



SHELL CHEMICAL COMPANY

A DIVISION OF SHELL OIL COMPANY

ONE SHELL PLAZA

P.O. BOX 2463

HOUSTON, TEXAS 77001

March 6, 1974

Mrs. J. Goodell
Attention: Docket OSH-36
Office of Standards
Occupational Safety and Health Administration
Room 240
1726 M Street N. W.
Washington, D. C. 20210

Dear Mrs. Goodell:

Possible Hazards of Vinyl Chloride
Manufacture and Use

Reference: Public Hearing February 15, 1974

With reference to testimony given by Shell Chemical Company at the above public hearing, we wish to include the following in the record.

(1) Transcript page 114 line 18

Insert after the word "teflon" the words "or Scotch-Pack, Aluminized Plastic".

(2) Transcript page 116 line 22

Change to read "Yes, we would". This is the speaker's recollection of the reply. The change is requested for reasons of accuracy; no requests to release the information had been received by February 15, 1974.

(3) Transcript page 120 lines 10-12

Attached are three copies of the prior material safety data sheet referred to.

ASI 000021322

Mr. J. Goodell

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(4) Transcript page 121 lines 4-5.

Attached are three copies of a letter mailed to our customers March 6, 1974 together with the newly revised material safety data sheet attached thereto. Both NIOSH and OSHA have requested copies of the breathing zone test procedure we use and we shall forward same when available (about March 15, 1974).

Very truly yours,
SHELL CHEMICAL COMPANY

R. J. Reynolds

R. J. Reynolds
Manager, Vinyl Chloride

Attachments (3)

ASI 000021323



SHELL CHEMICAL COMPANY

A DIVISION OF SHELL OIL COMPANY

ONE SHELL PLAZA

P.O. BOX 2463

HOUSTON, TEXAS 77001

March 6, 1974

TO SHELL VCM CUSTOMERS

Gentlemen:

Attached for your information and use within your company is a copy of the statement presented by Shell at the OSHA hearing on VCM manufacture and use February 15, 1974.

During the hearing, expert testimony was given by Dow Chemical Company, and by Professor Cesare Maltoni, Istituto di Oncologia, Bologna, Italy as to the effects observed in sophisticated tests of animals exposed long term to various levels of VCM. B. F. Goodrich testified also as to the discovery of angiosarcoma in livers of certain polyvinyl chloride workers at autopsy. Some follow-up reports on the incidence of angiosarcoma are found in the Wall Street Journal February 19, 1974 page 6, Chemical Engineering News February 25, 1974 and Chemical Week February 27, 1974. We would urge you to make arrangements with the OSHA recorder to receive a copy of the full testimony at the hearing when available.

Enclosed is a copy of our vinyl chloride safety data sheet which we have revised, based on testimony given at the hearing, to give more explicit warning of the potentialities associated with exposure to VCM. In this version of the safety data sheet, we specifically reference the information from Professor Maltoni that cancer development has been noted in rats down to VCM exposures of 250 ppm and also the information that exposure to VCM may be implicated in development of liver cancer in some polyvinyl chloride workers. In view of this information, we now rate VCM as a health hazard 3 (using the National Fire Protection Association rating system) and recommend air pack or supplied air respirator for personnel protection where such protection is required.

We are now preparing, for external distribution an expanded description of the sampling and analytical techniques we have been using to determine VCM concentration in workers' breathing zones. When this description is ready (probably about March 15, 1974) we shall send you a copy. As you know, we have adopted an internal working level of 50 ppm

ASI 000021324

maximum VCM exposure over eight hours for our operations. We believe that the periodic use of breathing zone analyses has helped considerably in keeping significantly below this level.

Very truly yours,
SHELL CHEMICAL COMPANY

Original Signed By R. J. REYNOLDS
R. J. Reynolds
Manager, Vinyl Chloride

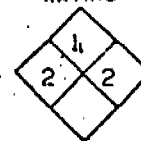
Attachment

ASI 000021325



SHELL OIL COMPANY
SHELL CHEMICAL COMPANY
SHELL DEVELOPMENT COMPANY
SHELL PIPE LINE CORPORATION

HAZARD
RATING



MATERIAL SAFETY DATA SHEET

Information on this form is furnished solely for the purpose of compliance with the Occupational Safety and Health Act of 1970 and shall not be used for any other purpose. Use or dissemination of all or any part of this information for any other purpose may result in a violation of law or constitute grounds for legal action.

