MATERIAL SAFETY DATA SHEET

Schering-Plough urges each user or recipient of this MSDS to read the entire data sheet to become aware of the hazards associated with this material.

SECTION 1. IDENTIFICATION OF SUBSTANCE AND CONTACT INFORMATION

MSDS NAME: Exspot For Dogs (with Dowanol)

SYNONYM(S):
Defend Exspot
Dog-Net Spot On
Exspot
Proticall Insecticide for Dogs
Pulvex Spot

MSDS NUMBER: SP000048

EMERGENCY NUMBER(S):
Schering-Plough Security Control Center (908) 820-6921 (24 hours)

Transportation Emergencies - CHEMTREC:
(800) 424-9300 (Inside Continental USA)
(703) 527-3887 (Outside Continental USA)

Animal Health Technical Services:
For Animal Adverse Events: Small Animals and Horses: (800) 224-5318
For Animal Adverse Events: Livestock: (800) 211-3573
For Animal Adverse Events: Poultry: (800) 219-9286

INFORMATION:
Animal Health Technical Services:
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SCHERING-PLOUGH MSDS HELPLINE:
(800) 770-8878 (US and Canada)
(908) 629-3657 (Worldwide)
Monday to Friday, 9am to 5pm (US Eastern Time)

SECTION 2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Dark amber
Liquid
Strong chemical odor

Flammable.

Harmful if swallowed.
Harmful if absorbed through skin.
Moderately irritating to skin and eyes.
May be irritating to respiratory system.
May cause sensitization by skin contact.

May cause effects to:
- central nervous system

Very toxic to aquatic organisms.
POTENTIAL HEALTH EFFECTS:

The toxicological properties of the mixture(s) have not been fully characterized in humans or animals. However, there are data to describe the toxicological properties of the individual ingredients. The following summary is based upon available information about the individual ingredients of the mixture(s), or of the expected properties of the mixture(s).

This product contains permethrin, a synthetic Type I pyrethroid ester. Occupational exposure to permethrin has induced temporary skin and facial sensations (feelings of numbness and tingling). Workers exposed to permethrin have also reported irritative symptoms, such as itching and burning of the skin, itching and irritation of the eyes, and irritation of the upper respiratory tract as well as increased nasal secretions. Anaphylactic reactions including bronchospasm and shock may occur in very sensitive individuals. Ingestion of large amounts may cause central nervous system effects resulting in seizures, coma, and respiratory arrest.

Ingestion of pyrethroid esters has caused stomach pain, nausea and vomiting, headache, dizziness, numbness and tingling, anorexia, fatigue, tremors, and intermittent convulsions.

Propylene glycol methyl ether (PGME) is a major constituent in Dowanol PM. PGME is transiently painful to the eyes and can be absorbed through the skin in toxic amounts after repeated high-dose exposure. The vapors of PGME are essentially intolerable to humans at acutely toxic concentrations. Concentrations that might cause effects from repeated exposures are very disagreeable (irritating to the eyes and mucous membranes and nauseating to some persons).

LISTED CARCINOGENS

<table>
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<tr>
<th>CHEMICAL NAME</th>
<th>CAS NUMBER</th>
<th>OSHA</th>
<th>IARC</th>
<th>NTP</th>
<th>ACGIH</th>
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Permethrin technical is classified by IARC as a Group 3 carcinogen (unclassifiable as to carcinogenicity in humans). Fields in the above table that do not contain data indicate that the materials have not been classified as human or animal carcinogens.

SECTION 3. COMPOSITION AND INFORMATION ON INGREDIENTS

CHEMICAL FAMILY: Pyrethroid Insecticide

PRODUCT USE: Veterinary product

CHEMICAL FORMULA: Mixture.

The formulation for this product is proprietary information. Only hazardous ingredients in concentrations of 1% or greater and/or carcinogenic ingredients in concentrations of 0.1% or greater are listed in the Chemical Composition table. Active ingredients in any concentration are listed. For additional information about carcinogenic ingredients see Section 3.

CHEMICAL COMPOSITION

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<th>CHEMICAL NAME</th>
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<td>Dowanol PM: (Propylene Glycol Methyl Ether)</td>
<td>107-98-2</td>
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ADDITIONAL INFORMATION: This MSDS is written to provide health and safety information for individuals who will be handling the final product formulation during research, manufacturing, and distribution. For health and safety information for individual ingredients used during manufacturing, refer to the appropriate MSDS for each ingredient. Refer to the package insert or product label for handling guidance for the consumer.

