

CONSEQUENCES OF EXPOSURE TO TOXIC AMOUNTS

VINYL CHLORIDE

- FORM:** Gas/liquid.
- EYE:** Gas - no effect. Liquid - frostbite.
- SKIN:** Gas - no effect. Liquid - frostbite.
- INHALATION:** Vapors accumulate readily. Brief exposure - central nervous system depression, tiredness, sleepiness; death.
- ORGAN EFFECTS:** Lung, liver and kidney.
Changes in the skin, bone, blood circulation.
- CARCINOGENICITY:** Positive in humans and in animals.
- BIRTH OR REPRODUCTIVE EFFECTS:** Negative.
- MUTAGENICITY:** Positive in bacteria. Negative in animals.
Temporary effects in man.
- ODOR THRESHOLD:** Reported thresholds vary greatly (300-4000 ppm).
Inadequate warning properties.
- EXPOSURE GUIDELINES:** OSHA PEL = 1 ppm; 5 ppm excursion limit
averaged over any period not exceeding 15 min.

CONSEQUENCES OF EXPOSURE TO TOXIC AMOUNTS

SULFURIC ACID

FORM: Liquid.

INGESTION: Severe burns.

EYE: Severe injury, blindness.
Vapors irritating.

SKIN: Severe burns - brief contact. **CORROSIVE.**

INHALATION: Severe irritation of nose, throat & lungs.
Lung injury.

EFFECTS FROM REPEATED EXPOSURES: Pitted teeth & persistent irritation of eyes, mouth, skin, nose & throat from mists. Lung effects.

CARCINOGENICITY: Increased numbers of cancers of voice box in workers exposed to mists of acids.

BIRTH DEFECTS: Negative.

ODOR THRESHOLD/WARNING PROPERTIES: Irritation provides warning of excessive exposures.

EXPOSURE GUIDELINES: ACGIH TLV = 1 mg/m³; STEL = 3 mg/m³.
OSHA PEL = 1 mg/m³.

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CONSEQUENCES OF EXPOSURE TO TOXIC AMOUNTS

NOISE

ACUTE: Short exposure to high noise levels may cause ringing in the ears and/or temporary hearing loss. Potential for damage increases as sound pressure levels increase above 90 dBA. Repeated short-term exposures may cause permanent loss.

CHRONIC: Repeated exposures may destroy hair cells which transmit sound signals to the brain and may cause permanent hearing loss.

Degree of hearing loss determined by sound level (dBA) & exposure time.

Average dBA

% of exposed workers with hearing loss at end of working lifetime

80
85
90

0-5
10-15
21-29

Typical sound pressure levels (dBA)

Situation

40
60
85

95
105
115
120

quiet room
window air conditioner
noise requiring you to raise voice
to be heard at 3 feet.
power lawn mower
saws, grinders
sand blasters
pneumatic chipper or nail driver

CONSEQUENCES OF EXPOSURE TO TOXIC AMOUNTS

METHYLENE CHLORIDE

- FORM:** Liquid
- EYE:** Moderate irritation, temporary tissue injury.
- SKIN:** Burning sensation, numbness. Irritation, possible burn.
Dry skin.
- INHALATION:** Vapors accumulate readily. May cause irritation, sleepiness, dizziness, drunkenness, blood effects, irregular heartbeats, unconsciousness, death.
- EFFECTS FROM REPEATED EXPOSURES:** Blood and central nervous system effects.
- CARCINOGENICITY:** Positive results in animals of doubtful significance.
Not believed to pose a risk to humans.
- BIRTH DEFECTS OR REPRODUCTIVE EFFECTS:** Negative.
- MUTAGENICITY:** Positive/negative in bacteria. Negative in animals.
- ODOR THRESHOLD:** Poor warning properties.
- EXPOSURE GUIDELINES:** ACGIH TLV = 50 ppm.
OSHA PEL = 500 ppm TWA; Ceiling = 1000 ppm;
Peak = 2000 ppm.

CAS 1/93

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CONSEQUENCES OF EXPOSURE TO TOXIC AMOUNTS

METHYL CHLORIDE

FORM: Gas.

EYE: Gas -- no hazard.
Liquid -- frostbite.

SKIN: Gas - no hazard.
Liquid -- frostbite.

INHALATION: Mental confusion, drunkenness, dizziness, staggering, sleepiness, nausea, convulsions, unconsciousness, coma, death. Brain damage.

EFFECTS FROM REPEATED EXPOSURES:
Nerve damage which can be permanent.
Effects in liver, kidney, testes and spleen of animals.

