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U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Pesticide Programs
Antimicrobials Division (7510C)
401 "M" St., S.W.
Washington, D.C. 20460

EPA Reg. Number:
74246-1

Date of Issuance:
Mar. 1, 2002

NOTICE OF PESTICIDE:

- Registration
- Reregistration

(under FIFRA, as amended)

Term of Issuance: Conditional

Name of Pesticide Product:
ZyDox 25

Name and Address of Registrant (include ZIP Code):

Nu Tek International, Inc.
1220 North Market Street, Suite 606
Wilmington, DE. 19801

On the basis of information furnished by the registrant, the above named pesticide is hereby registered/reregistered under the Federal Insecticide, Fungicide and Rodenticide Act. Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This product is conditionally registered in accordance with FIFRA sec. 3(c)(7)(A) provided that you:

1. Submit and/or cite all data required for registration/reregistration of your product under FIFRA section 3(c)(5) when the Agency requires all registrants of similar products to submit such data; and, submit acceptable responses required for Reregistration of your product under FIFRA section 4.
2. Make the following label changes:
 - a. Revise the EPA Registration Number to read EPA Reg. No. 74246-1.
 - b. Revise First aid statement to include "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 poison control center or doctor for treatment advice." Format as other treatments are and place after If Swallowed.
 - c. All instances of the word "should" must be replaced with the word "must".
 - d. Delete "Available chlorine ...39%" and asterisk at Sodium Chlorite.
 - e. Add signal word DANGER to front of first line on Hazards section. Add signal word DANGER to front of first line and revise to read Physical and Chemical Hazards section. Add sentence "Do not expose to hot surfaces, sparks or open flame" at end.
 - f. Change ClO₂ in all directions to read chlorine dioxide.
 - g. Fix typo of rinsate in the Disposal section.
3. Submit two copies of the revised final printed label for our records.

If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA sec. 6(e). Your release for shipment of the product constitutes acceptance of these conditions. A stamped copy of the label is enclosed for your records.

Signature of Approving Official:

Robert S. Brennis
Product Manager 32

Date:

MAR 1 ' 2002

ZyDox™ 25

CHLORINE DIOXIDE PRECURSOR FOR MICROBIAL CONTROL IN
WATER AND WASTEWATER

ACCEPTED
with COMMENTS
in EPA Letter Dated:

MAR 1 2002

Under the Federal Insecticide,
Fungicide, and Rodenticide Act as
amended, for the pesticide,
registered under EPA Reg. No.

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ACTIVE INGREDIENT:
Sodium Chlorite..... 25%
INERT INGREDIENTS..... 75%
TOTAL..... 100%

~~*Available Chlorine..... 30%~~

KEEP OUT OF REACH OF CHILDREN
DANGER!

See Side Panels for Additional Precautions



FIRST AID

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.

If Swallowed:

Call a poison control center or doctor immediately for
treatment advice.
Have person sip a glass of water if able to swallow.
Do not induce vomiting unless told to do so by the
poison control center or doctor.
Do not give anything by mouth to an unconscious
Person.

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.

Call
IF
Inhaled

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage.

HOT LINE NUMBER

Have the product container or label with you when calling a poison control center or
doctor, or going for treatment. You may also contact 1-800-858-7378 for emergency
medical treatment information.

EPA REG. NO. 74246-R

EPA EST. 74246-DE-001

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Manufactured by:
ZyChem-USA Inc.
Wilmington, DE 19801

NET CONTENTS: _____ gal
_____ liters

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER

HIGHLY CORROSIVE. CAUSES EYE AND SKIN DAMAGE. MAY BE FATAL IF SWALLOWED. Irritating to nose and throat. Avoid breathing vapor. Do not handle with bare hands. Wear goggles or face shield and neoprene gloves and use only clean, dry utensils when handling this product. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash separately to avoid fire.

