



**pennsylvania**  
DEPARTMENT OF ENVIRONMENTAL  
PROTECTION

**INSTRUCTIONS FOR SUBMITTING AIR QUALITY  
EMISSION INVENTORY**

Commonwealth of Pennsylvania  
Department of Environmental Protection  
Bureau of Air Quality

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*Note:* This booklet contains the instructions for completing emission inventory submittals. These instructions have been prepared to assist the owners/operators in reporting their emissions data. These instructions are not regulations. The Department reserves the right to modify these instructions as needed. *Please save this booklet for future reference.* If you have questions about the Annual Emission Statement, please contact your Regional Air Quality staff.

This booklet is available electronically via the Internet. You may access it at <http://www.dep.pa.gov/Business/Air/BAQ/BusinessTopics/Emission>.

# 1. Background

## 1.1 Annual Emission Statement Background

In accordance with 40 CFR Part 51, Subpart A, states are required to report state-wide air emissions to the United States Environmental Agency (EPA) every year. This annual air quality emission inventory is submitted in accordance with EPA's Consolidated Emission Reporting Requirement (CERR) (Federal Register, June 10, 2002) (67 FR 39602). The CERR details specific reporting requirements and intervals for various types of inventories and air emissions reported. Every year states are required to report point sources meeting certain thresholds for large emitters. Every third year, states are required to submit a complete inventory for all point, nonpoint, mobile, and non-road sources.

In accordance with Section 4(3) of the Pennsylvania Air Pollution Control Act (35 P.S. Section 4004(3)) and 25 Pa. Code Chapter 135, Section 135.3 (relating to reporting sources), the Pennsylvania Department of Environmental Protection (DEP or Department) is authorized to collect air quality emissions inventories. The purpose of the Chapter 135 reporting requirement is to, among other things, provide a means of obtaining data to evaluate the effectiveness of regulations, to maintain an accurate inventory of air contaminant emissions for air quality assessment and planning, and to provide a means of determining emissions fees.

The Annual Emission Statement (AES) requires information to satisfy several regulatory requirements. These requirements include Title V permitting (Pennsylvania Code, Title 25, Chapter 127), the Annual Inventory and Emission Statements (Pennsylvania Code, Title 25, Chapter 135.1-135.5), as well as other regulations that are part of the State Implementation Plan (SIP). The Annual Inventory and Emission Statement information is due March 1 for the previous calendar year or within 60 days of the date the facility's owner/operator is notified by the Department that the facility is subject, whichever is later.

These instructions are primarily for the purpose of providing guidance on the use of the electronic AES reporting options. Two electronic reporting applications are available to submit the emission inventory data. These systems are AES\*Online and AES\*XML (see Section 1.3 below).

Some minor facilities' data will be reviewed and filed, while other significant facilities will be reviewed and entered into the Department's emission inventory database (AIMS/eFACTS). Refer to Section 2, below, for detailed guidance. Regional Air Quality Staff (RAQ) ultimately determines which facilities will be placed in AIMS and be required to be reported in the emissions inventory.

When a facility is created in AIMS and determined to be subject to emissions inventory submittals, RAQ staff create and build connections for fuel material locations, subfacilities (emission sources), control devices, and stacks. Source Classification Codes (SCC) are assigned to each subfacility. These subfacilities and connections are regenerated each inventory year. If subfacilities change or are added, RAQ staff update AIMS, which subsequently changes AES\*Online and AES\*XML submittal pages.

Facilities starting to report electronically will be provided with instructions for registering for access to the electronic submittal portal. This registration remains in effect for subsequent years.

Once data have been submitted through AES\*Online or AES\*XML, RAQ staff review the submission for incorrect or missing data before the data are accepted into AIMS/eFACTS. Once the data have been accepted, QA/QC reports are run to look for additional questionable data.

Once the operating schedules, throughputs, and facility emission estimates have been transferred in, AIMS/eFACTS calculates the emissions using SCC factors. If the AIMS/eFACTS and facility estimates do not match, RAQ staff may work with the facility's owner/operator to determine if corrections are needed. AIMS/eFACTS may contain multiple emission estimates for a specific pollutant from a specific subfacility. Acceptable calculation methods include stack tests, Continuous Emission Monitoring (CEM) data, material balance calculations, industry-specific emission factors, and AP-42 emission factors (See Section 4.2), to list some examples. CEM and stack test data are usually the most reliable and should be used before any other method.

Some uses for AIMS/eFACTS data include Emissions Reductions Credits, Open Market Trading, regulation evaluation, development of State Implementation Plans (SIP), and modeling. A variety of standard and custom reports can be run on AIMS/eFACTS by DEP staff. AIMS/eFACTS data are provided to the federal Emissions Inventory System (EIS) database. These data are also available to other state agencies and the public upon request (See Chapter 6, Confidentiality).

## **1.2 Paper Reporting**

Starting with the 2018 Emission Inventory, the Department is requiring all facilities subject to reporting requirements under 25 Pa. Code § 135.3 report their emission inventory electronically through either the AES\*Online or AES\*XML applications (see section 1.3 – Electronic Reporting). This change was published in the PA Bulletin, [\[47 Pa. B. 3435\]](#), on June 17, 2017.

## **1.3 Electronic Reporting**

Electronic reporting information such as upcoming training (when scheduled) and registration forms are available from the DEP website at <http://www.dep.pa.gov/Business/Air/BAQ/BusinessTopics/Emission>.

Contact Robert Bihl at 717-772-3950 or through electronic mail at [rbihl@pa.gov](mailto:rbihl@pa.gov) to request electronic reporting information, including registration forms to request access to the services.

### **1.3.1 Web-based Reporting Forms**

The Bureau of Air Quality's (BAQ's) web-based reporting application is called **AES\*Online**. **AES\*Online** allows a facility's owner/operator to enter data on an Internet web site through an ordinary web browser. **AES\*Online** users no longer need to fill out paper forms. Facility users log in to a series of secure screens and enter their facility's inventory data. **AES\*Online** automatically fills in fields, where applicable, from the inventory map and from previous years' submissions. It also checks the data as it is entered to ensure accuracy. Additionally, **AES\*Online** includes the ability to add notes to the data and exchange correspondence with RAQ staff. **AES\*Online** provides a unique navigation system to allow the user to move between screen forms with ease. After RAQ staff review the submission, entries that need clarification are highlighted by the system so that the facility user can immediately verify the data without having to scroll through unnecessary screens. Data are automatically saved as each screen form is completed to prevent loss of data if the Internet connection is broken.

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**AES\*Online** requires Internet access. A GreenPort account with access to **AES\*Online** must be created (see contact information in 1.2, above) to gain access to the specific application for your facility. If your data management system is maintained in spreadsheets or databases, you may want to explore the entirely automated eXtensible Markup Language (XML) option instead of **AES\*Online**.

### 1.3.2 eXtensible Markup Language (XML)

**AES\*XML** requires Internet access. A GreenPort account with access to **AES\*XML** must be created (see contact in 1.2, above) to gain access to the specific application for your facility. XML provides a common language that allows dissimilar computer systems to share data. XML surrounds each piece of data with tags, similar to the way a web browser displays a page from the Internet. Software, called a parser, uses these tags to interpret the data. Many different software companies offer parsers for a variety of prices. An XML parser is bundled into Microsoft Office tools. XML uses a Document Type Definition (DTD) to establish the data content and tags for a specific file or document. BAQ has developed a DTD that defines the AES data and tags. A company that wishes to submit XML data to BAQ must request a copy of the DTD and configure their parser to translate the BAQ DTD. Files in XML format are transferred to DEP over the Internet using DEP's AES\*XML application. The XML standards and sample files are available for download by going to the DEP emissions website <http://www.dep.pa.gov/Business/Air/BAQ/BusinessTopics/Emission>.