SECTION 4. FIRST AID MEASURES

INHALATION: Remove to fresh air. Administer artificial respiration if breathing has ceased. Get IMMEDIATE medical attention.

SKIN CONTACT: In case of skin contact, while wearing protective gloves, carefully remove any contaminated clothing, including shoes, and wash skin thoroughly with soap and water. If irritation or symptoms occur or persist, consult a physician.

EYE CONTACT: In case of eye contact, immediately rinse eyes thoroughly with plenty of water. If wearing contact lenses, remove only after initial rinse, and continue rinsing eyes for at least 15 minutes. If irritation occurs or persists, consult a physician.

INGESTION: DO NOT induce vomiting. Do not attempt to give anything by mouth to a seizing, drowsy or unconscious person. If alert, rinse mouth, drink a glass of water and IMMEDIATELY consult a physician.

NOTE TO PHYSICIAN: Exspot For Dogs is intended for the treatment and control of fleas and ticks in dogs. It contains permethrin, a synthetic Type I pyrethroid ester.
SECTION 5. FIRE FIGHTING MEASURES

FLAMMABILITY DATA:

<table>
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<tr>
<td>FLASH POINT</td>
<td>37.8 to 40 deg C (100 to 104 deg F)</td>
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<tr>
<td>UEL</td>
<td>6.1 Vol %</td>
</tr>
<tr>
<td>LEL</td>
<td>2.3 Vol %</td>
</tr>
<tr>
<td>AUTOIGNITION TEMPERATURE</td>
<td>270 deg C (518 deg F)</td>
</tr>
</tbody>
</table>

SPECIAL FIRE FIGHTING PROCEDURES:
Wear full protective clothing and self-contained breathing apparatus (SCBA).

SUITABLE EXTINGUISHING MEDIA:
Alcohol foam, dry chemical, or carbon dioxide. Water may be ineffective.

UNSUITABLE EXTINGUISHING MEDIA:
Water.

THERMAL DECOMPOSITION PRODUCTS:

See Section 9 for Physical and Chemical Properties.

SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:
Wear appropriate personal protective equipment as specified in Section 8. Keep personnel away from the clean-up area.

SPILL RESPONSE / CLEANUP:
All spills should be handled according to site requirements and based on precautions cited in the MSDS. In the case of liquids, use proper absorbent materials. For laboratories and small-scale operations, incidental spills within a hood or enclosure should be cleaned by using a HEPA filtered vacuum or wet cleaning methods as appropriate. For large dry or liquid spills or those spills outside enclosure or hood, appropriate emergency response personnel should be notified. In manufacturing and large-scale operations, HEPA vacuuming prior to wet mopping or cleaning is required.

ENVIRONMENTAL PRECAUTIONS:
This product is extremely toxic to fish and/or aquatic organisms. Do not allow product to reach ground water, water course, sewage or drainage systems.

See Sections 9 and 10 for additional physical, chemical, and hazard information.

SECTION 7. HANDLING AND STORAGE

HANDLING:
Keep containers adequately sealed during material transfer, transport, or when not in use.

Appropriate handling of this material is dependent on many factors, including physical form, duration and frequency of process or task, and effectiveness of engineering controls. Site-specific risk assessments should be conducted to determine the feasibility and the appropriateness of all exposure control measures. See Section 8 (Exposure Controls) for additional guidance.

STORAGE:
Store in a cool, dry, well ventilated area.

SPECIAL PRECAUTIONS:
Keep away from ignition sources.

See Section 8 for exposure controls and additional safe handling information.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

The following guidance applies to the handling of the active ingredient(s) in this formulation.

EXPOSURE CONTROLS:
The health hazard risks of handling this material are dependent on many factors, including physical form, duration and frequency of process or task, and effectiveness of engineering controls. Site-specific risk assessments should be conducted to determine the feasibility and the appropriateness of all exposure control measures. Exposure controls for normal operating or routine procedures follow a tiered strategy. Engineering controls are the preferred means of long-term or permanent exposure control. If engineering controls are not feasible, appropriate use of personal protective equipment (PPE) may be considered as alternative control measures. However, PPE should not be used as a method of permanent or long-term exposure control. Exposure controls for non-routine operations must be evaluated and addressed as part of the site-specific risk assessment.
RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (PPE):

Respiratory Protection: Respiratory protective equipment (RPE) may be required for certain laboratory and large-scale manufacturing tasks if potential airborne breathing zone concentrations of substances exceed the relevant exposure limit(s). Workplace risk assessment should be completed before specifying and implementing RPE usage. Potential exposure points and pathways, task duration and frequency, potential employee contact with the substance, and the ability of the substance to be rendered airborne during specific tasks should be evaluated. Initial and ongoing strategies of quantitative exposure measurement should be obtained as required by the workplace risk assessment. All RPE must conform to local and regional specifications for efficacy and performance. Consult your site or corporate health and safety professional for additional guidance.

