



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, DC 20460

OFFICE OF CHEMICAL SAFETY  
AND POLLUTION PREVENTION

March 21, 2016

Sherri Gray  
Authorized Representative  
Pan Asian Chemicals Inc.  
5444 Westheimer Road, #1570  
Houston, TX 77056

Subject: Notification per PRN 98-10 – Revised to Remove California Restriction  
Product Name: PanaX 500™ 50  
EPA Registration Number: 88951-2  
Application Date: February 10, 2016  
Decision Number: 514644

Dear Ms. Gray:

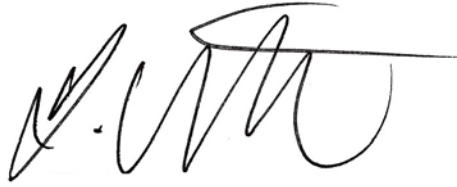
The Agency is in receipt of your Application for Pesticide Notification under Pesticide Registration Notice (PRN) 98-10 for the above referenced product. The Antimicrobials Division (AD) has conducted a review of this request for its applicability under PRN 98-10 and finds that the action requested falls within the scope of PRN 98-10.

The label submitted with the application has been stamped “Notification” and will be placed in our records.

Should you wish to add/retain a reference to the company’s website on your label, then please be aware that the website becomes labeling under the Federal Insecticide Fungicide and Rodenticide Act and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) list examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product’s label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA’s Office of Enforcement and Compliance.

If you have any questions, you may contact Terria Northern at 703-347-0265 or via email at [northern.terria@epa.gov](mailto:northern.terria@epa.gov).

Sincerely,

A handwritten signature in black ink, appearing to be 'J. Chao', written in a cursive style.

for

Julie Chao, Product Manager 33  
Regulatory Management Branch I  
Antimicrobials Division (7510P)  
Office of Pesticide Programs

**NOTIFICATION**

88951-2

The applicant has certified that no changes, other than those reported to the Agency have been made to the labeling. The Agency acknowledges this notification by letter dated:

03/21/2016

**PanaX 500™ 50**  
**Industrial Microbiocide**  
**FOR USE IN INDUSTRIAL PROCESSES ONLY.**  
**NOT FOR DOMESTIC USE.**

ACTIVE INGREDIENT:  
Glutaraldehyde.....50.0%  
INERT INGREDIENTS:.....50.0%  
TOTAL: .....100.0%

**NET [CONTENTS][WEIGHT]: 55 gallon, Bulk, Drum or As Marked on Container**

**KEEP OUT OF REACH OF CHILDREN**

**DANGER**

**FIRST AID**

<b>IF SWALLOWED:</b>	<ul style="list-style-type: none"> <li>Call a poison control center or a doctor immediately for treatment advice</li> <li>DO NOT INDUCE VOMITING.</li> <li>Do not give anything to drink.</li> </ul>
<b>IF IN EYES:</b>	<ul style="list-style-type: none"> <li>Wash immediately and continuously with flowing water for at least 30 minutes</li> <li>Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist.</li> <li>Call a poison control center or a doctor immediately for treatment advice.</li> </ul>
<b>IF ON SKIN OR CLOTHING:</b>	<ul style="list-style-type: none"> <li>Take off contaminated clothing.</li> <li>Rinse skin immediately with plenty of water for 15-20 minutes.</li> <li>Call a poison control center or a doctor for treatment advice.</li> </ul>
<b>IF INHALED:</b>	<ul style="list-style-type: none"> <li>Move person to fresh air.</li> <li>If person is not breathing, call 911 or an ambulance, and then give artificial respiration, preferably mouth-to-mouth if possible.</li> <li>Call a poison control center or a doctor for further treatment advice.</li> </ul>
<b>NOTE TO PHYSICIAN:</b>	Aspiration may cause lung damage. Probable mucosal damage may contraindicate the use of gastric lavage.
<i>Have the MSDS and, if available, the product container or label with you when calling a poison control center or a doctor, or going for treatment.</i>	
<b>IN CASE OF EMERGENCY</b>	<b>Call Chemtrec 1-800-424-9300</b>

