

464-692

03/26/2010

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1 of 7

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460



Office of Pesticide Programs

The Dow Chemical Company  
1803 Building  
Midland, MI 48674

MAR 26 2010

Attention: Rhonda Vance-Moeser  
Senior Regulatory Specialist

**Subject: UCARCIDE™ 45 Antimicrobial**  
EPA Registration No. 464-692  
Notification Dated March 17, 2010

This will acknowledge receipt of your notification, submitted under the provisions of FIFRA Section 3(c)(9).

**Proposed Notification**

- To update the label to reflect certain uses not registered in the State of California

**General Comments**

Based on a review of the submitted material, the following comments apply.

The Notification is in compliance with PR Notice 98-10 and is acceptable. This information has been made a part of your file.

If you have any questions concerning this letter, please contact Martha Terry at (703) 308-6217.

Sincerely,

Marshall Swindell  
Product Manager (33)  
Regulatory Management Branch 1  
Antimicrobials Division (7510P)



United States  
**Environmental Protection Agency**  
 Washington, DC 20460

Registration  
 Amendment  
 Other

OPP Identifier Number

**Application for Pesticide - Section I**

1. Company/Product Number 464-692	2. EPA Product Manager MARSHALL SWINDELL	3. Proposed Classification <input type="checkbox"/> None <input type="checkbox"/> Restricted
4. Company/Product (Name) The Dow Chemical Co./ UCARCIDE 45 Antimicrobial	PM# 33	
5. Name and Address of Applicant (Include ZIP Code) The Dow Chemical Company 1803 Building Midland, MI 48674 <input type="checkbox"/> Check if this is a new address	6. Expedited Review. In accordance with FIFRA Section 3(c)(3) (b)(i), my product is similar or identical in composition and labeling to: <input checked="" type="checkbox"/> EPA Reg. No. _____ Product Name _____	

**Section - II**

<input type="checkbox"/> Amendment - Explain below.	<input type="checkbox"/> Final printed labels in response to Agency letter dated _____
<input type="checkbox"/> Resubmission in response to Agency letter dated _____	<input type="checkbox"/> "Me Too" Application.
<input checked="" type="checkbox"/> Notification - Explain below.	<input type="checkbox"/> Other - Explain below.

**Explanation:** Use additional page(s) if necessary. (For section I and Section II.)

Notification to update label to indicate certain uses not registered in the state of California. Enclosed cover letter reflects the required Notification Statement.

**Section - III**

1. Material This Product Will Be Packaged In:				2. Type of Container	
Child-Resistant Packaging <input type="checkbox"/> Yes* <input type="checkbox"/> No	Unit Packaging <input type="checkbox"/> Yes <input type="checkbox"/> No	Water Soluble Packaging <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Metal <input type="checkbox"/> Plastic <input type="checkbox"/> Glass <input type="checkbox"/> Paper <input type="checkbox"/> Other (Specify) _____		
* Certification must be submitted		If "Yes" Unit Packaging wgt. No. per container	If "Yes" Package wgt. No. per container		
3. Location of Net Contents Information <input type="checkbox"/> Label <input type="checkbox"/> Container		4. Size(s) Retail Container		5. Location of Label Directions <input type="checkbox"/> On Label <input type="checkbox"/> On Labeling accompanying product	
6. Manner in Which Label is Affixed to Product <input type="checkbox"/> Lithograph <input type="checkbox"/> Paper glued <input type="checkbox"/> Stenciled			<input type="checkbox"/> Other _____		

**Section - IV**

1. Contact Point (Complete items directly below for identification of individual to be contacted, if necessary, to process this application.)		
Name Rhonda Vance-Moeser	Title Sr. Regulatory Specialist	Telephone No. (include Area Code) 989-636-1884
Certification I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.		6. Date Application Received (Stamped)
2. Signature <i>Rhonda Vance-Moeser</i>	3. Title Sr. Regulatory Specialist	
4. Typed Name Rhonda Vance-Moeser	5. Date March 17, 2010	



The Dow Chemical Company  
Midland, Michigan 48674  
USA

March 17, 2010

Overnight Mail

Document Processing Desk (NOTIF)  
Office of Pesticide Programs (7504P)  
U. S. Environmental Protection Agency  
Room S-4900, One Potomac Yard  
2777 S. Crystal Drive  
Arlington, Virginia 22202-4501

**RE: NOTIFICATION – EPA REG. NO. 464-692  
UCARCIDE™ 45 Antimicrobial**

To Whom It May Concern:

The Dow Chemical Company (Dow) hereby submits a Notification application to update the label to indicate certain uses are not registered in the state of California. In order for the application to be processed the required Notification statement is below.

