COMMON USES:
Medical

RECENT ACUTE TOXIC DATA:[1]

MUTAGEN DATA:

MMA-SAT	958	nmol/PLATE
CYT-HAM:LNG	1	gm/L/27H
SLM-DMG-ORL	200	μL

TOXICITY DATA:

IVN-INF TDLO:	150	μg/kg	TFX:SKN
ORL-MAN TDLO:	143	μg/kg	TFX:EYE
ORL-MAN TDLO:	1430	μg/kg	TFX:CNS
IMS-WMN TDLO:	181	μg/kg	TFX:ALR
IVN-MAN TDLO:	143	μg/kg	TFX:PUL
ORL-RAT LD50:	710	mg/kg	
IPR-RAT LD50:	300	mg/kg	
ORL-MUS LD50:	535	mg/kg	
ORL-MUS TDLO:	100	mg/kg/(12D preg)	TFX:TER
IPR-MUS LD50:	220	mg/kg	
SCU-MUS LD50:	300	mg/kg	
IVN-RBT LD50:	9	mg/kg	

DATA REFERENCES:

TOXICOLOGY REVIEWS AVAILABLE
REPORTED IN EPA TSCA INVENTORY, JULY 1979

TOXICITY AND HAZARD REVIEW:
Valium is a very much used drug by the public. Abuse of this drug may lead to addiction. It seems to work fine as an occasionally prescribed tranquilizer. Human infants on a dose of 150 mg/kg developed severe skin symptoms. In man via oral route damage to eyes and CNS occurred. IVN application to man causes pulmonary tract damage. As an exper teratogen it should be withheld from women of child bearing age and it must be regarded as a reproductive hazard in the work place.

RECENT FEDERAL REGISTER CITATIONS:
(Diazepam)

CITATION NUMBER = 44.131.135
(44FR40031, 7-6-79)

PROPOSED RULE: Add 21CFR203, Food & Drug Admin., Bureau of Drugs, Federal Food, Drug, and Cosmetic Act; Patient labeling requirements; Comments solicited by 10-4-79. (25FR12592, 26FR8389, 33FR8812, 35FR9001, 42FR37636, 43FR4212, 43FR47178)

CITATION NUMBER = 44.156.20
(44FR47104, 8-10-79)

NOTICE: 21CFR203, Food & Drug Admin., Bureau of Drugs, Federal Food, Drug, and Cosmetic Act; Notice of public hearing 9-10-79, 9-12-79, 9-14-79; Proposed patient labeling. (44FR40016)

REFERENCES

1. 1980 Registry of Toxic Effects of Chemical Substances, (Update #1)

CIS SOURCES OF INFORMATION
CIS, EI Mass Spectrometry
Cambridge Xray Crystal: 439-14-5.01
NIOSH/CIS, RTECS: DF15750
CIS, CI Mass Spectrometry
NON-CIS REFERENCES
EPA, TSCA Inventory List
Merck Index: 2961
NIMH, Psychotropic Drugs: 528
U.S. International Trade Commission
NIOSH, NOHS: A1048
ORNL, EMIC
ORNL, ETIC
IARC, Monographs (Carcinogenicity Reviews)
NLM CHEMLINE: TOXLINE

VINYL CHLORIDE

CAS # 75-01-4
NIOSH # KU 9625000

Syns: chloroethylene; chloroethene; monochloroethylene; vinyl chloride monomer; vinyl C monomer; Chlorethene; chlorure de vinyle (French); Winylu chlorek (Polish).

GENERAL INFORMATION:
Colorless liquid or gas (when inhibited), faintly sweet odor. Slightly soluble in water. bp: —13.4°, lel = 3.6%, uel = 33%; flash p: —108°F (COC),fp: —159.7°,d(liquid): 0.9195 @ 15°/4°, vap press: 2600 mm @ 25°, vap d: 2.15, autoign, temp.: 882°F.

COMPUTERIZED STRUCTURAL FORMULA:

CL◆C++C

mf: C_2H_3Cl
mw: 62.50

COMMON USES:
Plastics, refrigerant, organic compounds.

RECENT ACUTE TOXIC DATA:[1]

MUTAGEN DATA:

MMA-SAT	20	pph/4H
SLN-DMG-IHL	1	pph
MRC-SMC	48	mmol/L/3H
MMA-SSP	16	mmol/L/30M
HMA-MUS/SSP	700	mg/kg
MMA-HAM:LNG	20	pph/5H

CYT-HMN:HLA	10	mmol/L	

TOXICITY DATA:

