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April 1, 2009

Natick Conservation Commission
13 East Central Street
Natick, MA. 01760

Re: Lake Cochituate Aquatic Management Program
Notice of Intent to Apply Reward (Diquat) Herbicide

Attention: Matthew Gardner, Ph.D, Chairman

Dear Dr. Gardner:

Please be advise that at the Board of Health meeting on Monday, March 20, 2009 the Board discussed the DCR's Notice of Intent Application for the herbicide treatment of Reward (diquat) to control the invasive milfoil weed. This item was placed on the agenda per request of the Conservation Commission for a Board of Health opinion on this matter.

Representatives of the DCR, Aquatic Control Technology, Inc., and concerned citizens attended the meeting and were given the opportunity to express their position regarding the treatment request. The Board also reviewed written materials that were submitted and decided to pursue a professional opinion from an expert on water chemistry and the fate chemicals have in the environment. Dr. Warren J. Lyman, Ph.D. was contacted since he was familiar with the process and had been engaged in a previous herbicide treatment application submitted for Lake Cochituate and the Town of Natick.

After further review of all materials submitted, including the electronic report received by the Board from Dr. Warren Lyman (copy attached) on March 31, 2009, the Board of Health's position on this matter is as follows:

Based on our responsibility of protecting the Natick drinking water and in light of the information received to date, the Natick Board of Health cannot support DCR's Notice of Intent application and treatment of diquat in Lake Cochituate at this time.

If you have questions regarding this matter please contact the Board of Health at Ext. 6460.

Very truly yours,

NATICK BOARD OF HEALTH


James M. White, Jr. RS/REHS
Director of Public Health

MEMO

To: Donald Breda, Natick Board of Health
From: Warren Lyman, Ph.D., Carlisle, MA
Date: March 27, 2009
Subject: Opinions regarding proposed treatment of Lake Cochituate with Diquat

Introduction

At your request, I have read the documents you sent me* and provide below some comments and opinions regarding the proposed treatment of Lake Cochituate with Diquat to control populations of Eurasian watermilfoil. A key consideration in evaluating this proposal is the presence of nearby public water supply wells, the closest of which is about 900 feet from the proposed treatment area. Although I previously (in 2006) reviewed several documents related to an earlier proposal to treat the lake with Fluridone, I did not review any documents this time except for the ones you sent me.

Comments and Opinion

Target concentrations of Diquat in the treatment area (0.185 – 0.28 ppm) are ~ 10 times the EPA drinking water standard (0.02 ppm). Thus, a dilution factor of just over 10 (from the treated lake water to the well water) would get you below the level EPA has said is safe. But, in assessing health risks in cases involving potential contamination (especially of drinking water), you want an additional safety factor of at least 10. Thus, we'd really like to know we had a dilution factor of at least 100 between concentrations in the treated lake and the Town wells. Are we absolutely sure ("*beyond a reasonable doubt*") there will be that much dilution? I'm not absolutely sure. Only with site-specific hydrogeologic modeling, coupled with fate and transport modeling for Diquat (based on site-specific fate and transport data), could we obtain a reliable quantitative estimate of the likely dilution factor. This could then provide a basis for a quantitative risk assessment.

If the standard for decision making was just "*more likely than not*" (rather than "*beyond a reasonable doubt*"), then one might be on defensible ground in accepting that the proposed treatment would be safe. But I think the Board of Health has to use the higher standard.

VOC treatment system probably won't remove any Diquat that gets into the water supply system.

* Documents received: (1) Syngenta: Material safety Data Sheet for Reward Landscape and Aquatic Herbicide (5 pages; undated); (2) Aquatic Control Technology, Inc. (ACT): "Treatment of Non-Native Eurasian Watermilfoil at the Department of Conservation and Recreation Beach and Boat Ramp" (9 pages; undated); and (3) Testimony of Harlee Strauss, Ph.D. (9 pages; April 30, 2005).

I have some concern over the lack of site-specific data on chemical fate and transport relating to: (1) Diquat mobility in lake sediments and aquifer materials; and (2) Diquat degradation. I suspect most of the data referred to are from laboratory studies. The conditions of the laboratory studies are commonly quite different from actual environmental conditions. However, field data from NH Div. of Pesticide Control (p. 2 of ACT document), MA DEP (*ibid.*, p. 3), and WA Dept. Ecology (*ibid.*, p.4) are encouraging as they state there were no problems with drinking water contamination following a large number of Diquat treatments in those three states. Extensive use of Diquat at other sites (without apparent problems) provides some significant degree of comfort. But it doesn't get me "*beyond a reasonable doubt.*"

I wonder if Zone II wellhead protection areas (MA regs) are applicable to wells that are adjacent to large lakes. My guess is that the regulators had terrestrial environments in mind when they developed the regs. It might be worth checking with DEP. (Try Kathryn Hamilton @ 617-556-1070.)

I worked with Harlee Strauss on one risk assessment job several years ago. She is very well qualified in the risk assessment area. In her testimony (dated 4-30-05), she provides a qualitative risk assessment. Importantly, she notes the EPA's Reference Dose (on which their 0.02 ppm drinking water standard is based) is based on pre-1986 scientific data. She further points out that several studies published after 1986 suggests lower levels and different mechanisms of toxicity. Of necessity, her final opinion is subjective, but based on an in-depth knowledge of toxicology.

If you do support the treatment proposal, be sure to require testing of well water with an analytical method that can give quantitative results well below the EPA standard.