PRECAUTIONARY STATEMENTS
HAZARD TO HUMANS AND DOMESTIC ANIMALS

DANGER: Corrosive. Causes eye damage and skin irritation. Do not get in eyes, on skin or on clothing. Wear long-sleeved shirt and pants or coveralls, goggles or face shield and chemical-resistant gloves when handling. Prolonged or frequent skin contact may cause allergic reactions in some individuals. Harmful if inhaled. Avoid breathing vapor. May be fatal if swallowed. Wash thoroughly with soap and water and before eating, drinking, chewing gum or using tobacco. Remove contaminated clothing and wash before reuse.

ENVIRONMENTAL HAZARDS

This product is toxic to fish. 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.

DIRECTIONS FOR USE

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

Note: For cooling water systems of equal to or greater than 4000 gallons, do not apply by open pouring of liquid to cooling water systems; a metering pump delivery system is required for this use and application method.

INDUSTRIAL AND/OR COMMERCIAL RECIRCULATING COOLING WATER SYSTEMS (for control of bacteria, fungi and algae)

Initial Slug Dose: Add 140-525 ppm of TOLCIDE® PS50A (70-262.5 ppm THPS) based on total water volume. Repeat until control is obtained. Thereafter, add either Intermittently 52-210 ppm of TOLCIDE® PS50A (26-105 ppm THPS) or Continuously 28-98 ppm of TOLCIDE® PS50A (14-49 ppm THPS) per day.
Dirty systems must be cleaned prior to treatment.

HEAT TRANSFER SYSTEMS (Evaporative Condensers, Dairy Sweetwater Systems, Hydrostatic Sterilizers and Retorts, Brewery and Other Pasteurizers, and Warmers)

Add TOLCIDE® PS50A at the same application rates, and in the same manner as described above. It should be added to the system at a point of uniform mixing such as a basin area, sump area, or other reservoir or collecting area from which the treated water will be circulated uniformly throughout the system.

SERVICE WATER AND AUXILIARY SYSTEMS

TOLCIDE® PS50A should be added to service water and auxiliary systems at the same application rates, and in the same manner as described above. It should be added to the system at a point of uniform mixing such as a basin area, sump area, or other reservoir or collecting area from which the treated water will be circulated uniformly throughout the system

AIR WASHER SYSTEMS (Not for use in California)

For control of bacteria and fungi. This product may be used only in air washer systems which have mist eliminating components. Pre-clean the system with detergent and allow air washer to run with fan on for two hours. Flush and check nozzles, manually cleaning as necessary. Add 52-140 ppm of TOLCIDE® PS50A (26-70 ppm THPS) at a point where uniform mixing and even distribution will occur. Repeat as needed to maintain control.

PAPER MANUFACTURING (for control of bacteria, fungi and algae)

a) For use as a slimicide in the manufacture of paper and paperboard products and adhesives that do not contact food.
Dosing: Additions should be made at a point in the system where mixing action is good, e.g. raw stock chest beater or mixing unit.
Add intermittently or continuously depending on mill conditions.
Intermittent Dosing: Add 49-700 ppm of TOLCIDE® PS50A (24.5-350 ppm THPS) based on total water volume or an equivalent based on dry weight of paper produced.
Continuous Dosing: Add 28-98 ppm of TOLCIDE® PS50A (14-49 ppm THPS) based on total water volume or an equivalent based on dry weight of paper produced.
b) For use as a preservative to retard microbial growth in water-based coatings, starches, pigments and filler slurries. Do not use in paper and paperboard and adhesives that will contact food. *[Not for Use in New York State and California]*
The treatment rate necessary to retard spoilage of the additive will vary with the extent of contamination of make-up water and the length of storage.
Dosing: Apply from 350-1000 ppm of Tolcide® PS50A (175-500 ppm THPS) to the additive to be preserved based on the total weight of the additive and water.

INDUSTRIAL FRESH WATER SYSTEMS [Not for Use in California]

Do not use in freshwater used in the manufacture of paper and paperboard products that may contact food. TOLCIDE® PS50A is effective in controlling algae in holding ponds and in controlling bacteria and fungi in holding and processing tanks of industrial fresh water systems supplying water to pulp and paper mills, textile mills, and other manufacturing plants. In pulp and paper mills, treatment of the fresh water with TOLCIDE® PS50A can make an important contribution to slime control. The use of TOLCIDE® PS50A as described will reduce the development of slime in fresh water pipes and other equipment, and on the pulp and paper mill machine parts contacted by fresh water.

For the control of algae in industrial fresh water systems, TOLCIDE® PS50A should be added to provide a concentration of 2-20 ppm of product (1-10 ppm of THPS). Treatment should be based on the amount of water entering a pond or reservoir or leaving the pond or reservoir and entering the immediate processing operations. While treatment can be made continuously, regular slug-dosing treatment will provide adequate control.

