SAFETY DATA SHEET
Sentinel® Spectrum®
(milbemycin oxime/lufenuron/praziquantel)

1. IDENTIFICATION

Product Name: Sentinel® Spectrum®
(milbemycin oxime/lufenuron/praziquantel)

Recommended use of the chemical and restrictions on use:
Identified uses: Chewable Tablets for Worm and Flea Prevention and Control in Dogs and Puppies

Restrictions on Use:
Not for human use.

Company Identification:
Virbac AH, Inc.
P.O. Box 162059
Fort Worth, Texas 76161

Customer Information Telephone Number:
(800) 338-3659

Emergency Telephone Number:
CHEMTREC Number: (800) 424-9300
Other Emergency Number: 1-800-338-3659 for medical emergencies

Issue Date: April 10, 2015

2. HAZARDS IDENTIFICATION

Hazard Classification
Acute Hazards to the Aquatic Environment – Category 1 (OSHA non-mandatory)

Label Elements
Hazard Symbols

Signal Word: Warning

Hazard Statements
Very toxic to aquatic life.

Precautionary Statements
Prevention
Avoid release to the environment.
Response
Collect spillage.
Storage
None
Disposal
Dispose of contents/container in accordance with local regulation.

Revision Date: April 10, 2015
2. HAZARD IDENTIFICATION

Other Hazards
None

Specific Concentration Limits
The values listed below represent the percentages of ingredients of unknown toxicity.
- Acute oral toxicity: <10%
- Acute dermal toxicity: <10%
- Acute inhalation toxicity: 20 - 30%
- Acute aquatic toxicity: >90%

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms:
This product is a mixture.

<table>
<thead>
<tr>
<th>Component Name</th>
<th>CAS Number</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milbemycin oxime</td>
<td>122674-17-3</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Lufenuron</td>
<td>103055-07-8</td>
<td>5 – 10%</td>
</tr>
<tr>
<td>Praziquantel</td>
<td>55268-74-1</td>
<td>1 – 5%</td>
</tr>
<tr>
<td>Starch</td>
<td>NA</td>
<td>25 – 35%</td>
</tr>
</tbody>
</table>

Each flavored chew contains:
- 2.3, 5.75, 11.5 or 23.0 mg of Milbemycin oxime
- 46, 115, 230, or 460 mg of Lufenuron
- 22.8, 57, 114, or 228 mg of Praziquantel

4. FIRST-AID MEASURES

Description of necessary first-aid measures

Eyes
Not an expected route of entry. If tablet contacts eye, flush thoroughly with water. If pain or irritation persists contact a physician.

Skin
Wash skin with soap and water.

Ingestion
Contact a physician immediately if ingested. Physician may call a poison control center for advice concerning human ingestion.

Inhalation
Not applicable

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

Indication of immediate medical attention and special treatment needed

Notes to Physicians
Treat symptomatically.
5. FIRE - FIGHTING MEASURES

Extinguishing Media
Use extinguishing media appropriate for surrounding materials.

Unusual Fire and Explosion Hazards
Can release hazardous vapors during a fire.

Protective Equipment for Fire-Fighting
Wear full protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Wear appropriate protective clothing.

Environmental Precautions
Prevent the material from entering drains or watercourses.

Methods and materials for containment and cleaning up
Sweep and dispose of small amounts in trash. Large amounts should be disposed of in a sanitary landfill.

7. HANDLING AND STORAGE

Precautions for safe handling
Wear appropriate protective clothing.

Conditions for safe storage
Store in original container at controlled room temperatures between 59°F and 77°F (15°C - 25°C). Keep out of sunlight. Keep away from children. Wash hands after dispensing to dog and before eating, drinking or smoking.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure limits are listed below, if they exist.

Milbemycin Oxime
Manufacturer’s recommended limit: 0.12 mg/m³ 8h TWA

Lufenuron
Manufacturer’s recommended limit: 0.15 mg/m³ 8h TWA

Praziquantel
None established

Starch
ACGIH: TLV 10mg/m³ 8h TWA
OSHA: PEL 15 mg/m³ total dust, 5 mg/m³ respirable fraction

Appropriate engineering controls
No specific measures necessary. Good general room ventilation is expected to be adequate to control airborne levels.
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Individual protection measures
Respiratory Protection
Not required under normal conditions of use.
Skin Protection
Not required under normal conditions of use. Workers should wash hands before eating, drinking or smoking.
Eye/Face Protection
Not required under normal conditions of use.
Body Protection
Normal work wear.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Physical State</th>
<th>Color</th>
<th>Odor</th>
<th>Odor Threshold</th>
<th>pH</th>
<th>Density</th>
<th>Boiling Range/Point (°C/F)</th>
<th>Melting Point (°C/F)</th>
<th>Flash Point (°C/F)</th>
<th>Vapor Pressure</th>
<th>Evaporation Rate (BuAc=1)</th>
<th>Solubility in Water</th>
<th>Vapor Density (Air = 1)</th>
<th>VOC</th>
<th>Partition coefficient (n-octanol/water)</th>
<th>Viscosity</th>
<th>Auto-ignition Temperature</th>
<th>Decomposition Temperature</th>
<th>Upper explosive limit</th>
<th>Lower explosive limit</th>
<th>Flammability (solid, gas)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Solid</td>
<td>Brown</td>
<td>Characteristic beef-bacon flavor</td>
<td>No data available</td>
<td>Not applicable</td>
<td>No data available</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
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<td>Soluble</td>
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<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Reactivity
Data is not available

Chemical Stability
Stable under normal conditions.