Useful links for more information on XML:

<http://www.w3.org>

<http://msdn.Microsoft.com/xml/>

## 2. Determining Which Facilities Belong In the Emissions Inventory

These guidelines address the inventory requirements of Title V, the Annual Inventory, Emission Statements and other regulations that are part of the approved SIP. The regulations can be found at <http://www.pacode.com>. The Title V regulation is found in the Pennsylvania Code, Title 25, Chapter 127. The Annual Inventory regulation is found in the Pennsylvania Code, Title 25, Chapter 135.1-135.5. The Emission Statement regulation is found in Pennsylvania Code, Title 25, Chapter 135.21. The definition of the term "Title V Facility" can be found in the Pennsylvania Code, Title 25, Chapter 121.1. Exemptions from state operating permits can be found at <http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-96215/275-2101-003.pdf>. For information on permitting, contact BAQ Division of Permits at 717-787-4325.

Owners/operators of facilities that wish to generate or trade Emission Reduction Credits (ERCs) will need to document emissions. The AES is one way to do this. All owners/operators of facilities have the option of submitting the AES for ERC purposes. If the facility's owner/operator does not submit the AES, the facility's owner/operator should at least maintain sufficient production records to be able to reconstruct emissions for ERC purposes and for audits.

The emissions from any facility that is not required to submit annual inventory forms are captured in the Nonpoint Source inventory, which is calculated using demographics and emission factors. This includes the data from the Department's Oil and Gas inventory for those facilities that are not in the AIMS point source inventory. For information on nonpoint source

inventory, contact Robert Bonner at 717-772-3429 or through electronic mail at [rbonner@pa.gov](mailto:rbonner@pa.gov).

Any emissions that are below the source reporting thresholds for facilities that are subject to the annual inventory and are not reported will be calculated by BAQ using emission factors. Owners/operators of facilities have the option of submitting emission estimates for emissions below the source thresholds if the facility's estimate is better than the factor-generated numbers.

## **2.1 Title V Facilities**

All owners/operators of Title V facilities must complete an emissions inventory and have their information put into AIMS/eFACTS. Owners/operators of Title V facilities are subject to the annual emission inventory reporting because, by definition, they exceed the reporting thresholds in the Emission Statement and SIP regulations. Inventory information from Title V facilities is used for emission fee purposes and, in combination with other information, to demonstrate compliance with permit emission limits and other operating limits. RAQ staff determines which subfacilities will appear on the AIMS/eFACTS reporting forms. In some cases, the facility's owner/operator and RAQ staff may agree to treat multiple pieces of related equipment as one subfacility in the Title V permit. The facility's owner/operator must provide operating schedules and throughputs for all subfacilities on the forms. Ammonia (NH<sub>3</sub>), carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), PM<sub>10</sub> (filterable), PM<sub>2.5</sub> (filterable), PM-Con (condensable), sulfur oxides (SO<sub>x</sub>), and volatile organic compounds (VOC) emissions of 1.0 ton per year or more per subfacility must be reported on a subfacility by subfacility basis. The greenhouse gases (GHGs) carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O) must be reported, where applicable, for each subfacility that reports criteria emissions or HAPs. Emissions of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF<sub>6</sub>) are not to be reported. Report to the nearest hundredth (0.00) of a ton.

All HAPs must be reported and must be reported individually (speciated). They may not be reported together under the pollutant "HAPs". Please refer to Section 3.8 of this document for specific instructions on thresholds and reporting requirements for HAPs.



## 2.2 Non-Title V Facilities

Owners/operators of Non-Title V facilities may be required to complete the AES for several reasons: the Emission Statement regulation, permit cap compliance certification, SIP, and other purposes. DEP may also request inventory information from any facility per the Pennsylvania Code, Title 25, Chapter 135. The Emission Statement, permit caps, and SIP are discussed in paragraphs 2.2.1.1 and 2.2.3, below.

### 2.2.1 Facilities Inventoried for Emission Statement Purposes

The Emission Statement regulation is found in Pennsylvania Code, Title 25, Chapter 135.21. Owners or operators of facilities that are located in Bucks, Chester, Delaware or Montgomery Counties that emit or have a potential to emit 25 tons or more per year of VOC or 25 tons or more per year of NO<sub>x</sub> are required to report. Owners or operators of facilities located in the remainder of the Commonwealth that emit or have a potential to emit 50 tons or more per year of VOC or 100 tons or more per year of NO<sub>x</sub> must complete the AES.

**Owners or operators of facilities located in Allegheny or Philadelphia Counties should contact the county agency listed in Sections 9.7 and 9.8 for reporting instructions.**

Owners/operators of Non-Title V facilities subject to the Emission Statement regulation may be required to submit AIMS/eFACTS data. The RAQ will notify the owners or operators of the affected facilities. If a Non-Title V facility is requested to submit AIMS/eFACTS data, the instructions for Title V AIMS/eFACTS reporting apply. Please refer to Section 2.1 of this document.

#### 2.2.1.1. Emission Statement Exemptions

The following list of exemptions was published in the *Pennsylvania Bulletin* Volume 23, Number 17, pages 1994-95 on April 24, 1993:

##### Small Source Exemption

Section 135.21(d) provides an exemption from the reporting requirements for certain small stationary sources. Stationary sources that have actual emissions of less than 25 tons per year of NO<sub>x</sub> and 25 tons per year of VOC may be exempted from the emission reporting requirement if the Department of Environmental Resources submits an inventory of emissions to the Administrator of the Environmental Protection Agency. Such an inventory was submitted to EPA on November 12, 1992, to comply with this exemption requirement. Based on this inventory, the **Department hereby exempts from the emission statement requirement of 25 Pa. Code § 135.21** the following classes or categories of stationary sources which emit less than 25 tons per year of NO<sub>x</sub> and 25 tons per year of VOC:

- Non-Industrial Surface Coating:
  - Architectural
  - Automotive Refinishing
- Other Solvent Use
  - Electronics and Electrical Degreasing
  - Other Manufacturing Degreasing
  - Automotive Repair Cold Cleaning Degreasing
  - Manufacturing Cold Cleaning Degreasing
  - Dry cleaning

- Graphic Arts
- Surface Coatings
  - Flatwood Products
  - Furniture & Fixtures
  - Electrical Insulation
  - Metal Cans
  - Miscellaneous Finished Products
  - Machinery & Equipment
  - Appliances
  - New Motor Vehicles
  - Marine
  - Miscellaneous Manufacturing
  - Maintenance
  - Other Special Coatings
- Waste Management Practices
  - Publicly-Owned Treatment Works
  - Landfills
  - Treatment Storage Disposal Facilities
- Small Stationary Fossil Fuels\*
  - Fuel Oil Combustion
  - Coal Combustion
  - Gas Combustion
- Miscellaneous Subfacilities
  - On-Site Incineration (does not include open burning)
  - Leaking Underground Storage Tanks

*\*The sizes of small stationary fossil fuel sources are defined by Chapter 127.14, Permit Exemptions.*

These emission reporting exemptions relate to the emission reporting requirements of 25 PA Code 135.21(d), Emission Statements. The requirements for reporting for AIMS/eFACTS inventory purposes are outlined in Sections 2.1 and 2.2, above.