IHL-MAN TCLO:	500	ppm/4Y-I	TFX:CAR
ORL-RAT LD50:	500	mg/kg	
ORL-RAT TDLO:	11	gm/kg/3Y-I	TFX:CAR
IHL-RAT TCLO:	50	ppm/52W-I	TFX:CAR
IHL-RAT TCLO:	6000	ppm/4H/ (12-18D preg)	TFX:CAR
IHL-MUS TCLO:	50	ppm/30W-I	TFX:CAR
IHL-GPG LCLO:	20	pph/30M	
IHL-HAM TCLO:	500	ppm/4H/30W-I	TFX:CAR
IHL-MUS TC:	2500	ppm/26W-I	TFX:NEO
IHL-RAT TC:	250	ppm/52W-I	TFX:CAR
IHL-MUS TC:	50	ppm/47W-I	TFX:CAR
ORL-RAT TD:	34	gm/kg/3Y-I	TFX:CAR
IHL-MUS TC:	2500	ppm/26W-I	TFX:NEO
IHL-MUS TC:	2500	ppm/35W-I	TFX:CAR
IHL-RAT TC:	250	ppm/2Y-I	TFX:CAR
IHL-HAM TD:	500	ppm/48W-I	TFX:NEO
IHL-RAT TD:	250	ppm/80W-I	TFX:CAR
IHL-RAT TD:	50	ppm/37W-I	TFX:CAR

DATA REFERENCES:

AQUATIC TOXICITY RATING: TLm96:over 1000 ppm
*CARCINOGENIC DETERMINATION:HUMAN POSITIVE IARC**19,377,79*
THRESHOLD LIMIT VALUE—air:200 ppm
TOXICOLOGY REVIEWS AVAILABLE
OSHA STANDARD—air:TWA 1 ppm;Cl 5 ppm/15M
DOT-FLAMMABLE GAS, LABEL:FLAMMABLE GAS
OCCUPATIONAL EXPOSURE TO VINYL HALIDES rscm std-air:TWA 1 ppm; Cl 5 ppm/15M
REPORTED IN EPA TSCA INVENTORY, JULY 1979

TOXICITY AND HAZARD REVIEW:

Vinyl Chloride is now known to be a potent human and exper animal carc. Inhal by man @ 500 ppm caused cancer. Although it was first recognized to cause angiosarcoma of the liver, a rare liver tumor, it is now known to cause brain cancers and lung cancers in humans working with it. It has been termed a multi potent carc in that it produces tumors in many different organs and possibly different tumors in the same organs, see table below from C & EN for April 17, 1980 p. 27

NOL SIB.

Animal data show vinyl chloride is a multipotent carcinogen

This tumor type...	Is found in...
Liver angiosarcoma	Rats, mice, hamsters
Hepatocarcinoma	Rats
Extrahepatic angiosarcoma	Rats, mice
Zymbal gland (sebaceous) carcinoma	Rats
Nephroblastoma	Rats
Neuroblastoma	Rats
Mammary carcinoma	Rats, mice
Pulmonary tumor	Mice
Skin tumor[a]	Hamsters
Prestomach papilloma	Rats, hamsters
Melanoma[a]	Hamsters
Lymphoma[a]	Hamsters

[a]Data less certain. Source: Cesare Maltoni, Istituto di Oncologia, Bologna, Italy

Vinyl Chloride is highly irr via ihal and oral routes and to skin, eyes and mu mem. In high conc, it acts as an anesthetic. Causes skin burns by rapid evaporation and consequent freezing. Chronic exposure has shown liver injury in rats and rabbits. Circulatory and bone changes in the fingertips reported in workers handling unpolymerized materials. A recog human carc via oral and ihal routes causing cancers of the liver, lungs and brain. It is reproductive hazard of the work place.

FIRE HAZARD: Dangerous, when exposed to heat, flame or oxidizers. Large fires of this material are practically inextinguishable.

SPONT HEATING: No.

EXPLOSION HAZARD: Severe, in the form of vapor, when exposed to heat or flame. Also, on standing, forms peroxides in air and can then explode.

DISASTER HAZARD: Very dangerous; when heated to decomp, emits highly toxic fumes of phosgene; can react vigorously with oxidizing materials. Before storing or handling this material, instructions for its use should be obtained from the supplier.

ENVIRONMENTAL IMPACT INFORMATION IN THE EVENT OF SPILL OR MASSIVE RELEASE:

PERSISTENCY: Polymerizes in presence of air, oxygen, sunlight or heat. Volatilizes and will leave water quite soon.

MAJOR WATER USES THREATENED: Recreational

PROBABLE LOCATION AND STATE OF MATERIAL: Colorless gas. Heavy vapors will cling near ground. Some will dissolve. Polymerizes readily in air or sunlight.

WATER CHEMISTRY: Subject to polymerization.

COLOR IN WATER: Colorless

DEGREE OF HAZARD TO PUBLIC HEALTH: Irritant. Moderately toxic with inhalation. Emits highly toxic vapors when heated to decomposition.

AIR POLLUTION HAZARD: High

STORAGE AND HANDLING INFORMATION:

MODE OF TRANSPORTATION:

Rail	90.0%
Barge	2.0%
Pipe	8.0%

CONTAINERS: Pressure cylinders, tank cars, tank barges.

GENERAL STORAGE PROCEDURES: Protect against physical damage. Outside or detached storage is preferable. Inside storage should be in a fire resistive storage room, provided with adequate ventilation and free of sources of ignition and heat.

GENERAL HANDLING PROCEDURES: Guard against all sources of ignition.

