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# Chemical Inventory Limits for Investigation, Remediation, and Restoration of Material Disposal Area B Nuclear Environmental Site

Prepared by the
Environmental Stewardship–Environmental Remediation and Surveillance Division

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Approval:

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## 1.0 INTRODUCTION

Los Alamos National Laboratory (LANL, or the Laboratory) document LA-UR-05-XXXX, "Documented Safety Analysis for Investigation, Remediation, and Restoration of Material Disposal Area B Nuclear Environmental Site" (LANL 2006), identified the development of an Above-Ground Material Management Plan as a technical safety requirement (TSR) specific administrative control (SAC). Inventory limits specified by the Above-Ground Material Management Plan will mitigate the consequences in the event of an accidental release of a hazardous material/substance during the investigation, remediation, and restoration (IRR) of Material Disposal Area (MDA) B. This report provides the methodology used to develop chemical inventory limits for MDA B IRR and identifies those limits for a subset of chemicals. Additionally, the methodology described in this report will be used by field personnel to determine inventory limits for those chemicals identified during MDA B IRR that are not evaluated by this report.

Waste inventory information for MDA B is anecdotal. The Laboratory did not maintain waste inventory records during the active disposal life of this area (1945 to 1948). Therefore, while subject matter experts (SMEs) generated a list of contaminants of concern (CoCs) using historical documentation, investigation and characterization activities are necessary before the Laboratory will know the exact contents of MDA B. As such, inventory limits identified by the Above-Ground Material Management Plan will be applicable only to those chemicals (liquids and gases) staged/stored in the Definitive Identification Facility (DIF) and the surrounding storage/staging area (327 m from the maximally-exposed offsite individual [MEOI]) that the Laboratory has fully characterized. Field personnel will rely upon post-excavation containment (e.g., overpacking, cylinder coffins, etc.) and good work practices (as described by the Above-Ground Material Management Plan) to ensure the safety of the public, workers, and the environment during work within the excavation enclosure, during onsite transportation, and during work with unidentified hazardous materials/substances.

The primary consideration in the development of chemical inventory limits is to ensure no irreversible or other serious health effects or symptoms to the public at the nearest site boundary. Therefore, chemical inventories will be limited to the quantity of material that, given a chemical spill or release, will not meet or exceed 60-minute Acute Exposure Guideline Level 2 (AEGL-2), Emergency Response Planning Guideline 2 (ERPG-2), or Temporary Emergency Exposure Level 2 (TEEL-2) airborne concentration limits at the site boundary. In accordance with "AEGLs, ERPGs, or Rev. 21 TEELs for Chemicals of Concern 2005" (Craig 2005), AEGL values (final or interim) will be used to determine inventory limits, when available. In the absence of AEGL values, analysts will reference ERPG values. TEEL values will be used when no AEGL or ERPG values exist for a given chemical. Analysts will use the threshold quantities given by 29 CFR 1910.119 (Appendix A, List of Highly Hazardous Chemicals, Toxics, and Reactives) and 40 CFR 68.130 (Tables 1 and 2, List of Regulated Toxic Substances and Threshold Quantities for Accidental Release Prevention; Tables 3 and 4, List of Regulated Flammable Substances and Threshold Quantities for Accidental Release Prevention) in lieu of the quantities calculated based on AEGL/ERPG/TEEL-2 limits when the threshold quantities are more restrictive. Storage limits for flammable and combustible liquids and hazardous and toxic gases as specified by LIR 402-510-01, "Chemical Management," will take precedence over the limits identified in this report when they are more restrictive.

## 2.0 METHODOLOGY

An initial list of chemicals was developed using the CoC list provided in the documented safety analysis (DSA) (LANL 2006), the results of the pore gas and surface sampling conducted in 1998 and 2001 (LANL 2004), and a general list of volatile organic compounds (VOCs). Analysts identified a subset of this list for

inventory control. Analysts established inventory limits for those chemicals that the Laboratory may find in a readily dispersible form in MDA B. Liquids and gases were considered if they have a vapor pressure (VP) greater than 0.5 mm Hg and/or a boiling point (BP) less than 100°C. Chemicals normally found in a solid form were not analyzed. Although particles smaller than about 10 µm in diameter are respirable, a liquid or gas is expected to have greater consequences in terms of area of impact and time urgency. This criterion ensures that the analysis included those chemicals that may pose a high vaporization/dispersion hazard and is consistent with the chemical accident screening used in DOE/EIS-0238, “Site-Wide Environmental Impact Statement for Continued Operation of the Los Alamos National Laboratory” (DOE 1999).

Analysts used two separate air dispersion models to determine the inventory limit for a given chemical of concern: Areal Locations of Hazardous Atmospheres (ALOHA) Version 5.3.1 and Emergency Prediction Information Code (EPIcode) Version 7.0.

ALOHA is a public domain code that is part of a system of software known as the Computer-Aided Management of Emergency Operations (CAMEO), which was developed to plan for and respond to chemical emergencies. It is also widely used throughout the Department of Energy (DOE) complex for safety analysis applications. The Environmental Protection Agency (EPA), through its Chemical Emergency Preparedness and Prevention Office (CEPPO), and the National Oceanic and Atmospheric Administration (NOAA) Office of Response and Restoration jointly sponsor ALOHA. EPIcode was developed by Homann Associates, Inc., which maintains and upgrades the code. Homann Associates, Inc. developed EPIcode to automate the implementation of the EPA ‘Green Book’ guidance regarding dispersion of hazardous chemicals. The DOE Office of Environment, Safety, and Health designated both ALOHA and EPIcode as DOE “toolbox” codes. DOE-EH-4.2.1.3-ALOHA Code Guidance (DOE June 2004a) and DOE-EH-4.2.1.3-EPIcode Code Guidance (DOE June 2004b) provide detailed descriptions of the software and DOE-recommended guidance for use of the software in safety analysis applications.

ALOHA and EPIcode are well-developed computer models that are capable of calculating $\chi/Q$ values with the weather conditions provided, such as stability class, temperature, wind speed, and distance from release. These codes use a centerline Gaussian-dispersion plume model to represent chemical releases that are neutrally buoyant. ALOHA will also model heavy gas releases.

ALOHA and EPIcode use the Gaussian model to predict how gases that are about as buoyant as air will disperse in the atmosphere. Such "neutrally-buoyant" gases have about the same density as air. According to this model, wind and atmospheric turbulence are the forces that move the molecules of a released gas through the air, so as an escaped cloud is blown downwind, "turbulent mixing" causes it to spread out in the crosswind and upward directions. According to the Gaussian model, any crosswind slice of a moving pollutant cloud looks like a bell-shaped curve, high in the center and lower on the sides.

"Heavy gases" form vapor clouds that are heavier and denser than air. Heavy gases include not only gases with molecular weights heavier than air (the average molecular weight of air is about 29 kg/kmol), but sometimes also gases such as anhydrous ammonia that are normally lighter than air, but that are stored liquefied under pressure. Liquefied gases typically escape from storage as a cold, heavy cloud containing a mixture of gas and fine aerosol droplets. A release of such a mixture is called a two-phase flow. The aerosols weigh the cloud down and make it more dense, and their evaporation cools the cloud.

Heavy gases behave in a complicated way when they escape from storage. A heavy gas cloud first slumps away from the source in all directions, then flows downwind like water, propelled by the wind, gravitational slumping, and its forward momentum. As it moves downwind, air is stirred into the cloud, and it becomes less and less dense, eventually behaving like a neutrally buoyant gas.

The basis for identifying the potential for heavy gas effects is the Richardson (Ri) number. The Ri number represents a relative measure of the potential energy of the cloud with respect to the mechanical turbulent energy of the atmosphere. The source Ri ($Ri_o$) number, above which heavy gas transport effects are assumed important, is typically considered about 50 (Hanna, 1996). An absolute threshold value does not actually exist. Heavy gas effects may begin to appear for $Ri_o$ values as low as one and become more pronounced as $Ri_o$ is increased. ALOHA uses a critical $Ri_o$ value of one.

ALOHA's heavy gas model typically (as seen in this analysis) produces results that allow for a much higher inventory limit than those produced by EPIcode. Other analyses have used the results of ALOHA when heavy gas transport and dispersion are characteristic, since EPIcode does not have a heavy gas model. However, due to the lack of an absolute threshold value for the $Ri_o$ number and the tendency for heavy gas releases to transition to a neutrally buoyant plume, analysts chose the more conservative results of the two models (typically EPIcode) to set the inventory limits for MDA B IRR.

## 2.1 Input Parameters

Table 2.1-1 provides the basic input parameters used to run ALOHA and EPIcode. All releases are assumed to take place outdoors. No credit is taken for confinement structures or ventilation/filtration. Following sections provide the specific input parameters used to model liquid spills and gaseous releases.

**Table 2.1-1**
**Input Parameters for EPIcode and ALOHA**

| Input Parameter | EPIcode | ALOHA | Justification |
|---|---|---|---|
| Source Location/ Site Data | Lat: 34.00879 N<br>Long: 106.44313 W<br>Source Altitude: 2069 m (6789 ft) | Los Alamos, NM<br>Lat: 35° 31.2 min N<br>Long: 106° 11.4 min W<br>Elevation: 2069 m (6789 ft) | Latitude, longitude, and altitude are input into EPIcode; specific latitude, longitude, and elevation information is provided by ALOHA when Los Alamos, NM is chosen by the user. |
| Building Type | N/A | Default is sheltered single story | Not applicable to this analysis—receptor is conservatively located outside. |
| Date and Time | N/A | June 30, 2005; 0600 hours MDT | ALOHA uses a number of parameters, including date and time, to determine the evaporation rate; these parameters must also be consistent with the desired atmospheric stability class. The date and time have been selected to ensure the recommendation of Stability Class F. |
| Terrain/Ground Roughness | Standard (rural) | Open Country (rural) | Rural terrain is chosen for conservatism. EPIcode's rural model produces concentrations approximately 10 times greater than its urban model; ALOHA's rural model produces concentrations approximately 3 times greater than its urban model. |
| Atmospheric Stability Class | F | F | Atmospheric Stability Class F is conservatively chosen to represent unfavorable, worst-case |

**Table 2.1-1**
**Input Parameters for EPIcode and ALOHA**

| Input Parameter | EPIcode | ALOHA | Justification |
|---|---|---|---|
| | | | conditions. |
| Cloud Cover | N/A | Clear (0 tenths) | ALOHA primarily uses the cloud-cover input to estimate the amount of incoming solar radiation that is incident upon the puddle formed by a liquid spill (cloud cover is expected to also have an effect at night on the long wave radiation calculations and therefore a small effect on evaporation). Zero tenths cloud cover is conservative and consistent with the selection of Atmospheric Stability Class F. |
| Wind Speed/ Measurement Height | 1.5 m/s at 10 m | 1.5 m/s at 10 m | 1.5 m/s at 10 m is the DOE-recommended wind speed and conservative reference height for use with Stability Class F (DOE June 2004a; DOE June 2004b). Thoman, et. al., further demonstrates the conservatism of choosing a reference height of 10 m (as opposed to the 2 m default for EPIcode and 3 m default for ALOHA) (Thoman, et. al. 2005). |
| Wind Direction | Any direction | Any direction | Downwind concentration results are not sensitive to this input parameter specification. |
| Inversion Height | 200 m | 200 m | 200 m has been conservatively chosen to ensure the worst-case downwind concentrations are represented—the lower the inversion height, the higher the downwind concentration. |
| Temperature | 32.2°C | 32.2°C | 95$^{th}$ percentile value of a five-year record of |

**Table 2.1-1**
**Input Parameters for EPIcode and ALOHA**

| Input Parameter | EPIcode | ALOHA | Justification |
|---|---|---|---|
| | | | daily high temperatures for Los Alamos (measurements obtained from TA-53 monitoring station—10/31/00 to 10/30/05). |
| Humidity | N/A | 50% | 50% is the DOE-recommended value (DOE June 2004a). This value is used to calculate the evaporation rate only. ALOHA does not model chemical reactions resulting from moisture. |
| Release Height | 0 m (ground-level release) | 0 m (ground-level release) | All release scenarios assume a ground-level release. |
| Receptor Height | 0 m | 0 m (only option) | A receptor height of 0 m is most appropriate and conservative for a ground-level release (DOE June 2004b). |
| Deposition Velocity | 0 cm/s | 0 cm/s (only option) | Plume depletion is conservatively not considered given the close proximity of the MEOI. |
| Airborne Fraction | 1.00 | N/A | All of the material involved is conservatively assumed to be released to the atmosphere. |
| Sample/Averaging Time | 10 minutes | 3 minutes (only option) | Default values; these low sampling/averaging times are conservative as they provide for higher downwind concentrations. |
| Dispersion Model | Gaussian | Gaussian and Heavy Gas, as applicable | EPIcode uses the Gaussian model only; ALOHA decides the most appropriate of the Gaussian and Heavy Gas model to use for a given chemical. |

### 2.1.1 Puddle Source/Liquid Spill

Analysts chose ALOHA's puddle source model and EPIcode's liquid spill model to model the release of chemicals in a liquid form. These two models assume that the total inventory of a specified chemical has spilled onto the ground and has formed one puddle or pool that has a uniform depth and is not changing in area. Catastrophic failure of a storage vessel is an example of a scenario that could quickly progress to a puddle source or liquid spill configuration. The source term is proportional to the pool surface area, which is defined by the presence of a berm (or similar type barrier) or by assuming that the liquid spreads to some uniform thickness (e.g., 1 cm).

ALOHA (EPA/NOAA 2004)

ALOHA's puddle source model can model evaporation from puddles that are boiling or that are cooler than the boiling point of the liquid that they contain. To model evaporation from a puddle, ALOHA accounts for the effects of wind speed, atmospheric turbulence, air temperature and pressure, viscosity, and other properties of the spilled chemical. It accounts for the effects on puddle temperature of solar heating, evaporative cooling, and several other ways in which heat is exchanged between a puddle and its environment. For example, on a sunny day, ALOHA will expect heat energy from the sun to warm the puddle. It expects puddle temperature to directly influence evaporation rate so that the higher the puddle temperature, the faster the evaporation rate. It accounts for changes in puddle temperature and hence in evaporation rate over time. The types of heat transfer that ALOHA expects to affect puddle temperature fall into the following three categories:

- incoming solar radiation (affected by location, time and date, and cloud cover),
- heat transfer with the air (affected by air temperature, humidity, and initial puddle temperature), and
- heat transfer with the ground (affected by ground temperature, ground type, and initial puddle temperature).

The puddle source model requires the following specific inputs in addition to those given in Table 2.1-1:

- puddle area or diameter;
- volume, mass, or depth of the puddle;
- ground type;
- ground temperature; and
- initial puddle temperature.

The puddle area/diameter and the volume/mass/depth of the puddle characterize the quantity of the chemical spilled and provide the physical dimensions of the puddle or pool that are necessary for the evaporation calculation. Analysts determined the surface area of a spilled chemical using the following equation:

$$A = V/\Delta h \qquad \text{(Equation 2.2-1)}$$

where, A is the surface area of the puddle, V is the volume of the puddle (or total amount of material spilled), and Δh is the depth of the puddle. The purpose of this anaylsis was to determine the maximum

quantity of a specified chemical that will not meet or exceed AEGL/ERPG/TEEL-2 at the site boundary. Therefore, analysts estimated the volume of the puddle until a quantity was identified that yielded a concentration just less than the AEGL/ERPG/TEEL-2 threshold for the chemical modeled. The DOE code guidance for ALOHA (DOE June 2004a) recommends a puddle depth (Δh) of 1 cm, a depth that is commonly used and suggested by EPA guidance. Therefore, analysts used a puddle depth of 1 cm for this analysis.

