

**Hyperion Energy Center**  
Emission Calculations  
Organic HAP for Health Risk Assessment

Process Heaters

Pollutant	Fuel Usage (MMSCF/yr)	Emission Factor (lb/MMSCF)	Emissions (lbs/yr)
benzene	46,813	0.0021	9.83E+01
formaldehyde	46,813	0.075	3.51E+03
n-hexane	46,813	1.8	8.43E+04
POM 72002 *	46,813	0.0000498	2.33E+00
POM 73002 *	46,813	0.000008	3.75E-01
POM 74002 *	46,813	0.0000009	4.21E-02
POM 75002 *	46,813	0.0000012	5.62E-02
POM 76002 *	46,813	0.0000036	1.69E-01
POM 77002 *	46,813	0.0000009	4.21E-02
naphthalene	46,813	0.00061	2.86E+01
toluene	46,813	0.0034	1.59E+02

Sulfur Recovery Plant

Pollutant	Fuel Usage (MMSCF/yr)	Emission Factor (lb/MMSCF)	Emissions (lbs/yr)
benzene	2,190	0.0021	4.60E+00
formaldehyde	2,190	0.075	1.64E+02
n-hexane	2,190	1.8	3.94E+03
POM 72002 *	2,190	0.0000498	1.09E-01
POM 73002 *	2,190	0.000008	1.75E-02
POM 74002 *	2,190	0.0000009	1.97E-03
POM 75002 *	2,190	0.0000012	2.63E-03
POM 76002 *	2,190	0.0000036	7.88E-03
POM 77002 *	2,190	0.0000009	1.97E-03
naphthalene	2,190	0.00061	1.34E+00
toluene	2,190	0.0034	7.45E+00

\* Polycyclic Organic Matter chemicals are grouped as follows:

(see 72 FR 14734, March 29, 2007)

POM 72002 (2-Chloronaphthalene, 2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Anthracene, Benzo(c)phenanthrene, Benzo[e]Pyrene, Benzo[g,h,i]Perylene, Fluoranthene, Fluorene, Perylene, Phenanthrene, Pyrene);

POM 73002 (7,12-Dimethylbenz[a]Anthracene);

POM 74002 (3-Methylcholanthrene);

POM 75002 (5-Methylchrysene, Benzo[a]Pyrene, Dibenzo[a,h]Anthracene);

POM 76002 (B[j]Fluoranthene, Benz[a]Anthracene, Benzo[b]Fluoranthene, Benzo[k]Fluoranthene, Indeno[1,2,3-c,d]Pyrene);

POM 77002 (Chrysene)

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Combined-Cycle Gas Turbines

Pollutant	Fuel Usage (MMSCF/yr)	Emission Factor (lb/MMSCF)	Emissions (lbs/yr)
benzene	44,920	0.0021	9.43E+01
formaldehyde	44,920	0.075	3.37E+03
n-hexane	44,920	1.8	8.09E+04
POM 72002 *	44,920	0.0000498	2.24E+00
POM 73002 *	44,920	0.000008	3.59E-01
POM 74002 *	44,920	0.0000009	4.04E-02
POM 75002 *	44,920	0.0000012	5.39E-02
POM 76002 *	44,920	0.0000036	1.62E-01
POM 77002 *	44,920	0.0000009	4.04E-02
naphthalene	44,920	0.00061	2.74E+01
toluene	44,920	0.0034	1.53E+02

Power Island Flare & Gasifier Startup Vents

Pollutant	Fuel Usage (MMSCF/yr)	Emission Factor (lb/MMSCF)	Emissions (lbs/yr)
benzene	12	0.0021	2.56E-02
formaldehyde	12	0.075	9.14E-01
n-hexane	12	1.8	2.19E+01
POM 72002 *	12	0.0000498	6.07E-04
POM 73002 *	12	0.000008	9.75E-05
POM 74002 *	12	0.0000009	1.10E-05
POM 75002 *	12	0.0000012	1.46E-05
POM 76002 *	12	0.0000036	4.39E-05
POM 77002 *	12	0.0000009	1.10E-05
naphthalene	12	0.00061	7.44E-03
toluene	12	0.0034	4.14E-02

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(see 72 FR 14734, March 29, 2007)

POM 72002 (2-Chloronaphthalene, 2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Anthracene, Benzo(c)phenanthrene, Benzo[e]Pyrene, Benzo[g,h,i,]Perylene, Fluoranthene, Fluorene, Perylene, Phenanthrene, Pyrene);

POM 73002 (7,12-Dimethylbenz[a]Anthracene);

POM 74002 (3-Methylcholanthrene);

POM 75002 (5-Methylchrysene, Benzo[a]Pyrene, Dibenzo[a,h]Anthracene);

POM 76002 (B[j]Fluoranthene, Benz[a]Anthracene, Benzo[b]Fluoranthene, Benzo[k]Fluoranthene, Indeno[1,2,3-c,d]Pyrene);

POM 77002 (Chrysene)

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Wastewater Treatment Plant

Pollutant	Fuel Usage (MMgal/yr)	Emission Factor (lb/MMgal)	Emissions (lbs/yr)
benzene	1,099	1.23E+00	1.35E+03
ethyl benzene	1,099	5.88E-02	6.46E+01
n-hexane	1,099	1.18E-03	1.30E+00
phenol	1,099	1.25E-03	1.37E+00
toluene	1,099	1.75E-01	1.93E+02
p-xylene	1,099	1.17E-01	1.29E+02

Cooling Towers

Pollutant	Water Flow (MMgal/yr)	Emission Factor (lb/MMgal)	Emissions (lbs/yr)
benzene	68,328	1.51E-02	1.03E+03
1,3-butadiene	68,328	1.02E-05	7.00E-01
ethyl benzene	68,328	4.21E-03	2.88E+02
n-hexane	68,328	2.98E-02	2.03E+03
naphthalene	68,328	2.62E-04	1.79E+01
2,2,4-trimethylpentane	68,328	5.34E-02	3.65E+03
toluene	68,328	5.10E-02	3.49E+03
p-xylene	68,328	1.95E-02	1.33E+03

Product Loading Racks

Pollutant	Volume Loaded (MMgal/yr)	Emission Factor (lb/MMgal)	Emissions (lbs/yr)
benzene	491	6.12E-02	3.00E+01
ethyl benzene	491	3.75E-02	1.84E+01
n-hexane	491	4.99E-02	2.45E+01
toluene	491	3.13E-01	1.53E+02
xylenes (mixed)	491	1.88E-01	9.20E+01

Storage Tanks

Pollutant	Emission Factor (lb/MMgal)	Emissions (lbs/yr)
benzene	n/a	1.72E+03
ethyl benzene	n/a	2.18E+03
n-hexane	n/a	2.90E+03
methanol	n/a	9.27E+01
naphthalene	n/a	1.31E+02
toluene	n/a	1.96E+04

Equipment Leaks

Pollutant	Emission Factor (lb/MMgal)	Emissions (lbs/yr)
benzene	n/a	5.06E+01
1,3-butadiene	n/a	3.00E-02
ethyl benzene	n/a	1.41E+01
n-hexane	n/a	9.95E+01
naphthalene	n/a	8.80E-01
2,2,4-trimethylpentane	n/a	1.79E+02
toluene	n/a	1.71E+02
o-xylene	n/a	1.29E+01
xylenes (mixed)	n/a	6.52E+01