

XII. TABLES AND FIGURE

TABLE XII-1

SELECTED PROPERTIES OF METHYLENE CHLORIDE

Chemical Abstract serial number	000075092
Synonyms	Dichloromethane Methylene bichloride Methylene dichloride Methylene chloride
Molecular formula	CH ₂ Cl ₂
Formula weight	84.94
Boiling point (760 mm Hg)	40 C (760 mm Hg)
Melting point	95-97 C
Vapor density	2.93 (air = 1)
Density of saturated vapor	2.06 (air = 1)
Density	1.326 g/ml (20C)
Solubility	2.0 g/100 ml water at 20 C; soluble in ethanol, ethyl ether, acetone and carbon disulfide
Explosive limits in oxygen	15.5-67% by volume
Flash point	None
Autoignition temperature	624 - 662 C
Relative evaporation rate	14 (water = 1) 71 (ether = 100)
Vapor pressure	Temp F Temp C mm Hg
	50 10 230
	68 20 349
	77 25 436
	86 30 511
	95 35 600
Conversion factors (25 C; 760 mm Hg)	1 mg/liter = 1 g/cu m = 288 ppm 1 ppm = 3.48 mg/cu m = 3.48 µg/liter
Concentration in saturated air	550,000 ppm (25 C)

Adapted from references 1,4,5,6,7

TABLE XII-2

BREATH CONCENTRATIONS OF SUBJECTS DURING AND AFTER EXPOSURE
AT REST FOR 2 HOURS AT 100 ppm OF METHYLENE CHLORIDE

Breath concentrations during exposure, ppm

Time, min	No.	Mean	Range
15	4	39.5	31.4-45.4
30	4	42.9	35.2-49.0
45	4	42.3	34.0-50.0
60	4	45.6	37.4-56.2
75	4	48.2	34.9-58.2
90	3	48.7	40.0-55.4
105	4	47.3	37.6-57.4
120	4	47.0	37.2-58.1

Breath concentrations after exposure, ppm

0*	5	20.9	19.0-22.8
2	5	11.9	9.8-13.5
5	5	8.8	6.9-12.3
10	5	7.0	5.1-9.8
20	5	4.8	3.9-5.8
30	5	3.7	2.9-4.8
40	5	3.3	2.6-4.6
50	5	2.9	1.9-3.9
60	5	2.6	1.9-3.6
120	5	1.4	0.6-2.0
180	5	0.7	0.3-1.3
240	5	0.3	0.0-0.6
300	5	0.1	0.0-0.2

* First measurement after leaving exposure chamber
Adapted from DiVincenzo et al, [48] additional data supplied by authors

TABLE XII-3

BREATH CONCENTRATIONS OF SUBJECTS DURING AND AFTER EXPOSURE
FOR 4 HOURS AT 100 ppm OF METHYLENE CHLORIDE

Breath concentrations during exposure, ppm

Time, min	No.	Mean	Range
30	5	33.8	24.8-45.9
60	5	36.4	24.8-52.5
120	5	35.1	27.5-45.5
180	4	36.4	28.6-40.8
240	5	39.0	31.8-51.9

Breath concentrations after exposure, ppm

0*	5	21.6	19.1-23.8
2	5	13.7	12.3-17.1
5	5	9.6	8.3-11.9
10	5	7.7	6.0-9.2
20	5	5.4	5.1-6.6
30	5	4.6	3.7-5.9
40	5	4.2	3.3-5.9
50	5	3.3	2.6-3.9
60	5	3.2	2.3-4.2
120	5	1.7	1.2-2.5
180	5	1.0	0.7-1.3
240	5	0.8	0.4-1.1
300	3	0.4	0.2-0.7
360	3	0.4	0.2-0.7

