

Members of LCAR and Staff
Vermont Statehouse
Montpelier, VT 05620



28 December 2022

RE: P 22-06: Request that LCAR object to Revision of Pesticide Regulations;
response to LCAR questions

Dear Members of LCAR:

The coalition of the undersigned thank you for your efforts to understand and respond wisely to the Revised Regulations for Control of Pesticides (Regulations). We find them unacceptable for the community of life in Vermont.

We urge you to take a bold step on behalf of future generations, and object to these Regulations. Please send them back to the Agency of Agriculture.

You are authorized to object to rules if they are not consistent with legislative intent. Our research indicates that these rules are inconsistent with legislative intent in at least three areas:

- A. Legislative mandate (6 VSA section 1102) to reduce pesticides (in effect from 1970 to 2021);
- B. Legislative intent and efforts to reduce the state's contributions to global warming;
- C. Legislative intent and efforts to protect all pollinators.

If this step is unprecedented in LCAR's history, please consider that the use of thousands of pounds of pesticides—some now containing toxic PFAS, “forever chemicals”— are capable of degrading life, of “uncreating” the natural world in unprecedented ways and must be reversed now. This emergency is grounds for Vermont to adopt the Precautionary Principle.¹

A. Legislative mandate (6 VSA section 1102) to reduce pesticides (in effect from 1970 to 2021)

A-1. Historic data on pesticide use

¹ Hayes, AW (2005). The Precautionary Principle. *Are Hig Rada Toksikol*. Jun:56 (2) 161-6. PMID 15968832. The Precautionary Principle in its simplest form states: "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause-and-effect relationships are not fully established scientifically."

Your questions regarding pesticide use reduction in Vermont are important and justified. In response, we offer some historic data. The information indicates numerous compounds used across a variety of settings and purposes. Pesticides have changed in their toxicity and modes of action, allowing use of some pesticides at much lower concentrations than before. Nevertheless, the usage trend over the past decade is nearly double that of the previous decade.

The VAAFM webpage no longer supplies pesticide use data before 2010, so we are sharing yearly totals from posted records that were taken offline to cover the pre-2010 timeframe. The data below include only the pesticide use reported to the Agency, not over-the-counter sales to everyday homeowners. Notice that since 2013 use data remains steady at around 1 million pounds per year.²

YEARLY TOTAL USE of pesticides (lbs active ingredient) since 2000:

2000:	973,219.32
2001	1,149,295.78
2002	840,572.89
2003	439,384.03
2004	424,507.68
2005	388,905.28
2006	502,209.48
2007	442,465.20
2008	225,441.95
2009	404,104.96
2010	410,241.81
2011	574,899.72
2012	634,407.04
2013	1,155,078
2014	1,478,537.19
2015	1,390,033
2016	1,417,054
2017	1,347,793
2018	1,154,511
2019	1,019,946
2020	893,296
2021	1,023,615

² (<https://agriculture.vermont.gov/public-health-agricultural-resource-management-division/pesticide-programs/pesticide-usage-reported>)

Golf course use of the neonicotinoid *imidacloprid* (toxic to bees) *increased* from **93 lbs** in 2000 to **1265.93 lbs** in 2004. Imidacloprid contains PFAS³, and was found in Lake Champlain in 2021 by USGS⁴.

Major herbicides used on corn and/or soybeans (lbs. active ingredients):

	<i>2011</i>	<i>2016</i>	<i>2021</i>
Acetochlor	1941	17,360	31,446
Atrazine	76,615	96,346	79,759
Glyphosate	24,818	43,613	69,620
Metolachlor	81,855	89,353	56,578 ⁵

Notice the large increase in glyphosate use and acetochlor.

A-2. Vermont Statutes requiring pesticide reduction.

Pesticide reduction became part of VT law in 1970: 6 VSA section 1102.

Review of these Regulations was discussed by VT Pesticide Advisory Council in 2013 when this statute was still law; however, this law was not discussed during VPAC’s conversations.

When the Agricultural Innovation Board was created by Act 49 (H.434) in 2021, 6 VSA, Chapter 87 section 1102 was repealed. This section described the function and members of the Vermont Pesticide Advisory Council (VPAC). For our purposes here, this section also contained law requiring pesticide reduction.

VPAC resided within the Agency of Agriculture Food and Markets (VAAFMM) which had legal authority over pesticide regulation and a prominent role in VPAC. VPAC largely oversaw permits for right-of-way herbicide use for railways, electric utilities, highways, and later some forest use; these uses represent a small percent of the State’s total use. Agricultural use was never discussed for permitting or in terms of reduction during the lifetime of VPAC.

