Dow AgroSciences Canada Inc. encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. Product and Company Identification

Product Name
Lorsban* 50W Wettable Powder Insecticide

COMPANY IDENTIFICATION
Dow AgroSciences Canada Inc.
A Subsidiary of The Dow Chemical Company
Suite 2100, 450 1st Street SW
Calgary, AB T2P 5H1
Canada

For MSDS updates and Product Information: 800-667-3852
Revision 2012.08.01
Customer Information Number: 800-667-3852
solutions@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 613-996-6666
Local Emergency Contact: 613-996-6666

2. Hazards Identification

Emergency Overview
Color: Gray
Physical State: Powder
Odor: Obnoxious
Hazard of product:

WARNING! Toxic fumes may be released in fire situations. May cause eye irritation. Harmful if swallowed. May be harmful if inhaled. Cancer hazard. Powdered material may form explosive dust-air mixture. Slipping hazard. Isolate area. Keep upwind of spill. Avoid temperatures above 70 °C.
Potential Health Effects

Eye Contact: May cause moderate eye irritation. May cause slight corneal injury.

Skin Contact: Brief contact is essentially nonirritating to skin.

Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.

Skin Sensitization: Skin contact may cause an allergic skin reaction in a small proportion of individuals.

Inhalation: No adverse effects are anticipated from single exposure to dust. Based on the available data, narcotic effects were not observed. Based on the available data, respiratory irritation was not observed.

Ingestion: Moderate toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause serious injury, even death.

Aspiration hazard: Based on physical properties, not likely to be an aspiration hazard.

Effects of Repeated Exposure: For the active ingredient(s): Excessive exposure may produce organophosphate type cholinesterase inhibition. Signs and symptoms of excessive exposure to active ingredient may be headache, dizziness, incoordination, muscle twitching, tremors, nausea, abdominal cramps, diarrhea, sweating, pinpoint pupils, blurred vision, salivation, tearing, tightness in chest, excessive urination, convulsions. In animals, effects have been reported on the following organs: Adrenal gland. Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use.

Cancer Information: For the minor component(s): Crystalline silica has been shown to cause cancer in laboratory animals and humans. For the minor component(s): Lung fibrosis and tumors have been observed in rats exposed to titanium dioxide in two lifetime inhalation studies. Effects are believed to be due to overloading of the normal respiratory clearance mechanisms caused by the extreme study conditions. Workers exposed to titanium dioxide in the workplace have not shown an unusual incidence of chronic respiratory disease or lung cancer. Titanium dioxide was not carcinogenic in laboratory animals in lifetime feeding studies.

Birth Defects/Developmental Effects: For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

Reproductive Effects: Chlorpyrifos did not interfere with fertility in reproduction studies in laboratory animals. Some evidence of toxicity to the offspring occurred, but only at a dose high enough to produce significant toxicity to the parent animals.

3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>Amount W/W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorpyrifos</td>
<td>2921-88-2</td>
<td>50.0 %</td>
</tr>
<tr>
<td>Calcium polysilicate</td>
<td>1344-95-2</td>
<td>29.0 %</td>
</tr>
<tr>
<td>Kaolin</td>
<td>1332-58-7</td>
<td>&gt;= 0.4 - &lt;= 9.6 %</td>
</tr>
<tr>
<td>Titanium dioxide</td>
<td>13463-67-7</td>
<td>0.3 %</td>
</tr>
<tr>
<td>Silica, crystalline (quartz)</td>
<td>14808-60-7</td>
<td>0.1 %</td>
</tr>
<tr>
<td>Balance</td>
<td>Not available</td>
<td>&gt;= 10.0 - &lt;= 19.6 %</td>
</tr>
</tbody>
</table>

Amounts are presented as percentages by weight.

4. First-aid measures

Description of first aid measures

General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.
**Skin Contact:** Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly.

