



**Year 2012**  
**Air Quality Division**

*ANNUAL AIR EMISSIONS INVENTORY QUESTIONNAIRE*

*Concrete Batch Plant*

The 2012 Concrete Batch Plant Annual Emissions Inventory Questionnaire includes 4 forms that are required to be completed and submitted to the Air Quality Division. Instructions for each form are included below. Upon completion, submit all forms along with the signature by the Responsible Official of the facility within 90 days of receipt of a letter from the Department to the address below.

### **FORM 1: Facility General Information**

Complete all information as requested.

### **FORM 2: Equipment, Stack & Location Data**

Equipment Data: List all the on-site equipment along with the Authorization To Operate (ATO) number where available. Indicate, if not available.  
Stack Data: Provide details of each stack.  
Location Data: If the portable equipment was moved from one location to another, list the dates, the cities & counties, the latitude & longitude or address/driving directions for the portable equipment that was operated during the year 2012.

### **FORM 3A : Emissions Data - Point & Fugitive Emissions**

***Input all calculation results in the appropriate spaces provided in the form.***

Enter the number of units, throughput rate (tons/hour) for the equipment operated, and the hours operated for the year 2012. To calculate the emissions for each of these processes take the throughput rate multiply by hours operated, multiply by pollutant emission factor and divide by 2000. Input the number of the storage piles that were stored and processed, multiply by emission factor, and divide by 2000. If the number of the hours stored is unknown, use 8760 hours to obtain a worst-case estimate. Enter the vehicle miles traveled for the haul roads (miles/year). To calculate the emissions from haul roads, take vehicle miles traveled, multiply by emission factor, and divide by 2000.

### **FORM 3B: Emissions Data - Water Heater & Generator Emissions**

Based on the type of fuel used (Gasoline, Diesel, or Natural Gas/Liquid Propane), choose the appropriate table to input the equipment heat input rate (MM Btu/hour) for the water heater and hours operated for the year. To calculate the emissions, take the rated capacity, multiply by hours operated, multiply by emission factor, and divide by 2000. Based on the type of fuel used, choose the appropriate table to input the generator horsepower and hours operated. To calculate the emissions, take the horsepower multiply by hours operated, multiply by pollutant emission factor, and divide by 2000. If you used commercial electricity to power your equipment covered under your permit, please check the box at the bottom of page 8.

### **FORM 4: Summary & Certification**

A summarization of all the emissions by each pollutant will be listed within this form. All reports submitted to the Department should be certified true and accurate by the Responsible Official of the facility. This person is the owner or operator of the facility. **If there is a change of the Responsible Official of the facility, please notify the Department with an additional letter stating the change.**

If you have any question or have difficulty completing this form, please contact Darlene Celaya at (602) 771-7662. Remember to make photocopies of the completed questionnaire prior to mailing for your records/reference. Please mail the emission inventory questionnaire form to the following address:

**Arizona Department of Environmental Quality  
Attention: Darlene Celaya, Emission Inventory Team  
Air Quality Division, SIP Section 3415A-3  
1110 West Washington Street  
Phoenix, AZ 85007**

**FORM 1: FACILITY GENERAL INFORMATION**

**YEAR 2012**

**SECTION I: *Plant Identification & Mailing Information***

Company Name: \_\_\_\_\_

Place Name: \_\_\_\_\_ Place ID #: \_\_\_\_\_

Mailing Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_

County: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Permit # or LTF #: \_\_\_\_\_ General Permit: Yes  No

**SECTION II: *Emissions Inventory Contact***

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

E-mail Address: \_\_\_\_\_

**SECTION III: *Confidential Request***

*Pursuant to Arizona Revised Statutes §49-432 and §49-201, do you claim the Emissions Inventory data submittal confidential.* Yes  No

*If yes include which portions of the inventory are confidential along with a brief explanation:*

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**FORM 2: EQUIPMENT, STACK & LOCATION DATA**

**YEAR 2012**

**Table 1: Equipment List**

Equipment Type	Equipment ID	ATO #	Max. Rated Capacity	Amount Processed	Hours Operated

**Table 2: Stack Information**

	Stack #1	Stack #2	Stack #3
Process Type/Description			
Height (feet)			
Diameter (feet)			
Velocity (feet/second)			
Exhaust Gas Temperature (F)			
Flow Rate (actual cubic feet per minute)			

**Table 3: Operation Location**

Date		City & County of Operation	Latitude	Longitude	Address or Driving Directions
From	To				

