MATERIAL SAFETY DATA

FOR ANY EMERGENCY, CALL 24HOURS/ 7 DAYS: 1-800-654-6911
FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC(R): 1-800-424-9300
FOR ALL MSDS QUESTIONS & REQUESTS, CALL: 1-800-511-MSDS

PRODUCT NAME: TRIADINE® 10 INDUSTRIAL MICROBIOSTAT

1. PRODUCT AND COMPANY IDENTIFICATION

REVISION DATE: 06-27-2003
SUPERCEDES: 06-27-2003
MSDS NO: 00293-0004 - 100066
SYNONYMS: 1,3,5-tris(hydroxyethyl)-s-triazine - (Active ingredient)
CHEMICAL FAMILY: Mixture
DESCRIPTION / USE: Bactericide-fungicide Industrial biocide
FORMULA: Not applicable/Mixture

Arch Chemicals, Inc. 501 Merritt 7 PO Box 5204 Norwalk, CT 06856-5204

2. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS or CHEMICAL NAME</th>
<th>CAS #</th>
<th>% Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,3,5-Triazine-1,3,5(2H,4H,6H)-triethanol</td>
<td>4719-04-4</td>
<td>62 - 69</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>25 - 35</td>
</tr>
<tr>
<td>2-Pyridinethiol, 1-oxide, sodium salt</td>
<td>3811-73-2</td>
<td>5 - 10</td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

OSHA Hazard Classification: corrosive to eyes, skin irritant

Routes of Entry: Inhalation, skin, eyes, ingestion
Chemical Interactions: No known interactions
Medical Conditions Aggravated: Dermatitis may be aggravated following exposure.

Human Threshold Response Data
Odor Threshold: Not established
Irritation Threshold: Not established
Hazardous Materials Identification System/National Fire Protection Association Classifications

<table>
<thead>
<tr>
<th>Hazard Ratings:</th>
<th>Health</th>
<th>Flammability</th>
<th>Reactivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMIS</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NFPA</td>
<td>Not established</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Immediate (Acute) Health Effects

Inhalation Toxicity: Moderately toxic by inhalation.

Inhalation Irritation: High concentrations are moderately irritating to the eyes, nose, throat, and lungs.

Skin Contact: Skin contact may cause moderate irritation consisting of transient redness and swelling. This irritant effect would not be expected to result in permanent damage. Prolonged exposure may cause scab formation.

Skin Absorption: May be absorbed through skin, but it is unlikely that harmful effects will occur unless contact is prolonged, repeated, and extensive.

Eye Contact: Severe irritation and/or burns can occur following exposure. Direct contact may cause impairment of vision and corneal damage. Rinsing of the eye should take place immediately.

Ingestion Irritation: Ingestion may cause irritation of the gastrointestinal tract and gastrointestinal discomfort with any or all of the following symptoms: nausea, vomiting, lethargy or diarrhea.

Ingestion Toxicity: Moderately toxic if swallowed.

Acute Target Organ Toxicity: Respiratory Tract, Eyes, Skin

Prolonged (Chronic) Health Effects

Carcinogenicity: This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP or EPA. Sodium Omadine was administered orally and dermally to laboratory animals and was found not to induce tumor formation as compared to control animals.

Reproductive and Developmental Toxicity: Not known or reported to cause reproductive or developmental toxicity.

Sensitization: A similar product was found to be negative in the human repeat insult patch test. This product contains residual amounts of formaldehyde. Those individuals who are sensitive to the effects of formaldehyde may experience an allergic skin reaction to this product.

Inhalation: Prolonged or repeated exposure may cause more severe irritation.

Skin Contact: There are no known or reported effects from chronic exposure except for effects (if any) similar to those experienced from acute exposure.

Skin Absorption: May be absorbed through skin, but it is unlikely that harmful effects will occur unless contact is prolonged, repeated, and extensive.

Ingestion: There are no known or reported effects from chronic ingestion except for effects similar to those experienced from single exposure.

Chronic Target Organ Toxicity: Eyes, Respiratory Tract

Supplemental Health Hazard Information: This product may release formaldehyde during use. Formaldehyde is listed by IARC as a probable human carcinogen. In vitro mutagenicity tests did not reveal any adverse effects. Repeat exposure animal studies did not reveal any unusual effects. The only effect noted was due to the irritant nature of this product.
4. FIRST AID MEASURES

Inhalation: IF INHALED: Remove individual to fresh air. Seek medical attention if breathing becomes difficult.

