Factsheet August 2007

How to Estimate Your Hazardous Air Pollutant Emissions

What are Hazardous Air Pollutants?

Hazardous air pollutants, which are known as HAPs, are chemicals that are known or suspected causes of cancer, or other serious health problems, including damage to the respiratory or nervous systems, birth defects, and reproductive effects. HAPs are released by sources, such as auto body repair shops, dry cleaners, printing shop, surface coating and painting operations, and motor vehicles (cars, trucks, buses, etc.). Refer to Attachment C for a list of the 187 HAPs that are included in the Clean Air Act Amendments of 1990.

What kind of information do I need to estimate HAP emissions?

You can determine if you have HAPs in the coating and cleaning products at your business by looking on your Material Safety Data Sheets (MSDS). Contact your coating supplier for free copies of your product MSDS, if you do not have copies at your business. For a list of the HAPs that are listed in the 1990 Clean Air Act, contact the Division's Small Business Assistance Program (SBAP) or the Division's Permitting section and ask for **Attachment C, Hazardous Air Pollutant List,** of the **Small Source Registration Notice** (phone numbers are listed below). The HAPs that are listed on Attachment C are the chemicals that should be inventoried.

How do I estimate HAP emissions?

To estimate HAP emissions you will need the density or specific gravity, percent HAP (all by weight percent), and coating use in gallons. If the density or specific gravity and percent HAP information is not on the MSDS from your product supplier, then request it. If you use many types of products, **categorize the products you use into similar groups**. For example, an automotive refinishing shop may use the following categories: enamels, lacquers, clean-up solvents, topcoats, primers, etc. A printing shop may use the following categories: fountain solutions, inks, cleaning solutions, etc. A wood finishing shop may use the following categories: washcoats, sealers, topcoats, stains, cleanup solvents, etc. After categorizing your products, choose one product that is the most representative of that category. Continue to Step 1 to estimate your HAP emissions, based on the information supplied on the representative MSDS for each designated product category.

Step 1: Enter the different product categories in Column A. Estimate the total gallons of product that you use on an annual basis for each designated product category and fill in the number in Column B. The gallons per year can be estimated by recording what you use in an average month and then multiplying by 12 to convert to annual basis.

Step 2: The pounds per gallon in Column C can be determined from your *representative* MSDS for the product category. If the specific gravity (S.G.) is given instead, use the following formula to calculate pounds per gallon: S.G. X 8.3 lbs/gal. The S.G. will be in the range of 0.8 to 1.3. For example, most solvents are less than 1.0 since they are less dense than water, which has a S.G. of 1.0.

Step 3: Multiply the gallons per year in Column B by the pounds per gallon given in Column C. Fill in the number in Column D.

Step 4: Using your *representative* MSDS, compare **all** the chemicals listed on the MSDS to the list of 187 hazardous air pollutants (HAPs) list on **Attachment C** of the Small Source Registration Notice. List all the HAPs and percent by weight in the space provided in Column E. If the MSDS gives a range of 10-20% for a chemical, use the midpoint of 15%. Convert the percentage (15%) to a fraction (.15) and enter in column E. Keep in mind that an MSDS lists many chemicals that are not HAPs.

Step 5: To determine the pounds per year for each HAP in a product category, multiply the pounds per year in Column D by the fraction in Column E. Enter the number in the space provided in Column E.

Step 6: Add the pounds per year for each HAP in Column E and enter the total at the bottom of the table. Enter the pounds per year for all HAPs (grand total) in Box X. If you need more than three columns for HAPs, tape two worksheets together.

Hazardous Air Pollutants Emission Worksheet

Column A	Column B	Column C	Column D	Column E							
Chemical Products Used				(Name of HAP)		(Name of HAP)		(Name of HAP)		(Name of HAP)	
Product Categories (paints, glues, solvents)	Gallons Per Year	Pounds Per Gallon	Pounds Per Year	Fraction	Pounds Per Year	Fraction	Pounds Per Year	Fraction	Pounds Per Year	Fraction	Pounds Per Year
				Sub-Total (1) :		**Sub-Total (2) :**		**Sub-Total (3) :**		**Sub-Total (4) :**	
Box X (Pounds Per Year) **Grand Total (1+2+3+4) :**											

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Hazardous Air Pollutants Emission Worksheet

Column A	Column B	Column C	Column D	Column E							
Chemical Products Used				*Xylene* (Name of HAP)		*Toluene* (Name of HAP)		*Methylene Chloride* (Name of HAP)		(Name of HAP)	
Product Categories (paints, glues, solvents)	Gallons Per Year	Pounds Per Gallon	Pounds Per Year	Fraction	Pounds Per Year	Fraction	Pounds Per Year	Fraction	Pounds Per Year	Fraction	Pounds Per Year
Precoats	***200***	***6.5***	***1,300***								
Primer Surfacers	***150***	***7.5***	***1,125***	***0.10***	***112***			***0.25***	***280***		
Primer Sealers	***100***	***9.5***	***950***			***0.20***	***190***				
Solvents	***125***	***6.2***	***775***			***0.10***	***77***				
Topcoats	***75***	***9.5***	***712***			***0.30***	***214***				
Specialty	***40***	***8.0***	***320***	***0.05***	***16***			***0.15***	***48***		
				Sub-Total (1) :	***128***	**Sub-Total (2) :**	***481***	**Sub-Total (3) :**	***328***	**Sub-Total (4) :**	
				Box X (Pounds Per Year) **Grand Total (1+2+3+4) :**					***937***		

Utah Division of Air Quality

Attachment C: Hazardous Air Pollutant List

Below is a list of the 187 hazardous air pollutants (HAPs) that are regulated by the Clean Air Act Amendments (CAA) of 1990. Please indicate which pollutants are emitted by your business by checking the appropriate box(es) below. Provide an estimate of the expected annual and potential to emit emissions of HAPs and record in Section IV, Air Emission Information, of the Small Source Registration Notice.