Ground type influences the amount of heat energy transferred from the ground to an evaporating puddle. As it computes heat transfer from ground to puddle, ALOHA assumes that the ground does not absorb any of the spilled chemical. ALOHA offers four choices for ground type:

- default—unwetted soil not covered by rock or concrete;
- concrete—concrete, cement, asphalt, or otherwise paved surfaces;
- sandy—sandy, dry soil; and
- moist—sandy, moist soil.

ALOHA expects heat to be transferred most readily from a default or concrete ground into a puddle, and least readily from sandy ground. The more heat energy that is transferred into the puddle, the higher the evaporation rate and the downwind concentration. Analysts chose the default ground type (unwetted soil not covered by rock or concrete) as the most representative and conservative choice for this analysis.

ALOHA uses ground temperature to predict the amount of heat transferred from the ground to an evaporating puddle. The warmer the ground relative to the temperature of the puddle, the more heat energy will be transferred into the puddle, and the faster the puddle will evaporate. The DOE code guidance for ALOHA (DOE June 2004a) recommends a specification based on statistical analysis of measurements of ground surface temperature, and when such data is not available, the ground temperature should be set equal to the air temperature. Analysts conservatively set the ground temperature equal to the air temperature (32.2°C) for this analysis.

To predict the rate of evaporation from a puddle of spilled liquid, ALOHA must know the initial temperature of the puddle. It assumes the initial temperature to be the same throughout the depth and width of the puddle. The DOE code guidance for ALOHA (DOE June 2004a) recommends that the initial puddle temperature be consistent with the storage/operating temperature or the ambient temperature. Therefore, analysts assumed that the initial puddle temperature was equal to the air/ground temperature. The initial puddle temperature must be above the liquid's freezing point (ALOHA cannot predict sublimation rate from a frozen puddle) and equal to or less than the liquid's ambient boiling point.

EPIcode (Homann Associates, Inc. 2003)

EPIcode's liquid spill model is not as complex as ALOHA's puddle source model. EPIcode's evaporation methodology is based on an EPA model (EPA 1987) and considers the windspeed, molecular weight of the spilled material, surface area of the spilled material, vapor pressure of the spilled material at a given temperature, and the temperature of the spilled material. For liquid spill scenarios, EPIcode prompts the analyst for inputs of total quantity of liquid that is spilled, surface area of pool that forms from the spill (calculated by EPIcode), the chemical vapor pressure (calculated by EPIcode), and the liquid temperature. From these inputs, EPIcode calculates the evaporative release rate to the atmosphere and the duration of the release.

As with the ALOHA model, analysts estimated the total quantity of liquid spilled until a quantity was identified that yielded a concentration just less than the AEGL/ERPG/TEEL-2 threshold for the chemical modeled. Once the analyst specifies a quantity, EPIcode provides three possible spill areas—one based on a 1 cm pool depth, one based on a 1 mm pool depth, and one based on a 1 in. pool depth. For an unmitigated analysis, as with ALOHA, the DOE code guidance for EPIcode (DOE June 2004b) recommends that a minimum depth of 1 cm be specified.

The evaporation rate is directly proportional to the chemical vapor pressure, and the vapor pressure of the chemical constituent is a strong function of its temperature in the liquid state. EPIcode typically provides the vapor pressure at a given temperature (e.g., 25°C) for each chemical. EPIcode recalculates the vapor pressure based on the specified spill temperature. The DOE code guidance for EPIcode (DOE June 2004b) recommends that the analyst first consider the range of possible liquid temperatures, consistent with the storage/operating temperature or the environment temperature, and then specify the spill temperature. As with the ALOHA model, analysts conservatively set the spill temperature equal to the air/environment temperature (32.2°C) for this analysis.

Very small particles and gases or vapors are deposited on surfaces as a result of turbulent diffusion and Brownian motion. Chemical reactions, impaction, and other biological, chemical, and physical processes combine to keep the released substance at ground level. As this material is deposited on the ground, the plume above becomes depleted, and downwind concentrations are lower than would be the case without plume depletion. EPIcode uses a source-depletion algorithm to adjust the air concentration in the plume to account for this removal of material. The deposition velocity input determines plume depletion. The most conservative results are generally obtained with the deposition velocity set to zero; however, this assumption could lead to unrealistically large concentration predictions for particles, particularly at large distances downwind. The DOE code guidance for EPIcode (DOE June 2004b) recommends the default values of 0 cm/s for gases and vapors and 0.3 cm/s for solids, although other values may be used with justification. Due to the close proximity of the MEOI, analysts conservatively assumed a deposition velocity of 0 cm/s for liquid spills.

Additional input parameters include the airborne fraction and the physical height of the spill. Analysts conservatively assumed the airborne fraction, the fraction of the total quantity of material involved in the spill that is released to the atmosphere, to be 1.00. For MDA B IRR activities, the physical height of a chemical spill will be 0 m.

### 2.1.2 Gaseous Release

Analysts chose ALOHA's direct source model and EPIcode's term release model to model the release of chemicals in a gaseous form.

ALOHA (EPA/NOAA 2004)

The direct source model is used when the emission rate of a gas is known. The emission rate remains constant throughout the duration of the release. A continuous (lasting more than one minute) or instantaneous release (lasting one minute) may be chosen. For the purposes of this analysis, analysts modeled all gases as a continuous 10-minute release. This is consistent with modeling performed for the LANL site-wide environmental impact statement (DOE 1999). As for the liquid spill, analysts estimated the total quantity of gas released until a quantity was identified that yielded a concentration just less than the AEGL/ERPG/TEEL-2 threshold for the chemical modeled. Analysts assumed a ground-level release, so the source height was set to 0 m.

EPIcode (Homann Associates, Inc. 2003)

EPIcode defines a term release as a release that is of finite duration. As the release duration increases, the results from the term-release model approach that from the continuous release model for equivalent specifications of release rates and other input variables. At the other end of the spectrum for term releases (i.e., releases of very short duration) is the instantaneous release. When the user specifies an instantaneous term release, EPIcode uses the puff model. For other term releases (i.e., non-instantaneous), EPIcode automatically selects the puff or plume equation at each downwind location based on the relative dimension of the cloud width with respect to the cloud length. When the cloud length is less than the cloud width, the puff equation is considered a more accurate model of the dispersion.

As with ALOHA, analysts modeled all gases as a continuous 10-minute release and estimated the total quantity of gas released until a quantity was identified that yielded a concentration just less than the AEGL/ERPG/TEEL-2 threshold for the chemical modeled. The effective release height was set to 0 m. Analysts conservatively assumed the airborne fraction to be 1.00. No plume depletion was credited, and the deposition velocity was set to 0 cm/s.

## 3.0 CHEMICAL INVENTORY LIMITS

Tables 3.0-1 through 3.0-5 provide the inventory limits at 327 m identified through modeling for each of the chemicals analyzed. The chemicals are presented based on their Department of Transportation (DOT) hazard class. Appendix B provides the results of the modeling for both ALOHA and EPIcode. Modeling was performed at various distances and for both AEGL/ERPG/TEEL-2 and -3 to accommodate changes that may occur during the MDA B IRR planning phase. An activity or facility with greater than 100,000 lbs of a hazardous material/substance is considered to be in a production mode. Therefore, any limits identified at greater than 100,000 lbs were set at 100,000 lbs.

**Table 3.0-1**
**Chemical Inventory Limits for DOT Class 2: Gases (Flammable, Non-Flammable, Toxic)**

| Chemical | Form | CAS No. | Limit (lbs)—327 m |
|---|---|---|---|
| Bromomethane (also Methyl Bromide) | Gas | 74-83-9 | 30 |
| Chloroethane (also Ethyl chloride) | Gas | 75-00-3 | 410 |
| Chloromethane (also Methyl chloride) | Gas | 74-87-3 | 128 |
| Dichlorodifluoromethane | Gas | 75-71-8 | 7750 |
| Hydrogen bromide, anhydrous (also Hydrobromic acid, anhydrous) | Gas | 10035-10-6 | 1.5 |
| Hydrogen Chloride, anhydrous | Gas | 7647-01-0 | 5 |
| Hydrogen Fluoride, anhydrous | Gas | 7664-39-3 | 3 |
| Hydrogen iodide, anhydrous (also Hydriodic acid 4) | Gas | 10034-85-2 | 0.4 |
| Sulfur dioxide | Gas | 7446-09-5 | 0.3 |
| Vinyl Chloride | Gas | 75-01-4 | 1975[a] |

[a]10% LEL ≤ AEGL/ERPG/TEEL < 50% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account

**Table 3.0-2**
**Chemical Inventory Limits for DOT Class 3: Flammable and Combustible Liquids**

| Chemical | Form | CAS No. | Limit (lbs)—327 m |
|---|---|---|---|
| 1,1-Dichloroethane | Liquid | 75-34-3 | 13,100 |
| 1,1-Dichloroethylene (also Vinylidene Chloride) | Liquid | 75-35-4 | 26 |
| 1,2,4-Trimethylbenzene | Liquid | 95-63-6 | 11,500 |
| 1,2-Dichloroethane (also Ethylene Dichloride) | Liquid | 107-06-2 | 1975 |
| 1,2-Dichloropropane | Liquid | 78-87-5 | 1600 |
| 1,3,5-Trimethylbenzene (also Mesitylene) | Liquid | 108-67-8 | 5600 |
| 1,3-Dichloropropane | Liquid | 142-28-9 | 4700 |
| 2,2-Dichloropropane | Liquid | 594-20-7 | 530 |
| 2-Butanone (also Ethyl Methyl Ketone) | Liquid | 78-93-3 | 20,000[a] |
| 2-Chloroethyl vinyl ether | Liquid | 110-75-8 | 100 |
| 2-Chlorotoluene (also O-Chlorotoluene) | Liquid | 95-49-8 | 95,000 |
| 2-Hexanone (also Methyl Butyl Ketone) | Liquid | 591-78-6 | 3150 |
| 4-Chlorotoluene | Liquid | 106-43-4 | 100,000 |
| 4-Methyl-2-pentanone (also Methyl Isobutyl Ketone) | Liquid | 108-10-1 | 7000 |
| Acetone | Liquid | 67-64-1 | 10,000[a] |
| Acrylonitrile | Liquid | 107-13-1 | 126 |
| Benzene | Liquid | 71-43-2 | 750 |
| Bromobenzene | Liquid | 108-86-1 | 3750 |
| Carbon disulfide (also Carbon bisulfide) | Liquid | 75-15-0 | 325 |
| Chlorobenzene | Liquid | 108-90-7 | 53,700 |
| cis-1,3-Dichloropropylene (also cis-1,3-Dichloro-1-propene) | Liquid | 10061-01-5 | 84 |
| Ethylbenzene | Liquid | 100-41-4 | 8900 |
| Ethyl ether (also Diethyl ether) | Liquid | 60-29-7 | 395 |
| Isopropylbenzene (also Cumene) | Liquid | 98-82-8 | 7100 |
| m-Xylene | Liquid | 108-38-3 | 17,500 |
| p-Xylene | Liquid | 106-42-3 | 16,500 |
| n-Butylbenzene | Liquid | 104-51-8 | 100,000 |
| n-Propylbenzene | Liquid | 103-65-1 | 100,000 |
| Kerosene | Liquid | 8008-20-6 | 6400 |
| o-Xylene | Liquid | 95-47-6 | 23,500 |
| sec-Butylbenzene | Liquid | 135-98-8 | 16,000 |
| Styrene (also Styrene monomer) | Liquid | 100-42-5 | 31,500 |
| tert-Butylbenzene | Liquid | 98-06-6 | 68,000 |
| Toluene | Liquid | 108-88-3 | 12,500 |
| trans-1,2-Dichloroethylene | Liquid | 156-60-5 | 2700 |
| trans-1,3-Dichloropropylene | Liquid | 10061-02-6 | 93 |

[a]10% LEL ≤ AEGL/ERPG/TEEL < 50% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account

**Table 3.0-3**
**Chemical Inventory Limits for DOT Class 6: Toxic Substances and Infectious Substances**

| Chemical | Form | CAS No. | Limit (lbs)—327 m |
|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | Liquid | 630-20-6 | 5300 |
| 1,1,1-Trichloroethane | Liquid | 71-55-6 | 5100 |
| 1,1,2,2-Tetrachloroethane | Liquid | 79-34-5 | 775 |
| 1,2,3-Trichloropropane | Liquid | 96-18-4 | 3100 |
| 1,2-Dibromoethane (also Ethylene Dibromide) | Liquid | 106-93-4 | 3200 |
| 1,2-Dichlorobenzene (also O-Dichlorobenzene) | Liquid | 95-50-1 | 47,000 |
| 1,2-Dichloroethane (also Ethylene Dichloride) | Liquid | 107-06-2 | 1975 |
| 1,3-Dichlorobenzene (also M-Dichlorobenzene) | Liquid | 541-73-1 | 6500 |
| 2-Chloroethylvinyl ether | Liquid | 110-75-8 | 100 |
| Acrylonitrile | Liquid | 107-13-1 | 126 |
| Bromochloromethane | Liquid | 74-97-5 | 10,800 |
| Bromoform | Liquid | 75-25-2 | 300 |
| Carbon disulfide (also Carbon bisulfide) | Liquid | 75-15-0 | 325 |
| Carbon tetrachloride | Liquid | 56-23-5 | 2030 |
| Chloroform | Liquid | 67-66-3 | 310 |
| Dibromochloromethane (also Chlorodibromomethane) | Liquid | 124-48-1 | 150 |
| Dibromomethane | Liquid | 74-95-3 | 51 |
| Iodomethane (also Methyl idodide) | Liquid | 74-88-4 | 195 |
| Methylene chloride (also Dichloromethane) | Liquid | 75-09-2 | 1470 |
| Tetrachloroethylene (also Perchloroethylene) | Liquid | 127-18-4 | 18,000 |
| Trichloroethylene | Liquid | 79-01-6 | 7100 |
| Trichlorofluoromethane | Gas | 75-69-4 | 1250 |

**Table 3.0-4**
**Chemical Inventory Limits for DOT Class 8: Corrosives**

| Chemical | Form | CAS No. | Limit (lbs)—327 m |
|---|---|---|---|
| Ammonium Hydroxide (10-35% ammonia; 21-72% ammonium hydroxide; water is balance) | Liquid | 1336-21-6 | 102 |
| Hydrogen bromide, anhydrous (also Hydrobromic acid, anhydrous) | Gas | 10035-10-6 | 1.5 |
| Hydrogen bromide, solution (48%) | Liquid | 10035-10-6 | 700 |
| Hydrogen Chloride, anhydrous | Gas | 7647-01-0 | 5 |
| Hydrogen chloride, solution (30-40%) | Liquid | 7647-01-0 | 155 |
| Hydrogen Fluoride, anhydrous | Gas | 7664-39-3 | 3 |
| Hydrogen Fluoride, solution (47-52%) | Liquid | 7664-39-3 | 590 |
| Nitric acid, anhydrous | Liquid | 7697-37-2 | 270 |
| Nitric acid, solution (70%) | Liquid | 7697-37-2 | 450 |
| Sulfur dioxide | Gas | 7446-09-5 | 0.3 |

**Table 3.0-5**
**Chemical Inventory Limits for DOT Class 9: Miscellaneous Hazardous Materials**

| Chemical | Form | CAS No. | Limit (lbs)—327 m |
|---|---|---|---|
| 1,1,2-Trichloroethane | Liquid | 79-00-5 | 600 |
| Bromodichloromethane (also Dichlorobromomethane) | Liquid | 75-27-4 | 90 |
| Trichlorotrifluoroethane (also 1,1,2-Trichloro-1,2,2-trifluoroethane)<br>(Note: This chemical not regulated by DOT) | Liquid | 76-13-1 | 6250 |

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# Appendix A

*Acronyms/Abbreviations and Glossary*

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## A-1.0 ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AEGL | acute exposure guideline level |
| ALOHA | Areal Locations of Hazardous Atmospheres |
| BP | boiling point |
| CAMEO | Computer-Aided Management of Emergency Operations |
| CEPPO | Chemical Emergency Preparedness and Prevention Office |
| CoC | contaminant of concern |
| DIF | Definitive Identification Facility |
| DOE | Department of Energy |
| DOT | Department of Transportation |
| DSA | documented safety analysis |
| EPA | Environmental Protection Agency |
| EPIcode | Emergency Prediction Information Code |
| ERPG | emergency response planning guideline |
| IRR | investigation, remediation, and restoration |
| LANL | Los Alamos National Laboratory |
| MDA | material disposal area |
| MEOI | maximally-exposed offsite individual |
| NOAA | National Oceanic and Atmospheric Administration |
| OSHA | Occupational Safety and Health Administration |
| SAC | specific administrative control |
| SME | subject matter expert |
| TEEL | temporary emergency exposure level |
| TSR | technical safety requirement |
| VOC | volatile organic compound |
| VP | vapor pressure |

## A-2.0 GLOSSARY

**AEGL-2—**The airborne concentration (expressed as ppm or $mg/m^3$) of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.