TOLCIDE® PS50A

INDUSTRIAL ANTIMICROBIAL

ACTIVE INGREDIENT:
Tetrakis(hydroxymethyl) phosphonium sulfate……50%
OTHER INGREDIENTS:…… 50%
TOTAL: ……..100%

EPA Reg. No. 4564-17 EPA Est. 56485-PA-001

KEEP OUT OF REACH OF CHILDREN

DANGER

FIRST AID	
If in 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.
If swallowed:	• Call a poison control center or doctor immediately for treatment advice. • Have a person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.
If inhaled:	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. • Call a poison control center for further treatment advice.
If on skin or clothing:	• 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.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. *Note to physician:* Probable mucosal damage may contraindicate the use of gastric lavage.	

See Side Panels for Additional Precautionary Statements

In case of emergency, call CHEMTREC at 1-800-424-9300

TOWER WATER

8 Cedar Brook Drive
Cranbury, NJ 08512-7500 • 609-860-4000

Active ingredient produced in United Kingdom

NET CONTENTS STENCILED ON CONTAINER

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.
STORAGE: Store this product in a cool, dry area away from direct sunlight and heat to avoid deterioration. In case of a spill, flood the area with large quantities of water.
PESTICIDE DISPOSAL: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.
CONTAINER DISPOSAL: Triple rinse (or equivalent) all containers and offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill or other procedures approved by state and local authorities.

Note: Seller makes no warranty, expressed or implied, concerning the use of this product other than indicated on the label. Buyer assumes all risk and/or handling of this material, when such use and/or handling is contrary to label directions.
TOLCIDE® is a registered trademark of Rhodia UK Limited.

DIRECTIONS FOR USE-continued

INDUSTRIAL WASTEWATER SYSTEMS (Wastewater Systems, Wastewater Sludge and Wastewater Holding Tanks) [Not for Use in California]

TOLCIDE® PS50A should be added to a wastewater system or sludge at a convenient point of uniform mixing such as digester. Add 500-2500 ppm of TOLCIDE® PS50A (250-1250 ppm THPS) per 1,000 gallons of wastewater or sludge.

MACROFOULING CONTROL [Not for Use in California]

TOLCIDE® PS50A should be added continuously to maintain a level of 20 ppm active ingredient (THPS) in the system for a period of at least 96 hours. Initial Dose: When macrofouling is present in the system, apply 40 ppm of Tolcide® PS50A (20 ppm THPS) based on total water volume. Continue to add TOLCIDE® PS50A as needed to maintain the 20 ppm active ingredient (THPS) level for a period of at least 96 hours.

FIRE PROTECTION SYSTEMS

TOLCIDE® PS50A is effective at controlling microbial growth in waters and on pipe surfaces in fire protection systems. Such microbial growth when combined with other forms of corrosion can lead to accelerated corrosion rates and pitting corrosion, commonly referred to as microbiologically influenced corrosion. TOLCIDE® PS50A also helps to remove free oxygen from the water, thus eliminating an important nutrient for bacteria and an important reactant in many corrosion reactions.
TOLCIDE® PS50A should be added to a fire protection system using a chemical metering pump capable of variable purge rates. The TOLCIDE® PS50A should be injected at a point, such as a riser, manifold or makeup feed water line, where uniform mixing and distribution will occur. Add 150-600 ppm TOLCIDE® PS50A (75-300ppm THPS) depending on severity of microbial contamination in the system. Repeat as needed.

SOLUTIONS / EMULSIONS

Not for use in manufacture of paper and paperboard products and adhesives that may come in contact with food. For the preservation of solutions, emulsions, adhesives and other aqueous liquid products, the addition of 0.035% to 0.350% of TOLCIDE® PS50A (0.0175-0.175% THPS) is effective. Add at a point in the processing system where there will be sufficient time and agitation for good mixing and dispersion. The exact amount of TOLCIDE® PS50A to be added for the preservation of given formulations will depend on the components as well as local storage time and requirements.

OIL FIELD AND PETROCHEMICAL OPERATIONS

TOLCIDE® PS50A is effective in controlling sulfate reducing bacteria, general aerobic bacteria, including microorganisms that contribute to biofilm formation in oil field recovery, processing and distribution applications and supporting systems; such as injection water, water holding tanks, disposal well water, recirculating water handling systems, and pipelines. TOLCIDE® PS50A has been shown to dissolve iron sulfide and sequester iron when used under these conditions, leading to improved filter life and well injectivity, and reduction of hydrocarbon sheen. TOLCIDE® PS50A is also effective for use in controlling microbial growth in fluids used for drilling and stimulation of oil wells.