**Eye Contact:** Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be available in work area.

**Ingestion:** Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.

**Most important symptoms and effects, both acute and delayed**

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), no additional symptoms and effects are anticipated.

**Indication of immediate medical attention and special treatment needed**

Chlorpyrifos is a cholinesterase inhibitor. Treat symptomatically. In case of severe acute poisoning, use antidote immediately after establishing an open airway and respiration. Atropine, only by injection, is the preferable antidote. Oximes, such as 2-PAM/protopam, may be therapeutic if used early; however, use only in conjunction with atropine. Attempt control with diazepam 5-10 mg (adults) intravenous over 2-3 minutes. Repeat every 5-10 minutes as needed. Monitor for hypotension, respiratory depression, and need for intubation. Consider second agent if seizures persist after 30 mg. If seizures persist or recur administer phenobarbital 600-1200 mg (adults) intravenous diluted in 60 ml 0.9% saline given at 25-50 mg/minute. Evaluate for hypoxia, dysrhythmia, electrolyte disturbance, hypoglycemia (treat adults with dextrose 100 mg intravenous). Maintain adequate ventilation and oxygenation of the patient. If exposed, plasma and red blood cell cholinesterase tests may indicate significance of exposure (baseline data are useful). Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

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**5. Fire Fighting Measures**

**Suitable extinguishing media**

Water. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers.

**Special hazards arising from the substance or mixture**

**Hazardous Combustion Products:** During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Sulfur oxides. Phosphorous compounds. Nitrogen oxides. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

**Unusual Fire and Explosion Hazards:** Do not permit dust to accumulate. When suspended in air dust can pose an explosion hazard. Minimize ignition sources. If dust layers are exposed to elevated temperatures, spontaneous combustion may occur. Dense smoke is produced when product burns.

**Advice for firefighters**

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environmental damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Soak thoroughly with water to cool and prevent re-ignition. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the “Accidental Release Measures” and the “Ecological Information” sections of this (M)SDS.

**Special Protective Equipment for Firefighters:** Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

See Section 9 for related Physical Properties
6. Accidental Release Measures

**Personal precautions, protective equipment and emergency procedures:** Ventilate area of leak or spill. Isolate area. Spilled material may cause a slipping hazard. Keep unnecessary and unprotected personnel from entering the area. Keep upwind of spill. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection. Refer to Section 7, Handling, for additional precautionary measures.

**Environmental precautions:** Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

**Methods and materials for containment and cleaning up:** Contain spilled material if possible. Small spills: Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. Handling and Storage

**Handling**

**General Handling:** Good housekeeping and controlling of dusts are necessary for safe handling of product. Keep away from heat, sparks and flame. Avoid contact with eyes. Do not swallow. Avoid breathing dust. Avoid contact with skin and clothing. Wash thoroughly after handling. Keep container closed. Keep out of reach of children. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

**Storage**

Store in a dry place. Store in original container. Do not store near food, foodstuffs, drugs or potable water supplies.

*Avoid temperatures above* 70 °C

8. Exposure Controls / Personal Protection

**Exposure Limits**

<table>
<thead>
<tr>
<th>Component</th>
<th>List</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorpyrifos</td>
<td>CAD AB OEL TWA</td>
<td>0.1 mg/m3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CAD BC OEL TWA</td>
<td>0.1 mg/m3 SKIN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ACGIH TWA</td>
<td>0.1 mg/m3 SKIN, BEI</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CAD ON OEL TWAEV</td>
<td>0.1 mg/m3 SKIN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OEL (QUE) TWA</td>
<td>0.2 mg/m3 SKIN</td>
<td></td>
</tr>
<tr>
<td>Calcium polysilicate</td>
<td>OEL (QUE) TWA Total dust.</td>
<td>10 mg/m3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CAD ON OEL TWAEV Total dust.</td>
<td>10 mg/m3</td>
<td></td>
</tr>
</tbody>
</table>
### ACGIH TWA

