BAYER CORPORATION
AGRICULTURE DIVISION
P.O. Box 4913 Hawthorn Road
Kansas City, MO 64120-0013

TRANSPORTATION EMERGENCY
CALL CHEMTREC: (800) 424-9300
DISTRICT OF COLUMBIA: (202) 483-7616

NON-TRANSPORTATION
BAYER EMERGENCY PHONE...: (816) 242-2582
BAYER INFORMATION PHONE.: (816) 242-2000

I. PRODUCT IDENTIFICATION:

PRODUCT NAME.....: PROVADO 1.6
PRODUCT CODE.....: 11657
EPA REGISTRATION NO.: 3125-457
CHEMICAL FAMILY.....: Chloronicotinyl
CHEMICAL NAME.....: 1-[(6-chloro-3-pyridinyl)methyl]-N-nitro-
2-imidazolidinimine
SYNONYMS.....: Imidacloprid; BAY NTN 33893
FORMULA.....: C9 H10 Cl N5 O2
PRODUCT USE.....: Commercial Insecticide

II. HAZARDOUS INGREDIENTS:

INGREDIENT NAME /CAS NUMBER	EXPOSURE LIMITS	CONCENTRATION (%)
Imidacloprid 138261-41-3	OSHA : Not Established ACGIH: Not Established	17 %
Ingredient 1979 Specific chemical identity is withheld as a trade secret.	OSHA : Not Established ACGIH: Not Established	1-3 %
Ingredient 2035 Specific chemical identity is withheld as a trade secret.	OSHA : Not Established ACGIH: Not Established	1-3 %

III. PHYSICAL PROPERTIES:

PHYSICAL FORM.....: Viscous Liquid; Suspension
COLOR.....: Off-white to tan

Continued on next page

III. PHYSICAL PROPERTIES (Continued)

ODOR.....: Mild, non-offensive
ODOR THRESHOLD.....: Not established
MOLECULAR WEIGHT.....: 255.7 (for imidacloprid)
pH .....: 8.1
BOILING POINT.....: Not established
MELTING/FREEZING POINT....: Freezing: 20 F
VISCOSITY.....: 400-600 cps @ 25 C
SOLUBILITY IN WATER .....: 75% of mixture
SPECIFIC GRAVITY .....: 1.10
BULK DENSITY.....: Not applicable
% VOLATILE BY VOLUME.....: Not established
VAPOR PRESSURE .....: 1.5 x 10 -9 mm @ 20 C (for imidacloprid)
VAPOR DENSITY .....: Not established (Air = 1)

IV. FIRE AND EXPLOSION DATA:

FLASH POINT.....: Greater than 200 F (93 C)
FLAMMABLE LIMITS:
  UPPER EXPLOSIVE LIMIT (UEL)(%): Not Applicable
  LOWER EXPLOSIVE LIMIT (LEL)(%): Not Applicable
EXTINGUISHING MEDIA.....: Water; Carbon Dioxide; Dry Chemical; Foam
SPECIAL FIRE FIGHTING PROCEDURES: Keep out of smoke, cool exposed containers with water spray. Fight fire from upwind position. Use self-contained breathing equipment. Contain run-off by diking to prevent entry into sewers or waterways. Equipment or materials involved in pesticide fires may become contaminated.

V. HUMAN HEALTH DATA:

ROUTE(S) OF ENTRY.....: Inhalation; Skin Contact; Skin Absorption

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:
ACUTE EFFECTS OF EXPOSURE.....: No specific symptoms of acute overexposure are known to occur in humans. Animal studies have shown that this material is mildly toxic by the oral and dermal routes. It is minimally irritating to the conjunctiva of the eye but the irritation is reversible within 72 hours. It is not a dermal irritant or a dermal sensitizer.
CHRONIC EFFECTS OF EXPOSURE...: No specific symptoms of chronic overexposure are known to occur in humans.

CARCINOGENICITY.....: This product is not listed by NTP, IARC or regulated as a carcinogen by OSHA.

