



DNREC Division of Air Quality Health Risk Modeling for Noramco Construction Permit Application



Health Risk Modeling

As part of the permit application review process, DNREC conducts computer modeling to ensure that negative health effects will not occur if the Department were to grant a permit. The DNREC Division of Air Quality (DAQ) has modeled Noramco’s proposed permit emissions and determined DAQ’s health and safety screening criteria have been met.

DAQ uses U.S. Environmental Protection Agency (EPA) modeling tools which provide a maximum downwind concentration (MDC), which is the modeled concentration of a pollutant found beyond the facility by using the unique characteristics of the emission point. The MDC is then compared to scientifically-determined acceptable exposure limits, with a large safety factor figuring into calculations to account for different ages and individual health conditions, genders, and body types. The exposure limit is known as a Threshold Limit Value (TLV).

The MDCs for Noramco’s construction permit application for a new vacuum pump and process lines were computed using the EPA’s AERSCREEN dispersion model. AERSCREEN is EPA’s recommended model to predict concentrations of pollutants in the air around emission sources.

As the table below demonstrates, the TLV:MDC ratios from the addition of the new vacuum pump and process lines at Noramco’s Swedes Landing Road facility far exceed DNREC’s screening criteria. The emissions are far below what would be considered to cause adverse health effects should a DNREC permit be granted for constructing them.

AERSCREEN Modeling Results					
Pollutant	Emission Rate (lb/day)	MDC (µg/m ³) (8-hr)	MDC (mg/m ³)	TLV (8-hr)	TLV:MDC (mg/m ³)
Ethanol	0.5	1.1	0.0011	1884.19	1712900:1
Ethyl Acetate	1.15	2.5	0.0025	1440	576000:1
Methanol	0.7	1.5	0.0015	2.98	1987:1
n-Butanol	0.04	0.09	0.00009	61	677778:1
Tetrahydrofuran	1.87	4.0	0.004	147	36750:1
Toluene	0.9	1.9	0.0019	75	39474:1
Triethylamine	0.01	0.3	0.00003	41.39	1379667:1
Acetone	1.4	0.3	0.003	594	198000:1
Hydrogen Chloride	0.02	0.03	0.00003	262	8733333:1

Please note that these modeling results do not signify that DNREC will issue a permit, as modeling is conducted as part of the Department’s standard permit review process. Also, if a permit is granted, facility-wide permitted emissions will not increase.