THREE ELEPHANT BORIC ACID GRANULAR TECHNICAL

Material Safety Data Sheet

PESTICIDE: EPA Registration No. **64745-3** [Not for Food or Drug Use - - ONLY For Manufacturing Use]

Manufactured by:
Searles Valley Minerals
13200 Main Street
P.O. Box 367, Trona, CA 93592-0367

Sectrion I - CHEMICAL PRODUCT & COMPANY IDENTIFICATION

PRODUCT NAME: Three Elephant Boric Acid Granular Technical --- Pesticide: EPA Reg.# 64745-3
MANUFACTURER:
Searles Valley Minerals
P.O. Box 367
Trona, CA 93592-0367
EMERGENCY PHONE NUMBER:
24 Hour Information Service: 760-372-2291
CHEMTREC: 800-424-9300
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Section II - COMPOSITION/INFORMATION ON INGREDIENTS

NOTE: See Section 15 for Exposure Limits.
PRODUCT NAME: Boric Acid Granular Technical
FORMULA: H_3BO_3
CHEMICAL NAME: Boric Acid
SYNONYMS: OrthoBoric Acid, Boracic Acid
COMPONENTS:
Material: Boric Acid
CAS Number: 10043-35-3
Percent: 99.755% (Label Claim = 100%)

Boric Acid is hazardous under the OSHA Hazard Communication Standard based on animal chronic toxicity studies of similar organic Borates; see Section 11 for details on Toxicological Data.

Section III - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Boric Acid is a white odorless, powdered substance that is not flammable, combustible, or explosive, and it presents no unusual hazard if involved in a fire. Boric Acid presents little or no hazard (to humans) and has low acute oral and dermal toxicities. Care should be taken to minimize the amount of Boric Acid released to the environment to avoid ecological effects.
ROUTES OF EXPOSURE: In the occupational setting, inhalation is the most important route of exposure. Dermal absorption is usually not important because Boric Acid is not absorbed through the intact skin.
INHALATION: Mild irritation to nose and throat may occur when the PEL or TLV are exceeded (see Section 15).
EYE CONTACT: Exposure to Boric Acid dust does not cause eye irritation in normal industrial use.
DERMAL CONTACT: Boric Acid is non-irritating to the intact skin. Can be readily absorbed through broken or abraded skin.
INGESTION: Boric Acid products are not intended for ingestion. Amounts greater than one teaspoonful, when ingested, may cause gastrointestinal problems.
CANCER: Boric Acid is not considered a carcinogen.
REPRODUCTIVE: A human study of occupationally exposed Borate worker population showed no adverse reproductive effects. Animal studies of similar organic Borates demonstrated reproductive effects in males.
TARGET ORGANS: No target organs have been determined in humans. High dose animal ingestion studies indicate that the testes is the target organ.
SIGNS AND SYMPTOMS OF EXPOSURE: Symptoms of accidental over-exposure to Boric Acid have been associated with ingestion or by absorption through large areas of damaged skin. These may include nausea, vomiting, and diarrhea, with delayed effects of skin redness and peeling.

See Section 4 also. See Section 11 for details on Toxicological Data.

Section IV - EMERGENCY & FIRST AID PROCEDURES

HAZARDS TO HUMANS AND DOMESTIC ANIMALS: CAUTION Harmful if swallowed or inhaled. Causes moderate eye irritation. Avoid contact with eyes or clothing. Avoid breathing dust. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.

STATEMENT OF PRACTICAL TREATMENT: **If swallowed:** Call a physician or poison control center. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger [or if available, by administering syrup of ipecac]. If person is unconscious, do not give anything by mouth and do not induce vomiting. **If Inhaled:** Remove victim to fresh air. If not breathing, give artificial respiration, preferably by mouth-to-mouth. Get medical attention. **If In Eyes:** Flush eyes with plenty of water. Call a physician if irritation persists.

