

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product identifier

Product form : Mixture  
Product name : Chlorinated Pesticides Standard  
Product code : AL0-101254  
Product group : Trade product

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

##### 1.2.1. Relevant identified uses

Main use category : Laboratory Use  
Industrial/Professional use spec : Industrial  
For professional use only  
Use of the substance/mixture : Certified reference material for laboratory use only

##### 1.2.2. Uses advised against

No additional information available

#### 1.3. Details of the supplier of the safety data sheet

Phenova  
6390 Joyce Dr. Suite 100  
80403 Golden, CO - United States  
T 1-866-942-2978 - F 1-866-283-0269  
[info@phenova.com](mailto:info@phenova.com) - [www.phenova.com](http://www.phenova.com)

#### 1.4. Emergency telephone number

Emergency number : ChemTel Assistance (US/Canada) 1-800-255-3924  
ChemTel Assistance (International) +1 813-248-0585

### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

##### Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flam. Liq. 2	H225
Acute Tox. 3 (Oral)	H301
Acute Tox. 4 (Dermal)	H312
Skin Irrit. 2	H315
Repr. 2	H361
STOT SE 3	H336
STOT RE 2	H373
Asp. Tox. 1	H304
Aquatic Acute 1	H400
Aquatic Chronic 1	H410

##### Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

Repr.Cat.3; R62  
Repr.Cat.3; R63  
F; R11  
Xn; R21/22  
Xn; R65  
Xn; R48/20  
Xi; R38  
N; R50/53  
R67

Full text of R-phrases: see section 16

##### Adverse physicochemical, human health and environmental effects

No additional information available

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### 2.2. Label elements

#### Labeling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



Signal word (CLP) :

Danger

Hazardous ingredients :

toluene, heptachlor, Endosulfan Sulfate, Endosulfan I (alpha isomer), 4,4'-DDT, delta-BHC, alpha-BHC, aldrin, beta-BHC, gamma-BHC, dieldrin, Endosulfan II (beta isomer), endrin, Endrin Ketone, heptachlor epoxide (isomer B), hexane

Hazard statements (CLP) :

H225 - Highly flammable liquid and vapor  
 H301 - Toxic if swallowed  
 H304 - May be fatal if swallowed and enters airways  
 H312 - Harmful in contact with skin  
 H315 - Causes skin irritation  
 H336 - May cause drowsiness or dizziness  
 H361 - Suspected of damaging fertility or the unborn child  
 H373 - May cause damage to organs through prolonged or repeated exposure  
 H400 - Very toxic to aquatic life  
 H410 - Very toxic to aquatic life with long lasting effects

Precautionary statements (CLP) :

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking  
 P233 - Keep container tightly closed  
 P260 - Do not breathe dust/fume/gas/mist/vapors/spray  
 P270 - Do not eat, drink or smoke when using this product  
 P271 - Use only outdoors or in a well-ventilated area  
 P273 - Avoid release to the environment  
 P280 - Wear protective gloves/protective clothing/eye protection/face protection  
 P308+P313 - IF exposed or concerned: Get medical advice/attention  
 P403+P235 - Store in a well-ventilated place. Keep cool  
 P405 - Store locked up

No labeling applicable

### 2.3. Other hazards

No additional information available

## SECTION 3: Composition/information on ingredients

### 3.1. Substance

Not applicable

### 3.2. Mixture

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
toluene (Component)	(CAS No) 108-88-3 (EC no) 203-625-9 (EC index no) 601-021-00-3	48	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Repr. 2, H361d STOT SE 3, H336 STOT RE 2, H373 Asp. Tox. 1, H304
hexane (Component)	(CAS No) 110-54-3 (EC no) 203-777-6 (EC index no) 601-037-00-0	48	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Repr. 2, H361f STOT SE 3, H336 STOT RE 2, H373 Asp. Tox. 1, H304 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
methoxychlor (Component)	(CAS No) 72-43-5 (EC no) 200-779-9	0.2	Eye Irrit. 2, H319 Aquatic Acute 1, H400 (M=10)
heptachlor (Component)	(CAS No) 76-44-8 (EC no) 200-962-3 (EC index no) 602-046-00-2	0.2	Acute Tox. 3 (Oral), H301 Acute Tox. 2 (Dermal), H310 Carc. 2, H351 STOT RE 2, H373 Aquatic Acute 1, H400 (M=100) Aquatic Chronic 1, H410 (M=100)
Endosulfan Sulfate (Component)	(CAS No) 1031-07-8	0.2	Acute Tox. 1 (Oral), H300 Aquatic Acute 1, H400

