I. PRODUCT IDENTIFICATION

REVISION NO 7
REVISION DATE 12/22/06
PRODUCT NAME POOL FROG BAC PAC
SYNONYMS Trichloroisocyanuric Acid, TCCA, Trichlor, Trichloro-s-triazinetrione
CHEMICAL FAMILY Chloroisocyanurates
FORMULA \( (\text{ClNCO})_3 \)
DESCRIPTION Swimming Pool Sanitizer
OSHA HAZARD CLASSIFICATION Oxidizer, skin corrosive, eye hazard, oral toxin, lung toxin

II. COMPONENT DATA

PRODUCT COMPOSITION

<table>
<thead>
<tr>
<th>CAS or CHEMICAL NAME</th>
<th>Percentage Range</th>
<th>HAZARDOUS PER 29 CFR 1910.1200</th>
<th>CAS NUMBER</th>
<th>EXPOSURE STANDARDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trichloro-s-triazinetrione</td>
<td>96-100</td>
<td>Yes</td>
<td>87-90-1</td>
<td>None Established</td>
</tr>
<tr>
<td>Dichloroisocyanuric acid</td>
<td>0-4</td>
<td>Yes</td>
<td>2782-57-2</td>
<td>None Established</td>
</tr>
</tbody>
</table>
III. PRECAUTIONS FOR SAFE HANDLING AND STORAGE

DO NOT TAKE INTERNALLY, AVOID CONTACT WITH SKIN, EYES, AND CLOTHING. UPON CONTACT WITH SKIN OR EYES, WASH OFF WITH WATER.

STORAGE CONDITIONS Store in a clean dry well ventilated area. Keep away from incompatible chemicals (see below).

DO NOT STORE AT TEMPERATURES ABOVE: 60 Degrees C (140 Degrees F)

PRODUCT STABILITY AND COMPATIBILITY

SHELF LIFE LIMITATIONS Indefinite. Available chlorine loss can be as little as 0.1% per year at ambient temperatures.

INCOMPATIBLE MATERIALS FOR PACKAGING Paper, cardboard

INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT Organic materials, reducing agents, nitrogen containing materials, other oxidizers, acids, bases

IV. PHYSICAL DATA

APPEARANCE White granular solid or tablet-form product
FREEZING POINT Not Applicable
BOILING POINT Not Applicable
DECOMPOSITION TEMPERATURE 225 Deg. C (437 Deg. F)
SPECIFIC GRAVITY >1.0 @ 20 Deg. C
BULK DENSITY
Granular-0.89 to 1.1 g/cc
Tablets-1.16 to 1.90 g/cc
pH OF 1% SOLUTION 2.7-2.9
VAPOR PRESSURE @ 25 DEG. C Not Available
SOLUBILITY IN WATER 1.2% @ 25 Deg. C
VOLATILES, PERCENT BY VOLUME Not Applicable
EVAPORATION RATE Not Applicable
VAPOR DENSITY Not Applicable
MOLECULAR WEIGHT 232.5
ODOR Sharp, chlorine-like, bleach odor
COEFFICIENT OF OIL/WATER DISTRIBUTION Not Available

V. PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT:

RESPIRATORY PROTECTION Wear a NIOSH/MSHA approved respirator equipped with chemical cartridge for protection against chlorine gas and a dust/mist type prefilter. A respirator protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator’s use. When dusty conditions are encountered, wear a NIOSH/MSHA approved full face respirator equipped with chemical cartridge for protection against chlorine gas and a dust type pre-filter.

VENTILATION Use local exhaust ventilation to minimize dust levels.

SKIN PROTECTIVE EQUIPMENT Wear gloves, boots, chemical safety goggles, aprons or impermeable suit to avoid skin and eye contact. Eyewash station should be provided in the immediate work area.

EYE PROTECTION Use chemical safety glasses (ANSI Z87.1) to avoid eye contact. Where industrial use occurs, chemical goggles may be required.
VI. FIRE AND EXPLOSION HAZARD INFORMATION

FLAMMABILITY DATA
FLAMMABLE No
COMBUSTIBLE No
PYROPHORIC No
FLASH POINT Not Applicable
AUTOIGNITION TEMPERATURE Not Applicable
FLAMMABLE LIMITS AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE (PERCENT VOLUME IN AIR) Not Applicable

NFPA RATINGS
Health 3
Flammability 0
Reactivity 2
Special Hazard Warning OXIDIZER

HMIS RATINGS
Health 3
Flammability 0
Reactivity 2

EXTINGUISHING MEDIA Not Applicable

FIRE FIGHTING TECHNIQUES AND COMMENTS:
Use water to cool containers exposed to fire. On small fires, use water spray or fog. On large fires, use heavy deluge or fog streams. Flooding amounts of water may be required before extinguishment can be accomplished. Do not use dry chemical extinguishers containing ammonia compounds.