**AEGL-3—**The airborne concentration (expressed as ppm or $mg/m^3$) of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.

**ERPG-2—**The maximum concentration in air below which it is believed nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair their abilities to take protective action.

**ERPG-3—**The maximum concentration in air below which it is believed nearly all individuals could be exposed for up to one hour without experiencing or developing life-threatening health effects.

**TEEL-2—**Same as ERPG-2.

**TEEL-3—**Same as ERPG-3.

# Appendix B

*Modeling Results*

| | Chemical | CAS No. | DOT Hazard Class | Form | VP | BP | AEGL/ERPG/ TEEL | Distance to MEOI (m) | ALOHA Quantity (lbs) | ALOHA Concentration | ALOHA Model | EPIcode Quantity (lbs) | EPIcode Concentration | EPIcode Model | Inventory Limit (lbs) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,1,1,2-Tetrachloroethane | 630-20-6 | 6 | Liquid | 14 mm Hg at 25°C | 135.1°C | 60 ppm (TEEL-2) | 127 | --- | --- | --- | 860 | 59 ppm | Liquid Spill | 860 | CERCLA chemical; reportable quantity = 100 lbs |
| | | | | | | | | 227 | | | | 2650 | 59 ppm | | 2650 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | | | | 4400 | 59 ppm | | 4400 | |
| | | | | | | | | 327 | | | | 5300 | 59 ppm | | 5300 | |
| | | | | | | | | 357 | | | | 6250 | 59 ppm | | 6250 | |
| | | | | | | | 200 ppm (TEEL-3) | 127 | | | | 3450 | 190 ppm | | 3450 | |
| | | | | | | | | 227 | | | | 10,550 | 190 ppm | | 10,550 | |
| | | | | | | | | 297 | | | | 17,600 | 190 ppm | | 17,600 | |
| | | | | | | | | 327 | | | | 21,050 | 190 ppm | | 21,050 | |
| | | | | | | | | 357 | | | | 24,800 | 190 ppm | | 24,800 | |
| 2 | 1,1,1-Trichloroethane | 71-55-6 | 6 | Liquid | 100 mm Hg at 20°C | 73.9°C | 600 ppm (AEGL-2 interim) | 127 | 4,050 | 593 ppm | Puddle (Heavy Gas) | 825 | 590 ppm | Liquid Spill | 825 | CERCLA chemical; reportable quantity = 1000 lbs |
| | | | | | | | | 227 | 11,750 | 598 ppm | | 2550 | 590 ppm | | 2550 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 19,100 | 595 ppm | | 4250 | 590 ppm | | 4250 | |
| | | | | | | | | 327 | 22,750 | 595 ppm | | 5100 | 590 ppm | | 5100 | |
| | | | | | | | | 357 | 26,750 | 598 ppm | | 6050 | 590 ppm | | 6050 | |
| | | | | | | | 4200 ppm (AEGL-3 interim) | 127 | | | | 8800 | 4100 ppm | Liquid Spill | 8800 | |
| | | | | | | | | 227 | | | | 26,500 | 4100 ppm | | 26,500 | |
| | | | | | | | | 297 | | | | 44,500 | 4100 ppm | | 44,500 | |
| | | | | | | | | 327 | | | | 53,000 | 4100 ppm | | 53,000 | |
| | | | | | | | | 357 | | | | 62,500 | 4100 ppm | | 62,500 | |
| 3 | 1,1,2,2-Tetrachloroethane | 79-34-5 | 6 | Liquid | 5 mm Hg at 20°C | 146.4°C | 5 ppm (TEEL-2) | 127 | 170 | 4.91 ppm | Puddle (Gaussian) | 125 | 4.8 ppm | Liquid Spill | 125 | CERCLA chemical; reportable quantity = 100 lbs |
| | | | | | | | | 227 | 1150 | 4.97 ppm | (Heavy Gas) | 390 | 4.9 ppm | | 390 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 2050 | 4.89 ppm | | 650 | 4.8 ppm | | 650 | |
| | | | | | | | | 327 | 2550 | 4.9 ppm | | 775 | 4.8 ppm | | 775 | |
| | | | | | | | | 357 | 3100 | 4.9 ppm | | 925 | 4.9 ppm | | 925 | |
| | | | | | | | 100 ppm (TEEL-3) | 127 | | | | 3650 | 99 ppm | Liquid Spill | 3650 | |
| | | | | | | | | 227 | | | | 11,100 | 99 ppm | | 11,100 | |
| | | | | | | | | 297 | | | | 18,500 | 99 ppm | | 18,500 | |
| | | | | | | | | 327 | | | | 22,300 | 99 ppm | | 22,300 | |
| | | | | | | | | 357 | | | | 26,000 | 99 ppm | | 26,000 | |
| 4 | 1,1,2-Trichloroethane | 79-00-5 | 9 | Liquid | 16.7 mm Hg at 20°C | 113.9°C | 15 ppm (TEEL-2) | 127 | 275 | 14.8 ppm | Puddle (Heavy Gas) | 95 | 14 ppm | Liquid Spill | 95 | CERCLA chemical; reportable quantity = 100 lbs |
| | | | | | | | | 227 | 1000 | 14.9 ppm | | 300 | 14 ppm | | 300 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 1800 | 14.9 ppm | | 500 | 14 ppm | | 500 | |
| | | | | | | | | 327 | 2200 | 14.8 ppm | | 600 | 14 ppm | | 600 | |
| | | | | | | | | 357 | 2700 | 14.9 ppm | | 700 | 14 ppm | | 700 | |
| | | | | | | | 100 ppm (TEEL-3) | 127 | | | | 780 | 99 ppm | | 780 | |
| | | | | | | | | 227 | | | | 2400 | 99 ppm | | 2400 | |
| | | | | | | | | 297 | | | | 4000 | 99 ppm | | 4000 | |
| | | | | | | | | 327 | | | | 4800 | 99 ppm | | 4800 | |
| | | | | | | | | 357 | | | | 5700 | 99 ppm | | 5700 | |
| 5 | 1,1-Dichloroethane | 75-34-3 | 3 | Liquid | 182 mm Hg at 20°C | 57.2°C | 3000 ppm (TEEL-2 and TEEL-3) | 127 | 7500 | 2930 ppm | Puddle (Heavy Gas) | 2100 | 2900 ppm | Liquid Spill | 2100 | CERCLA chemical; reportable quantity = 1000 lbs |
| | | | | | | | | 227 | 20,500 | 2920 ppm | | 6500 | 2900 ppm | | 6500 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 33,200 | 2990 ppm | | 10,950 | 2900 ppm | | 10,950 | |
| | | | | | | | | 327 | 38,500 | 2920 ppm | | 13,100 | 2900 ppm | | 13,100 | |
| | | | | | | | | 357 | 46,500 | 2970 ppm | | 15,450 | 2900 ppm | | 15,450 | |
| 6 | 1,1-Dichloroethylene (also Vinylidene Chloride) | 75-35-4 | 3 | Liquid | 602 mm Hg at 25°C | 37°C | 20 ppm (TEEL-2) | 127 | 9 | 19.7 ppm | Puddle (Heavy Gas) | 4 | 18 ppm | Liquid Spill | 4 | CAA Section 112(r) chemical; threshold quantity = 10,000 lbs |
| | (Note: ALOHA initial puddle temperature is set at 24.6°C—the ambient boiling point.) | | | | | | | 227 | 35 | 19.3 ppm | | 13 | 19 ppm | | 13 | CERCLA chemical; reportable quantity = 100 lbs |
| | | | | | | | | 297 | 65 | 19.7 ppm | | 22 | 19 ppm | | 22 | EPCRA Section 313 chemical |
| | | | | | | | | 327 | 80 | 19.6 ppm | | 26 | 19 ppm | | 26 | |
| | | | | | | | | 357 | 99 | 19.8 ppm | | 31 | 19 ppm | | 31 | |
| | | | | | | | 600 ppm (TEEL-3) | 127 | | | | 145 | 590 ppm | Liquid Spill | 145 | |
| | | | | | | | | 227 | | | | 450 | 590 ppm | | 450 | |
| | | | | | | | | 297 | | | | 750 | 590 ppm | | 750 | |
| | | | | | | | | 327 | | | | 900 | 590 ppm | | 900 | |
| | | | | | | | | 357 | | | | 1050 | 590 ppm | | 1050 | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | 1,2,3-Trichloropropane | 96-18-4 | 6 | Liquid | 3 mm Hg at 25°C | 156.2°C | 10 ppm (TEEL-2) | 127 | 490 | 9.96 ppm | Puddle (Gaussian) | 510 | 9.9 ppm | Liquid Spill | 490 | EPCRA Section 313 chemical |
| | (EPIcode specific gravity incorrect; specific gravity corrected to 1.39 per CAMEO.) | | | | | | | 227 | 4000 | 9.89 ppm | (Heavy Gas) | 1575 | 9.9 ppm | | 1575 | |
| | | | | | | | | 297 | 7250 | 9.94 ppm | | 2600 | 9.8 ppm | | 2600 | |
| | | | | | | | | 327 | 9000 | 9.98 ppm | | 3100 | 9.8 ppm | | 3100 | |
| | | | | | | | | 357 | 10,900 | 9.99 ppm | | 3700 | 9.9 ppm | | 3700 | |
| | | | | | | | 100 ppm (TEEL-3) | 127 | | | | 7800 | 99 ppm | Liquid Spill | 7800 | |
| | | | | | | | | 227 | | | | 24,000 | 99 ppm | | 24,000 | |
| | | | | | | | | 297 | | | | 39,500 | 99 ppm | | 39,500 | |
| | | | | | | | | 327 | | | | 47,500 | 99 ppm | | 47,500 | |
| | | | | | | | | 357 | | | | 56,000 | 99 ppm | | 56,000 | |
| 8 | 1,2,4-Trimethylbenzene | 95-63-6 | 3 | Liquid | 1 mm Hg at 13.3°C | 168.9°C | 36.6 ppm (TEEL-2) | 127 | 7750 | 36.1 ppm | Puddle (Heavy Gas) | 1850 | 36 ppm | Liquid Spill | 1850 | EPCRA Section 313 chemical |
| | | | | | | | | 227 | 25,750 | 36.3 ppm | | 5750 | 36 ppm | | 5750 | |
| | | | | | | | | 297 | 44,500 | 36.4 ppm | | 9500 | 36 ppm | | 9500 | |
| | | | | | | | | 327 | 54,000 | 36.4 ppm | | 11,500 | 36 ppm | | 11,500 | |
| | | | | | | | | 357 | 63,500 | 36 ppm | | 13,500 | 36 ppm | | 13,500 | |
| | (NOTE: LEL = 8000 ppm; 10% LEL ≤ TEEL < 50% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account.) | | | | | | 1500 ppm (TEEL-3) | 127 | | | | >100,000 | | Liquid Spill | 100,000 | |
| | | | | | | | | 227 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 297 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 327 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | |
| 9 | 1,2-Dibromoethane (also Ethylene Dibromide) | 106-93-4 | 6 | Liquid | 12 mm Hg at 20°C | 131.1°C | 30 ppm (TEEL-2) | 127 | 2400 | 29.7 ppm | Puddle (Heavy Gas) | 520 | 29 ppm | Liquid Spill | 520 | CERCLA chemical; reportable quantity = 1 lb |
| | | | | | | | | 227 | 8000 | 29.7 ppm | | 1600 | 29 ppm | | 1600 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 14,000 | 29.9 ppm | | 2650 | 29 ppm | | 2650 | |
| | | | | | | | | 327 | 17,000 | 29.8 ppm | | 3200 | 29 ppm | | 3200 | |
| | | | | | | | | 357 | 20,000 | 29.4 ppm | | 3750 | 29 ppm | | 3750 | |
| | | | | | | | 100 ppm (TEEL-3) | 127 | | | | 2010 | 99 ppm | Liquid Spill | 2010 | |
| | | | | | | | | 227 | | | | 6150 | 99 ppm | | 6150 | |
| | | | | | | | | 297 | | | | 10,250 | 99 ppm | | 10,250 | |
| | | | | | | | | 327 | | | | 12,350 | 99 ppm | | 12,350 | |
| | | | | | | | | 357 | | | | 14,550 | 99 ppm | | 14,550 | |
| 10 | 1,2-Dichlorobenzene (also O-Dichlorobenzene) | 95-50-1 | 6 | Liquid | 1 mm Hg at 20°C | 180.6°C | 50 ppm (TEEL-2) | 127 | 35,000 | 49.6 ppm | Puddle (Heavy Gas) | 7750 | 49 ppm | Liquid Spill | 7750 | CERCLA chemical; reportable quantity = 100 lbs |
| | | | | | | | | 227 | >100,000 | | | 23,800 | 49 ppm | | 23,800 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | >100,000 | | | 39,000 | 49 ppm | | 39,000 | |
| | | | | | | | | 327 | >100,000 | | | 47,000 | 49 ppm | | 47,000 | |
| | | | | | | | | 357 | >100,000 | | | 55,000 | 49 ppm | | 55,000 | |
| | | | | | | | 200 ppm (TEEL-3) | 127 | | | | 54,850 | 190 ppm | Liquid Spill | 54,850 | |
| | | | | | | | | 227 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 297 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 327 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | |
| 11 | 1,2-Dichloroethane (also Ethylene Dichloride) | 107-06-2 | 3,6 | Liquid | 64 mm Hg at 20°C | 83.3°C | 200 ppm (ERPG-2) | 127 | 1700 | 199 ppm | Puddle (Heavy Gas) | 320 | 190 ppm | Liquid Spill | 320 | CERCLA chemical; reportable quantity = 100 lbs |
| | | | | | | | | 227 | 5300 | 198 ppm | | 990 | 190 ppm | | 990 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 9000 | 199 ppm | | 1650 | 190 ppm | | 1650 | |
| | | | | | | | | 327 | 11,500 | 198 ppm | | 1975 | 190 ppm | | 1975 | |
| | | | | | | | | 357 | 13,500 | 196 ppm | | 2300 | 190 ppm | | 2300 | |
| | | | | | | | 300 ppm (ERPG-3) | 127 | | | | 500 | 290 ppm | Liquid Spill | 500 | |
| | | | | | | | | 227 | | | | 1560 | 290 ppm | | 1560 | |
| | | | | | | | | 297 | | | | 2600 | 290 ppm | | 2600 | |
| | | | | | | | | 327 | | | | 3115 | 290 ppm | | 3115 | |
| | | | | | | | | 357 | | | | 3695 | 290 ppm | | 3695 | |
| 12 | 1,2-Dichloropropane | 78-87-5 | 3 | Liquid | 40 mm Hg at 20°C | 96.7°C | 110 ppm (TEEL) | 127 | 1250 | 108 ppm | Puddle (Heavy Gas) | 260 | 100 ppm | Liquid Spill | 260 | CERCLA chemical; reportable quantity = 1000 lbs |
| | | | | | | | | 227 | 4000 | 107 ppm | | 800 | 100 ppm | | 800 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 7000 | 109 ppm | | 1325 | 100 ppm | | 1325 | |
| | | | | | | | | 327 | 8350 | 108 ppm | | 1600 | 100 ppm | | 1600 | |
| | | | | | | | | 357 | 10,000 | 108 ppm | | 1875 | 100 ppm | | 1875 | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 400 ppm (TEEL-3) | 127 | | | | 1140 | 390 ppm | Liquid Spill | 1140 | |
| | | | | | | | | 227 | | | | 3510 | 390 ppm | | 3510 | |