**“This Notification is consistent with the provisions of PR Notice 98-10 and EPA regulations at 40 CFR 152.46, and no other changes have been made to the labeling or the confidential statement of formula of this product. I understand that it is violation of 18 U.S.C. Sec. 1001 to willfully make any false statement to EPA. I further understand that if this notification is not consistent with the terms of PR Notice 98-10 and 40 CFR 152.46, this product may be in violation of FIFRA and I may be subject enforcement action and penalties under section 12 and 14 of FIFRA”**

Enclosed are the following documents to support this Notification

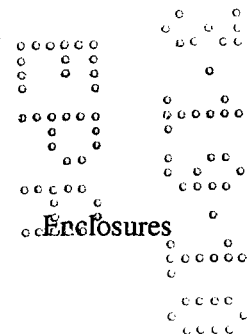
- 1) Completed application, Pesticide Registration, Form 8570-1.
- 2) One marked copy of the label indicating the change highlighted.
- 3) Two copies of final label.

Please contact me if you have any questions or need additional information.

Sincerely,

*Rhonda Vance-Moeser*  
*BM*

Rhonda Vance-Moeser  
Senior Regulatory Specialist  
1790 Bldg. / Office 226  
Midland, MI 48667  
Phone: (989) 636-1884  
e-mail: [rgvmoeser@dow.com](mailto:rgvmoeser@dow.com)



**PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

**DANGER**

**KEEP OUT OF REACH OF CHILDREN**

Corrosive. Causes irreversible eye damage. Causes skin burns. Harmful if inhaled. May be fatal if swallowed. Harmful if absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Causes asthmatic signs and symptoms in hyper-reactive individuals.

Do not get in eyes, on skin, on clothing.  
Avoid breathing vapor. Do not swallow.

Wear goggles, protective clothing, and butyl or nitrile gloves.

Wash thoroughly with soap and water after handling.

Remove contaminated clothing and wash before reuse.

**ENVIRONMENTAL HAZARDS**

This pesticide 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.

**STORAGE AND HANDLING**

UCARCIDE™ 45 Antimicrobial is incompatible with many commonly used materials of construction such as steel, galvanized iron, aluminum, tin, and zinc. UCARCIDE™ 45 Antimicrobial can be stored and handled in baked phenolic-lined steel, polyethylene, stainless steel, or reinforced epoxy-plastic equipment. This product freezes at about 1° F (-17° C). Therefore, unless the storage tank is inside or underground, heating and insulation may be required. If heating is needed, exposure to high temperatures should be avoided. For short storage times (up to about 1 month), temperatures of up to 100° F (37.8° C) can be tolerated but the preferred maximum storage temperature is about 80° F (26.7° C).

A stainless steel centrifugal pump is suggested for transfer service. Spiral-wound stainless steel with TEFLON® Polymer is suitable for gaskets and packing.

Handle in a well-ventilated area. If vapors are irritating to the nose or eyes, special ventilation or respiratory protection (MSHA/NIOSH approved air purifying respirator equipped with an organic vapor cartridge) may be required.

**STORAGE AND DISPOSAL**

**PESTICIDE DISPOSAL:** Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited. Pesticide wastes are toxic. 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 your Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

**CONTAINER DISPOSAL:**

**Label option for nonrefillable containers of all sizes**

Nonrefillable container. Do not reuse or refill this container. Triple or pressure rinse (or equivalent) promptly after emptying. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or other procedures approved by state and local authorities.

**Option to use for labels on refillable containers of all sizes**

Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning of 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 container before final disposal, empty contents into application equipment and triple rinse. Pour or pump rinsate into application equipment or rinsate collection system. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

**BEFORE HANDLING OR USING THIS PRODUCT, SEE  
YOUR EMPLOYER AND READ CURRENT MATERIAL  
SAFETY DATA SHEET.**

**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.

# UCARCIDE™ 45 Antin 5 of 7

A highly effective Microbiocide for use in controlling Bacteria including Slime Forming Bacteria those that contain Reverse Osmosis Membranes and Service Water and Auxiliary Systems, Process Water Systems, Pigments and Filler Slurries for Paper and Paperboard, Water Basins and Consumer Processes and Products and for use in Preserving Aqueous-Based Solution Storage Fields and Equipment; such as Steam-Injection Water Holding Tanks, Flood Water Handling Systems.