<table>
<thead>
<tr>
<th>Product</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaolin</td>
<td>10 mg/m³</td>
<td>The value is for particulate matter containing no asbestos and &lt;1% crystalline silica.</td>
</tr>
<tr>
<td>Titanium dioxide</td>
<td>0.10 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Silica, crystalline (quartz)</td>
<td>0.025 mg/m³</td>
<td>Exposure must be minimized.</td>
</tr>
</tbody>
</table>

### CAD BC OEL TWA

<table>
<thead>
<tr>
<th>Product</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respirable fraction.</td>
<td>3 mg/m³</td>
</tr>
<tr>
<td>Total dust.</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>Respirable dust.</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>Respirable fraction.</td>
<td>0.025 mg/m³</td>
</tr>
<tr>
<td>Respirable dust.</td>
<td>0.1 mg/m³</td>
</tr>
</tbody>
</table>

### CAD BC OEL TWA

<table>
<thead>
<tr>
<th>Product</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respirable fraction.</td>
<td>3 mg/m³</td>
</tr>
<tr>
<td>Total dust.</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>Respirable dust.</td>
<td>10 mg/m³</td>
</tr>
</tbody>
</table>

### OEL (QUE) TWA

<table>
<thead>
<tr>
<th>Product</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total dust.</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>Respirable dust.</td>
<td>2 mg/m³</td>
</tr>
</tbody>
</table>

### CAD AB OEL TWA

<table>
<thead>
<tr>
<th>Product</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respirable.</td>
<td>2 mg/m³</td>
</tr>
<tr>
<td>Total dust.</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>Respirable.</td>
<td>2 mg/m³</td>
</tr>
</tbody>
</table>

### CAD MB OEL TWA

<table>
<thead>
<tr>
<th>Product</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respirable fraction</td>
<td>2 mg/m³</td>
</tr>
<tr>
<td>Total dust.</td>
<td>10 mg/m³</td>
</tr>
</tbody>
</table>

### OEL (QUE) TWA

<table>
<thead>
<tr>
<th>Product</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total dust.</td>
<td>10 mg/m³</td>
</tr>
</tbody>
</table>

### CAD ON OEL TWA

<table>
<thead>
<tr>
<th>Product</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respirable.</td>
<td>2 mg/m³</td>
</tr>
<tr>
<td>Total dust.</td>
<td>10 mg/m³</td>
</tr>
</tbody>
</table>

### CAD AB OEL TWA

<table>
<thead>
<tr>
<th>Product</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respirable.</td>
<td>2 mg/m³</td>
</tr>
</tbody>
</table>

### CAD BC OEL TWA

<table>
<thead>
<tr>
<th>Product</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respirable fraction.</td>
<td>3 mg/m³</td>
</tr>
<tr>
<td>Total dust.</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>Respirable dust.</td>
<td>10 mg/m³</td>
</tr>
</tbody>
</table>

### OEL (QUE) TWA

<table>
<thead>
<tr>
<th>Product</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respirable.</td>
<td>0.10 mg/m³</td>
</tr>
<tr>
<td>Respirable dust.</td>
<td>0.1 mg/m³</td>
</tr>
</tbody>
</table>

### CAD BC OEL TWA

<table>
<thead>
<tr>
<th>Product</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respirable fraction.</td>
<td>0.025 mg/m³</td>
</tr>
<tr>
<td>Respirable dust.</td>
<td>0.025 mg/m³</td>
</tr>
<tr>
<td>Respirable.</td>
<td>0.1 mg/m³</td>
</tr>
</tbody>
</table>
CAD AB OEL  TWA  0.025 mg/m³
Respirable particles.

Consult local authorities for recommended exposure limits.
RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.
A BEI notation following the exposure guideline refers to a guidance value for assessing biological monitoring results as an indicator of the uptake of a substance from all routes of exposures.
A “skin” notation following the inhalation exposure guideline refers to the potential for dermal absorption of the material including mucous membranes and the eyes either by contact with vapors or by direct skin contact.
It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.