CARCINOGENICITY: Positive in mice only at high doses.

REPRODUCTIVE EFFECTS: Positive in rats.

BIRTH DEFECTS: Positive in mice; negative in rats.

MUTAGENICITY: Positive in bacteria; positive/negative in animals.

ODOR THRESHOLD: 21 ppm Poor warning properties.

EXPOSURE GUIDELINES: DOW IHG = 25 ppm TWA, 75 ppm excursion.

CONSEQUENCES OF EX. OSURE TO TOXIC AMOUNTS

METHANOL

Methyl alcohol

FORM:

Liquid.

INGESTION:

Highly toxic to humans. Small amounts (1-8 ounces) may cause serious injury or death. May affect the central nervous system resulting in symptoms such as incoordination, sleepiness, & poor concentration; may cause metabolic acidosis*, and affect vision with effects ranging from blurring up to blindness.

EYE:

Slight irritation; temporary tissue injury.

SKIN:

Irritation. Absorbed.

INHALATION:

Vapors accumulate readily. May cause irritation of nose and throat, and effects ranging from headache, sleepiness, blurred vision, and upset stomach to metabolic acidosis, blindness, and death.

**EFFECTS FROM
REPEATED EXPOSURES:**

Sleepiness, incoordination, upset stomach, blurred vision, blindness.

BIRTH DEFECTS: Positive in animals.

CARCINOGENICITY: Negative in animals.

MUTAGENICITY: Negative in bacteria.

WARNING PROPERTIES: Inadequate warning properties.

EXPOSURE GUIDELINES: ACGIH TLV & OSHA PEL = 200 ppm TWA;
STEL = 250 ppm; SKIN.

CAS 493

*Metabolic acidosis = altered acidity of body fluids which may lead to effects in organs such as the kidney, liver and heart.

CONSEQUENCES OF EXPOSURE TO TOXIC AMOUNTS

HYDROCHLORIC ACID

- FORM:** Liquid
- EYE:** Severe injury, blindness. Vapors may cause watery eyes.
- SKIN:** Severe burns from brief contact. CORROSIVE.
- INGESTION:** Severe burns.
- INHALATION:** Vapors accumulate readily. May cause severe irritation and injury of nose, throat, & lungs; and death.
- EFFECTS FROM REPEATED EXPOSURES:**
Pitted tooth enamel.
Bleeding & sores of nose, mouth, gums.
- CARCINOGENICITY:** Negative in animals.
- ODOR THRESHOLD:** No information.
- EXPOSURE GUIDELINES:**
ACGIH TLV = 5 ppm Ceiling.

CONSEQUENCES OF EXPOSURE TO TOXIC AMOUNTS

DICHLORODIFLUOROMETHANE (FREON 12)

FORM: Gas; liquid under pressure.

EYE: Gas - no irritation.
Liquid - frost-bite injury.

SKIN: Gas - no irritation.
Liquid - frost-bite injury.

INHALATION: Low concentrations - no effects.
High concentrations - sleepiness (narcotic effects) ; irregular heartbeats; death due to asphyxiation (suffocation).

ORGAN EFFECTS
from repeated exposures: Sleepiness (narcotic effects).

CARCINOGENICITY: Negative in animals.

BIRTH DEFECTS /
REPRODUCTIVE EFFECTS: Negative in animals.

MUTAGENICITY: Negative in bacteria and animals.

EXPOSURE GUIDELINES: ACGIH TLV & OSHA PEL = 1000 ppm.

DR-0002-0575

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CAS 10/90

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CONSEQUENCES OF EXPOSURE TO TOXIC AMOUNTS

CHLOROFORM

FORM: Liquid.

EYE: Moderate Irritation.
Vapors irritating.

SKIN: Irritation or burn. Dry skin.

INHALATION: Vapors accumulate readily. May cause irritation of nose & throat, sleepiness, dizziness, drunkenness, irregular heartbeats, unconsciousness, death. High levels immediately dangerous to life.

EFFECTS FROM REPEATED EXPOSURES: Liver and kidney injury (humans).
Drinking alcohol increases the effects.

CARCINOGENICITY: Positive in animals.

BIRTH DEFECTS: Positive in animals.

MUTAGENICITY: Negative in bacteria and animals.

ODOR THRESHOLD: No information. Poor warning properties.

EXPOSURE GUIDELINES: OSHA PEL = 2 ppm.