SECTION I	
MANUFACTURER'S NAME Shell Chemical Company	EMERGENCY TELEPHONE NO. 713-473-9461
ADDRESS (Number, Street, City, State, and Zip Code) P. O. Box 2463, Houston, Texas 77001	
CHEMICAL NAME AND SYNONYMS Vinyl Chloride, Chloroethylene, Chloroethene	TRADE NAME Vinyl Chloride Monomer
CHEMICAL FAMILY Vinyl Halide	FORMULA CH₂CH Cl

SECTION II HAZARDOUS INGREDIENTS*						
COMPOSITION	%	SPECIES	LC ₅₀		LC ₅₀	
			ORAL	DERMAL	CONCENTRATION	NO. RS
PIGMENTS						
CATALYST						
VEHICLE						
SOLVENTS						
ADDITIVES						
OTHERS						
Vinyl Chloride	100					

SECTION III PHYSICAL DATA			
BOILING POINT (°F)	7	SPECIFIC GRAVITY (H ₂ O=1)	20°C 0.91
VAPOR PRESSURE (mmHg)	668°F 2560	PERCENT VOLATILE BY VOLUME (%)	100
VAPOR DENSITY (AIR=1)	2.15	EVAPORATION RATE (_____=1)	
SOLUBILITY IN WATER	Slight		
APPEARANCE AND ODOR Colorless, sweet smelling gas			

SECTION IV FIRE AND EXPLOSION HAZARD DATA			
FLASH POINT (Method used)	-108°F TOC	FLAMMABLE LIMITS	at ordinary temperature 3.6 33.0
EXTINGUISHING MEDIA	CO₂, dry chemicals		
SPECIAL FIRE FIGHTING PROCEDURES	Do not use water except as a spray or fog. Wear self contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS	Handle as an extremely flammable liquid and gas. Material is under pressure		

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

500 ppm (ACGIH proposes 1972 change to 200 ppm)

EFFECTS OF OVEREXPOSURE

Acts as a mild general anesthetic. Prolonged contact with skin results in freezing.

EMERGENCY AND FIRST AID PROCEDURES

Remove victim to area free of vinyl chloride vapors. Give artificial respiration if necessary. Remove contaminated clothing to prevent freezing. Remove from eyes with large amounts of water.

SECTION VI REACTIVITY DATA

STABILITY

UNSTABLE

X

CONDITIONS TO AVOID

Requires inhibitor - avoid sunlight and/or heat.

STABLE

INCOMPATIBILITY (Materials to avoid)

air, oxygen

HAZARDOUS DECOMPOSITION PRODUCTS

H Cl, CO and phosgene on combustion.

HAZARDOUS POLYMERIZATION

MAY OCCUR

X

CONDITIONS TO AVOID

air, sunlight and/or heat

WILL NOT OCCUR

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all sources of ignition. Remove all personnel not wearing protection equipment shown in Sect. VIII. Use forced ventilation from explosion-proof equipment. Allow to evaporate.

WASTE DISPOSAL METHOD

Do not permit material to enter sewers. Use controlled evaporation.

Guard against fire and explosion hazards.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

Air pack or organic canister mask as required.

VENTILATION

LOCAL EXHAUST

highly recommended

SPECIAL

MECHANICAL (General)

Highly recommended - use explosion-proof equipment.

OTHER

PROTECTIVE GLOVES

Rubber

EYE PROTECTION

Chemical goggles and/or face shields

OTHER PROTECTIVE EQUIPMENT

To prevent all contact with body as required.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Prevent any leakage. Provide sufficient ventilation to prevent high concentrations. Keep away from all sources of ignition. Handle as an extremely flammable material which is stored under pressure.

NAME

D. M. Sheets - Supervisor

TITLE

Regulatory Affairs - Chemical Prod

COMPANY

Shell Chemical

SIGNATURE

D. M. Sheets

DATE

June 1972

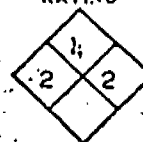
THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDOR OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS SPECULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDOR OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDOR ASSUMES THE RISK IN HIS USE OF THE MATERIAL.