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Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Endosulfan I (alpha isomer) (Component)	(CAS No) 959-98-8	0.2	Acute Tox. 2 (Oral), H300 Acute Tox. 4 (Dermal), H312 Acute Tox. 2 (Inhalation:dust,mist), H330 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
4,4'-DDT (Component)	(CAS No) 50-29-3 (EC no) 200-024-3 (EC index no) 602-045-00-7	0.2	Acute Tox. 3 (Oral), H301 Acute Tox. 3 (Dermal), H311 Carc. 2, H351 STOT RE 1, H372 Aquatic Acute 1, H400 (M=100) Aquatic Chronic 1, H410 (M=100)
4,4'-DDD (Component)	(CAS No) 72-54-8 (EC no) 200-783-0	0.2	Acute Tox. 4 (Dermal), H312 Aquatic Acute 1, H400 (M=100) Aquatic Chronic 1, H410
cis-Chlordane (Component)	(CAS No) 5103-71-9	0.2	Acute Tox. 4 (Oral), H302 Aquatic Acute 1, H400 (M=100) Aquatic Chronic 1, H410
delta-BHC (Component)	(CAS No) 319-86-8 (EC no) 206-272-9 (EC index no) 602-042-00-0	0.2	Acute Tox. 3 (Oral), H301 Acute Tox. 4 (Dermal), H312 Carc. 2, H351 Aquatic Acute 1, H400 Aquatic Chronic 2, H411
alpha-BHC (Component)	(CAS No) 319-84-6 (EC no) 206-270-8 (EC index no) 602-042-00-0	0.2	Acute Tox. 3 (Oral), H301 Acute Tox. 4 (Dermal), H312 Carc. 2, H351 Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410 (M=10)
aldrin (Component)	(CAS No) 309-00-2 (EC no) 206-215-8 (EC index no) 602-048-00-3	0.2	Acute Tox. 2 (Oral), H300 Acute Tox. 2 (Dermal), H310 Carc. 2, H351 STOT RE 1, H372 Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410 (M=10)
beta-BHC (Component)	(CAS No) 319-85-7 (EC no) 206-271-3 (EC index no) 602-042-00-0	0.2	Acute Tox. 3 (Oral), H301 Acute Tox. 4 (Dermal), H312 Carc. 2, H351 Aquatic Acute 1, H400 Aquatic Chronic 2, H411
gamma-BHC (Component)	(CAS No) 58-89-9 (EC no) 200-401-2 (EC index no) 602-043-00-6	0.2	Acute Tox. 3 (Oral), H301 Acute Tox. 3 (Dermal), H311 Acute Tox. 4 (Inhalation), H332 Lact., H362 STOT RE 2, H373 Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410 (M=10)
4,4'-DDE (Component)	(CAS No) 72-55-9 (EC no) 200-784-6	0.2	Acute Tox. 4 (Oral), H302 Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410 (M=10)
dieldrin (Component)	(CAS No) 60-57-1 (EC no) 200-484-5 (EC index no) 602-049-00-9	0.2	Acute Tox. 2 (Oral), H300 Acute Tox. 1 (Dermal), H310 Carc. 2, H351 STOT RE 1, H372 Aquatic Acute 1, H400 (M=100) Aquatic Chronic 1, H410 (M=100)
Endosulfan II (beta isomer) (Component)	(CAS No) 33213-65-9	0.2	Acute Tox. 3 (Oral), H301 Aquatic Acute 1, H400 (M=100) Aquatic Chronic 1, H410
endrin (Component)	(CAS No) 72-20-8 (EC no) 200-775-7 (EC index no) 602-051-00-X	0.2	Acute Tox. 1 (Oral), H300 Acute Tox. 1 (Dermal), H310 Aquatic Acute 1, H400 (M=1000) Aquatic Chronic 1, H410 (M=1000)
Endrin Ketone (Component)	(CAS No) 53494-70-5	0.2	Acute Tox. 2 (Oral), H300
heptachlor epoxide (isomer B) (Component)	(CAS No) 1024-57-3 (EC no) 213-831-0 (EC index no) 602-063-00-5	0.2	Acute Tox. 3 (Oral), H301 Carc. 2, H351 STOT RE 2, H373 Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410 (M=10)
Name	Product identifier	Specific concentration limits	
hexane (Component)	(CAS No) 110-54-3 (EC no) 203-777-6 (EC index no) 601-037-00-0	(C >= 5) STOT RE 2, H373	

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### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

- First-aid measures general : Never give anything by mouth to an unconscious person. IF exposed or concerned: Get medical advice/attention.
- First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
- First-aid measures after skin contact : Rinse skin with water/shower. Remove/Take off immediately all contaminated clothing. Immediately call a poison center or doctor/physician. Wash with plenty of soap and water. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical advice/attention.
- First-aid measures after eye contact : Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persist.
- First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Immediately call a poison center or doctor/physician.

#### 4.2. Most important symptoms and effects, both acute and delayed

- Symptoms/injuries after inhalation : May cause drowsiness or dizziness.
- Symptoms/injuries after skin contact : Repeated exposure to this material can result in absorption through skin causing significant health hazard. Harmful in contact with skin. Causes skin irritation.
- Symptoms/injuries after ingestion : Toxic if swallowed. Swallowing a small quantity of this material will result in serious health hazard. May be fatal if swallowed and enters airways.

#### 4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media

- Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.
- Unsuitable extinguishing media : Do not use a heavy water stream.

#### 5.2. Special hazards arising from the substance or mixture

- Fire hazard : Highly flammable liquid and vapor.
- Explosion hazard : May form flammable/explosive vapor-air mixture.

#### 5.3. Advice for firefighters

- Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
- Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

##### 6.1.1. For non-emergency personnel

- Emergency procedures : Evacuate unnecessary personnel.