Physical & ^{at once} CHEMICAL HAZARDS

DANGER

Dry sodium chlorite is a strong oxidizing agent. This product becomes a fire or explosive hazard if allowed to dry. Mix only into water. Contamination may start a chemical reaction with generation of heat, liberation of hazardous gases (chlorine dioxide is a poisonous, explosive gas) and possible fire and explosion. Do not contaminate with garbage, dirt, organic matter, household products, chemicals, soap products, paint products, solvents, acid, vinegar, beverages, oils, pine oil, dirty rags, or any other foreign matter. Do not expose to hot surfaces, sparks or open flame.

ENVIRONMENTAL HAZARDS

This product is toxic to fish and aquatic organisms. 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.

TREATMENT

ZyDox™-25 is a source of chlorine dioxide for use in controlling microorganisms in water and wastewater systems. In treating water systems, ZyDox™-25 must be used only in conjunction with approved chlorine dioxide generation equipment, which utilizes chlorine gas, or a combination of chlorine solution and/or muriatic acid or food grade acid as the activating agent. In general, the chlorine dioxide solution is applied to achieve residual concentrations of 10 ppm or less for water treatment. Because of the variability of demand in water and process systems the dosage of chlorine dioxide which is required to achieve the target residuals, is normally lower for continuous feed systems than for slug or timed feed applications. The minimum acceptable residual for chlorine dioxide, as determined by a verified procedure, is 0.1 ppm for ER-1100 Letter Dated:

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minute contact time.

POINTS OF ADDITION

In all cases, generated chlorine dioxide solution be applied in such a manner to ensure adequate mixing and minimal violation. The water system to be treated may either be passed directly through the chlorine dioxide generator or treated via side stream injection point. The generation system employed should be in good working order and capable of achieving chlorine dioxide solutions free from chlorine contamination. Residual determination procedures should be substantiated methods and should also be specific for chlorine dioxide or used in systems where no chlorine contamination is possible. Do not add ZyDox™-25 directly to process water.

change
"should"
to
"must"

POTABLE WATER TREATMENT

Feed Requirements:

The required dosages will vary with water conditions and to the extent of contamination present. For municipal and other potable water systems, a chlorine dioxide residual concentration of up to 2 ppm is sufficient to provide adequate disinfection. Normal target residual concentrations are in the 0.20 - 0.75 ppm range. Chlorine dioxide must be applied at a sufficient residual concentration for a sufficient contact time (C•T Value) to achieve the required disinfection. The concentration of total residuals oxidants (chlorine dioxide, chlorite and chlorate) should be monitored such that it does not exceed 1.0 ppm in the system.

Method of Feed:

ZyDox™-25 is converted to chlorine dioxide through a chlorine dioxide generator. Chlorine dioxide solutions should be applied to the processing system at a point, and in such a manner which permits adequate mixing and even distribution. The feed point should be well below the water level to prevent volatilization of the chlorine dioxide. Do not apply ZyDox™-25 directly to the potable water. Avoid co-incident feeding of ClO₂ with lime or powdered activated carbon.

chlorine dioxide

Chlorine Dioxide Analysis:

Residual chlorine dioxide concentrations should be determined using a ZyDox™ Chlorine Dioxide Test kit.

- 4500- ClO₂ D DPD-Glycine Method
- 4500- ClO₂ E Amerometric Method II

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in EPA Letter Dated:
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WASTEWATER DISINFECTION

Feed Requirements:

The required dosages will vary with water conditions and the degree of contamination present. For most municipal and other wastewater systems, a chlorine dioxide residual concentration of up to 5 ppm is sufficient to provide adequate disinfection.

For sulfide odor control, between pH 5-9, a minimum of 5.2 ppm (wt) of chlorine dioxide should be applied to oxidize 1 ppm of sulfide (measured as sulfide Ion). For phenol destruction, at pH less than 8, 1.5 ppm chlorine dioxide will oxidize 1 ppm phenol; at pH greater than 10, 3.3 ppm chlorine dioxide will oxidize 1 ppm phenol.

