



PRECAUTIONARY STATEMENTS

DANGER. HAZARD TO HUMANS

This algicide is a strong chemical oxidant. Contact with acids or combustible materials, including clothing, may cause fire or explosions.

STORAGE AND DISPOSAL

STORAGE. Cairox<sup>®</sup> Algicide may be kept indefinitely, if stored in a cool dry area in tightly closed containers away from heat. A fire-resistant building with concrete floors is preferable. Do NOT store near acids, organic solvents, or any combustible materials. May cause fire or explosion.

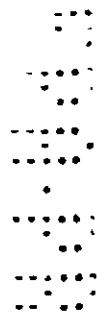
SPILLS AND LEAKS. In case of a spill or leak, sweep or scoop up, and remove promptly. Do NOT return spilled material to the container of Cairox<sup>®</sup> Algicide. Water in large amounts is effective in extinguishing Cairox<sup>®</sup> Algicide fires.

DISPOSAL. Before disposal Cairox<sup>®</sup> Algicide must be chemically deactivated to a non-hazardous material by treatment with a large volume of concentrated aqueous solution of bisulfite or ferrous salts; addition of 3 molar sulfuric acid will accelerate the reaction. The slurry (sludge) should be transferred to a large container and neutralized with soda ash. After removal of free water, the remaining sludge (primarily hydrous manganese dioxides and ferric oxides) may be disposed of in an approved landfill.

The Cairox<sup>®</sup> Algicide container should be triple-rinsed with water, punctured to facilitate drainage, and subsequently disposed of in an approved landfill. The rinse liquids should be used in the water treatment process.

Draft labeling; 19 July 82; left sidepanel.

**ACCEPTED**  
With Comments of EPA Letter  
Date **9 SEP 1982**  
**8429-6**  
UNDER THE FEDERAL INSECTICIDE  
FUNGICIDE AND ROUENICIDE ACT  
FOR ECONOMIC POISON REGISTERED  
ED UNDER NO.



RESTRICTED USE PESTICIDE  
FOR APPLICATION ONLY BY TRAINED WATER TREATMENT PLANT  
OPERATORS OR PERSONS UNDER THEIR DIRECT SUPERVISION.

CAIROX<sup>®</sup> ALGICIDE

AN ALGICIDE FOR USE IN POTABLE WATER TREATMENT SYSTEMS

Potassium permanganate...98.00%  
Inert ingredients..... 2.00%  
Total....100.00%

ALSO FOR OTHER NON-PESTICIDAL USES

KEEP OUT OF REACH OF CHILDREN

-DANGER-

CORROSIVE; causes eye and skin damage. CAUTION; harmful  
or fatal if swallowed. Do not get in eyes, on skin, or  
on clothing. Avoid breathing dust. Wear goggles or face  
shield, proper respirator, and plastic gloves when handling.

FIRST AID: CALL A POISON CONTROL CENTER OR PHYSICIAN NOW!

IF SWALLOWED, give one or two glasses of milk or water.

IF IN THE EYES, flood with water for at least 15 minutes  
while holding the eyelids open. Do NOT attempt to  
neutralize by using any other chemical on the eye.

IF ON THE SKIN, flood with water. Stains can be removed  
from the skin (but NOT THE EYES) with a 2% sodium  
bisulfite solution in water, or with lemon juice,  
followed by a water rinse.

IF ON CLOTHING, remove the clothing IMMEDIATELY for washing.

CONSULT A PHYSICIAN IMMEDIATELY AFTER FIRST AID

Additional precautionary statements are on the side panel of  
label. NOTE TO PHYSICIAN: obstructive edema of the glottis  
has occurred in oral poisonings. Systemic effects are not  
of primary importance due to poor absorption. Treat by  
swallowing egg white and by gastric lavage.

Mfgr. by CARUS CHEMICAL CO.  
LASALLE, IL 61301 USA

EPA Establishment No. \_\_\_\_\_ EPA Registration No. \_\_\_\_\_  
LOT NO. \_\_\_\_\_ NET WEIGHT: \_\_\_\_\_ Kg.  
( \_\_\_\_\_ ) Lbs.

Draft labeling; 19 July 82; front panel.