VII. REACTIVITY INFORMATION

CONDITIONS UNDER WHICH THIS PRODUCT MAY BE UNSTABLE
TEMPERATURES ABOVE 225 Degrees C (437 Degrees F)
MECHANICAL SHOCK OR IMPACT No
ELECTRICAL (STATIC) DISCHARGE No
OTHER Contact with small amounts of water may result in an exothermic reaction with the liberation of toxic fumes.
HAZARDOUS POLYMERIZATION Will Not Occur
INCOMPATIBLE MATERIALS  Organic materials, oils, grease, sawdust, reducing agents, nitrogen containing compounds, other oxidizers, acids, bases, dry fire extinguishers containing ammonium compounds

HAZARDOUS DECOMPOSITION PRODUCTS  Nitrogen trichloride, chlorine, nitrous oxides, cyanates, carbon monoxide, carbon dioxide

OTHER CONDITIONS TO AVOID  Damp or slightly wet product (will evolve nitrogen trichloride)

SUMMARY OF REACTIVITY
OXIDIZER  Yes
PYROPHORIC  No
ORGANIC PEROXIDE  No
WATER REACTIVE  No

VIII. FIRST AID

EYES  Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

SKIN  Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

INGESTION  Call poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by the mouth to an unconscious person. Have the product container or label with you when calling a poison control center or doctor or going for treatment.

INHALATION  Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

IX. TOXICOLOGY AND HEALTH INFORMATION

ROUTES OF ABSORPTION  Inhalation, Skin, Eye, Ingestion
HARMFUL  IF INHALED OR INGESTED
HARMFUL  IF EXPOSED TO SKIN OR EYES
ODOR THRESHOLD  No Available Data
There is no data for irritation threshold. TCCA has the potential to be immediately dangerous to life and health.
SIGNNS, SYMPTOMS, AND EFFECTS OF EXPOSURE:

INHALATION:
Inhalation of this material is irritating to the nose, mouth, throat, and lungs. It may also cause burns to the respiratory tract with the production of lung edema which can result in shortness of breath, wheezing, choking, chest pain, and impairment of lung function. Inhalation of high concentrations can result in permanent lung damage. Chronic (repeated) inhalation exposure may cause impairment of lung function and permanent lung damage.

EYE:
Severe irritation and/or burns can occur following eye exposure. Contact may cause impairment of vision and corneal damage.

SKIN:
Dermal exposure can cause severe irritation and/or burns characterized by redness, swelling, and scab formation. Prolonged skin exposure may cause destruction of the dermis with impairment of the skin at side of contact to regenerate. Effects from chronic skin exposure would be similar to those from single exposure except for effects secondary to tissue destruction.

INGESTION:
Irritation and/or burns can occur to the gastrointestinal tract, including the stomach and intestines, characterized by nausea, vomiting, diarrhea, abdominal pain, bleeding, and/or tissue ulceration.

There are no known or reported effects from chronic exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:
Asthma and respiratory and cardiovascular disease.

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY:
None known or reported.

ANIMAL TOXICOLOGY

Acute Toxicity:
Inhalation LC 50 - > 50 mg/1 (rats, one hour exposure)
Oral LD 50 - 490 mg/kg (rat)
Dermal LD 50 - greater than 2 g/kg (rabbit)
Causes burns to eyes and skin.

Toxicity to Wildlife:
LC 50
Rainbow Trout 96 hrs. exposure .32 ppm
Bluegill sunfish 96 hrs. exposure .30 ppm
Daphnia magna 48 hrs. Exposure .21 mg/1
Mallard duck 8 day dietary exposure 1.6 g/kg
>10,000 ppm
Bobwhite quail 8 day dietary exposure 7422 ppm

Chronic Toxicity:
There are no known or reported effects from repeated exposure. Toxicological investigation indicates it does not produce significant effects from chronic exposure.
Reproductive Toxicity: 
There are no known or reported effects on reproductive function or fetal development. Toxicological investigation indicates it does not effect reproductive function of fetal development.

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

Mutagenicity: 
This product is not known or reported to be mutagenic.

X. TRANSPORTATION INFORMATION

THIS MATERIAL IS REGULATED AS A DOT HAZARDOUS MATERIAL.

