1,2-DIBROMOETHANE

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
ETHYLENE DIBROMIDE

OTHER NAMES

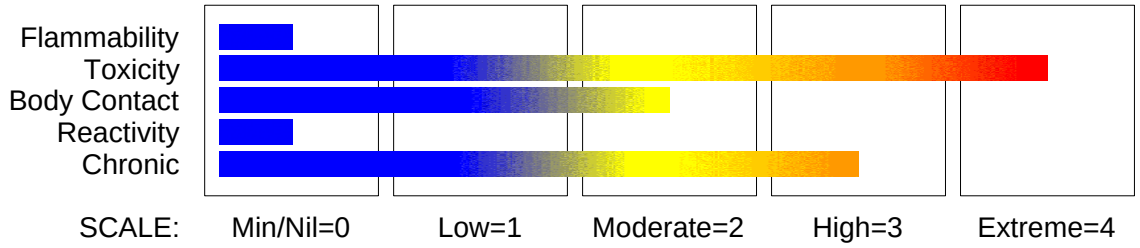
C2-H2-Br2, Br2C2H2, "1, 2-dibromoethane", "1, 2-dibromoethane", "Iscobrome D", DBE, bromofume, Nephis, sym-dibromoethane, Pestmaster, "glycol dibromide", "Pestmaster EDB-85" , aethylenbromid, Soilbrom-40, Celmide, "RCRA waste number UO67", "1, 2-dibromaethan", "1 , 2-dibromaethan", "Dowfume 40", "1, 2-dibromoetano", "1, 2-dibromoetano", "Dowfume EDB", dibromoethane, "Dowfume W-8", "alpha, beta-dibromoethane", "Dowfume W-85", "1, 2 -dibroomethaan", "1, 2-dibroomethaan", "Dowfume W-90", dwubromoetan, "Dowfume W-100", "ethylene bromide", EDB, "1, 2-ethylene dibromide", "1, 2-ethylene dibromide", "ENT 15, 349", fumo-gas, "glycol bromide"

PROPER SHIPPING NAME
ETHYLENE DIBROMIDE

PRODUCT USE
DANGEROUS POISON.
Scavenger for lead in gasoline; grain fumigant; general solvent; waterproofing preparations; organic synthesis; fumigant for tree crops.

SUPPLIER
Company: S D FINE- CHEM LIMITED
Address:
315- 317, T.V. INDUSTRIAL ESTATE,
248, WORLI,
MUMBAI- 400030.INDIA.
technical@sdfine.com
Telephone: 91- 22- 24959898
Telephone: 91- 22- 24959899
Fax: 91- 22- 24937232

HAZARD RATINGS



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Section 2 - HAZARDS IDENTIFICATION

GHS Classification

Acute Toxicity (Dermal) Category 3
Acute Toxicity (Inhalation) Category 2
Acute Toxicity (Oral) Category 3
Carcinogen Category 1B
Chronic Aquatic Hazard Category 2
Eye Irritation Category 2A
Reproductive Toxicity Category 1B
Respiratory Irritation Category 3
Skin Corrosion/Irritation Category 2

EMERGENCY OVERVIEW

HAZARD

DANGER
Determined by using GHS criteria:
H335 H330 H311 H301 H315 H319 H350 H360 H411
May cause respiratory irritation
Fatal if inhaled
Toxic in contact with skin
Toxic if swallowed
Causes skin irritation
Causes serious eye irritation
May cause CANCER
May damage fertility
Toxic to aquatic life with long lasting effects

PRECAUTIONARY STATEMENTS

Prevention

Use only outdoors or in a well ventilated area.
Obtain special instructions before use.
Wear respiratory protection.
Wash thoroughly after handling.
Wear protective gloves/clothing
Do not handle until all safety precautions have been read and understood.
Use personal protective equipment as required.
Do not breathe dust/fume/gas/mist/vapours/spray.
Do not eat, drink or smoke when using this product.
Wash hands thoroughly after handling.

continued...

Response

Keep container tightly closed.
IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
If eye irritation persists, get medical advice/attention.
If exposed or concerned: Get medical attention advice.
Wear eye/face protection.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If skin irritation occurs, seek medical advice/attention.
Remove/Take off immediately all contaminated clothing
Call a POISON CENTER or doctor/physician if you feel unwell.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
Specific treatment: refer to Label or MSDS.
Wash/Decontaminate removed clothing before reuse.
Immediately call a POISON CENTER or doctor/physician.
IF ON SKIN: Gently wash with plenty of soap and water.

