Section 1 - Product and Company Information

Product Name               FLUTAMIDE
Product Number             F9397
Brand                      SIGMA

Company                     Sigma-Aldrich Canada, Ltd
Address                     2149 Winston Park Drive
                           Oakville ON L6H 6J8 CA
Technical Phone:           9058299500
Fax:                       9058299292
Emergency Phone:          800-424-9300

Section 2 - Composition/Information on Ingredient

<table>
<thead>
<tr>
<th>Substance Name</th>
<th>CAS #</th>
<th>SARA 313</th>
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<tbody>
<tr>
<td>FLUTAMIDE</td>
<td>13311-84-7</td>
<td>No</td>
</tr>
</tbody>
</table>

Formula         C11H11F3N2O3
Synonyms        Flutamide * Niftholide * Niftolide *
                4'-Nitro-3'-trifluoromethylisobutyranilide *
                Propanamide,
                2-methyl-N-(4-nitro-3-(trifluoromethyl)phenyl)-
                (9CI) * Sch 13521 *
                alpha,alpha,alpha-Trifluoro-2-methyl-4'-nitro-m-pr
                opionotoluidide
RTECS Number:   UG5700000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW
Harmful.
  Possible risk of harm to the unborn child. Harmful by inhalation,
  in contact with skin and if swallowed.
  Target organ(s): Male reproductive system. Possible carcinogen.
  Calif. Prop. 65 developmental hazard.

HMIS RATING
  HEALTH: 0*
  FLAMMABILITY: 0
  REACTIVITY: 0

NFPA RATING
  HEALTH: 0
  FLAMMABILITY: 0
  REACTIVITY: 0

  *additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures
ORAL EXPOSURE
If swallowed, wash out mouth with water provided person is conscious. Call a physician.

INHALATION EXPOSURE
If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

DERMAL EXPOSURE
In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

EYE EXPOSURE
In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

FLASH POINT
N/A

AUTOIGNITION TEMP
N/A

FLAMMABILITY
N/A

EXTINGUISHING MEDIA
Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

FIREFIGHTING
Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Specific Hazard(s): Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

PROCEDURE(S) OF PERSONAL PRECAUTION(S)
Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP
Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS
Use only in a chemical fume hood. Safety shower and eye bath.

PERSONAL PROTECTIVE EQUIPMENT
Other: Wear appropriate government approved respirator, chemical-resistant gloves, safety goggles, other protective clothing.
Section 9 - Physical/Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>At Temperature or Pressure</th>
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<tbody>
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<td>Molecular Weight</td>
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<tr>
<td>pH</td>
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<tr>
<td>BP/BP Range</td>
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<td>MP/MP Range</td>
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<td>Freezing Point</td>
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<tr>
<td>Solubility</td>
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<td></td>
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</tbody>
</table>

N/A = not available

Section 10 - Stability and Reactivity

STABILITY

Stable: Stable.

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide, Nitrogen oxides, Hydrogen fluoride.

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

Section 11 - Toxicological Information

ROUTE OF EXPOSURE

Multiple Routes: May cause irritation. Harmful if swallowed, inhaled, or absorbed through skin.

TARGET ORGAN(S) OR SYSTEM(S)

Male reproductive system.

CONDITIONS AGGRAVATED BY EXPOSURE

The toxicological properties have not been thoroughly investigated.
TOXICITY DATA

Oral
Rat
787 mg/kg
LD50

Intraperitoneal
Rat
289 MG/KG
LD50

Oral
Dog
> 2000 mg/kg
LD50
Remarks: Liver: Other changes. Gastrointestinal: Other changes. Gastrointestinal: Nausea or vomiting.

CHRONIC EXPOSURE - CARCINOGEN

Species: Rat
Route of Application: Oral
Dose: 2730 MG/KG
Exposure Time: 1Y
Frequency: I

CHRONIC EXPOSURE - TERATOGEN

Species: Rat
Dose: 1050 MG/KG
Route of Application: Oral
Exposure Time: (14-20D PREG)
Result: Specific Developmental Abnormalities: Urogenital system.

Species: Rat
Dose: 525 MG/KG
Route of Application: Subcutaneous
Exposure Time: (14-20D PREG)
Result: Specific Developmental Abnormalities: Skin and skin appendages. Specific Developmental Abnormalities: Urogenital system.

Species: Rat
Dose: 275 MG/KG
Route of Application: Subcutaneous
Exposure Time: (11-21D PREG)
Result: Specific Developmental Abnormalities: Central nervous system.

Species: Rat
Dose: 400 MG/KG
Route of Application: Subcutaneous
Exposure Time: (16-19D PREG)
Result: Specific Developmental Abnormalities: Endocrine system.
Specific Developmental Abnormalities: Other developmental abnormalities.

