

ILLINOIS POLLUTION CONTROL BOARD
April 10, 1986

IN THE MATTER OF:)
)
PROPOSAL OF CARUS CHEMICAL COMPANY)
)
TO AMEND THE ALGICIDE REGULATIONS) R84-19
) (Deconsolidated
AT 35 ILL. ADM. CODE 602.103 AND) from R84-4)
602.110)
)

ADOPTED RULE. FINAL ORDER.

OPINION AND ORDER OF THE BOARD (by J. Marlin):

This matter comes before the Board upon the filing of a proposal on May 23, 1984 by Carus Chemical Company, Inc. (Carus) to amend 35 Ill. Adm. Code 602.103. This proceeding is being deconsolidated from another proceeding, R84-4. In R84-4, Applied Biochemists Inc. (Applied) had filed a proposal on December 14, 1983 and an amended proposal on January 10, 1984 to amend Section 602.103. Both the Carus and Applied proposals were consolidated for hearing by Hearing Officer Order on June 8, 1984 after Board discussion. Merit hearings were held in Springfield, Illinois on July 24, 1984 and in Chicago, Illinois on July 31, 1984. The Illinois Department of Energy and Natural Resources on November 27, 1984 found that an economic impact study was not necessary and stated that "[t]he cost of making a formal study is economically unreasonable in relation to the value of the study to the Board in determining the adverse economic impact of the regulation." (November 27, 1984 Negative Declaration). The Economic and Technical Advisory Committee concurred in this finding on January 23, 1985. A supplemental hearing called by the Board to address informational deficiencies was held May 20, 1985 in DeKalb, Illinois. The participants submitted additional information after hearing. The Illinois Environmental Protection Agency (Agency) submitted comments on October 7, 1985. With those comments, the Agency proposed that not only should Section 602.103 be amended but that Section 602.110 be amended as well by deleting the words "copper sulfate" and adding the words "the algicide."

In its First Notice Opinion and Order dated November 7, 1985, the Board proposed to adopt amendments to 35 Ill. Adm. Code 602.103 and 602.110. First notice of this proposal was published at 9 Illinois Register 18328 on December 2, 1985. Other than from the Administrative Code Unit, no comments were received. The second notice period began on January 23, 1986 and terminated on March 10, 1986: no objection was received from the Joint Committee on Administrative Rules during this period.

The current algicide permit section 602.103 allows the use of only copper sulfate in treating algae problems in bodies of water used as public water supplies. Carus requests that the

regulations be modified to allow the use of its products for this purpose. The Carus proposal would amend Section 602.103 to include its two potassium permanganate products, Cairox Technical and Cairox FF. These are registered with the USEPA (Reg. No.'s 8429-6, 8429-7) pursuant to the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA, 7 U.S.C. 136 et seq.) for use in potable water treatment systems. They are also registered with the Illinois Department of Agriculture (as of November 9, 1983; Carus Exhs. C,D) pursuant to the Illinois Pesticides Act (IPA), Ill. Rev. Stat. 1985, ch. 5, par. 801 et seq. As registered, they may not be used in open bodies of water. Cairox Technical contains 98 percent potassium permanganate and two percent inert ingredients while Cairox FF contains 95.6 percent potassium permanganate and 4.4 percent inert ingredients, which includes a food-grade additive (Exhs. A,B,C; JR. 38).

Potassium Permanganate

Potassium permanganate is currently used at water treatment plants to treat drinking water at the raw water intake. It is a strong oxidizing agent which degrades in water in less than a minute (MR. 129). The principal degradation product is manganese dioxide which is highly insoluble and biologically inert (MR. 107).

The labels for Cairox FF and Cairox Technical state that they are for use in potable water treatment systems to be applied only by trained water treatment plant operators or persons under their direct supervision (Carus, Exh. C). Mammalian and aquatic toxicity studies were performed (Carus Exh. E). Acute oral (rat) and dermal (rabbit) toxicity studies show that the Carus products are corrosive to skin (Carus Exh. E). The lethal concentration of Cairox Technical in fifty percent of the bluegill sunfish (Lepomis macrochirus) exposed in a 96 hour static exposure study was determined to be 2.7 mg/l (Carus Exh. E, Summary). The LC50 for Cairox FF was 3.6 mg/l. The LC50 (48 hr.) for the macroinvertebrate Daphnia magna was 84 mg/l Technical Grade with no effect at 56 mg/l. An LC50 (96 hr.) value for the green algae Selenastrum capricornutum Printz was 210 mg/l Technical Grade with no effect below 100 mg/l. Id.

