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Assessment of Testing Needs: Dichloromethane

Support Document Proposed Health and Environmental Effects Test Rule

Section 4
Toxic Substances
Control Act

EPA 560/2-81-003
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ASSESSMENT OF TESTING NEEDS: DICHLOROMETHANE

SUPPORT DOCUMENT, PROPOSED
HEALTH AND ENVIRONMENTAL EFFECTS TEST RULE
TOXIC SUBSTANCES CONTROL ACT SECTION 4

ASSESSMENT DIVISION
OFFICE OF TOXIC SUBSTANCES
Washington, D.C. 20460

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDES AND TOXIC SUBSTANCES
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INTRODUCTION AND SUMMARY OF PROPOSED TESTING

Dichloromethane (CH_2Cl_2, methylene chloride, CAS number 75-09-2) is a volatile liquid at standard temperature and pressure.

The Interagency Testing Committee (ITC), which is charged under section 4(e) of the Toxic Substances Control Act with making priority testing recommendations to the EPA, recommended that dichloromethane be tested for carcinogenicity, mutagenicity, teratogenicity, other chronic effects and environmental effects, and that epidemiology studies be done (USEPA 1978a).

Because of the large production volume, extensive release to the environment and numbers of people potentially exposed to dichloromethane, both occupationally and as consumers, the EPA is proposing testing of dichloromethane under section 4(a)(1)(B) of the Toxic Substances Control Act. This section provides for testing requirements if, among other conditions, a chemical substance is produced in substantial quantities, and (I) it enters or may reasonably be anticipated to enter the environment in substantial quantities or (II) there may be significant or substantial human exposure to the substance.

This document presents the EPA's basis for making the three statutory findings required to be made under section 4(a)(1)(B) regarding production, release and exposure, the insufficiency of available data, and the necessity for testing, and describes the recommended testing.

This document also supports the 4(a)(1)(A) findings for subchronic cardiovascular effects testing and provides the Agency's basis for not proposing testing in certain areas recommended by the ITC.

SUMMARY OF TESTING DECISIONS

Effects of Concern [4(a)(1)(B)]	Testing Recommended by TTC	Additional Testing Proposed by the EPA [4(a)(1)(A)]	Decision
Health Effects			
Acute			
Oral			Not proposed[a]
Dermal			Not proposed[a]
Inhalation			Not proposed[a]
Ocular irritation			Not proposed[a]
Dermal irritation			Not proposed[a]
Dermal sensitization			Proposed
Chronic	Chronic		Not proposed[a]
Mutagenic	Mutagenic		Not proposed[b]
Reproductive			Proposed
Teratogenic	Teratogenic		Not proposed[a]
Oncogenic	Oncogenic		Not proposed[c]
Neurotoxic			Not proposed[d]
	Epidemiology		Not proposed[e]
		Subchronic cardiovascular	Proposed
Environmental Effects	Environmental Effects		
Aquatic vertebrates			
Acute			
Freshwater, coldwater			Not proposed[a]
Freshwater, warmwater			Not proposed[a]
Marine, coldwater			Not proposed[b]
Marine, warmwater			Not proposed[a]
Chronic			
Freshwater, coldwater			Proposed
Freshwater, warmwater			Proposed
Marine, coldwater			Not proposed[b]
Marine, warmwater			Proposed
Aquatic invertebrates			
Acute			
Freshwater			Not proposed[a]
Marine			Not proposed[a]

(Continued)