| | | | | | | | | 297 | | | | 5800 | 390 ppm | | 5800 | |
| | | | | | | | | 327 | | | | 7000 | 390 ppm | | 7000 | |
| | | | | | | | | 357 | | | | 8200 | 390 ppm | | 8200 | |
| 13 | 1,3,5-Trimethylbenzene (also Mesitylene) | 108-67-8 | 3 | Liquid | 2.73 mm Hg at 25°C | 164.7°C | 25 ppm (TEEL-2) | 127 | 3500 | 24.3 ppm | Puddle (Heavy Gas) | 900 | 24 ppm | Liquid Spill | 900 | |
| | | | | | | | | 227 | 12,000 | 24.4 ppm | | 2800 | 24 ppm | | 2800 | |
| | | | | | | | | 297 | 20,500 | 24 ppm | | 4650 | 24 ppm | | 4650 | |
| | | | | | | | | 327 | 25,500 | 24.3 ppm | | 5600 | 24 ppm | | 5600 | |
| | | | | | | | | 357 | 30,500 | 24.2 ppm | | 6600 | 24 ppm | | 6600 | |
| | | | | | | | 500 ppm (TEEL-3) | 127 | | | | 52,000 | 490 ppm | Liquid Spill | 52,000 | |
| | | | | | | | | 227 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 297 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 327 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | |
| 14 | 1,3-Dichlorobenzene (also M-Dichlorobenzene) | 541-73-1 | 6 | Liquid | 2.13 mm Hg at 25°C | 172°C | 15 ppm (TEEL-2) | 127 | 3500 | 14.7 ppm | Puddle (Heavy Gas) | 1050 | 14 ppm | Liquid Spill | 1050 | CERCLA chemical; reportable quantity = 100 lbs |
| | | | | | | | | 227 | 12,000 | 14.7 ppm | | 3200 | 14 ppm | | 3200 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 20,000 | 14 ppm | | 5450 | 14 ppm | | 5450 | |
| | | | | | | | | 327 | 26,500 | 14.9 ppm | | 6500 | 14 ppm | | 6500 | |
| | | | | | | | | 357 | 31,750 | 14.9 ppm | | 7700 | 14 ppm | | 7700 | |
| | | | | | | | 75 ppm (TEEL-3) | 127 | | | | 7875 | 74 ppm | Liquid Spill | 7875 | |
| | | | | | | | | 227 | | | | 23,750 | 74 ppm | | 23,750 | |
| | | | | | | | | 297 | | | | 39,750 | 74 ppm | | 39,750 | |
| | | | | | | | | 327 | | | | 47,500 | 74 ppm | | 47,500 | |
| | | | | | | | | 357 | | | | 56,000 | 74 ppm | | 56,000 | |
| 15 | 1,3-Dichloropropane | 142-28-9 | 3 | Liquid | 18.1 mm Hg at 25°C | 120.4°C | 100 ppm (TEEL-2) | 127 | 3350 | 99.4 ppm | Puddle (Heavy Gas) | 765 | 99 ppm | Liquid Spill | 765 | CERCLA chemical; reportable quantity = 5000 lbs |
| | | | | | | | | 227 | 10,500 | 97.3 ppm | | 2350 | 99 ppm | | 2350 | |
| | | | | | | | | 297 | 18,000 | 97.5 ppm | | 3900 | 99 ppm | | 3900 | |
| | | | | | | | | 327 | 22,000 | 98.4 ppm | | 4700 | 99 ppm | | 4700 | |
| | | | | | | | | 357 | 26,000 | 97.8 ppm | | 5500 | 99 ppm | | 5500 | |
| | | | | | | | 350 ppm (TEEL-3) | 127 | | | | 3300 | 340 ppm | Liquid Spill | 3300 | |
| | | | | | | | | 227 | | | | 10,150 | 340 ppm | | 10,150 | |
| | | | | | | | | 297 | | | | 16,850 | 340 ppm | | 16,850 | |
| | | | | | | | | 327 | | | | 20,200 | 340 ppm | | 20,200 | |
| | | | | | | | | 357 | | | | 23,750 | 340 ppm | | 23,750 | |
| 16 | 2,2-Dichloropropane | 594-20-7 | 3 | Liquid | 126 mm Hg at 22°C | 70.5°C | 110 ppm (TEEL-2) | 127 | | | | 85 | 100 ppm | Liquid Spill | 85 | |
| | | | | | | | | 227 | | | | 260 | 100 ppm | | 260 | |
| | | | | | | | | 297 | | | | 440 | 100 ppm | | 440 | |
| | | | | | | | | 327 | | | | 530 | 100 ppm | | 530 | |
| | | | | | | | | 357 | | | | 620 | 100 ppm | | 620 | |
| | | | | | | | 400 ppm (TEEL-3) | 127 | | | | 350 | 390 ppm | Liquid Spill | 350 | |
| | | | | | | | | 227 | | | | 1090 | 390 ppm | | 1090 | |
| | | | | | | | | 297 | | | | 1800 | 390 ppm | | 1800 | |
| | | | | | | | | 327 | | | | 2150 | 390 ppm | | 2150 | |
| | | | | | | | | 357 | | | | 2550 | 390 ppm | | 2550 | |
| 17 | 2-Butanone (also Ethyl Methyl Ketone) | 78-93-3 | 3 | Liquid | 71 mm Hg at 20°C | 79.6°C | 2700 ppm (AEGL-2 interim) | 127 | 12,000 | 2620 ppm | Puddle (Heavy Gas) | 3300 | 2600 ppm | Liquid Spill | 3300 | CERCLA chemical; reportable quantity = 5000 lbs |
| | (NOTE: LEL = 14,000 ppm; 10% LEL ≤ AEGL < 50% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account.) | | | | | | | 227 | 35,000 | 2640 ppm | | 10,250 | 2600 ppm | | 10,250 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 57,000 | 2670 ppm | | 17,000 | 2600 ppm | | 17,000 | |
| | | | | | | | | 327 | 67,000 | 2640 ppm | | 20,000 | 2600 ppm | | 20,000 | |
| | | | | | | | | 357 | 78,000 | 2630 ppm | | 24,000 | 2600 ppm | | 24,000 | |
| | (NOTE: LEL = 14,000 ppm; 10% LEL ≤ AEGL < 50% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account.) | | | | | | 4000 ppm (AEGL-3 interim) | 127 | | | | 5600 | 3900 ppm | Liquid Spill | 5600 | |
| | | | | | | | | 227 | | | | 17,250 | 3900 ppm | | 17,250 | |
| | | | | | | | | 297 | | | | 28,500 | 3900 ppm | | 28,500 | |
| | | | | | | | | 327 | | | | 34,000 | 3900 ppm | | 34,000 | |
| | | | | | | | | 357 | | | | 40,000 | 3900 ppm | | 40,000 | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18 | 2-Chloroethyl vinyl ether | 110-75-8 | 3,6 | Liquid | 30 mm Hg at 25°C | 108°C | 5 ppm (TEEL-2) | 127 | -- | -- | -- | 16 | 4.9 ppm | Liquid Spill | 16 | CERCLA chemical; reportable quantity = 1000 lbs |
| | | | | | | | | 227 | | | | 50 | 4.9 ppm | | 50 | |
| | | | | | | | | 297 | | | | 80 | 4.7 ppm | | 80 | |
| | | | | | | | | 327 | | | | 100 | 4.9 ppm | | 100 | |
| | | | | | | | | 357 | | | | 117 | 4.9 ppm | | 117 | |
| | | | | | | | 25 ppm (TEEL-3) | 127 | | | | 82 | 24 ppm | Liquid Spill | 82 | |
| | | | | | | | | 227 | | | | 255 | 24 ppm | | 255 | |
| | | | | | | | | 297 | | | | 425 | 24 ppm | | 425 | |
| | | | | | | | | 327 | | | | 520 | 24 ppm | | 520 | |
| | | | | | | | | 357 | | | | 610 | 24 ppm | | 610 | |
| 19 | 2-Chlorotoluene (also O-Chlorotoluene) | 95-49-8 | 3 | Liquid | 3.43 mm Hg at 25°C | 159.2°C | 250 ppm (TEEL-2) | 127 | 60,000 | 244 ppm | Puddle (Heavy Gas) | 16,500 | 240 ppm | Liquid Spill | 16,500 | |
| | | | | | | | | 227 | >100,000 | | | 50,000 | 240 ppm | | 50,000 | |
| | | | | | | | | 297 | >100,000 | | | 80,000 | 240 ppm | | 80,000 | |
| | | | | | | | | 327 | >100,000 | | | 95,000 | 240 ppm | | 95,000 | |
| | | | | | | | | 357 | >100,000 | | | >100,000 | | | 100,000 | |
| | (NOTE: LEL = 10,000 ppm; 10% LEL ≤ TEEL < 50% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account.) | | | | | | 1500 ppm (TEEL-3) | 127 | | | | >100,000 | | Liquid Spill | 100,000 | |
| | | | | | | | | 227 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 297 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 327 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | |
| 20 | 2-Hexanone (also Methyl Butyl Ketone) | 591-78-6 | 3 | Liquid | 10 mm Hg at 38.8°C | 127.2°C | 25 ppm (TEEL-2) | 127 | 550 | 24.9 ppm | Puddle (Heavy Gas) | 500 | 24 ppm | Liquid Spill | 500 | |
| | | | | | | | | 227 | 1900 | 24.4 ppm | | 1550 | 24 ppm | | 1550 | |
| | | | | | | | | 297 | 3400 | 24.4 ppm | | 2600 | 24 ppm | | 2600 | |
| | | | | | | | | 327 | 4200 | 24.5 ppm | | 3150 | 24 ppm | | 3150 | |
| | | | | | | | | 357 | 5000 | 24.2 ppm | | 3700 | 24 ppm | | 3700 | |
| | (NOTE: LEL = 12,000 ppm; 10% LEL ≤ TEEL < 50% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account.) | | | | | | 1600 ppm (TEEL-3) | 127 | 75,000 | 1560 ppm | Puddle (Heavy Gas) | >100,000 | | Liquid Spill | 75,000 | |
| | | | | | | | | 227 | >100,000 | | | >100,000 | | | 100,000 | |
| | | | | | | | | 297 | >100,000 | | | >100,000 | | | 100,000 | |
| | | | | | | | | 327 | >100,000 | | | >100,000 | | | 100,000 | |
| | | | | | | | | 357 | >100,000 | | | >100,000 | | | 100,000 | |
| 21 | 4-Chlorotoluene | 106-43-4 | 3 | Liquid | 2.76 mm Hg at 25°C | 162.4°C | 500 ppm (TEEL-2) | 127 | -- | -- | -- | 63,000 | 490 ppm | Liquid Spill | 63,000 | |
| | | | | | | | | 227 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 297 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 327 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | |
| | (NOTE: LEL = 7000 ppm; 10% LEL ≤ TEEL < 50% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account.) | | | | | | 2500 ppm (TEEL-3) | 127 | | | | >100,000 | | Liquid Spill | 100,000 | |
| | | | | | | | | 227 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 297 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 327 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | |
| 22 | 4-Methyl-2-pentanone (also Methyl Isobutyl Ketone) | 108-10-1 | 3 | Liquid | 16 mm Hg at 20°C | 116.7°C | 250 ppm (TEEL-2) | 127 | 5600 | 246 ppm | Puddle (Heavy Gas) | 1150 | 240 ppm | Liquid Spill | 1150 | CERCLA chemical; reportable quantity = 5000 lbs |
| | | | | | | | | 227 | 17,000 | 245 ppm | | 3550 | 240 ppm | | 3550 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 28,500 | 245 ppm | | 5750 | 240 ppm | | 5750 | |
| | | | | | | | | 327 | 34,500 | 247 ppm | | 7000 | 240 ppm | | 7000 | |
| | | | | | | | | 357 | 40,500 | 246 ppm | | 8250 | 240 ppm | | 8250 | |
| | | | | | | | 500 ppm (TEEL-3) | 127 | | | | 2700 | 490 ppm | Liquid Spill | 2700 | |
| | | | | | | | | 227 | | | | 8400 | 490 ppm | | 8400 | |
| | | | | | | | | 297 | | | | 13,900 | 490 ppm | | 13,900 | |
| | | | | | | | | 327 | | | | 16,700 | 490 ppm | | 16,700 | |
| | | | | | | | | 357 | | | | 19,600 | 490 ppm | | 19,600 | |
| 23 | Acetone | 67-64-1 | 3 | Liquid | 180 mm Hg at 20°C | 56.2°C | 3200 ppm (AEGL-2 interim) | 127 | 7500 | 3150 ppm | Puddle (Heavy Gas) | 1700 | 3100 ppm | Liquid Spill | 1700 | CERCLA chemical; reportable quantity = 5000 lbs |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (LEL = 21,500 ppm; 10% LEL ≤ AEGL < 50% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account) | | | | | | | 227 | 21,500 | 3170 ppm | | 5200 | 3100 ppm | | 5200 | |
| | | | | | | | | 297 | 34,500 | 3150 ppm | | 8650 | 3100 ppm | | 8650 | |
| | | | | | | | | 327 | 41,000 | 3130 ppm | | 10,000 | 3100 ppm | | 10,000 | |
| | | | | | | | | 357 | 48,000 | 3140 ppm | | 12,000 | 3100 ppm | | 12,000 | |
| | (LEL = 21,500 ppm; 10% LEL ≤ AEGL < 50% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account) | | | | | | 5700 ppm (AEGL-3 interim) | 127 | | | | 3450 | 5600 ppm | Liquid Spill | 3450 | |
| | | | | | | | | 227 | | | | 10,600 | 5600 ppm | | 10,600 | |
| | | | | | | | | 297 | | | | 17,600 | 5600 ppm | | 17,600 | |
| | | | | | | | | 327 | | | | 21,000 | 5600 ppm | | 21,000 | |
| | | | | | | | | 357 | | | | 24,800 | 5600 ppm | | 24,800 | |
| 24 | Acrylonitrile | 107-13-1 | 3,6 | Liquid | 83 mm Hg at 20°C | 77.3°C | 35 ppm (ERPG-2) | 127 | 50 | 34.4 ppm | Puddle (Heavy Gas) | 20.5 | 34 ppm | Liquid Spill | 20.5 | CAA Section 112(r) chemical; threshold quantity = 20,000 lbs |
| | | | | | | | | 227 | 185 | 34.1 ppm | | 64 | 34 ppm | | 64 | CERCLA chemical; reportable quantity = 100 lbs |
| | | | | | | | | 297 | 345 | 34.6 ppm | | 107 | 34 ppm | | 107 | EPCRA EHS chemical; threshold planning quantity = 10,000 lbs |
| | | | | | | | | 327 | 425 | 34.4 ppm | | 126 | 34 ppm | | 126 | EPCRA Section 313 chemical |
| | | | | | | | | 357 | 510 | 34 ppm | | 148 | 34 ppm | | 148 | |
| | | | | | | | 75 ppm (ERPG-3) | 127 | | | | 46 | 74 ppm | Liquid Spill | 46 | |
| | | | | | | | | 227 | | | | 142 | 74 ppm | | 142 | |
| | | | | | | | | 297 | | | | 237 | 74 ppm | | 237 | |
| | | | | | | | | 327 | | | | 285 | 74 ppm | | 285 | |
| | | | | | | | | 357 | | | | 335 | 74 ppm | | 335 | |
| 25 | Ammonium hydroxide solution (10-35% ammonia; 21-72% ammonium hydroxide; water is balance) | 1336-21-6 | 8 | Liquid | 580 mm Hg at 20°C | 36°C | 40 ppm (TEEL-2) | 127 | | | | 16.5 | 39 ppm | Liquid Spill | 16.5 | |