However, if the facility is a Synthetic Minor subject to inventories related to State Implementation Planning, actual VOC emissions greater than or equal to 10 TPY for the facility must be reported.

## **2.2.2 Facilities Inventoried for Permit Cap Compliance Certification**

Some owners/operators of facilities have taken permit restrictions in order to avoid major status and a federally-enforceable permit. Also, a facility may have a subfacility cap for other reasons. The method of demonstrating cap compliance is addressed in the permit. The AES and/or AIMS/eFACTS may be used to demonstrate cap compliance.

## 2.2.3 Facilities Inventoried for State Implementation Planning Purposes

Owners/operators of synthetic minor facilities are subject to the inventory and must complete the AIMS/eFACTS reporting forms if actual VOC emissions are greater than or equal to 10 TPY for the facility. This VOC threshold was established to meet EPA's ozone planning requirements. The facility's owner/operator must report annually. Owners/operators of synthetic minor facilities subject to the inventory must report throughputs and operating schedules for all subfacilities on the AIMS/eFACTS reporting forms. In addition, these owners/operators of facilities must report VOC actual emissions as a facility total. Report to the nearest hundredth (0.00) of a ton. The emission estimates for other pollutants will be calculated by BAQ AIMS/eFACTS database using emission factors. The facility's owner/operator has the option of reporting emission estimates for other pollutants if the facility's owner/operator's estimates are better than the factor-based calculations.

## 2.2.4 Midstream Oil and Gas Facilities

All owners and operators of companies involved in natural gas related activities, as specified below, are subject to the inventory and must submit electronically through AES\*Online. All Criteria Pollutants, Greenhouse Gas emissions, and the following Hazardous Air Pollutants (HAPs) must be submitted, regardless of emission amounts.

HAPs subject to reporting by Oil and Gas Facilities:

- 2,2,4-Trimethylpentane
- Benzene
- Ethylbenzene
- Formaldehyde
- Toluene
- x-Hexane
- Xylene

Oil and gas facilities that are subject to emissions reporting include those engaged in the following: coal bed methane gas compressing, processing and related activities; unconventional Midstream natural gas development, production, transmission, processing and related activities; and conventional Midstream natural gas compressing, processing and related activities. The sources and activities that the Department has identified as subject to the emissions reporting requirements include, but are not limited to: drill rigs, well heads and well completions (unconventional natural gas activities); compressor stations; dehydration units; fugitives, such as connectors, flanges, pump lines, pump seals and valves; heaters and reboilers; pneumatic controllers and pumps; stationary engines; tanks, pressurized vessels and impoundments; venting; blow down systems; and pigging operations.

## 3. Completing AES\*Online and AES\*XML Submittals

### 3.1 Throughputs For Each Source

Throughputs must be tracked and reported in monthly increments for each subfacility. **If an operating schedule changes during a month, you must provide a throughput for each operating schedule in effect that month.** Monthly throughputs are required to accommodate various data reports generated from AIMS/eFACTS, such as quarterly reporting with a December start date or quarterly percentages.

### 3.2 Operating Schedules For Each Source

DEP recognizes that owners/operators of facilities may change operating schedules during the year. Owners/operators of primary facilities must provide at least one operating schedule for each subfacility. Owners/operators of primary facilities may provide multiple operating schedules per subfacility if an operating schedule changes significantly during the year. Examples of significant changes could be a piece of equipment shut down for more than two weeks or a change from 1 shift to 2 or 3 (and vice versa). Consult with RAQ staff for guidance. Keep in mind that worst-case production numbers will yield worst-case emissions numbers when emissions are calculated in AIMS/eFACTS using SCCs.

For each subfacility operating schedule, the facility's owner/operator must provide:

1. Start date of the operating schedule and
2. End date of the operating schedule.

Additionally, for each operating schedule 2 of the following 3 must be provided:

1. Total hours the subfacility operated during that particular operating schedule;
2. Total days the subfacility operated during that particular operating schedule; and
3. Average days per week the subfacility operated during that particular operating schedule.

If you are trying to report a shutdown period for a subfacility, you end the current operating schedule when the shutdown occurs, and start a new operating schedule when the shutdown is over. For example, if your plant were shut down from July 1 to July 15, you would have:

Operating schedule 1: Date effective = January 1  
Date end = June 30  
Operating schedule 2: Date effective = July 16  
Date end = December 31

**Note:** *If there is not enough space provided on the preprinted forms to submit all operating schedules and throughputs and/or new SCCs, contact your DEP regional office.*

### 3.3 Emission Estimates

Owners/operators of facilities must provide an estimate of the tons of NO<sub>x</sub>, VOC, PM<sub>10</sub> (filterable), PM<sub>2.5</sub> (filterable), PM-Con(condensable), SO<sub>x</sub>, NH<sub>3</sub>, and CO emitted per year for each subfacility within the plant. The GHGs CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O must be reported for these sources where applicable. See Section 3.8 of this document for Hazardous Air Pollutants ("HAP") reporting.

Owners/operators of facilities must also indicate the method used to calculate the emissions. Calculation Method Codes are listed in the back of the instructions. Continuous Emission Monitoring (CEM) data is the most reliable for emission estimates and should be used when available. **If calculation method code COM (See Comment) is used, a comment containing calculation methodology must be included by using the "New Note" function.** Calculation worksheets should be attached to the submittal for calculation method code COM.

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### 3.4 Fuel Analysis

Percent sulfur, percent ash, and BTU content must be reported for all fuels. Report zeros where appropriate. Check with RAQ staff to determine the analytical results that must be reported.

### 3.5 Surface Coating (Paint, Glue, Ink) Analysis

Percent water, coating density, and total volatile content must be reported for all water- and solvent-based coatings used. If possible, include a list of all coatings and their associated analyses with your submission. Contact your RAQ staff for the preferred reporting format.

### 3.6 Control Devices

The owners/operators of new facilities and previously unreported subfacilities must report control efficiencies for every pollutant controlled by a control device. These pollutants may include VOCs, NO<sub>x</sub>, SO<sub>x</sub>, CO, PM<sub>10</sub> (filterable), PM<sub>2.5</sub> (filterable), PM-Con(condensable), and NH<sub>3</sub>. If the primary control system does not capture 100 percent of the subfacility emissions, both a fugitive emission point and a regular stack should be reported. **Control and capture are not the same.** Control is defined as the amount of the specific pollutant's emissions that a control device is capable of destroying or removing. Capture is defined as the amount of the pollutant's emissions that actually reach the control device. Capture can degrade through holes in ductwork, inefficient negative pressure systems, and other issues occurring between the pollutant source and the control device.

If your facility's owner/operator is planning to add, modify or remove control devices, your RAQ staff should be notified several months prior to the change. A new or modified permit may need to be issued, if control devices are changed. No modifications or additions may be begun before a plan approval has been issued by the Department, unless a Request for Determination of Minor Significance has been issued, indicating no permit is required.

### 3.7 Stacks

The owners/operators of new facilities and previously unreported subfacilities must provide RAQ staff with stack inside diameter, height, exhaust flow in ACFM, exhaust velocity in meters or feet per second, exhaust temperature, exhaust percent moisture, and the direction of stack discharge. If your facility's owner/operator is planning to add, modify or remove stacks, your DEP inspector should be notified prior to the change. Make certain that changes do not require a new or modified permit prior to beginning work.

