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

” + ” indicates a ceiling value

” ++ ” 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 *See 29 CFR 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 See 29 CFR 1910.1026	-	-	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 See 29 CFR 1910.1027	-	0.3 mg/m3	-	9 mg/m3 ++
Cadmium dust See 29 CFR 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	-	-

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

ACGIH

OSHA 29 CFR 1910.1000, Table Z-1

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