Active Ingredient: Glutaraldehyde \_\_\_\_\_ 45%  
Inert Ingredient(s): \_\_\_\_\_ 55%  
Total \_\_\_\_\_ 100%

**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.	
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.	
<b>IN CASE OF AN EMERGENCY</b> endangering life or property involving this product, call collect (989)636-4400.	

SEE SIDE PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS.

E.P.A. Registration No. 464-692

E.P.A. Est. XXXXX-XXX

Produced for:



The Dow Chemical Company

Midland, Michigan 48674 U.S.A.

(989)636-4400

© TM Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

Made in U.S.A.

**NET CONTENTS: XXX gallons**  
**NET WEIGHT: XXX lb / XXX kg**  
**LOT NO:**

0097

# Antimicrobial

ANTIMICROBIAL

Bacteria and Sulfate-Reducing Bacteria, Fungi (Yeast and Molds) and Algae in Air Washers and in Heat Transfer Systems, Wastewater Systems Including Wastewater Sludge and Holding Tanks, Bead Coatings for Paper and Paperboard and in Functional Fluids and Lubricants and Aqueous Metals, Slurries and Emulsions and in Oil Well Drilling, Oil Field Processing Applications, Oil Field Water, Fracturing Fluids, Injection Water, Holding Pond Water, Disposal-Well Water, Water Holding Tanks

## DIRECTION

It is a violation of Federal Law to use this product in a manner not intended by the manufacturer.

### 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. UCARCIDE 45 Antimicrobial 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 UCARCIDE 45 Antimicrobial. Under these conditions, blowdown should be discontinued for up to 24 hours.

UCARCIDE 45 Antimicrobial 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 12.7 to 25.4 fluid ounces of UCARCIDE 45 Antimicrobial per 1,000 gallons of water in the system. Repeat until control is achieved.

**Subsequent Dose:** When microbial control is evident, add 5.1 to 12.7 fluid ounces of UCARCIDE 45 Antimicrobial per 1,000 gallons of water in the system weekly, or as needed to maintain control. Badly fouled systems must be cleaned before treatment is begun.

#### CONTINUOUS FEED METHOD

**Initial Dose:** When the system is noticeably fouled, apply 12.7 to 25.4 fluid ounces of UCARCIDE 45 Antimicrobial per 1,000 gallons of water in the system.

**Subsequent Dose:** Maintain this treatment level by starting a continuous feed of 2.5 to 12.7 fluid ounces of UCARCIDE 45 Antimicrobial per 1,000 gallons of water in the system per day. Badly fouled systems must be cleaned before treatment is begun.

### SERVICE WATER AND AUXILIARY SYSTEMS

UCARCIDE 45 Antimicrobial 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)

UCARCIDE 45 Antimicrobial 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 collecting area from which the treated water will be circulated uniformly throughout the system.

### INDUSTRIAL WASTEWATER SYSTEMS

(Wastewater Systems, Wastewater Sludge And Wastewater Holding Tanks)

UCARCIDE 45 Antimicrobial should be added to a wastewater system or sludge at a convenient point of uniform mixing such as the digester. Add 0.45 to 2.2 gallons (500 to 2,500 ppm UCARCIDE 45 Antimicrobial) per 1,000 gallons of wastewater or sludge.

### BET SUGAR MILLS AND BEET SUGAR MILL PROCESS WATER SYSTEMS

UCARCIDE 45 Antimicrobial should be added to the system at a point of uniform mixing such as the diffuser, transport water pump, weir box, or diffuser feed water pump. Additions may be made intermittently (SLUG DOSE) or continuously.

#### INTERMITTENT (SLUG DOSE) METHOD

**Initial Dose:** When the system is noticeably contaminated, add 6.1 to 15.2 fluid ounces (222 to 560 ppm product) of UCARCIDE 45 Antimicrobial per ton or 200 to 500 mL of UCARCIDE 45 Antimicrobial per metric ton of sliced beets as a slug dose. Repeat until control is achieved.

**Subsequent Dose:** When microbial control is evident, add 0.9 to 9.1 fluid ounces (33 to 330 ppm) of UCARCIDE 45 Antimicrobial per ton or 30 to 300 mL of UCARCIDE 45 Antimicrobial per metric ton of sliced beets in the system as a slug dose as necessary to maintain control. The total should not exceed 118 gallons per 1,000 tons of beets sliced per day.

