MEMORANDUM

TO: Anson Tebbetts, Secretary
Vermont Agency of Agriculture, Food and Markets

FROM: Vermont Pesticide Advisory Council through Cary Giguere

SUBJECT: Review of use of pellet forms of Sonar® aquatic herbicide products

DATE: July 21, 2017

CC: Razelle Hoffman-Contois, Chair of Vermont Pesticide Advisory Council
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Secretary Tebbetts:

Over the past several months, the Vermont Department of Environmental Conservation (DEC) has received aquatic nuisance control permit applications that propose use of the aquatic herbicide product SonarOne® (a pellet formulation) with active ingredient fluridone (1-methyl-3-phenyl-5-[3-(trifluoromethyl)phenyl]-4(1H)-pyridinone) to help control the growth and spread of the aquatic nuisance plant Eurasian watermilfoil in various waters of the State.

While there is a long history of discussion amongst stakeholders in Vermont regarding potential use of various pellet (solid) forms of Sonar® products, despite extensive dialog with the registrant and associated researchers, many questions and uncertainties remain. According to DEC's records, no authorized use of a Sonar® pellet product has occurred in Vermont to date.

In January 2017, the Vermont Pesticide Advisory Council (VPAC) initiated a comprehensive review of Sonar® pellet products to determine if points of concern could be sufficiently addressed and if so, if advice regarding potential use of such products could be developed for consideration by DEC.

As part of this effort, permitting specialists in DEC's Lakes and Ponds Program, product specialists—including the Registrant's Senior Aquatics Technology Leader—and representatives from the applicator community were consulted, and participated in multiple VPAC meetings where discussion of use of solid Sonar® herbicide products was a main agenda item. At each meeting, the public, regulated community and other stakeholders were provided the opportunity to offer comment, verbally and/or in writing. Minutes of each meeting are posted on the VPAC SharePoint site (publically accessible).

Members of VPAC conducted research into other entities that engage in aquatic vegetation management activities, and reviewed reports of recent experiences where Sonar® pellet products have been used. Documents regarding dissolution and dissolution rate, human and ecological toxicity, impacts to non-targets, site-specific treatment plans and post treatment reports, as well as application techniques and other aspects of such product use, were obtained, reviewed and discussed in depth by the Council.

Based on the recent research effort and associated extensive discussions, VPAC offers the following information and advice regarding use of pellet forms of Sonar® aquatic herbicide products in general:

- Overall, studies reviewed indicate that well planned treatment with Sonar® pellet products may offer localized control of certain invasive aquatic plant species.

- Efficacy, dissolution, dissipation and release rate have all been documented to be highly influenced by various site-specific factors; thus, if Sonar® pellet products are to be considered for use, DEC must develop and employ waterbody specific, detailed Treatment as well as Monitoring and Sampling Plans. Each plan must be adaptive: each must be adjusted based both on general conditions of the waterbody to be treated and in response to observed influence of site-specific conditions.

- Information from the initial treatment of a waterbody must inform the need for, timing, and magnitude of any booster treatments.

- Application to waters 2 feet or less in depth is not recommended. Limiting application to waters greater than 2 feet in depth is not likely to impact efficacy and serves as a practical measure to address "attractive nuisance" concerns.

- During the course of review, VPAC identified some uncertainties regarding label language as pertains to potable water. The following recommendation appears appropriate given current label language on liquid and pellet products: for whole or partial lake or reservoir treatments, in treatment areas that are within ¼ mile of a functioning potable water intake, no single application can exceed 20 parts per billion. This does not mean that the Council advocates that 20 ppb, or any other specific value, be employed as a drinking water value or action level; evaluation of a proposed target concentration with respect to the level of concern for public health or development of a chemical-specific drinking water guidance value (if no federal MCL exists) is conducted by the Vermont Department of Health.

- Sampling and Monitoring Plans should address N-methylformamide, a potential breakdown product of potential interest with regard to human health.

- A vertical profile of water column temperature should be developed for each waterbody where use is proposed. This profile should be used to help predict the presence and/or development and depth of a site-specific thermocline.

- When appropriate, a vertical profile of the concentration of active ingredient in the water column should be developed for each waterbody post treatment. This will help inform overall use of such products as well as build a waterbody specific profile.

- Site-specific Monitoring and Sampling Plans should consider and address water movement, wind action, flow dilution, the presence of sensitive receptors (such as potable water intakes and residences) as well as other factors.

- The Council recommends that site-specific Treatment Plans should detail precautions that will be taken to prevent impact to Rare, Threatened and Endangered Species.

- Each Treatment Plan should provide site-specific mass balance calculations (similar to that provided for Silver Lake). As each waterbody will have a unique ratio of littoral zone to whole waterbody, this calculation helps ensure there an adequate safety zone.

- The Council recommends treatment with Sonar® liquid formulation(s) at somewhat higher target concentration but for shorter duration should be evaluated. Treatment with pellet formulations should not automatically be assumed to represent a decrease in active ingredient and use of such products is not recommended to become a default approach.