

2) Chemical Standards in Workplace

(A) *The average atmospheric chemical concentration in the workplace throughout normal working period shall not exceed the specific level as follows:*

No.	Substances	Chemical Concentration	
		ppm	mg/m ³
1.	Aldrin	-	0.25
2.	Azinphos-methyl	-	0.2
3.	Chlordane	-	0.5
4.	DDT	-	1
5.	DDVP	-	1
6.	Dichlorvos	-	1
7.	Dieldrin	-	0.25
8.	Dimethyl 1,2-dibromo 2,2 dichloroethyl phosphate (Dibrom)	-	3
9.	Endrin	-	0.1
10.	Guthion	-	0.2
11.	Lead arsenate	-	0.15
12.	Lindane	-	0.5
13.	Malathion	-	15
14.	Methoxychlor	-	15
15.	Nicotine	-	0.5
16.	Systox	-	0.1
17.	Thallium (soluble compounds) as Tl	-	0.1
18.	Thiram	-	5
19.	Toxaphene	-	0.5
20.	Parathion	-	0.11
21.	Phosdrin	-	0.1
22.	Pyrethrum	-	5
23.	Warfarin	-	0.1
24.	Carbaryl (Sevin R)	-	5
25.	2,4-D	-	10
26.	Paraquat	-	0.5
27.	2,4,5-T	-	10
28.	Acetic acid	10	25
29.	Ammonia	50	35
30.	Arsenic and compounds (as As)	-	0.5
31.	Arsine	0.05	0.2
32.	Biphenyl	0.2	1
33.	Bisphenol A	0.5	2.8
34.	Carbon dioxide	5,000	9,000
35.	Carbon monoxide	50	55
36.	Chlorine	1	3

(A) The average atmospheric chemical concentration in the workplace throughout normal working period shall not exceed the specific level as follows (Cont'd) :

No.	Substances	Chemical Concentration	
		ppm	mg/m ³
37.	Chlorine dioxide	0.1	0.3
38.	Chromium and Chromium compounds	-	1
39.	Copper fume	-	0.1
40.	Dust or mist of copper	-	1
41.	Cotton dust (raw)	-	1
42.	Cyanide (as CN)	-	5
43.	Ethyl alcohol (Ethanol)	1,000	1,900
44.	Fluoride (as F)	-	2.5
45.	Fluorine	0.1	0.2
46.	Hydrogen cyanide	10	11
47.	Iron oxide fume	-	10
48.	Methyl alcohol (Methanol)	200	260
49.	Nickel carbonyl	0.001	0.007
50.	Nickel, metal and soluble compounds, as Ni	-	1
51.	Nitric acid	2	5
52.	Nitric oxide	25	30
53.	Nitrogen dioxide	5	9
54.	Nitroglycerin	0.2	2
55.	Sodium hydroxide	-	2
56.	Sulfur dioxide	5	13
57.	Sulfuric acid	-	1
58.	Tetraethyl lead (as Pb)	-	0.075
59.	Tetramethyl lead (as Pb)	-	0.07
60.	Tin and Inorganic compounds of tin	-	2
61.	Tin and Organic compounds of tin	-	0.1
62.	Phenol	5	19
63.	Phosgene (Carbonyl chloride)	0.1	0.4
64.	Phosphine	0.3	0.4
65.	Phosphoric acid	-	1
66.	Phosphorus (yellow)	-	0.1
67.	Phosphorus pentachloride	-	1
68.	Phosphorus pentasulfide	-	1
69.	Phosphorus trichloride	0.5	3
70.	Xylene (Xylol)	100	435
71.	Zinc chloride fume	-	1
72.	Zinc oxide fume	-	5

(B) The maximum atmospheric chemical concentration in the workplace shall be as follows:

No.	Substances	Chemical Concentration	
		ppm	mg/m ³
1.	Allyl glycidyl ether (AGE)	10	45
2.	Boron trifluoride	1	3
3.	Butylamine	5	15
4.	tert-Butyl chromate (as CrO ₃)	-	0.1
5.	Chlorine trifluoride	0.1	0.4
6.	Chloroacetaldehyde	1	3
7.	Chloroform (trichloromethane)	50	240
8.	o-Dichlorobenzene	50	300
9.	Dichloroethyl ether	15	90
10.	1,1-Dichloro-1-nitroethane	10	60
11.	Diglycidyl ether (DGE)	0.5	2.8
12.	Ethyl mercaptan	10	25
13.	Ethylene glycol dinitrate and/or Nitroglycerin	0.2	1
14.	Hydrogen chloride	5	7
15.	Iodine	0.1	1
16.	Manganese	-	5
17.	Methyl bromide	20	80
18.	Methyl mercaptan	10	20
19.	α-Methyl styrene	100	480
20.	Methylene bisphenyl isocyanate (MDI)	0.02	0.2
21.	Monomethyl hydrazine	0.2	0.35
22.	Terphenyls	1	9
23.	Toluene-2,4-Diisocyanate	0.02	0.14
24.	Vinyl chloride	1	2.8