### 3.8 Hazardous Air Pollutants

Hazardous Air Pollutant (HAP) estimates are required for certain plants. Please refer to Chapter 2, Determining Which Facilities Belong in the Emissions Inventory, for more information. All HAPs that must be reported are listed in Chapter 9. A calculation method is required with the HAP estimates. Refer to Chapter 9.1, Calculation Method Codes For Emissions. Additional information/definition can be found in the 25 Pennsylvania Code Section 121.1, under "Title V regulated air pollutants." You must submit via AES\*Online or AES\*XML.

There are *de minimus* levels for HAP reporting. If the total HAP emissions from a facility are less than one (1) ton per year per HAP, **except lead**, the facility's owner/operator is not

required to report HAPs, with the additional exceptions below. However, if the facility has over one (1) ton per year of any HAP, that HAP needs to be reported for each subfacility that emits that specific HAP. If the actual total lead (Pb) emissions from a facility are less than one-half (0.5) ton per year, the facility's owner/operator is not required to report lead.

All HAPs must be reported. HAPs must be reported individually (speciated). They may not be reported together under the pollutant "HAPs". Subfacility by subfacility speciated reporting of HAPs is required for Maximum Achievable Control Technology (MACT) purposes.

In some cases HAPs are also VOCs or particulates, such as trichloroethylene. **Do not subtract the HAP emission estimates from the VOC or particulate emission estimates.** The subtraction will be dealt with by BAQ AIMS/eFACTS database.

For these HAPs of special concern, owners/operators of facilities should report any emissions above the following thresholds:

Polychlorobiphenols (PCB)	0.01 TPY per subfacility
Lead (Pb)	0.01 TPY per subfacility
Polycyclic Organic Matter (POM)	0.01 TPY per subfacility
Dioxins**	0.02 pounds/yr per subfacility
Furans**	0.02 pounds/yr per subfacility

\*\* Submit only in pounds per year

For Mercury (Hg), also a HAP of special concern, the reporting thresholds are:

- 0.0005 TPY per subfacility for non-coal-fired electric generating units (EGU)
- 0.00002 TPY per subfacility for coal-fired and oil-fired EGUs
- 0.01 TPY per subfacility for all other types of subfacilities

The federal EPA's Mercury and Air Toxics Standards (MATS) regulation is adopted by reference under Pennsylvania regulations at Section 122.3. This regulation applies to coal-fired and oil-fired electric generating units and established new emission limits beginning in 2015. Because of the interest in this pollutant for all categories of sources, reduced reporting thresholds are being established. MATS eReporting to EPA does not take the place of reporting these emissions to the Department.

As all HAPs must be reported and as some subfacilities are considered insignificant and not included on the reporting forms, use the "Miscellaneous Emissions" sections of the reporting applications to reconcile the facility totals with individual subfacility estimates.

### **3.9 Site Pollutant Summary**

This page summarizes the annual emissions of NO<sub>x</sub>, SO<sub>x</sub>, VOC, PM<sub>10</sub> (filterable), PM<sub>2.5</sub> (filterable), PM-Con (condensable), NH<sub>3</sub>, and CO for the facility. The GHGs CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O must be reported for the site where applicable. You may provide site totals for HAPs, but they must be speciated. Site emissions totals cannot be less than the total of all subfacility emissions totals.

## 4. Helpful Resources

### 4.1 Checklists for Common Errors

Some errors have a way of being repetitious. While BAQ accepts responsibility for unclear instructions and other systemic errors, please complete this checklist before submitting your AIMS/eFACTS data.

Comments and questions about the contents of the AES can be directed to Robert Bihl at 717-772-3950 or [rbihl@pa.gov](mailto:rbihl@pa.gov).

#### 4.1.1 Facility Information

- Is your tax ID (IRS #) valid?
- Are all the contacts on your forms correct?
- Is BAQ's map of your subfacilities correct?
- Do you have any subfacilities not included in the map?

#### 4.1.2 Subfacility Information

- Are your units of measure correct? (AIMS/eFACTS automatically defaults to the units used the previous year.)
- Does your Source Classification Code (SCC) match BAQ's?
- Have you submitted throughput data by month for each subfacility?
- Have you included date effective (start date) and date end for your operating schedules?
- Have you included days per week, total days and total hours for your operating schedules?
- If you have manually calculated your emissions, **have you explained your calculation procedure?** (Please provide as many details as possible.) **PLEASE NOTE THAT, IF YOU USE "SEE COMMENTS", YOU MUST INCLUDE COMMENTS.**
- Does the Pollutant Summary page include all emissions?
- Does the summary page include all the source/miscellaneous emissions you have entered?

#### 4.1.3 Hazardous Air Pollutants (HAPs)

- Have you speciated your HAPs emissions by subfacility?

## **4.2 AP-42 and WebFIRE**

AP-42 is a compilation of air pollutant emission factors containing the same factors used for SCCs and is issued by the U.S. Environmental Protection Agency. AP-42 uses factors for general subfacility categories. AP-42 contains a variety of methods for calculating emissions for any given subfacility type. The AP-42 series is available in several media. AP-42 is available free online at <https://www3.epa.gov/ttnchie1/ap42/>.

WebFIRE is the EPA's online database that contains emissions factors for criteria emissions and HAPs for industrial and non-industrial processes. The WebFIRE factors are very specific for subfacility type. More information about WebFIRE may be obtained at <https://www3.epa.gov/ttn/chie/webfire/index.html>.

**Please note: If comparing factors in WebFIRE against AP-42, the most recent factors published should take precedence.**

## **4.3 Industry-Specific Emission Factors**

Industry groups have also developed emission factors. You may want to contact the appropriate industry trade organization to obtain any factors that exist.

## **4.4 Standard Industrial Classification and North American Industry Classification System**

The U.S. Bureau of Census has replaced its Standard Industrial Classification (SIC) system with the North American Industry Classification System (NAICS). SICs have been converted to the 2012 version of the NAICS codes in AIMS/eFACTS. Please confirm that the proper NAICS is applied to your facility. The NAICS is also required by the IRS, and your financial department may have this information for you.

NAICS information is available from the United States Census Bureau at: <http://www.census.gov/eos/www/naics/>.

## **4.5 Small Business Assistance**

The Environmental Management Assistance Program (EMAP) is a program in Pennsylvania designed to help small businesses understand and comply with environmental regulations and identify pollution prevention and energy efficiency opportunities. There are four ways to request assistance from EMAP: call 877-ask-emap, visit the web site at [www.askemap.org](http://www.askemap.org), send an e-mail to [questions@askemap.org](mailto:questions@askemap.org) or contact your local Small Business Development Center (check [www.pasbdc.org](http://www.pasbdc.org) for the center nearest you). Services such as site visits and permit reviews are confidential and provided at no charge. Business names and addresses will not be released to any regulatory agency.

The DEP Small Business Ombudsman helps businesses locate sources of funding to install equipment and process changes which result in pollution prevention or energy efficiency. The Small Business Ombudsman can also represent small business interests to DEP. The DEP Small Business Ombudsman can be reached by telephone at 717-783-0909 or you can visit the website at: <http://www.dep.pa.gov/Business/Air/BAQ/BusinessTopics/BusinessAssistance>.



## 5. Confidentiality

**Confidential status must be requested in a letter to the DEP regional office annually.** The letter must specify the subfacilities and information that are affected and the reasons for needing confidentiality. Confidentiality is discussed in Section 13.2 of the Pennsylvania Air Pollution Control Act ([http://www.portal.state.pa.us/portal/server.pt/community/regulations\\_and\\_clean\\_air\\_plans/21827](http://www.portal.state.pa.us/portal/server.pt/community/regulations_and_clean_air_plans/21827)). Only throughputs and operating schedules can be treated as confidential in AIMS/eFACTS. Emissions cannot be kept confidential. Confidential throughputs and operating schedules are not provided in basic reports requested by the public and agencies other than EPA. Confidential throughputs and operating schedules are provided to EPA.