Effects of Concern [4(a)(1)(B)]	Testing Recommended by ITC	Additional Testing Proposed by the EPA [4(a)(1)(A)]	Decision
Chronic			
Freshwater			Proposed
Marine			Proposed
Aquatic plants			
Algae			
Freshwater			Not proposed[a]
Marine			Not proposed[a]
Vascular			
Freshwater			Not proposed[b]
Marine			Not proposed[b]
Birds			
Acute			
Terrestrial			Proposed
Waterfowl			Proposed
Chronic			
Terrestrial			Proposed
Waterfowl			Proposed
Mammals			
Acute			Not proposed[a]
Chronic			Not proposed[a]
Terrestrial invertebrates			Not proposed[b]
Terrestrial plants			
Seed germination/root elongation			Not proposed[a]
Early seedling growth			Proposed
Full life cycle			Not proposed[b]
Bioconcentration			
Aquatic vertebrate			Proposed
Aquatic benthic invertebrate			Not proposed[a]
Terrestrial plant uptake translocation			Proposed

(Continued)

Effects of Concern [4(a)(1)(B)]	Testing Recommended by ITC	Additional Testing Proposed by the EPA [4(a)(1)(A)]	Decision
Alteration of microorganism function			Not proposed[b]
Ecosystem effects			Not proposed[b]
Environmental Fate			
Persistence			Not proposed[a]
Transport			Not proposed[a]

a) Information adequate to assess
b) The EPA will undertake responsibility for evaluation
c) Testing underway by NCI
d) No test standards available
e) Testing underway by Dow/Celanese

1. PRODUCTION AND USES

1.1. Production

Dichloromethane is a high production chemical. The amount of dichloromethane produced domestically in 1979 was 634 million pounds (288 million kilograms) (USITC 1980). The market has increased substantially in the last few decades, rising from 36 million pounds (16 million kilograms) in 1951 (Malishkevich et al. 1978), although dichloromethane production decreased more than 15 percent in 1980. On the basis of production in the first 11 months of 1980, the estimated year's production was 537 million pounds (244 million kilograms) (USITC 1980).

According to one recent source, five chemical manufacturers produce dichloromethane at seven sites (Anon. 1979). The TSCA inventory showed that in 1977 there were six manufacturers and 13 importers (USEPA 1980). However imports are minimal compared to domestic production (USEPA 1980).

The predominant process used to manufacture dichloromethane in the United States is the catalytic vapor phase hydrochlorination of methanol to chloromethane followed by chlorination to dichloromethane (Ahlstrom and Steele 1979).

1.2. Uses

Dichloromethane is used for a variety of purposes: as a paint remover, a urethane foam-blowing agent, a vapor degreasing and dip solvent for metal cleaning, a solvent for aerosol products, a solvent in the pharmaceutical industry, a solvent in the manufacture of polycarbonates by polymerization, and as an extractant for caffeine, spices, and hops. It is used in the manufacture of plastics, textiles, photographic film, and photoresistant coatings, as a solvent carrier in the manufacture of herbicides and insecticides, and in rapid drying paints and adhesives, carbon removers and brush cleaners. Other minor applications include use as a low pressure refrigerant, as a low-temperature heat transfer medium and as an air-conditioning coolant (Ahlstrom and Steele 1979).

Distribution of dichloromethane in its major uses is shown below (Anon. 1979):

Use	Percent of Total	Kg/yr, millions (1978)
Paint remover	29%	75
Aerosols	21%	54
Metal degreasing	18%	46
Export	15%	39
Urethane foam blowing agent	9%	23
Other	8%	20

The fastest growing segment of the dichloromethane market is the aerosol sector. This is due to the substitution of dichloromethane for chlorofluorocarbons as a solvent, vapor pressure depressant, and flame retardant. Consumption by the aerosol industry is expected to grow by as much as 15 percent annually over the next several years and to become the largest market for dichloromethane (Ahlstrom and Steele 1979, Lowenheim and Moran 1975).

Dichloromethane is expected to retain popularity as a paint remover. Although it competes with trichloroethylene and perchloroethylene as a solvent, it is preferred as a paint remover because of its nonreactivity with aluminum (Lowenheim and Moran 1975).

2. EXPOSURE

2.1. Human Exposure

The use of dichloromethane may result in substantial exposure of significant numbers of workers and consumers.