Water Floods

Tolcide® PS50A should be added to a water flood system at a point where uniform mixing will occur.
Initial Treatment: For a noticeably fouled system, add 140-525 ppm TOLCIDE® PS50A (70-262.5 ppm THPS). When added to a flowing system, slug dose for 2-6 hours based on flow rates. Repeat as necessary until control is achieved.
ubsequent Treatment:: Once control has been achieved, add 21-147 ppm TOLCIDE® PS50A 0.5-73.5 ppm THPS) weekly or as needed to maintain control. When added to a flowing system, slug dose for 2-6 urs based on flow rates.
ntinuous Treatment: TOLCIDE® PS50A can be dosed continuously at a level of 21-100 ppm (10.5-50 ppm HPS).

l and Gas Production and Transmission Pipelines and Systems

OLCIDE® PS50A should be added at a point in the pipeline where uniform mixing will occur. The application should conducted to ensure maximum distribution of TOLCIDE® PS50A through the entire internal surface of the pipeline by adding an amount of biocide which eventually comes out the other end of the pipeline. Criteria for success of the treatment will be reduction in bacterial count and/or corrosion rates.
Slug Dosing: Follow instructions for water flood treatment.
Continuous Dosing: TOLCIDE® PS50A can be dosed continuously at a level of 21-150 ppm (10.5-75 ppm THPS).

Drilling Muds, Packer Fluids, Completion and Workover Fluids

TOLCIDE® PS50A should be added to these fluids at a point where uniform mixing will occur. Add 49-2100 ppm of TOLCIDE® PS50A (24.5-1050 ppm THPS) to a freshly prepared fluid depending on severity of contamination.

Gas Storage Well and Systems [Not for Use in California]

Individual injection wells should be treated with TOLCIDE® PS50A at the same application rates, and in the same manner as described under Water Floods. Injections should be repeated as needed to maintain control.
Individual drips should be treated with a sufficient quantity of TOLCIDE® PS50A to produce a concentration of 50-200 ppm TOLCIDE® PS50A (25-100 ppm THPS) when diluted by the water present in the drip. Injections should be repeated as needed to maintain control.

Hydrotesting

Water used to hydrotest pipelines or vessels should contain 100-1000 ppm TOLCIDE® PS50A (50-500 ppm THPS), depending on water quality and length of time the equipment will remain idle.

Pipeline Pigging and Scraping Operation

Add TOLCIDE® PS50A to a slug of water immediately following the scraper (ideally this water volume can be kept to a minimum and contained between the scraper and a trailing pig). Sufficient TOLCIDE® PS50A should be added to produce a concentration of 0.01% to 0.1% (50-500 ppm THPS) in the water at the discharge point or pig trap, depending on the length of the pipeline and the severity of the biofouling.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name	:	TOLCIDE PS50A
FIFRA Registration number	:	4564-17

1.2 Relevant identified uses of the substance or mixture and uses advised against

Uses of the Substance / Mixture	:	Specific use(s): FIFRA regulated use only., Biocidal product

1.3 Details of the supplier of the safety data sheet

Company	:	Solvay USA Inc., NOVECARE 8 Cedar Brook Drive Cranbury, NJ, 08512-7500, US Telephone number: 800-973-7873

1.4 Emergency telephone

FOR EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CONTACT: CHEMTREC 800-424-9300 within the United States and Canada, or 703-527-3887 for international collect calls.

SECTION 2: Hazards identification

Although OSHA has not adopted the environmental portion of the GHS regulations, this document may include information on environmental effects.

2.1 Classification of the substance or mixture

HCS 2012 (29 CFR 1910.1200)

Acute toxicity, Category 4	H302: Harmful if swallowed.
Acute toxicity, Category 3	H331: Toxic if inhaled.
Serious eye damage, Category 1	H318: Causes serious eye damage.
Skin sensitization, Category 1	H317: May cause an allergic skin reaction.
Reproductive toxicity, Category 2	H361: Suspected of damaging fertility or the unborn child.

2.2 Label elements

HCS 2012 (29 CFR 1910.1200)

Pictogram :

Signal Word : Danger

Hazard Statements:

H302	Harmful if swallowed.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H331	Toxic if inhaled.
H361	Suspected of damaging fertility or the unborn child.

Precautionary Statements:

Prevention

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P261	Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P272	Contaminated work clothing must not be allowed out of the workplace.
P280	Wear eye protection/ face protection.
P280	Wear protective gloves.
P281	Use personal protective equipment as required.

Response

P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P310	Immediately call a POISON CENTER or doctor/ physician.
P330	Rinse mouth.
P333 + P313	If skin irritation or rash occurs: Get medical advice/ attention.
P363	Wash contaminated clothing before reuse.

Storage

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.

Disposal

P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Other hazards which do not result in classification

H400: Very toxic to aquatic life.
H411: Toxic to aquatic life with long lasting effects.

Possible damage to liver following repeated or prolonged exposure by ingestion.

SECTION 3: Composition/information on ingredients

3.1 Substance

Not applicable, this product is a mixture.

3.2 Mixture

Chemical nature : Aqueous solution

Hazardous Ingredients and Impurities

Chemical Name	Identification number CAS-No.	Concentration [%]
Tetrakis(Hydroxymethyl) Phosphonium Sulfate	55566-30-8	50

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice : Show this material safety data sheet to the doctor in attendance.
First responder needs to protect himself.
Place affected apparel in a sealed bag for subsequent decontamination.
Plan first aid action before beginning work with this product.
In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

If inhaled : Move to fresh air.
Keep at rest.
Consult a physician.