| | | | | | | | | 227 | | | | 50 | 39 ppm | | 50 | |
| | | | | | | | | 297 | | | | 85 | 39 ppm | | 85 | |
| | | | | | | | | 327 | | | | 102 | 39 ppm | | 102 | |
| | | | | | | | | 357 | | | | 120 | 39 ppm | | 120 | |
| | | | | | | | 100 ppm (TEEL-3) | 127 | | | | | | | | |
| | | | | | | | | 227 | | | | | | | | |
| | | | | | | | | 297 | | | | | | | | |
| | | | | | | | | 327 | | | | | | | | |
| | | | | | | | | 357 | | | | | | | | |
| 26 | Benzene | 71-43-2 | 3 | Liquid | 75 mm Hg at 20°C | 79.4°C | 150 ppm (ERPG-2) | 127 | 630 | 148 ppm | Puddle (Heavy Gas) | 125 | 140 ppm | Liquid Spill | 125 | CERCLA chemical; reportable quantity = 10 lbs |
| | | | | | | | | 227 | 2100 | 149 ppm | | 390 | 140 ppm | | 390 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 3600 | 148 ppm | | 650 | 140 ppm | | 650 | |
| | | | | | | | | 327 | 4300 | 146 ppm | | 750 | 140 ppm | | 750 | |
| | | | | | | | | 357 | 5200 | 148 ppm | | 875 | 140 ppm | | 875 | |
| | | | | | | | 1000 ppm (ERPG-3) | 127 | | | | 1090 | 990 ppm | Liquid Spill | 1090 | |
| | | | | | | | | 227 | | | | 3340 | 990 ppm | | 3340 | |
| | | | | | | | | 297 | | | | 5550 | 990 ppm | | 5550 | |
| | | | | | | | | 327 | | | | 6650 | 990 ppm | | 6650 | |
| | | | | | | | | 357 | | | | 7850 | 990 ppm | | 7850 | |
| 27 | Bromobenzene | 108-86-1 | 3 | Liquid | 10 mm Hg at 40°C | 156.6°C | 15 ppm (TEEL-2) | 127 | 1900 | 14.7 ppm | Puddle (Heavy Gas) | 610 | 14 ppm | Liquid Spill | 610 | |
| | | | | | | | | 227 | 6500 | 14.5 ppm | | 1850 | 14 ppm | | 1850 | |
| | | | | | | | | 297 | 12,000 | 14.9 ppm | | 3000 | 14 ppm | | 3000 | |
| | | | | | | | | 327 | 14,500 | 14.7 ppm | | 3750 | 14 ppm | | 3750 | |
| | | | | | | | | 357 | 17,500 | 14.8 ppm | | 4400 | 14 ppm | | 4400 | |
| | | | | | | | 350 ppm (TEEL-3) | 127 | | | | 31,500 | 340 ppm | Liquid Spill | 31,500 | |
| | | | | | | | | 227 | | | | 96,500 | 340 ppm | | 96,500 | |
| | | | | | | | | 297 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 327 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | |
| 28 | Bromochloromethane | 74-97-5 | 6 | Liquid | 148 mm Hg at 25°C | 67.8°C | 1000 ppm (TEEL-2) | 127 | 7950 | 998 ppm | Puddle (Heavy Gas) | 1760 | 990 ppm | Liquid Spill | 1760 | |
| | | | | | | | | 227 | 22,400 | 992 ppm | | 5425 | 990 ppm | | 5425 | |
| | | | | | | | | 297 | 36,000 | 990 ppm | | 9000 | 990 ppm | | 9000 | |
| | | | | | | | | 327 | 43,000 | 997 ppm | | 10,800 | 990 ppm | | 10,800 | |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 357 | 50,000 | 995 ppm | | 12,700 | 990 ppm | | 12,700 | | |
| | | | | | | | 2000 ppm (TEEL-3) | 127 | | | | 3900 | 1900 ppm | Liquid Spill | 3900 | | |
| | | | | | | | | 227 | | | | 12,000 | 1900 ppm | | 12,000 | | |
| | | | | | | | | 297 | | | | 19,975 | 1900 ppm | | 19,975 | | |
| | | | | | | | | 327 | | | | 23,875 | 1900 ppm | | 23,875 | | |
| | | | | | | | | 357 | | | | 28,100 | 1900 ppm | | 28,100 | | |
| 29 | Bromodichloromethane (also Dichlorobromomethane) | 75-27-4 | 9 | Liquid | 50 mm Hg at 20°C | 88.5°C | 30 mg/m$^3$ (TEEL-2) | 127 | -- | -- | -- | 14.5 | 29 mg/m$^3$ | Liquid Spill | 14.5 | CERCLA chemical; reportable quantity = 5000 lbs | |
| | | | | | | | | 227 | | | | 45 | 29 mg/m$^3$ | | 45 | EPCRA Section 313 chemical | |
| | | | | | | | | 297 | | | | 75 | 29 mg/m$^3$ | | 75 | | |
| | | | | | | | | 327 | | | | 90 | 29 mg/m$^3$ | | 90 | | |
| | | | | | | | | 357 | | | | 105 | 29 mg/m$^3$ | | 105 | | |
| | | | | | | | 150 mg/m$^3$ (TEEL-3) | 127 | | | | 75 | 140 mg/m$^3$ | | 75 | | |
| | | | | | | | | 227 | | | | 230 | 140 mg/m$^3$ | | 230 | | |
| | | | | | | | | 297 | | | | 385 | 140 mg/m$^3$ | | 385 | | |
| | | | | | | | | 327 | | | | 465 | 140 mg/m$^3$ | | 465 | | |
| | | | | | | | | 357 | | | | 545 | 140 mg/m$^3$ | | 545 | | |
| 30 | Bromoform | 75-25-2 | 6 | Liquid | 5 mm Hg at 20°C | 149.4°C | 1 ppm (TEEL-2) | 127 | 60 | 0.9 ppm | Puddle (Gaussian) | 48 | 0.93 ppm | Liquid Spill | 48 | CERCLA chemical; reportable quantity = 100 lbs | |
| | | | | | | | | 227 | 200 | 0.918 ppm | | 150 | 0.94 ppm | | 150 | EPCRA Section 313 chemical | |
| | | | | | | | | 297 | 500 | 0.965 ppm | (Heavy Gas) | 250 | 0.94 ppm | | 250 | | |
| | | | | | | | | 327 | 600 | 0.927 ppm | | 300 | 0.94 ppm | | 300 | | |
| | | | | | | | | 357 | 750 | 0.976 ppm | | 350 | 0.93 ppm | | 350 | | |
| | | | | | | | 850 ppm (TEEL-3) | 127 | | | | >100,000 | | Liquid Spill | 100,000 | | |
| | | | | | | | | 227 | | | | >100,000 | | | 100,000 | | |
| | | | | | | | | 297 | | | | >100,000 | | | 100,000 | | |
| | | | | | | | | 327 | | | | >100,000 | | | 100,000 | | |
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | | |
| 31 | Bromomethane (also Methyl Bromide) | 74-83-9 | 2 | Gas | 1690 mm Hg at 25°C | 3.3°C | 50 ppm (ERPG-2) | 127 | 22 | 49.9 ppm | Direct Continuous (Heavy Gas) | 4.75 | 48 ppm | Term Release | 4.75 | CERCLA chemical; reportable quantity = 1000 lbs | |
| | | | | | | | | 227 | 70 | 49.1 ppm | | 15 | 49 ppm | | 15 | EPCRA EHS chemical; threshold planning quantity = 1000 lbs | |
| | | | | | | | | 297 | 120 | 48.7 ppm | | 25 | 49 ppm | | 25 | EPCRA Section 313 chemical | |
| | | | | | | | | 327 | 150 | 49.7 ppm | | 30 | 49 ppm | | 30 | OSHA (29 CFR 1910.119) chemical; threshold quantity = 2500 lbs | |
| | | | | | | | | 357 | 175 | 48.9 ppm | | 35 | 48 ppm | | 35 | | |
| | | | | | | | 200 ppm (ERPG-3) | 127 | | | | 19 | 190 ppm | Term Release | 19 | | |
| | | | | | | | | 227 | | | | 59 | 190 ppm | | 59 | | |
| | | | | | | | | 297 | | | | 99 | 190 ppm | | 99 | | |
| | | | | | | | | 327 | | | | 119 | 190 ppm | | 119 | | |
| | | | | | | | | 357 | | | | 141 | 190 ppm | | 141 | | |
| 32 | Carbon disulfide (also Carbon bisulfide) | 75-15-0 | 3,6 | Liquid | 297 mm Hg at 20°C | 46.7°C | 160 ppm (AEGL-2 interim) | 127 | 240 | 158 ppm | Puddle (Heavy Gas) | 50 | 150 ppm | Liquid Spill | 50 | CAA Section 112(r) chemical; threshold quantity = 20,000 lbs | |
| | | | | | | | | 227 | 900 | 158 ppm | | 160 | 150 ppm | | 160 | CERCLA chemical; reportable quantity = 100 lbs | |
| | | | | | | | | 297 | 1575 | 158 ppm | | 270 | 150 ppm | | 270 | EPCRA EHS chemical; threshold planning quantity = 10,000 lbs | |
| | | | | | | | | 327 | 1925 | 159 ppm | | 325 | 150 ppm | | 325 | EPCRA Section 313 chemical | |
| | | | | | | | | 357 | 2275 | 158 ppm | | 375 | 150 ppm | | 375 | | |
| | | | | | | | 480 ppm (AEGL-3 interim) | 127 | | | | 170 | 470 ppm | Liquid Spill | 170 | | |
| | | | | | | | | 227 | | | | 525 | 470 ppm | | 525 | | |
| | | | | | | | | 297 | | | | 880 | 470 ppm | | 880 | | |
| | | | | | | | | 327 | | | | 1060 | 470 ppm | | 1060 | | |
| | | | | | | | | 357 | | | | 1250 | 470 ppm | | 1250 | | |
| 33 | Carbon tetrachloride | 56-23-5 | 6 | Liquid | 91 mm Hg at 20°C | 76.7°C | 190 ppm (AEGL-2 interim) | 127 | 1750 | 186 ppm | Puddle (Heavy Gas) | 330 | 180 ppm | Liquid Spill | 330 | CERCLA chemical; reportable quantity = 10 lbs | |
| | | | | | | | | 227 | 5350 | 188 ppm | | 1015 | 180 ppm | | 1015 | EPCRA Section 313 chemical | |
| | | | | | | | | 297 | 9000 | 189 ppm | | 1695 | 180 ppm | | 1695 | | |
| | | | | | | | | 327 | 10,750 | 189 ppm | | 2030 | 180 ppm | | 2030 | | |
| | | | | | | | | 357 | 12,700 | 189 ppm | | 2400 | 180 ppm | | 2400 | | |
| | | | | | | | 520 ppm (AEGL-3 interim) | 127 | | | | 1020 | 510 ppm | Liquid Spill | 1020 | | |
| | | | | | | | | 227 | | | | 3120 | 510 ppm | | 3120 | | |
| | | | | | | | | 297 | | | | 5150 | 510 ppm | | 5150 | | |
| | | | | | | | | 327 | | | | 6200 | 510 ppm | | 6200 | | |
| | | | | | | | | 357 | | | | 7350 | 510 ppm | | 7350 | | |
| 34 | Chlorobenzene | 108-90-7 | 3 | Liquid | 12 mm Hg at 25°C | 167.8°C | 500 ppm (TEEL-2) | 127 | 30,000 | 498 ppm | Puddle (Heavy Gas) | 8875 | 490 ppm | Liquid Spill | 8875 | CERCLA chemical; reportable quantity = 100 lbs | |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 227 | 85,000 | 490 ppm | | 27,000 | 490 ppm | | 27,000 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | >100,000 | | | 44,900 | 490 ppm | | 44,900 | |
| | | | | | | | | 327 | >100,000 | | | 53,700 | 490 ppm | | 53,700 | |
| | | | | | | | | 357 | >100,000 | | | 63,000 | 490 ppm | | 63,000 | |
| | | | | | | | 1000 ppm (TEEL-3) | 127 | | | | 23,600 | 990 ppm | Liquid Spill | 23,600 | |
| | | | | | | | | 227 | | | | 71,000 | 990 ppm | | 71,000 | |
| | | | | | | | | 297 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 327 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | |
| 35 | Chloroethane (also Ethyl chloride) | 75-00-3 | 2 | Gas | 1310 mm Hg at 25°C | 12.2°C | 1000 ppm (TEEL-2) | 127 | 390 | 983 ppm | Direct Continuous (Heavy Gas) | 65 | 970 ppm | Term Release | 65 | CAA Section 112(r) chemical; threshold quantity = 10,000 lbs |
| | | | | | | | | 227 | 1120 | 990 ppm | | 205 | 990 ppm | | 205 | CERCLA chemical; reportable quantity = 100 lbs |
| | | | | | | | | 297 | 1820 | 994 ppm | | 340 | 980 ppm | | 340 | EPCRA Section 313 chemical |
| | | | | | | | | 327 | 2160 | 993 ppm | | 410 | 980 ppm | | 410 | |
| | | | | | | | | 357 | 2500 | 982 ppm | | 480 | 980 ppm | | 480 | |
| | (LEL = 36,000 ppm; 10% LEL ≤ TEEL < 50% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account) | | | | | | 3800 ppm (TEEL-3) | 127 | | | | 250 | 3700 ppm | Term Release | 250 | |
| | | | | | | | | 227 | | | | 775 | 3700 ppm | | 775 | |
| | | | | | | | | 297 | | | | 1300 | 3700 ppm | | 1300 | |
| | | | | | | | | 327 | | | | 1550 | 3700 ppm | | 1550 | |
| | | | | | | | | 357 | | | | 1840 | 3700 ppm | | 1840 | |
| 36 | Chloroform | 67-66-3 | 6 | Liquid | 160 mm Hg at 20°C | 61.7°C | 64 ppm (AEGL-2 interim) | 127 | 220 | 63 ppm | Puddle (Heavy Gas) | 50 | 63 ppm | Liquid Spill | 50 | CAA Section 112(r) chemical; threshold quantity = 20,000 lbs |
| | | | | | | | | 227 | 750 | 62.8 ppm | | 155 | 63 ppm | | 155 | CERCLA chemical; reportable quantity = 10 lbs |
| | | | | | | | | 297 | 1300 | 62.6 ppm | | 260 | 63 ppm | | 260 | EPCRA EHS chemical; threshold planning quantity = 10,000 lbs |
| | | | | | | | | 327 | 1600 | 63.2 ppm | | 310 | 63 ppm | | 310 | EPCRA Section 313 chemical |
| | | | | | | | | 357 | 1900 | 62.9 ppm | | 365 | 63 ppm | | 365 | |
| | | | | | | | 3200 ppm (AEGL-3 interim) | 127 | | | | 3700 | 3100 ppm | Liquid Spill | 3700 | |
| | | | | | | | | 227 | | | | 11,000 | 3100 ppm | | 11,000 | |
| | | | | | | | | 297 | | | | 19,000 | 3100 ppm | | 19,000 | |
| | | | | | | | | 327 | | | | 22,700 | 3100 ppm | | 20,000 | |
| | | | | | | | | 357 | | | | 26,750 | 3100 ppm | | 20,000 | |
| 37 | Chloromethane (also Methyl chloride) | 74-87-3 | 2 | Gas | 4220 mm Hg at 25°C | -24.4°C | 400 ppm (ERPG-2) | 127 | 110 | 390 ppm | Direct Continuous (Heavy Gas) | 20 | 380 ppm | Term Release | 20 | CAA Section 112(r) chemical; threshold quantity = 10,000 lbs |
| | | | | | | | | 227 | 340 | 391 ppm | | 64 | 390 ppm | | 64 | CERCLA chemical; reportable quantity = 100 lbs |
| | | | | | | | | 297 | 580 | 396 ppm | | 105 | 390 ppm | | 105 | EPCRA Section 313 chemical |
| | | | | | | | | 327 | 700 | 398 ppm | | 128 | 390 ppm | | 128 | OSHA (29 CFR 1910.119) chemical; threshold quantity = 15,000 lbs |