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Method of Feed:

ZyDox™-25 is converted to chlorine dioxide through a chlorine dioxide generator. Chlorine dioxide solutions should be applied to the processing system at a point, and in a manner which permits adequate mixing and uniform distribution. The feed point should be well below the water level to prevent volatilization of the chlorine dioxide. Avoid co-incident feeding of Cl₂ with lime or powdered activated carbon.

Chlorine Dioxide Analysis:

Residual chlorine dioxide concentrations should be determined using a ZyDox™ Chlorine Dioxide Test kit.

chlorine dioxide

- 4500- ClO₂ D DPD-Glycine Method
- 4500- ClO₂ E Amerometric Method II

FOOD PROCESSING PLANTS, DAIRIES, BOTTLING PLANTS, BREWERIES

For microbial control in typical food processing water systems, such as flume transport, chill water systems, hydrocoolers, and other water systems. Apply ZyDox™-25 through a chlorine dioxide generation system to achieve chlorine dioxide residual concentration ranging from 0.25 to 5.0 ppm.

Chlorine dioxide generated from ZyDox™-25 may also be used for washing whole uncut and unpeeled potatoes without subsequent potable water rinse requirement, provided that the concentration of total residual oxidants meet the residual limitations of ≤ 1.0 ppm.

Residual concentrations up to 5.0 ppm chlorine dioxide in process water may be used as a water sanitizer for fruit and vegetable washing and cut and peeled potatoes without a subsequent potable water rinse requirement, provided that the concentration of total residual oxidants meet the residual limitations of ≤ 1.0 ppm.

Residual concentrations up to 5.0 ppm chlorine dioxide in process water may be used for washing whole uncut and unpeeled fruits and vegetables although a final potable water rinse is required if the residual exceeds 1 ppm.

Potatoes, including those which have been peeled or cut, may be treated with sufficient chlorine dioxide to product a residual concentration of up to 5.0 ppm provided this is followed by a potable water rinse.

Feed Requirements:

The required dosages will vary with process conditions and the degree of contamination present. Depending on the requirements of the specific water system, chlorine dioxide should be applied continuously or intermittently to achieve a chlorine dioxide residual concentration between 0.25 and 5.0 ppm.

Water containing up to 3 ppm residual chlorine dioxide may be used for washing fruits and vegetables provided that the treatment is followed by a potable water rinse blanching or cooking.

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Method of Feed:

ZyDox™-25 should be applied to the processing system at a point, and in a manner which permits adequate mixing and uniform distribution. The feed point should be well below the surface of the water to prevent loss of the chlorine dioxide.

Chlorine Dioxide Analysis:

Residual chlorine dioxide concentrations should be determined using a ZyDox™ Chlorine Dioxide Test kit.

- 4500- ClO₂, D DPD-Glycine Method
- 4500- ClO₂, E Amerometric Method II

GENERAL INDUSTRIAL PROCESS WATER TREATMENT (OILFIELD INJECTION WATER, WHITE WATER PAPER MILL SYSTEMS, AND RECIRCULATING COOLING TOWERS)

INDUSTRIAL PROCESS WATER TREATMENT

Feed Requirements:

The required dosages will vary with water conditions and the degree of contamination present. For most process water, a chlorine dioxide residual concentration of up to 5 ppm is sufficient to provide adequate disinfection.

Method of Feed:

ZyDox™-25 is converted to chlorine dioxide through a chlorine dioxide generator. Chlorine dioxide solutions should be applied to the processing system at a point, and in a manner which permits adequate mixing and uniform distribution. The feed point should be well below the water level to prevent volatilization of the chlorine dioxide. Avoid co-incident feeding of ClO₂ with lime or powdered activated carbon.

Chlorine Dioxide Analysis:

Residual chlorine dioxide concentrations should be determined using a ZyDox™ Chlorine Dioxide Test kit.

- 4500- ClO₂, D DPD-Glycine Method
- 4500- ClO₂, E Amerometric Method II

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OILFIELD INJECTION

Feed Requirements:

The required dosages will vary with process conditions. ZyDox™-25 may be applied either continuously or intermittently through a chlorine dioxide generating system to oil well production water as it is separated from the oil, and before it is re-injected into the well.