DOT DESCRIPTION FROM THE HAZARDOUS MATERIALS TABLE 49 CFR 172.101:

LAND  Trichloroisocyanuric Acid Dry, 5.1, UN 2468, PGII, ERG No. 141
WATER Trichloroisocyanuric Acid Dry, 5.1, UN 2468, PGII, IMDG Pg. No. 5190, EmS No. 5.1-05
AIR Same as LAND

HAZARD LABEL / PLACARD:  OXIDIZER

REPORTABLE QUANTITY:  Not applicable (Per 49 CFR 172.101, Appendix)

DOT EMERGENCY GUIDE NUMBER:  42

XI. SPILL AND LEAKAGE PROCEDURES

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300.

REPORTABLE QUANTITY:  Not Applicable (Per 40 CFR 302.4)

SPILL MITIGATION PROCEDURES:  Hazardous concentrations in air may be found in local spill area and immediately downwind.

If spill material is still dry, do not put water directly on this product as a gas evolution may occur.  If material is wet, contact the OCEAN network for proper stabilization procedures.

AIR RELEASE - vapors may be suppressed by the use of a water fog.

WATER RELEASE - this material is heavier than water.  This material is soluble in water.  Stop flow of material into water source as soon as possible.  Begin monitoring for available chlorine and pH immediately.

LAND SPILL - Do not contaminate spill material with any organic materials, ammonia, ammonium salts or urea.  Clean up all spill material with clean, dry dedicated equipment and place in a clean dry container.

SPILL RESIDUES:  Dispose of per guidelines under Section XII, WASTE DISPOSAL.  This material may be neutralized for disposal; you are requested to contact OCEAN at 800-Olin-911 before beginning any such operation.
PERSONAL PROTECTION FOR EMERGENCY SPILL AND FIRE-FIGHTING
SITUATIONS: Additional respiratory protection is necessary when a small spill involving this product occurs. You are recommended to use a half mask cartridge type NIOSH approved respirator, with chlorine cartridges.
All other responses to this material require the use of a self-contained breathing apparatus (SCBA).

Additional protective clothing must be worn to prevent personal contact with this material. Those items include but are not limited to boots, gloves (see below for compatible materials), hard hat, splash-proof goggles, and impervious clothing, i.e., chemically impermeable suit.

Compatible materials for response to this material are Neoprene, Chlorinated Polyethylene, Butyl Rubber, and Saranex.

Protection concerns must also address the following:
If this material becomes damp/wet or contaminated in a container the formation of nitrogen trichloride gas may occur and an explosive condition may exist.

XII. WASTE DISPOSAL

If this product becomes a waste, it meets the criteria of a hazardous waste as defined under 40 CFR 261 and would have the following EPA hazardous waste number: D001.

If this product becomes a waste, it will be a hazardous waste which is subject to the Land Disposal Restrictions under 40 CFR 268 and must be managed accordingly.

As a hazardous solid waste, it must be disposed of in accordance with local, state, and federal regulations in a permitted hazardous waste treatment, storage and disposal facility by treatment.

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.

XIII. ADDITIONAL REGULATORY STATUS INFORMATION

TOXIC SUBSTANCES CONTROL ACT: This substance is listed on the Toxic Substances Control Act Inventory.

SUPERFUND AMENDMENT AND REAUTHORIZATION ACT TITLE III:

HAZARD CATEGORIES, PER 40 CFR 370.2:
   HEALTH: Immediate (Acute)
   PHYSICAL: Fire and Reactivity

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW, PER 40 CFR 355, APP.A:

   EXTREMELY HAZARDOUS SUBSTANCE - THRESHOLD PLANNING QUANTITY:
      None Established

   SUPPLIER NOTIFICATION REQUIREMENTS, PER 40 CFR 372.45:
      None Established
XV. MAJOR REFERENCES

7. Chemical Degradation and Permeation Database and Selection guide for Resistant Protective Materials. Austin, TX.
17. Medline, U.S. National Library of Medicine, Bethesda, MD.
24. 28-Day Dosing Study in Rats (Extended to a 59-Day Dosing Study), s-Triazinetriol, Monosodium Slat; Sodium Dichloro-s-triaizinetrione dihydrate and Trichloro-s-triazinetrione, International Research and Development Corporation, Mattawan, MI, Study No. 167-150, September 12, 1980.


THE INFORMATION IN THIS MATERIAL SAFETY SHEET 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 PERSON WORKING WITH OR HANDLING THIS PRODUCT. KING TECHNOLOGY BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS.

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