## 6. Certification of Data Accuracy for Emission Statement

The submittal must be sent by the Responsible Official. Only the Responsible Official with Submitter clearance can submit. Upon hitting the Submit button in AES\*Online or AES\*XML, the facility is certifying that all data are complete and accurate.

The definition of a Responsible Official is in Pennsylvania Code Section 121 (Definitions). This can be found at <http://www.pacode.com/secure/data/025/chapter121/s121.1.html>.

## 7. Extensions Beyond March 1

As per 25 Pa. Code, Section 135.3(c), a facility's owner/operator may request an extension of time from DEP for the filing of the annual emission inventory, and DEP may grant the extension for reasonable cause. Extension requests should be made in writing to the RAQ contact listed in these instructions. Include the reason for the request and the expected date by which the inventory report will be submitted.

## 8. DEP Contact Listings

Please return the completed forms to the appropriate RAQ representative from the following contact listing. If you have questions about the forms, please call your RAQ representative.

### 8.1 Contact Listing, Norristown - Region I (Southeast)

Contact	County
Andrea Fuchs Southeast Regional Office 2 East Main Street Norristown, PA 19401 (484) 250-7503	Montgomery
Kevin McLemore Southeast Regional Office 2 East Main Street Norristown, PA 19401 (484) 250-7502	Chester Delaware
Shawn Mountain Southeast Regional Office 2 East Main Street Norristown, PA 19401 (484) 250-7504	Bucks

## 8.2 Contact Listing, Wilkes-Barre - Region II (Northeast)

Contact	County
Christian Ostrowski Northeast Regional Office Two Public Square Wilkes-Barre, PA 18701-1915 (570) 826-2551	Lackawanna Luzerne Pike Monroe Schuylkill Susquehanna Wayne Wyoming

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Andrew Schweitzer Bethlehem District Office 4530 Bath Pike Bethlehem, PA 18017 (610) 861-2143	Carbon Lehigh Northampton
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### 8.3 Contact Listing, Harrisburg - Region III (South-central)

Contact	County
David Bubbenmoyer Harrisburg District Office 909 Elmerton Ave. Harrisburg, PA 17110 (717) 705-4877	Adams Dauphin Perry York
William Borst Lancaster District Office 1661 Old Philadelphia Pike Lancaster, PA 17602 (717) 390-2360	Berks Lancaster Lebanon
John Pipta Altoona District 3001 Fairway Drive Altoona, PA 16602 (814) 946-7294	Bedford Blair Cumberland Franklin Fulton Juniata Huntington Mifflin

**8.4 Contact Listing, Williamsport - Region IV (North-central)**

Contact	County
Andrea Ryder Northcentral Regional Office 208 West Third Street Suite 101 Williamsport, PA 17701 (570) 321-6580	Bradford Cameron Centre Clearfield Clinton Columbia Lycoming Montour Northumberland Potter Snyder Sullivan Tioga Union

**8.5 Contact Listing, Pittsburgh - Region V (Southwest)**

Contact	County
Beth Speicher Pittsburgh Regional Office 400 Waterfront Drive Pittsburgh, PA 15222-4745 (412) 442-5214	Beaver Greene Washington Fayette
Tom Norris New Stanton District Office 131 Broadview Road P.O. Box 133 New Stanton, PA 15672 (724) 925-5428	Cambria Somerset Westmoreland

**8.6 Contact Listing, Meadville - Region VI (Northwest)**

Contact	County
Lori McNabb Northwest Regional Office 230 Chestnut Street Meadville, PA 16335-3481 (814) 332-6634	Crawford Elk Erie Forest McKean Warren
Scott Dyll New Castle District Office 121 North Mill Street New Castle, PA 16101 (724) 598-2208	Armstrong Butler Clarion Indiana Lawrence Jefferson Mercer Venango

**8.7 Contact Listing, Philadelphia Air Management Services**

Contact
Assistant Director of Engineering Department of Public Health Air Management Services 321 University Avenue Philadelphia, PA 19104 (215) 875-5678

## **8.8 Contact Listing, Allegheny County Health Department**

Contact
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Gary Fischman Allegheny County Health Department Air Quality Program 301 39th Street Pittsburgh, PA 15201 (412) 578-8141
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## 9. Codes and Tables

### 9.1 Calculation Method Codes For Emissions

These codes are assigned by the facility's owner/operator and describe the method used to calculate the emission estimates. **Please note that, if using Code 9 (See Comment), a comment containing the calculation methodology must be included. This code cannot be used otherwise.** If entering site emissions, they must be equal to, or greater than, the total of all subfacility emissions for each pollutant. If site emissions are significantly larger than the total of all subfacility emissions, please contact the regional office to discuss the need for an additional subfacility to cover the higher emissions.

CODE	AIMS DESCRIPTION
1	DEP Stack Test
2	Company Stack Test Approved by DEP
3	Other Company Test Approved by DEP
9	See Comment
10	Company SCC Factor
11	Company Material Balance
12	Company Efficiency of Control Device
14	Continuous Emission Monitoring
15	AP-42 Latest Available
16	Company-Calculated Site Emission



## 9.2 Reliability Codes For Emissions

Reliability codes are assigned by the RAQ staff or AIMS/eFACTS. **The codes are provided in the instructions for informational purposes only.** The following list is arranged in order of most reliable method of calculation to least reliable. Codes A, B, C, D, E and U are assigned by AIMS/eFACTS and describe the reliability of the SCC used. Please note that the code "COM" must include comments.

CODE	DESCRIPTION
CEM	Continuous Emission Monitoring
BST	Best Stack Test
ST	Stack Test
DVC	DEP VOC Calculation
CVC	Company VOC Calculation
MMB	Measured Material Balance
ME	Measured Efficiency
RE	Rated Efficiency
EMB	Estimated Material Balance
COM	See Comment
A	A Rated Factor
B	B Rated Factor
C	C Rated Factor
D	D Rated Factor
E	E Rated Factor
SITE	Site-Level Manual Emission
U	U Unrated Factor
NA	N/A For Plant Total

### 9.3 Abbreviations/Acronyms

Abbreviation/ Acronym	Definition
ACFM	Actual cubic feet per minute
ACT	Actual
AIMS	Air Information Management System (BAQ's database module of eFACTS)
BAQ	Bureau of Air Quality
BTU	British thermal units
CAS	Chemical abstract service
CD	Control device
CO	Carbon monoxide
CU	Combustion unit
DEP	Pennsylvania Department of Environmental Protection
eFACTS	environment, Facility, Application, Compliance Tracking System
EGU	electric generation unit
EHS	Extremely Hazardous Substance
EPA	United States Environmental Protection Agency
EIS	Emission Inventory System (EPA Database)
FML	Fuel material location
FUEL MAT LOC	Fuel material location
Hg	Mercury
IN	Incinerator
INC	Incinerator
MACT	Maximum Achievable Control Technology
MBTU	Thousand Btu
MMBTU	Million Btu
NAICS	North American Industrial Classification System
NO <sub>x</sub>	Nitrogen oxides
Pb	Lead
PCB	Polychlorobiphenols
PM <sub>10</sub> (filterable)	Filterable particulate matter < 10 microns in diameter
PM <sub>2.5</sub> (filterable)	Filterable particulate matter < 2.5 microns in diameter
PM-Con(condensable)	Condensable particulate matter
POM	Polycyclic Organic Matter
PR	Process
PTE	Potential to Emit
RAQ	Regional Air Quality
SCC	Source Classification Code
SCFM	Standard cubic feet per minute
SIC	Standard Industrial Classification
SO <sub>x</sub>	Sulfur oxides
TPY	Tons per Year
VOC	Volatile organic compounds