(C) The maximum atmospheric chemical concentration in the workplace shall not exceed the specific level as follows:

No.	Substances	Average Concentration during Normal Work Period	Concentration for a Specified Time		Allowable Concentration
			Concentration	Allowable Exposure Period	
1.	Benzene	10 ppm	50 ppm	10 minutes	25 ppm
2.	Beryllium and Beryllium compounds	2 µg/m ³	25 µg/m ³	30 minutes	5 µg/m ³
3.	Cadmium fume	0.1 mg/m ³	-	-	0.3 mg/m ³
4.	Cadmium dust	0.2 mg/m ³	-	-	0.6 mg/m ³
5.	Carbondisulfide	20 ppm	100 ppm	30 minutes	30 ppm
6.	Carbontetrachloride	10 ppm	200 ppm	5 minutes in any 4 hours	25 ppm
7.	Ethylene dibromide	20 ppm	50 ppm	5 minutes	30 ppm
8.	Ethylene dichloride	50 ppm	200 ppm	5 minutes in any 3 hours	100 ppm
9.	Formaldehyde	3 ppm	10 ppm	30 minutes	5 ppm
10.	Fluoride as dust	2.5 mg/m ³	-	-	-
11.	Lead and its inorganic compounds	0.2 mg/m ³	-	-	-
12.	Methyl chloride	100 ppm	300 ppm	5 minutes in any 3 hours	200 ppm
13.	Methylene chloride	500 ppm	2,000 ppm	5 minutes in any 2 hours	1,000 ppm
14.	Organo (alkyl) mercury	0.01 mg/m ³	-	-	0.04 mg/m ³
15.	Styrene	100 ppm	600 ppm	5 minutes in any 3 hours	200 ppm
16.	Trichloro ethylene	100 ppm	300 ppm	5 minutes in any 2 hours	200 ppm
17.	Tetrachloro ethylene	100 ppm	300 ppm	5 minutes in any 3 hours	200 ppm
18.	Toluene	200 ppm	500 ppm	10 minutes	300 ppm
19.	Hydrogen sulfide	-	50 ppm	10 minutes	20 ppm
20.	Mercury	-	-	-	0.05 mg/m ³
21.	Chromic acid and chromate salt	-	-	-	0.1 mg/m ³

(D) The atmospheric mineral dust concentration in the workplace throughout normal working period shall not exceed the specific level as follows:

No.	Substances	Average Amount of Dusts throughout Normal Working Time	
		Mppcf	mg/m ³
1.	Silica :		
	Crystalline :		
	Quartz (Respirable dust)	$\frac{250}{\%SiO_2 + 5}$	$\frac{10 \text{ mg/m}^3}{\%SiO_2 + 2}$
	Quartz (Total dust)	-	$\frac{30 \text{ mg/m}^3}{\%SiO_2 + 2}$
	Cristobalite	$\frac{1}{2} \left(\frac{250}{\%SiO_2 + 5} \right)$	$\frac{1}{2} \left(\frac{10 \text{ mg/m}^3}{\%SiO_2 + 2} \right)$
	Tridymite	$\frac{1}{2} \left(\frac{250}{\%SiO_2 + 5} \right)$	$\frac{1}{2} \left(\frac{10 \text{ mg/m}^3}{\%SiO_2 + 2} \right)$
2.	Amorphous, including natural diatomaceous earth	20	$\frac{80 \text{ mg/m}^3}{\%SiO_2}$
3.	Silicates (less than 1% crystalline silica) :		
	Asbestos	5*	-
	Tremolite	5*	-
	Talc (Asbestos form)	5*	-
	Talc (Non-asbestos form)	20	-
	Mica	20	-
	Soapstone	20	-
	Portland cement	50	-
	Graphite	15	-
	Coal dust (respirable fraction less than 5 % SiO ₂)	-	2.4 mg/m ³
Coal dust (for more than 5 % SiO ₂)	-	$\frac{10 \text{ mg/m}^3}{\%SiO_2 + 2}$	
4.	Inert or nuisance dust		
	Respirable dust	15	5 mg/m ³
	Total dust	50	15 mg/m ³

Remark : Mppcf is million particles per 1 cubic foot.

* means fibres/1 cc. of air.

Source : Notification of the Ministry of Interior, issued under the Announcement of the Revolutionary Party, No.103, dated May 30, B.E.2520 (1977), which was published in the Royal Government Gazette, Vol.94, Part 64 dated July 12, B.E.2520 (1977).

Note : The legislation is cancelled and the new legislation is not enacted yet. Therefore, the above standards under this legislation are allowed to be applied for compliance unless the new legislation is enacted and effective.