Recommendations of the Mosquito Control for the Twenty-First Century Task Force

Appendix A: Recommendations Considered but not Supported by a Majority of the Task Force

All recommendations voted on by subcommittees were advanced to the full Task Force for consideration. The following recommendations did not receive majority support from Task Force members present at the March 29, 2022 meeting. On March 29, 2022, when voting took place, 20 of the 23 Task Force members were present. The text of the recommendation and vote outcome, as well as and any background information prepared by the subcommittees are presented in this section.

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Recommendation BP-2: Limiting Ground-Based Applications of Adulticides

Directive: *(i) Facilitating the use of integrated pest management*

Background

Not developed.

Recommendation

MCDs should conduct ground-based adulticiding applications only when alternative methods (e.g., source reduction, water management, or larviciding) are not feasible or have been insufficiently effective, and when clear thresholds for spraying are met. These thresholds should be determined through consideration of mosquito surveillance data that demonstrate elevated disease risk or the aggregation of a significant number of complaints. Thresholds may be tailored based on factors such as geography, habitat, season, weather conditions, mosquito species and abundance, and density of nearby residences.

Voting Results

Title	Yes	No	Abstain	Total
BP-2: Limiting Ground-Based Applications of Adulticides	7	12	1	**20**

Recommendation BP-6: Prohibit Aerial Applications of Adulticides

Directive: *(i) Facilitating the use of integrated pest management*

Background

There is a lack of proven efficacy of aerial adulticiding in preventing human disease. At the same time, there is likely harm to human and ecological health due to spraying.

Recommendation

The aerial application of adulticides should be prohibited.

Voting Results

Title	Yes	No	Abstain	Total
BP-6: Prohibit Aerial Applications of Adulticides	5	15	0	**20**

Recommendation BP-9: QA/QC Testing of Chemicals Used in Mosquito Control

Directive: *(vi) Developing procedures to protect human and ecological health and minimize non-target impacts of mosquito pesticides, including, but not limited to, effects on persons with respiratory or immune system illnesses, drinking water supplies, pollinators, and aquatic life*

Background

Not developed.

Recommendation

The Board shall develop a quality assurance/quality control chemical management program that implements systematic reviews and verifications of bulk chemical purchases used in aerial and MCD-based truck applications. The protocols shall focus on reviewing manufacturer and/or independent laboratory analysis data and plans that highlight the parties and their associated role in manufacture, packaging, storage, and transport. This review shall be conducted during the procurement process and prior to a delivery. Secondly, the program shall detail protocols and safeguards for quick, pragmatic tests adopted for chemical delivery acceptance and pre-application. In cases of bulk purchases, used for widespread use by many MCDs or the state, the protocols could allow for lot-based testing where a subset of containers from the same source are tested. Thirdly, the program shall highlight delivery rejection procedures in cases of chemical quality issues or inability to meet requirements stated in delivery acceptance tests, the purchase specifications, or any issue associated with residual or apparent contamination.

Voting Results

Title	Yes	No	Abstain	Total
BP-9: QA/QC Testing of Chemicals Used in Mosquito Control	7	13	0	**20**

Recommendation BP-11: Reduce Pesticide Applications for Nuisance Control

Directive: *(vi) Developing procedures to protect human and ecological health and minimize non-target impacts of mosquito pesticides, including, but not limited to, effects on persons with respiratory or immune system illnesses, drinking water supplies, pollinators and aquatic life*

Background

Not developed.

Recommendation

In consultation with MCDs, the Commonwealth should consider ways to reduce or restrict the number of individual requests for nuisance controls.

Voting Results

Title	Yes	No	Abstain	Total
BP-11: Reduce Pesticide Applications for Nuisance Control	4	13	3	**20**

Recommendation BP-14: Criteria for Declaring a Public Health Hazard

Directive: *(vi) Developing procedures to protect human and ecological health and minimize non-target impacts of mosquito pesticides, including, but not limited to, effects on persons with respiratory or immune system illnesses, drinking water supplies, pollinators, and aquatic life*

Background

Not developed.

Recommendation

The declaration of a public health hazard related to mosquito-borne disease should be based on published and research-based criteria. To promote transparency, relevant participants (e.g., DPH, SRB, MCDs, and/or local health agencies) should document their decision-making process in the Mosquito Management Plan on an annual basis regardless of whether a public health hazard is declared.