Personal Protection
Eye/Face Protection: Use chemical goggles.
Skin Protection: Wear clean, body-covering clothing.
Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Neoprene. Nitrile/butadiene rubber (“nitrile” or “NBR”). Polyvinyl chloride (“PVC” or “vinyl”). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.
Respiratory Protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions, no respiratory protection should be needed; however, in dusty atmospheres, use an approved particulate respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.
Ingestion: Avoid ingestion of even very small amounts; do not consume or store food or tobacco in the work area; wash hands and face before smoking or eating.

Engineering Controls
Ventilation: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td></td>
</tr>
<tr>
<td>Physical State</td>
<td>Powder</td>
</tr>
<tr>
<td>Color</td>
<td>Gray</td>
</tr>
<tr>
<td>Odor</td>
<td>Obnoxious</td>
</tr>
<tr>
<td>pH</td>
<td>8.6 @ 10% pH Electrode (10% mixture in water)</td>
</tr>
<tr>
<td>Melting Point</td>
<td>No test data available</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Boiling Point (760 mmHg)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flash Point - Closed Cup</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Evaporation Rate (Butyl Acetate = 1)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammable Limits In Air</td>
<td></td>
</tr>
<tr>
<td>Lower</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Upper</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>very low</td>
</tr>
<tr>
<td>Vapor Density (air = 1)</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
Specific Gravity (H2O = 1) Not applicable
Solubility in water Visual wettable powder
(by weight)
Partition coefficient, No data available for this product. See Section 12 for individual
n-octanol/water (log Pow) component data.
Autoignition Temperature No test data available
Decomposition No test data available
Temperature
Dynamic Viscosity Not applicable
Kinematic Viscosity Not applicable
Liquid Density no testing required
Bulk Density 0.277 g/cm³ @ 22.8 °C Unspecified

10. Stability and Reactivity

Reactivity
No dangerous reaction known under conditions of normal use.

Chemical stability
Unstable at elevated temperatures.

Possibility of hazardous reactions
Polymerization will not occur.
Conditions to Avoid: Avoid temperatures above 70 °C. Active ingredient decomposes at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.


Hazardous decomposition products
Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Hydrogen cyanide. Organic sulfides. Sulfur dioxide.

11. Toxicological Information

Acute Toxicity
Ingestion
As product: LD50, rat, female 382 mg/kg
Dermal
As product: LD50, rabbit, male and female > 5,000 mg/kg
Inhalation
As product: LC50, 4 h, Dust, rat, male and female > 2.53 mg/l
No deaths occurred at this concentration.

Eye damage/eye irritation
May cause moderate eye irritation. May cause slight corneal injury.

Skin corrosion/irritation
Brief contact is essentially nonirritating to skin.

Sensitization
Skin
Skin contact may cause an allergic skin reaction in a small proportion of individuals.
Respiratory
No relevant data found.

Repeated Dose Toxicity
For the active ingredient(s): Excessive exposure may produce organophosphate type cholinesterase inhibition. Signs and symptoms of excessive exposure to active ingredient may be headache, dizziness, incoordination, muscle twitching, tremors, nausea, abdominal cramps, diarrhea, sweating, pinpoint pupils, blurred vision, salivation, tearing, tightness in chest, excessive urination, convulsions.
In animals, effects have been reported on the following organs: Adrenal gland. Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use.

**Chronic Toxicity and Carcinogenicity**
Active ingredient did not cause cancer in laboratory animals. For the minor component(s): Crystalline silica has been shown to cause cancer in laboratory animals and humans. For the minor component(s): Lung fibrosis and tumors have been observed in rats exposed to titanium dioxide in two lifetime inhalation studies. Effects are believed to be due to overloading of the normal respiratory clearance mechanisms caused by the extreme study conditions. Workers exposed to titanium dioxide in the workplace have not shown an unusual incidence of chronic respiratory disease or lung cancer. Titanium dioxide was not carcinogenic in laboratory animals in lifetime feeding studies.