##### 6.1.2. For emergency responders

- Protective equipment : Equip cleanup crew with proper protection. Avoid breathing dust/fume/gas/mist/vapors/spray.
- Emergency procedures : Ventilate area.

#### 6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters. Avoid release to the environment.

#### 6.3. Methods and material for containment and cleaning up

- Methods for cleaning up : Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

#### 6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

- Additional hazards when processed : Handle empty containers with care because residual vapors are flammable.
- Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapor. No open flames. No smoking. Use only non-sparking tools. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area.
- Hygiene measures : Do not eat, drink or smoke when using this product. Gently wash with plenty of soap and water. Remove/Take off immediately all contaminated clothing. Wash contaminated clothing before reuse.

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### 7.2. Conditions for safe storage, including any incompatibilities

Technical measures	: Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment.
Storage conditions	: Keep in fireproof place. Keep container tightly closed. Keep container tightly closed and in a well-ventilated place. Keep away from any flames or sparking source.
Incompatible products	: Strong bases. Strong acids.
Incompatible materials	: Sources of ignition. Direct sunlight. Heat sources.

### 7.3. Specific end use(s)

No additional information available

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

cis-Chlordane (5103-71-9)		
USA OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	0.5 mg/m <sup>3</sup>
4,4'-DDT (50-29-3)		
USA OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup>

### 8.2. Exposure controls

Appropriate engineering controls	: Either local exhaust or general room ventilation is usually required.
Personal protective equipment	: Avoid all unnecessary exposure. Gloves. Protective clothing. Protective goggles. Safety glasses.



Hand protection	: Wear chemically resistant protective gloves. Wear suitable gloves resistant to chemical penetration.
Eye protection	: Chemical goggles or safety glasses. Safety glasses.
Skin and body protection	: Wear suitable protective clothing. Wear chemically protective gloves, lab coat or apron to prevent prolonged or repeated skin contact.
Respiratory protection	: Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. Wear respiratory protection.
Other information	: Do not eat, drink or smoke during use.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Color	: Colorless.
Odor	: characteristic.
pH	: No data available
Melting point	: No data available
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: Highly flammable liquid and vapor
Relative density	: No data available
Solubility	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosion limits	: No data available

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No additional information available

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### 10.2. Chemical stability

Not established. Highly flammable liquid and vapor. May form flammable/explosive vapor-air mixture.

### 10.3. Possibility of hazardous reactions

Not established.

### 10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures. Open flame.

### 10.5. Incompatible materials

Strong acids. Strong bases.

### 10.6. Hazardous decomposition products

fume. Carbon monoxide. Carbon dioxide. May release flammable gases.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity : Oral: Toxic if swallowed. Dermal: Harmful in contact with skin.

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ATE CLP (oral)	100.000 mg/kg body weight
ATE CLP (dermal)	1100.000 mg/kg body weight
aldrin (309-00-2)	
LD50 oral rat	38 mg/kg (Rat)
LD50 dermal rat	90 mg/kg (Rat)
ATE CLP (oral)	38.000 mg/kg body weight
ATE CLP (dermal)	90.000 mg/kg body weight
alpha-BHC (319-84-6)	
LD50 oral rat	177 mg/kg (Rat)
ATE CLP (oral)	177.000 mg/kg body weight
ATE CLP (dermal)	1100.000 mg/kg body weight
beta-BHC (319-85-7)	
ATE CLP (oral)	100.000 mg/kg body weight
ATE CLP (dermal)	1100.000 mg/kg body weight
delta-BHC (319-86-8)	
ATE CLP (oral)	100.000 mg/kg body weight
ATE CLP (dermal)	1100.000 mg/kg body weight
gamma-BHC (58-89-9)	
LD50 oral rat	76 mg/kg (Rat; Literature study)
LD50 dermal rat	1000 mg/kg (Rat; Literature study)
LC50 inhalation rat (mg/l)	1.56 mg/l/4h (Rat; Literature study)
ATE CLP (oral)	76.000 mg/kg body weight
ATE CLP (dermal)	1000.000 mg/kg body weight
ATE CLP (gases)	4500.000 ppmV/4h
ATE CLP (vapors)	1.560 mg/l/4h
ATE CLP (dust, mist)	1.560 mg/l/4h
cis-Chlordane (5103-71-9)	
LD50 oral rat	540 mg/kg
ATE CLP (oral)	540.000 mg/kg body weight
4,4'-DDD (72-54-8)	
LD50 dermal rabbit	1200 mg/kg
ATE CLP (dermal)	1200.000 mg/kg body weight
4,4'-DDE (72-55-9)	
LD50 oral rat	880 mg/kg
ATE CLP (oral)	880.000 mg/kg body weight
4,4'-DDT (50-29-3)	
LD50 oral rat	87 mg/kg
LD50 dermal rabbit	300 mg/kg
ATE CLP (oral)	87.000 mg/kg body weight
ATE CLP (dermal)	300.000 mg/kg body weight