**[See Side Panel for Additional Precautionary Statements]**

**EPA Registration Number.....88951-2**

**EPA Establishment Number.....[90265-CHN-001][EPA Est. No. (insert number)]**

**PAN ASIAN CHEMICALS INC.**  
**5444 Westheimer Rd., Suite 1570**  
**HOUSTON, TEXAS 77056**

**EMERGENCY CONTACT: CHEMTREC (24 HOURS PER DAY) 1-800-424-9300**

**[Sold by: (insert company name and contact information)]**

**PRECAUTIONARY STATEMENTS  
HAZARD TO HUMAN AND DOMESTIC ANIMALS  
DANGER**

**KEEP OUT OF REACH OF CHILDREN**

Corrosive. Causes irreversible eye damage and skin burns. May be fatal if swallowed. Harmful if inhaled. Harmful if absorbed through the skin. Do not get in eyes, on skin or on clothing. Wear goggles or face shield and rubber gloves when handling. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove and wash contaminated clothing before reuse. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

**ENVIRONMENTAL HAZARDS**

This pesticide is toxic to fish, aquatic invertebrates, oysters and shrimp. 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. PanaX 500™ 50 is especially recommended for controlling sulfate reducing bacteria in water to be used for polymer treated water-flood programs. PanaX 500™ 50 does not interfere with the viscosity characteristics of the polymer agent. PanaX 500™ 50 may be applied in systems used to treat injection water immediately ahead of water de-oiling equipment such as an air floatation unit in the clear water holding tank or at the suction side of the injection pump. PanaX 500™ 50 should be used full strength in concentrations of 15 ppm of PanaX 500™ 50 on a continuous basis or in slug applications to 2500 ppm of PanaX 500™ 50 or higher concentrations as needed (1/4 pint per 1000 gallons equals approximately 15 ppm). A typical slug application is one quarter per 1000 gallons.

[In order to determine the most cost effective use level for (insert product name) in a given use, field trials are suggested.]

**[For further information on uses and use rates see Product Information Sheet.]**

**STORAGE AND HANDLING**

Container: Keep container closed when not in use. Store in a cool, dry well-ventilated area away from incompatible substance. Refrigeration has been recommended.

**[LIMITED WARRANTY AND DISCLAIMER]**

[Seller warrants that the product conforms to its chemical description as contained on this label and is reasonably fit for the purposes stated on this label when used in accordance with directions under normal conditions of use. THE WARRANTIES MADE IN THIS PARAGRAPH ARE SELLER'S SOLE WARRANTIES WITH RESPECT TO THE PRODUCT AND ARE MADE EXPRESSLY IN LIEU OF AND EXCLUDE ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE AND ALL OTHER EXPRESS OR IMPLIED REPRESENTATIONS AND WARRANTIES.]

## STORAGE AND DISPOSAL

*Do not contaminate water, food, or feed by storage or disposal.*

**STORAGE:** Do not pour, spill or store near heat or open flame.

**PESTICIDE DISPOSAL:** Pesticide wastes are toxic. Improper disposal of excess pesticides, spray mixture or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label directions, contact your State Pesticide or your Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

**CONTAINER DISPOSAL:** Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full of water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat the rinsing procedure two more times.

## DIRECTIONS FOR USE

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

### **AIR WASHERS AND INDUSTRIAL SCRUBBING SYSTEMS/RECIRCULATING COOLING AND PROCESS WATER SYSTEMS:**

This product may be used only in industrial air washers and air washer systems which have mist-eliminating components. PanaX 500™ 50 should be added at the application rates described below to a water treatment system at a convenient point of uniform mixing such as the basin area. Addition may be made intermittently (SLUG DOSE) or continuously. Badly fouled systems can be shock treated with PanaX 500™ 50. Under these conditions, blowdown should be discontinued for up to 24 hours. PanaX 500™ 50 can be used in industrial process water systems that contain ultra-filtration units and non-medical reverse osmosis membranes (where approved for compatibility by the membrane manufacturer) and associated distribution systems.