#### CONTINUOUS FEED METHOD

**Initial Dose:** When the system is noticeably contaminated, add 6.1 to 15.2 fluid ounces/minute (222 to 560 ppm product) of UCARCIDE 45 Antimicrobial per ton or 200 to 500 mL/minute of UCARCIDE 45 Antimicrobial per metric ton of beets sliced per minute in the system via automatic pump of suitable construction.

**Subsequent Dose:** When microbial control is evident, add 0.9 to 9.1 fluid ounces/minute (33 to 330 ppm) of UCARCIDE 45 Antimicrobial per ton or 30 to 300 mL/minute of UCARCIDE 45 Antimicrobial per metric ton of beets sliced per minute in the system, or as necessary to maintain control. The total should not exceed 118 gallons per 1,000 tons of beets sliced per day.

### PAPER MILLS AND PAPER MILL PROCESS WATER SYSTEMS

UCARCIDE 45 Antimicrobial 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 0.6 to 3.3 lbs of UCARCIDE 45 Antimicrobial 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 2.2 lbs of UCARCIDE 45 Antimicrobial 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 0.11 to 0.7 lbs. of UCARCIDE 45 Antimicrobial per 1,000 lbs. of dry powder to produce a concentration from 111 to 667 ppm as product (based on slurry solids) in the mixed slurry.

### WATER BASED COATINGS FOR PAPER AND PAPERBOARD

NOTE: For use in non-food contact coatings only.

Use from 0.11 to 0.7 lbs. of UCARCIDE 45 Antimicrobial per 1,000 lbs. of dry powder to produce a concentration from 111 to 667 ppm as product (based on slurry solids) in the mixed slurry.

### AQUEOUS METALWORKING FLUIDS

UCARCIDE 45 Antimicrobial should be added to a metalworking 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 to 6 gallons of UCARCIDE 45 Antimicrobial per 10,000 gallons of metalworking fluid to the system. Repeat until control is achieved.

**Subsequent Dose:** When microbial control is evident, add 0.8 to 4 gallons of UCARCIDE 45 Antimicrobial per 10,000 gallons of metalworking fluid to the system weekly, or as needed to maintain control. Badly fouled systems should 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 as recommended by your Dow representative to provide 1.3 to 7.6 fluid ounces (50 to 300 ppm active) of UCARCIDE 45 Antimicrobial per 100 gallons of diluted lubricant.

GE UC ind pre bal uni PR For for, At RE For ele in-t con sys CO For to & adf WA UC Inlt sys Sut UC FR/ Pro UC well pipe Dor dep DR/ UC/ tank Inlt 100 Mal gall cont PA/ UC/ tank fluid cast OIL Pro UC/ shoi surf syst facil befo the v GAS UCA shou surf syst facil befo the v GAS Indv of 55 befo Indv 2.22 as n HYD Wat UCA idle. PIPE Add a min prod the le

7 of 7

Industrial Scrubbing Systems, Recirculating Cooling and Process Water Systems Including Beet Sugar Mills and Beet Sugar Mill Process Water Systems and in Paper Mills and Paper Mill Metalworking Fluids and for use by Manufacturers as a Preservative in Industrial, Institutional and Water Systems, Oil and Gas Production and Transmission Pipelines and Systems, and Gas Tanks, Fuel Storage Tanks and related Refinery and Oil Field Closed, Industrial Recirculating

## ONS FOR USE

product in a manner inconsistent with its labeling.

### GENERAL PRESERVATIVE USE

UCARCIDE 45 Antimicrobial 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 UCARCIDE 45 Antimicrobial to the product formulation at a rate of 0.022% to 0.22% (222.5 to 2,222.5 ppm) based on the water content of the product (0.22 to 2.2 lbs UCARCIDE 45 Antimicrobial per 1,000 lbs water content). Mix uniformly.

### PRESERVATIVE FOR CONCENTRATES

For use in concentrates where effective preservation is needed after dilution, add UCARCIDE 45 Antimicrobial to the product formulation at a rate such that the diluted end-use product will contain 0.022% to 0.22% UCARCIDE 45 Antimicrobial. At no time during the preservation process should the level of UCARCIDE™ 45 Antimicrobial exceed 2.2%.