☐	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
☐	Varies	Antimony Compounds
☐	Varies	Arsenic Compounds (inorganic including arsine)
☐	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
☐	Varies	Beryllium Compounds
☐	92-52-4	Biphenyl
☐	542-88-1	Bis(chloromethyl)ether
☐	117-81-7	Bis(2-ethylhexyl)phthalate (DEHP)
☐	75-25-2	Bromoform
☐	106-99-0	1,3-Butadiene
☐	Varies	Cadmium Compounds
☐	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
☐	57-74-9	Chlordane
☐	133-90-4	Chloramben
☐	7782-50-5	Chlorine
☐	79-11-8	Chloroacetic acid
☐	532-27-4	2-Chloroacetophenone
☐	108-90-7	Chlorobenzene
☐	510-15-6	Chlorobenzilate
☐	67-66-3	Chloroform
☐	126-99-8	Chloroprene
☐	107-30-2	Chloromethyl methyl ether
☐	Varies	Chromium Compounds
☐	Varies	Cobalt Compounds
☐	Varies	Coke Oven Emissions
☐	108-39-4	m-Cresol
☐	95-48-7	o-Cresol
☐	106-44-5	p-Cresol
☐	1319-77-3	Cresols/Cresylic acid (isomers and mixture)
☐	98-82-8	Cumene
☐	Varies	Cyanide Compounds
☐	94-75-7	2,4-D (2,4Dichlorophenoxyacetic acid, including salts and esters)
☐	72-55-9	DDE (1, 1-Dichloro-2, 2-Bis(p-Chlorophenyl) Ethylene)
☐	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(p)
☐	91-94-1	3,3-Dichlorobenzidene
☐	111-44-4	Dichloroethyl ether (Bis(2-chloroethyl)ether)
☐	542-75-6	1,3-Dichloropropene
☐	62-73-7	Dichlorvos
☐	111-42-2	Diethanolamine
☐	121-69-7	N,N-Diethyl aniline (N,N-Dimethylaniline)
☐	64-67-5	Diethyl sulfate
☐	534-52-1	4,6-Dinitro-o-cresol, and salts
☐	51-28-5	2,4-Dinitrophenol
☐	121-14-2	2,4-Dinitrotoluene
☐	60-11-7	Dimethyl aminoazobenzene
☐	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
☐	119-90-4	3,3-Dimethoxybenzidine
☐	119-93-7	3,3',-Dimethyl benzidine
☐	123-91-1	1,4-Dioxane (1,4-Diethyleneoxide)
☐	122-66-7	1,2-Diphenylhydrazine
☐	106-89-8	Epichlorohydrin (l-Chloro-2,3-epoxypropane)
☐	106-88-7	1,2-Epoxybutane
☐	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 (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 thioure

- ☐ 75-34-3 Ethylidene dichloride (1,1-Dichloroethane)
- ☐ Varies Fine mineral fibers
- ☐ Varies Glycol ethers
- ☐ 76-44-8 Heptachlor
- ☐ 50-00-0 Formaldehyde
- ☐ 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 (Hydrogen chloride)
- ☐ 7664-39-3 Hydrogen fluoride (Hydrofluoric acid)
- ☐ 123-31-9 Hydroquinone
- ☐ 78-59-1 Isophorone
- ☐ Varies Lead Compounds
- ☐ 58-89-9 Lindane (all isomers)
- ☐ 108-31-6 Maleic anhydride
- ☐ Varies Manganese Compounds
- ☐ Varies Mercury Compounds
- ☐ 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)
- ☐ 108-10-1 Methyl isobutyl ketone (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
- ☐ Varies Nickel Compounds
- ☐ 98-95-3 Nitrobenzene
- ☐ 100-02-7 4-Nitrophenol
- ☐ 79-46-9 2-Nitropropane
- ☐ 684-93-5 N-Nitroso-N-methylurea
- ☐ 59-89-2 N-Nitrosomorpholine
- ☐ 62-75-9 N-Nitrosodimethylamine
- ☐ 92-93-3 4-Nitrobiphenyl
- ☐ 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 (Aroclors)
- ☐ Varies Polycylic Organic Matter
- ☐ 1120-71-4 1,3-Propane sultone
- ☐ 57-57-8 beta-Propiolactone
- ☐ 123-38-6 Propionaldehyde
- ☐ 114-26-1 Propoxur (Baygon)
- ☐ 75-55-8 1,2-Propylenimine (2-Methyl aziridine)
- ☐ 78-87-5 Propylene dichloride (1,2-Dichloropropane)
- ☐ 75-56-9 Propylene oxide
- ☐ 91-22-5 Quinoline
- ☐ 106-51-4 Quinone
- ☐ Varies Radionuclides (including radon)
- ☐ Varies Selenium Compounds
- ☐ 96-09-3 Styrene oxide
- ☐ 100-42-5 Styrene
- ☐ 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
- ☐ 75-01-4 Vinyl chloride
- ☐ 75-35-4 Vinylidene chloride (1,1-Dichloroethylene)
- ☐ 1330-20-7 Xylenes (isomers and mixture)
- ☐ 108-38-3 m-Xylenes
- ☐ 95-47-6 o-Xylenes
- ☐ 106-42-3 p-Xylenes

NOTE: For all listings above which contain the word "compounds" and for glycol ethers, the following applies: Unless otherwise specified, these listings 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. Polymers are excluded from the glycol category.