The National Occupational Hazard Survey (NOHS) estimates that approximately 2.5 million persons are exposed to dichloromethane annually in occupational settings (NIOSH 1979). Much of this exposure is expected to result from its use as a degreasing solvent and paint remover, as a process solvent (e.g., in polymerization), and as a foam-blowing agent.

Industrial degreasing operations, such as metal cleaning by the cold cleaning and vapor degreasing processes, may lead to substantial worker exposure. In cold cleaning, the part to be cleaned is sprayed, dipped or agitated in the solvent. In vapor degreasing, the object is immersed in the solvent and then exposed to hot solvent vapor as the final step. Emissions from these processes can result from solvent bath filling operations, solvent bath evaporation, evaporation from cleaned objects, equipment leaks, and solvent disposal (USEPA 1979). All such emissions may result in worker exposure.

It was determined from sampling data obtained from the Celanese Fibers Company plant in Rock Hill, South Carolina (SRI 1979a) that time-weighted average exposures to dichloromethane, from dichloromethane's use as a solvent for triacetate polymer in the Arnel® production and processing area, ranged from 31 ppm to 572 ppm. Area samples taken showed peak dichloromethane concentrations as high as 1853 ppm. It was estimated that 920 of the 1950 employees might be exposed to dichloromethane.

The process using dichloromethane in a new paint stripping facility at Robins Air Force Base, Warner Robins, Georgia, is an example of exposure that may occur when dichloromethane is used (SRI 1979b). Approximately 106 persons work in the aircraft

stripping operation. The 22 paint strippers, both male and female, who work on an aircraft are required to wear protective clothing, but since there is an exhaust ventilation system, respirators are not required. About 1000 gallons per aircraft of Intex 857® "mild" stripper, containing approximately 50 percent dichloromethane, 25 percent aliphatic and aromatic hydrocarbons, ten percent non-volatile hydrocarbons and 14 percent water and ammonia, is sprayed in several coats with scraping and brushing of the surfaces between sprayings. In addition to the stripping personnel, there are supervisory personnel, drivers, maintenance personnel, and others who may be exposed intermittently to dichloromethane. The exposure duration for these workers varies; however, for most of the paint stripping crew, the exposure to dichloromethane may be up to eight hours per day.

A walk-through survey conducted on June 15, 1978, found dichloromethane in concentrations varying from 9 to 57 ppm for area samples and 113 to 206 ppm for personal samples (SRI 1979b). An in-depth survey performed the week of May 14, 1979, gave time-weighted average exposure concentrations which ranged from 15.7 to 268 ppm with an average concentration of 64 ppm in the personal samples of 12 of the 22 workers involved in the stripping operation. The highest exposure was to a worker in the wheel well of the aircraft.

Many dichloromethane-containing aerosol products such as paint, paint removers, automotive parts cleaners, rust penetrants, oven cleaners, lubricants, adhesives, and mold releases are likely to be used in occupational settings, many of which are small establishments. There is very little information on measured levels of dichloromethane in such situations. One study showed concentrations in indoor atmospheres of up to 1000 times the typical tropospheric air concentration of 20-50 ppt, some of which could be attributed to the use or storage of aerosols (NRC 1978). The highest level found, above 23 ppb (0.023 ppm) in a beauty parlor, was attributed to the use of aerosol hair care products. Since the three such products listed in the Clinical Toxicology of Commercial Products database (CTCP 1981) contained only seven and a half to ten percent of dichloromethane, while some other types of products listed contain much larger amounts (e.g., a nonskid spray for rugs containing 56% dichloromethane), the limited data cited may well understate the potential for exposure of this type. Because above-background levels of dichloromethane have been found in retail outlets where dichloromethane-containing products are sold and in service establishments such as restaurants, there is not only potential daily exposure of large numbers of employees nationwide but also potential occasional exposure of millions of members of the general public.