Skin contact : Take off contaminated clothing and shoes immediately.
Wash off with plenty of water.
Wash immediately and thoroughly for a prolonged period (at least 15 minutes).
Get medical attention if irritation develops and persists.

Eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Get immediate medical advice/ attention.

Ingestion : Do not induce vomiting without medical advice.
If victim is conscious:
Rinse mouth with water.
Keep at rest.
Never give anything by mouth to an unconscious person.
Do not leave the victim unattended.
Vomiting may occur spontaneously
Risk of product entering the lungs on vomiting after ingestion.
Lay victim on side.
Get immediate medical advice/ attention.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms	:	Lachrymation Ingestion may provoke the following symptoms: Nausea Liver disorders
Risks	:	Skin contact may aggravate existing skin disease

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician	:	All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred. Treat symptomatically. There is no specific antidote available.

SECTION 5: Firefighting measures

Flash point	:	Not applicable (aqueous liquid).
Autoignition temperature	:	Not applicable
Flammability / Explosive limit	:	no data available

5.1 Extinguishing media

Suitable extinguishing media	:	In case of fire, use water/water spray/water jet/carbon dioxide/sand/foam/alcohol resistant foam/chemical powder for extinction.
Unsuitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire fighting	:	Harmful or toxic vapors are released. Do not allow run-off from fire fighting to enter drains or water courses. Under fire conditions: Will burn (following evaporation of water) Hazardous decomposition products Phosphorus trihydride (phosphine) Oxides of phosphorus Sulfur oxides Carbon oxides

5.3 Advice for firefighters

Special protective equipment for fire-fighters	:	Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing.

		In the event of fire, wear self-contained breathing apparatus. Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing
Specific fire fighting methods	:	Standard procedure for chemical fires.
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions, protective equipment and emergency procedures	:	Do not breathe spray. Avoid contact with the skin and the eyes. Use personal protective equipment. Ensure adequate ventilation. Evacuate personnel to safe areas.

6.2 Environmental precautions

Environmental precautions	:	Do not allow uncontrolled discharge of product into the environment. Contain the spilled material by diking. Do not flush into surface water or sanitary sewer system. Do not let product enter drains. Spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies

6.3 Methods and materials for containment and cleaning up

Recovery	:	Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). Keep in suitable, closed containers for disposal.
	:	Never return spills in original containers for re-use.
Decontamination / cleaning	:	Wash nonrecoverable remainder with large amounts of water. Recover the cleaning water for subsequent disposal.
	:	Decontaminate tools, equipment and personal protective equipment in a segregated area.
Disposal	:	Dispose of contents/ container to an approved waste disposal plant. Dispose of in accordance with local regulations.

6.4 Reference to other sections

Reference to other sections	:	For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Technical measures	:	Provide adequate ventilation.
Advice on safe handling and usage	:	Avoid exposure - obtain special instructions before use. This product must only be handled by skilled operators. Reduce the duration of exposure to the minimum required. Avoid formation of aerosol. Avoid the formation or spread of mists in the atmosphere. Handle in accordance with good industrial hygiene and safety practice. Use only with adequate ventilation/personal protection. Do NOT handle without gloves.
Hygiene measures	:	Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this materials: 1) Do not store, use, and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored. 2) Wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics, or using the toilet. 3) Wash exposed skin promptly to remove accidental splashes or contact with material.

7.2 Conditions for safe storage, including any incompatibilities

Technical Measures for storage	:	Prevent unauthorized access. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Take all necessary measures to avoid accidental discharge of products into drains and waterways due to the rupture of containers or transfer systems.

Storage conditions

Recommended	:	Keep in a dry, cool and well-ventilated place. Keep container tightly closed.
To be avoided	:	Keep away from incompatible materials to be indicated by the manufacturer Keep away from open flames, hot surfaces and sources of ignition.
Incompatible products	:	Do not mix with incompatible materials (See list, section 10).

Packaging Measures

Packaging Measures	:	Polyethylene or polypropylene drums., Stainless steel
Packaging materials—Recommended	:	Plastic materials (polyethylene).
Packaging materials—To be avoided	:	Ordinary steel.

Storage stability

Storage temperature	:	no data available
Other data	:	No decomposition if stored and applied as directed.

7.3 Specific end use(s)

no data available

SECTION 8: Exposure controls/personal protection

Introductory Remarks: These recommendations provide general guidance for handling this product. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Assistance with selection, use and maintenance of worker protection equipment is generally available from equipment manufacturers.

8.1 Control parameters

Ingredients with workplace control parameters

Ingredients	Value type	Value	Basis
Tetrakis(Hydroxymethyl) Phosphonium Sulfate	TWA	2 mg/m3	ACGIH
	Central nervous system, 2014 Adoption, Not classifiable as a human carcinogen		

8.2 Exposure controls

Control measures

Engineering measures	:	Where engineering controls are indicated by use conditions or a potential for excessive exposure exists, the following traditional exposure control techniques may be used to effectively minimize employee exposures : Avoid splashes. Effective exhaust ventilation system Facilities and equipment easily cleanable. Separate rooms are required for washing, showering and changing clothes.