Section V - FIRE FIGHTING MEASURES

GENERAL HAZARD: Boric Acid is not flammable, combustible, or explosive. Boric Acid presents no unusual hazards when involved in a fire. This product is an inherent fire retardant.
UEL/LEL: Not Applicable
FLASH POINT: Not Applicable
AUTOIGNITION TEMPERATURE: Not Applicable
FLAMMABILITY CLASSIFICATION: Flammability Classification (29 CFR 1910.1200), Non-flammable solid.
EXTINGUISHING MEDIA: Any fire extinguishing media may be used on nearby fires.

Section VI - ACCIDENTAL RELEASE MEASURES

ENVIRONMENTAL HAZARD: Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.

Section VII - HANDLING & STORAGE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling]

CAUTION: Keep out of Reach of Children

HYGIENIC PRACTICES: Wash hands thoroughly with soap and water after handling, and before eating, drinking, or smoking.
STORAGE AND DISPOSAL: Do not contaminate water, food or feed by storage or disposal. **STORAGE:** Store in a cool, dry area away from heat. **PESTICIDE DISPOSAL:** Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. **CONTAINER DISPOSAL:** completely empty bags into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. Observe all Federal, state and local regulations concerning disposal of waste pesticide and containers. **FORMULATORS AND REPACKAGERS USING THIS PRODUCT ARE RESPONSIBLE FOR OBTAINING ENVIRONMENTAL PROTECTION AGENCY (EPA) REGISTRATION FOR THEIR PRODUCTS**. [Refer to PR Notice 95-1 for the applicability of the *Environmental Hazards* statement to your product.) This product is a soluble inorganic powder which may be used for the formulation of products for the following **registered end-use patterns:** 1) Algaecides for water treatment in swimming pools; 2) Bacteriostats for use in impregnating or otherwise applying to absorbent material(s) to inhibit the growth of odor-causing bacteria when applied at a rate of 0.015 to 0.37% w/w (approximately) equivalent boron; 3) Insecticides for mop, spot and crack and crevice treatment in homes, residential, industrial, institutional and commercial buildings and in transportation equipment; 4) Insecticide/fungicide for wood treatment.

Section VIII - EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Use local exhaust ventilation to keep airborne levels below exposure limits (see Section 15).
EYE PROTECTION: Use goggles or vented safety glasses in excessively dusty conditions.
SKIN PROTECTION: (Not required under normal conditions.) Use protection if excessively dusty or if skin is damaged.
RESPIRATORY PROTECTION: Use appropriate NIOSH/MSHA certified respirators when levels are expected to exceed exposure limits (see Section 15).

Section IX - PHYSICAL & CHEMICAL PROPERTIES

SOLUBILITY IN WATER: 4.7% at 20□C; 27.5% at 100□C
APPEARANCE: White granular or powder solid, odorless.
MOLECULAR WEIGHT: 61.83
BOILING POINT: Not Applicable
MELTING POINT: 169□C
pH VALUE: At 20□C: 7.26 (100 ppm solution)
FLASH POINT: None
SPECIFIC GRAVITY (H_2O = 1 at 4□C): 1.44
VAPOR PRESSURE: Not Applicable
BULK DENSITY: 57.0 Lbs./ CuFt.

Section X - STABILITY & REACTIVITY DATA

STABILITY: Stable under normal conditions; forms partial hydrate in moist air. When heated, water is lost forming Metaboric Acid (HBO_2). On further heating, the material is converted to boric oxide (B_2O_3).
INCOMPATIBILITY: Boric Acid reacts as a weak acid that may cause corrosion of base metals. Reaction with strong reducing agents such as metal hydrides or alkali metals will generate hydrogen gas that could create an explosive hazard.
HAZARDOUS DECOMPOSITION PRODUCTS: None known.
HAZARDOUS POLYMERIZATION: Will not occur.

Section XI - TOXICOLOGICAL EFFECTS

EYES: Boric Acid, when applied to the eyes of albino rabbits (Draize test), produced effects of mild erythema, and mild to moderate discharge in 5 of 6 rabbits. All signs subsided by the fourth day after application. Fifty years of occupational exposure history indicates no human eye injury from exposure to Boric Acid.