Dichloromethane is also an ingredient in many other consumer products: cleaning agents, adhesives, paints and paint removers. The dichloromethane content can reach 90 percent in some products (Aviado et al. 1977). This can be expected to lead

to a variety of exposure patterns, depending upon such factors as the frequency of use and the adequacy of ventilation during and after use. For example, an experiment was performed to measure dichloromethane levels in the air after the use of a paint remover (Otson et al. 1981). The experiment was set up to mimic home use of the product as much as possible. In a room approximately 8 feet by 13.5 feet, varying amounts of paint remover were brushed on a plywood board. Air samples were then taken at spots throughout the room at 30 and 480 minutes. Levels as high as 3.41 g/m^3 (989 ppm) were measured one and one/half feet from the ground in an unventilated room 30 minutes after application, whereas in a ventilated room, levels at 30 minutes never rose above 0.65 g/m^3 (188 ppm). When applied as an aerosol, dichloromethane levels were higher, particularly in the ventilated room. Immediately after use, levels were highest near the floor, indicating that children in these areas might receive greater exposure than adults. The authors added that stripping of household furniture would normally require application of greater amounts of paint remover than those used in this study, and emphasized that even small quantities of these products should not be used in rooms with poor ventilation, as recommended occupational health limits can easily be exceeded.

If one takes into account the various types of consumer products already mentioned, it appears that many millions of people are likely to be exposed to dichloromethane at home.

2.2. Environmental Exposure

Emissions from use are the major source of dichloromethane in the environment, although it may be produced naturally in small amounts by forest fires or agricultural burning, and possibly by reactions in seawater and marine plants (NRC 1978). In 1978, 566 million pounds (257 million kilograms) of dichloromethane was produced, and 84 percent is estimated to have been dispersed to sewage treatment plants and surface waters, deposited on land, or lost to the atmosphere (NRC 1978). In wastewater treatment plants, dichloromethane concentrations are usually reduced by aeration in ponds, which results in release to the atmosphere (NRC 1978).

Dichloromethane was one of the more frequently detected organics in a monitoring study by Ewing et al. (1977), being found at 32 of 204 surface water sites from which samples were collected. Sites were located near heavily industrialized river basins across the United States. Concentrations reported were in the low ppb range.

The short evaporation half-life of dichloromethane from moving water (21±3 min) (Dilling et al. 1975) probably allows most of the compound dissolved in water to be eventually transported into the atmosphere. Dichloromethane in concentrations up to 400 ppm is also readily biodegraded by bacteria (Brunner et al. 1980, Rittmann and McCarty 1980) and may be removed from the

4.8. Epidemiology

SRI International (1979a) conducted an epidemiologic feasibility study on dichloromethane for the National Institute of Occupational Safety and Health (NIOSH). During the course of the survey, NIOSH found that the Celanese Fibers Company and Dow Chemical Company were jointly funding an epidemiologic study on dichloromethane-exposed workers. The results of that study are due to be published soon in the Scandinavian Journal of Work, Environment and Health. The EPA is not proposing epidemiology studies until the Agency has had the opportunity to evaluate the already completed study in order to determine whether any additional investigation will be necessary.

4.9. Subchronic Cardiovascular Effects

Cardiovascular testing is being proposed for dichloromethane under section 4(a)(1)(A) because acute toxicity studies and data on metabolism suggest a potential unreasonable risk for subchronic cardiovascular effects, and available data are insufficient to assess such toxicity.