Storage

Store locked up.

Disposal

Dispose of contents and container in accordance with relevant legislation.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
ethylene dibromide	106-93-4	> 99

Section 4 - FIRST AID MEASURES

SWALLOWED

For advice, contact a Poisons Information Centre or a doctor.
· IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.
· For advice, contact a Poisons Information Centre or a doctor.
Where Medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:
· Induce vomiting with fingers down the back of the of the throat, ONLY IF CONSCIOUS.
· Lean patient forward or place on left side (head-down position if possible) to maintain open airway and prevent aspiration.
NOTE: Wear a protective glove when inducing vomiting by mechanical means.
· In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
· If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided. Further action will be the responsibility of the medical specialist.
· If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the MSDS.
Avoid giving milk or oils.
Avoid giving alcohol.

continued...

EYE

If this product comes in contact with the eyes:
· Immediately hold eyelids apart and flush the eye continuously with running water.
· Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
· Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
· Transport to hospital or doctor without delay.
· Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin or hair contact occurs:
· Immediately flush body and clothes with large amounts of water, using safety shower if available.
· Quickly remove all contaminated clothing, including footwear.
· Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre.
· Transport to hospital, or doctor.

INHALED

· If fumes or combustion products are inhaled remove from contaminated area.
· Lay patient down. Keep warm and rested.
· Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
· Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
· Transport to hospital, or doctor.

NOTES TO PHYSICIAN

Treat symptomatically.
DO NOT administer sympathomimetic drugs as they may cause ventricular arrhythmias.
Since ingestion by mouth leads to serious liver injury, it is imperative that the stomach be promptly emptied and thorough gastric lavage accomplished. Efforts to protect the liver should include such traditional procedures as a high carbohydrate diet and supplementary vitamins, especially vitamins B, C and K. [ILO]
Treat seizures with IV diazepam (for adult up to 10mg; children 0.1-0.3 mg/kg slowly).
If oedema occurs administer 100% oxygen and treat with cautious doses of 5-10mg morphine, 250-500g IV aminophylline (slowly) and Furosemide (1mg/kg IV to maximum of 40mg).
Traet burns symptomatically.
All patients shall be observed for systemic effects.
Oral Management:
NO GASTRIC LAVAGE or EMETIC
Encourage oral fluids.
Consider nasogastric aspiration of stomach contents within 1 hour of ingestion.
Activated charcoal may be given although there is no evidence of its ability to adsorb the material.
If facilities are available, early gastro-oesophagoscopy should be undertaken within 12 hours of the event to assess the extent and severity of injury.
Systemic Management:

continued...

Symptomatic patients should be observed for 24 hours.
There is no specific antidote.
Check and correct urea and electrolytes, blood gases and pH.
Monitor ECG, WBC count, haematocrit, respiration, renal and hepatic function.
Raised serum levels of uric acid, skeletal muscle enzymes, hepatic aminotransferases, creatinine phosphokinase and creatinine have occurred in severe poisoning.
Haemodialysis has been used to treat renal treatment failure and acidosis in two patients; serum bromide levels were not recorded.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA
· Foam.
· Dry chemical powder.
· BCF (where regulations permit).
· Carbon dioxide.
· Water spray or fog - Large fires only.

FIRE FIGHTING
Alert Fire Brigade and tell them location and nature of hazard.
· Wear full body protective clothing with breathing apparatus.
· Prevent, by any means available, spillage from entering drains or water course.
· Consider evacuation (or protect in place).
Fight fire from a safe distance, with adequate cover.
Cool fire exposed containers with water spray from a protected location.
DO NOT approach containers suspected to be hot.
If safe to do so, remove containers from path of fire.
Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD
· Non combustible.
· Not considered to be a significant fire risk.
· Expansion or decomposition on heating may lead to violent rupture of containers.
· Decomposes on heating and may produce toxic fumes of carbon monoxide (CO).
· May emit acrid smoke.
Decomposition may produce toxic fumes of:.
hydrogen bromide.