Skin Contact: IF ON SKIN: Immediately flush skin with plenty of water for 15 minutes. If clothing comes in contact with the product, the clothing should be removed immediately and laundered before re-use. Call a physician.

Eyes: IF IN EYES: Immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids apart. Call a physician immediately.

Ingestion: IF SWALLOWED: Immediately drink water to dilute. Consult a physician if symptoms develop. Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Flammability Summary (OSHA): Product is not known to be flammable, combustible, pyrophoric or explosive.

Flammable Properties
Flash Point: None
Autoignition Temperature: None
Upper Flammable/Explosive Limit, % in air: Not applicable
Lower Flammable/Explosive Limit, % in air: Not applicable

Fire/Explosion Hazards: This material is not expected to burn unless all the water is boiled away. The remaining compounds may be ignitable.

Extinguishing Media: Not Applicable. - Choose extinguishing media suitable for surrounding materials.

Fire Fighting Instructions: In case of fire, use normal fire fighting equipment including a NIOSH approved self-contained breathing apparatus (SCBA). Use water to cool containers.

Hazardous Combustion Products: oxides of nitrogen, Formaldehyde, Carbon monoxide, Carbon dioxide

6. ACCIDENTAL RELEASE MEASURES

Personal Protection for Emergency Situations: Additional protective clothing must be worn to prevent personal contact with this material. Those items include but are not limited to boots, impervious gloves, hard hat, splash-proof goggles, impervious clothing, i.e., chemically impermeable suit, self-contained breathing apparatus.

Spill Mitigation Procedures
Air Release: Vapors may be suppressed by the use of water fog. Contain all liquid for treatment or neutralization.

Water Release: Divert water flow around spill if possible and safe to do so. Notify all downstream users of possible contamination. Continue to handle as described in land spill.

Land Release: Absorb spill with inert material (e.g., dry sand, clay, earth or commercial absorbent), then place in a chemical waste container. Place spill cleanup materials in proper container/s for proper disposal and decontaminate the entire spill area.
**7. HANDLING AND STORAGE**

Handling: Do not take internally. Avoid contact with skin, eyes and clothing. Upon contact with skin or eyes, wash off with water. Avoid breathing mist or vapor.

Storage: Do not expose to direct light.

Shelf Life Limitations: One year minimum if stored in the original container in a cool, dry place.

Incompatible Materials for Storage: Refer to Section 10, "Incompatible Materials."

Do Not Store At temperatures Above: 122 Deg. F. 50 Deg. C.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

Ventilation: Local exhaust ventilation or other engineering controls are necessary when handling or using this product.

Protective Equipment for Routine Use of Product

Respiratory Protection: Wear a NIOSH approved respirator if any exposure occurs.

Respirator Type(s): As a minimum a NIOSH approved full-face respirator equipped with formaldehyde cartridges.

Skin: Avoid skin contact by wearing gloves, an apron and other protective equipment. Wash hands and other exposed areas thoroughly with soap and water immediately after any contact. A safety shower should be provided in the immediate work area.

Eyes: Use chemical goggles and a faceshield. Emergency eyewash should be provided in the immediate work area.

Protective Clothing Type: Impervious

**Exposure Limit Data**

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>CAS #</th>
<th>OSHA PEL / STEL</th>
<th>ACGIH LIMITS</th>
<th>ACGIH WEEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,3,5-triazine-1,3,5-</td>
<td>4719-04-4</td>
<td>None established</td>
<td>None established</td>
<td>Not Established</td>
</tr>
<tr>
<td>(2H,4H,6H)-triethanol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Pyridinethiol, 1-oxide, sodium salt</td>
<td>3811-73-2</td>
<td>None established</td>
<td>None established</td>
<td>Not Established</td>
</tr>
<tr>
<td>2-Pyridinethiol, 1-oxide, sodium salt: Arch internal standard: 0.35 mg/cubic meter (TWA); MAK: 1mg/cubic meter (TWA)</td>
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</tbody>
</table>