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<b>dieldrin (60-57-1)</b>	
LD50 oral rat	38 mg/kg (Rat)
ATE CLP (oral)	38.000 mg/kg body weight
ATE CLP (dermal)	5.000 mg/kg body weight
<b>Endosulfan I (alpha isomer) (959-98-8)</b>	
LD50 oral rat	76 ml/kg
ATE CLP (oral)	5.000 mg/kg body weight
ATE CLP (dermal)	1100.000 mg/kg body weight
<b>Endosulfan II (beta isomer) (33213-65-9)</b>	
LD50 oral rat	240 mg/kg
ATE CLP (oral)	240.000 mg/kg body weight
<b>Endosulfan Sulfate (1031-07-8)</b>	
LD50 oral rat	18 mg/kg
ATE CLP (oral)	0.500 mg/kg body weight
<b>endrin (72-20-8)</b>	
LD50 oral rat	3 mg/kg (Rat)
LD50 dermal rat	12 mg/kg (Rat)
LD50 dermal rabbit	60 mg/kg (Rabbit)
ATE CLP (oral)	3.000 mg/kg body weight
ATE CLP (dermal)	12.000 mg/kg body weight
<b>Endrin Ketone (53494-70-5)</b>	
LD50 oral rat	10 mg/kg
ATE CLP (oral)	10.000 mg/kg body weight
<b>heptachlor (76-44-8)</b>	
LD50 oral rat	130 mg/kg (Rat)
LD50 dermal rat	119 mg/kg (Rat)
LC50 inhalation rat (mg/l)	> 2 mg/l/4h (Rat)
ATE CLP (oral)	130.000 mg/kg body weight
ATE CLP (dermal)	119.000 mg/kg body weight
<b>heptachlor epoxide (isomer B) (1024-57-3)</b>	
LD50 oral rat	60 mg/kg (Rat)
ATE CLP (oral)	60.000 mg/kg body weight
<b>methoxychlor (72-43-5)</b>	
LD50 oral rat	5000 mg/kg (Rat)
LD50 dermal rat	7600 mg/kg (Rat)
LD50 dermal rabbit	2800 mg/kg (Rabbit)
ATE CLP (oral)	5000.000 mg/kg body weight
ATE CLP (dermal)	2800.000 mg/kg body weight
<b>hexane (110-54-3)</b>	
LD50 oral rat	25000 mg/kg (Rat; Literature study)
LD50 dermal rabbit	3000 mg/kg (Rabbit; Literature study)
LC50 inhalation rat (ppm)	48000 ppm/4h (Rat; Literature study)
ATE CLP (oral)	25000.000 mg/kg body weight
ATE CLP (dermal)	3000.000 mg/kg body weight
ATE CLP (gases)	48000.000 ppmV/4h
<b>toluene (108-88-3)</b>	
LD50 oral rat	> 2000 mg/kg (Rat; Equivalent or similar to OECD 401; Literature study; 5580 mg/kg bodyweight; Rat; Experimental value)
LD50 dermal rabbit	12223 mg/kg (Rabbit; Literature study; Other; >5000 mg/kg bodyweight; Rabbit; Experimental value)
LC50 inhalation rat (mg/l)	> 20 mg/l/4h (Rat; Literature study)
ATE CLP (dermal)	12223.000 mg/kg body weight

Skin corrosion/irritation	: Causes skin irritation.
Serious eye damage/irritation	: Not classified Based on available data, the classification criteria are not met
Respiratory or skin sensitization	: Not classified Based on available data, the classification criteria are not met

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Germ cell mutagenicity	: Not classified Based on available data, the classification criteria are not met
Carcinogenicity	: Not classified Based on available data, the classification criteria are not met May cause cancer
Reproductive toxicity	: Suspected of damaging fertility or the unborn child.
Specific target organ toxicity (single exposure)	: May cause drowsiness or dizziness.
Specific target organ toxicity (repeated exposure)	: May cause damage to organs through prolonged or repeated exposure.
Aspiration hazard	: May be fatal if swallowed and enters airways.
Potential Adverse human health effects and symptoms	: Harmful in contact with skin. Toxic if swallowed.

### SECTION 12: Ecological information

#### 12.1. Toxicity

Ecology - water : Very toxic to aquatic life with long lasting effects.