| | | | | | | | | 357 | 820 | 395 ppm | | 151 | 390 ppm | | 151 | |
| | | | | | | | 1000 ppm (ERPG-3) | 127 | | | | 52 | 990 ppm | Term Release | 52 | |
| | | | | | | | | 227 | | | | 160 | 990 ppm | | 160 | |
| | | | | | | | | 297 | | | | 268 | 990 ppm | | 268 | |
| | | | | | | | | 327 | | | | 322 | 990 ppm | | 322 | |
| | | | | | | | | 357 | | | | 380 | 990 ppm | | 380 | |
| 38 | cis-1,3-Dichloropropylene (also cis-1,3-Dichloro-1-propene) | 10061-01-5 | 3 | Liquid | 43 mm Hg at 25°C | 104.3°C | 5 ppm (TEEL-2) | 127 | -- | -- | -- | 13.5 | 4.9 ppm | Liquid Spill | 13.5 | |
| | | | | | | | | 227 | | | | 42 | 4.9 ppm | | 42 | |
| | | | | | | | | 297 | | | | 70 | 4.9 ppm | | 70 | |
| | | | | | | | | 327 | | | | 84 | 4.9 ppm | | 84 | |
| | | | | | | | | 357 | | | | 98 | 4.9 ppm | | 98 | |
| | | | | | | | 12.5 ppm (TEEL-3) | 127 | | | | 33 | 12 ppm | Liquid Spill | 33 | |
| | | | | | | | | 227 | | | | 100 | 12 ppm | | 100 | |
| | | | | | | | | 297 | | | | 170 | 12 ppm | | 170 | |
| | | | | | | | | 327 | | | | 210 | 12 ppm | | 210 | |
| | | | | | | | | 357 | | | | 250 | 12 ppm | | 250 | |
| 39 | Dibromochloromethane (also Chlorodibromomethane) | 124-48-1 | 6 | Liquid | 54.9 mm Hg at 23.9°C | 116°C | 40 $mg/m^3$ (TEEL-2) | 127 | -- | -- | -- | 24 | 39 $mg/m^3$ | Liquid Spill | 24 | CERCLA chemical; reportable quantity = 100 lbs |
| | | | | | | | | 227 | | | | 75 | 39 $mg/m^3$ | | 75 | |
| | | | | | | | | 297 | | | | 125 | 39 $mg/m^3$ | | 125 | |
| | | | | | | | | 327 | | | | 150 | 39 $mg/m^3$ | | 150 | |
| | | | | | | | | 357 | | | | 175 | 39 $mg/m^3$ | | 175 | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 150 mg/m$^3$ (TEEL-3) | 127 | | | | 90 | 140 mg/m$^3$ | Liquid Spill | 90 | |
| | | | | | | | | 227 | | | | 285 | 140 mg/m$^3$ | | 285 | |
| | | | | | | | | 297 | | | | 475 | 140 mg/m$^3$ | | 475 | |
| | | | | | | | | 327 | | | | 570 | 140 mg/m$^3$ | | 570 | |
| | | | | | | | | 357 | | | | 675 | 140 mg/m$^3$ | | 675 | |
| 40 | Dibromomethane | 74-95-3 | 6 | Liquid | 44.9 mm Hg at 25°C | 95.6°C | 10 mg/m$^3$ (TEEL-2) | 127 | 12 | 9.81 mg/m$^3$ | Puddle (Heavy Gas) | 8 | 9.5 mg/m$^3$ | Liquid Spill | 8 | CERCLA chemical; reportable quantity = 1000 lbs |
| | | | | | | | | 227 | 40 | 9.5 mg/m$^3$ | | 25 | 9.6 mg/m$^3$ | | 25 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 71 | 9.82 mg/m$^3$ | | 43 | 9.9 mg/m$^3$ | | 43 | |
| | | | | | | | | 327 | 86 | 9.96 mg/m$^3$ | | 51 | 9.8 mg/m$^3$ | | 51 | |
| | | | | | | | | 357 | 102 | 9.95 mg/m$^3$ | | 60 | 9.8 mg/m$^3$ | | 60 | |
| | | | | | | | 500 mg/m$^3$ (TEEL-3) | 127 | | | | 470 | 490 mg/m$^3$ | Liquid Spill | 470 | |
| | | | | | | | | 227 | | | | 1460 | 490 mg/m$^3$ | | 1460 | |
| | | | | | | | | 297 | | | | 2435 | 490 mg/m$^3$ | | 2435 | |
| | | | | | | | | 327 | | | | 2920 | 490 mg/m$^3$ | | 2920 | |
| | | | | | | | | 357 | | | | 3445 | 490 mg/m$^3$ | | 3445 | |
| 41 | Dichlorodifluoromethane | 75-71-8 | 2 | Gas | 4980 mm Hg at 25°C | -30°C | 10,000 ppm (TEEL-2) | 127 | 4950 | 9980 ppm | Direct Continuous (Heavy Gas) | 1250 | 9900 ppm | Term Release | 1250 | CERCLA chemical; reportable quantity = 5000 lbs |
| | | | | | | | | 227 | 14,750 | 9960 ppm | | 3850 | 9900 ppm | | 3850 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 25,000 | 9960 ppm | | 6450 | 9900 ppm | | 6450 | |
| | | | | | | | | 327 | 30,000 | 9870 ppm | | 7750 | 9900 ppm | | 7750 | |
| | | | | | | | | 357 | 36,500 | 9980 ppm | | 9150 | 9900 ppm | | 9150 | |
| | | | | | | | 15,000 ppm (TEEL-3) | 127 | | | | 1820 | 14,000 ppm | Term Release | 1820 | |
| | | | | | | | | 227 | | | | 5625 | 14,000 ppm | | 5625 | |
| | | | | | | | | 297 | | | | 9400 | 14,000 ppm | | 9400 | |
| | | | | | | | | 327 | | | | 11,300 | 14,000 ppm | | 11,300 | |
| | | | | | | | | 357 | | | | 13,350 | 14,000 ppm | | 13,350 | |
| 42 | Ethylbenzene | 100-41-4 | 3 | Liquid | 10 mm Hg at 26°C | 136.2°C | 125 ppm (TEEL-2) | 127 | 6250 | 124 ppm | Puddle (Heavy Gas) | 1450 | 120 ppm | Liquid Spill | 1450 | CERCLA chemical; reportable quantity = 1000 lbs |
| | | | | | | | | 227 | 19,500 | 124 ppm | | 4450 | 120 ppm | | 4450 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 33,000 | 124 ppm | | 7450 | 120 ppm | | 7450 | |
| | | | | | | | | 327 | 39,500 | 124 ppm | | 8900 | 120 ppm | | 8900 | |
| | | | | | | | | 357 | 47,000 | 124 ppm | | 10,500 | 120 ppm | | 10,500 | |
| | (LEL = 8000 ppm; 10% LEL ≤ TEEL < 50% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account) | | | | | | 800 ppm (TEEL-3) | 127 | | | | 16,250 | 790 ppm | Liquid Spill | 16,250 | |
| | | | | | | | | 227 | | | | 49,500 | 790 ppm | | 49,500 | |
| | | | | | | | | 297 | | | | 82,000 | 790 ppm | | 82,000 | |
| | | | | | | | | 327 | | | | 97,500 | 790 ppm | | 97,500 | |
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | |
| 43 | Ethyl ether (also Diethyl ether) | 60-29-7 | 3 | Liquid | 442 mm Hg at 20°C | 34.6°C | 500 ppm (TEEL) | 127 | 295 | 497 ppm | Puddle (Heavy Gas) | 63 | 490 ppm | Liquid Spill | 63 | CAA Section 112(r) chemical; threshold quantity = 10,000 lbs |
| | (Note: ALOHA initial puddle temperature is set at 27.5°C—the ambient boiling point.) | | | | | | | 227 | 975 | 494 ppm | | 195 | 490 ppm | | 195 | CERCLA chemical; reportable quantity = 100 lbs |
| | | | | | | | | 297 | 1650 | 490 ppm | | 330 | 490 ppm | | 330 | |
| | | | | | | | | 327 | 2050 | 499 ppm | | 395 | 490 ppm | | 395 | |
| | | | | | | | | 357 | 2425 | 496 ppm | | 465 | 490 ppm | | 465 | |
| | (LEL = 17,000 ppm; 10% LEL ≤ TEEL < 50% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account) | | | | | | 1900 ppm (TEEL-3) | 127 | | | | 260 | 1800 ppm | Liquid Spill | 260 | |
| | | | | | | | | 227 | | | | 800 | 1800 ppm | | 800 | |
| | | | | | | | | 297 | | | | 1350 | 1800 ppm | | 1350 | |
| | | | | | | | | 327 | | | | 1600 | 1800 ppm | | 1600 | |
| | | | | | | | | 357 | | | | 1900 | 1800 ppm | | 1900 | |
| 44 | Hydrogen bromide, anhydrous (also Hydrobromic acid, anhydrous) | 10035-10-6 | 2,8 | Gas | 760 mm Hg at -66.5°C | -66.5°C | 3 ppm (TEEL-2) | 127 | 0.5 | 2.92 ppm | Direct Continuous (Heavy Gas) | 0.24 | 2.9 ppm | Term Release | 0.24 | OSHA (29 CFR 1910.119) chemical; threshold quantity = 5000 lbs |
| | | | | | | | | 227 | 1.6 | 2.97 ppm | | 0.75 | 2.9 ppm | | 0.75 | |
| | | | | | | | | 297 | 2.5 | 2.92 ppm | | 1.25 | 2.9 ppm | | 1.25 | |
| | | | | | | | | 327 | 3.1 | 2.93 ppm | | 1.5 | 2.9 ppm | | 1.5 | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 357 | 3.6 | 2.84 ppm | | 1.8 | 2.9 ppm | | 1.8 | | |
| | | | | | | | 30 ppm (TEEL-3) | 127 | | | | 2.4 | 29 ppm | Term Release | 2.4 | | |
| | | | | | | | | 227 | | | | 7.5 | 29 ppm | | 7.5 | | |
| | | | | | | | | 297 | | | | 12.5 | 29 ppm | | 12.5 | | |
| | | | | | | | | 327 | | | | 15 | 29 ppm | | 15 | | |
| | | | | | | | | 357 | | | | 18 | 29 ppm | | 18 | | |
| 45 | Hydrogen bromide, solution (48%) | 10035-10-6 | 8 | Liquid | 4.5 mm Hg at 20°C | 126°C | 3 ppm (TEEL-2) | 127 | | | | 115 | 2.9 ppm | Liquid Spill | 115 | OSHA (29 CFR 1910.119) chemical; threshold quantity = 5000 lbs | |
| | | | | | | | | 227 | | | | 355 | 2.9 ppm | | 355 | | |
| | | | | | | | | 297 | | | | 580 | 2.9 ppm | | 580 | | |
| | | | | | | | | 327 | | | | 700 | 2.9 ppm | | 700 | | |
| | | | | | | | | 357 | | | | 825 | 2.9 ppm | | 825 | | |
| | | | | | | | 30 ppm (TEEL-3) | 127 | | | | | | | | | |
| | | | | | | | | 227 | | | | | | | | | |
| | | | | | | | | 297 | | | | | | | | | |
| | | | | | | | | 327 | | | | | | | | | |
| | | | | | | | | 357 | | | | | | | | | |
| 46 | Hydrogen chloride, anhydrous | 7647-01-0 | 2,8 | Gas | 29,900 mm Hg at 17.8°C | -85°C | 22 ppm (AEGL-2) | 127 | 1.6 | 21.8 ppm | Direct Continuous (Heavy Gas) | 0.8 | 21 ppm | Term Release | 0.8 | CAA Section 112(r) chemical; threshold quantity = 5000 lbs | |
| | (Note: Modeling assumes this chemical does not come into contact with water. A reaction with water could affect the downwind dispersion.) | | | | | | | 227 | 5 | 20.7 ppm | | 2.5 | 21 ppm | | 2.5 | CERCLA chemical; reportable quantity = 5000 lbs | |
| | | | | | | | | 297 | 8 | 20.3 ppm | | 4.1 | 21 ppm | | 4.1 | EPCRA EHS chemical; threshold planning quantity = 500 lbs | |
| | | | | | | | | 327 | 10 | 21.5 ppm | | 5 | 21 ppm | | 5 | EPCRA Section 313 chemical | |
| | | | | | | | | 357 | 12 | 21.4 ppm | | 5.9 | 21 ppm | | 5.9 | OSHA (29 CFR 1910.119) chemical; threshold quantity = 5000 lbs | |
| | | | | | | | 100 ppm (AEGL-3) | 127 | | | | 3.75 | 99 ppm | Term Release | 3.75 | | |
| | | | | | | | | 227 | | | | 11.6 | 99 ppm | | 11.6 | | |
| | | | | | | | | 297 | | | | 19.4 | 99 ppm | | 19.4 | | |
| | | | | | | | | 327 | | | | 23.4 | 99 ppm | | 23.4 | | |
| | | | | | | | | 357 | | | | 27.6 | 99 ppm | | 27.6 | | |
| 47 | Hydrogen chloride, solution (30-40%) | 7647-01-0 | 8 | Liquid | 190 mm Hg at 25°C | 53°C | 22 ppm (AEGL-2) | 127 | 22 | 21.8 ppm | Puddle (Gaussian) | 25 | 21 ppm | Liquid Spill | 22 | CAA Section 112(r) chemical; threshold quantity = 5000 lbs | |
| | | | | | | | | 227 | 85 | 21.1 ppm | | 75 | 21 ppm | | 75 | CERCLA chemical; reportable quantity = 5000 lbs | |
| | | | | | | | | 297 | 250 | 21.8 ppm | (Heavy Gas) | 125 | 21 ppm | | 125 | EPCRA EHS chemical; threshold planning quantity = 500 lbs | |
| | | | | | | | | 327 | 310 | 21.5 ppm | | 155 | 21 ppm | | 155 | EPCRA Section 313 chemical | |
| | | | | | | | | 357 | 375 | 21.5 ppm | | 180 | 21 ppm | | 180 | OSHA (29 CFR 1910.119) chemical; threshold quantity = 5000 lbs | |
| | | | | | | | 100 ppm (AEGL-3) | 127 | | | | | | | | | |
| | | | | | | | | 227 | | | | | | | | | |
| | | | | | | | | 297 | | | | | | | | | |
| | | | | | | | | 327 | | | | | | | | | |
| | | | | | | | | 357 | | | | | | | | | |
| 48 | Hydrogen fluoride, anhydrous | 7664-39-3 | 2,8 | Gas | 400 mm Hg at 2.5°C | 19.4°C | 24 ppm (AEGL-2) | 127 | 0.7 | 23.1 ppm | Direct Continuous (Gaussian) | 0.45 | 22 ppm | Term Release | 0.45 | CAA Section 112(r) chemical; threshold quantity = 1000 lbs | |
| | (Note: Modeling assumes this chemical does not come into contact with water. A reaction with water could affect the downwind dispersion.) | | | | | | | 227 | 2.2 | 23.5 ppm | | 1.5 | 23 ppm | | 1.5 | CERCLA chemical; reportable quantity = 100 lbs | |
| | | | | | | | | 297 | 3.7 | 23.6 ppm | | 2.5 | 23 ppm | | 2.5 | EPCRA EHS chemical; threshold planning quantity = 100 lbs | |
| | | | | | | | | 327 | 4.5 | 23.9 ppm | | 3 | 23 ppm | | 3 | EPCRA Section 313 chemical | |
| | | | | | | | | 357 | 5.3 | 23.9 ppm | | 3.5 | 23 ppm | | 3.5 | OSHA (29 CFR 1910.119) chemical; threshold quantity = 1000 lbs | |
| | | | | | | | 44 ppm (AEGL-3) | 127 | 1.3 | 42.9 ppm | | 0.9 | 43 ppm | Term Release | 0.9 | | |
| | | | | | | | | 227 | 4.1 | 43.8 ppm | | 2.75 | 43 ppm | | 2.75 | | |
| | | | | | | | | 297 | 6.5 | 41.5 ppm | | 4.6 | 43 ppm | | 4.6 | | |
| | | | | | | | | 327 | 8 | 42.6 ppm | | 5.6 | 43 ppm | | 5.6 | | |
| | | | | | | | | 357 | 9.5 | 42.8 ppm | | 6.6 | 43 ppm | | 6.6 | | |
| 49 | Hydrogen fluoride, solution (47-52%) | 7664-39-3 | 8 | Liquid | 27 mm Hg at 21°C | 105°C | 24 ppm (AEGL-2) | 127 | 150 | 23.6 ppm | Puddle (Gaussian) | 95 | 23 ppm | Liquid Spill | 95 | CAA Section 112(r) chemical; threshold quantity = 1000 lbs | |