Skin Protection: Gloves that provide an appropriate barrier to the skin are recommended if there is potential for contact with this material. Consult your site safety staff for guidance.

Eye Protection: Safety glasses with side shields. Use of goggles or full face protection may be required based on hazard, potential for contact, or level of exposure. Consult your site safety staff for guidance.

Body Protection: In small-scale or laboratory operations, lab coats or equivalent protection is required. Disposable Tyvek or other dust impermeable suit should be considered based on procedure or level of exposure. Use of additional PPE such as shoe coverings, gauntlets, hood, or head covering may be necessary. Consult your site safety staff for guidance.

In large-scale or manufacturing operations, disposable Tyvek or other dust impermeable suit is recommended and based on level of exposure. Use of additional PPE such as shoe coverings, gauntlets, hood, or head covering may be necessary. Consult your site safety staff for guidance.

EXPOSURE LIMIT VALUES

<table>
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<tr>
<th>CHEMICAL NAME</th>
<th>CAS NUMBER</th>
<th>ACGIH TLV (TWA)</th>
<th>OSHA PEL (TWA)</th>
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<td>Dowanol PM: (Propylene Glycol Methyl Ether)</td>
<td>107-98-2</td>
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<table>
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<th>OSHA PEL (STEL / SKIN)</th>
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Fields in the above table(s) that do not contain data indicate that exposure limits are not available for those endpoints.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

| FORM: | Liquid |
| COLOR: | Dark amber |
| ODOR: | Strong chemical odor |
| BOILING POINT / RANGE: | 120 deg C |
| VAPOR PRESSURE: | 12 hPa @ 20 deg C |
| SPECIFIC GRAVITY: | 1.09 |
| SOLUBILITY: | Water: Not miscible |

See Section 5 for flammability/explosivity information.

SECTION 10. STABILITY AND REACTIVITY

STABILITY/ REACTIVITY:
Stable under normal conditions.

INCOMPATIBLE MATERIALS / CONDITIONS TO AVOID:
Oxidizers. Keep away from heat, sparks, open flame, and direct sunlight.

HAZARDOUS DECOMPOSITION PRODUCTS / REACTIONS:

SECTION 11. TOXICOLOGICAL INFORMATION

The information presented below pertains to the following individual ingredients, and not to the mixture(s).
ACUTE TOXICITY DATA

INHALATION:
Permethrin: LC50 (4hr): 2.3 mg/L (rat)
Propylene glycol methyl ether: LC50 (4hr): 6 mg/L (rat)

SKIN:
Moderately irritating.
Permethrin: LD50: >2000 mg/kg (rabbit)
Propylene glycol methyl ether: LD50: 13,500 mg/kg (rabbit)

EYE:
Moderately irritating.

ORAL:
Permethrin: Oral LD50: 806 mg/kg (rat)
Propylene glycol methyl ether: Oral LD50: 5000 mg/kg (rat)

SENSITIZATION:
Permethrin: Moderate skin sensitizer in animals.

REPEAT DOSE TOXICITY DATA

SUBCHRONIC / CHRONIC TOXICITY:
In sub-chronic studies ranging from 14 days to 26 weeks, rats and mice were treated with oral dosages of permethrin up to 10,000 mg/kg. Dose-dependent effects such as an increase in liver/body weight ratio, hypertrophy of the liver, and clinical signs of poisoning such as tremor were observed. The no-observed effects-level (NOEL) in rats ranged from 20 mg/kg diet (in studies lasting 90 days or 6 months) to 1500 mg/kg diet (in a 6-month study). Chronic studies ranging from 1 to 2 years were conducted in rats, mice and dogs. Dosages varied with species ranging from 1 mg/kg/day to 375 mg/kg/day of permethrin. Target organs of toxicity were the liver (increased liver weight and hepatocellular swelling), lung (increased weight), and testes (decreased weight). Depression and increased mortality were observed in mice at 75 mg/kg/day and above. Additional signs and symptoms of toxicity in the rat include hyperexcitability, sparring behavior, aggressiveness, enhanced startle response, whole body tremor and prostration.

Rats exposed to propylene glycol methyl ether at concentrations as high as 3000 ppm, 6hr/day, for 9 days exhibited reversible central nervous system depression. No other effects were observed. No evidence of adverse effects were observed in rats and monkeys exposed to 800 ppm for 132 daily exposures over a period of 186 days.