<b>aldrin (309-00-2)</b>	
LC50 fish 1	0.013 mg/l (96 h; <i>Lepomis macrochirus</i> )
EC50 Daphnia 1	0.028 mg/l (48 h; <i>Daphnia pulex</i> )
LC50 fish 2	0.018 mg/l 96 h; <i>Salmo gairdneri</i> ( <i>Oncorhynchus mykiss</i> )
<b>alpha-BHC (319-84-6)</b>	
LC50 fish 1	0.01 - 4.4 mg/l (96 h; Pisces)
LC50 other aquatic organisms 1	24 ppm (48 h; <i>Rana</i> sp.; Larvae)
EC50 Daphnia 1	0.1 mg/l (600 h; <i>Daphnia magna</i> )
LC50 fish 2	0.17 - 1.3 mg/l (48 h; <i>Cyprinus carpio</i> )
EC50 Daphnia 2	0.1 mg/l (227 h; <i>Daphnia magna</i> )
Threshold limit other aquatic organisms 1	24 ppm (48 h; <i>Rana</i> sp.; Larvae)
Threshold limit algae 1	1.4 mg/l (96 h; Algae; Growth)
Threshold limit algae 2	2 mg/l (336 h; Chlorophyta)
<b>beta-BHC (319-85-7)</b>	
LC50 fish 1	0.01 - 4.4 mg/l (96 h; Pisces)
Threshold limit algae 1	2 mg/l (504 h; Diatomeae)
Threshold limit algae 2	< 1 mg/l (120 h; Chlorophyta; Growth)
<b>delta-BHC (319-86-8)</b>	
LC50 fish 1	0.01 - 4.4 mg/l (96 h; Pisces)
Threshold limit algae 1	< 2.0 mg/l (524 h; Diatomeae)
<b>gamma-BHC (58-89-9)</b>	
LC50 fish 1	0.016 mg/l (96 h; <i>Poecilia reticulata</i> )
EC50 Daphnia 1	0.516 mg/l (48 h; <i>Daphnia magna</i> )
LC50 fish 2	0.022 mg/l 96 h; <i>Salmo gairdneri</i> ( <i>Oncorhynchus mykiss</i> )
EC50 Daphnia 2	0.46 mg/l (48 h; <i>Daphnia pulex</i> )
TLM fish 1	0.77 ppm (96 h; <i>Lepomis macrochirus</i> )
TLM fish 2	0.032 mg/l 96 h; <i>Salmo gairdneri</i> ( <i>Oncorhynchus mykiss</i> )
TLM other aquatic organisms 1	< 1 ppm (96 h)
Threshold limit other aquatic organisms 1	5 mg/l ( <i>Pseudomonas putida</i> )
Threshold limit algae 1	1.9 mg/l ( <i>Scenedesmus quadricauda</i> )
Threshold limit algae 2	0.30 mg/l ( <i>Microcystis aeruginosa</i> )
<b>cis-Chlordane (5103-71-9)</b>	
LC50 fish 1	0.0074 mg/l <i>Lepomis macrochirus</i> (Bluegill) 96 H
<b>4,4'-DDD (72-54-8)</b>	
LC50 fish 1	0.04 - 0.05 mg/l <i>Lepomis macrochirus</i> (Bluegill) 96.0 h
LC50 other aquatic organisms 1	0.06 - 0.09 mg/l <i>Oncorhynchus mykiss</i> (rainbow trout) 96.0 h
EC50 Daphnia 1	0.01 mg/l <i>Daphnia pulex</i> (Water flea) 48 H
LC50 fish 2	3.47 - 5.58 mg/l <i>Pimephales promelas</i> (fathead minnow) 96.0 h
<b>4,4'-DDE (72-55-9)</b>	
LC50 fish 1	0.2 - 0.3 mg/l <i>Lepomis macrochirus</i> (Bluegill) 96 h
LC50 other aquatic organisms 1	0.05 - 0.18 mg/l <i>Salmo salar</i> (Atlantic salmon) 96 h
LC50 fish 2	0.03 - 0.04 mg/l <i>Oncorhynchus mykiss</i> (rainbow trout) 96 h