#### 9.4 Table A: Hazardous Air Pollutants (112 [b]) Sorted Alphabetically by Pollutant Name

CAS	POLLUTANT
75-07-0	Acetaldehyde
60-35-5	Acetamide
75-05-8	Acetonitrile
98-86-2	Acetophenone
53-96-3	2-Acetylaminofluorene
107-02-8	Acrolein
79-06-1	Acrylamide
79-10-7	Acrylic acid
107-13-1	Acrylonitrile
107-05-1	Allyl chloride
92-67-1	4-Aminobiphenyl
62-53-3	Aniline
90-04-0	o-Anisidine
1332-21-4	Asbestos
71-43-2	Benzene (including Benzene from gasoline)
92-87-5	Benzidine
98-07-7	Benzotrichloride
100-44-7	Benzyl chloride
92-52-4	Biphenyl
117-81-7	Bis(2-ethylhexyl)phthalate (DEHP)
542-88-1	Bis(chloromethyl)ether
75-25-2	Bromoform
106-99-0	1,3-Butadiene
156-62-7	Calcium cyanamide
133-06-2	Captan
63-25-2	Carbaryl
75-15-0	Carbon disulfide
56-23-5	Carbon tetrachloride
463-58-1	Carbonyl sulfide
120-80-9	Catechol
133-90-4	Chloramben
5-774-9	Chlordane
7782-50-5	Chlorine
79-11-8	Chloroacetic acid

CAS	POLLUTANT
532-27-4	2-Chloroacetophenone
108-90-7	Chlorobenzene
510-15-6	Chlorobenzilate
67-66-3	Chloroform
107-30-2	Chloromethyl methyl ether
126-99-8	Chloroprene (2-chloro-1,3-butadiene)
1319-77-3	Cresols/Cresylic acid (isomers and mixture)
95-48-7	o-Cresol
108-39-4	m-Cresol
106-44-5	p-Cresol
98-82-8	Cumene (Isopropylbenzene)
94-75-7	2,4-D, salts,esters (Dichlorophenoxyacetic acid)
72-55-9	DDE (p,p-Dichlorodiphenyldichloroethylene)
334-88-3	Diazomethane
132-64-9	Dibenzofurans
96-12-8	1,2-Dibromo-3-chloropropane
84-74-2	Dibutylphthalate
106-46-7	1,4-Dichlorobenzene
91-94-1	3,3-Dichlorobenzidine
111-44-4	Dichloroethyl ether (Bis(2 chloroethyl)ether)
542-75-6	1,3-Dichloropropene (mixture)
62-73-7	Dichlorvos
111-42-2	Diethanolamine
121-69-7	N,N-Dimethylaniline
64-67-5	Diethyl sulfate
119-90-4	3,3-Dimethoxybenzidine
60-11-7	Dimethyl aminoazobenzene
119-93-7	3,3-Dimethyl benzidine
79-44-7	Dimethyl carbamoyl chloride
68-12-2	Dimethyl formamide
57-14-7	1,1-Dimethyl hydrazine
131-11-3	Dimethyl phthalate
77-78-1	Dimethyl sulfate
534-52-1	4,6-Dinitro-o-cresol, and salts
51-28-5	2,4-Dinitrophenol
121-14-2	2,4-Dinitrotoluene
123-91-1	1,4-Dioxane (1,4-Diethyleneoxide)

CAS	POLLUTANT
122-66-7	1,2-Diphenylhydrazine
106-89-8	Epichlorohydrin (1-chloro-2,3-epoxypropane)
106-88-7	1,2-Epoxybutane (1,2-Butylene oxide)
140-88-5	Ethyl acrylate
100-41-4	Ethyl benzene
51-79-6	Ethyl carbamate (Urethane)
75-00-3	Ethyl chloride (Chloroethane)
106-93-4	Ethylene dibromide (1,2-Dibromoethane)
107-06-2	Ethylene dichloride (1,2-Dichloroethane)
107-21-1	Ethylene glycol
151-56-4	Ethylene imine (Aziridine)
75-21-8	Ethylene oxide
96-45-7	Ethylene thiourea
75-34-3	Ethylidene dichloride (1,1-Dichloroethane)
50-00-0	Formaldehyde
76-44-8	Heptachlor
118-74-1	Hexachlorobenzene
87-68-3	Hexachlorobutadiene
77-47-4	Hexachlorocyclopentadiene
67-72-1	Hexachloroethane
822-06-0	Hexamethylene 1,6-diisocyanate
680-31-9	Hexamethylphosphoramide
110-54-3	Hexane
302-01-2	Hydrazine
7647-01-0	Hydrochloric acid
7664-39-3	Hydrogen fluoride (Hydrofluoric acid)
123-31-9	Hydroquinone
78-59-1	Isophorone
58-89-9	Lindane (gamma hexachlorocyclohexane) (all isomers)
108-31-6	Maleic anhydride
67-56-1	Methanol
72-43-5	Methoxychlor
74-83-9	Methyl bromide (Bromomethane)
74-87-3	Methyl chloride (Chloromethane)
71-55-6	Methyl chloroform (1,1,1-Trichloroethane)
60-34-4	Methyl hydrazine
74-88-4	Methyl iodide (Iodomethane)

CAS	POLLUTANT
108-10-1	Methyl isobutyl ketone (4-methyl-2-pentanone) (Hexone)
624-83-9	Methyl isocyanate
80-62-6	Methyl methacrylate
1634-04-4	Methyl tert butyl ether
101-14-4	4,4-Methylene-bis(2-chloroaniline)
75-09-2	Methylene chloride (Dichloromethane)
101-68-8	Methylene diphenyl diisocyanate (MDI)
101-77-9	4,4-Methylenedianiline
91-20-3	Naphthalene
98-95-3	Nitrobenzene
92-93-3	4-Nitrobiphenyl
100-02-7	4-Nitrophenol
79-46-9	2-Nitropropane
684-93-5	N-Nitroso-N-methylurea
62-75-9	N-Nitrosodimethylamine
59-89-2	N-Nitrosomorpholine
56-38-2	Parathion
82-68-8	Pentachloronitrobenzene (Quintobenzene)
87-86-5	Pentachlorophenol
108-95-2	Phenol
106-50-3	p-Phenylenediamine
75-44-5	Phosgene
7803-51-2	Phosphine
7723-14-0	Phosphorus
85-44-9	Phthalic anhydride
1336-36-3	Polychlorinated biphenyls (PCBs) (Aroclors)
1120-71-4	1,3-Propane sultone
57-57-8	beta Propiolactone
123-38-6	Propionaldehyde
114-26-1	Propoxur (Baygon)
78-87-5	Propylene dichloride (1,2-Dichloropropane)
75-56-9	Propylene oxide
75-55-8	1,2-Propylenimine (2-Methyl aziridine)
91-22-5	Quinoline
106-51-4	Quinone (1,4-benzoquinone)
100-42-5	Styrene
96-09-3	Styrene oxide

