MATERIAL SAFETY DATA SHEET

SECTION 1. CHEMICAL IDENTIFICATION

<table>
<thead>
<tr>
<th>Product Name:</th>
<th>Lufenuron 50 g/L EC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Name of a.i.:</td>
<td>Lufenuron</td>
</tr>
<tr>
<td>Chemical Name:</td>
<td>RS)-1-[2,5-dichloro-4-(1,1,2,3,3,3-hexafluoropropoxy) phenyl]-3-(2,6-difluorobenzoyl)urea</td>
</tr>
<tr>
<td>Synonym:</td>
<td>None</td>
</tr>
<tr>
<td>Chemical Family:</td>
<td>Benzoylurea</td>
</tr>
<tr>
<td>Chemical Formulation:</td>
<td>C_{17}H_{8}Cl_{2}F_{8}N_{2}O_{3}</td>
</tr>
<tr>
<td>Product Use:</td>
<td>Insecticide/Acaricide</td>
</tr>
<tr>
<td>Formulation:</td>
<td>Emulsifiable Concentrate</td>
</tr>
</tbody>
</table>

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component Name</th>
<th>CAS No.</th>
<th>Content (w/v)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lufenuron</td>
<td>103055-07-8</td>
<td>50 g/L</td>
</tr>
<tr>
<td>Other inert ingredients</td>
<td>non-hazardous</td>
<td>up to 1L</td>
</tr>
</tbody>
</table>

SECTION 3. HAZARDS IDENTIFICATION

Hazard classification
Hazardous (National Occupational Health and Safety Commission - NOHSC)

R-phrase(s):
R10 Flammable.
R38 Irritating to skin.
R41 Risk of serious damage to eyes.
R43 May cause sensitization by skin contact.
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R65 Harmful: may cause lung damage if swallowed.
R67 Vapours may cause drowsiness and dizziness.

S-phrase(s):
S 2 Keep out of the reach of children.
S13 Keep away from food, drink and animal feedingstuffs.
S20/21 When using do not eat, drink or smoke.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S35 This material and its container must be disposed of in a safe way.
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S57 Use appropriate container to avoid environmental contamination.
S62 If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

SECTION 4. FIRST AID MEASURES

Ingestion If poisoning occurs contact a doctor or Poisons Information Centre. If swallowed DO NOT induce vomiting. Give a glass of water. Begin artificial respiration if victim is not breathing. Use mouth to nose rather than mouth to mouth.

Eye Will irritate the eyes. Avoid contact with eyes. If product gets in eyes wash it out immediately with water.

Skin Will irritate the skin. Avoid contact with skin. If skin contact occurs remove contaminated clothing and wash affected areas thoroughly with soap and water.

Inhalation Move person to fresh air and keep at rest until recovered.

Advice to Doctor
No specific antidote is available. If poisoning is suspected apply symptomatic therapy.

SECTION 5.  FIRE FIGHTING MEASURES

Extinguishing media:
Water spray, foam

Fire/Explosive Hazards:
This product is flammable. Extinguish warehouse and factory fires using fine-water spray or foam. During a fire this product may release smoke and hazardous decomposition products. When fighting a major fire wear an air-supplied respirator. Fire fighters should wear appropriate breathing apparatus as carbon monoxide and other harmful vapors may be generated.

Hazchem Code  
Not Regulated.

SECTION 6.  ACCIDENTAL RELEASE MEASURES

Remove heavily contaminated soil layer and bury in a safe place away from water supplies.
(1) Keep all bystanders away.
(2) Wear goggles, half face-piece respirator with combined dust and vapour cartridge, full length clothing and PVC gloves.
(3) Reposition any leaking containers so as to minimise further leakage.
(4) Dam and absorb spill with an absorbent material (e.g. sand or soil).
(5) Shovel the absorbed spill into drums.
(6) Dispose of the absorbed material will depend upon the extent of the spill.
· For quantities up to 50L of product bury in a secure landfill site.
· For quantities greater than 50L seek advice from the manufacturer (use emergency contact number below) before attempting disposal. Contain in a secure location until disposal method is established.
(7) Decontaminate the spill area with detergent and water and rinse with the smallest volume of water practicable.
SECTION 7. HANDLING AND STORAGE

Handling Precautions:
Keep out of reach of children and animals. Avoid contact the product.

Storage Precautions
Store away from sun and damp, in original tightly closed containers, in well ventilated area apart from food or feed. Avoid storage in temperatures below -10°C and above 35°C.

SECTION 8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

Engineering controls:
No special requirements. Product is used outdoors.