FIRE INCOMPATIBILITY
Avoid contact with strong acids, strong alkalis and strong oxidisers.
May react violently with.
aluminium.
magnesium powdered metals alkali metals e.g. sodium, potassium, lithium.
Dissolves most plastics and synthetic fibres.

Personal Protective Equipment
Breathing apparatus.
Gas tight chemical resistant suit.
Limit exposure duration to 1 BA set 30 mins.

continued...

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS
Clean up all spills immediately.
Avoid breathing vapours and contact with skin and eyes.
Wear protective clothing, impervious gloves and safety glasses.
Wipe up and absorb small quantities with vermiculite or other absorbent material.
Place spilled material in clean, dry, sealable, labelled container.

MAJOR SPILLS
· Clear area of personnel and move upwind.
· Alert Fire Brigade and tell them location and nature of hazard.
· Wear breathing apparatus plus protective gloves.
· Prevent, by any means available, spillage from entering drains or water course.
· Stop leak if safe to do so.
· Contain spill with sand, earth or vermiculite.
· Collect recoverable product into labelled containers for recycling.
· Neutralise/decontaminate residue.
· Collect solid residues and seal in labelled drums for disposal.
· Wash area and prevent runoff into drains.
· After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.
· If contamination of drains or waterways occurs, advise emergency services.

EMERGENCY RESPONSE PLANNING GUIDELINES (ERPG)
The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour WITHOUT experiencing or developing

life-threatening health effects is:
ethylene dibromide 100 ppm

irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:
ethylene dibromide 30 ppm

other than mild, transient adverse effects without perceiving a clearly defined odour is:
ethylene dibromide 30 ppm

The threshold concentration below which most people will experience no appreciable risk of health effects:
ethylene dibromide 20 ppm

American Industrial Hygiene Association (AIHA)

Ingredients considered according to the following cutoffs

Very Toxic (T+)	>= 0.1%	Toxic (T)	>= 3.0%
R50	>= 0.25%	Corrosive (C)	>= 5.0%
R51	>= 2.5%		
else	>= 10%		

where percentage is percentage of ingredient found in the mixture

continued...

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS

X	X	+	X	X	+

+: May be stored together
O: May be stored together with specific preventions
X: Must not be stored together

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

Use good occupational work practice. Observe manufacturer's storing and handling recommendations.
Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.
Avoid all personal contact, including inhalation.
Avoid generating and breathing mist.
Wear protective clothing when risk of exposure occurs.
Avoid smoking, naked lights or ignition sources.
Use in a well-ventilated area.
until atmosphere has been checked., Avoid contact with incompatible materials.
DO NOT spray directly on humans, exposed food or food utensils.
When handling, DO NOT eat, drink or smoke.
Keep containers securely sealed when not in use.
Avoid physical damage to containers.
Always wash hands with soap and water after handling. Work clothes should be laundered separately.

SUITABLE CONTAINER

Packaging as recommended by manufacturer.
· Check that containers are clearly labelled.
Metal can.
Metal drum.

STORAGE INCOMPATIBILITY

Segregate from strong oxidisers, strong alkalis, aluminium and magnesium powdered metals alkali metals e.g. sodium, potassium, lithium.
In the presence of moisture and at higher temperatures material breaks down generating hydrobromic acid, which may corrode and perforate containers. Slowly decomposes in the presence of light.

STORAGE REQUIREMENTS

Store in a cool area and away from sunlight.
Store in a well-ventilated area.
Keep containers securely sealed.
Check regularly for spills and leaks.
Store away from incompatible materials.

continued...

No smoking, naked lights, heat or ignition sources.
Protect containers against physical damage.
Keep storage area free of debris, waste and combustibles.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

• ethylene dibromide: CAS:106- 93- 4 CAS:8003- 07- 4 CAS:625084- 37- 9 CAS:56729- 21- 6

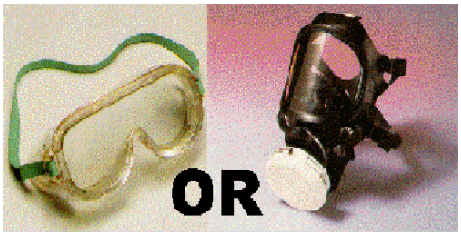
EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m3)	Revised IDLH Value (ppm)
ethylene dibromide		100

MATERIAL DATA

Odour Threshold: 25 ppm
The TLV is thought to be protective against eye and skin irritation and against liver and kidney damage.