**FORM 3A: EMISSIONS DATA - POINT**

**YEAR 2012**

**Transfer Point Emissions**

*Conversion Factors - 1 cubic yard of concrete = 2 tons of concrete 2000 lbs = 1 ton*

Source	Pollutant	Number of Source	Throughput Rate tons/hour	Hours Operated hours/year	Emission Factor pounds/ton	Emissions tons/year
Continuous & batch drop operations onto aggregate storage piles	PM10				0.0016	
	PM				0.0032	
Continuous & batch drop operations onto sand storage piles	PM10				0.0004	
	PM				0.0008	
Aggregate transfer to feed hopper	PM10				0.0016	
	PM				0.0032	
Sand transfer to feed hopper	PM10				0.0004	
	PM				0.0008	
Aggregate transfer to elevated bins	PM10				0.0016	
	PM				0.0032	
Sand transfer to elevated bins	PM10				0.0004	
	PM				0.0008	
Aggregate transfer to weigh hoppers	PM10				0.0019	
	PM				0.0039	
Sand transfer to weigh hoppers	PM10				0.0019	
	PM				0.0039	
Cement transfer to silo	PM10				0.0002	
	PM				0.0003	
Cement transfer to weigh hopper	PM10				0.0019	
	PM				0.0039	
Mixer loading (truck mix)	PM10				0.0022	
	PM				0.0079	
Mixer loading (central mix)	PM10				0.0007	
	PM				0.0024	
Conveyor transfer points (aggregate)	PM10				0.0004	
	PM				0.0008	
Conveyor transfer points (sand)	PM10				0.0004	
	PM				0.0008	
Screening	PM10				0.00035	
	PM				0.00103	
Fine screening	PM10				0.001	
	PM				0.0017	

**FORM 3A: EMISSIONS DATA - FUGITIVES**

**YEAR 2012**

**Storage Piles**

Source	Pollutants	No. of Piles	Hours Stored hours/year	Emission Factor pounds/hour/pile	Emissions tons/year
Wind erosion - active aggregate pile	PM10			0.00001	
	PM			0.0001	
Wind erosion - active sand pile	PM10			0.0001	
	PM			0.0001	
Wind erosion - inactive aggregate pile	PM10			0.0001	
	PM			0.0001	
Wind erosion - inactive sand pile	PM10			0.0001	
	PM			0.0001	

**Haul Roads - Vehicle Traffic**

Conversion Factor - 1 foot = 0.0001894 mile

Source	Pollutants	Vehicle Miles Traveled miles/year	Emission Factor pounds/VMT	Emission tons/year
Front End Loaders	PM10		0.19	
	PM		0.73	
Ready Mix Trucks	PM10		0.17	
	PM		0.66	

**FORM 3B: EMISSIONS CALCULATIONS FOR WATER HEATER**

**YEAR 2012**

Conversion Factors - MM = 1,000,000 M = 1,000 1 Therm = 100,000 BTUs. 1 MMBTU = 1,000,000 BTUs. 1HP = 2546.15 BTUs