CHEMICAL NAME: NIOSH Immediately Dangerous to Life or Health:

The IDLH has not been established for this product.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Physical State:</th>
<th>liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color:</td>
<td>pale amber</td>
</tr>
<tr>
<td>Odor:</td>
<td>mild amine</td>
</tr>
<tr>
<td>Molecular Weight:</td>
<td>Not Applicable/Mixture</td>
</tr>
<tr>
<td>pH:</td>
<td>10 - 11.5 (10% solution in neutral, distilled water)</td>
</tr>
<tr>
<td>Octanol/Water Coeff:</td>
<td>No data</td>
</tr>
<tr>
<td>Solubility in Water:</td>
<td>Completely miscible</td>
</tr>
</tbody>
</table>
Bulk Density: 1.17 g/cc
Specific Gravity: 1.17
Vapor Density: No data
Vapor Pressure: (@ 25 Deg. C) 15.3 mmHg
Evaporation Rate: < 1.00 (water = 1)
Boiling Point: 110 Deg. C.
230 Deg. F.
Freezing Point: - 36 Deg. C.
- 33 Deg. F.
Volatile, % by vol.: 30%
VOC Content %w/w / lbs/gal: Not applicable / Not applicable
HAP Content %w/w / lbs/gal: Not applicable / Not applicable

10. STABILITY AND REACTIVITY

Stability and Reactivity Summary: Stable under normal conditions. This product may become unstable at elevated temperatures after the removal of water. Decomposes slowly. Product is not sensitive to mechanical shock or impact. Not sensitive to static discharge.

Hazardous Polymerization: Will not occur
Conditions to Avoid: Avoid direct exposure to sunlight or ultraviolet (UV) light sources. High temperatures
Chemical Incompatibility: concentrated acids, strong oxidizing agents
Hazardous Decomposition Products: Formaldehyde, Carbon monoxide, Carbon dioxide, oxides of nitrogen
Decomposition Temperature: No data

11. TOXICOLOGICAL INFORMATION

Component Animal Toxicology
Oral LD50 value:
1,3,5-Triazine-1,3,5(2H,4H,6H)-triethanol Oral LD50: Rat 763 mg/kg
Dermal LD50 value:
1,3,5-Triazine-1,3,5(2H,4H,6H)-triethanol Dermal LD50 Rabbit > 2 g/kg
Inhalation LC50 value: No data

Product Animal Toxicity:
Oral LD50 value: Oral LD50: Rat Believed to be 800 mg/kg
Dermal LD50 value: Dermal LD50 Rabbit > 2 g/kg
Inhalation LC50 value: Inhalation LC50 (4h) nose only Rat Believed to be 0.87 mg/l (aerosol)
Inhalation LC50 (1h) nose only Rat Believed to be 3.5 mg/l (aerosol)

Skin Irritation: This material is expected to be severely irritating.
Eye Irritation: Draize score Rabbit 44 /110 This material is expected to cause irreversible effects to the cornea with impairment of vision or corrosion to the eyes.

Skin Sensitization: A similar product was found to be a negative skin sensitizer in the guinea pig Buehler method.

Acute Toxicity: Moderately toxic by inhalation. Moderately toxic if swallowed. This product is severely irritating to skin, eyes and mucous membranes. Prolonged contact may result in a possible corrosive effect.

Subchronic/Chronic Toxicity: Repeated dermal and oral administration resulted in significant irritation at the site of administration.
2-Pyridinethiol, 1-oxide, sodium salt

Skeletal muscle atrophy has been observed from oral and dermal exposure in rats to pyrithione compounds. Exposure to monkeys at several times the dose given to rats gave no indication of either muscle or nerve damage. Although these effects are possible with human exposure, the evaluation of the animals toxicological data makes the above effects unlikely from industrial product use.

Reproductive and Developmental Toxicity:

Similar materials were tested and shown not to be teratogenic (cause birth defects) nor fetotoxic.

Component Data:

2-Pyridinethiol, 1-oxide, sodium salt

The Omaidne in this product does not exert a direct effect on reproductive performance or post-natal development. This material does not produce fetal malformations from dermal exposure. Fetal toxicity and skeletal malformations were noted, but only at doses which produced maternal toxicity. It is judged that the hazard to human health from this effect is not significant.