#### **INTERMITTENT (SLUG DOSE) METHOD**

**Initial dose:** When the system is noticeably fouled, apply 12 to 24 fluid ounces of PanaX 500™ 50 per 1000 gallons of water in the system. Repeat until control is achieved.

**Subsequent dose:** When microbial control is evident, add 4.8 to 12 fluid ounces of PanaX 500™ 50 per 1000 gallons of water in the system weekly, or as needed to maintain control. Badly fouled system must be cleaned before treatment is begun.

#### **CONTINUOUS FEED METHOD**

**Initial dose:** When the system is noticeably fouled, apply 12 to 24 fluid ounces of PanaX 500™ 50 per 1000 gallons of water in the system.

**Subsequent dose:** Maintain this treatment level by starting a continuous feed of 2.4 to 12 fluid ounces of PanaX 500™ 50 per 1000 gallons of water in the system per day. Badly fouled system must be cleaned before treatment is begun.

### **SERVICE WATER AND AUXILLARY SYSTEMS**

PanaX 500™ 50 should be used at the same application rates, and in the same manner as described above. It should be added to the system at a point that will allow for uniform mixing throughout the system.

### **HEAT TRANSFER SYSTEMS**

(Evaporative Condensers, Dairy Sweetwater Systems, Hydrostatic Sterilizers and Retorts, and

Pasteurizers and Warmers) PanaX 500™ 50 should be used 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 collection area from which the treated water will be circulated uniformly throughout the system.

### **INDUSTRIAL WASTEWATER SYSTEMS**

(Wastewater system, wastewater sludge and wastewater holding tanks)

PanaX 500™ 50 should be added to a wastewater system or sludge at a convenient point of uniform mixing such as the digester. Add 5.4 to 27 fluid ounces (450 to 2,250 ppm) PanaX 500™ 50 per 100 gallons of wastewater or sludge.

### **PAPER MILLS AND PAPER MILL PROCESS WATER SYSTEMS**

PanaX 500™ 50 should be added to the paper making system at a point of uniform mixing such as the beaters, broke chest pump, save-all tank, or white water tank.

**Initial Dose:** When the system is noticeably contaminated, add 0.5 to 3.0 lbs. of PanaX 500™ 50 per ton of pulp or paper (dry basis) as a slug dose. Repeat until control is achieved. Heavily fouled systems should be boiled out prior to initial treatment.

**Subsequent Dose:** When microbial control is evident, add 0.3 to 2.0 lbs. of PanaX 500™ 50 per ton of pulp or paper (dry basis) as a slug dose as necessary to maintain control.

### **PIGMENTS AND FILLER SLURRIES FOR PAPER AND PAPERBOARD**

(For use in food and non-food contact pigments and filler slurries). Use from 0.1 to 0.6 lbs. of PanaX 500™ 50 per 1000 lbs. dry powder to produce a concentration of 100 to 600 ppm as product (based on slurry solids) in the mixed slurry.

### **WATER BASED COATINGS**

**NOTE:** For use in non-food contact coatings only. Use from 0.1 to 0.6 lbs. of PanaX 500™ 50 per 1000 lbs. dry powder to produce a concentration of 200 to 1200 ppm as product (based on slurry solids) in the mixed slurry.

### **AQUEOUS METAL WORKING FLUIDS**

PanaX 500™ 50 should be added to a metal working fluid system at a point of uniform mixing such as the fluid collection tank. Additions may be made intermittently (SLUG DOSE) at intervals of one week or less.