* First measurement after leaving exposure chamber

Adapted from DiVincenzo et al, [48] additional data supplied by authors

TABLE XII-4

BREATH CONCENTRATIONS OF SUBJECTS DURING AND AFTER EXPOSURE
FOR 2 HOURS AT REST AT 200 ppm OF METHYLENE CHLORIDE

Breath concentrations during exposure, ppm

Time, min	No.	Mean	Range
10	7	69.5	50.0-95.0
20	7	71.8	58.0-96.0
30	7	73.7	50.0-96.0
40	6	71.0	55.0-91.0
50	7	76.2	44.0-98.0
60	7	76.2	53.0-105.0
75	7	81.2	56.0-114.0
90	7	80.7	58.0-107.0
105	7	89.4	54.0-120.0
120	7	88.4	71.0-113.0

Breath concentrations after exposure, ppm

0*	7	38.0	25.0-51.0
2	7	25.3	16.0-38.0
5	6	22.2	16.0-28.0
10	7	16.0	11.0-20.0
20	7	11.4	7.0-15.0
30	6	9.0	7.0-10.0
40	5	7.7	5.4-9.5
50	6	5.5	3.9-6.8
60	7	5.0	3.0-7.8
120	7	2.2	1.4-3.3
180	7	1.1	0.4-1.6
240	7	0.8	0.4-1.4
300	7	0.5	0.1-0.8
360	6	0.2	0.1-0.5

* First measurement after leaving exposure chamber

Adapted from DiVincenzo et al, [48] additional data supplied by authors

TABLE XII-5

BREATH CONCENTRATIONS DURING EXPOSURE OF SUBJECTS
EXPOSED AT REST OR EXERCISE FOR 2 HOURS
AT 100 ppm OF METHYLENE CHLORIDE

Time, min	No.	Status	Methylene chloride, ppm	
			Mean	Range
10	4	resting	28.2	15-39
15	4	exercise	39.7	29-49
25	4	resting	33.5	25-40
30	4	exercise	45.5	33-56
40	4	resting	38.5	30-48
45	4	exercise	47.0	35-56
55	4	resting	36.2	26-47
60	4	exercise	48.2	35-59
70	4	resting	38.2	30-47
90	4	exercise	49.5	35-59
100	4	resting	40.2	33-47
120	4	resting	42.0	32-47

Adapted from DiVincenzo et al, [48] additional data supplied by authors

TABLE XII-6

BREATH CONCENTRATIONS AFTER EXPOSURE OF
INDIVIDUALS WHO EXERCISED WHILE EXPOSED
FOR 2 HOURS AT 100 ppm OF METHYLENE CHLORIDE VAPOR

Time, min	No.	Methylene chloride, ppm	
		mean	range
0	4	29.0	22.0-37.0
2	4	17.5	14.0-20.0
5	4	14.8	12.0-18.0
10	4	12.5	9.0-15.0
20	4	8.0	7.0-9.0
30	4	7.6	6.0-9.9
40	4	5.7	4.0-8.6
50	3	4.8	3.3-7.6
60	4	4.2	3.0-7.4
120	4	2.6	2.0-4.0
180	2	1.0	0.9-1.2
240	3	0.9	0.7-1.5
300	2	0.2	0.2-0.4
360	3	0.2	0.1-0.4

Adapted from DiVincenzo et al, [48] additional data supplied by authors

TABLE XII-7

BLOOD CONCENTRATIONS OF METHYLENE CHLORIDE IN MAN
DURING AND FOLLOWING EXPOSURE AT 200 ppm FOR 2 HOURS

During Exposure			After Exposure		
Time, min	mg/liter range	No.	Time, min	mg/liter range	No.
10-12	0.511-0.666	3	60	0.356-0.422	4
30	0.032-1.399	4	120	0.178-0.266	4
50-80	1.130-2.000	4	180	0.111-0.200	4
120	1.780-2.200	4	240	0.066-0.155	4