Personal protection:
Harmful if inhaled or swallowed. Will irritate the eyes and skin. Avoid contact with eyes and skin. Avoid inhaling vapour or spray mist. When opening the container and preparing the spray and using the prepared spray wear cotton overalls buttoned to the neck and wrist and a washable hat, elbowlength PVC gloves and face shield or goggles. If product on skin, immediately wash area with soap and water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day’s use, wash gloves and face shield or goggles and contaminated clothing.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Form: Clear liquid
Color: Yellow-brown
Odor: No specific odor
Boiling point: Not available
pH value: 5 – 7 (1% as emulsion)  
Flash point: 48°C  
Density: 0.92 - 0.96 g/cm³  
Solubility in water: Emulsifiable  
Stability: Stable under normal conditions

SECTION 10.  STABILITY AND REACTIVITY

Stability: Stable at ambient temperatures and pressures  
Flammability: The product is flammable  
Incompatibility: None identified  

Decomposition Products:  
Oxides of nitrogen, HCl and HF under burning conditions

SECTION 11.  TOXICOLOGICAL INFORMATION

Acute toxicity / Irritation studies (for end product):

Acute Oral Toxicity  
Slightly Toxic  
Rat: LD50: > 3000 mg/kg  

Acute Dermal Toxicity  
Slightly Toxic  
Rat: LD50: > 4000 mg/kg  

Acute Inhalation Toxicity  
Slightly Toxic  
Rat: LC50 (4 h): > 5.3 mg/L  

Skin Irritation  
Rabbit: a moderate dermal irritant  

Eye Irritation  
Rabbit: a moderate eye irritant  

Sensitization  
Guinea pig: Not a sensitizer

Chronic (Lufenuron technical)  
Lufenuron technical has been extensively tested on laboratory mammals and in test-tube systems. The liver and kidney were identified as target organs. No evidence of neurotoxic, mutagenic, teratogenic or reproductive effects was obtained. No carcinogenic potential was noticed in rats.
SECTION 12. ECOLOGICAL INFORMATION

Available data are for Lufenuron technical:

Birds: Practically non-toxic to birds
Acute oral LD50 for mallard ducks >2000 mg/kg bw. Dietary LC50(8 d) for mallard ducks >5000 mg/kg

Fish: Very highly toxic to fish
LC50(96 h) for bluegill sunfish 34, rainbow trout 76 µg/l.

Daphnia: Very highly toxic to daphnia
LC50 (48 h) 8 µg/l.

Algae: Highly toxic to algae
EC50(72 h) for Senecastrum capricornutum >20 µg/l

Bees: Practically non-toxic to bees
Acute LD50 (contact) >100 µg/bee, (oral) >200 µg/bee

Earthworms: Practically non-toxic to earthworm
LC50 (14 d) 1000 ppm

Soil/Environment (Lufenuron technical)
Lufenuron was rapidly degraded in biologically active soils under aerobic conditions. DT50 13-20 d. Lufenuron showed a very strong adsorption onto soil particles: Koc (mean value) 38 mg/g o.c.

SECTION 13. DISPOSAL CONSIDERATIONS

Dispose of empty, used containers by:
(a) Triple rinsing or preferably pressure rinsing containers with water. Add the rinsings to the spray tank. DO NOT dispose of undiluted chemicals on site.
(b) If recycling, replace cap and return clean containers to recycler or designated collection point.

(c) If not recycling, break, crush or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots.

(d) Burning of empty containers if circumstances, especially wind conditions, permit is an alternative method.

SECTION 14. TRANSPORT INFORMATION

Land transport ADR/RID

UN number: 1993
Proper Shipping Name: FLAMMABLE LIQUID, N.O.S. (contain lufenuron)
Class: 3
Subsidiary Risk: Not regulated
Packaging group: III

Marine transport IMDG

UN number: 1993
Proper Shipping Name: FLAMMABLE LIQUID, N.O.S. (contain lufenuron)
Class: 3
Subsidiary Risk: Not regulated
Packaging group: III
Marine pollutant: Yes

Air transport ICAO/IATA

UN number: 1993
Proper Shipping Name: FLAMMABLE LIQUID, N.O.S. (contain lufenuron)
Class: 3
Subsidiary Risk: Not regulated
Packaging group: III
SECTION 15. REGULATORY INFORMATION

EPCRA SARA Title III Classification:
Section 311/312 Hazard Classes: Acute Health Hazard
Section 313 Toxic Chemicals: Not Applicable

California Proposition 65
Not applicable

CERCLA/SARA 302 Report Quantity (RQ)
None.

RCRA Hazardous Waste Classification (40 CFR 261)
Not applicable

TSCA Status
Exempt from TSCA, subject to FIFRA

SECTION 16. OTHER INFORMATION

Revised Date: August 20, 2010
MSDS Number: SN704/50EC

Revision Summary:
To reflect database modification (no substantive changes - only related to system).

This information is provided in good faith but without express or implied warranty. Buyer assumes all responsibility for safety and use not in accordance with label instructions.