Exposure Limits for Air Contaminants — Quick Tips



References:

NIOSH Pocket Guide to Chemical Hazards, NIOSH, 2005

Definitions:

TLV (threshold limit value)-An estimate of the average safe airborne concentration of a substance in representative conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse effect. TLVs are published annually by the American Conference of Governmental Industrial Hygienists (ACGIH).

PEL (permissible exposure limit)-The OSHA limits of employee exposure to chemicals; found primarily in 29 CFR 1910.1000, table Z-1.

STEL (short term exposure limit)-The maximum concentration for a continuous 15-minute exposure period. Ceiling is the maximum allowable concentration to which an employee may be exposed.

IDLH (immediately dangerous to life and health)-The concentration of an airborne chemical which may cause irreversible health effects or death. NIOSH

| Chemical Name | TLV ppm | PEL ppm | STEL/Ceiling ppm | IDLH ppm |
|--|------------|--------------|---------------------|---------------|
| Acetaldehyde | - | 200 | 25 ACGIH | 2000 ++ |
| Acetic acid | 10 | 10 | 15 ACGIH | 50 |
| Acetic anhydride | 5 | 5 | 5 NIOSH | 200 |
| Acetone | 500 | 1000 | 750 ACGIH | 2500 |
| Acetonitrile | 20 | 40 | - | 500 |
| Acetylene tetrabromide (1,1,2,2 Tetrabromoethane) | 0.1 | 1 | - | 8 |
| Acrolein | - | 0.1 | 0.1 ACGIH | 2 |
| Acrylamide | 0.03 | 0.3 mg/m3 | - | 60 mg/m3++ |

| Aldrin | 0.05 | 0.25 mg/m3 | - | 25 mg/m3++ |
|------------------------|------------|---------------|--------------------|---------------|
| Allyl alcohol | 0.5 | 2 | 4 NIOSH | 20 |
| Allyl chloride | 1 | 1 | 2 ACGIH / NIOSH | 250 |
| Allyl glycidyl ether | 1 | 10+ | 10 NIOSH | 50 |
| Allyl propyl disulfide | 0.5 | 2 | 3 NIOSH | - |
| Alpha-alumina (td) | - | 15 mg/m3 | - | - |
| Alpha-alumina (rf) | - | 5 mg/m3 | - | - |
| Aluminum, metal (td) | - | 15 mg/m3 | - | - |
| Aluminum metal (rf) | 1 mg/m3 | 5 mg/m3 | - | - |

| ANTU | 0.3 mg/m3 | 0.3 mg/m3 | - | 100 mg/m3 |
|---------------------|---------------|--------------|----------------------|--------------|
| Arsenic, org. comp. | 0.01 mg/m3 | 0.5 mg/m3 | - | - |
| Arsine | 0.005 | 0.05 | 0.002 mg/m3 NIOSH | 3++ |
| Azinphos-methyl | 0.2 mg/m3 | 0.2 mg/m3 | - | 10 mg/m3 |

[&]quot; + " indicates a ceiling value

 $^{^{\}prime\prime}$ ++ $^{\prime\prime}$ indicates that the chemical is believed, by NIOSH, to be a potential carcinogen.

| Chemical Name | TLV ppm | PEL ppm | STEL/Ceiling ppm | IDLH ppm |
|---|--------------|--------------|---------------------------------|---------------|
| Barium, sol. comp. | 0.5 mg/m3 | 0.5 mg/m3 | - | 50 mg/m3 |
| Barium sulfate (td) | 10 mg/m3 | 15 mg/m3 | - | - |
| Barium sulfate (rf) | - | 5 mg/m3 | - | - |
| Benomyl (td) | 10 mg/m3 | 15 mg/m3 | - | - |
| Benomyl (rf) | - | 5 mg/m3 | - | - |
| Benzene <u>*See 29 CFR</u> 1910.1028 | 0.5 | 1* | 5* OSHA 2.5 ACGIH 1 NIOSH | 500 ++ |
| Benzoyl peroxide | 5 mg/m3 | 5 mg/m3 | - | 1500 mg/m3 |
| Benzyl chloride | 1 | 1 | 1 / 15min NIOSH | 10 |