SKIN: Boric Acid was applied to the skin of albino rabbits. Slight to no irritation persisted 72 hours after application. No evidence of tissue damage was found. Low acute dermal toxicity; LD_{50} for rabbits is expected to be greater than 2,000 mg/kg of body weight (test conducted per 16 CFR 1500.41). Boric Acid is not absorbed through intact skin.
INHALATION: Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposure to Boric Acid and Sodium Borate dust (See Section 4 also).
INGESTION: Low acute oral toxicity; LD_{50} for Sprague-Dawley rats is 3,500 to 4,100 mg/kg of body weight. (See Section 4 also).
CARCINOGENICITY: Boric Acid is not listed as a carcinogen by the Environmental Protection Agency (EPA), the State of California, or the International Agency for Research on Cancer (IARC). A report issued by the National Toxicology Program showed "no evidence of carcinogenicity" from a full two-year bioassay on Boric Acid on mice at feed doses of 2,500 to 5,000 ppm in the diet. No mutagenic activity was observed for Boric Acid in a recent battery of four short-term mutagenicity assays.
REPRODUCTIVE: A human study of occupationally exposed Borate worker population showed no adverse reproductive effects. Animal studies indicate that Boric Acid reduces or inhibits sperm production, causes testicular atrophy, and, when given to pregnant animals during gestation, may cause developmental changes. These feed studies were conducted under chronic exposure conditions leading to doses many times in excess of those that could occur through inhalation of dust in the occupational setting.

Dietary levels of Boric Acid of 6,700 ppm in chronic feeding studies in rats and dogs produced testicular changes {Weir, Fisher, 1972}. In chronic feeding studies of mice on diets containing 5,000 ppm Boric Acid, testicular atrophy was present, while mice fed 2,500 ppm Boric Acid showed no significant increase in testicular atrophy. In another chronic Boric Acid study, degeneration of seminiferous tubules was present together with a reduction of germ cells in mice fed 4,500 ppm Boric Acid. In a reproduction study on rats, 2,000 ppm of dietary Boric Acid had no adverse effect on lactation, litter size, weight and appearance [Weir, Fisher, 1972]. In a continuous breeding study in mice, there was a reduction in fertility rates in males receiving 4,500 ppm Boric Acid, but not for females receiving 4,500 ppm Boric Acid [Fail et al., 1992].

Boric Acid at dietary levels of 1,000 ppm administered to pregnant female rats throughout gestation caused a slight reduction in fetal weight, but was considered close to NOAEL. Doses of 2,000 ppm and above caused fetal malformations and maternal toxicity. In mice, the no effect level for fetal weight reduction and maternal toxicity was 1,000 ppm Boric Acid. Fetal weight loss was noted at dietary levels of 2,000 ppm and above. Malformations (agenesis or shortening of the thirteenth rib) were seen at 4,000 ppm [Heindal et al.,1992].

Section XII - ECOLOGICAL DATA

NOTE: Boron is the element in Boric Acid that is used to characterize Borate product ecological effects. To convert Boric Acid to boron multiply by 0.1748.

FISH TOXICITY: Boron naturally occurs in seawater at an average concentration of 5 mg B/liter. In laboratory studies the acute toxicity (96-hr LC_{50}) for under-yearling Coho salmon (Onchorhynchus kisutch) in seawater was determined as 40 mg B/L (added as Sodium Metaborate). The Minimum Lethal Dose for minnows exposed to Boric Acid at 20□C for 6 hours is 18,000 to 19,000 mg/l in distilled water, 19,000 to 19,500 in hard water.

Rainbow trout (S. gairdneri)
- 24-day LC_{50} = 150.0 mg/B/L
- 36-day NOEC-LOEC = 0.75-1 mg/B/L

Goldfish (Carassius auratus)
- 7-day NOEC-LOEC = 26.50 mg/B/L
- 3-day LC_{50} = 178 mg/B/L

BIRD TOXICITY: Dietary levels of 100 mg/kg resulted in reduced growth of female mallards. As little as 30 mg/kg fed to mallard adults adversely affected the growth rate of offspring.
INVERTEBRATE TOXICITY:

Daphnids
- 48-hour LC_{50} = 133 mg/B/L
- 21-day NOEC-LOEC = 6-13 mg/B/L

PHYTOTOXICITY: Although boron is an essential micro-nutrient for healthy growth of plants, it can be harmful to boron-sensitive plants in higher quantities. Plants and trees can easily be exposed by root absorption to toxic levels of boron in the form of water-soluble Borate leached into nearby waters or soil. Care should be taken to minimize the amount of boron released to the environment.
ENVIRONMENTAL FATE DATA:
Persistence/Degradation: Boron is naturally occurring and is commonly found in the environment. Boric Acid decomposes in the environment to natural Borate.
Soil Mobility: The product is soluble in water and is leachable through normal soil.