Adapted from DiVincenzo et al, [48] additional data supplied by authors

TABLE XII-8

BLOOD CONCENTRATIONS OF METHYLENE CHLORIDE IN
SUBJECTS AFTER EXPOSURE AT 100 ppm FOR 2 HOURS

Time, min	mg/liter
3	0.622
4	0.666
4	0.666
8	0.666
7	0.577
15	0.399
19	0.355
35	0.244
44	0.266
60	0.266
67	0.122
68	0.088
120	0.100
127	0.088
129	0.066

Adapted from DiVincenzo et al, [48] additional data supplied by authors

TABLE XII-9

URINARY EXCRETION OF METHYLENE CHLORIDE IN MAN AFTER EXPOSURE
AT 100 ppm FOR 2 HOURS

Subject	Time of Collection after Exposure, min	Urine Volume ml	CH ₂ Cl ₂ μg	24-Hour Total, μg
GDV	5	115	23.7	26.8
	125	165	3.1	
FJY	30	141	18.5	23.9
	285	97	5.4	
AI	5	125	16.4	21.0
	111	243	4.6	
TSE	5	165	18.6	18.6

Adapted from DiVincenzo et al [48]

TABLE XII-10

URINARY EXCRETION OF METHYLENE CHLORIDE IN MAN AFTER EXPOSURE
AT 200 ppm FOR 2 HOURS

Subject	Time of Collection after Exposure, min	Urine Volume ml	CH ₂ Cl ₂ μg	24-Hour Total, μg
GDV	12	185	52.2	63.7
	125	80	4.4	
	225	135	5.1	
	280	108	2.0	
FJY	12	153	57.4	69.9
	300	225	12.5	
BDA	62	235	92.8	101.8
	354	240	9.0	
CJT	5	210	63.5	82.1
	60	200	18.6	
WHJ	18	245	83.4	83.4
WJK	15	94	42.5	63.3
	120	80	13.4	
	300	133	7.4	
AW	10	204	84.6	106.7
	300	172	13.0	
	555	163	9.1	

Adapted from DiVincenzo et al [48]

TABLE XII-11

ENVIRONMENTAL CONCENTRATIONS OF METHYLENE CHLORIDE
IN THE ATMOSPHERE OF A PLASTIC FILM FACTORY

Working Location	No. of Samples	Range ppm	Average ppm
Charging mixers	7	153-965	372
Adding solvent	3	72-2,454	1,022
Adding solid plastic	4	1,642-4,896	3,142
Filtration process	15	29-1,210	331
Exchange of filter plant	14	464-1,699	901
Casting machine	121	32-1,414	297
Dryer	71	43-991	265
Water powered shut off	35	60-2,632	541
Dry powered shut off	10	109-622	317
Winding machine	16	81-567	213
Catwalk delivery room	2	61-86	72
Rear of cooler	12	1,823-3,781	2,913
CH ₂ Cl ₂ regenerator	8	84-723	423

Adapted from Kuzelova and Vlasak [55]

TABLE XII-12

ENVIRONMENTAL CONCENTRATION OF METHYLENE CHLORIDE
IN A PLASTIC FILM FACTORY
CHARCOAL COLLECTION-GAS CHROMATOGRAPHIC ANALYSIS

Location	Time	Day 1 ppm	Day 2 ppm
Casting room			
Desk No. 1	3:30 pm	471	
	8:30 am		159
	10:30 am		172
	2:30 pm		219
Dryer	3:30 pm	566	
Front caster No. 2	3:40 pm	594	
	1:00 pm		404
Back caster No. 2	6:00 pm	412	
Stretcher	3:50 pm	300	
Utility table	6:20 pm	399	
Desk No. 2	11:50 am		610
Filter Room			
Filter	5:00 pm	845	
Mezzanine	8:30 pm	966	
Basement	1:00 pm		2,140
Winding room	5:00 pm	190	
Office	9:00 pm		326
Laboratory	4:20 pm	182	

Adapted from data supplied by Massachusetts Department of Labor and Industries (LD Pagnotto, written communication, December 1973)