MEDICAL CONDITIONS
  AGGRAVATED BY EXPOSURE.....: No specific medical conditions are known which

V. HUMAN HEALTH DATA (Continued)

may be aggravated by exposure to this product.

VI. EMERGENCY AND FIRST AID PROCEDURES:

FIRST AID FOR EYES.....: Hold eyelids open and flush with copious amounts of water for 15 minutes. Call a physician if irritation persists or develops after flushing.

FIRST AID FOR SKIN.....: Remove contaminated clothing. Wash skin with soap and water. Get medical attention if irritation persists. If signs of intoxication (poisoning) occur, get medical attention immediately.

FIRST AID FOR INHALATION: First, remove victim to fresh air or uncontaminated area. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention as soon as possible.

FIRST AID FOR INGESTION.: If ingestion is suspected, call a physician or poison control center. Drink one or two glasses of water and induce vomiting by touching back of throat with finger, or, if available, by administering syrup of ipecac. If syrup of ipecac is available, administer 1 tablespoonful (15 mL) of syrup of ipecac followed by 1 to 2 glasses of water. If vomiting does not occur within 20 minutes, repeat the dose once. Do not induce vomiting or give anything by mouth to an unconscious person.

NOTE TO PHYSICIAN.....: Treat symptomatically. In case of poisoning, it is also requested that Bayer Corp., Agriculture Division, Kansas City, Missouri, be notified. Telephone: 816/242-2582

ANTIDOTES.....: None

VII. EMPLOYEE PROTECTION RECOMMENDATIONS:

EYE PROTECTION REQUIREMENTS.....: Splash-proof goggles should be used to prevent liquid splashes from getting into the eyes.

SKIN PROTECTION REQUIREMENTS.....: Wear long sleeves and trousers to prevent skin contact.

HAND PROTECTION REQUIREMENTS.....: The use of chemical-resistant gloves to prevent skin contact is recommended as good practice.

RESPIRATOR REQUIREMENTS.....: Under normal handling conditions, no respiratory protection is needed; however, when potential exposure to this product is excessive, wear a NIOSH-approved respirator for dusts and mists or for pesticides.

VENTILATION REQUIREMENTS.....: Control exposure levels through the use of general and local exhaust ventilation where needed.

ADDITIONAL PROTECTIVE MEASURES.....: Clean water should be available for washing in case of eye or skin contamination. Educate and train employees in safe use of the product. Follow all label instructions. Launder clothing after use. Wash thoroughly after handling.

VIII. REACTIVITY DATA:

STABILITY.....: This is a stable material.
HAZARDOUS POLYMERIZATION...: Will not occur.
INCOMPATIBILITIES.....: None known
INSTABILITY CONDITIONS.....: Strong exothermal reaction above 200 C (imidacloprid)
DECOMPOSITION PRODUCTS.....: Proposed: HCl, HCN, CO, NOx (for imidacloprid)

IX. SPILL AND LEAK PROCEDURES:

SPILL OR LEAK PROCEDURES....: Isolate area and keep unauthorized people away. Do not walk through spilled material. Avoid breathing vapors and skin contact. Wear proper protective equipment. Dike contaminated area with absorbent granules, soil, sand, etc. If large spill, material should be recovered. Small spills can be absorbed with absorbent granules, spill control pads, or any absorbent material. Carefully sweep up absorbed spilled material. Place in covered container for reuse or disposal. Scrub contaminated area with soap and water. Use dry absorbent material such as clay granules to absorb and collect wash solution for proper disposal. Contaminated soil may have to be removed and disposed. Do not allow material to enter streams, sewers, or other waterways or contact vegetation.
WASTE DISPOSAL METHOD.....: Follow container label instructions for disposal of wastes generated during use in compliance with the product label. In other situations, bury in an EPA approved landfill or burn in an incinerator approved for pesticide destruction. Do not reuse container.