Species: Mouse
Dose: 300 MG/KG
Route of Application: Subcutaneous
Exposure Time: (14-16D PREG)
Result: Specific Developmental Abnormalities: Urogenital system.

Species: Pig
Dose: 1225 MG/KG
Route of Application: Oral
Exposure Time: (6W-16W PREG)
Result: Effects on Embryo or Fetus: Other effects to embryo.

CHRONIC EXPOSURE - MUTAGEN

Species: Rat
Dose: 50 UMOL/L
Cell Type: liver
Mutation test: DNA inhibition

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD
Result: Overexposure may cause reproductive disorder(s) based on tests with laboratory animals.

Species: Rat
Dose: 150 MG/KG
Route of Application: Oral
Exposure Time: (30D MALE)
Result: Paternal Effects: Testes, epididymis, sperm duct.
Paternal Effects: Prostate, seminal vessicle, Cowper's gland, accessory glands.

Species: Rat
Dose: 375 MG/KG
Route of Application: Oral
Exposure Time: (15D MALE)
Result: Paternal Effects: Testes, epididymis, sperm duct.
Paternal Effects: Prostate, seminal vessicle, Cowper's gland, accessory glands.

Species: Rat
Dose: 3840 MG/KG
Route of Application: Oral
Exposure Time: (64D MALE)
Result: Effects on Fertility: Male fertility index (e.g., # males impregnating females per # males exposed to fertile nonpregnant females). Specific Developmental Abnormalities: Musculoskeletal system.

Species: Rat
Dose: 280 MG/KG
Route of Application: Intraperitoneal
Exposure Time: (7D MALE)

Species: Rat
Dose: 70 MG/KG
Route of Application: Subcutaneous
Exposure Time: (7D MALE)
Result: Paternal Effects: Other effects on male. Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count).

Species: Rat
Dose: 65 MG/KG
Route of Application: Intramuscular
Exposure Time: (10-22D PREG)
Result: Effects on Newborn: Delayed effects.

Species: Rat
Dose: 29040 UG/KG
Route of Application: Intramuscular
Exposure Time: (17W MALE)

Species: Rat
Dose: 350 MG/KG
Route of Application: Parenteral
Exposure Time: (7D MALE)

Species: Rat
Dose: 200 MG/KG
Route of Application: Parenteral
Exposure Time: (16-17D PREG)
Result: Endocrine: Androgenic. Paternal Effects: Other effects on male.

Species: Mouse
Dose: 80 MG/KG
Route of Application: Subcutaneous
Exposure Time: (10D MALE)
Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count).

Species: Mouse
Dose: 400 MG/KG
Route of Application: Subcutaneous
Exposure Time: (10D MALE)
Result: Paternal Effects: Prostate, seminal vesicle, Cowper's gland, accessory glands.

Species: Mouse
Dose: 1 GM/KG
Route of Application: Subcutaneous
Exposure Time: (13-18D PREG)
Result: Effects on Newborn: Other postnatal measures or effects.

Species: Mammal
Dose: 1404 MG/KG
Route of Application: Oral
Exposure Time: (1-78D PREG)
Result: Effects on Newborn: Other postnatal measures or effects. Effects on Newborn: Physical.
Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION
Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT
Proper Shipping Name: None
Non-Hazardous for Transport: This substance is considered to be non-hazardous for transport.

IATA
Non-Hazardous for Air Transport: Non-hazardous for air transport.

Section 15 - Regulatory Information

EU ADDITIONAL CLASSIFICATION
Symbol of Danger: Xn
Indication of Danger: Harmful.
R: 20/21/22-63
Risk Statements: Harmful by inhalation, in contact with skin and if swallowed. Possible risk of harm to the unborn child.
S: 22-36
Safety Statements: Do not breathe dust. Wear suitable protective clothing.

US CLASSIFICATION AND LABEL TEXT
Indication of Danger: Harmful.
Risk Statements: Possible risk of harm to the unborn child. Harmful by inhalation, in contact with skin and if swallowed. Safety Statements: Do not breathe dust. Wear suitable protective clothing.

UNITED STATES REGULATORY INFORMATION
SARA LISTED: No

UNITED STATES - STATE REGULATORY INFORMATION

CALIFORNIA PROP - 65
California Prop - 65: This product is or contains chemical(s) known to the state of California to cause developmental toxicity. California Proposition 65: This product is or contains chemical(s) known to the state of California to cause developmental toxicity. California Proposition 65: This product is or contains chemical(s) known to the state of California to cause developmental toxicity.

CANADA REGULATORY INFORMATION
WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
Section 16 - Other Information

DISCLAIMER
For R&D use only. Not for drug, household or other uses.

WARRANTY
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