MATERIAL SAFETY DATA

Arch Chemicals, Inc.

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® 3 INDUSTRIAL MICROBIOSTAT

1. PRODUCT AND COMPANY IDENTIFICATION

REVISION DATE: 06-27-2003
SUPERCEDES: 07-29-2002
MSDS NO: 00294-0003 - 100076
SYNONYMS: 1,3,5-tris(hydroxyethyl)-s-triazine - (Active ingredient)
CHEMICAL FAMILY: Triazine
DESCRIPTION / USE: Industrial biocide
FORMULA: Not applicable/Mixture

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

2. COMPOSITION / INFORMATION ON INGREDIENTS

CAS or CHEMICAL NAME                     CAS #       % Range
1,3,5-Triazine-1,3,5(2H,4H,6H)-triethanol  4719-04-4  76 - 82
Water                                      7732-18-5  18 - 24

3. HAZARDS IDENTIFICATION

OSHA Hazard Classification: corrosive to eyes, skin irritant

Routes of Entry: 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:** No data

**Inhalation Irritation:** High concentrations are moderately irritating to the eyes, nose, throat, and lungs. Prolonged exposure may cause irritation consisting of transient redness and swelling. This irritant effect would not be expected to result in permanent damage.

**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:** Not expected to be absorbed through the skin.

**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.

**Reproductive and Developmental Toxicity:** This chemical has been tested in laboratory animals and no evidence of teratogenicity, embryotoxicity or fetotoxicity was seen.

**Sensitization:** 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. A similar product was found to be negative in the human repeat insult patch test.

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

**Skin Contact:** Prolonged or repeated exposure may cause more severe irritation.

**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:** This product has not been tested. However, chronic (repeated) exposures to this product would be expected to produce similar effects as seen from acute exposures.

**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: Not applicable
Upper Flammable/Explosive Limit, % in air: Not applicable
Lower Flammable/Explosive Limit, % in air: Not applicable
Fire/Explosion Hazards: Material will not ignite or burn. 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: This material is heavier than water. This material is soluble in water. Notify all downstream users of possible contamination. Divert water flow around spill if possible and safe to do so.
Land Release: Create a dike or trench to contain materials. If unable to remove as a liquid, begin to absorb in the diking material and add additional absorbent as necessary. Do not place spill materials back in their original containers. Place spill cleanup materials in proper container/s for proper disposal and decontaminate the entire spill area.
Additional Spill Information: Evacuate all non-essential personnel. Hazardous concentrations in air may be found in local spill area. Stop source of spill as soon as possible and notify appropriate personnel. Dispose of spill residues per guidelines under Section 13, Disposal Consideration.
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: Store in a cool, dry place. Isolate from incompatible materials.

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- (2H,4H,6H)-triethanol</td>
<td>4719-04-4</td>
<td>None established</td>
<td>None established</td>
<td>Not Established</td>
</tr>
</tbody>
</table>

The IDLH has not been established for this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State:</td>
<td>liquid</td>
</tr>
<tr>
<td>Color:</td>
<td>yellow amber</td>
</tr>
<tr>
<td>Odor</td>
<td>mild amine</td>
</tr>
<tr>
<td>Molecular Weight:</td>
<td>(Active ingredient)219.29</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>(@ 25 Deg. C) 0.0713</td>
</tr>
<tr>
<td>Solubility in Water:</td>
<td>Completely miscible</td>
</tr>
<tr>
<td>Bulk Density:</td>
<td>1.16 g/cc</td>
</tr>
<tr>
<td>Specific Gravity:</td>
<td>1.16</td>
</tr>
<tr>
<td>Vapor Density:</td>
<td>No data</td>
</tr>
<tr>
<td>Vapor Pressure:</td>
<td>(@ 25 Deg. C) 5.8 mmHg</td>
</tr>
<tr>
<td>Evaporation Rate:</td>
<td>&lt; 1.00 (water = 1)</td>
</tr>
<tr>
<td>Boiling Point:</td>
<td>106 Deg. C.</td>
</tr>
<tr>
<td></td>
<td>223 Deg. F.</td>
</tr>
</tbody>
</table>
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
Oral LD50 value: 1,3,5-Triazine-1,3,5(2H,4H,6H)-triethanol Oral LD50: Rabbit > 2 g/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 = 680 mg/kg
Dermal LD50 value: Dermal LD50 Rabbit > 2 g/kg

Skin Irritation: This material is expected to be severely irritating.
Eye Irritation: This material is expected to be severely irritating.
Skin Sensitization: A similar product was found to be a negative skin sensitizer in the guinea pig Buehler method.

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

Reproductive and Developmental Toxicity: This material has been tested in laboratory animals and no evidence of teratogenicity or embryotoxicity was seen.

Mutagenicity: Component Data: 1,3,5-Triazine-1,3,5(2H,4H,6H)-triethanol
This product has been shown to be non-mutagenic based on a battery of assays.

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

This chemical is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP, or EPA.
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: Sheepshead minnow 96 hr. LC50: > 118 mg/l (measured, flow-through).
Mysid shrimp 96 hr. LC50: 12 mg/l (measured, flow-through).
Rainbow trout (Salmo gairdneri) 96 hr. LC50: > 119 mg/l (measured, flow-through).
Bobwhite quail dietary LC50: > 5620 ppm
Bobwhite quail Oral LD50: 1520 mg/kg
Daphnia magna, 48 hr. LC50: = 26.1 mg/l.

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
Flash Point: (C) Not Applicable

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 #
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 #
- Formaldehyde (gas) impurity 50-00-0 carcinogen; initial date 1/1/88

16. OTHER INFORMATION

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

MAJOR REFERENCES:
- Hexahydro-1,3,5-tris (2-hydroxyethyl) triazine, a new bacteriocidal agent as a cause of allergic contact dermatitis. Contact Dermatitis, 2:92-98.
• Triazine Joint Venture Unpublished Report # 1824. Acute Toxicity to Cyprinodon variegatus (Sheepshead minnow) with Triadine 3. Toxikon Corporation. 2/22/94.
• Triazine Joint Venture Unpublished Report # 1826. Acute Toxicity to Oncorhyncus mykiss (Rainbow trout) with Triadine 3. Toxikon Corporation. 2/22/94.

Other references available upon request.
THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200. THE INFORMATION IN THIS MSDS SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. ARCH CHEMICALS BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION BUT, MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MSDS IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT ARCH CHEMICALS MSDS CONTROL AT THE PHONE NUMBER ON THE FRONT PAGE TO MAKE CERTAIN THAT THIS DOCUMENT IS CURRENT.