TABLE XII-13

ALVEOLAR CARBON MONOXIDE CONCENTRATIONS (ppm) AND DERIVED CARBOXYHEMOGLOBIN (PERCENT) DURING AND AFTER EXPOSURE TO METHYLENE CHLORIDE

Hours Since Exposure Start	Item Measured	Subject						
		1	2	3	4	5	6	7
<u>During exposure values</u>								
0*	CO	26	32	30	32	24	30	27
	COHb	4.4	3.3	5.0	5.3	4.1	5.0	4.6
2	CO	29	32	39	32	41	36	31
	COHb	4.9	5.3	6.4	5.3	6.8	6.0	5.2
4	CO	31	41	44	45	60	41	40
	COHb	5.2	6.8	7.2	7.4	9.6	6.8	6.6
6	CO	34	43	47	43	74	51	45
	COHb	5.7	7.0	7.7	7.0	11.5	8.3	7.4
8	CO	36	41	58	51	77	50	44
	COHb	5.7	6.8	9.3	8.3	12.0	8.1	7.2
<u>After exposure values</u>								
9	CO	38	40	56	50	68	50	44
	COHb	6.3	8.1	9.0	8.1	10.7	8.1	7.2
11	CO	33	33	4zz	41	61	46	39
	COHb	5.5	5.5	7.5	6.8	9.7	7.5	6.4
15	CO	38	27	29	24	44	42	38
	COHb	4.7	4.6	4.9	4.1	7.2	6.9	6.3
24	CO	17	21	23	25	29	26	23
	COHb	3.6	3.6	3.9	4.2	4.9	4.4	3.9

* Beginning of workday
Adapted from Ratney et al [59]

TABLE XII-14

EFFECTS OF EXPOSURE TO METHYLENE CHLORIDE AT 5,000 ppm ON
RUNNING ACTIVITY OF 5 RATS DURING 1 HOUR

Measurement	Rat Number					Average
	1	2	3	4	5	
Conditions						
	Revolutions / hour					
Preexposure 20-day average	725	186	928	482	518	568
Even days (no exposure)	1,251 803 343 525 568	483 309 1 29 207	1,152 1,349 403 885 293	1,019 918 541 738 620	366 549 232 257 477	
Average	698	226	816	765	376	576
Odd days during exposure	1 136 0 276 232	5 51 39 85 14	10 65 15 135 25	33 60 40 103 104	19 15 0 14 1	
Average	129	39	50	68	10	59
Odd days 30 min after exposure	68 375 173 219 1	169 109 12 14 190	746 468 92 259 404	167 551 246 432 328	13 338 54 477 161	
Average	167	99	394	345	209	243

Adapted from Heppel et al [66]

TABLE XII-15

LIVER AND BODY WEIGHTS OF MICE WITH CONTINUOUS
INHALATION OF 5,000 ppm METHYLENE CHLORIDE

Day		Body weight grams		Liver wt/body wt g/100 g		Liver weight grams	
		Control	CH2Cl 2	Control	CH2Cl 2	Control	CH2Cl 2
1	mean*	24.5	23.5	4.89	6.38	1.2	1.5
	SE	0.80	0.78			0.05	0.07
2	mean	25.3	20.7	5.14	7.25	1.3	1.5
	SE	0.55	0.50			0.05	0.05
3	mean	26.1	19.2	4.60	7.29	1.2	1.4
	SE	0.58	0.35			0.04	0.05
4	mean	26.5	19.4	4.91	7.22	1.3	1.4
	SE	0.45	0.37			0.04	0.05
7	mean	26.2	18.0	4.96	7.22	1.3	1.3
	SE	0.49	0.47			0.04	0.05

* 13-20 female mice/group
Adapted from Weinstein et al [71]

TABLE XII-16

EFFECTS OF 4 WEEKS OF CONTINUOUS EXPOSURE AT 1,000 ppm
 METHYLENE CHLORIDE ON DOG HEMATOLOGY, LIVER ENZYMES, AND BSP RETENTION

