urban Interstate: Total	0.335105
		Urban Other Freeways and Expressways: Total	0.056875
		Rural Local: Total	0.00155
	Light Duty Diesel Trucks 1 thru 4 (M6) (LDDT) Total		2.51218
	Light Duty Diesel Vehicles (LDDV)	Urban Other Principal Arterial: Total	0.53514
		Urban Local: Total	0.4709
		Urban Minor Arterial: Total	0.253585
		Urban Collector: Total	0.23775
		Urban Interstate: Total	0.221275

Pinellas County 2000 Air Toxics Emissions Inventory

SCC3_DESC	SCC6_DESC	SCC8_DESC	Tons/year
		Urban Other Freeways and Expressways: Total	0.03758
		Rural Local: Total	0.000995
	Light Duty Diesel Vehicles (LDDV) Total		1.757225
Highway Vehicles - Diesel Total			99.0208
Grand Total			4692.389