The acute toxicity tests have shown that, depending upon the duration of exposure, inhalation of doses of 500 to 5000 ppm in the dog appears to stimulate the cardiovascular system, increasing arterial pressure and myocardial contractility (Adams 1975, Aviado et al. 1977). It is believed these changes may be an indirect result of either sympathetic nervous system stimulation or adrenal discharge, since the effects are blocked by the administration of a beta blocker (Aviado et al. 1977). Exposure to much higher concentrations of dichloromethane (15,000 ppm) appears to result in depression of medullary function, followed by direct myocardial depression at 40,000 ppm, which would overshadow any changes caused at lower doses (von Oettingen et al. 1949). The cardiovascular depression is characterized by decreases in contractility, cardiac output, and stroke volume (Aviado et al. 1977, Taylor et al. 1976). It has also been demonstrated that acute exposure to high levels of dichloromethane followed by the administration of otherwise nonhazardous doses of epinephrine can result in ventricular arrhythmias in dogs (5,000 ppm: Adams 1975; 24,000 ppm: Clark and Tinston 1973) and mice (200,000 ppm: Aviado and Belej 1974).

Heppel et al. (1944) exposed dogs to 5000 ppm dichloromethane for seven hours/day, five days/week for six months. Mean arterial blood pressures were determined on five dogs at intervals of one to two weeks. Of 83 determinations, all but three were normal. Histopathologic study of the heart showed no effects. However, this study was not specifically designed to investigate the effects on the heart and the vascular system, or those parameters which are deemed essential to evaluate cardiovascular toxicity (e.g., cardiac output, contractility, electrocardiographic changes). The pathology of the heart did not indicate if full thickness wedges were cut, thus including all the tissue from the

endocardium to the epicardium; no mention was made of any histopathology on the coronary arteries and the major bifurcation of the aorta.

Douglas et al. (1980) and Loyke (1973) have demonstrated a decrease in systolic blood pressure in both spontaneously hypertensive and renal hypertensive rats following the administration of multiple doses of dichloromethane; no change in the blood pressure of normotensive animals was observed.

No further information on the cardiovascular effects of long term exposure to dichloromethane was found. Dichloromethane is metabolized *in vivo* to carbon monoxide (Carlsson and Hultengren 1974, Kubic et al. 1974, Stewart et al. 1972), which forms carboxyhemoglobin. A two-hour exposure to 1,000 ppm dichloromethane gave mean peak carboxyhemoglobin levels of ten percent in human volunteers (Stewart et al. 1972). Chronic exposure of dogs to 100 ppm carbon monoxide, yielding 21 percent carboxyhemoglobin, produced degenerative changes in myocardial muscle fibers, comparable to those resulting from experimentally produced anoxia (Ehrich et al. 1944). Thus, dichloromethane may act indirectly on the heart via metabolism to carbon monoxide.

The EPA is proposing that a 90-day subchronic cardiovascular test, performed in the dog according to the test standard described in the test rule, would provide the information needed to assess this chemical. The dog is the species of choice for this type of experiment because the dog has been shown to be more sensitive than the mouse to the acute myocardial sensitization effects of dichloromethane, and because the techniques for cardiovascular testing have been developed adequately only in the dog (Page et al. 1980).

5. ENVIRONMENTAL EFFECTS: SUFFICIENCY OF DATA

5.1. Aquatic Vertebrates

5.1.1. Acute Effects

The EPA is not proposing that acute toxicity tests be performed on aquatic vertebrates, as enough information exists to be able to assess the hazard of dichloromethane in this group.

Alexander et al. (1978) evaluated the toxicity of dichloromethane to the fathead minnow (*Pimephales promelas* Rafinesque), a freshwater, warmwater fish, in a 96-hour flow-through test, finding an LC_{50} of 193 ppm. The fish were also observed for the following effects: loss of equilibrium, melanization, narcosis and swollen hemorrhaging gills. For dichloromethane, the concentration that produced one or more of these effects was 99 ppm; the author did not specify which tests were positive. Fish affected during the exposure were transferred to freshwater at the end of the 96-hour period after which most recovered.

Short exposures to dichloromethane at sublethal levels seemed to produce reversible effects.