Item Measured*	Preexposure		After 4 weeks	
	Control	Exposed	Control	Exposed
Hematocrit, vol %	42.8	45.1	41.9	55.5
Hgb, g %	14.9	16.0	14.5	18.3
RBC, millions	6.3	6.8	6.3	7.7
WBC, thousands	14.0	11.3	14.0	11.4
Reticulocytes, %	0.2	0.6	0.9	0.1
ICDH, Sigma units	279	118	193	352
SGPT, Sigma-Frankel units	33.2	24.9	28.8	102.3
BSP, % retention	5.5	6.0	3.25	6.5

* Values are means of 8 animals, except BSP values are means of 4
 Adapted from MacEwen et al [73]

TABLE XII-17

THE EFFECT OF CONTINUOUS EXPOSURE AT 25 AND 100 ppm OF
METHYLENE CHLORIDE ON MOUSE LIVER MICROSOMAL CYTOCHROMES

CH ₂ Cl ₂ Exposure Group	nM cytochrome/mg microsomal protein		
	P-450	b5	P-420
30 Exposure days			
Control	0.866	0.860	0.507
25 ppm	0.815	0.780	0.455
100 ppm	0.511**	0.642**	0.227**
60 Exposure days			
Control	0.959	0.990	0.504
25 ppm	0.984	0.981	0.460
100 ppm	0.708*	1.173	0.842
90 Exposure days			
Control	0.848	0.815	0.506
25 ppm	0.867	0.854	0.419
100 ppm	0.653**	0.944**	0.646**

* P<0.05; ** P<0.01

Adapted from Haun et al [70]

TABLE XII-18

METHYLENE CHLORIDE INHALATION EXPOSURES AND EFFECTS

Author	Concentration ppm	Exposure Variables	Effects
<u>Humans - experimental</u>			
Stewart et al [39] [41]	50-1,000	1 to 7.5 hrs/day 5 days/wk	COHb percentages proportional to exposure concentration and time.
Forster et al [43]	50-500	7.5 hrs 5 days/wk	Increased affinity of Hgb for oxygen in proportion to exposure concentration.
	100 and 500	7.5 hrs/day 5 days/wk	Blood lactic acid increased slightly from exercise at 500 ppm, not 100 ppm.
Fodor & Winneke [37]	317 and 751	4 hrs	Depressed CFF, decreased auditory vigilance performance.
Winneke [38]	317, 470 751	3-5 hrs	Decreased performance of CFF, auditory vigilance, psychomotor tasks.
<u>Humans - occupational</u>			
Collier [35]	Unknown	1 subject, 13 yrs intermittent	Irregular, severe leg and arm pains, hot flashes, vertigo stupor, poor night vision, anorexia, precordial pain, rapid pulse, short of breath, fatigue, 4,910,000 rbc, 6,200 wbc; punctuate basophilia of 3,500/million improved 6 wks after removal from work.
Collier [35]	Unknown	1 worker, 20 yrs intermittent	Drowsy, pains in head, tingling in hands and feet.

TABLE XII-18 (CONTINUED)

METHYLENE CHLORIDE INHALATION EXPOSURES AND EFFECTS

Author	Concentration ppm	Exposure Variables	Effects
Moskowitz & Shapiro [50]	Unknown	4 workers, acute expo- sure, prob- ably 1-3 hrs	3 workers hospitalized with eye, lung, and res- piratory tract irrita- tion, reduced Hgb and RBC counts; 1 worker died veins of pia-arachnoid conspicuously engorged.
Hughes [51]	Unknown	4 hrs	Oppressive odor, irrita- tion of eyes, excessive fatigue, weakness, sleepi- ness, light headedness, chilly sensations, nausea, shortness of breath, sub- sternal pain, weakness, dry rales in chest, pulmonary edema.
Kuzelova & Vlasak [55]	28-4,896	33 workers, average of 2 yrs exposure	Headache, fatigue, irritation of upper respiratory tract, conjunctiva, neurasthenic disorders, mild acute poison- ing in 3, with unconscious- ness in 1, sweet taste, heart palpitations.
Weiss [58]	660-3,600	1 worker, several hrs/day for 5 yrs	After 3 yrs: burning pain around heart, restlessness, feeling of pressure, palpita- tions, forgetfulness, insom- nia, feeling of drunkenness. After 5 yrs: auditory and visual hallucinations, slight erythema of hands and under- arms, diagnosed as having toxic encephalosis.
Ratney et al [59]	159-219 (average 183)	4 workers, 3 investi- gators	Increased alveolar CO at end of work day.