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<b>4,4'-DDT (50-29-3)</b>	
LC50 fish 1	0.01 mg/l Pimephales promelas (fathead minnow) 96 h
LC50 other aquatic organisms 1	0.0034 mg/l Oncorhynchus mykiss (rainbow trout) 96 h
EC50 Daphnia 1	0.00108 mg/l Immobilization - Daphnia magna (Water flea) 48 h
LC50 fish 2	0.01 mg/l Lepomis macrochirus (Bluegill) 96 h
LOEC (acute)	150 mg/l Oncorhynchus mykiss (rainbow trout) 3 d
NOEC (acute)	113 mg/l Oncorhynchus mykiss (rainbow trout) 3 d
<b>dieldrin (60-57-1)</b>	
LC50 fish 1	0.0012 mg/l 96 h; Salmo gairdneri (Oncorhynchus mykiss)
EC50 Daphnia 1	0.19 mg/l (48 h; Daphnia pulex)
EC50 other aquatic organisms 1	0.240 mg/l (48 h; Simocephalus serrulatis)
LC50 fish 2	0.003 mg/l (96 h; Lepomis macrochirus)
TLM fish 1	0.0079 mg/l (96 h; Lepomis macrochirus)
TLM fish 2	0.037 ppm (96 h; Carassius auratus)
Threshold limit algae 1	> 100 ppm (Algae)
<b>Endosulfan II (beta isomer) (33213-65-9)</b>	
LC50 fish 1	0.0066 mg/l 96 H
EC50 Daphnia 1	0.1 - 1 mg/l Daphnia magna (Water flea) 48 H
<b>Endosulfan Sulfate (1031-07-8)</b>	
LC50 fish 1	0.01 - 0.1 mg/l Carassius auratus (goldfish)
EC50 other aquatic organisms 1	0.76 mg/l EC50 (Daphnia Magna)
<b>endrin (72-20-8)</b>	
LC50 fish 1	0.0006 mg/l (96 h; Lepomis macrochirus)
LC50 other aquatic organisms 1	0.0002 mg/l (96 h; Rana sp.)
EC50 Daphnia 1	0.020 mg/l (48 h; Daphnia pulex)
EC50 other aquatic organisms 1	0.045 mg/l (48 h; Simocephalus serrulatis)
LC50 fish 2	0.0006 mg/l 96 h; Salmo gairdneri (Oncorhynchus mykiss)
EC50 Daphnia 2	0.0042 mg/l (48 h; Daphnia magna)
TLM fish 1	0.005 ppm (48 h; Cyprinus carpio)
TLM fish 2	0.0013 mg/l (Pisces)
Threshold limit other aquatic organisms 1	0.0002 mg/l (96 h; Rana sp.)
<b>Endrin Ketone (53494-70-5)</b>	
LC50 fish 1	1640 mg/l Pimephales promelas (fathead minnow) 96 H
EC50 Daphnia 1	3600 mg/l Daphnia magna (Water flea) 48 H
<b>heptachlor (76-44-8)</b>	
LC50 fish 1	0.007 mg/l 96 h; Salmo gairdneri (Oncorhynchus mykiss)
EC50 Daphnia 1	0.042 mg/l (48 h; Daphnia pulex)
LC50 fish 2	0.019 mg/l (96 h; Lepomis macrochirus)
TLM fish 1	0.00702 mg/l (Pimephales promelas)
<b>heptachlor epoxide (isomer B) (1024-57-3)</b>	
LC50 fish 1	0.02 mg/l (96 h; Salmo sp.)
LC50 other aquatic organisms 1	0.00145 mg/l (Gastropoda)
LC50 fish 2	5.37 mg/l (96 h; Lepomis macrochirus)
Threshold limit other aquatic organisms 1	0.00145 mg/l (Gastropoda)
<b>methoxychlor (72-43-5)</b>	
LC50 fish 1	0.02 mg/l 96 h; Salmo gairdneri (Oncorhynchus mykiss)
LC50 other aquatic organisms 1	3.6 mg/l (50 h; Daphnia magna)
LC50 fish 2	0.062 mg/l (96 h; Lepomis macrochirus)
Threshold limit other aquatic organisms 1	3.6 mg/l (50 h; Daphnia magna)
<b>hexane (110-54-3)</b>	
LC50 fish 1	2.5 mg/l (96 h; Pimephales promelas)
EC50 Daphnia 1	2.1 mg/l (48 h; Daphnia magna)
LC50 fish 2	4 mg/l (24 h; Carassius auratus)
EC50 Daphnia 2	0.4 mg/l (96 h; Chaetogammarus marinus)
Threshold limit other aquatic organisms 1	9.049 mg/l (Protozoa)
Threshold limit algae 1	10 mg/l (Laminariales; Photosynthesis)
Threshold limit algae 2	26 mg/l (72 h; Pseudokirchneriella subcapitata; GLP)

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<b>toluene (108-88-3)</b>	
LC50 fish 1	24 mg/l 96 h; Salmo gairdneri (Oncorhynchus mykiss)
EC50 Daphnia 1	84 mg/l (24 h; Daphnia magna; Locomotor effect)
LC50 fish 2	13 mg/l (96 h; Lepomis macrochirus)
EC50 Daphnia 2	11.5 - 19.6 mg/l (48 h; Daphnia magna)
Threshold limit algae 1	> 400 mg/l (168 h; Scenedesmus quadricauda; Toxicity test)
Threshold limit algae 2	105 mg/l (192 h; Microcystis aeruginosa)

### 12.2. Persistence and degradability

<b>Chlorinated Pesticides Standard</b>	
Persistence and degradability	May cause long-term adverse effects in the environment.
<b>aldrin (309-00-2)</b>	
Persistence and degradability	Not readily biodegradable in water. Forming sediments in water. Non degradable in the soil. Adsorbs into the soil. Photodegradation in the air.
<b>alpha-BHC (319-84-6)</b>	
Persistence and degradability	Not readily biodegradable in water.
<b>beta-BHC (319-85-7)</b>	
Persistence and degradability	Not readily biodegradable in water. Biodegradable in the soil.
<b>delta-BHC (319-86-8)</b>	
Persistence and degradability	Not readily biodegradable in water. Forming sediments in water.
<b>gamma-BHC (58-89-9)</b>	
Persistence and degradability	Not readily biodegradable in water. Forming sediments in water. Biodegradable in the soil under anaerobic conditions. No inhibition of biodegradation process in the soil. Not readily biodegradable in the soil. Adsorbs into the soil.
ThOD	0.66 g O <sub>2</sub> /g substance
<b>dieldrin (60-57-1)</b>	
Persistence and degradability	Not readily biodegradable in water. Forming sediments in water. Non degradable in the soil. Adsorbs into the soil.
<b>endrin (72-20-8)</b>	
Persistence and degradability	Not readily biodegradable in water. Forming sediments in water. Non degradable in the soil. Adsorbs into the soil.
<b>heptachlor (76-44-8)</b>	
Persistence and degradability	Not readily biodegradable in water.
<b>heptachlor epoxide (isomer B) (1024-57-3)</b>	
Persistence and degradability	Forming sediments in water. Adsorbs into the soil.
<b>methoxychlor (72-43-5)</b>	
Persistence and degradability	Biodegradability in soil: no data available.
<b>hexane (110-54-3)</b>	
Persistence and degradability	Readily biodegradable in water. Photooxidation in water. easily degradable in the soil.
ThOD	3.52 g O <sub>2</sub> /g substance
BOD (% of ThOD)	0.63 % ThOD
<b>toluene (108-88-3)</b>	
Persistence and degradability	Readily biodegradable in water. easily degradable in the soil.
Biochemical oxygen demand (BOD)	2.15 g O <sub>2</sub> /g substance
Chemical oxygen demand (COD)	2.52 g O <sub>2</sub> /g substance
ThOD	3.13 g O <sub>2</sub> /g substance
BOD (% of ThOD)	0.69 % ThOD