REPRODUCTIVE / DEVELOPMENTAL TOXICITY:
In a three-generation reproductive study with permethrin, rats were administered doses ranging from 25 to 125 mg/kg/day. Systemic effects observed in the offspring were seen in the liver (hepatocyte hypertrophy and eosinophilia) and eye (infantile glaucoma). Body tremors were observed in the parents and offspring at 125 mg/kg/day. No teratogenic effects, maternal toxicity or fetotoxicity were observed in rats and rabbits administered 200 and 400 mg/kg/day, respectively, of permethrin.

Pregnant rats and rabbits exposed by inhalation to propylene glycol methyl ether at concentrations up to 3000 ppm did not exhibit teratogenic or embryotoxic effects. Slight fetotoxicity in the form of delayed sternebral ossification was observed in the offspring of rats exposed at 3000 ppm; a dose that was also maternally toxic. In a continuous breeding study, no change in reproductive parameters was observed in mice treated orally with 3333 mg/kg.

MUTAGENICITY / GENOTOXICITY:
Permethrin was negative in a bacterial mutagenicity study (Ames) and in a mammalian mutagenicity study (mouse lymphoma).
Propylene glycol methyl ether was negative in a variety of assays.

CARCINOGENICITY:
This material has not been evaluated for carcinogenicity.

Six carcinogenicity assays, three each in mice and rats, were conducted with permethrin. No tumorigenicity was seen in rat studies. However, species specific increases in pulmonary adenomas, a common benign tumor of mice with a high spontaneous background incidence, were seen in the three mouse studies. In one of these studies, there was an increased incidence of pulmonary alveolar cell carcinomas and benign liver adenomas when permethrin was administered in the diet at 5,000 ppm.

SECTION 12. ECOLOGICAL INFORMATION

There are no data for the final product or its formulation(s). This information presented below pertains to the following ingredient(s).

ECOTOXICITY DATA
INGREDIENT ECOTOXICITY

Permethrin: 96-hr LC50 (rainbow trout): 0.1 to 314 ug/L
Permethrin: 96-hr LC50 (brook trout): 2.3 to 5.2 ug/L
Permethrin: 96-hr LC50 (channel catfish): 1.1 ug/L
Permethrin: 48-hr EC50 (daphnid): 0.2 to 22 ug/L

ENVIRONMENTAL DATA

OTHER INGREDIENT ENVIRONMENTAL DATA:
Permethrin is readily biodegradable.

SECTION 13. DISPOSAL CONSIDERATIONS

MATERIAL WASTE:
Disposal must be in accordance with applicable federal, state/provincial, and/or local regulations. Incineration is the preferred method of disposal, when appropriate. Operations that involve the crushing or shredding of waste materials or returned goods must be handled to meet the recommended exposure limit.

PACKAGING AND CONTAINERS:
Disposal must be in accordance with applicable federal, state/provincial, and/or local regulations.

SPECIAL ENVIRONMENTAL HANDLING PROCEDURES:
Do not allow product to reach ground water, water courses, sewage or drainage system.

SECTION 14. TRANSPORT INFORMATION

DOT CLASSIFICATION: Not regulated in containers less than or equal to 119 gallons (450 L).

IATA CLASSIFICATION:

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<th>Proper Shipping Name</th>
<th>Flammable liquids, n.o.s. (permethrin, propylene glycol methyl ether)</th>
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<tr>
<td>Hazard Class:</td>
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<td>UN Number:</td>
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<td>Packing Group:</td>
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ADR CLASSIFICATION:

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IMDG CLASSIFICATION:

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SECTION 15. REGULATORY INFORMATION

TSCA LISTING

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<th>CHEMICAL NAME</th>
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<td>Dowanol PM: (Propylene Glycol Methyl Ether)</td>
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U.S. STATE REGULATIONS

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<th>California Proposition 65</th>
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<th>NJRTK</th>
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SECTION 16. OTHER INFORMATION

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequence of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

DEPARTMENT ISSUING MSDS: Global Safety and Environmental Affairs
                                      Occupational and Environmental Toxicology
                                      Schering-Plough Corporation
                                      1095 Morris Avenue
                                      Union, NJ 07083 USA

SCHERING-PLOUGH MSDS HELPLINE: (800) 770-8878 (US and Canada)
                                      (908) 629-3657 (Worldwide)
                                      Monday to Friday, 9am to 5pm (US Eastern Time)

MSDS CREATION DATE: 02-Sep-1999
SUPERSEDES DATE: 07-Feb-2003