Personal protective equipment

Respiratory protection	:	When respirators are required, select NIOSH/MSHA approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industrial recommendations. Use a respirator with an approved filter if a risk assessment indicates this is necessary.
Hand protection	:	Glove material: Polyvinyl alcohol or nitrile- butyl-rubber gloves Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves must be inspected prior to use. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Eye protection	:	Eye and face protection requirements will vary dependent upon work environment conditions and material handling practices. Appropriate ANSI Z87 approved equipment should be selected for the particular use intended for this material. Eye contact should be prevented through the use of: Safety glasses with side-shields In case of contact through splashing: Wear face-shield and protective suit.
Skin and body protection	:	Wear suitable protective clothing, gloves and eye/face protection. Choose body protection according to the amount and concentration of the dangerous substance at the work place. Remove and wash contaminated apparel.
Hygiene measures	:	Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this materials: 1) Do not store, use, and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored. 2) Wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics, or using the toilet. 3) Wash exposed skin promptly to remove accidental splashes or contact with material.
Protective measures	:	Always have on hand a first-aid kit, together with proper instructions. Ensure that eyewash stations and safety showers are close to the workstation location. The protective equipment must be selected in accordance with current local standards and in cooperation with the supplier of the protective equipment. Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the potential hazards, and/or risks that may occur during use.

SECTION 9: Physical and chemical properties

Physical and Chemical properties here represent typical properties of this product. Contact the business area using the Product information phone number in Section 1 for its exact specifications.

9.1 Information on basic physical and chemical properties

Appearance	:	Form : Aqueous solution Physical state: liquid Color: pale yellow to pale pink
Odor	:	characteristic
Odor Threshold	:	no data available
pH	:	3.0 - 4.0 (1 % (m/v))
Freezing point	:	< 14 °F (< -10 °C)
Flash point	:	Not applicable (aqueous liquid).
Evaporation rate (Butylacetate = 1)	:	no data available
Flammability (solid, gas)	:	The product is not flammable.
Flammability / Explosive limit	:	no data available
Autoignition temperature	:	Not applicable
Vapor pressure	:	no data available
Vapor density	:	no data available
Density	:	1.21 - 1.29 g/cm3 (68 °F (20 °C))
Solubility	:	Water solubility : completely miscible Solubility in other solvents: not determined
Partition coefficient: n-octanol/water	:	log Pow: -9.8 THPS 75%, Structure-activity relationship (SAR), estimated log Pow: -4.38 Polymer, Structure-activity relationship (SAR), estimated
Thermal decomposition	:	> 320 °F (160 °C)

Viscosity	:	Viscosity, kinematic : 4 mm2/s (73 °F (23 °C))
Explosive properties	:	no data available
Oxidizing properties	:	Not considered as oxidizing.

9.2 Other information

Molecular weight	:	406.3 g/mol

SECTION 10: Stability and reactivity

10.1 Reactivity

Reactivity	:	Stable at normal ambient temperature and pressure.

10.2 Chemical stability

Chemical stability	:	Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

No decomposition if stored and applied as directed.

Polymerization	:	Hazardous polymerization does not occur.

10.4 Conditions to avoid

Conditions to avoid	:	No dangerous reaction known under conditions of normal use.

10.5 Incompatible materials

Materials to avoid	:	Strong acids Strong bases Strong oxidizing agents Strong reducing agents.

10.6 Hazardous decomposition products

Decomposition products	:	Oxides of phosphorus Sulfur oxides Hydrogen Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke). PHOSPHINE

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Acute oral toxicity	:	The product itself has not been tested. According to the data on the components According to the classification criteria for mixtures. Harmful if swallowed. LD50 : 575 mg/kg - Rat , for males and females THPS 75% Unpublished internal reports LD50 : > 2,000 mg/kg - Rat Polymer Unpublished internal reports
Acute inhalation toxicity	:	The product itself has not been tested. Data available only for some components. According to the classification criteria for mixtures. Toxic by inhalation. LC50 - 4 h (dust/mist) : 0.59 mg/l - Rat , for males and females THPS 75% Published data
Acute dermal toxicity	:	The product itself has not been tested. Data available only for some components. According to the classification criteria for mixtures. Not classified as harmful by contact with skin LD50 : > 2,000 mg/kg - Rat , for males and females THPS 75% Unpublished internal reports
Acute toxicity (other routes of administration)	:	no data available

Skin corrosion/irritation

Skin irritation : The product itself has not been tested.
According to the data on the components
According to the classification criteria for mixtures.
Not classified as irritating to skin

Rabbit
No skin irritation
Method: OECD Test Guideline 404
THPS 75%
Unpublished internal reports

Rabbit
Method: OECD Test Guideline 404
Unpublished internal reports
Polymer
Not classified as irritating to skin

Serious eye damage/eye irritation

Eye irritation : The product itself has not been tested.
According to the data on the components
According to the classification criteria for mixtures.
Risk of serious damage to eyes.