For continuous feeds, chlorine dioxide may be applied at dosages slightly higher than sulfide's oxidative demand as determined by a demand study. For intermittent treatment, chlorine dioxide should be applied at a shock dosage of 200-3000 ppm.

Method of Feed:

ZyDox™-25 is applied through a chlorine dioxide generator. Chlorine dioxide solutions should be fed where adequate mixing and uniform distribution can be accomplished.

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Multiple treatment points may be required in some cases. The feed point should be below the water level to prevent volatilization of the chlorine dioxide.

Chlorine Dioxide Analysis:

Residual chlorine dioxide concentrations should be determined using a ZyDox™ Chlorine Dioxide Test kit.

- 4500- ClO₂ D DPD-Glycine Method
- 4500- ClO₂ E Amerometric Method II

WHITE WATER PAPER MILL SYSTEMS

Feed Requirements:

MUST

The required dosage will vary with the degree of microbiological and process contamination present. Depending on the specific requirements of the system, ZyDox™-25 should be applied continuously or intermittently through a chlorine dioxide generating system to achieve a chlorine dioxide residual concentration between 0.1 and 5.0 ppm. Intermittent treatments should be repeated as often as necessary to maintain control.

Method of Feed:

ZyDox™-25 is converted to chlorine dioxide through a chlorine dioxide generator. Chlorine dioxide solutions should be applied to the processing system in a manner that permits adequate mixing and uniform distribution. In many systems, this may require multiple feed points. The feed points must be carefully selected to provide effective microbial control at critical points within the Paper-mill system. Feed points should be well below the surface of the water to prevent volatilization of the chlorine dioxide.

Chlorine Dioxide Analysis:

Residual chlorine dioxide concentrations should be determined using a ZyDox™ Chlorine Dioxide Test kit.

- 4500- ClO₂ D DPD-Glycine Method
- 4500- ClO₂ E Amerometric Method II

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RECIRCULATING COOLING TOWERS

Feed Requirements:

For control of bacterial slime and algae in industrial recirculating and one-pass cooling systems, the required dosage will vary depending on the exact application and the degree of contamination present. The required chlorine dioxide residual concentrations range between 0.1 and 5.0 ppm. Chlorine dioxide may be applied either continuously or intermittently. The typical chlorine dioxide residual concentration range is 0.1 - 1.0 ppm for continuous doses, and 0.1 - 5.0 ppm for intermittent doses. The minimum acceptable residual concentration of chlorine dioxide is 0.1 ppm for a minimum one minute contact time.

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Method of Feed:

ZyDox™-25 chlorine dioxide should be fed to the cooling tower drip pan (cold water well) or other feed point that permits adequate mixing and uniform distribution. The feed point should be well below the water level to prevent volatilization of the chlorine dioxide.

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Chlorine Dioxide Analysis:

Residual chlorine dioxide concentrations should be determined using a ZyDox™ Chlorine Dioxide Test kit.

4500- ClO₂ D DPD-Glycine Method

4500- ClO₂ E Amerometric Method II

STORAGE AND DISPOSAL

Storage: Do not contaminate water, food or feed by storage or disposal. Keep product in tightly closed container when not in use. Don't drop, roll or skid container. Keep upright. Always replace cover. Store in a cool, dry well-ventilated area away from direct sunlight and heat to avoid deterioration.

Emergency Handling: In case of contamination or decomposition, do not reseal container. If possible, isolate container in open and well ventilated area. Flood with large volumes of water. If fire occurs, extinguish fire by applying large quantities of water. Any unopened drums near the fire should be cooled by spraying with water.

TYPE: MINSATE

Pesticide Disposal: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or ~~Orinate~~ 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 all containers. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities. If incinerated, stay out of smoke.

DOT SHIPPING NAME:
CHLORITE SOLUTION
8 (CORROSIVE); UN 1908, PGIII

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