Carus would like to expand the use of potassium permanganate to include its application to public surface water supply sources. The current USEPA registration allows its use only in water treatment systems (MR. 121). Even if the Board approves Carus' request, the Company will need a Federal label change before the product can be used in water supply reservoirs. Carus intends to pursue this matter with the USEPA. Carus submitted a paper by Dr. Jerome Carr entitled "Integrated Iron and Nitrogen Control for Lake Restoration" which is now made Carus Exhibit F. Dr. Carr studied the use of potassium permanganate as an algicide in Morses Pond, a 102 acre pond in Massachusetts. The study showed a reduction in the amount of iron in the pond available for macrophytic uptake after application of potassium

permanganate which in turn limited the amount of algae present (Carus Exh. F).

Potassium permanganate has been successfully used as an algicide in water treatment plants when it is applied continuously. In open water, treatment will be infrequent and the product concentration will be tailored to the chemistry of the receiving water (MR. 135). The immediate effect of the treatment is largely limited to the upper portion of the water column in the area behind the applicator's boat. Given this situation, the potential for widespread harm to the aquatic fauna in a lake is remote.

The Board finds that potassium permanganate is suitable for use as an algicide in public water supplies. In so finding, the Board notes that this compound must also be approved by the USEPA for this purpose prior to such use. The Board further finds pursuant to Section 27(b) of the Act that the allowance of potassium permanganate as a public water supply algicide will have no adverse economic impact on the people of this State and will in fact foster competition between approved public water supply algcides.

The Agency in its comments proposed that copper carbonate, copper monoethanolamine, copper triethanolamine and potassium permanganate be added to Section 602.103. Because of the deconsolidation of these proceedings for final decision by the Board, only the addition of potassium permanganate has been considered here. The Agency's and Applied's requests to add the other chemical formulations as well as Applied's request to include all potable water algcides registered with the USEPA will be considered this same day in the final Opinion and Order in R84-4.

The Agency has suggested deleting the phrase "supervising the application of the algicide" from current Section 602.110. No reason for deleting the phrase was provided. The Board believes that the phrase is helpful and declines to delete it in the absence of a justification for doing so.

ORDER

The Board hereby adopts 35 Ill. Adm. Code 602.103 and 602.110, as amended, and directs the Clerk to cause the rules to be published in the Illinois Register and to be filed with the Secretary of State:

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE F: PUBLIC WATER SUPPLIES
CHAPTER I: POLLUTION CONTROL BOARD

PART 602
PERMITS

Section 602.103 Algicide Permits

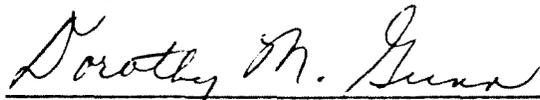
No algicide shall be applied to any stream, reservoir, lake, pond, or other body of water used as a public water supply source without an Algicide Permit issued by the Agency. Copper sulphate is and potassium permanganate are the only algaecides which may be used in public water supplies. Permits issued under this Section will be valid for public water supply sources only.

Section 602.110 Algicide Permit Applications

- a) All applications for algicide permits shall contain:
1. the name and certificate number of the certified operator supervising the application of the algicide,
 2. a statement describing the extent of the algae problem, history of any past algae problems, and algicide treatments, and a description of any fish kills which have resulted from treatments in the past; and
 3. adequate information to support exceeding the limits as stated in 35 Ill. Adm. Code 302: Water Quality Standards.
- b) After any algicide permit is issued, and before the permit expires by its stated terms, if there is any major change either in the operation of the public water supply, or in algae growth, which affects the use of ~~copper sulfate~~ the algicide as outlined in the permit, the public water supply shall submit an application for modification of its permit. This application shall contain all of the information required by this subsection (b) and subsection (a) above.
- c) Any algicide permit issued under this Section shall exempt permittee from obtaining an aquatic pesticide permit as provided in 35 Ill. Adm. Code 652.601.

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 10th day of April, 1986 by a vote of 7-0.


 Dorothy M. Gunn, Clerk
 Illinois Pollution Control Board