Rabbit
Risk of serious damage to eyes.
Method: OECD Test Guideline 405
THPS 75%
Unpublished internal reports

Rabbit
Method: OECD Test Guideline 405
Polymer
Not classified as irritating to eyes
Unpublished internal reports

Respiratory or skin sensitization

Sensitization : Magnusson and Kligman method - Guinea pig
May cause sensitization by skin contact.
THPS 75%
Unpublished internal reports

Magnusson and Kligman method - Guinea pig
Polymer
not sensitizing
Unpublished internal reports

Mutagenicity

Genotoxicity in vitro : According to the data on the components

Mutagenicity (Salmonella typhimurium - reverse mutation assay)
with and without metabolic activation
negative
THPS 75%
Unpublished internal reports

Mutagenicity (in vitro mammalian cytogenetic test)
Strain: CHO
with and without metabolic activation
positive
THPS 75%
Unpublished internal reports

UDS test
Strain: Hepatocyte (primary culture)
negative
THPS 75%
Unpublished internal reports

Mouse lymphoma test / TK
with and without metabolic activation
positive
THPS 75%
Unpublished internal reports

Mutagenicity (Escherichia coli - reverse mutation assay)
with and without metabolic activation
negative
Polymer
Unpublished internal reports

Genotoxicity in vivo : Data available only for some components.
Product is not considered to be genotoxic

Rodent dominant Lethal test - Rat
negative
THPS 75%
Unpublished internal reports

In vivo micronucleus test - Mouse
negative
THPS 75%
Unpublished internal reports

Carcinogenicity

Carcinogenicity : Data available only for some components.

Rat Oral exposure
THPS 75%
Animal testing did not show any carcinogenic effects.
Published data

Mouse Oral exposure
THPS 75%
Animal testing did not show any carcinogenic effects.
Published data

This product does not contain any ingredient designated as probable or suspected human carcinogens by:
NTP
IARC
OSHA
ACGIH

Toxicity for reproduction and development

Toxicity to reproduction / fertility : Data available only for some components.

Fertility study 2 generations - Rat
Oral exposure
THPS 75%
no impairment of fertility has been observed
Unpublished internal reports

Developmental Toxicity/Teratogenicity : Data available only for some components.

Rat
Oral exposure
NOEL teratogenicity: 60 mg/kg
NOEL maternal: 15 mg/kg

THPS 75%
Unpublished internal reports

Rabbit
Oral exposure
NOEL teratogenicity: 18 mg/kg
NOEL maternal: 18 mg/kg

THPS 75%
Effects on development were observed
Unpublished internal reports

STOT

STOT-single exposure : Toxicology Assessment:
The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT-repeated exposure : Toxicology Assessment:

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Data available only for some components.

Oral exposure 90 Days - Rat , for males and females
NOEL: 1 mg/kg
THPS 75%
Liver toxicity
Unpublished internal reports

Neurological effects

Neurological effects : THPS 75%, The product does not induce inhibition, Screening biochemistry test kit for cholinesterase activity inhibition

Carcinogenicity

Tetrakis(Hydroxymethyl) Phosphonium Sulfate : The product is not considered to be carcinogenic.

Teratogenicity

Tetrakis(Hydroxymethyl) Phosphonium Sulfate : Suspected human reproductive toxicant

Aspiration toxicity

Aspiration toxicity : no data available

SECTION 12: Ecological information

12.1 Toxicity

Aquatic Compartment

Acute toxicity to fish : LC50 - 96 h : 95 mg/l - Oncorhynchus mykiss (rainbow trout)
THPS 75%
Unpublished internal reports

LC50 - 96 h : 87 mg/l - Pleuronectes platessa (European Plaice)
THPS 75%
Unpublished internal reports

Acute toxicity to daphnia and other aquatic invertebrates.	:	EC50 - 48 h : 15.1 mg/l - Daphnia magna (Water flea) THPS 75% Unpublished internal reports
	:	EC50 - 48 h : 17 mg/l - Daphnia magna (Water flea) Polymer Harmful to aquatic organisms. Test results are based on the dry product. Unpublished internal reports
	:	EC50 - 48 h : 0.4 mg/l - Crustacean: Acartia tonsa THPS 75%
	:	EC50 - 96 h : 1,000 mg/l - Crustacean: Americamysis bahia Polymer Unpublished internal reports
Toxicity to aquatic plants	:	EC50 - 96 h : 0.66 mg/l - Pseudokirchneriella subcapitata (microalgae) THPS 75% Unpublished internal reports
	:	EC50 - 96 h : 0.16 mg/l - Skeletonema costatum (marine diatom) THPS 75% Unpublished internal reports
	:	NOEC - 96 h : 0.059 mg/l - Skeletonema costatum (marine diatom) THPS 75% Unpublished internal reports
Toxicity to microorganisms	:	EC50 - 3 h : 24 mg/l - activated sludge THPS 75% Unpublished internal reports
		EC50 - 3 h : 2,200 mg/l - activated sludge Polymer Test results are based on the dry product. Unpublished internal reports
Chronic toxicity to fish	:	NOEC: 1.1 mg/l - 32 d - Pimephales promelas (fathead minnow) THPS 75% Unpublished internal reports
Chronic toxicity to daphnia and other aquatic invertebrates.	:	NOEC: 0.032 mg/l - 21 d - Daphnia magna (Water flea) Method: OECD Test Guideline 202 THPS 75% Unpublished internal reports