X. SPECIAL PRECAUTIONS & STORAGE DATA:

STORAGE TEMPERATURE(MIN/MAX): None/30 day average not to exceed 100 F.
SHELF LIFE.....: Not Noted
SPECIAL SENSITIVITY.....: Heat
HANDLING/STORAGE PRECAUTIONS: Store in a cool dry area designated specifically for pesticides. Do not store near any material intended for use or consumption by humans or animals.

XI. SHIPPING INFORMATION:

TECHNICAL SHIPPING NAME.....: Imidacloprid
FREIGHT CLASS BULK.....: Insecticides, NOI-NMFC 102120
FREIGHT CLASS PACKAGE.....: Insecticides, NOI-NMFC 102120
PRODUCT LABEL.....: Not Noted

DOT (DOMESTIC SURFACE)

PROPER SHIPPING NAME.....: Not hazardous or regulated
HAZARD CLASS OR DIVISION .....: Non-Regulated

IMO / IMDG CODE (OCEAN)

PROPER SHIPPING NAME.....: Not hazardous or regulated
HAZARD CLASS DIVISION NUMBER...: Non-Regulated

ICAO / IATA (AIR)

PROPER SHIPPING NAME.....: Not hazardous or regulated
HAZARD CLASS DIVISION NUMBER...: Non-Regulated

XII. ANIMAL TOXICITY DATA:

Acute toxicity studies have not been performed on this product as formulated. The acute toxicity data provided have been extrapolated from a similar formulation, MERIT 2 Flowable Insecticide. The non-acute information pertains to the technical grade active ingredient, imidacloprid.

ACUTE TOXICITY
ORAL LD50.....: Male Rat: >4870 mg/kg; Female Rat: 4143 mg/kg
DERMAL LD50.....: Male & Female Rabbit: >2000 mg/kg
INHALATION LC50....: 4 Hr. Exposure to Liquid Aerosol: Male and Female Rat: >5.33 mg/l (analytical) -- 1Hr. Exposure to Liquid Aerosol (extrapolated from 4 Hr. LC50): Male and Female Rat: >20 mg/l (analytical)
EYE EFFECTS.....: Rabbit: Only minimal irritation to the conjunctiva was observed with all irritation resolving within 72 hours.
SKIN EFFECTS.....: Rabbit: Not a dermal irritant.
SENSITIZATION.....: Guinea Pig: Not a dermal sensitizer.

SUBCHRONIC TOXICITY...: In a 3 week dermal toxicity study, rabbits were treated with the active ingredient, imidacloprid, at the limit dose level of 1000 mg/kg for 6 hours/day, 5 days/week. There were no local or systemic effects observed at any of the levels tested. The no-observed-effect-level (NOEL) was 1000 mg/kg. In a 4 week inhalation study, rats were exposed to dust concentrations of imidacloprid at 5.5, 30.5 and 191.2 mg/cubic meter for 6 hours/day, 5 days/week. Effects observed at the high concentration included

decreased body weight gains, decreased heart and thymus weights, increased liver weights, and induction of the hepatic mixed-function oxidases. Histopathological examinations did not reveal any organ damage or local injury to the respiratory tract. The NOEL was 5.5 mg/cubic meter based on induction of the hepatic mixed-function oxidases.

CHRONIC TOXICITY.....: Dogs were administered imidacloprid for 1 year at dietary concentrations of 200, 500 or 1250 ppm. Due to the lack of significant effects, the high dose was increased to 2500 ppm at 17 weeks for the remainder of the study. Effects at the high dose included decreased food consumption, increased liver weights and elevated serum chemistries. The NOEL was 500 ppm. In chronic studies using rats, imidacloprid was administered for 2 years to rats at dietary concentrations of 100, 300, 900 or 1800 ppm. Histopathology examinations revealed an increased incidence of mineralization in the colloid of the thyroid follicles at concentrations of 300 ppm and greater. At 1800 ppm, there were changes in the serum chemistries and a slight increase in the incidence of parafollicular hyperplasia seen in the thyroids. Body weight gains were reduced at 900 and 1800 ppm. The overall NOEL was 100 ppm.