CAS	POLLUTANT
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin
79-34-5	1,1,2,2-Tetrachloroethane
127-18-4	Tetrachloroethylene (Perchloroethylene)
7550-45-0	Titanium tetrachloride
108-88-3	Toluene
95-80-7	2,4-Toluene diamine
584-84-9	2,4-Toluene diisocyanate
95-53-4	o-Toluidine
8001-35-2	Toxaphene (chlorinated camphene)
120-82-1	1,2,4-Trichlorobenzene
79-00-5	1,1,2-Trichloroethane
79-01-6	Trichloroethylene
95-95-4	2,4,5-Trichlorophenol
88-06-2	2,4,6-Trichlorophenol
121-44-8	Triethylamine
1582-09-8	Trifluralin
540-84-1	2,2,4-Trimethylpentane
108-05-4	Vinyl acetate
593-60-2	Vinyl bromide (bromoethene)
75-01-4	Vinyl chloride
75-35-4	Vinylidene chloride (1,1-Dichloroethylene)
1330-20-7	Xylenes (isomers and mixture)
95-47-6	o-Xylenes
108-38-3	m-Xylenes
106-42-3	p-Xylenes

**9.5 Table B: Hazardous Air Pollutants (112 [b]) Sorted by Chemical Abstract Service Number (“CAS #”).**

CAS	POLLUTANT
50-00-0	Formaldehyde
51-28-5	2,4-Dinitrophenol
51-79-6	Ethyl carbamate (Urethane)
53-96-3	2-Acetylaminofluorene
56-23-5	Carbon tetrachloride
56-38-2	Parathion
57-14-7	1,1-Dimethyl hydrazine
57-57-8	beta Propiolactone
57-74-9	Chlordane
58-89-9	Lindane (gamma hexachlorocyclohexane) (all isomers)
59-89-2	N-Nitrosomorpholine
60-11-7	Dimethyl aminoazobenzene
60-34-4	Methyl hydrazine
60-35-5	Acetamide
62-53-3	Aniline
62-73-7	Dichlorvos
62-75-9	N-Nitrosodimethylamine
63-25-2	Carbaryl
64-67-5	Diethyl sulfate
67-56-1	Methanol
67-66-3	Chloroform
67-72-1	Hexachloroethane
68-12-2	Dimethyl formamide
71-43-2	Benzene (including Benzene from gasoline)
71-55-6	Methyl chloroform (1,1,1-Trichloroethane)
72-43-5	Methoxychlor
72-55-9	DDE (p,p-Dichlorodiphenyldichloroethylene)
74-83-9	Methyl bromide (Bromomethane)
74-87-3	Methyl chloride (Chloromethane)
74-88-4	Methyl iodide (Iodomethane)
75-00-3	Ethyl chloride (Chloroethane)
75-01-4	Vinyl chloride
75-05-8	Acetonitrile



CAS	POLLUTANT
75-07-0	Acetaldehyde
75-09-2	Methylene chloride (Dichloromethane)
75-15-0	Carbon disulfide
75-21-8	Ethylene oxide
75-25-2	Bromoform
75-34-3	Ethylidene dichloride (1,1-Dichloroethane)
75-35-4	Vinylidene chloride (1,1-Dichloroethylene)
75-44-5	Phosgene
75-55-8	1,2-Propylenimine (2-Methyl aziridine)
75-56-9	Propylene oxide
76-44-8	Heptachlor
77-47-4	Hexachlorocyclopentadiene
77-78-1	Dimethyl sulfate
78-59-1	Isophorone
78-87-5	Propylene dichloride (1,2-Dichloropropane)
79-00-5	1,1,2-Trichloroethane
79-01-6	Trichloroethylene
79-06-1	Acrylamide
79-10-7	Acrylic acid
79-11-8	Chloroacetic acid
79-34-5	1,1,2,2-Tetrachloroethane
79-44-7	Dimethyl carbamoyl chloride
79-46-9	2-Nitropropane
80-62-6	Methyl methacrylate
82-68-8	Pentachloronitrobenzene (Quintobenzene)
84-74-2	Dibutylphthalate
85-44-9	Phthalic anhydride
87-68-3	Hexachlorobutadiene
87-86-5	Pentachlorophenol
88-06-2	2,4,6-Trichlorophenol
90-04-0	o-Anisidine
91-20-3	Naphthalene
91-22-5	Quinoline
91-94-1	3,3-Dichlorobenzidine
92-52-4	Biphenyl
92-67-1	4-Aminobiphenyl
92-87-5	Benzidine
92-93-3	4-Nitrobiphenyl
94-75-7	2,4-D, salts,esters (Dichlorophenoxyacetic acid)
95-47-6	o-Xylenes
95-48-7	o-Cresol

CAS	POLLUTANT
95-53-4	o-Toluidine
95-80-7	2,4-Toluene diamine
95-95-4	2,4,5-Trichlorophenol
96-09-3	Styrene oxide
96-12-8	1,2-Dibromo-3-chloropropane
96-45-7	Ethylene thiourea
98-07-7	Benzotrichloride
98-82-8	Cumene (Isopropylbenzene)
98-86-2	Acetophenone
98-95-3	Nitrobenzene
100-02-7	4-Nitrophenol
100-41-4	Ethyl benzene
100-42-5	Styrene
100-44-7	Benzyl chloride
101-14-4	4,4-Methylene-bis(2-chloroaniline)
101-68-8	Methylene diphenyl diisocyanate (MDI)
101-77-9	4,4-Methylenedianiline
106-42-3	p-Xylenes
106-44-5	p-Cresol
106-46-7	1,4-Dichlorobenzene
106-50-3	p-Phenylenediamine
106-51-4	Quinone (1,4-benzoquinone)
106-88-7	1,2-Epoxybutane (1,2-Butylene oxide)
106-89-8	Epichlorohydrin (1-chloro-2,3-epoxypropane)
106-93-4	Ethylene dibromide (1,2-Dibromoethane)
106-99-0	1,3-Butadiene
107-02-8	Acrolein
107-05-1	Allyl chloride
107-06-2	Ethylene dichloride (1,2-Dichloroethane)
107-13-1	Acrylonitrile
107-21-1	Ethylene glycol
107-30-2	Chloromethyl methyl ether
108-05-4	Vinyl acetate
108-10-1	Methyl isobutyl ketone (4-methyl-2-pentanone) (Hexone)
108-31-6	Maleic anhydride
108-38-3	m-Xylenes
108-39-4	m-Cresol
108-88-3	Toluene
108-90-7	Chlorobenzene

CAS	POLLUTANT
108-95-2	Phenol
110-54-3	Hexane
111-42-2	Diethanolamine
111-44-4	Dichloroethyl ether (Bis(2 chloroethyl)ether)
114-26-1	Propoxur (Baygon)
117-81-7	Bis(2-ethylhexyl)phthalate (DEHP)
118-74-1	Hexachlorobenzene
119-90-4	3,3-Dimethoxybenzidine
119-93-7	3,3-Dimethyl benzidine
120-80-9	Catechol
120-82-1	1,2,4-Trichlorobenzene
121-14-2	2,4-Dinitrotoluene
121-44-8	Triethylamine
121-69-7	N,N-Dimethylaniline
122-66-7	1,2-Diphenylhydrazine
123-31-9	Hydroquinone
123-38-6	Propionaldehyde
123-91-1	1,4-Dioxane (1,4-Diethyleneoxide)
126-99-8	Chloroprene (2-chloro-1,3-butadiene)
127-18-4	Tetrachloroethylene (Perchloroethylene)
131-11-3	Dimethyl phthalate
132-64-9	Dibenzofurans
133-06-2	Captan
133-90-4	Chloramben
140-88-5	Ethyl acrylate
151-56-4	Ethylene imine (Aziridine)
156-62-7	Calcium cyanamide
302-01-2	Hydrazine
334-88-3	Diazomethane
463-58-1	Carbonyl sulfide
510-15-6	Chlorobenzilate
532-27-4	2-Chloroacetophenone
534-52-1	4,6-Dinitro-o-cresol, and salts
540-84-1	2,2,4-Trimethylpentane
542-75-6	1,3-Dichloropropene (mixture)
542-88-1	Bis(chloromethyl)ether
584-84-9	2,4-Toluene diisocyanate
593-60-2	Vinyl bromide (bromoethene)
624-83-9	Methyl isocyanate