**Carcinogenicity Classifications:**

<table>
<thead>
<tr>
<th>Component</th>
<th>List</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium dioxide</td>
<td>IARC</td>
<td>Possibly carcinogenic to humans.; 2B</td>
</tr>
<tr>
<td>Silica, crystalline (quartz)</td>
<td>ACGIH</td>
<td>Suspected human carcinogen.; Group A2</td>
</tr>
<tr>
<td></td>
<td>IARC</td>
<td>Carcinogenic to humans.; 1</td>
</tr>
</tbody>
</table>

**Developmental Toxicity**
For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Active ingredient did not cause birth defects in laboratory animals.

**Reproductive Toxicity**
Chlorpyrifos did not interfere with fertility in reproduction studies in laboratory animals. Some evidence of toxicity to the offspring occurred, but only at a dose high enough to produce significant toxicity to the parent animals.

**Genetic Toxicology**
For the active ingredient(s): Based on a majority of negative data and some equivocal or marginally positive results, active ingredient is considered to have minimal genetic toxicity potential.

### 12. Ecological Information

**Toxicity**

**Data for Component: Chlorpyrifos**

Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species). Material is highly toxic to birds on a dietary basis (LC50 between 50 and 500 ppm).

**Fish Acute & Prolonged Toxicity**

LC50, Oncorhynchus mykiss (rainbow trout), 96 h: 0.003 mg/l

**Aquatic Invertebrate Acute Toxicity**

EC50, Daphnia magna (Water flea), 48 h: 0.00068 mg/l

**Aquatic Plant Toxicity**

EC50, Skeletonema costatum, Growth inhibition (cell density reduction), 96 h: 0.255 - 0.328 mg/l

**Toxicity to Micro-organisms**

EC50; activated sludge: > 100 mg/l

**Fish Chronic Toxicity Value (ChV)**

Pimephales promelas (fathead minnow), 216 d, NOEC:0.000568 mg/l

**Aquatic Invertebrates Chronic Toxicity Value**

Daphnia magna (Water flea), number of offspring, NOEC: 0.000056 mg/l

**Toxicity to Above Ground Organisms**

oral LD50, Other: 122 mg/kg bodyweight.
dietary LC50, Colinus virginianus (Bobwhite quail): 423 mg/kg diet.
oral LD50, Apis mellifera (bees): 0.36 micrograms/bee
contact LD50, Apis mellifera (bees): 0.070 micrograms/bee

**Toxicity to Soil Dwelling Organisms**

LC50, Eisenia fetida (earthworms), 14 d: 129 mg/kg

**Data for Component: Calcium polysilicate**

No relevant information found.
Not expected to be acutely toxic to aquatic organisms.

**Data for Component: Kaolin**

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

*Fish Acute & Prolonged Toxicity*

NOEC mortality, Leuciscus idus (Golden orfe), static test, 48 h: > 1,000 mg/l

*Aquatic Invertebrate Acute Toxicity*

EC50, Daphnia magna (Water flea), static test, 48 h, immobilization: > 1,000 mg/l

Not expected to be acutely toxic to aquatic organisms.

**Persistence and Degradability**

**Data for Component: Chlorpyrifos**

Biodegradation under aerobic laboratory conditions is below detectable limits (BOD20 or BOD28/ThOD < 2.5%).