TOXIC COMBUSTION PRODUCTS: HCl, phosgene, CO, hazardous, employ self-contained breathing apparatus.

EXTINGUISHING METHODS: Stop flow of gas. Use water to keep containers cool. Do not extinguish unless necessary to effect an immediate shutoff of flow. Dry chemical and carbon dioxide can be used to extinguish vinyl chloride fires.

PERSONAL SAFETY PRECAUTIONS: Gas tight goggles and breathing apparatus is required in fire areas or where closed environment or poor ventilation causes high vapor concentrations. Eye goggles and impervious outerwear are recommended for areas where liquid vinyl chloride may be encountered. Evacuate area.

Enter from upwind after gas levels have subsided. Notify fire and air authority. Remove ignition sources.

COUNTERMEASURES: Use carbon or peat on dissolved portion.

AVAILABILITY OF COUNTERMEASURE MATERIALS: Carbon-water treatment plants, sugar refineries. Peat-nurseries, floral shops.

DISPOSAL METHODS: Dilute to 1% solution and remove phenol inhibitor as sodium. 1. Pour onto vermiculite, sodium bicarbonate or a sand soda ash mixture (90/10). (Add slaked lime if fluoride is present) mix in paper boxes, place in incinerator, cover with scrap wood and paper, ignite with excelsior train. Stay upwind, or dump in closed incinerator with afterburner 2. Dissolve in flammable solvent and spray in incinerator firebox equipped with afterburner and alkali scrubber

DISPOSAL NOTIFICATION: Local Air Authority

RECENT FEDERAL REGISTER CITATIONS:
(Vinyl Chloride)

CITATION NUMBER = 45.98.704
(45FR33066ff, 5-19-80)

FINAL RULE, PROPOSED RULE: Add 40CFR261, 264, 265, revision of 40CFR260, 262, 263, Environmental Protection Agency, Solid Waste Disposal Act; Hazardous waste constituent; Effective date 11-19-80; Comments solicited by 7-18-80

CITATION NUMBER = 45.98.810
(45FR33290ff, 5-19-80)

FINAL RULE: Revision of 40CFR122, 123, 124, 125, Environmental Protection Agency, Resource Conservation & Recovery Act, Safe Drinking Water Act, Clean Water Act, Clean Air Act; National Pollutant Discharge Elimination System, prevention of significant deterioration; Consolidated permit regulations; Effective date 7-18-80; Effective date 11-19-80; Effective date 6-2-80 (45FR26894, 44FR32854)

CITATION NUMBER = 45.98.1396
(45FR33131ff, 5-19-80)

FINAL RULE, PROPOSED RULE: Add 40CFR261, 264, 265, revision of 40CFR260, 262, 263, Environmental Protection Agency, Solid Waste Disposal Act; Constituent for specifically listed hazardous waste

REFERENCES

1. 1980 Registry of Toxic Effects of Chemical Substances. (Update #1)

CIS SOURCES OF INFORMATION
CIS, EI Mass Spectrometry
CIS, Carbon 13 NMR Spectrometry: 75-01-4.01
EPA/CIS, OHM/TADS: 72T16947
NIOSH/CIS, RTECS: KU9625O
EPA/CIS, WaterDROP
NON-CIS REFERENCES
EPA, TSCA Inventory List
Merck Index: 9645
EPA, Chemical Spills
EPA, AEROS SOTDAT: 3860
CPSC, CHEMRIC
EPA, Pesticides — Registered Inert Ingredients
NBS, Gaseous Ions
NFPA, Hazardous Chemicals: 49300
US. International Trade Commission
EPA, Effluent Guidelines
EPA, Organic Chemical Producers: 3520
IPC, Chemical Product: 8612867576445
IPC, Chemical Plant: 867576445
NSF, Chemicals List: A4,65
EROICA, Thermodynamics
NIOSH, NOHS: 76445
ORNL, EMIC
ORNL, ETIC
EPA/IERL, Non-Criteria Pollutant Emissions
EPA, Chemical Indicators, Industrial Contamination
EPA, Selected Organic Air Pollutants
Clean Air Act — Section 112
EPA, Carcinogen Assessment Group List of Chemicals
API/TRC, Thermodynamics and Spectroscopy
EPA/NCTR, Industrial Carcinogen and Mutagen Study
EPA, Environmental Carcinogen Assessment Program
DHEW/NCI, Laboratory Chemicals Monographs
EPA/NSF, Econ. & Tox. Data — Selected Comm. Chem.
EPA, Potential Carcinogen Study, Selected Chem.
IARC, Monographs (Carcinogenicity Reviews)
EPA, Expanded Potential Industrial Car. & Mut.
Tox Tips: 9:9,1:10,1:13,1:8,1:3,5:5,16:45,1:6
NLM CHEMLINE: TOXLINE
NCI, Environmental Determinants of Cancer
OSHA, Concentration Limits for Gases and Vapors
NFPA #491M, Manual of Hazardous Chemical Reactions: 491M-440
NFPA #325M, Fire Hazard Properties of Flammables: 325M-51, 325M-187
EPA, Toxic Substances Control Procedures