CARCINOGENICITY.....: Imidacloprid was investigated for carcinogenicity in chronic feeding studies using mice and rats at maximum levels of 2000 and 1800 ppm, respectively. There was no evidence of a carcinogenic potential observed in either species.

MUTAGENICITY.....: The imidacloprid mutagenicity studies, taken collectively, demonstrate that the active ingredient is not genotoxic or mutagenic.

DEVELOPMENTAL TOXICITY: In a teratology study using rats, imidacloprid was administered by oral gavage during gestation at doses of 10, 30 or 100 mg/kg. At the maternally toxic dose of 100 mg/kg, skeletal examinations of the fetuses revealed a slight increase in the incidence of wavy ribs. The NOELs for maternal and developmental toxicity were 10 and 30 mg/kg, respectively. Teratogenic effects were not observed at any of the doses tested. Rabbits were administered imidacloprid during gestation at oral doses of 8, 24 or 72 mg/kg. At the maternally toxic dose of 72 mg/kg, reduced body weights and delayed skeletal ossification were observed in the fetuses. The NOELs for maternal and developmental toxicity were 8 and 24 mg/kg, respectively. Teratogenic effects were not observed at any of the doses tested.

REPRODUCTION.....: In a reproduction study, imidacloprid was administered to rats for 2 generations at dietary concentrations of 100, 250 or 700 ppm. Offspring at 700 ppm, exhibited reduced mean body weights and body weight gains. No other reproductive effects were observed. The maternal and reproductive NOELs were 100 and 250 ppm, respectively.

NEUROTOXICITY .....: In an acute oral neurotoxicity study using rats, imidacloprid was administered as a single dose at concentrations of 42, 151 or 307 mg/kg. Clinical observations and neurotoxicity evaluations were performed over a period of 15 days followed by a neurohistopathological examination. Deaths attributed to imidacloprid were observed at the high dose within a day of treatment. The NOEL for motor and locomotor activity was 42 mg/kg for males. Females at the low dose exhibited minimal decrease in activity in the figure-eight maze. In a subsequent study, the NOEL for motor and locomotor activity in females was 20 mg/kg. All clinical signs and neurobehavioral effects were ascribed to acute cholinergic toxicity, with complete recovery at

sublethal doses within 7 days following treatment. The NOEL for neurotoxicity was 307 mg/kg based on the absence of treatment-related microscopic lesions in skeletal muscle or neural tissue. In a 13 week neurotoxicity study, imidacloprid was administered to rats at dietary concentrations of 140, 963 or 3027 ppm. At the mid-and high dose, effects observed included reductions in body weight and feed consumption, and clinical chemistry findings. Neurobehavorial changes were observed only in males at the high dose. There were no correlative micropathologic findings in muscle or neural tissues in any animals at any treatment level. The NOEL for neurotoxicity was 3027 ppm. The overall NOEL was 140 ppm.

XIII. FEDERAL REGULATORY INFORMATION:

OSHA STATUS.....: This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.

TSCA STATUS.....: This product is exempt from TSCA Regulation under FIFRA Section 3 (2)(B)(ii) when used as a pesticide.

CERCLA REPORTABLE QUANTITY..: No components listed

SARA TITLE III:

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES..: None

SECTION 311/312 HAZARD CATEGORIES.....: Immediate Health Hazard

SECTION 313 TOXIC CHEMICALS.....: None

RCRA STATUS.....: If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)

XIV. OTHER REGULATORY INFORMATION:

NFPA 704M RATINGS:	Health	Flammability	Reactivity	Other
	1	1	1	

0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

Bayer’s method of hazard communication is comprised of Product Labels and

XIV. OTHER REGULATORY INFORMATION (Continued)

Material Safety Data Sheets. NFPA ratings are provided by Bayer Corporation as a customer service.

XV. APPROVALS:

REASON FOR ISSUE.....: Create new MSDS
PREPARED BY.....: V. C. Standart
APPROVED BY.....: D. C. Eberhart
TITLE.....: Product Safety Manager
APPROVAL DATE.....: 11/28/94
SUPERSEDES DATE.....: None
MSDS NUMBER.....: 20912