### 12.3. Bioaccumulative potential

<b>Chlorinated Pesticides Standard</b>	
Bioaccumulative potential	Not established.
<b>aldrin (309-00-2)</b>	
BCF fish 1	20000 (Cyprinus carpio; Test duration: 10 weeks)
BCF other aquatic organisms 1	12260 (Algae)
BCF other aquatic organisms 2	350 - 4500 (Mytilidae)
Log Pow	5.52 - 7.4 (Experimental value)
Bioaccumulative potential	High potential for bioaccumulation (BCF > 5000).
<b>alpha-BHC (319-84-6)</b>	
BCF fish 1	17000 (24 h; Poecilia reticulata; Fatty tissue)

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<b>alpha-BHC (319-84-6)</b>	
BCF fish 2	540 (24 h; <i>Poecilia reticulata</i> )
BCF other aquatic organisms 1	160 ( <i>Mytilus edulis</i> ; Fresh weight)
BCF other aquatic organisms 2	> 8000 (24 h; <i>Artemia salina</i> ; Fatty tissue)
Log Pow	3.81 - 3.89
Bioaccumulative potential	High potential for bioaccumulation (BCF > 5000).
<b>beta-BHC (319-85-7)</b>	
BCF fish 1	1485 (504 h; <i>Poecilia reticulata</i> ; Flow-through system)
BCF fish 2	273 (504 h; <i>Cyprinus carpio</i> ; Flow-through system)
BCF other aquatic organisms 1	127 (72 h; Lamellibranchiata)
BCF other aquatic organisms 2	37 - 831 (24 h; Protozoa)
Log Pow	3.8 - 4.5
Bioaccumulative potential	Potential for bioaccumulation ( $500 \leq \text{BCF} \leq 5000$ ).
<b>delta-BHC (319-86-8)</b>	
BCF fish 1	813 (Pisces; QSAR)
BCF fish 2	648 (96 h; <i>Poecilia reticulata</i> )
BCF other aquatic organisms 1	272 (72 h; Lamellibranchiata)
BCF other aquatic organisms 2	326 - 2806 (48 h; Protozoa)
Log Pow	2.80 - 4.38
Bioaccumulative potential	Potential for bioaccumulation ( $500 \leq \text{BCF} \leq 5000$ ).
<b>gamma-BHC (58-89-9)</b>	
BCF fish 1	1400 (672 h; <i>Lepomis macrochirus</i> )
BCF fish 2	180 (768 h; <i>Pimephales promelas</i> )
BCF other aquatic organisms 1	2610 (Mollusca)
BCF other aquatic organisms 2	240 (24 h; <i>Chlorella sp.</i> )
Log Pow	3.57 (Experimental value)
Bioaccumulative potential	High potential for bioaccumulation (BCF > 5000).
<b>4,4'-DDD (72-54-8)</b>	
Log Pow	6.02
<b>4,4'-DDE (72-55-9)</b>	
BCF fish 1	12037 <i>Gambusia affinis</i> (Mosquito fish)
Log Pow	6.51
<b>4,4'-DDT (50-29-3)</b>	
BCF fish 1	46670 <i>Oncorhynchus mykiss</i> (rainbow trout) 20 d
Log Pow	6.91
<b>dieldrin (60-57-1)</b>	
BCF fish 1	3300 ( <i>Salmo trutta</i> )
BCF fish 2	4430 ( <i>Pseudorasbora parva</i> )
BCF other aquatic organisms 1	2880 (168 h; <i>Crassostrea sp.</i> )
BCF other aquatic organisms 2	1570 (50 h; <i>Mytilus edulis</i> )
Log Pow	5.4 - 5.61 (Experimental value)
Bioaccumulative potential	High potential for bioaccumulation (Log Kow > 5).
<b>endrin (72-20-8)</b>	
BCF fish 1	15000 ( <i>Salmo trutta</i> ; Fresh water)
BCF fish 2	6400 ( <i>Salmo trutta</i> ; Salt water)
BCF other aquatic organisms 1	500 - 2780 (Mytilidae)
BCF other aquatic organisms 2	1920 (50 h; <i>Mytilus edulis</i> )
Log Pow	4.56 - 5.2 (Experimental value)
Bioaccumulative potential	High potential for bioaccumulation (BCF > 5000).
<b>heptachlor (76-44-8)</b>	
BCF fish 1	17300 ( <i>Cyprinus carpio</i> ; Test duration: 10 weeks)
BCF fish 2	21300 (96 h; <i>Cyprinodon variegatus</i> )
BCF other aquatic organisms 1	200 - 8500 (Crustacea)
BCF other aquatic organisms 2	17600 (Mollusca)
Log Pow	5.05 - 6.13
Bioaccumulative potential	High potential for bioaccumulation (BCF > 5000).
<b>heptachlor epoxide (isomer B) (1024-57-3)</b>	
BCF fish 1	14455 (672 h; <i>Pimephales promelas</i> )

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<b>heptachlor epoxide (isomer B) (1024-57-3)</b>	
BCF other aquatic organisms 1	1700 (50 h; Mytilus edulis)
BCF other aquatic organisms 2	10630 (Corbicula sp.)
Log Pow	4.43 - 5.40
Bioaccumulative potential	High potential for bioaccumulation (BCF > 5000).