Mutagenicity:

A similarly structured compound was tested in a battery of mutagenicity assays and was found to be non-mutagenic. This product was determined to be non-mutagenic in the Ames assay.

Component Data:

1,3,5-Triazine-1,3,5(2H,4H,6H)-triethanol

This chemical has been shown to be non-mutagenic based on a battery of assays.

2-Pyridinethiol, 1-oxide, sodium salt

This product has been shown to be non-mutagenic based on a battery of assays.

Carcinogenicity:

This chemical is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP, or EPA.

Component Data:

2-Pyridinethiol, 1-oxide, sodium salt

Sodium Omadine was administered orally and dermally to laboratory animals and was found not to induce tumor formation as compared to control animals.

12. ECOLOGICAL INFORMATION

Overview: Slightly toxic to fish and other aquatic organisms. Slightly toxic to wildlife and domestic animals.

Ecological Toxicity Values:

Product Aquatic Toxicity: Rainbow trout (Salmo gairdneri)  96 hr. LC50:  = 42 mg/l (nominal, static).

Bluegill 96 hr. LC50: 77 mg/l (nominal, static).

Channel Catfish, 96 hr. LC50: 36 mg/l (nominal, static).

Daphnia magna, 48 hr. LC50: 5.4 mg/l (nominal, static).

Bobwhite quail dietary LC50:  > 5620 ppm

Bobwhite quail Oral LD50: 1520 mg/kg

13. DISPOSAL CONSIDERATIONS

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USER OF THIS MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.
Waste Disposal Summary: If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

Potential US EPA Waste Codes: Not applicable

Disposal Methods: As a nonhazardous waste, it should be disposed of in accordance with local, state and federal regulations.

Components subject to land ban restrictions: No components subject to land ban restrictions.

14. TRANSPORT INFORMATION

THIS MATERIAL IS NOT REGULATED AS A DOT HAZARDOUS MATERIAL.

DOT Description (49 CFR 172.101):
- Land (U.S. DOT): Not Regulated
- Air (IATA/ICAO): SAME AS LAND
- Water (IMO): SAME AS LAND

Special Comments: Inhalation is not a normal route of absorption relative to transportation.

15. REGULATORY INFORMATION

UNITED STATES:

Toxic Substances Control Act (TSCA): The components of this product are listed on the TSCA Inventory of Existing Chemical Substances.

Pesticide acceptance indication: US EPA Registration Number: See label for registration number.

FIFRA Listing of Pesticide Chemicals (40 CFR 180): This product is regulated under the Federal Insecticide, Fungicide and Rodenticide Act. It must be used for purposes consistent with its labeling.

Superfund Amendments and Reauthorization Act (SARA) Title III:

Hazard Categories Sections 311/312 (40 CFR 370.2):
- Health: Acute
- Physical: None

- Extremely Hazardous Substance Section 302 - Threshold Planning Quantity: Not applicable
- Reportable Quantity (40 CFR 302.4): None listed

Supplier Notification Requirements (40 CFR 372.45), 313 Reportable Components: No 313-listed chemicals in this product

State Right-to-Know Regulations Status of Ingredients
- Pennsylvania: Not listed
- New Jersey: Not listed
- Massachusetts: Not listed
CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 - Proposition 65: "WARNING: This product contains a chemical(s) known to the State of California to cause cancer and/or birth defects or other reproductive harm."

CAS or CHEMICAL NAME | CAS # | Carcinogen; initial date 1/1/88
--- | --- | ---
Formaldehyde (gas) impurity | 50-00-0 |

16. OTHER INFORMATION

MSDS REVISION: Revised to meet the ANSI standard of 16 sections.

STATUS:

MAJOR REFERENCES:

34. Toxicol Laboratories Limited, Ledbury, Herefordshire, ENGLAND. 104 Week Oral (Gavage) Combined Carcinogenicity and Toxicity Study in Rat. Sodium Omadine. Protocol No. OLA/3/C.
35. Toxicol Laboratories Limited, Ledbury, Herefordshire, ENGLAND. 80 Week Dermal Carcinogenicity Study in the Mouse. Sodium Omadine. Study No. OLA/7/C.

Other references available upon request.