#### DIRECTIONS FOR USE

RESTRICTED USE PESTICIDE. FOR APPLICATION ONLY BY TRAINED WATER TREATMENT PLANT OPERATORS OR PERSONS UNDER THEIR SUPERVISION. It is a violation of federal law to use this product in a manner inconsistent with its labeling.

#### FOR ALGAE CONTROL IN POTABLE WATER TREATMENT SYSTEMS

Cairox<sup>®</sup> Algicide is for use in potable water treatment systems for the control of algal infestations of raw water. Laboratory studies have shown that Cairox<sup>®</sup> Algicide applied at levels of 2 - 4 ppm will markedly reduce or destroy a population of blue-green algae (Anacystis; Anabaena; Gleotrichia; Aphanizomenon; Oscillatoria) or green algae (Hydrodictyon); at levels of 10 or 100 ppm other algal organisms are destroyed (blue-green: Mastigocladus; green: Coelastrum; Selenastrum; Chlamydomonas; Cosmarium; Chlorella; diatoms: Nitzschia). Various flagellate algae (Ceratum; Dinobryon; Pandorina; Synura; Volvox; Uroglenopsis) and diatoms (Asterionella; Tabellaria; Synedra) have been effectively controlled by water treatment plants through applying Cairox<sup>®</sup> Algicide to the raw water at rates of 0.3 - 4.8 ppm.

WHEN TO APPLY: An algae-related problem in finished drinking water is usually manifested as an unacceptable taste &/or odor. Microscopic examination and counting of a raw water sample will reveal the likely organism. Early treatment provides the most satisfactory control at the lowest dosage level. Cairox<sup>®</sup> Algicide treatment should be continued as long as necessary to control the problem-causing algae. Cairox<sup>®</sup> Algicide treatment will also improve flow through algae-clogged filters.

HOW TO APPLY: Cairox<sup>®</sup> Algicide should be applied as early as possible in the treatment process, preferably at the raw water intake, and prior to the addition of other chemicals. It may be applied continuously as a dry material, using a conventional helix-type dry chemical feeder, or as an aqueous solution using an ordinary positive displacement pump for chemicals.

APPLICATION RATE: For application to raw water at the intake, Cairox<sup>®</sup> Algicide should be applied continuously. Determine the required concentration, using the lowest rate necessary to control problem algae. The application of 1.1 mg Cairox<sup>®</sup> Algicide per gallon of raw water treated provides a Cairox<sup>®</sup> concentration of 0.3 ppm in treated water. This concentration may be adequate. Since the nature and density of algal growth, as well as the pH, total hardness, and dissolved oxygen content, of the raw water supply affect the concentration of Cairox<sup>®</sup> Algicide required, appropriate adjustments of the treatment process at the water plant are required.

Algal content of raw or finished water may be identified and enumerated by microscopic techniques of proven reliability (see Standard Methods for the Examination of Water & Wastewater; 15th edition; APHA, AWWA, & WPCF; Washington, DC). Standard jar testing procedures are recommended for the other parameters, and are outlined in detail in the above reference and the product brochure. Residual levels of manganese in finished drinking water should be 0.05 ppm or less.

Both viable algae and the cellular contents of disrupted algal organisms may contribute undesirable odors or tastes to finished water. In addition to its algicidal activity, Cairox<sup>®</sup> Algicide will effectively oxidize many of the odor-causing cell breakdown products. It also oxidizes dissolved iron and manganese for subsequent easy removal. Manganese dioxide - one of the products of this oxidation process - acts as a coagulant aid to reduce the amounts of other treatment chemicals needed. Conventional accepted analytical methods for algae in drinking water, iron, manganese, taste and odor should be employed to monitor these multiple properties of Cairox<sup>®</sup> Algicide (see Standard Methods reference, above).

(Label; right sidepanel; draft; 7-19-82)

9 SEP 1982

Attachment to Registration Notice for EPA Registration No. 8429-6 listing additional revisions and/or conditions which must be satisfied before this product is released for shipment.

- a. The finished printed label must be revised in accordance with the enclosed edited version of your proposed label.
- b. Delete the Restricted Use classification from the label and the product bulletin. This formulation has not been classified.
- c. Revise the ingredient statements in the product bulletin in accordance with the edited version of your proposed label.