TABLE XII-18 (CONTINUED)

METHYLENE CHLORIDE INHALATION EXPOSURES AND EFFECTS

Author	Concentration ppm	Exposure Variables	Effects
		<u>Animals</u>	
Flury & Zernik [60]	14,500	2 hrs	Mice, death.
	10,000	2 hrs	Mice, narcosis.
	4,000	6 hrs	Dogs, light narcosis after 2.5 hrs; rabbits after 6 hours.
	6,000	6 hrs	Guinea pigs, light narcosis in 2.5 hrs, rabbits and cats in 3/4 hrs, dogs in 2 hrs.
Svirbely et al [63]	12,795-16,897	7 hrs	Mice LC50 = 16,188 ppm.
Muller [61]			Mice LC50 = 14,400 ppm.
Lazarew [62]			Mice LC50 = 17,400 ppm.
von Oettingen et al [64]	15,000 and 20,000		Dogs, loss of pupillary and corneal reflexes after 10-20 min, complete muscular relaxation after 25-35 min, reduction in blood pressure, rapid narcosis at 20,000 ppm.
	40,000		Dogs, loss of pupillary and corneal reflexes after 10-20 min, complete muscular relaxation after 16 min; 3 of 5 dogs died from progres- sive heart failure due to cardiac injury.

TABLE XII-18 (CONTINUED)

METHYLENE CHLORIDE INHALATION EXPOSURES AND EFFECTS

Author	Concentration ppm	Exposure Variables	Effects
Berger & Fodor [65]	25,000-28,000	1.5 hrs	Rats, electrical activity stopped after 1.5 hrs.
	16,000-18,000	6 hrs	Rats, initial excitement followed by deep narcosis, decreased EMG tonus, decreased EEG activity, breathing difficulties, tremor, electrical activity stopped after 6 hrs.
	5,000-9,000	8 hrs	Long sleeping phase lacking desynchronization phases.
	2,800	14 hrs	Rats, decreased proportion of REM sleep to total sleep.
Fodor & Winneke [37]	3,000, 1,000 and 500	24 hrs	Rats, suppressed REM sleep, increased time between two REM periods, linear relation between dose and response.
Heppel & Neal [66]	5,000	30 min/ day	Rats, decreased running activity.
Weinstein et al [71]	5,000	7 days	Mice, initial increase in physical activity followed by decrease in food and water intake, lethargy, increased liver to body weight ratio and liver fat, mild fatty infiltrations, hydropic degeneration of centrilobular cells.
Fodor et al [67]	100 or 1,000	3 hrs	Rats, increased blood CO measurements.

TABLE XII-18 (CONTINUED)