| Beryllium | 0.002 mg/m3 | 0.002 mg/m3 | 0.005 ; 0.025 30 min. peak/8 hr. shift OSHA 0.0005 mg/m3 NIOSH | 4 mg/m3 ++ |
|--------------------------------|----------------|----------------|--|------------------|
| Bismuth telluride undoped (td) | 10 mg/m3 | 15 mg/m3 | - | - |
| Bismuth telluride undoped (rf) | - | 5 mg/m3 | - | - |
| Boron oxide (td) | 10 mg/m3 | 15 mg/m3 | - | 2000 mg/m3 |
| Boron trifluoride | - | - | 1.0 NIOSH, OSHA, ACGIH | 25 |
| Bromine | 0.1 | 0.1 | 0.2 ACGIH 0.3 NIOSH | 3 |
| Bromoform | 0.5 | 0.5 | - | 850 |
| 1,3 butadiene | 2 | 1 | 5 OSHA | 2000 ++ (LEL) |
| 2-butanone (MEK) | 200 | 200 | 300 ACGIH / NIOSH | 3000 |
| 2-butoxyethanol | 20 | 50 | - | 700 |
| n-butyl-acetate | 150 | 150 | 200 ACGIH / NIOSH | 1700 (LEL) |
| sec-butyl acetate | 200 | 200 | - | 1700 (LEL) |
| tert-butyl acetate | 200 | 200 | - | 1500 (LEL) |

| n-Butyl alcohol (n- butanol) | 20 | 100 | 50 NIOSH | 1400 (LEL) |
|--|-----|-----|--------------------------|-------------------|
| sec-Butyl alcohol (sec- butanol) | 100 | 150 | 150 NIOSH | 2000 |
| tert-Butyl alcohol (tert- butanol) | 100 | 100 | 150 NIOSH | 1600 |
| Butylamine | 5+ | 5+ | 5 NIOSH | 300 |
| tert-butyl chromate <u>See 29 CFR</u> <u>1910.1026</u> | - | - | 0.1 mg/m3 ACGIH, OSHA | 15 mg/m3 ++ |
| n-butyl glycidyl ether | 3 | 50 | 5.6 /15 min. NIOSH | 250 |
| Butyl mercaptan | 0.5 | 10 | 0.5 /15 min. NIOSH | 500 |
| p-tert-butyl-1-toluene | 1 | 10 | 20 NIOSH | 100 |

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| Chemical Name | TLV ppm | PEL ppm | STEL/Ceiling ppm | IDLH ppm |
|---|-------------|--------------|---------------------|---------------|
| Cadmium fume <u>See 29 CFR</u> 1910.1027 | - | 0.3 mg/m3 | - | 9 mg/m3 ++ |
| Cadmium dust <u>See 29 CFR</u> 1910.1027 | - | 0.3 mg/m3 | - | 9 mg/m3 ++ |
| Calcium carbonate (td) (limestone) | - | 15 mg/m3 | - | - |
| Calcium carbonate (rf) | - | 5 mg/m3 | - | - |
| Calcium hydroxide (td) | 5 mg/m3 | 15 mg/m3 | - | - |
| Calcium hydroxide (rf) | - | 5 mg/m3 | - | - |
| Calcium oxide | 2 mg/m3 | 5 mg/m3 | - | 25 mg/m3 |
| Calcium silicate (td) | 10 mg/m3 | 15 mg/m3 | - | - |
| Calcium silicate (rf) | - | 5 mg/m3 | - | - |
| Calcium sulfate (td) | 10 mg/m3 | 15 mg/m3 | - | - |
| Calcium sulfate (rf) | - | 5 mg/m3 | - | - |

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| Camphor, synthetic | 12 mg/m3 | 2 mg/m3 | 19 mg/m3 ACGIH | 200 mg/m3 |
|----------------------------|--------------|--------------|----------------------------------|------------------|
| Carbaryl | 5 mg/m3 | 5 mg/m3 | - | 100 mg/m3 |
| Carbon black | 3.5 mg/m3 | 3.5 mg/m3 | - | 1750 mg/m3 ++ |
| Carbon dioxide | 5000 | 5000 | 30,000 ACGIH / NIOSH | 40,000 |
| Carbon disulfide | 1 | 20 | 10 NIOSH | 500 |
| Carbon monoxide | 25 | 50 | 200 NIOSH | 1200 |
| Carbon tetrachloride | 5 | 10 | 10 ACGIH 2 / 60 min. NIOSH | 200 ++ |
| Cellulose (td) | 10 mg/m3 | 15 mg/m3 | - | - |
| Cellulose (rf) | - | 5 mg/m3 | - | - |
| Chlordane | 0.5 mg/m3 | 0.5 mg/m3 | - | 100 mg/m3++ |
| Chlorinated camphene | 0.5 mg/m3 | 0.5 mg/m3 | - | 200 mg/m3++ |
| Chlorinated diphenyl oxide | 0.5 mg/m3 | 0.5 mg/m3 | - | 5 mg/m3 |
| Chlorine | 0.5 | - | 1 ACGIH/OSHA 0.5 NIOSH | 10 |

^{*}For entire list download the pdf

Sources

Information on the most up to date NIOSH chemical hazards can be found online in the NIOSH Pocket Guide to Chemical Hazards, NIOSH, 2010

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