### REVERSE OSMOSIS MEMBRANES

For effective preservation of reverse osmosis elements (where approved for compatibility by membrane manufacturer), immerse elements in a tank containing 0.22% to 2.2% UCARCIDE 45 Antimicrobial. UCARCIDE 45 Antimicrobial 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 0.22% to 2.2% UCARCIDE 45 Antimicrobial to the tank in the circulating system. Maintain the concentration of UCARCIDE 45 Antimicrobial by periodic addition to counteract any system leakage.

### CONCRETE ADMIXTURES

For effective preservation of concrete admixtures, add UCARCIDE 45 Antimicrobial to the product formulation at a rate of 2,222 to 8,889 ppm based on the weight of the admixture (2.2 to 8.9 lbs UCARCIDE 45 Antimicrobial per 1,000 lbs. concrete admixture). Mix uniformly.

### WATER FLOODS

UCARCIDE 45 Antimicrobial should be added to a water flood system at a point of uniform mixing. Initial Treatment: When the system is noticeably contaminated, add 110 to 5,500 ppm UCARCIDE 45 Antimicrobial to the system (0.1 to 4.9 gallons UCARCIDE 45 Antimicrobial per 1,000 gallons flood water). Repeat until control is achieved. Subsequent Dose: When microbial control is evident, add 22 to 5,500 ppm UCARCIDE 45 Antimicrobial (0.02 to 4.9 gallons UCARCIDE 45 Antimicrobial per 1,000 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. UCARCIDE 45 Antimicrobial reduces bacterial contamination and degradation of fracturing fluids and gels used in oil and gas well stimulations. Add UCARCIDE 45 Antimicrobial to the frac water storage tanks or directly into the well head injection pipeline as the water is being pumped down-hole. Dose Range: UCARCIDE 45 Antimicrobial should be added at a rate of 111 to 5,556 ppm (1.0 - 49.7 gals per 10,000 gallons) depending on the degree of bacterial fouling in the source water.

### DRILLING, COMPLETION, AND WORKOVER FLUIDS

UCARCIDE 45 Antimicrobial should be added to a drilling fluid system at a point of uniform mixing such as the circulating mud tank. Initial treatment: Add 55 to 1,100 ppm UCARCIDE 45 Antimicrobial (0.21 to 4.1 gallons UCARCIDE 45 Antimicrobial per 100 barrels of fluid) to a freshly prepared fluid depending on the severity of contamination. Maintenance dosage: Maintain a concentration of 55 to 1,100 ppm UCARCIDE 45 Antimicrobial by adding 0.21 to 4.1 gallons of UCARCIDE 45 Antimicrobial per 100 barrels of additional fluid, or as needed, depending on the severity of contamination.

### PACKER FLUIDS

UCARCIDE 45 Antimicrobial should be added to a packer fluid at a point of uniform mixing such as a circulating holding tank. Add 55 to 666 ppm UCARCIDE 45 Antimicrobial (0.21 to 2.5 gallons UCARCIDE 45 Antimicrobial 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. UCARCIDE 45 Antimicrobial should be added to an oil production or transmission line via direct injection. The application should be conducted to ensure maximum distribution of UCARCIDE 45 Antimicrobial 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 UCARCIDE 45 Antimicrobial 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

UCARCIDE 45 Antimicrobial should be added to a gas production or transmission pipeline via direct injection. The application should be conducted to ensure maximum distribution of UCARCIDE 45 Antimicrobial 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 UCARCIDE 45 Antimicrobial 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 a sufficient quantity of UCARCIDE 45 Antimicrobial to produce a concentration of 556 to 5,556 ppm UCARCIDE 45 Antimicrobial 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 UCARCIDE 45 Antimicrobial to produce a concentration of 222 to 2,222 ppm UCARCIDE 45 Antimicrobial when diluted by the water present in the drip. Injections should be repeated yearly, or as needed to maintain control.

### HYDROTESTING

Water used to hydrotest pipelines or vessels should contain 110 to 4,444 ppm UCARCIDE 45 Antimicrobial (0.1 to 3.9 gallons UCARCIDE 45 Antimicrobial per 1,000 gallons water), depending on water quality and length of time the equipment will remain idle.

### PIPELINE PIGGING AND SCRAPING OPERATIONS

Add UCARCIDE 45 Antimicrobial 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 UCARCIDE 45 Antimicrobial should be added to produce a concentration of 0.11 to 1.1% (0.1 to 1.0 gallon UCARCIDE 45 Antimicrobial per 100 gallons water), depending on the length of the pipeline and the severity of biofouling.



### NOTICE

Do Not Ship or Store with Food, Feeds, Drugs, or Clothing