PERSONAL PROTECTION



EYE

· Chemical goggles.
· Safety glasses with side shields.
· Full face shield.
· Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET

· Barrier cream and Butyl rubber gloves or Neoprene gloves.
Safety footwear.
DO NOT use this product to clean the skin.

continued...

OTHER
Overalls and Plastic apron.
· Impervious protective clothing.
· Eyewash unit.
Ensure there is ready access to a safety shower.

GLOVE SELECTION INDEX
Glove selection is based on a modified presentation of the:
" Forsberg Clothing Performance Index" .
The effect(s) of the following substance(s) are taken into account in the computer- generated selection: ethylene dibromide

Protective Material CPI *.

PVA	A
VITON	A
VITON/NEOPRENE	A
VITON/NITRILE	A
TEFLON	A
BUTYL/NEOPRENE	C
BUTYL	C
PVC	C
SARANEX- 23	C
NITRILE	C
NEOPRENE	C

A: Best Selection
B: Satisfactory; may degrade after 4 hours continuous immersion
C: Poor to Dangerous Choice for other than short term immersion
NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -
* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

RESPIRATOR
Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Breathing Zone Level ppm (volume)	Maximum Protection Factor	Half- face Respirator	Full- Face Respirator
1000	10	A- AUS	-
1000	50	-	A- AUS
5000	50	Airline *	-
5000	100	-	A- 2
10000	100	-	A- 3
	100+		Airline**

* - Continuous Flow ** - Continuous-flow or positive pressure demand.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.

continued...

For further information consult
your
Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

Use in a well-ventilated area.
General exhaust is adequate under normal operating conditions. If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouse or closed storage areas. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:	Air Speed:
solvent, vapours, degreasing etc., evaporating from tank (in still air)	0.25- 0.5 m/s (50- 100 f/min)
aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)	0.5- 1 m/s (100- 200 f/min.)
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1- 2.5 m/s (200- 500 f/min)
grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).	2.5- 10 m/s (500- 2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range	Upper end of the range
1: Room air currents minimal or favourable to capture	1: Disturbing room air currents
2: Contaminants of low toxicity or of nuisance value only	2: Contaminants of high toxicity
3: Intermittent, low production.	3: High production, heavy use
4: Large hood or large air mass in motion	4: Small hood - local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min.) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.
In confined spaces where there is inadequate ventilation, wear full-face air supplied breathing apparatus.

continued...

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Halogenated hydrocarbon; colourless nonflammable liquid.
Chloroform-like odour.
Solubility in water: 0.4%
Miscible with most organic solvents.
Saturation Vapour Concentration: 1.4% (113 g/m3) @ 20 deg C.
Evaporation Rate: < 1 (Butyl Ether = 1)
Conversion factor: 1ppm = 7.67 mg/m3

PHYSICAL PROPERTIES

Liquid.
Does not mix with water.
Sinks in water.
Toxic or noxious vapours/gas.

Molecular Weight: 187.88
Melting Range (°C): 10
Solubility in water (g/L): Immiscible
pH (1% solution): Not applicable.
Volatile Component (%vol): 100
Relative Vapour Density (air=1): 6.5
Lower Explosive Limit (%): Not applicable
Autoignition Temp (°C): Not applicable
State: Liquid

Boiling Range (°C): 131
Specific Gravity (water=1): 2.18 @ 20 C
pH (as supplied): Not applicable
Vapour Pressure (kPa): 1.47 @ 25 C
Evaporation Rate: < 1 BuAc=1
Flash Point (°C): Not applicable
Upper Explosive Limit (%): Not applicable
Decomposition Temp (°C): Not available
Viscosity: Not available

log Kow (Prager 1995): 1.35
log Kow (Sangster 1997): 1.96
log Kow: 1.6-1.76

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Toxic effects may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 40 gram may be fatal or may produce serious damage to the health of the individual.

continued...

Considered an unlikely route of entry in commercial/industrial environments.