SHELL OIL COMPANY
SHELL CHEMICAL COMPANY
SHELL DEVELOPMENT COMPANY
SHELL PIPE LINE CORPORATION

HAZARD
RATING



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SECTION I	
MANUFACTURER'S NAME Shell Chemical Company	EMERGENCY TELEPHONE NO. 713-473-9461
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CHEMICAL NAME AND SYNONYMS Vinyl Chloride, Chloroethylene, Chloroethene	TRADE NAME Vinyl Chloride Monomer
CHEMICAL FAMILY Vinyl Halide	FORMULA CH₂CH Cl

SECTION II HAZARDOUS INGREDIENTS*						
COMPOSITION	%	SPECIES	LD ₅₀		LC ₅₀	
			ORAL	DERMAL	CONCENTRATION	HOURS
PIGMENTS						
CATALYST						
VEHICLE						
SOLVENTS						
ADDITIVES						
OTHERS						
Vinyl Chloride	100					

SECTION III PHYSICAL DATA			
BOILING POINT (°F)	7	SPECIFIC GRAVITY (H ₂ O=1) 20°C	0.91
VAPOR PRESSURE (mmHg) 66.8°F	2580	PERCENT VOLATILE BY VOLUME (%)	100
VAPOR DENSITY (AIR=1)	2.15	EVAPORATION RATE (=1)	
SOLUBILITY IN WATER	Slight		
APPEARANCE AND ODOR Colorless, sweet smelling gas			

SECTION IV FIRE AND EXPLOSION HAZARD DATA			
FLASH POINT (Method used) -108°F TOC	FLAMMABLE LIMITS at ordinary temperature	LeI 3.6	UeI 33.0
EXTINGUISHING MEDIA CO ₂ , dry chemicals			
SPECIAL FIRE FIGHTING PROCEDURES Do not use water except as a spray or fog. Wear self contained breathing apparatus.			
UNUSUAL FIRE AND EXPLOSION HAZARDS Handle as an extremely flammable liquid and gas. Material is under pressure			

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

OSHA - 500 ppm (ceiling); AGGIH - 200 ppm (TWA)

EFFECTS OF OVEREXPOSURE

Acts as a mild general anesthetic. Prolonged contact with skin results in freezing.

EMERGENCY AND FIRST AID PROCEDURES

Remove victim to area free of vinyl chloride vapors. Give artificial respiration if necessary. Remove contaminated clothing to prevent freezing. Remove from eyes with large amounts of water.

SECTION VI REACTIVITY DATA

STABILITY

UNSTABLE

X

CONDITIONS TO AVOID

Requires inhibitor - avoid sunlight

STABLE

and/or heat.

INCOMPATIBILITY (Materials to avoid)

air, oxygen

HAZARDOUS DECOMPOSITION PRODUCTS

H Cl, CO and phosgene on combustion.

HAZARDOUS
POLYMERIZATION

MAY OCCUR

X

CONDITIONS TO AVOID

air, sunlight and/or heat

WILL NOT OCCUR

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all sources of ignition. Remove all personnel not wearing protection equipment shown in Sect. VII. Use forced ventilation from explosion-proof equipment. Allow to evaporate.

WASTE DISPOSAL METHOD

Do not permit material to enter sewers. Use controlled evaporation.

Guard against fire and explosion hazards.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

Air pack or organic canister mask as required.

VENTILATION

LOCAL EXHAUST

highly recommended

SPECIAL

MECHANICAL (General)

Highly recommended - use explosion-proof equipment.

OTHER

PROTECTIVE GLOVES

Rubber

EYE PROTECTION

Chemical goggles and/or face shields

OTHER PROTECTIVE EQUIPMENT

To prevent all contact with body as required.

SECTION IX SPECIAL PRECAUTIONS

ASI 000021329

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Prevent any leakage. Provide sufficient ventilation to prevent high concentrations. Keep away from all sources of ignition. Handle as an extremely flammable material which is stored under pressure.

NAME D. M. Sheets - Supervisor

TITLE Regulatory Affairs - Chemical Prod

COMPANY Shell Chemical

SIGNATURE *D. M. Sheets*

DATE 1972

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDEOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR TO HIS PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADVISED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDEOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	OSHA - 500 ppm (ceiling); ACGIH - 200 ppm (TWA); Shell - 50 ppm (TWA)
EFFECTS OF OVEREXPOSURE	See over. Also prolonged contact with skin results in freezing.
EMERGENCY AND FIRST AID PROCEDURES	Remove victim to area free of vinyl chloride vapors. Give artificial respiration if necessary. Remove contaminated clothing to prevent freezing. Remove from eyes with large amounts of water.