**Initial Dose:** When the system is noticeably fouled apply 2.4 to 7.2 fluid ounces (100 to 300 ppm active) of PanaX 500™ 50 per 100 gallons of metal working fluid to the system. Repeat until control is achieved.

**Subsequent Dose:** When microbial control is evident add 0.95 to 4.8 fluid ounces (40 to 200 ppm active) of PanaX 500™ 50 per 100 gallons of metalworking fluid to the system weekly, or as needed to maintain control. Badly fouled system must be cleaned before treatment is begun.

### **WATER BASED CONVEYOR LUBRICANTS**

(Brewery, Juice, Dairy, Beverage, and Food Processing Systems)

Avoid contamination of food in application of product. Thoroughly clean all tracks and conveyors to remove gross soil. Rinse well. Use an automatic feed system to provide 1.2 to 7.2 fluid ounces (50 to 300 ppm active) of PanaX 500™ 50 per 100 gallons of diluted lubricant.

### **GENERAL PRESERVATIVE USE**

PanaX 500™ 50 is recommended for use in aqueous or water containing products and systems, including

industrial, institutional and consumer in can process and products, to control the growth of bacteria and fungi. For effective preservation, add PanaX 500™ 50 to the product formulation at a rate of 0.02% to 0.2% based on the water content of the product ( 0.2 to 2.0 lbs. PanaX 500™ 50 per 1000 lbs. water content. Mix uniformly.

#### **PERSERVATIVE FOR CONCENTRATES**

For use in concentrates where effective preservation is needed after dilution, add PanaX 500™ 50 to the product formulation at a rate such that the diluted end-use product will contain 0.02 % to 0.20% PanaX 500™ 50. At no time during the preservation process should the level of PanaX 500™ 50 exceed 2.0%.

#### **REVERSE OSMOSIS MEMBRANES**

For effective preservation of reverse osmosis elements (where approved for compatibility by membrane manufacturer), immerse elements in a tank containing 0.2% to 2.0% PanaX 500™ 50. PanaX 500™ 50 can also be added to in-line recirculating systems for preservation of installed out-of-service reverse osmosis equipment (where approved for compatibility by membrane manufacturer). Add 0.2% to 2.0% PanaX 500™ 50 to the tank in the circulating system. Maintain the concentration of PanaX 500™ 50 by periodic addition to counteract any system leakage.

#### **CONCRETE ADMIXTURES**

For effective preservation of concrete admixtures, add PanaX 500™ 50 to the product formulation at a rate of 2000 to 8000 ppm based on the weight of the admixture ( 2.0 to 8.0 lbs. PanaX 500™ 50 per 1000 pounds concrete admixture.). Mix uniformly.

#### **WATER FLOODS**

PanaX 500™ 50 should be added to a water flood system at a point of uniform mixing.

**Initial Treatment:** When the system is noticeably contaminated, add 100 to 5000 ppm PanaX 500™ 50 to the system (0.1 to 4.7 gallons PanaX 500™ 50 per 1000 gallons flood water). Repeat until control is achieved.

**Subsequent Dose:** When microbial control is evident, add 20 to 5000 ppm PanaX 500™ 50 (0.02 to 4.7 gallons PanaX 500™ 50 per 1000 gallons flood water) to the system weekly, or as needed to maintain control.

#### **FRAC FLUIDS**

~~Product not registered for this use in the State of California~~

PanaX 500™ 50 reduces bacterial contamination and degradation of fracturing fluids and gels used in oil and gas well stimulations. Add PanaX 500™ 50 to the frac water storage tanks or directly into the well head injection pipeline as the water is being pumped down-hole.

**Dose Range:** PanaX 500™ 50 should be added at a rate of 100 to 500 ppm (0.95 – 47 gallons per 10000 gallons) depending on the degree of bacterial fouling in the source water.

#### **DRILLING, COMPLETION, AND WORKOVER FLUIDS**

PanaX 500™ 50 should be added to a drilling fluid system at a point of uniform mixing such as the circulating mud tank.