Sediment compartment
Toxicity to benthic organims

Tetrakis(Hydroxymethyl) Phosphonium Sulfate	:	EC50: 619 Exposure duration: 5 Days Unpublished internal reports

Terrestrial Compartment
Toxicity to soil dwelling organisms

Tetrakis(Hydroxymethyl) Phosphonium Sulfate	:	LC50: 960 mg/kg - 14 Days - Eisenia fetida (earthworms) Method: OECD Test Guideline 207

Toxicity to terrestrial plants

Tetrakis(Hydroxymethyl) Phosphonium Sulfate	:	EC50: 102 mg/kg - 14 Days Method: OECD Test Guideline 208

Ecotoxicity assessment

Acute aquatic toxicity	:	According to the classification criteria for mixtures. Very toxic to aquatic life.
Chronic aquatic toxicity	:	Toxic to aquatic life with long lasting effects.

M-Factor

Tetrakis(Hydroxymethyl) Phosphonium Sulfate	:	Acute aquatic toxicity = 1 (according to the Globally Harmonized System (GHS))

12.2 Persistence and degradability

Biodegradability

Biodegradability	:	Ultimate aerobic biodegradability Method: Simulation study 70 % - 21 d Readily biodegradable. THPS 75% US EPA FIFRA, Subdivision N, § 162-4 Unpublished internal reports Ultimate aerobic biodegradability Not readily biodegradable. Polymer Unpublished internal reports anaerobic Method: Simulation study 60 % - 30 d THPS 75% US EPA FIFRA, Subdivision N, § 162-3 Unpublished internal reports Product is not persistent.

Stability

Stability in water

Tetrakis(Hydroxymethyl) Phosphonium Sulfate	:	DT50: Half-life value: 131 Days (77 °F (25 °C)) pH: 5.0 Method: according to a standardized method Unpublished internal reports DT50: Half-life value: 72 Days (77 °F (25 °C)) pH: 7.0 Method: according to a standardized method Unpublished internal reports DT50: Half-life value: 7 Days (77 °F (25 °C)) pH: 9.0 Method: according to a standardized method Unpublished internal reports

Photodegradation

Tetrakis(Hydroxymethyl) Phosphonium Sulfate	:	Sensitizer: OH Concentration sensitizer in molecule/cm3: 1,500,000 1/cm3 Rate constant in cm3 / molecule*s: 2.7E-11 cm3/s Half-life indirect photolysis: 0.4 Days Structure-activity relationship (SAR) Published data
Other Physicochemical reactions	:	THPS 75% Product is easily oxidizable in aqueous media in dilute solutions

Degradability assessment

Degradability assessment

Tetrakis(Hydroxymethyl) Phosphonium Sulfate	:	The product is considered to be rapidly degradable in the environment

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water	:	According to the data on the components Not potentially bioaccumulable Structure-activity relationship (SAR)

12.4 Mobility in soil

Adsorption potential (Koc)	:	Log Koc: 2.2 THPS 75% Moderately mobile in soils Unpublished internal reports
Known distribution to environmental compartments	:	Ultimate destination of the product: Water

12.5 Results of PBT and vPvB assessment

Results of PBT and vPvB assessment	:	This mixture contains no substance considered to be persistent, bioaccumulating, and toxic (PBT)., This mixture contains no substance considered to be very persistent and very bioaccumulating (vPvB).

12.6 Other adverse effects

Environment assessment : According to the classification criteria for mixtures.
Very toxic to aquatic life.
Toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product Disposal

Advice on Disposal : Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate. Please be advised that state and local requirements for waste disposal may be more restrictive or otherwise different from federal laws and regulations. Consult state and local regulations regarding the proper disposal of this material.

Waste Code : EPA:
Hazardous Waste – NO

Advice on cleaning and disposal of packaging

Advice : Take preliminary precautions based on the dangerous properties of the product.
Empty the packaging completely prior to disposal.
Empty containers should be taken to an approved waste handling site for recycling or disposal.
The user's attention is drawn to the possible existence of local regulations regarding disposal.

SECTION 14: Transport information

Transportation status: IMPORTANT! Statements below provide additional data on listed transport classification.
The listed Transportation Classification does not address regulatory variations due to changes in package size, mode of shipment or other regulatory descriptors.