| | | | | | | | | 227 | 500 | 23.3 ppm | | 295 | 23 ppm | | 295 | CERCLA chemical; reportable quantity = 100 lbs | |
| | | | | | | | | 297 | 875 | 23.5 ppm | | 490 | 23 ppm | | 490 | EPCRA EHS chemical; threshold planning quantity = 100 lbs | |
| | | | | | | | | 327 | 1075 | 23.7 ppm | | 590 | 23 ppm | | 590 | EPCRA Section 313 chemical | |
| | | | | | | | | 357 | 1275 | 23.5 ppm | | 700 | 23 ppm | | 700 | OSHA (29 CFR 1910.119) chemical; threshold quantity = 1000 lbs | |
| | | | | | | | 44 ppm (AEGL-3) | 127 | | | | | | | | | |
| | | | | | | | | 227 | | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 297 | | | | | | | | |
| | | | | | | | | 327 | | | | | | | | |
| | | | | | | | | 357 | | | | | | | | |
| 50 | Hydrogen iodide, anhydrous (also Hydriodic Acid 4) | 10034-85-2 | 2 | Gas | 5940 mm Hg at 25°C | -35.38°C | 0.5 ppm (TEEL-2) | 127 | 0.1 | 0.399 ppm | Direct Continuous (Heavy Gas) | 0.065 | 0.49 ppm | Term Release | 0.065 | |
| | (Note: Modeling assumes this chemical does not come into contact with water. A reaction with water could affect the downwind dispersion.) | | | | | | | 227 | 0.35 | 0.448 ppm | | 0.2 | 0.49 ppm | | 0.2 | |
| | | | | | | | | 297 | 0.65 | 0.492 ppm | | 0.3 | 0.44 ppm | | 0.3 | |
| | | | | | | | | 327 | 0.75 | 0.48 ppm | | 0.4 | 0.48 ppm | | 0.4 | |
| | | | | | | | | 357 | 0.9 | 0.493 ppm | | 0.45 | 0.46 ppm | | 0.45 | |
| | | | | | | | 5 ppm (TEEL-3) | 127 | 1.5 | 4.91 ppm | Direct Continuous (Heavy Gas) | 0.65 | 4.9 ppm | Term Release | 0.65 | |
| | | | | | | | | 227 | 5.1 | 4.94 ppm | | 2 | 4.9 ppm | | 2 | |
| | | | | | | | | 297 | 9 | 4.91 ppm | | 3.3 | 4.8 ppm | | 3.3 | |
| | | | | | | | | 327 | 11 | 4.89 ppm | | 4 | 4.8 ppm | | 4 | |
| | | | | | | | | 357 | 13.5 | 4.95 ppm | | 4.75 | 4.9 ppm | | 4.75 | |
| 51 | Iodomethane (also Methyl idodide) | 74-88-4 | 6 | Liquid | 402 mm Hg at 25°C | 42.8°C | 50 ppm (ERPG-2) | 127 | 120 | 49.6 ppm | Puddle (Heavy Gas) | 31 | 48 ppm | Liquid Spill | 31 | CERCLA chemical; reportable quantity = 100 lbs |
| | | | | | | | | 227 | 460 | 49.5 ppm | | 97 | 49 ppm | | 97 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 800 | 49.5 ppm | | 163 | 49 ppm | | 163 | OSHA (29 CFR 1910.119) chemical; threshold quantity = 7500 lbs |
| | | | | | | | | 327 | 960 | 49 ppm | | 195 | 49 ppm | | 195 | |
| | | | | | | | | 357 | 1150 | 49 ppm | | 230 | 49 ppm | | 230 | |
| | | | | | | | 125 ppm (ERPG-3) | 127 | | | | 82 | 120 ppm | Liquid Spill | 82 | |
| | | | | | | | | 227 | | | | 250 | 120 ppm | | 250 | |
| | | | | | | | | 297 | | | | 420 | 120 ppm | | 420 | |
| | | | | | | | | 327 | | | | 505 | 120 ppm | | 505 | |
| | | | | | | | | 357 | | | | 600 | 120 ppm | | 600 | |
| 52 | Isopropylbenzene (also Cumene) | 98-82-8 | 3 | Liquid | 10 mm Hg at 38.3°C | 152°C | 50 ppm (TEEL-2) | 127 | 4700 | 49.7 ppm | Puddle (Heavy Gas) | 1150 | 49 ppm | Liquid Spill | 1150 | CERCLA chemical; reportable quantity = 5000 lbs |
| | | | | | | | | 227 | 15,000 | 48.7 ppm | | 3500 | 49 ppm | | 3500 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 26,000 | 49 ppm | | 5900 | 49 ppm | | 5900 | |
| | | | | | | | | 327 | 32,000 | 49.7 ppm | | 7100 | 49 ppm | | 7100 | |
| | | | | | | | | 357 | 38,000 | 49.5 ppm | | 8300 | 49 ppm | | 8300 | |
| | (NOTE: LEL = 8000 ppm; 10% LEL ≤ TEEL < 50% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account.) | | | | | | 900 ppm (TEEL-3) | 127 | | | | 60,000 | 890 ppm | Liquid Spill | 60,000 | |
| | | | | | | | | 227 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 297 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 327 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | |
| 53 | m-Xylene | 108-38-3 | 3 | Liquid | 8.35 mm Hg at 25°C | 138.8°C | 200 ppm (TEEL-2) | 127 | 12,000 | 190 ppm | Puddle (Heavy Gas) | 2900 | 190 ppm | Liquid Spill | 2900 | CERCLA chemical; reportable quantity = 1000 lbs |
| | | | | | | | | 227 | 38,000 | 198 ppm | | 8500 | 190 ppm | | 8500 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 63,000 | 199 ppm | | 14,000 | 190 ppm | | 14,000 | |
| | | | | | | | | 327 | 75,000 | 197 ppm | | 17,500 | 190 ppm | | 17,500 | |
| | | | | | | | | 357 | 87,000 | 194 ppm | | 20,500 | 190 ppm | | 20,500 | |
| | | | | | | | 900 ppm (TEEL-3) | 127 | | | | 23,000 | 890 ppm | Liquid Spill | 23,000 | |
| | | | | | | | | 227 | | | | 70,000 | 890 ppm | | 70,000 | |
| | | | | | | | | 297 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 327 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | |
| 54 | p-Xylene | 106-42-3 | 3 | Liquid | 10 mm Hg at 27.3°C | 138.5°C | 200 ppm (TEEL-2) | 127 | 12,000 | 199 ppm | Puddle (Heavy Gas) | 2700 | 190 ppm | Liquid Spill | 2700 | CERCLA chemical; reportable quantity = 100 lbs |
| | | | | | | | | 227 | 36,000 | 198 ppm | | 8350 | 190 ppm | | 8350 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 60,000 | 199 ppm | | 13,750 | 190 ppm | | 13,750 | |
| | | | | | | | | 327 | 72,000 | 199 ppm | | 16,500 | 190 ppm | | 16,500 | |
| | | | | | | | | 357 | 84,000 | 197 ppm | | 19,500 | 190 ppm | | 19,500 | |
| | | | | | | | 900 ppm (TEEL-3) | 127 | | | | 21,500 | 890 ppm | Liquid Spill | 21,500 | |
| | | | | | | | | 227 | | | | 65,000 | 890 ppm | | 65,000 | |
| | | | | | | | | 297 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 327 | | | | >100,000 | | | 100,000 | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | |
| 55 | Methylene chloride (also Dichloromethane) | 75-09-2 | 6 | Liquid | 350 mm Hg at 20°C | 40°C | 750 ppm (ERPG-2) | 127 | 1100 | 733 ppm | Puddle (Heavy Gas) | 240 | 740 ppm | Liquid Spill | 240 | CERCLA chemical; reportable quantity = 1000 lbs |
| | | | | | | | | 227 | 3750 | 743 ppm | | 730 | 740 ppm | | 730 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 6250 | 742 ppm | | 1230 | 740 ppm | | 1230 | |
| | | | | | | | | 327 | 7500 | 745 ppm | | 1470 | 740 ppm | | 1470 | |
| | | | | | | | | 357 | 8775 | 740 ppm | | 1740 | 740 ppm | | 1740 | |
| | | | | | | | 4000 ppm (ERPG-3) | 127 | | | | 1525 | 3900 ppm | Liquid Spill | 1525 | |
| | | | | | | | | 227 | | | | 4700 | 3900 ppm | | 4700 | |
| | | | | | | | | 297 | | | | 7800 | 3900 ppm | | 7800 | |
| | | | | | | | | 327 | | | | 9350 | 3900 ppm | | 9350 | |
| | | | | | | | | 357 | | | | 11,050 | 3900 ppm | | 11,050 | |
| 56 | n-Butylbenzene | 104-51-8 | 3 | Liquid | 1 mm Hg at 22.7°C | 183.1°C | 150 ppm (TEEL-2) | 127 | >100,000 | | Puddle (Heavy Gas) | 49,500 | 140 ppm | Liquid Spill | 49,500 | |
| | | | | | | | | 227 | >100,000 | | | >100,000 | | | 100,000 | |
| | | | | | | | | 297 | >100,000 | | | >100,000 | | | 100,000 | |
| | | | | | | | | 327 | >100,000 | | | >100,000 | | | 100,000 | |
| | | | | | | | | 357 | >100,000 | | | >100,000 | | | 100,000 | |
| | | | | | | | 750 (TEEL-3) | 127 | | | | >100,000 | | Liquid Spill | 100,000 | |
| | | | | | | | | 227 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 297 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 327 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | |
| 57 | n-Propylbenzene | 103-65-1 | 3 | Liquid | 10 mm Hg at 43.4°C | 159.2°C | 600 ppm (TEEL-2) | 127 | >100,000 | | Puddle (Heavy Gas) | 49,500 | 590 ppm | Liquid Spill | 49,500 | |
| | | | | | | | | 227 | >100,000 | | | >100,000 | | | 100,000 | |
| | | | | | | | | 297 | >100,000 | | | >100,000 | | | 100,000 | |
| | | | | | | | | 327 | >100,000 | | | >100,000 | | | 100,000 | |
| | | | | | | | | 357 | >100,000 | | | >100,000 | | | 100,000 | |
| | (NOTE: LEL = 8000 ppm; 10% LEL ≤ TEEL < 50% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account.) | | | | | | 3000 ppm (TEEL-3) | 127 | | | | >100,000 | | Liquid Spill | 100,000 | |
| | | | | | | | | 227 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 297 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 327 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | |
| 58 | Nitric acid, anhydrous | 7697-37-2 | 8 | Liquid | 62 mm Hg at 25°C | 82.8°C | 24 ppm (AEGL-2 interim) | 127 | 110 | 23.8 ppm | Puddle (Heavy Gas) | 45 | 23 ppm | Liquid Spill | 45 | OSHA (29 CFR 1910.119) chemical; threshold quantity = 500 lbs |
| | (Note: Modeling assumes this chemical does not come into contact with water. A reaction with water could affect the downwind dispersion.) | | | | | | | 227 | 400 | 23.4 ppm | | 135 | 23 ppm | | 135 | |
| | | | | | | | | 297 | 750 | 23.7 ppm | | 225 | 23 ppm | | 225 | |
| | | | | | | | | 327 | 900 | 23.2 ppm | | 270 | 23 ppm | | 270 | |
| | | | | | | | | 357 | 1100 | 23.2 ppm | | 320 | 23 ppm | | 320 | |
| | | | | | | | 92 ppm (AEGL-3 interim) | 127 | | | | 185 | 91 ppm | Liquid Spill | 185 | |
| | | | | | | | | 227 | | | | 570 | 91 ppm | | 500 | |
| | | | | | | | | 297 | | | | 950 | 91 ppm | | 500 | |
| | | | | | | | | 327 | | | | 1150 | 91 ppm | | 500 | |
| | | | | | | | | 357 | | | | 1350 | 91 ppm | | 500 | |
| 59 | Nitric acid, solution (70%) | 7697-37-2 | 8 | Liquid | 48 mm Hg at 20°C | 122°C | 24 ppm (AEGL-2 interim) | 127 | 800 | 22.9 ppm | Puddle (Gaussian) | 73 | 23 ppm | Liquid Spill | 73 | OSHA (29 CFR 1910.119) chemical; threshold quantity = 500 lbs |
| | (Note: Modeling assumes this chemical does not come into contact with water. A reaction with water could affect the downwind dispersion.) | | | | | | | 227 | | | | 225 | 23 ppm | | 225 | |
| | | | | | | | | 297 | | | | 375 | 23 ppm | | 375 | |
| | | | | | | | | 327 | | | | 450 | 23 ppm | | 450 | |
| | | | | | | | | 357 | | | | 525 | 23 ppm | | 525 | |
| | | | | | | | 92 ppm (AEGL-3 interim) | 127 | | | | | | | | |
| | | | | | | | | 227 | | | | | | | | |
| | | | | | | | | 297 | | | | | | | | |
| | | | | | | | | 327 | | | | | | | | |
| | | | | | | | | 357 | | | | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 60 | Kerosene | 8008-20-6 | 3 | Liquid | 5 mm Hg at 20°C | 175°C | 400 mg/m$^3$ (TEEL-2 and TEEL-3) | 127 | | | | 1025 | 390 mg/m$^3$ | Liquid Spill | 1025 | |
| | | | | | | | | 227 | | | | 3200 | 390 mg/m$^3$ | | 3200 | |
| | | | | | | | | 297 | | | | 5300 | 390 mg/m$^3$ | | 5300 | |
| | | | | | | | | 327 | | | | 6400 | 390 mg/m$^3$ | | 6400 | |
| | | | | | | | | 357 | | | | 7500 | 390 mg/m$^3$ | | 7500 | |
| 61 | o-Xylene | 95-47-6 | 3 | Liquid | 6.61 mm Hg at 25°C | 144°C | 200 ppm (TEEL-2) | 127 | 17,000 | 199 ppm | Puddle (Heavy Gas) | 3900 | 190 ppm | Liquid Spill | 3900 | CERCLA chemical; reportable quantity = 1000 lbs |
| | | | | | | | | 227 | 50,000 | 196 ppm | | 11,500 | 190 ppm | | 11,500 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 83,500 | 199 ppm | | 19,500 | 190 ppm | | 19,500 | |
| | | | | | | | | 327 | 100,000 | 199 ppm | | 23,500 | 190 ppm | | 23,500 | |
| | | | | | | | | 357 | >100,000 | | | 28,000 | 190 ppm | | 28,000 | |
| | (NOTE: LEL = 9000 ppm; 10% LEL ≤ TEEL < 50% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account.) | | | | | | 900 ppm (TEEL-3) | 127 | | | | 33,000 | 890 ppm | Liquid Spill | 33,000 | |
| | | | | | | | | 227 | | | | 100,000 | 890 ppm | | 100,000 | |
| | | | | | | | | 297 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 327 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | |
