

INSTRUCTIONS:

Section 6.10: Equipment Leaks

IMPORTANT: Do NOT use pencil to fill out the application. Please type responses or print using black ink. If you have any questions, feel free to contact the Nebraska Department of Water, Energy, and Environment (DWEE) via DWEE.AirQuality@nebraska.gov or the Air Quality Permitting Section at (402) 471-2186.

Complete the information on the top of each page. Enter the name of the company/facility as it is known in Nebraska. The facility name on every page of the application should be identical. Enter the date the form was completed. Enter the DWEE Facility Identification (FID) number assigned by the Nebraska Department of Water, Energy, and Environment. If this is a new facility, leave this space blank. Enter the Emission Point Identification Number. Each place where emissions are emitted into atmosphere from your facility should be labeled with an individual identification number.

1) Equipment Leak Volatile Organic Compound (VOC) Emission Calculations

- In column (A), enter the type of component such as “light liquid valve” (see table below) and product such as “ethanol”.
- In column (B), enter the number of components of this type and service that are/will be located at the facility.
- In column (C), identify the appropriate VOC emission factor. The emission factors are from EPA’s *Protocol for Equipment Leak Emission Estimates* (November 1995, document number EPA-453/R-95-017) and are listed in the table below. New facilities shall use the average emission factors. Existing facilities have the option to use either average emission factors or the leak/no leak approach. If the leak/no leak approach is used, then the ppmv category ($\geq 10,000$ or $< 10,000$ ppmv) must be entered with each component type listed in column (A).

VOC Emission Factors for Equipment Leaks			
Component Type	Average Emission Factor (kg/hr/source)	Leak/No Leak Approach	
		$\geq 10,000$ ppmv Emission Factor (kg/hr/source)	$< 10,000$ ppmv Emission Factor (kg/hr/source)
Gas Valves	0.00597	0.0782	0.000131
Light Liquid Valves	0.00403	0.0892	0.000165
Control Valves	0.00403	0.0892	0.000165
Light Liquid Pumps	0.0199	0.243	0.00187
Compressor Seals (Gas)	0.228	1.608	0.0894
Pressure Relief Valves (Gas)	0.104	1.691	0.0447
Connectors	0.00183	0.113	0.0000810
Flanges	0.00183	0.113	0.0000810
Open-Ended Lines	0.0017	0.01195	0.00150
Sampling Connections	0.0150	0.0150	
Transmitters	0.0150	0.0150	
Manholes	0.0150	0.0150	

INSTRUCTIONS (continued):

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- d) In column (D), determine the uncontrolled VOC emission rate by multiplying the number of components (B) by the emission factor (C) then by the conversion factor of 9.68 ($9.68 = 2.2 \text{ lb/kg} * 8760 \text{ hr/yr} \div 2000 \text{ lb/ton}$). Sum all rows and enter the total uncontrolled VOC emission in the shaded row at the bottom.
- e) In column (E), identify the appropriate control efficiency from the implementation of the Leak Detection and Repair (LDAR) program. You may assume a control efficiency only if you are required by regulation to perform a LDAR program; for example, if you are or will be subject to New Source Performance Standard (NSPS), Subpart VV or VVa for Synthetic Organic Chemical Manufacturing Industry. The control efficiencies are from EPA's *Protocol for Equipment Leak Emission Estimates* (November 1995, document number EPA-453/R-95-017) and are listed in the table below.

Control Efficiency of LDAR Program		
Component Type	Monthly Monitoring	Quarterly Monitoring
Gas Valves	87 %	67%
Light Liquid Valves	84 %	61%
Control Valves	84%	61%
Light Liquid Pumps	69 %	45%

- f) In column (F), determine the controlled VOC emission rate by multiplying the uncontrolled VOC emission rate in column (D) by one minus the control efficiency in column (E) expressed in decimal form (ex. $84\% = 0.84$). Sum all rows and input total VOC controlled emission in the shaded row at the bottom.

2) Equipment Leak Hazardous Air Pollutant (HAP) Emission Calculations

- g) For (G), enter the product name that is leaked from the equipment/components.
- h) In column (H), enter the names of all hazardous air pollutants (HAPs) contained in the product being leaked.
- i) In column (I), record the HAP amount as a weight percent of total VOC in the product being leaked.
- j) In column (J), calculate the emission of each individual HAP in tons per year by multiplying the controlled VOC emission rate (F) by the HAP percentage in column (I) expressed in decimal form (ex. $84\% = 0.84$). Sum the emissions from each individual HAP and enter the total in the shaded row at the bottom.