Possibility of hazardous reactions
Hazardous polymerization will not occur.

Conditions to Avoid
Heat - high temperatures
10. STABILITY AND REACTIVITY

Incompatible Materials
None known.

Hazardous Decomposition Products
None known.

11. TOXICOLOGICAL INFORMATION

See product insert and/or packaging for additional information.

Acute Toxicity

Milbemycin oxime
Oral LD50 (rat) >2000 mg/kg
Dermal LD50 (rat) >2000 mg/kg
Inhalation LD50 (rat) 1220 mg/m^3 4h

Lufenuron
Oral LD50 (rat) >2000 mg/kg
Dermal LD50 (rat) >2000 mg/kg
Inhalation LD50 (rat) >2350 mg/m^3 4h

Praziquantel
Oral LD50 (rat) 2840 mg/kg
Dermal LD50 (rat) >2000 mg/kg

Specific Target Organ Toxicity (STOT) – single exposure
Praziquantel: Acute overexposure (ingestion) may cause dizziness, headache, drowsiness, malaise, abdominal pain.

Specific Target Organ Toxicity (STOT) – repeat exposure
Praziquantel: Chronic overexposure may cause nausea, lethargy, diarrhea, itching, fever and rash.

Serious Eye damage/Irritation
Milbemycin oxime: Not irritating to eyes in rabbit studies.
Lufenuron: Not irritating to eyes in rabbit studies.
Praziquantel: Not irritating to eyes in rabbit studies.

Skin Corrosion/Irritation
Milbemycin oxime: Not irritating to skin in rabbit studies.
Lufenuron: Not irritating to skin in rabbit studies.
Praziquantel: Not irritating to skin in rabbit studies.

Respiratory or Skin Sensitization
Milbemycin oxime: Not sensitizing in guinea pig study.
Lufenuron: Sensitizing in guinea pig in Maximisation Test.
Praziquantel: Not sensitizing in guinea pig study.

Carcinogenicity
Product: Not considered carcinogenic by NTP, IARC, and OSHA.
Praziquantel: Long term studies in rats and golden hamsters did not reveal any carcinogenic effect.
Lufenuron: Not carcinogenic in rat and mouse studies.
11. TOXICOLOGICAL INFORMATION

Germ Cell Mutagenicity
Milbemycin oxime: Negative results for in vivo and in vitro animal studies.
Lufenuron: Negative results for in vivo and in vitro animal studies.
Praziquantel: Negative results for in vivo and in vitro animal studies.

Reproductive Toxicity
Praziquantel: Studies in rats and rabbits have shown no evidence of impaired fertility or harm to the fetus. An increase of the abortion rate was found in rats at three times the single human therapeutic dose.
Lufenuron: Did not show teratogenic effects in animal experiments.
Milbemycin oxime: Not teratogenic in rat and rabbit studies.

Aspiration Hazard
Not an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicity
Lufenuron
LC50 (Rainbow Trout) >73 mg/l 96hr
LC50 (Daphnia magna) 0.0011 – 0.0013 mg/l 48hr
EC50 (green algae) 10 mg/l 72hr
Milbemycin Oxime
LC50 (Common carp) 0.059 mg/l 48hr
LC50 (Daphnia pulex) >300 mg/l 3hr

Mobility in soil
Ivermectin: Ivermectin is metabolized in the soil. Water solubility is limited and it binds to soil very tightly. It does not bioconcentrate in fish and is not taken up from soil into plants.

Persistence/Degradability
Lufenuron: Not readily biodegradable.

Bioaccumulative Potential
No relevant studies identified.

Other adverse effects
No relevant studies identified.

13. DISPOSAL CONSIDERATIONS
Dispose of in accordance with all applicable local and national regulations.

14. TRANSPORT INFORMATION
Contact supplier for transport information.
15. REGULATORY INFORMATION

United States TSCA Inventory
This product is a drug and therefore is not regulated under the US EPA Toxic Substance Control Act.

Canada DSL Inventory
This product contains ingredients that are not listed on the Domestic Substance List (DSL).

California Proposition 65
This product contains the following materials which the State of California has found to cause cancer, birth defects or other reproductive harm: Butylated Hydroxyanisole (BHA) (<0.05%)

SARA Title III Sect. 311/312 Categorization
None

SARA Title III Sect. 313
This product contains a chemical that is listed in Section 313 at or above de minimis concentrations. The following listed chemicals are present: None

16. OTHER INFORMATION

Legend
ACGIH: American Conference of Governmental Industrial Hygienists
CAS#: Chemical Abstracts Service Number
IARC: International Agency for Research on Cancer
LD50: Lethal Dose 50%
NA: Denotes no information found or available
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration
PEL: Permissible Exposure Limit
STEL: Short Term Exposure Limit
TLV: Threshold Limit Value
VOC: Volatile Organic Compounds

Revision Date: April 10, 2015
Replaces: This is the first issue.
Changes made: Not applicable

Prepared By: EnviroNet LLC.

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