EYE
Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals.
Repeated or prolonged eye contact may cause inflammation characterised by temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.
The vapour is discomforting.
The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

SKIN
Skin contact with the material may produce toxic effects; systemic effects may result following absorption.
Evidence exists, or practical experience predicts, that the material either produces inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis.
Bare unprotected skin should not be exposed to this material.
The material may accentuate any pre-existing skin condition.
Toxic effects may result from skin absorption.
The material may produce severe skin irritation after prolonged or repeated exposure, and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) thickening of the epidermis.

Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis. Prolonged contact is unlikely, given the severity of response, but repeated exposures may produce severe ulceration.

INHALED
Evidence shows, or practical experience predicts, that the material produces irritation of the respiratory system in a substantial number of individuals following inhalation.
Inhalation hazard is increased at higher temperatures.

CHRONIC HEALTH EFFECTS
On the basis, primarily, of animal experiments, the material may be regarded as carcinogenic to humans. There is sufficient evidence to provide a strong presumption that human exposure to the material may result in cancer on the basis of:
- appropriate long-term animal studies
- other relevant information.

Principal routes of exposure are usually by.
skin contact/absorption and inhalation of vapour.
The material may accumulate in the human body and progressively cause tissue damage.
Prolonged excessive, or repeated exposures in any form are hazardous.
Chronic inhalation may cause bronchitis and/ or shortness of breath which can progress to pulmonary fibrosis. Impairment of hepatic and renal

continued...

Section 11 - TOXICOLOGICAL INFORMATION

functions may also occur.
Exposure may cause gastrointestinal disturbances; damage to the eyes; damage to the liver, damage to the kidneys, damage to the lungs.
A case of chronic or sub-acute poisoning in a worker has been reported. He suffered from conjunctivitis, pharyngeal and bronchial irritation, severe loss of appetite, headache and depression. His condition markedly on removal from exposure.
There is some evidence to suggest that this substance is also capable of altering genetic material.
Oral administration induces a squamous cell carcinoma of the stomach. The latent period is shorter than that induced by the equivalent chloro-compound. Inhalation induces cancer in the nasal cavity.
Oral administration to animals has caused cancers in the stomachs of rats and mice, lung cancers in mice, cancers in the spleen of male rats and liver of female rats.
There is evidence that exposure to ethylene dibromide in animals together with exposure to Disulfiram increased the incidence of tumours. As a precaution, workers who are on Disulfiram therapy should not be exposed to ethylene dibromide.

TOXICITY AND IRRITATION

TOXICITY	IRRITATION
Oral (rat) LD50: 108 mg/kg	Skin (human): 1538 mg/2h - SEVERE
Oral (human) LDLO: 90 mg/kg	Skin (rabbit): 1%/14d - SEVERE
Inhalation (rat) TCLO: 10 ppm/2y - I	Eye (rabbit): 1%
Inhalation (rat) LC50: 14300 mg/m^3/30m	
Dermal (rabbit) LD50: 300 mg/kg	

NOTE: Substance has been shown to be mutagenic in at least one assay, or belongs to a family of chemicals producing damage or change to cellular DNA.
WARNING: This substance has been classified by the IARC as Group 2A: Probably Carcinogenic to Humans.

Section 12 - ECOLOGICAL INFORMATION

Fish LC50 (96hr.) (mg/l):	18 (48hr)
Hazardous Air Pollutant:	Yes
log Kow (Prager 1995):	1.35
log Kow (Sangster 1997):	1.96
Half- life Soil - High (hours):	4320
Half- life Soil - Low (hours):	672
Half- life Air - High (hours):	2567
Half- life Air - Low (hours):	257
Half- life Surface water - High (hours):	4320
Half- life Surface water - Low (hours):	672
Half- life Ground water - High (hours):	2880
Half- life Ground water - Low (hours):	470
Aqueous biodegradation - Aerobic - High (hours):	4320
Aqueous biodegradation - Aerobic - Low (hours):	672
Aqueous biodegradation - Anaerobic - High (hours):	360
Aqueous biodegradation - Anaerobic - Low (hours):	48
Photooxidation half- life air - High (hours):	2567
Photooxidation half- life air - Low (hours):	257
First order hydrolysis half- life (hours):	19272

continued...