Section XIII - DISPOSAL CONSIDERATIONS

DISPOSAL GUIDANCE: See Section 7.

Section XIV - TRANSPORT REGULATIONS

US DEPARTMENT of TRANSPORTATION (DOT) IDENTIFICATION NUMBER: Boric Acid is not a DOT Hazardous Material or Hazardous Substance.
INTERNATIONAL TRANSPORTATION: Boric Acid has no U.N. number, and is not regulated under international rail, highway, water, or air transport regulations.

Section XV - REGULATORY INFORMATION

TSCA NUMBER: 10043-35-3
RCRA (40 CFR 261): Not listed under any section.
CERCLA (SUPERFUND): Not listed under any section.
CLEAN WATER ACT (CWA): Boric Acid is not regulated by any water quality criteria under Section 304, is not listed as priority pollutant under Section 307, and is not listed as a hazardous substance under Section 311.
SAFE DRINKING WATER ACT (SDWA): Not regulated under SDWA, 42 USC 300g-1, 40 CFR 141 et seq. Consult state and local regulations for possible water quality advisories involving boron.
OCCUPATIONAL EXPOSURE LIMITS: Boric Acid is listed/regulated by OSHA, CAL OSHA, or ACGIH as "Particulate Not Otherwise Classified" or "Nuisance Dust".
OSHA: Permissible Exposure Limit: 150mg/m^3, total dust
5 mg/m^3, respirable dust
ACGIH: Threshold Limit Value: 2 mg/m^3
CALIFORNIA OSHA: Permissible Exposure Limit: 5 mg/m^3

INTERNATIONAL AGENCY for RESEARCH on CANCER: Not listed as a carcinogen.
NTP ANNUAL REPORT ON CARCINOGENS: Not listed as a carcinogen.
OSHA CARCINOGEN: Not listed as an OSHA carcinogen.
CONEG MODEL LEGISLATION: Meets all CONEG requirements relating to heavy metal limitations on components of packaging materials.
CALIFORNIA PROPOSITION 65: Not listed as carcinogen or reproductive toxin.
FEDERAL DRUG AGENCY (FDA): Pursuant to 21 CFR 175.105, 176.180, and 181.30, Boric Acid (non-pesticide) is approved by the FDA for use in adhesive components of packaging materials, as a component of paper coatings on such materials, or for use in the manufacture thereof, which materials are expected to come in contact with dry food products.
WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEMS (WHMIS): Boric Acid is regulated as a Controlled Product and is classified as D2A because of reproductive toxicity.
FIFRA: This product is a ***PESTICIDE.***

Section XVI - OTHER INFORMATION

OTHER INFORMATION:
Product Label Text Hazard Information (see appropriate sections as relates to pesticide use):

- May be harmful if swallowed.
- May cause reproductive harm or birth defects based on animal data.
- Avoid contamination of food or feed.
- Not for food or drug use
- Practice good housekeeping.
- Refer to all sections of this MSDS.
- KEEP OUT OF THE REACH OF CHILDREN.

National Fire Protection Association (NFPA) Classification:
4 = Severe, 3 = Serious, 2 = Moderate, 1 = Slight, 0 = Minimal

Health	0
Flammability	0
Reactivity	0

Hazardous Materials Information Systems (HMIS):
4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Insignificant

Blue:	(Acute Health)	1*
Red:	(Flammability)	0
Yellow:	(Reactivity)	0

* Chronic Effects (for explanation see Section 11)

NOTICE

Judgements as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, Searles Valley Minerals extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.

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