**Initial Treatment:** Add 50 to 1000 ppm PanaX 500™ 50 (0.2 to 4.0 gallons PanaX 500™ 50 per 100 barrels of fluid) to a freshly prepared fluid depending on the severity of contamination.

**Maintenance Dosage:** Maintain a concentration of 50 to 1000 ppm PanaX 500™ 50 by adding 0.2 to 4.0 gallons of PanaX 500™ 50 per 100 barrels of additional fluid, or as needed, depending on the severity of contamination.

## **PACKER FLUIDS**

PanaX 500™ 50 should be added to a packer fluid at a point of uniform mixing such as a circulating holding tank. Add 50 to 600 ppm PanaX 500™ 50 (0.2 to 2.4 gallons PanaX 500™ 50 per 100 barrels of fluid) to a freshly prepared fluid depending on the severity of contamination. Seal the treated packer fluid in the wall between the casing and production tube.

## **OIL PRODUCTION AND TRANSMISSION PIPELINES AND SYSTEMS**

**Product not registered for this use in the State of California**

PanaX 500™ 50 should be added to an oil production or transmission line via direct injection. The application should be conducted to ensure maximum distribution of PanaX 500™ 50 throughout the entire internal pipeline surface by adding a sufficient amount of biocide to detect/measure a residual concentration at the back end of the pipeline system. Criteria for success of the treatment will be a reduction in bacterial counts and/or reduced corrosion rates. To facilitate application, it may be desirable to dilute the PanaX 500™ 50 with an appropriate solvent immediately before use. The concentration in the solvent should not fall below an active concentration range of 500 to 5000 ppm based on the volume of water in the pipeline. Injections to the system should be weekly or as needed to maintain control.

## **GAS PRODUCTION AND TRANSMISSION PIPELINES AND SYSTEMS**

**Product not registered for this use in the State of California**

PanaX 500™ 50 should be added to a gas production or transmission line via direct injection. The application should be conducted to ensure maximum distribution of PanaX 500™ 50 throughout the entire internal pipeline surface by adding a sufficient amount of biocide to detect/measure a residual concentration at the back end of the pipeline system. Criteria for success of the treatment will be a reduction in bacterial counts and/or reduced corrosion rates. To facilitate application, it may be desirable to dilute the PanaX 500™ 50 with an appropriate solvent immediately before use. The concentration in the solvent should not fall below an active concentration range of 500 to 5000 ppm based on the volume of water in the pipeline. Injections to the system should be weekly or as needed to maintain control.

## **GAS STORAGE WELLS AND SYSTEMS**

Individual injection wells should be treated with sufficient quantity of PanaX 500™ 50 to produce a concentration of 500 to 5000 ppm PanaX 500™ 50 when diluted by the water present in the formation. Injection should take place before gas is injected (during the summer). Injections should be repeated yearly, or as needed to maintain control. Individual drips should be treated with a sufficient quantity of PanaX 500™ 50 to produce a concentration of 200 to 2000 ppm PanaX 500™ 50 when diluted by the water present in the drip. Injections should be repeated yearly, or as needed to maintain control.

## **HYDROTESTING**

Water used to hydro-test pipelines or vessels should contain 100 to 4000 ppm PanaX 500™ 50 (0.1 to 3.8 gallons PanaX 500™ 50 per 1000 gallons water), depending on water quality and length of time the equipment will remain idle.

## **PIPELINE PIGGING AND SCRAPING OPERATIONS**

Add PanaX 500™ 50 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 PanaX 500™ 50 should be added to produce a concentration of 0.1 to 1.0% (0.1 to 0.95 gallons PanaX 500™ 50 per 100 gallons water), depending on the length of the pipeline and the severity of biofouling.