Pollutants	FUEL - NATURAL GAS		FUEL - DIESEL		FUEL - BUTANE		FUEL - PROPANE	
	Water Heater		Water Heater		Water Heater		Water Heater	
	Max. Rated Capacity MMBtu-hour	Operational Hours hours/year	Max. Rated Capacity MMBtu-hour	Operational Hours hours/year	Max. Rated Capacity MMBtu-hour	Operational Hours hours/year	Max. Rated Capacity MMBtu-hour	Operational Hours hours/year
	Emission Factor pounds/MMBtu	Emissions tons/year						
PM	0.0075		0.0240		0.0059		0.0066	
PM10	0.0075		1.56E-06		0.0059		0.0066	
NOx	0.0980		0.1460		0.2059		0.2077	
SOx	0.0006		0.8290		-	-	-	-
VOC	0.0054		0.0025		0.0041		0.0033	
CO	0.0824		0.0365		0.0353		0.0350	
Acenaphthene	1.76E-09		1.54E-07		-	-	-	-
Acenaphthylene	1.76E-09		1.85E-09		-	-	-	-
Anthracene	2.35E-09		8.91E-09		-	-	-	-
Arsenic	1.96E-07		-	-	-	-	-	-
Benz(a)anthracene	1.76E-09		2.93E-08		-	-	-	-
Benzene	2.06E-06		1.56E-06		-	-	-	-
Benzo(b)fluoranthene	1.76E-09		-	-	-	-	-	-
Benzo(b,k)fluoranthene	-	-	1.08E-08		-	-	-	-
Benzo(g,h,i)perylene	1.18E-09		1.65E-08		-	-	-	-
Benzo(k)fluoranthene	1.76E-09		-	-	-	-	-	-
Beryllium	1.18E-08		-	-	-	-	-	-
Butane	2.06E-03		-	-	-	-	-	-
Cadmium	1.08E-06		-	-	-	-	-	-
Chromium	1.37E-06		-	-	-	-	-	-
Chrysene	1.76E-09		-	-	-	-	-	-
Dibenzo(a,h)anthracene	1.18E-09		1.22E-08		-	-	-	-
Dichlorobenzene	1.18E-06		-	-	-	-	-	-
Ethane	3.04E-03		-	-	-	-	-	-
Ethylbenzene	-	-	4.64E-07		-	-	-	-
Fluoranthene	2.94E-09		3.53E-08		-	-	-	-
Fluorene	2.75E-09		3.26E-08		-	-	-	-
Formaldehyde	7.35E-05		2.41E-04		-	-	-	-
Hexane	1.76E-03		-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	1.76E-09		1.56E-08		-	-	-	-
Lead	4.90E-07		-	-	-	-	-	-
2-Methylnaphthalene	2.35E-08		-	-	-	-	-	-
Manganese	3.73E-07		-	-	-	-	-	-
Mercury	2.55E-07		-	-	-	-	-	-
Methane	2.25E-03		1.58E-03		0.0020		0.0022	
Molybdenum	1.08E-06		-	-	-	-	-	-
Naphthalene	5.98E-07		8.25E-06		-	-	-	-
OCDD	-	-	2.26E-11		-	-	-	-
O-Xylene	-	-	7.96E-07		-	-	-	-
Selenium	2.35E-08		-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	1.72E-06		-	-	-	-
Toluene	3.33E-06		4.53E-05		-	-	-	-

**FORM 3B: EMISSIONS CALCULATIONS - GENERATORS**

**YEAR 2012**

Pollutants	FUEL - DIESEL - LESS THAN OR EQUAL TO 600 HP				FUEL - DIESEL - GREATER THAN 600 HP			
	Generator #1		Generator #2		Generator #1		Generator #2	
	Max. Capacity (HP)	Operational Hours (hours/year)	Max. Capacity (HP)	Operational Hours (hours/year)	Max. Capacity (HP)	Operational Hours (hours/year)	Max. Capacity (HP)	Operational Hours (hours/year)
	Emission Factor pounds/hp-hour	Emissions tons/year	Emission Factor pounds/hp-hour	Emissions tons/year	Emission Factor pounds/hp-hour	Emissions tons/year	Emission Factor pounds/hp-hour	Emissions tons/year
PM	0.0022		0.0022		0.0007		0.0007	
PM10	0.0022		0.0022		0.0006		0.0006	
NOx	0.0310		0.0310		0.0240		0.0240	
SOx	0.0021		0.0021		0.0073		0.0073	
VOC	0.0025		0.0025		0.0007		0.0007	
CO	0.0067		0.0067		0.0055		0.0055	
Acenaphthene	9.94E-09		9.94E-09		3.28E-08		3.28E-08	
Acenaphthylene	3.54E-08		3.54E-08		6.46E-08		6.46E-08	
Acetaldehyde	5.37E-06		5.37E-06		1.76E-07		1.76E-07	
Acrolein	6.48E-07		6.48E-07		5.52E-08		5.52E-08	
Anthracene	1.31E-08		1.31E-08		8.61E-09		8.61E-09	
Benzene	6.53E-06		6.53E-06		5.43E-06		5.43E-06	
Benzo(a)anthracene	1.18E-08		1.18E-08		4.35E-09		4.35E-09	
Benzo(a)pyrene	1.32E-09		1.32E-09		1.80E-09		1.80E-09	
Benzo(b)fluoranthene	6.94E-10		6.94E-10		7.77E-09		7.77E-09	
Benzo(g,h,i)perylene	3.42E-09		3.42E-09		3.89E-09		3.89E-09	
Benzo(k)fluoranthene	1.09E-09		1.09E-09		1.53E-09		1.53E-09	
1,3-Butadiene	2.74E-07		2.74E-07		-	-	-	-
Chrysene	2.47E-09		2.47E-09		1.07E-08		1.07E-08	
Dibenz(a,h)anthracene	4.08E-09		4.08E-09		2.42E-09		2.42E-09	
Fluoranthene	5.33E-08		5.33E-08		2.82E-08		2.82E-08	
Fluorene	2.04E-07		2.04E-07		8.96E-08		8.96E-08	
Formaldehyde	8.26E-06		8.26E-06		5.52E-07		5.52E-07	
Indeno(1,2,3-cd)pyrene	2.63E-09		2.63E-09		2.90E-09		2.90E-09	
Naphthalene	5.94E-07		5.94E-07		9.10E-07		9.10E-07	
Phenanthrene	2.06E-07		2.06E-07		2.86E-07		2.86E-07	
Propylene	1.81E-05		1.81E-05		1.95E-05		1.95E-05	
Pyrene	3.35E-08		3.35E-08		2.60E-08		2.60E-08	
Toluene	2.86E-06		2.86E-06		1.97E-06		1.97E-06	
Xylene	2.00E-06		2.00E-06		1.35E-06		1.35E-06	