Static 96-hour bioassays have been performed on two species of freshwater, warmwater fish (the fathead minnow, Pimephales promelas Rafinesque, and the blue-gill sunfish Lepomis macrochirus) and a marine species (the sheepshead minnow, Cyprinodon variegatus). The LC_{50} value for the fathead minnow is 310 ppm (Alexander et al. 1978), for the blue-gill sunfish, 224 ppm and for the sheepshead minnow, 331 ppm (USEPA 1978b).

Two additional static fish toxicity tests have been performed on the golden orfe, Leuciscus idus (Juhnke and Ludemann 1978), another freshwater, warmwater species. The LC_{50} values at two different laboratories were 521 ppm and 528 ppm.

5.1.2. Chronic Effects

There are no data on the chronic effects of dichloromethane in aquatic vertebrates. Therefore, the EPA is proposing early life-stage tests in a freshwater, warmwater species of fish, a freshwater, coldwater species and a warmwater, marine species according to the TSCA section 4 standards. A chronic test on a coldwater marine species will be sponsored by the EPA because no corresponding standards are available.

5.2. Aquatic Invertebrates

5.2.1. Acute Effects

The EPA is not proposing additional acute testing for aquatic invertebrates, as existing information is adequate. The result of a 48-hour static bioassay gave an LC_{50} for the freshwater cladoceran, Daphnia magna, of 220 ppm (LeBlanc 1980). For a marine invertebrate, Mysidopsis bahia, a 96-hour static bioassay yielded an LC_{50} of 256 ppm (USEPA 1978b).

5.2.2. Chronic Effects

There are no data on the chronic effects of dichloromethane in aquatic invertebrates. Therefore, the EPA is proposing life-cycle tests in a freshwater invertebrate and a marine species, according to the TSCA section 4 test standards.

5.3. Aquatic Plant Toxicity

5.3.1. Algae

The EPA is not proposing additional testing of nonvascular aquatic plants, as the information presently available is deemed sufficient to evaluate the acute effects of dichloromethane.

Several species of algae have been investigated for their response to dichloromethane. Bringmann and Kuhn (1978) reported

on the levels of compound required to inhibit cell multiplication after eight days in two freshwater species, Microcystis aeruginosa and Scenedesmus quadricauda. The toxicity threshold, i.e., the concentration causing the onset of inhibition, was 550 ppm for Microcystis and 1450 ppm for Scenedesmus.

The EPA (USEPA 1978b) has tested the effects of dichloromethane on two algae, a freshwater species, Selenastrum capricornutum and a marine species, Skeletonema costatum. In both cases the concentrations required to inhibit photosynthesis by 50 percent and inhibit cell growth by 50 percent were greater than 662 ppm (the highest dose tested).

5.3.2 Vascular Plants

A test on vascular aquatic plant toxicity is needed, but no TSCA section 4 standards are available and therefore the EPA will sponsor the testing.

5.4. Birds

5.4.1. Acute Effects

There are no data on the acute effects of dichloromethane in birds. Therefore, the EPA is proposing acute toxicity tests on a terrestrial bird and a waterfowl according to the TSCA section 4 standards.

5.4.2. Chronic Effects

There are no data on the chronic effects of dichloromethane in birds. Therefore, the EPA is proposing reproductive studies on a terrestrial bird and a waterfowl according to the TSCA section 4 standards.

5.5. Terrestrial Plants

5.5.1. Seed Germination/Root Elongation

Dichloromethane has been used as a solvent carrier for the incorporation of compounds for testing seeds, and the effect of dichloromethane on seed germination has been well studied. Therefore, the EPA is not proposing that any additional testing be performed.