**Stability in Water (1/2-life):**

72 d

**OECD Biodegradation Tests:**

<table>
<thead>
<tr>
<th>Biodegradation</th>
<th>Exposure Time</th>
<th>Method</th>
<th>10 Day Window</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 %</td>
<td>28 d</td>
<td>OECD 301D Test</td>
<td>fail</td>
</tr>
</tbody>
</table>

**Indirect Photodegradation with OH Radicals**

<table>
<thead>
<tr>
<th>Rate Constant</th>
<th>Atmospheric Half-life</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.167E-11 cm3/s</td>
<td>1.4 h</td>
<td>Estimated.</td>
</tr>
</tbody>
</table>

**Biological oxygen demand (BOD):**

BOD 5

BOD 10

BOD 20

BOD 28

0.000 %

Data for Component: Calcium polysilicate

Biodegradation is not applicable.

Data for Component: Kaolin

Biodegradation is not applicable.

Data for Component: Titanium dioxide

Biodegradation is not applicable.

Data for Component: Silica, crystalline (quartz)

Biodegradation is not applicable.

**Bioaccumulative potential**

Data for Component: Chlorpyrifos

*Bioaccumulation*: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

*Partition coefficient, n-octanol/water (log Pow):* 4.7 Estimated.

Data for Component: Calcium polysilicate

*Bioaccumulation*: Partitioning from water to n-octanol is not applicable.

Data for Component: Kaolin

*Bioaccumulation*: Partitioning from water to n-octanol is not applicable.

Data for Component: Titanium dioxide

*Bioaccumulation*: No data available.

*Bioconcentration Factor (BCF)*: No data available.

Data for Component: Silica, crystalline (quartz)

*Bioaccumulation*: Partitioning from water to n-octanol is not applicable.

**Mobility in soil**

Data for Component: Chlorpyrifos

*Mobility in soil*: Expected to be relatively immobile in soil (Koc > 5000).
Partition coefficient, soil organic carbon/water (Koc): 8,151
Henry’s Law Constant (H): 6.6E-06 atm*m3/mole  Measured

Data for Component: Calcium polysilicate
   Mobility in soil: No relevant data found.

Data for Component: Kaolin
   Mobility in soil: No relevant data found.

Data for Component: Titanium dioxide
   Mobility in soil: No data available.

Data for Component: Silica, crystalline (quartz)
   Mobility in soil: No relevant data found.

### 13. Disposal Considerations

If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

### 14. Transport Information

TDG Small container
   - TDG not required for road or rail per Sec. 1.45.1

TDG Large container
   - TDG not required for road or rail per Sec. 1.45.1

IMDG
   - Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
   - Technical Name: CHLORPYRIFOS
   - Hazard Class: 9
   - ID Number: UN3077  Packing Group: PG III
   - EMS Number: F-A,S-F
   - Marine pollutant.: Yes

ICAO/IATA
   - Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
   - Technical Name: CHLORPYRIFOS
   - Hazard Class: 9
   - ID Number: UN3077  Packing Group: PG III
   - Cargo Packing Instruction: 956
   - Passenger Packing Instruction: 956

### 15. Regulatory Information

CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

Hazardous Products Act Information: CPR Compliance
This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.
Hazardous Products Act Information: WHMIS Classification
This product is exempt under WHMIS.

Pest Control Products Act Registration number: 20944

National Fire Code of Canada
Not applicable

16. Other Information

Hazard Rating System

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health</th>
<th>Fire</th>
<th>Reactivity</th>
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<tr>
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<td>2</td>
<td>2</td>
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Recommended Uses and Restrictions
Identified uses
Product use: End use insecticide product

Revision
Identification Number: 50633 / 1023 / Issue Date 2012.08.01 / Version: 5.0
DAS Code: XRM-4700
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

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<td>Occupational Exposure Limit</td>
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<tr>
<td>STEL</td>
<td>Short Term Exposure Limit</td>
</tr>
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<td>TWA</td>
<td>Time Weighted Average</td>
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<tr>
<td>ACGIH</td>
<td>American Conference of Governmental Industrial Hygienists, Inc.</td>
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<td>DOW IHG</td>
<td>Dow Industrial Hygiene Guideline</td>
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