6 VSA section 1102 (7) (A-E) mandated VPAC and VAAFMM to do the following:

“(7) To recommend benchmarks with respect to the state goal of achieving an overall reduction in the use of pesticides consistent with sound pest or vegetative management practices, and to issue an annual report to the general assembly, detailing the state's progress in reaching those benchmarks and attaining that goal. The benchmarks should be designed to enable evaluation of multiple indicators of pesticide usage, use patterns, and

³Lasee, Steven (2022). Targeted analysis and Total Oxidizable Precursor assay of several insecticides for PFAS. Journal of Hazardous Materials Letters. <https://doi.org/10.1016/j.hazl.2022.100067>

⁴Matt, Serena (2021). <https://www.usgs.gov/data/synoptic-study-study-glyphosate-neonicotinoids-and-selected-other-pesticides-streams-draining-lake>.

⁵ (<https://agriculture.vermont.gov/public-health-agricultural-resource-management-division/pesticide-programs/pesticide-usage-reported>)

associated risks. Benchmarks should take into consideration, but shall not be limited to, the following:

(A) *Decreasing amount of acreage where pesticides are used;*

(B) Reducing the risks associated with the use of pesticides.

(C) *Increasing the acreage managed by means of integrated pest management techniques.*

(D) *Decreasing, within each level of comparable risk, the quantity of pesticides applied per acre.*

(E) Recommendations regarding the implementation of other management practices that result in decreased pesticide use.” (Emphasis added,)

Neither the Pesticide Advisory Council nor the Agency of Agriculture Food & Markets has complied with this law, which was repealed in 2021 by H.434.

One reason leading to increased use is that “*Integrated pest management*” now emphasizes pesticide use, not use of non-toxic alternatives in cooperation with nature. Hence continued large uses of pesticides.

A-3. Pesticide monitoring, detection issues; USGS 2021 report

Pesticide usage tracking is dependent on testing and monitoring. Lack of available data encourages the default position of pesticide use increases. Vermont Agency of Agriculture Food and Markets has a monitoring program for farm wells and other locations. It was not until recent years that the agency tested for degradates as well as parent compounds.

The VAAFM lab has not been capable of detecting glyphosate or its (breakdown product) AMPA (short for amino methylphosphonic acid). If the Agency can't find it in the water, there is no reason to reduce its use.

Glyphosate contains about 18% phosphorus⁶ and has been found in waters nationwide. USGS found AMPA at the Burlington WWTF and the confluence of Potash Brook, Stevens Brook and Rock River with Lake Champlain. Atrazine and metolachlor were found at all five testing sites. Clothianidin (neonicotinoid) was detected at all five sites, highest in Potash Brook.⁷

A-4. Pesticides, toxicity and water quality standards.

⁶ Hébert, MP et al (2018). Overlooked impact of rising glyphosate loading... doi:10.1002/fee.1985

⁷ See note 4 above.

Pesticide toxicity is not well reflected in Water Quality Standards; very few pesticides used in VT are included in the WQS. For example, the 700 ppb standard for glyphosate does not consider its endocrine disrupting capability at lower concentrations, or its ability to disturb or damage the microbial community that are so important to human and animal health. Many diseases can now be linked to glyphosate's disruption of gut microbial communities.⁸

Endocrine disruption is not governed by traditional toxicology which holds that the "dose makes the poison". Harmful effects from exposure to endocrine disruptors can be greater at very low concentrations than at higher concentrations. Endocrine disrupting compounds were identified thirty years ago and present serious regulatory challenges.⁹

A-5. PFAS contamination of pesticides

An additional threat are the per- and polyfluoroalkyl substances (PFAS) being added as unidentified ingredients in pesticides. Unidentified toxins in pesticides present regulatory and environmental problems.¹⁰ Many PFAS are toxic at very low concentrations (some below testing capability), bio-accumulate in living tissue, are very mobile and do not breakdown in the environment. Here is a brief chronology of PFAS in pesticides:

2020: Scientists find PFAS added to pesticides to increase pesticide effectiveness.

2020-21: Conservation Law Foundation and Public Employees for Environmental Responsibility find insecticides used for mosquito control contaminated by PFAS; urge VAAFM and Agency of Natural Resources to take regulatory action.

No actions were taken. EPA and VAAFM claim contamination is leached from containers.