[company logo]

**PRODUCT INFORMATION SHEET**

(product name)  
EPA REG. NO. (insert number)

**This document must accompany each shipment of (PRODUCT NAME)**

**DIRECTIONS FOR USE**

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

**AIR WASHERS AND INDUSTRIAL SCRUBBING SYSTEMS / RECIRCULATING COOLING AND PROCESS WATER SYSTEMS:**

This product may be used only in industrial air washers and air washer systems which have mist-eliminating components. (product name) should be added at the application rates described below to a water treatment system at a convenient point of uniform mixing such as the basin area. Addition may be made intermittently (SLUG DOSE) or continuously. Badly fouled systems can be shock treated with (PRODUCT NAME). Under these conditions, blowdown should be discontinued for up to 24 hours. (PRODUCT NAME) can be used in industrial process water systems that contain ultra-filtration units and non-medical reverse osmosis membranes (where approved for compatibility by the membrane manufacturer) and associated distribution systems.

**INTERMITTENT (SLUG DOSE) METHOD**

Initial dose: When the system is noticeably fouled, apply 12 to 24 fluid ounces of (PRODUCT NAME) per 1000 gallons of water in the system. Repeat until control is achieved.

Subsequent dose: When microbial control is evident, add 4.8 to 12 fluid ounces of (PRODUCT NAME) per 1000 gallons of water in the system weekly, or as needed to maintain control. Badly fouled system must be cleaned before treatment is begun.

**CONTINUOUS FEED METHOD**

Initial dose: When the system is noticeably fouled, apply 12 to 24 fluid ounces of (PRODUCT NAME) per 1000 gallons of water in the system.

Subsequent dose: Maintain this treatment level by starting a continuous feed of 2.4 to 12 fluid ounces of (PRODUCT NAME) per 1000 gallons of water in the system per day. Badly fouled system must be cleaned before treatment is begun.

**SERVICE WATER AND AUXILLARY SYSTEMS:** (PRODUCT NAME) should be used at the same application rates, and in the same manner as described above. It should be added to the system at a point that will allow for uniform mixing throughout the system.

**HEAT TRANSFER SYSTEMS:** (Evaporative Condensers, Dairy Sweetwater Systems, Hydrostatic Sterilizers and Retorts, and Pasteurizers and Warmers) (PRODUCT NAME) should be used at the same application rates, and in the same manner as described above. It should be added to the system as a point of uniform mixing such as a basin area, sump area, or other reservoir or collection area from which the treated water will be circulated uniformly throughout the system.

**INDUSTRIAL WASTEWATER SYSTEMS:** (Wastewater system, wastewater sludge and wastewater holding tanks) (PRODUCT NAME) should be added to a wastewater system or sludge at a convenient point of uniform mixing such as the digester. Add 5.4 to 27 fluid ounces (450 to 2,250 ppm) (PRODUCT NAME) per 100 gallons of wastewater or sludge.

**PAPER MILLS AND PAPER MILL PROCESS WATER SYSTEMS** (PRODUCT NAME) should be added to the paper making system at a point of uniform mixing such as the beaters, broke chest pump, save-all tank, or white water tank.

Initial Dose: When the system is noticeably contaminated, add 0.5 to 3.0 lbs. of (PRODUCT NAME) per ton of pulp or paper (dry basis) as a slug dose. Repeat until control is achieved. Heavily fouled systems should be boiled out prior to initial treatment.

Subsequent Dose: When microbial control is evident, add 0.3 to 2.0 lbs. of (PRODUCT NAME) per ton of pulp or paper (dry basis) as a slug dose as necessary to maintain control.

**PIGMENTS AND FILLER SLURRIES FOR PAPER AND PAPERBOARD** (For use in food and non-food contact pigments and filler slurries). Use from 0.1 to 0.6 lbs. of (PRODUCT NAME) per 1000 lbs. dry powder to produce a concentration of 100 to 600 ppm as product (based on slurry solids) in the mixed slurry.