Drinking Water Standards:
hydrocarbon total: 10 ug/l (UK max.).
log Kow: 1.6-1.76
Henry's atm m^3 /mol: 6.29E-04
Log BCF: 0.78
Toxicity invertebrate: cell mult. inhib.0.75-6300mg/L
Bioacculmulation: nil
Nitrif. inhib.: 16% inhib at 100mg/L
processes Abiotic: photochem
Ethylene dibromide degrades in the atmosphere by reaction with photochemically produced hydroxy radicals (half-life 32 days).
Estimated half-life in water is 1-5 days ; evaporates.
Persistence in soil can vary greatly from several days to several months depending on soil type.
Due to slow biodegradation rate the material has the potential to leach into ground water.
Does not bioconcentrate in food chains.

Section 13 - DISPOSAL CONSIDERATIONS

Recycle wherever possible.
Consult manufacturer for recycling options.
Consult State Land Waste Management Authority for disposal.
Reclaim solvent at an approved site.
Evaporate or incinerate residue at an approved site.
Recycle containers if possible, or dispose of in an authorised landfill.

WASTE DISPOSAL PROCEDURES
• Place the recoverable quantities of ethylene bromide into a halogenated solvent disposal container for incineration. Burn in a furnace equipped with an afterburner and alkali scrubber [Armour 1996.]

SPILLAGE DISPOSAL
• Clear area of personnel. Wear breathing apparatus, eye protection, nitrile rubber gloves and protective clothing to control personal contact. Cover the ethylene bromide spill with a 1:1:1 mixture by weight of sodium carbonate or calcium carbonate, bentonite and sand. Scoop into a container for incineration. Wash the area of the spill thoroughly with water and soap [Armour 1996].

Section 14 - TRANSPORTATION INFORMATION

Labels Required: TOXIC
HAZCHEM: 2XE

continued...

UNDG:

Dangerous Goods Class:	6.1	Subrisk:	None
UN Number:	1605	Packing Group:	I

Shipping Name:ETHYLENE DIBROMIDE

Maritime Transport IMDG:

IMDG Class:	6.1	IMDG Subrisk:	None
UN Number:	1605	Packing Group:	I
EMS Number:	F- A, S- A		

Shipping name:ETHYLENE DIBROMIDE

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS:IATA

Section 15 - REGULATORY INFORMATION

REGULATIONS

ethylene dibromide (CAS: 106-93-4) is found on the following regulatory lists;
IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk
International Agency for Research on Cancer (IARC) Carcinogens
International Council of Chemical Associations (ICCA) - High Production Volume List
OECD Representative List of High Production Volume (HPV) Chemicals
United Nations List of Prior Informed Consent Chemicals
United Nations List of Prior Informed Consent Chemicals - French
United Nations List of Prior Informed Consent Chemicals - Spanish
WHO Guidelines for Drinking-water Quality - Guideline values for chemicals that are of health significance in drinking-water

No data available for ethylene dibromide as CAS: 8003-07-4, CAS: 625084-37-9, CAS: 56729-21-6.

Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
ethylene dibromide	106- 93- 4, 8003- 07- 4, 625084- 37- 9, 56729-21- 6

REPRODUCTIVE HEALTH GUIDELINES

Established occupational exposure limits frequently do not take into consideration reproductive end points that are clearly below the thresholds for other toxic effects. Occupational reproductive guidelines (ORGs) have been suggested as an additional standard. These have been established after a literature search for the reproductive no-observed-adverse effect-level (NOAEL) and the lowest-observed-adverse-effect-level (LOAEL). In addition the US EPA's procedures for risk assessment for hazard

continued...

identification and dose-response assessment as applied by NIOSH were used in the creation of such limits. Uncertainty factors (UFs) have also been incorporated.

#32orgr

Ingredient	ORG	UF	Endpoint	CR	Adeq TLV
ethylene dibromide	0.008 mg/m3	100	R	5.6	-

These exposure guidelines have been derived from a screening level of risk assessment and should not be construed as unequivocally safe limits. ORGS represent an 8-hour time -weighted average unless specified otherwise.
CR = Cancer Risk/10000; UF = Uncertainty factor:
TLV believed to be adequate to protect reproductive health:
LOD: Limit of detection
Toxic endpoints have also been identified as:
D = Developmental; R = Reproductive; TC = Transplacental carcinogen
Jankovic J., Drake F.: A Screening Method for Occupational Reproductive American Industrial Hygiene Association Journal 57: 641-649 (1996).

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