DR-0002-3609

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CAS 8/89

DO A 019538
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CONSEQUENCES OF EXPOSURE TO TOXIC AMOUNTS

CHLORODIFLUOROMETHANE

(FREON 22)

- FORM:** Gas; liquid under pressure.
- EYE:** Gas - irritation; watery eyes.
Liquid - frost-bite injury.
- SKIN:** Gas - irritation from repeated contact. Liquid - frost-bite injury.
- INHALATION:** Low concentrations - no effects.
High concentrations - sleepiness, central nervous system effects; death due to asphyxiation (suffocation).
- ORGAN EFFECTS:** Sleepiness (anesthesia); central nervous system effects, irregular heartbeats.
- CARCINOGENICITY:** Negative in animals exposed to 1000 and 5000 ppm.
Weak positive effect at 50,000 ppm
- BIRTH DEFECTS:** Some positive findings in animals but only at doses which produced ill effects in the mother.
- REPRODUCTIVE EFFECTS:** Negative in animals.
- MUTAGENICITY:** Negative/positive in bacteria; negative in animals.
- EXPOSURE GUIDELINES:** ACGIH TLV & OSHA PEL = 1000 ppm.

CAS 9/90

DO A 019539
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CONSEQUENCES OF EXPOSURE TO TOXIC AMOUNTS

CHLORINE

FORM: Gas/liquid.

EYE: Severe irritation and tissue injury; possible blindness

SKIN: Severe burns - brief contact

INHALATION: Vapors accumulate readily. Short exposure may cause severe irritation of nose, throat and lungs, lung injury, death.

ORGAN EFFECTS
from repeated exposures: Eye, nose, throat, lung irritation.
Pitted tooth enamel. Lung, liver, kidney effects.

CARCINOGENICITY: Negative in animals.

BIRTH DEFECTS/ REPRODUCTIVE EFFECTS: Negative.

MUTAGENICITY: Positive in bacteria, negative in animals.

ODOR THRESHOLD: 0.2 - 0.4 ppm

EXPOSURE GUIDELINES: OSHA PEL = 0.5 ppm TWA, STEL = 1 ppm.

CONSEQUENCES OF EXPOSURE TO TOXIC AMOUNTS

CELL EFFLUENT

- FORM:** Liquid.
- INGESTION:** Severe burns.
- EYE:** Severe injury; possible blindness.
Mists irritating.
- SKIN:** CORROSIVE. Severe burns from brief contact.
- INHALATION:** Mists - severe irritation of nose & throat.
- ORGAN EFFECTS from repeated exposure:** High blood pressure, kidney effects from repeated excessive consumption of sodium chloride, a component.
- MUTAGENICITY:** Sodium chloride - positive/negative in bacteria.
- WARNING PROPERTIES:** Irritation occurs at low concentrations & should warn of excessive exposure.
- EXPOSURE GUIDELINES:** Sodium hydroxide: ACGIH TLV = 2 mg/m³, ceiling.
Sodium chloride: Dow IHG = 10 mg/m³.

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CAS 11/90

DO A 019541
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CONSEQUENCES OF EXPOSURE TO TOXIC AMOUNTS

CARBON TETRACHLORIDE

- FORM:** Liquid
- EYE:** Slight irritation.
- SKIN:** Irritation, possible burn.
Dry skin.
Absorbed through the skin.
- INHALATION:** Vapors accumulate readily. May cause irritation of eyes, nose & throat, tiredness, dizziness, drunkenness, irregular heartbeats, unconsciousness, death. Alcohol consumption may increase effects.
- INGESTION:** 2 teaspoons may cause death of human.
- ORGAN EFFECTS FROM EXCESSIVE EXPOSURE:**
Central nervous system, liver, kidney, and stomach effects.
- CARCINOGENICITY:**
Positive in animals.
- BIRTH DEFECTS, REPRODUCTIVE, & MUTAGENIC EFFECTS:** Negative.
- ODOR:** Threshold 10 -100 ppm. Poor warning properties.
- EXPOSURE GUIDELINES:** ACGIH TLV = 5 ppm, Skin.
OSHA PEL = 2 ppm.

CAS 1/93

CONSEQUENCES OF EXPOSURE TO TOXIC AMOUNTS

ASBESTOS

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FORM: Fibrous solid.

EYE and SKIN: Irritation or injury due to scratching of tissues by the fibers or dusts (mechanical abrasion).

INHALATION: Lung effects or injury.

EFFECTS FROM REPEATED EXPOSURES:

Lung disease (asbestosis) which worsens with time to a point where it is disabling and may cause death.

CARCINOGENICITY: Positive in humans and animals.

EXPOSURE GUIDELINES:

OSHA PEL = 0.2 fibers/cc TWA;
1 fiber/cc for 30-minute exposure.