2022: Lasee et al (2022): PFAS in insecticides are not same as those in containers, remain in soil and are taken up by plants.

2022: Alexandrino et al (2022): Nearly 70% of new pesticides registered in last 20 years are fluorinated compounds: more persistent, more bioaccumulative, more toxic to non-target species.

PFAS and pesticides in water, food and air undermine our health and immune systems, rendering us more vulnerable to viral pandemics. The revised regulations do not address unidentified PFAS in pesticides or fluorinated pesticides at all.

Genuine consideration of these phenomena in the regulations or water quality standards would require pesticide reduction to compensate for toxicities at much lower concentrations.

⁸ Claus, SP et al (2016). The gut microbiota: a major player in the toxicity of environmental pollutants? *E:10,1038/npjbiofilms*.2016.3.

⁹ Birnbaum, L (2012). Environmental Chemicals: Evaluating Low-Dose Effects. *doi.10.1289/ehp.1205179*

¹⁰ Glüge, J et al (2020). An overview of the uses of per- and polyfluoroalkyl substances (PFAS). *Environ. Sci.: Processes Impacts*, 2020, 22, 2345

What connection does the Public Health and Resource Management Division of VAAFM see between pesticides and human health?

B. Pesticides and Legislative intent to reduce global warming

Vermont Legislature has invested considerable time and effort toward combating global warming in Vermont. The Global Warming Solutions Act (Act 153, 2020) was passed and mandates many efforts statewide to combat climate change. Pesticides contribute to global warming in several ways. The regulations do not reflect any ways in which pesticides contribute to global warming as follows:

1. Three (3) greenhouse gases are emitted during pesticide manufacturing: **CO₂, methane and nitrous oxide.**
2. 17,000 acres in Idaho have been disturbed for phosphate mining to produce Roundup.
3. Pesticides are made from petroleum, packaged in petroleum-based containers, transported by petroleum, and applied using petroleum.
4. Pesticides bind with vital ions in the soil and break down into CO₂ and formaldehyde.
5. Pesticides are shown to kill off soil microbial organisms that are essential for helping soil structure to sequester carbon, thus preventing the important climate mitigation measure of sequestering carbon in the soil.¹¹

C. Legislative intent to protect *all* pollinators.

The Pollinator Protection Committee was commissioned by the Legislature in Act 83 (2016) to study conditions of pollinators in Vermont and present recommendations for essential pollinator protection to the Legislature. The Committee recommended several specific changes to the Pesticide Regulations.

Two specific recommendations that were *omitted* from the Revised Regulations were 1) “avoid use of soil fumigants;” and 2) “specifically identifying managed and native pollinators and their habitat as an environmental concern in the regulations and permit language.”¹²

Pesticides are adversely affecting pollinators and known to be lethal to these essential creatures. We are at a critical moment to take action on their behalf, so that our natural systems do not collapse due to unnecessary toxins.

¹¹ Sarfraz Hussain, et. al. (2009) Impact of pesticides on soil microbial diversity, enzymes and biochemical reactions, *Advances in Agronomy*, vol. 2
Gunstone, Tari et al (2021). Pesticides and Soil Invertebrates: a hazard assessment. *Frontiers in Environmental Science*. 4 May 2021. <https://doi.org/10.3389/fens.2021.643847>
Spyrou, I.M., Karpouzias, D.G. & Menkissoglu-Spiroudi, U.(2009). Do Botanical Pesticides Alter the Structure of the Soil Microbial Community?. *Microb Ecol* 58, 715–727. <https://doi.org/10.1007/s00248-009-9522-z>

¹² Vermont Pollinator Protection Committee. Report to the Vermont Legislature as required by Act 83 of 2016. Pp.5-6. <https://agriculture.vermont.gov/sites/agriculture/files/documents/Pollinator%20Protection%20Report-FINAL.pdf>

Our Recommendations to LCAR:

Please object to these regulations for the reasons stated above.

Recommendations for letters to Committees of Jurisdiction:

1. Urge legislation to require the use of the Precautionary Principle In Vermont, as many other nations have done.¹³
2. Reinstate statute quoted above in section 2 requiring pesticide use reduction.
3. Require that the minimum age for pesticide applicators be 25 years; remove teaching of pesticide application from high schools.
4. Require that any pesticides to be used In Vermont be certified free of PFAS to the extent detectable by an independent lab.
5. Ban the neonicotinoid class of pesticides, including neonic-treated seeds.

Respectfully submitted by members of the
VT Pesticide & Poisons Action Network

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¹³ See footnote 1