METHYLENE CHLORIDE INHALATION EXPOSURES AND EFFECTS

Author	Concentration ppm	Exposure Variables	Effects
Heppel et al [69]	5,000	7 hrs/day 5 days/wk up to 6 mo	Various experimental animals, no effect.
	10,000	4 hrs/day	Various animals, incoordination, conjunctival irritation, shallow respiration, pulmonary congestion, edema with focal extravasation of blood, some fatty degeneration.
MacEwen et al [73]	1,000	14 wks continuous	Various experimental animals, increased hematocrit, Hgb, RBC, bilirubin; weight loss, mild centrilobular fat.
	5,000	14 wks continuous	High mortality, pneumonia, fatty liver, icterus, splenic atrophy, edema of meninges, renal tubule vascular changes.
Haun et al [70]	25	2-8 wks continuous	Various experimental animals, no overt toxicity, non-specific tubular degenerative and regenerative changes.
	100		Altered cytochromes P-450, P-420, and b5, fatty infiltration of the liver, nonspecific tubular degenerative and regenerative changes, elevated COHb.
Thomas et al [72]	25	14 wks continuous	Mice, increased activity.
Weinstein & Diamond [74]	100	10 wks continuous	Elevated liver fat, decreased hepatocyte glycogen, centrilobular fatty infiltration.

TABLE XII-19

ENVIRONMENTAL CONCENTRATIONS OF METHYLENE CHLORIDE
SILICA GEL COLLECTION - ALKALINE HYDROLYSIS
Summary of 1968 - 1972 Data

Locations Sampled	No. of Samples	Range ppm	Mean ppm
Casting room*			
Desk No. 1	13**	55-310	169
Dryer	6	120-495	270
Front caster No. 2	14	88-495	196
Back caster No. 2	12	75-380	217
Stretcher	7	190-346	250
Front caster No. 1	2	82-146	114
Utility table	1	250	250
Desk No. 2	3	70-180	132
Filter room			
Filter	4	190-590	381
Mezzanine	2	157-180	168
Basement	7	155-400	197
Winding room		140-215	188
Office	3	35-57	46

* Chloroform concentrations in the casting room, 16-73 ppm

** This location considered typical of general room air

Adapted from data supplied by the Massachusetts Department of Labor and Industries (LD Pagnotto, written communication, December 1973)

TABLE XII-20

COMPARISON BETWEEN ENVIRONMENTAL CONCENTRATIONS OF METHYLENE CHLORIDE
IN A PLASTIC FILM PLANT MEASURED BY 2 COLLECTION AND
ANALYTICAL METHODS

Location	1968-1972		1973			
	Averages of Silica Gel-Alkaline Hydrolysis		Charcoal-Gas Chromatography Day 1		Chromatography Day 2	
	ppm	no.	ppm	no.	ppm	no.
Casting Room						
Desk No. 1	169	13	471	1	183	3
Dryer	270	6	566	1	-	
Dryer	270	6	566	1	-	
Front Caster No. 2	196	14	594	1	404	1
Back Caster No. 2	217	12	412	1	-	
Stretcher	250	7	300	1	-	
Utility Table	250	1	399	1	-	
Desk No. 2	132				610	
Filter Room						
Filter	381	4	845	1	-	
Mezzanine	168	2	966	1	-	
Basement	197	7	-	1	2,140	
Winding Room	188	5	190	1	-	
Office	46	3	-		326	1

Adapted from data supplied by the Massachusetts Department of Labor and Industries (LD Pagnotto, written communication, December 1973)

TABLE XII-21

THERMAL DECOMPOSITION PRODUCTS OF METHYLENE CHLORIDE VAPOR

CH ₂ Cl ₂ concentration, ppm	Type of combustion	Concentration of Combustion Products, ppm			
		HCL	COCl ₂	Cl ₂	CO ₂
5 minutes after ignition					
10,000	open gas flame	310	80	-	-
23,000	open gas flame	1,130	150	-	-
202-374	kerosene flame	-	32	-	-
52,000	hot iron surface	1,300	20	-	-
30 minutes after ignition					
10,000	open gas flame	810	320	-	10,000
23,000	open gas flame	270	440	-	13,000
202-374	kerosene flame	-	77	-	-
57,000	hot electric wire	650	90	-	-
Nonspecified after ignition time					
570,000	wood fire	45,500	580	-	-
Welding Operations					
730	tungsten arc	10	1	4	-