<b>methoxychlor (72-43-5)</b>	
Bioaccumulative potential	No bioaccumulation data available.

<b>hexane (110-54-3)</b>	
BCF fish 1	501.187 (Pimephales promelas)
Log Pow	3.5 - 3.94 (Calculated)
Bioaccumulative potential	Bioaccumable.

<b>toluene (108-88-3)</b>	
BCF fish 1	13.2 (Anguilla japonica)
BCF fish 2	90 (72 h; Leuciscus idus)
BCF other aquatic organisms 1	380 (24 h; Chlorella sp.; Fresh weight)
BCF other aquatic organisms 2	4.2 (Mytilus edulis; Fresh weight)
Log Pow	2.73 (Experimental value; Other; 20 °C)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

### 12.4. Mobility in soil

<b>aldrin (309-00-2)</b>	
Ecology - soil	Soil contaminant. Not toxic to plants. Toxic to bees.

<b>gamma-BHC (58-89-9)</b>	
Ecology - soil	Toxic to bees.

<b>dieldrin (60-57-1)</b>	
Ecology - soil	Soil contaminant. Toxic to bees.

<b>endrin (72-20-8)</b>	
Ecology - soil	Toxic to flora. Toxic to fauna. Toxic to bees.

<b>heptachlor (76-44-8)</b>	
Ecology - soil	Not toxic to plants. Not toxic to bees in normal conditions of use.

<b>hexane (110-54-3)</b>	
Surface tension	0.018 N/m

<b>toluene (108-88-3)</b>	
Surface tension	0.03 N/m (20 °C)

### 12.5. Results of PBT and vPvB assessment

No additional information available

### 12.6. Other adverse effects

Additional information : Avoid release to the environment

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations.  
Additional information : Handle empty containers with care because residual vapors are flammable.  
Ecology - waste materials : Avoid release to the environment. Hazardous waste due to toxicity.

## SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

### 14.1. UN number

UN-No. (ADR) : 1993  
UN-No.(IATA) : 1993

### 14.2. UN proper shipping name

Proper Shipping Name (ADR) : FLAMMABLE LIQUID, N.O.S.  
Proper Shipping Name (IATA) : FLAMMABLE LIQUID, N.O.S.  
Proper Shipping Name (IMDG) : FLAMMABLE LIQUID, N.O.S.  
Proper Shipping Name (ADN) : FLAMMABLE LIQUID, N.O.S.  
Transport document description (ADR) : UN 1993 FLAMMABLE LIQUID, N.O.S. (hexane(110-54-3) toluene(108-88-3)), 3, II, (D/E), ENVIRONMENTALLY HAZARDOUS

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### 14.3. Packing group

Class (ADR) : 3  
Classification code (ADR) : F1  
Class (IATA) : 3  
Class (IMDG) : 3  
Class (ADN) : 3  
Hazard labels (ADR) : 3



Hazard labels (IATA) : 3



### 14.4. Packing group

Packing group (ADR) : II  
Packing group (IATA) : II

### 14.5. Environmental hazards

Dangerous for the environment :



Other information : No supplementary information available.

### 14.6. Special precautions for user

#### 14.6.1. Overland transport

Hazard identification number (Kemler No.) : 33  
Classification code (ADR) : F1  
Orange plates :



Special provision (ADR) : 274, 601, 640D  
Transport category (ADR) : 2  
Tunnel restriction code (ADR) : D/E  
Limited quantities (ADR) : 1I  
Excepted quantities (ADR) : E2

#### 14.6.2. Transport by sea

No additional information available

#### 14.6.3. Air transport

CAO packing instructions (IATA) : 364  
CAO max net quantity (IATA) : 60L  
PCA packing instructions (IATA) : 353  
PCA Limited quantities (IATA) : Y341  
PCA limited quantity max net quantity (IATA) : 1L  
PCA max net quantity (IATA) : 5L  
PCA Excepted quantities (IATA) : E2  
ERG code (IATA) : 3H

#### 14.6.4. Inland waterway transport

Carriage prohibited (ADN) : No

### 14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

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### SECTION 15: Regulatory information

#### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

##### 15.1.1. EU-Regulations

Contains no substances with Annex XVII restrictions  
Contains no REACH candidate substance  
Contains no REACH Annex XIV substances.

##### 15.1.2. National regulations

No additional information available

#### 15.2. Chemical safety assessment

No chemical safety assessment has been carried out

### SECTION 16: Other information

Data sources : REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labeling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Other information : None.

PHV SDS EU

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