SECTION VI REACTIVITY DATA

STABILITY	UNSTABLE	X	CONDITIONS TO AVOID Avoid sunlight and/or heat and exclude all oxygen
	STABLE		
INCOMPATIBILITY (Materials to avoid)	air, oxygen		
HAZARDOUS DECOMPOSITION PRODUCTS	H Cl, CO and phosgene on combustion		
HAZARDOUS POLYMERIZATION	MAY OCCUR	X	CONDITIONS TO AVOID air, sunlight and/or heat
	WILL NOT OCCUR		

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	Remove all sources of ignition. Remove all personnel not wearing protection equipment shown in Sect. VIII. Use forced ventilation from explosion-proof equipment. Allow to evaporate.
WASTE DISPOSAL METHOD	Do not permit material to enter sewers. Use controlled evaporation. Guard against fire and explosion hazards.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)	Air pack or organic canister mask as required.	
VENTILATION	LOCAL EXHAUST highly recommended	SPECIAL
	MECHANICAL (General) Highly recommended - use explosion-proof equipment	OTHER
PROTECTIVE GLOVES	Rubber	EYE PROTECTION Chemical goggles and/or face shields
OTHER PROTECTIVE EQUIPMENT	To prevent all contact with body as required.	

SECTION IX SPECIAL PRECAUTIONS

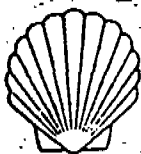
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	Prevent any leakage. Provide sufficient ventilation to prevent high concentrations. Keep away from all sources of ignition. Handle as an extremely flammable material which is stored under pressure.
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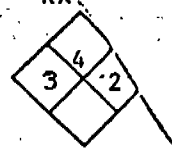
D. M. Sheets, Supervisor
Regulatory Affairs - Chemical Products
Shell Chemical Company

DATE 1973

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SHELL CHEMICAL COMPANY
SHELL DEVELOPMENT COMPANY
SHELL PIPE LINE CORPORATION



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CHEMICAL FAMILY Vinyl Halide	FORMULA

SECTION II HAZARDOUS INGREDIENTS*	
COMPOSITION	
Vinyl Chloride	100
Extended exposure of rats to known concentrations of VCM vapor ranging from 30,000-250 ppm has resulted in cancers of a variety of organs, including a rare cancer of the liver. No cancers or other effects have been reported in animal exposed to 50 ppm. After years of exposure to unreported concentrations of VCM and other chemicals associated with PVC production, some workers have developed degeneration of the ends of the finger bones. A larger than normal percentage have shown some degree of liver abnormality. A few have developed the same rare form of liver cancer found in the rat studies. Where the human exposure levels are known (160 ppm average over 17 years), no clinical illness or overt condition attributable to VCM was found. Some blood test values appeared to be altered, however. Detailed reports of the toxicological studies are available for examination in the Plant Safety Office. In view of the above, VCM must be accorded the precautions appropriate for a cancer-suspect agent.	

SECTION III PHYSICAL DATA			
BOILING POINT (°F)	7	SPECIFIC GRAVITY (H ₂ O=1) 20° C.	0.91
VAPOR PRESSURE (mmHg) @ 68° F.	2580	PERCENT VOLATILE BY VOLUME (%)	100
VAPOR DENSITY (AIR=1)	2.15	EVAPORATION RATE (_____=1)	
SOLUBILITY IN WATER	Slight		
APPEARANCE AND ODOR Colorless, sweet, smelling gas. Odor threshold about 250 ppm, but olfactory fatigue occurs, so odor cannot be relied upon to provide warning of hazardous levels.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA			
FLASH POINT (Method used)	-108° F., T.O.C.	FLAMMABLE LIMITS	
		at ordinary temperature	3.6 33.0
EXTINGUISHING MEDIA	CO ₂ , dry chemicals		
SPECIAL FIRE FIGHTING PROCEDURES	Do not use water except as a spray or fog. ASI 000021332		
	Wear self contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS	Handled as an extremely flammable liquid and gas. Material is under pressure.		