Meyer and Mayer (1971) stored lettuce seeds in dichloromethane for 24 hours without loss of viability. Storage of intact cottonseed (Gossypium hirsutum L.) in dichloromethane for up to 72 hours did not alter germination (Halloin 1977). Gynoecious cucumber (Cucumis sativa L.) seeds also showed no decrease in germination when soaked in pure dichloromethane for periods up to 24 hours (Globerson and Dagan 1973). Seeds of Lactuca sativa (Grand Rapids lettuce) showed a statistically significant increase in percent germination when soaked in dichloromethane

for periods up to 12 hours (Rao et al. 1976). Pigweed seed (Amaranthus retroflexus L.) soaked in dichloromethane for four to five hours also showed an increase in germination rates (Brewer and Wilson 1975). However, longer soaking, 24 hours, decreased the germination rates (Brewer and Wilson 1975). Brewer and Wilson (1975) also investigated the effect of dichloromethane on oats (Avena sativa L.), showing decreases in germination at both four hours and 24 hours. Hull-less oats, scarified pigweed seed (Brewer and Wilson 1975) and cottonseeds with damaged seed coats (Halloin 1977) all showed decreased germination rates after treatment with dichloromethane. It is apparent that the effect of dichloromethane on seed germination will depend upon the condition of the seed, the species of plant and the length of treatment.

5.5.2. Early Seedling Growth

There are no data on the effects of dichloromethane on early seedling growth in terrestrial plants. Therefore the EPA is proposing that such tests be done according to the TSCA section 4 standards.

5.5.3. Life-Cycle Test

There are no data on the effects of dichloromethane on the life-cycle of terrestrial plants. However, there are no corresponding TSCA section 4 test standards, and therefore the EPA will sponsor the testing.

5.6. Bioconcentration

No bioconcentration testing has been performed with dichloromethane. The EPA is proposing that testing be performed in terrestrial plants and in an aquatic vertebrate according to TSCA section 4 standards.

5.7. Other Effects of Concern

The EPA is not proposing testing for other effects of concern (toxicity to terrestrial invertebrates, alteration of microorganism function, ecosystem effects), because no TSCA section 4 test standards are available. Testing for such effects, if needed, will be the responsibility of the EPA.

6. ENVIRONMENTAL FATE: SUFFICIENCY OF DATA

The EPA is not proposing additional physicochemical data acquisition because existing information is sufficient to characterize the environmental fate of dichloromethane. Some of these data are described below.

Melting point	-96.7°C

Boiling point		39.8°C
Specific gravity at 20/4°		1.320 g/ml
Vapor density (Air = 1.02)		2.93
Vapor pressure	0°C	147 mm Hg
	20°	348.6
	30°	510.8
Water solubility	20°	13.2 g/kg

(Ahlstrom and Steele 1979)

Partition coefficient ($\log P_{oct/H_2O}$) 1.25 (Hansch et al. 1975)

Hydrolysis at pH 7.0: 25° 18 months (Dilling et al. 1975)
half life 100° 13.75 days (Fells and Moelwyn-Hughes 1958)

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15. Supplementary Notes

16. Abstract (Limit: 200 words)

The Interagency Testing Committee (ITC), which is charged under section 4(e) of the Toxic Substances Control Act with making priority testing recommendations to the EPA, recommended that dichloromethane be tested for carcinogenicity, mutagenicity, teratogenicity, other chronic effects and environmental effects and that epidemiology studies be done (USEPA 1978a Because of the large production volume, extensive release to the environment and numbers of people potentially exposed to dichloromethane, both occupationally and as consumers, the EPA is proposing testing of dichloromethane under section 4(a)(1)(B) of the Toxic Substances Control Act. This section provides for testing requirements if, among other conditions, a chemical substance is produced in substantial quantities, and (I) it enters or may reasonably be anticipated to enter the environment in substantial quantities or (II) there may be significant or substantial human exposure to the substance.

This document presents the EPA's basis for making the three statutory findings required to be made under section 4(a)(1)(B) regarding production, release and exposure, the insufficiency of available data, and the necessity for testing, and describes the recommended testing.
This document also supports the 4(a)(1)(A) findings for subchronic cardiovascular effects testing and provides the Agency's basis for not proposing testing in certain areas recommended by the ITC.

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