#### **REVERSE OSMOSIS MEMBRANES**

For effective preservation of reverse osmosis elements (where approved for compatibility by membrane manufacturer), immerse elements in a tank containing 0.2% to 2.0% (PRODUCT NAME). (PRODUCT NAME) can also be added to in-line recirculating systems for preservation of installed out-of-service reverse osmosis equipment (where approved for compatibility by membrane manufacturer). Add 0.2% to 2.0% (PRODUCT NAME) to the tank in the circulating system. Maintain the concentration of (PRODUCT NAME) by periodic addition to counteract any system leakage.

(product name) is especially recommended for controlling sulfate reducing bacteria in water to be used for polymer treated water-flood programs. (product name) does not interfere with the viscosity characteristics of the polymer agent. (product name) may be applied in systems used to treat injection water immediately ahead of water de-oiling equipment such as an air flotation unit in the clear water holding tank or at the suction side of the injection pump. (product name) should be used full strength in concentration of 30 ppm of (product name) on a continuous basis or in slug applications to 5,000 ppm of (product name) or higher concentrations as needed (1/4 pint per 1,000 gallons equals approximately 30 ppm). A typical slug application is one quart per 1,000 gallons.

**WATER BASED COATINGS (for use in non-food contact coatings only):** Use from 0.2 to 1.2 pounds of (product name) per 1,000 pounds dry powder to produce a concentration of 200 to 1,200 ppm as product (based on slurry solids) in the mixed slurry.

**AQUEOUS METAL WORKING FLUIDS:** (product name) should be added to a metal working fluid system at a point of uniform mixing such as the fluid collection tank. Additions may be made intermittently (SLUG DOSE) at intervals of one week or less.

**Initial Dose:** When the system is noticeably fouled, apply 2.4 to 7.2 fluid ounces (100 to 300 ppm active) of (product name) per 100 gallons of metal working fluid to the system. Repeat until control is achieved.

**Subsequent Doses:** When microbial control is evident, add 0.95 to 4.8 fluid ounces (40 to 200 ppm active) of (product name) per 100 gallons of metal working fluid to the system weekly, or as needed to maintain control. Badly fouled systems must be cleaned before treatment is begun.

**WATER BASED CONVEYOR LUBRICANTS (Brewery, Juice, Dairy, Beverage, and Food Processing Systems):** Avoid contamination of food in application of product. Thoroughly clean all tracks and conveyors to remove gross soil. Rinse well. Use an automatic feed system to provide 1.2 to 7.2 fluid ounces (50 to 300 ppm active) of (product name) per 100 gallons of diluted lubricant.

**GENERAL PRESERVATIVE USE:** (product name) is recommended for use in aqueous or water containing products and systems, including industrial, institutional and consumer in can processes and products, to control the growth of bacteria and fungi. For effective preservation, add (product name) to the product formulation at a rate of 0.04% to

0.4% based on the water content of the product (0.4 to 4.0 pounds (product name) per 1,000 pounds of water content). Mix uniformly.

**PRESERVATIVES FOR CONCENTRATES:** For use in concentrates where effective preservation is needed after dilution, add (product name) to the product formulation at a rate such that the diluted end-use product will contain 0.04% to 0.40% (product name). At no time during the preservation process should the level of (product name) exceed 6.6%.

**CONCRETE ADMIXTURES:** For effective preservation of concrete admixtures, add (product name) to the product formulation at a rate of 4,000 to 16,000 ppm based on the weight of the admixture (4.0 to 16.0 pounds (product name) per 1,000 pounds concrete admixture). Mix uniformly.

**WATER FLOODS:** (product name) should be added to a water flood system at a point of uniform mixing.

**Initial Treatment:** When the system is noticeably contaminated, add 100 to 5,000 ppm (product name) to the system (0.1 to 4.7 gallons (product name) per 1,000 gallons flood water). Repeat until control is achieved.

**Subsequent Dose:** When microbial control is evident, add 20 to 5,000 ppm (product name) (0.02 to 4.7 gallons (product name) per 1,000 gallons flood water) to the system weekly, or as needed to maintain control.