CAS	POLLUTANT
680-31-9	Hexamethylphosphoramide
68493-5	N-Nitroso-N-methylurea
822-06-0	Hexamethylene 1,6-diisocyanate
1120-71-4	1,3-Propane sultone
1319-77-3	Cresols/Cresylic acid (isomers and mixture)
1330-20-7	Xylenes (isomers and mixture)
1332-21-4	Asbestos
1336-36-3	Polychlorinated biphenyls (PCB's) (Aroclors)
1582-09-8	Trifluralin
1634-04-4	Methyl tert butyl ether
1746-01-6	2,3,7,8-Tetrachlorodibenzo p dioxin
7550-45-0	Titanium tetrachloride
7647-01-0	Hydrochloric acid
7664-39-3	Hydrogen fluoride (Hydrofluoric acid)
7723-14-0	Phosphorus
7782-50-5	Chlorine
7803-51-2	Phosphine
8001-35-2	Toxaphene (chlorinated camphene)

## 9.6 Table C: Compounds As Listed In 112(b)

Compound Name
Antimony Compounds
Arsenic Compounds (inorganic including arsine)
Beryllium Compounds
Cadmium Compounds
Chromium Compounds
Cobalt Compounds
Coke Oven Emissions
Cyanide Compounds <sup>1</sup>
Fine mineral fibers <sup>2</sup>
Glycol ethers <sup>3</sup>
Lead Compounds
Manganese Compounds
Mercury Compounds
Nickel Compounds
Polycyclic Organic Matter <sup>4, 5</sup>
Radionuclides (including radon) <sup>6</sup>
Selenium Compounds

**Note:** Unless otherwise specified, “Glycol ethers” and all listings above that contain the word “compounds” are defined as including any unique chemical substance that contains the named chemical (i.e., antimony, arsenic, etc.) as part of that chemical’s infrastructure.

<sup>1</sup> X’CN where X = H’ or any other group where a formal dissociation may occur. For example, KCN or Ca(CN)<sub>2</sub>

<sup>2</sup> Includes mineral fibers emissions from facilities manufacturing or processing glass, rock, or slag fibers (or other mineral derived fibers) of average diameter 1 micrometer or less.

<sup>3</sup> Includes mono- and di-ethers of ethylene glycol, diethylene glycol, and triethylene glycol R(OCH<sub>2</sub>CH<sub>2</sub>)<sub>n</sub>-OR’ where

n = 1, 2, or 3

R = alkyl or aryl groups

R’ = R, H, or groups which, when removed, yield glycol ethers with the structure: R(OCH<sub>2</sub>CH<sub>2</sub>)<sub>n</sub>-OH. Polymers are excluded from the glycol category.

<sup>4</sup> Includes organic compounds with more than one benzene ring, and which have a boiling point greater than or equal to 100 ° C.

<sup>5</sup> The term Polycyclic Organic Matter (POM) defines a broad class of compounds that generally includes all organic structures having two or more fused aromatic rings (i.e., rings that share a common border), and that have a boiling point greater than or equal to 212° F (100° C).

([www.epa.gov/ttn/atw/hlthef/polycycl.html](http://www.epa.gov/ttn/atw/hlthef/polycycl.html))

<sup>6</sup> A type of atom that spontaneously undergoes radioactive decay.

## 9.7 Table D: Sample Polycyclic Organic Matter (POM)

### Sorted by Pollutant Name

Note that 112b defines POMs by rules and not by a list. Consequently, this list is NOT all-inclusive. POMs were defined in the original list of HAPs to include "...organic compounds with more than one benzene ring, and which have a boiling point greater than or equal to 100° C." But in its Technology Transfer Network (TTN) page for POM ([www.epa.gov/ttn/atw/hlthef/polycycl.html](http://www.epa.gov/ttn/atw/hlthef/polycycl.html)), "The term polycyclic organic matter (POM) defines a broad class of compounds that generally includes all organic structures having two or more fused aromatic rings (i.e. rings that share a common border), and that have a boiling point greater than or equal to 212° F (100° C)."

CAS	POLLUTANT
83-32-9	Acenaphthene
208-96-8	Acenaphthylene
120-12-7	Anthracene
56-55-3	Benz(a)anthracene
50-32-8	Benzo(a)pyrene
205-99-2	Benzo(b)fluoranthene
191-24-2	Benzo(g,h,i)perylene
207-08-9	Benzo(k)fluoranthene
63-25-2	Carbaryl
91-58-7	2-Chloronaphthalene
218-01-9	Chrysene
53-70-3	Dibenzo(a,h)anthracene
57-97-6	7,12-Dimethylbenz(a)anthracene
206-44-0	Fluoranthene
86-73-7	Fluorene
193-39-5	Indeno(1,2,3-cd)pyrene
56-49-5	3-Methylcholanthrene
91-57-6	2-Methylnaphthalene
91-20-3	Naphthalene
90-15-3	1-Naphthol
134-32-7	1-Naphthylamine
15299-99-7	Napropamide
91-20-3	Naphthalene
85-01-8	Phenanthrene
129-00-0	Pyrene

## 9.8 Table E: Sample Polycyclic Organic Matter (POM)

### Sorted by CAS #

Note that 112b defines POMs by rules and not by a list. Consequently, this list is NOT all-inclusive. POMs were defined in the original list of HAPs to include "...organic compounds with more than one benzene ring, and which have a boiling point greater than or equal to 100° C." But in its Technology Transfer Network (TTN) page for POM ([www.epa.gov/ttn/atw/hlthef/polycycl.html](http://www.epa.gov/ttn/atw/hlthef/polycycl.html)), "The term polycyclic organic matter (POM) defines a broad class of compounds that generally includes all organic structures having two or more fused aromatic rings (i.e., rings that share a common border), and that have a boiling point greater than or equal to 212° F (100° C)."

CAS	POLLUTANT
50-32-8	Benzo(a)pyrene
53-70-3	Dibenzo(a,h)anthracene
56-49-5	3-Methylcholanthrene
56-55-3	Benz(a)anthracene
57-97-6	7,12-Dimethylbenz(a)anthracene
63-25-2	Carbaryl
83-32-9	Acenaphthene
85-01-8	Phenanthrene
86-73-7	Fluorene
90-15-3	1-Naphthol
91-20-3	Naphthalene
91-20-3	Naphthalene
91-57-6	2-Methylnaphthalene
91-58-7	2-Chloronaphthalene
120-12-7	Anthracene
129-00-0	Pyrene
134-32-7	1-Naphthylamine
191-24-2	Benzo(g,h,i)perylene
193-39-5	Indeno(1,2,3-cd)pyrene
205-99-2	Benzo(b)fluoranthene
206-44-0	Fluoranthene
207-08-9	Benzo(k)fluoranthene
208-96-8	Acenaphthylene
218-01-9	Chrysene
15299-99-7	Napropamide