Adapted from references 34,53,140

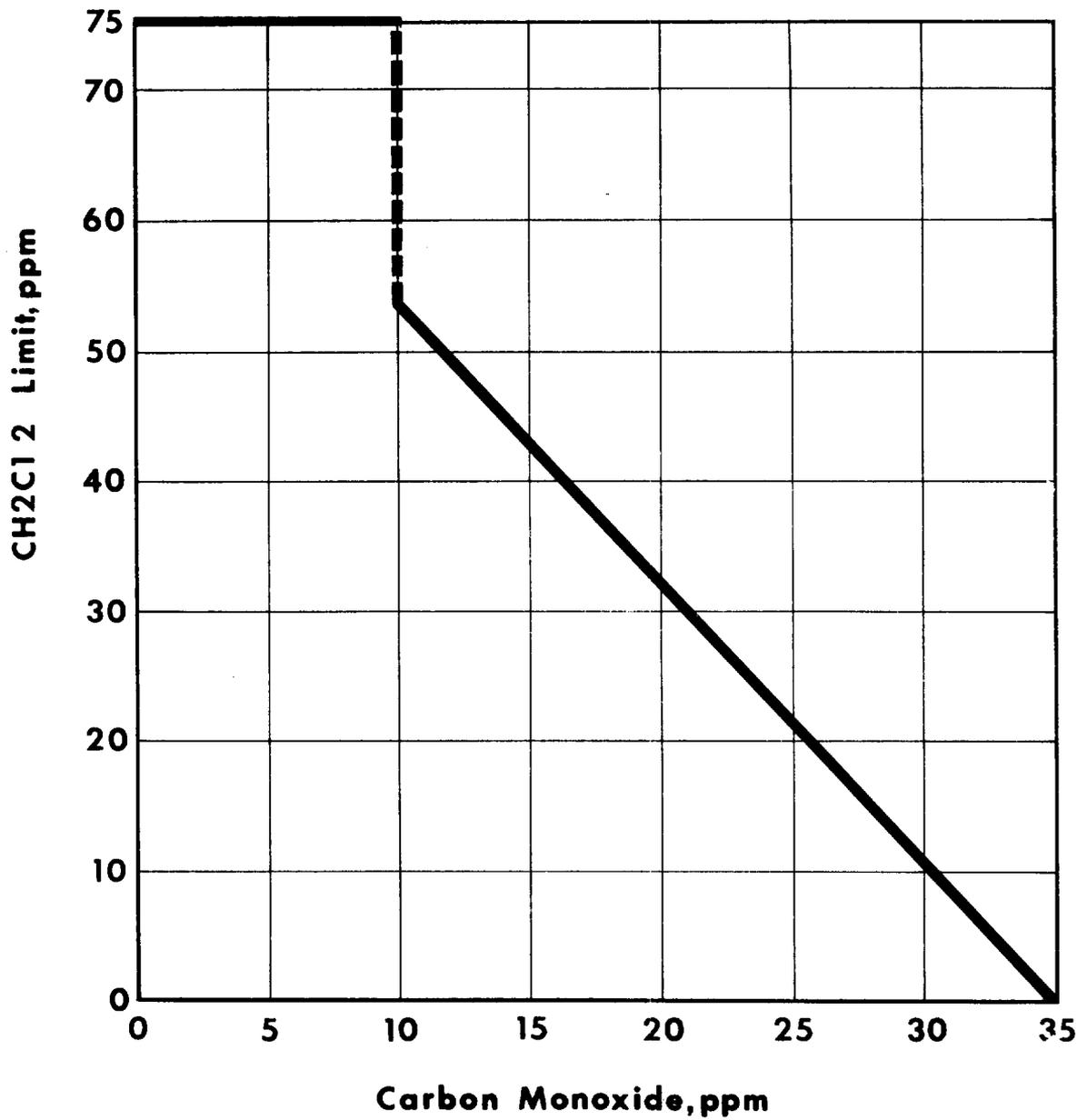


FIGURE XII-1. Methylene Chloride TWA exposure limits as functions of carbon monoxide exposure concentrations

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