



# TOXIC & COMBUSTIBLE GASES

| Material   | TLV/<br>TWA<br>(ppm) | CEILING<br>(ppm)      | IDLH<br>(ppm) | CHEM*<br>HAZARD | RELATIVE<br>DENSITY<br>(Air = 1.0) |
|--|----------------------|-----------------------|---------------|-----------------|------------------------------------|
| AMMONIA, NH <sub>3</sub>   | 25                   |                       | 300           | 15%             | 0.6                                |
| ARSINE, AsH <sub>3</sub>   | 0.05                 |                       | 3             | ND              | 2.7                                |
| BORON TRICHLORIDE, BCl <sub>3</sub>                              |                      | 5 ppm Ceiling, as HCl |               |                 |                                    |
| BORON TRIFLUORIDE, BF <sub>3</sub>                               |                      | 1                     | 25            | Nf              | 2.4                                |
| BROMINE, Br <sub>2</sub>   | 0.1                  |                       | 3             | OA              | 5.5                                |
| CARBON MONOXIDE, CO  | 25                   |                       | 1200          | 12.5%           | 1                                  |
| CHLORINE, Cl <sub>2</sub>  | 0.5                  |                       | 10            | OA              | 2.5                                |
| DIBORANE, B <sub>2</sub> H <sub>6</sub>                          | 0.1                  |                       | 15            | 0.8%            | 1                                  |
| DICHLOROSILANE, SiH <sub>2</sub> Cl <sub>2</sub>                 |                      | 5 ppm Ceiling, as HCl |               |                 |                                    |
| FLUORINE, F <sub>2</sub>   | 1                    |                       | 25            | OA              | 1.3                                |
| GERMANE, GeH <sub>4</sub>  | 0.2                  |                       | NE            | ND              | 2.6                                |
| HYDROGEN BROMIDE, HBr  |                      | 3                     | 30            | Nf              | 2.8                                |
| HYDROGEN CHLORIDE, HCl   |                      | 5                     | 50            | Nf              | 1.3                                |
| HYDROGEN CYANIDE, HCN  |                      | 4.7                   | 50            | 5.6%            | 0.9                                |
| HYDROGEN FLUORIDE, HF  |                      | 3                     | 30            | Nf              | 1.9                                |
| HYDROGEN SELENIDE, H <sub>2</sub> Se                             | 0.05                 |                       | 1             | ND              | 2.8                                |
| HYDROGEN SULFIDE, H <sub>2</sub> S                               | 10                   |                       | 100           | 4%              | 1.2                                |
| NITRIC OXIDE, NO   | 25                   |                       | 100           | OA              | 1                                  |
| NITROGEN DIOXIDE, NO <sub>2</sub> /N <sub>2</sub> O <sub>4</sub> | 3                    |                       | 20            | OA              | 2.6                                |
| NITROGEN TRIFLUORIDE, NF <sub>3</sub>                            | 10                   |                       | 1000          | OA              | 2.5                                |
| OZONE, O <sub>3</sub>  |                      | 0.1                   | 5             | OA              | 1.7                                |
| PHOSGENE, COCl <sub>2</sub>                                      | 0.1                  |                       | 2             | Nf              | 3.5                                |
| PHOSPHINE, PH <sub>3</sub>                                       | 0.3                  |                       | 50            | P               | 1.2                                |
| SILANE, SiH <sub>4</sub>   | 5                    |                       | NE            | P               | 1.1                                |
| SILICON TETRAFLUORIDE, SiF <sub>4</sub>                          |                      | 3 ppm Ceiling, as HF  |               |                 |                                    |
| SULFUR DIOXIDE, SO <sub>2</sub>                                  | 2                    |                       | 100           | Nf              | 2.3                                |
| SULFUR HEXAFLUORIDE, SF <sub>6</sub>                             | 1000                 |                       | NE            | Nf              | 5.1                                |
| TUNGSTEN HEXAFLUORIDE, WF <sub>6</sub>                           |                      | 3 ppm Ceiling, as HF  |               |                 |                                    |

**\*CHEMICAL/FIRE HAZARD:**

Number= Lower Explosive Limit in % Volume  
 ND = Flammability/Fire Parameters Not Determined  
 Nf = Nonflammable  
 OA = Oxidizer and/or Accelerator  
 P = Pyrophoric

**TOXICITY HAZARD:**

TLV/TWA= Threshold Limit Value/Time Weighted Average  
 Ceiling= Exposure Concentrations Should Not be Exceeded  
 IDLH= Immediately Dangerous to Life or Health  
 NE = IDLH Not Established

Data from NIOSH "POCKET GUIDE TO CHEMICAL HAZARDS," the ACGIH "TLV" HANDBOOK, and other sources.