DOT

14.1 UN number UN 2810

14.2 Dangerous Good Description UN 2810 TOXIC, LIQUIDS, ORGANIC, N.O.S. (tetrakis(hydroxymethyl) phosphonium sulphate), 6.1, III

14.3 Transport hazard class 6.1

14.4 Packing group

Packing group	III
Label(s)	6.1
ERG No	153

14.5 Environmental hazards	YES
Marine pollutant	Marine Pollutant (tetrakis(hydroxymethyl) phosphonium sulphate)

TDG

14.1 UN number	UN 2810
14.2 Dangerous Good Description	UN 2810 TOXIC LIQUID, ORGANIC, N.O.S. (tetrakis(hydroxymethyl) phosphonium sulphate), 6.1, III
14.3 Transport hazard class	6.1
14.4 Packing group	
Packing group	III
Label(s)	6.1
ERG No	153
14.5 Environmental hazards	YES
Marine pollutant	Marine Pollutant (tetrakis(hydroxymethyl) phosphonium sulphate)

IMDG

14.1 UN number	UN 2810
14.2 Dangerous Good Description	UN 2810 TOXIC LIQUID, ORGANIC, N.O.S. (tetrakis(hydroxymethyl) phosphonium sulphate), 6.1, III
14.3 Transport hazard class	6.1
14.4 Packing group	
Packing group	III
Label(s)	6.1
EmS	F-A , S-A
14.5 Environmental hazards	YES
Marine pollutant	

14.6 Special precautions for user
For personal protection see section 8.

IATA

14.1 UN number	UN 2810
14.2 Dangerous Good Description	UN 2810 TOXIC LIQUID, ORGANIC, N.O.S. (tetrakis(hydroxymethyl) phosphonium sulphate), 6.1, III

14.3 Transport hazard class 6.1

14.4 Packing group

Packing group	III
Label(s):	6.1
Packing instruction (cargo aircraft)	663
Max net qty / pkg	220.00 L
Packing instruction (passenger aircraft)	655
Max net qty / pkg	60.00 L

14.5 Environmental hazards YES
Marine pollutant

14.6 Special precautions for user
For personal protection see section 8.

Note: The above regulatory prescriptions are those valid on the date of publication of this sheet. Given the possible evolution of transportation regulations for hazardous materials, it would be advisable to check their validity with your sales office.

SECTION 15: Regulatory information

15.1 Notification status

United States TSCA Inventory	:	e (special case) This product is regulated under the United States Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).
Canadian Domestic Substances List (DSL)	:	YES (positive listing) All components of this product are on the Canadian DSL.
Australia Inventory of Chemical Substances (AICS)	:	n (Negative listing) Not in compliance with the inventory
Japan. CSCL - Inventory of Existing and New Chemical Substances	:	n (Negative listing) Not in compliance with the inventory
Korea. Korean Existing Chemicals Inventory (KECI)	:	n (Negative listing) Not in compliance with the inventory
China. Inventory of Existing Chemical Substances in China (IECSC)	:	n (Negative listing) Not in compliance with the inventory

15.2 Federal Regulations

SARA 311/312 Hazards

Fire Hazard	no
Reactivity Hazard	no
Sudden Release of Pressure Hazard	no
Acute Health Hazard	yes
Chronic Health Hazard	yes

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity

Ingredients	CAS-No.	Reportable quantity
Formaldehyde	50-00-0	100 lb
Acrylic Acid	79-10-7	5000 lb

SARA 304 Reportable Quantity

Ingredients	CAS-No.	Reportable quantity
Formaldehyde	50-00-0	100 lb

SARA 302 Reportable Quantity

Ingredients	CAS-No.	Reportable quantity
Formaldehyde	50-00-0	100 lb

15.3 State Regulations

California Prop 65 : WARNING! This product contains a chemical known in the State of California to cause cancer.
Formaldehyde

No Significant Risk Levels (NSRLs) have been established for the following:
Formaldehyde
Value : 40 micrograms per day

SECTION 16: Other information

NFPA (National Fire Protection Association) - Classification

Health	:	2 moderate
Flammability	:	0 minimal
Instability or Reactivity	:	1 slight

HMIS (Hazardous Materials Identification System (Paint & Coating)) - Classification

Health	:	2 moderate
Flammability	:	0 minimal
Reactivity	:	1 slight

Further information

Date Prepared	:	02/24/2015
Further information	:	Product classified under the US GHS format.

Key or legend to abbreviations and acronyms used in the safety data sheet

TWA	:	8-hour, time-weighted average
ACGIH	:	American Conference of Governmental Industrial Hygienists
OSHA	:	Occupational Safety and Health Administration
WHMIS	:	Workplace Hazardous Materials Information System
NTP	:	National Toxicology Program
IARC	:	International Agency for Research on Cancer
	:	Solvay Acceptable Exposure Limit
NIOSH	:	National Institute for Occupational Safety and Health
NFPA	:	National Fire Protection Association
HMIS	:	Hazardous Materials Identification System (Paint & Coating)

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information, and belief at the date of its publication. Such information is only given as a guidance to help the user handle, use, process, store, transport, dispose, and release the product in satisfactory safety conditions and is not to be considered as a warranty or quality specification. It should be used in conjunction with technical sheets but do not replace them. Thus, the information only relates to the designated specific product and may not be applicable if such product is used in combination with other materials or in another manufacturing process, unless otherwise specifically indicated. It does not release the user from ensuring he is in conformity with all regulations linked to its activity.