Check Box, if you used commercial electricity to power your permitted equipment.

	FUEL - GASOLINE				FUEL - NATURAL GAS OR LIQUIFIED PETROLEUM GAS			
	Generator #1		Generator #2		Generator #1		Generator #2	
	Max. Capacity (HP)	Operational Hours (hours/year)	Max. Capacity (HP)	Operational Hours (hours/year)	Max. Capacity (HP)	Operational Hours (hours/year)	Max. Capacity (HP)	Operational Hours (hours/year)
Pollutants	Emission Factor pounds/hp-hour	Emissions tons/year	Emission Factor pounds/hp-hour	Emissions tons/year	Emission Factor pounds/hp-hour	Emissions tons/year	Emission Factor pounds/hp-hour	Emissions tons/year
PM	0.0007		0.0007		0.0001		0.0001	
PM10	0.0007		0.0007		0.0001		0.0001	
NOx	0.0110		0.0110		0.0206		0.0206	
SOx	0.0060		0.0060		4.35E-06		4.35E-06	
VOC	0.0220		0.0220		0.0008		0.0008	
CO	0.4390		0.4390		0.0029		0.0029	
1,3-Butadiene	-	-	-	-	1.69E-06		1.69E-06	
Acetaldehyde	-	-	-	-	7.10E-06		7.10E-06	
Acrolein	-	-	-	-	6.70E-06		6.70E-06	
Benzene	-	-	-	-	4.02E-06		4.02E-06	
Butyr/isobutyraldehyde	-	-	-	-	1.24E-07		1.24E-07	
Carbon Tetrachloride	-	-	-	-	4.51E-08		4.51E-08	
Chlorobenzene	-	-	-	-	3.28E-08		3.28E-08	
Chloroform	-	-	-	-	3.49E-08		3.49E-08	
1,1-Dichloroethane	-	-	-	-	2.88E-08		2.88E-08	
1,2-Dichloroethane	-	-	-	-	2.88E-08		2.88E-08	
1,2-Dichloropropane	-	-	-	-	3.31E-09		3.31E-09	
1,3-Dichloropropene	-	-	-	-	3.23E-08		3.23E-08	
Ethane	-	-	-	-	1.79E-04		1.79E-04	
Ethylbenzene	-	-	-	-	6.31E-08		6.31E-08	
Ethylene Dibromide	-	-	-	-	5.42E-08		5.42E-08	
Formaldehyde	-	-	-	-	5.22E-05		5.22E-05	
Methane	-	-	-	-	5.86E-04		5.86E-04	
Methanol	-	-	-	-	7.79E-06		7.79E-06	
Methylene Chloride	-	-	-	-	1.05E-07		1.05E-07	
Naphthalene	-	-	-	-	2.47E-07		2.47E-07	
Styrene	-	-	-	-	3.03E-08		3.03E-08	
1,1,2,2-Tetrachloroethane	-	-	-	-	6.44E-08		6.44E-08	
1,1,2-Trichloroethane	-	-	-	-	3.90E-08		3.90E-08	
Toluene	-	-	-	-	1.42E-06		1.42E-06	
Vinyl Chloride	-	-	-	-	1.83E-08		1.83E-08	
Xylene	-	-	-	-	4.96E-07		4.96E-07	

All the emissions for each pollutant are totalled and entered in the table below.

Pollutant	Tonnage (tons per year)
Particulate Matter (PM)	
Particulate Matter Less Than 10 Microns (PM10)	
Nitrogen Oxides (NOx)	
Sulfur Oxides (SOx)	
Volatile Organic Compounds (VOC)	
Carbon Monoxide (CO)	
Hazard Air Pollutants (HAPs)	

**Certification of Truth & Accuracy**

I certify that based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

All information not identified by me as confidential in nature shall be treated by the Arizona Department of Environmental Quality as public record.

Signature of Responsible Official: \_\_\_\_\_

Date: \_\_\_\_\_

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_