| 62 | sec-Butylbenzene | 135-98-8 | 3 | Liquid | 1 mm Hg at 18.6°C | 170.7°C | 35 ppm (TEEL-2) | 127 | 9000 | 34.5 ppm | Puddle (Gaussian) | 2650 | 34 ppm | Liquid Spill | 2650 | |
| | | | | | | | | 227 | 59,000 | 34.9 ppm | (Heavy Gas) | 8000 | 34 ppm | | 8000 | |
| | | | | | | | | 297 | 100,000 | 34.9 ppm | (Heavy Gas) | 13,500 | 34 ppm | | 13,500 | |
| | | | | | | | | 327 | >100,000 | | | 16,000 | 34 ppm | | 16,000 | |
| | | | | | | | | 357 | >100,000 | | | 19,000 | 34 ppm | | 19,000 | |
| | | | | | | | 150 ppm (TEEL-3) | 127 | | | | 18,500 | 140 ppm | Liquid Spill | 18,500 | |
| | | | | | | | | 227 | | | | 56,000 | 140 ppm | | 56,000 | |
| | | | | | | | | 297 | | | | 93,000 | 140 ppm | | 93,000 | |
| | | | | | | | | 327 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | |
| 63 | Styrene (also Styrene monomer) | 100-42-5 | 3 | Liquid | 5 mm Hg at 20°C | 145°C | 250 ppm (ERPG-2) | 127 | 24,500 | 248 ppm | Puddle (Heavy Gas) | 5000 | 240 ppm | Liquid Spill | 5000 | CERCLA chemical; reportable quantity = 1000 lbs |
| | | | | | | | | 227 | 72,000 | 247 ppm | | 16,000 | 240 ppm | | 16,000 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | >100,000 | | | 26,500 | 240 ppm | | 26,500 | |
| | | | | | | | | 327 | >100,000 | | | 31,500 | 240 ppm | | 31,500 | |
| | | | | | | | | 357 | >100,000 | | | 37,000 | 240 ppm | | 37,000 | |
| | (NOTE: LEL = 9000 ppm; 10% LEL ≤ ERPG < 50% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account.) | | | | | | 1000 ppm (ERPG-3) | 127 | | | | 38,500 | 990 ppm | Liquid Spill | 38,500 | |
| | | | | | | | | 227 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 297 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 327 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | |
| 64 | Sulfur dioxide | 7446-09-5 | 2,8 | Gas | 2990 mm Hg at 25°C | -10°C | 0.75 ppm (AEGL-2 interim) | 127 | 0.095 | 0.737 ppm | Direct Continuous (Heavy Gas) | 0.045 | 0.68 ppm | Term Release | 0.045 | CAA Section 112(r) chemical; threshold quantity = 5000 lbs |
| | | | | | | | | 227 | 0.25 | 0.66 ppm | | 0.15 | 0.73 ppm | | 0.15 | CERCLA reportable quantity = 500 lbs |
| | | | | | | | | 297 | 0.45 | 0.707 ppm | | 0.25 | 0.73 ppm | | 0.25 | EPCRA EHS chemical; threshold planning quantity = 500 lbs |
| | | | | | | | | 327 | 0.55 | 0.727 ppm | | 0.3 | 0.73 ppm | | 0.3 | |
| | | | | | | | | 357 | 0.65 | 0.721 ppm | | 0.35 | 0.72 ppm | | 0.35 | |
| | | | | | | | 27 ppm (AEGL-3 interim) | 127 | | | | 1.75 | 26 ppm | Term Release | 1.75 | |
| | | | | | | | | 227 | | | | 5.4 | 26 ppm | | 5.4 | |
| | | | | | | | | 297 | | | | 9 | 26 ppm | | 9 | |
| | | | | | | | | 327 | | | | 10.9 | 26 ppm | | 10.9 | |
| | | | | | | | | 357 | | | | 12.9 | 26 ppm | | 12.9 | |
| 65 | tert-Butylbenzene | 98-06-6 | 3 | Liquid | 1 mm Hg at 13°C | 169.1°C | 150 ppm (TEEL-2) | 127 | | | | 11,000 | 140 ppm | Liquid Spill | 11,000 | |
| | | | | | | | | 227 | | | | 34,000 | 140 ppm | | 34,000 | |
| | | | | | | | | 297 | | | | 57,000 | 140 ppm | | 57,000 | |
| | | | | | | | | 327 | | | | 68,000 | 140 ppm | | 68,000 | |
| | | | | | | | | 357 | | | | 80,000 | 140 ppm | | 80,000 | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (NOTE: LEL = 7000 ppm; 10% LEL ≤ TEEL < 50% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account.) | | | | | | 750 ppm (TEEL-3) | 127 | | | | >100,000 | | Liquid Spill | 100,000 | |
| | | | | | | | | 227 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 297 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 327 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | |
| 66 | Tetrachloroethylene (also Perchloroethylene) | 127-18-4 | 6 | Liquid | 14 mm Hg at 20°C | 121.1°C | 230 ppm (AEGL-2 interim) | 127 | 12,500 | 224 ppm | Puddle (Heavy Gas) | 3000 | 220 ppm | Liquid Spill | 3000 | CERCLA chemical; reportable quantity = 100 lbs |
| | | | | | | | | 227 | 37,500 | 224 ppm | | 9000 | 220 ppm | | 9000 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 61,000 | 223 ppm | | 15,000 | 220 ppm | | 15,000 | |
| | | | | | | | | 327 | 75,000 | 229 ppm | | 18,000 | 220 ppm | | 18,000 | |
| | | | | | | | | 357 | 88,000 | 228 ppm | | 21,000 | 220 ppm | | 21,000 | |
| | | | | | | | 1200 ppm (AEGL-3 interim) | 127 | | | | 25,500 | 1100 ppm | Liquid Spill | 25,500 | |
| | | | | | | | | 227 | | | | 78,000 | 1100 ppm | | 78,000 | |
| | | | | | | | | 297 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 327 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | |
| 67 | Toluene | 108-88-3 | 3 | Liquid | 20 mm Hg at 18.3°C | 111.1°C | 510 ppm (AEGL-2 interim) | 127 | 9000 | 508 ppm | Puddle (Heavy Gas) | 2050 | 500 ppm | Liquid Spill | 2050 | CERCLA chemical; reportable quantity = 1000 lbs |
| | | | | | | | | 227 | 26,500 | 505 ppm | | 6200 | 500 ppm | | 6200 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 43,500 | 503 ppm | | 10,500 | 500 ppm | | 10,500 | |
| | | | | | | | | 327 | 52,000 | 501 ppm | | 12,500 | 500 ppm | | 12,500 | |
| | | | | | | | | 357 | 61,500 | 505 ppm | | 14,500 | 500 ppm | | 14,500 | |
| | (NOTE: LEL = 11,000 ppm; 10% LEL ≤ AEGL < 50% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account.) | | | | | | 2900 ppm (AEGL-3 interim) | 127 | | | | 20,500 | 2800 ppm | Liquid Spill | 20,500 | |
| | | | | | | | | 227 | | | | 60,500 | 2800 ppm | | 60,500 | |
| | | | | | | | | 297 | | | | 100,000 | 2800 ppm | | 100,000 | |
| | | | | | | | | 327 | | | | >100,000 | | | 100,000 | |
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | |
| 68 | trans-1,2-Dichloroethylene (also trans-1,2-Dichloroethene) | 156-60-5 | 3 | Liquid | 331 mm Hg at 25°C | 48°C | 1000 ppm (AEGL-2 interim) | 127 | 2050 | 975 ppm | Puddle (Heavy Gas) | 440 | 990 ppm | Liquid Spill | 440 | CERCLA chemical; reportable quantity = 1000 lbs |
| | | | | | | | | 227 | 6400 | 994 ppm | | 1360 | 990 ppm | | 1360 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 10,400 | 993 ppm | | 2250 | 990 ppm | | 2250 | |
| | | | | | | | | 327 | 12,400 | 993 ppm | | 2700 | 990 ppm | | 2700 | |
| | | | | | | | | 357 | 14,500 | 992 ppm | | 3200 | 990 ppm | | 3200 | |
| | (NOTE: LEL = 56,000 ppm; 10% LEL ≤ AEGL < 50% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account.) | | | | | | 17,000 ppm (AEGL-3 interim) | 127 | | | | 13,200 | 16,000 ppm | Liquid Spill | 13,200 | |
| | | | | | | | | 227 | | | | 40,300 | 16,000 ppm | | 40,300 | |
| | | | | | | | | 297 | | | | 66,000 | 16,000 ppm | | 66,000 | |
| | | | | | | | | 327 | | | | 79,600 | 16,000 ppm | | 79,600 | |
| | | | | | | | | 357 | | | | 93,300 | 16,000 ppm | | 93,300 | |
| 69 | trans-1,3-Dichloropropylene | 10061-02-6 | 3 | Liquid | 30 mm Hg at 20°C | 112°C | 5 ppm (TEEL-2) | 127 | | | | 15 | 4.9 ppm | Liquid Spill | 15 | EPCRA Section 313 chemical |
| | | | | | | | | 227 | | | | 47 | 4.9 ppm | | 47 | |
| | | | | | | | | 297 | | | | 78 | 4.9 ppm | | 78 | |
| | | | | | | | | 327 | | | | 93 | 4.9 ppm | | 93 | |
| | | | | | | | | 357 | | | | 112 | 4.9 ppm | | 112 | |
| | | | | | | | 25 ppm (TEEL-3) | 127 | | | | | | | | |
| | | | | | | | | 227 | | | | | | | | |
| | | | | | | | | 297 | | | | | | | | |
| | | | | | | | | 327 | | | | | | | | |
| | | | | | | | | 357 | | | | | | | | |
| 70 | Trichloroethylene | 79-01-6 | 6 | Liquid | 58 mm Hg at 20°C | 87.2°C | 450 ppm (AEGL-2 interim) | 127 | 5400 | 446 ppm | Puddle (Heavy Gas) | 1150 | 440 ppm | Liquid Spill | 1150 | CERCLA chemical; reportable quantity = 100 lbs |
| | | | | | | | | 227 | 17,000 | 446 ppm | | 3550 | 440 ppm | | 3550 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 28,000 | 446 ppm | | 5950 | 440 ppm | | 5950 | |
| | | | | | | | | 327 | 33,100 | 444 ppm | | 7100 | 440 ppm | | 7100 | |
| | | | | | | | | 357 | 39,500 | 448 ppm | | 8300 | 440 ppm | | 8300 | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 3800 ppm (AEGL-3 interim) | 127 | | | | 16,500 | 3700 ppm | Liquid Spill | 16,500 | |
| | | | | | | | | 227 | | | | 50,000 | 3700 ppm | | 50,000 | |
| | | | | | | | | 297 | | | | 83,000 | 3700 ppm | | 83,000 | |
| | | | | | | | | 327 | | | | 97,000 | 3700 ppm | | 97,000 | |
| | | | | | | | | 357 | | | | >100,000 | | | 100,000 | |
| 71 | Trichlorofluoromethane | 75-69-4 | 6 | Gas (T ≥ 23.9°C) | 690 mm Hg at 20°C | 23.9°C | 1500 ppm (TEEL-2) | 127 | 1080 | 1470 ppm | Direct Continuous (Heavy Gas) | 207 | 1400 ppm | Term Release | 207 | CERCLA chemical; reportable quantity = 5000 lbs |
| | | | | | | | | 227 | 2900 | 1470 ppm | | 635 | 1400 ppm | | 635 | EPCRA Section 313 chemical |
| | | | | | | | | 297 | 4600 | 1470 ppm | | 1050 | 1400 ppm | | 1050 | |
| | | | | | | | | 327 | 5500 | 1490 ppm | | 1250 | 1400 ppm | | 1250 | |
| | | | | | | | | 357 | 6400 | 1490 ppm | | 1500 | 1400 ppm | | 1500 | |
| | | | | | | | 2000 ppm (TEEL-3) | 127 | | | | 275 | 1900 ppm | Term Release | 275 | |
| | | | | | | | | 227 | | | | 850 | 1900 ppm | | 850 | |
| | | | | | | | | 297 | | | | 1425 | 1900 ppm | | 1425 | |
| | | | | | | | | 327 | | | | 1725 | 1900 ppm | | 1725 | |
| | | | | | | | | 357 | | | | 2025 | 1900 ppm | | 2025 | |
| 72 | Trichlorotrifluoroethane (also 1,1,2-Trichloro-1,2,2-trifluoroethane) | 76-13-1 | 9 | Liquid | 285 mm Hg at 20°C | 47.8°C | 1500 ppm (TEEL-2) | 127 | 3500 | 1480 ppm | Puddle (Heavy Gas) | 1000 | 1400 ppm | Liquid Spill | 1000 | EPCRA Section 313 chemical |
| | | | | | | | | 227 | 9500 | 1440 ppm | | 3100 | 1400 ppm | | 3100 | |
| | | | | | | | | 297 | 15,500 | 1490 ppm | | 5200 | 1400 ppm | | 5200 | |
| | | | | | | | | 327 | 18,000 | 1450 ppm | | 6250 | 1400 ppm | | 6250 | |
| | | | | | | | | 357 | 22,000 | 1480 ppm | | 7400 | 1400 ppm | | 7400 | |
| | | | | | | | 2000 ppm (TEEL-3) | 127 | | | | 1400 | 1900 ppm | Liquid Spill | 1400 | |
| | | | | | | | | 227 | | | | 4400 | 1900 ppm | | 4400 | |
| | | | | | | | | 297 | | | | 7350 | 1900 ppm | | 7350 | |
| | | | | | | | | 327 | | | | 8800 | 1900 ppm | | 8800 | |
| | | | | | | | | 357 | | | | 10,350 | 1900 ppm | | 10,350 | |
| 73 | Vinyl chloride | 75-01-4 | 2 | Gas | 2950 mm Hg at 25°C | -13.9°C | 5000 ppm (ERPG-2) | 127 | 1700 | 4990 ppm | Direct Continuous (Heavy Gas) | 320 | 4900 ppm | Term Release | 320 | CAA Section 112(r) chemical; threshold quantity = 10,000 lbs |
| | (NOTE: LEL = 36,000 ppm; 10% LEL ≤ ERPG < 50% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account.) | | | | | | | 227 | 4600 | 4940 ppm | | 975 | 4900 ppm | | 975 | CERCLA reportable quantity = 1 lbs |
| | | | | | | | | 297 | 7400 | 4930 ppm | | 1650 | 4900 ppm | | 1650 | EPCRA Section 313 chemical |
| | | | | | | | | 327 | 8800 | 4930 ppm | | 1975 | 4900 ppm | | 1975 | |
| | | | | | | | | 357 | 10,300 | 4920 ppm | | 2350 | 4900 ppm | | 2350 | |
| | (NOTE: LEL = 36,000 ppm; 50% LEL ≤ ERPG < 100% LEL; safety considerations against the hazard(s) of explosion(s) must be taken into account.) | | | | | | 20,000 ppm (ERPG-3) | 127 | | | | 1250 | 19,000 ppm | Term Release | 1250 | |
| | | | | | | | | 227 | | | | 3900 | 19,000 ppm | | 3900 | |
| | | | | | | | | 297 | | | | 6500 | 19,000 ppm | | 6500 | |
| | | | | | | | | 327 | | | | 7850 | 19000 ppm | | 7850 | |
| | | | | | | | | 357 | | | | 9250 | 19,000 ppm | | 9250 | |