**FRAC FLUIDS:** (product name) reduces bacterial contamination and degradation of fracturing fluids and gels used in oil and gas well stimulations. Add (product name) to the frac water storage tanks or directly in to the well head injection pipeline as the water is being pumped down-hole. Dose range: (product name) should be added at a rate of 100 to 5,000 ppm (0.95 to 47 gallons per 10,000 gallons) depending on the degree of bacterial fouling in the source water.

**DRILLING, COMPLETION AND WORKOVER FLUIDS:** (product name) should be added to a drilling fluid system at a point of uniform mixing such as the circulating mud tank.

**Initial treatment:** Add 50 to 1,000 ppm (product name) (0.2 to 4.0 gallons (product name) per 100 barrels of fluid) to a freshly prepared fluid depending on the severity of contamination.

**Maintenance dosage:** Maintain a concentration of 50 to 1,000 ppm (product name) by adding 0.2 to 4.0 gallons of (product name) per 100 barrels of additional fluid, or as needed, depending on the severity of contamination.

**PACKER FLUIDS:** (product name) should be added to a packer fluid at a point of uniform mixing such as a circulating holding tank. Add 50 to 600 ppm (product name) (0.2 to 2.4 gallons (product name) per 100 barrels of fluid) to a freshly prepared fluid depending on the severity of contamination. Seal the treated packer fluid in the wall between the casing and production tube.

**OIL PRODUCTION AND TRANSMISSION PIPELINES AND SYSTEMS:** (product name) should be added to an oil production or transmission line via direct injection. The application should be conducted to ensure maximum distribution of (product name) throughout the entire internal pipeline surface by adding a sufficient amount of biocide to detect/ measure a residual concentration at the back end of the pipeline system. Criteria for success of the treatment will be a reduction in bacterial counts and / or reduced corrosion rates. To facilitate application, it may be desirable to dilute the (product name) with an appropriate solvent immediately before use. The concentration in the solvent should not fall below an active concentration range of 500 to 5,000 ppm based on the volume of water in the pipeline. Injections to the system should be weekly or as needed to maintain control.

**GAS PRODUCTION AND TRANSMISSION PIPELINES AND SYSTEMS:** (product name) should be added to a gas production or transmission line via direct injection. The application should be conducted to ensure maximum distribution of (product name) throughout the entire internal pipeline surface by adding a sufficient amount of biocide to detect/ measure a residual concentration at the back end of the pipeline system. Criteria for success of the

treatment will be a reduction in bacterial counts and / or reduced corrosion rates. To facilitate application, it may be desirable to dilute the (product name) with an appropriate solvent immediately before use. The concentration in the solvent should not fall below an active concentration range of 500 to 5,000 ppm based on the volume of water in the pipeline. Injections to the system should be weekly or as needed to maintain control.

**GAS STORAGE WELLS AND SYSTEMS:** Individual injection wells should be treated with sufficient quantity of (product name) to produce a concentration of 500 to 5,000 ppm (product name) when diluted by the water present in the formation. Injection should take place before gas is injected (during the summer). Injections should be repeated yearly, or as needed to maintain control. Individual drips should be treated with a sufficient quantity of (product name) to produce a concentration of 200 to 2,000 ppm (product name) when diluted by the water present in the drip. Injections should be repeated yearly, or as needed to maintain control.

**HYDROTESTING:** Water used to hydro-test pipelines or vessels should contain 100 to 4,000 ppm (product name) (0.1 to 3.8 gallons (product name) per 1,000 gallons water), depending on water quality and length of time the equipment will remain idle.

**PIPELINE PIGGING AND SCRAPING OPERATIONS:** Add (product name) 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 (product name) should be added to produce a concentration of 0.1 to 1.0% (0.1 to 0.95 gallons (product name) per 100 gallons water), depending on the length of the pipeline and the severity of biofouling.

(insert company name and contact information)