Voting Results

Title	Yes	No	Abstain	Total
BP-14: Criteria for Declaring a Public Health Hazard	8	12	0	**20**

Recommendation BP-15: Agriculture Opt-Out

Directive: *(iv) Protecting organic agriculture from pesticide use*

Background

Not developed.

Recommendation

The current opt-out from aerial spraying that is offered to any farm that is United States Department of Agriculture (USDA) certified organic should also be offered to any farm that is 2 acres or more in size, produces food for sale or donation, and uses generally recognized organic practices, as well as any farm that produces for sale or donation honey, pollen, live bees, or other products derived from bees. The procedure for opting-out of aerial spraying shall be that outlined in 333 CMR 13.03.

Voting Results

Title	Yes	No	Abstain	Total
BP-15: Agriculture Opt-Out	6	13	1	**20**

Recommendation LE-4: Menu-based approach

Directive: *(iii) providing for local options regarding the use of pesticides*

Background

Some municipalities do not want to receive or pay for all services offered by their local MCD. It is expected that most municipalities would like to access education, surveillance, and habitat management services. However, it is understood that not all municipalities want to receive pesticide applications, or do not want to receive the full extent of pesticide applications engaged in by their local MCD. A menu-based approach that shifts some responsibilities from districts to state-wide agencies will allow more resource sharing, including expertise and equipment, throughout the Commonwealth, improving efficiency of mosquito control operations.

This subcommittee is not proposing to extend the municipal opt-out process because it will be rendered irrelevant under this "opt-in" menu-based approach.

Recommendation

Funding and resources shall be provided by the Commonwealth to perform surveillance and education in all municipalities. This funding would be given to MCDs and municipalities, as appropriate, to conduct these services. For municipalities that are members of MCDs, surveillance would be conducted by the MCD. If the municipality is not a member of an MCD, surveillance would be conducted by DPH. Results must be shared with municipal governments. Prior to each mosquito control season, funding and staffing would be assessed and must be provided to DPH and MCDs as needed. DPH would provide the results of its surveillance activities to the municipalities where the surveillance occurred. DPH would also create and maintain a repository of educational and outreach materials for municipalities' use. DPH would develop education and outreach materials; education and outreach would be conducted by a municipal agency or by an MCD on behalf of the municipality.

Municipalities may opt-in to additional services including larviciding and adulticiding. Under the Commonwealth's current mosquito control structure, these services would continue to be provided by MCDs. These services would be funded by municipalities receiving those services.

Another subcommittee under this task force recommends revisions to M.G.L. c. 252 and MCD enabling legislation. That recommendation would allow novel funding approaches for MCD funding. Assuming that recommendation is implemented, it would be further recommended to allow a "menu-based approach" for municipalities joining districts. This approach would allow municipalities to pick and choose which mosquito control services they would receive (in addition to the standard surveillance, education, and source reduction). Municipalities would

only pay for services received. Municipalities would have to select services at least one year in advance. The following issues would require further consideration:

- Would this approach be open to all municipalities, or only those that have not yet joined an MCD?
- Are there baseline services or a baseline fee for joining an MCD? For example, could a town receive truck-based adulticiding without receiving MCD surveillance? How would costs for fixed expenses (e.g., facilities) be determined?
    - Are any activities that may have high upfront costs but result in decreased need for pesticides and costs in future years, such as habitat management or other projects, incentivized in this structure?
    - How would IPM be mandated or incentivized in this structure? Would any services be required to ensure IPM is followed?
- What would be the funding mechanism?
    - MCDs require a certain level of funding and year-to-year consistency to operate effectively. This presents a risk if many towns choose not to opt-in, to opt-in at a low level of services, or to change services from one year to the next. Methods to stabilize funding should be considered.
    - The experience of the Pioneer Valley district shows that even a small contribution for basic services may be beyond municipalities' willingness to pay.
- When joining an MCD, does a municipality opt-in once, annually, or could this decision be reviewed and changed periodically?
- How would surveillance locations be determined? Would every municipality have at least one trap regardless of mosquito habitat?
- Would any of these changes impact how private contractors should be regulated?
- What level of control would municipalities have over these operations? For example, would all municipalities opt-in to all adulticiding, or could they specify triggers or areas allowed to be sprayed?
    - Would municipalities be equipped to make these decisions, which are currently made by MCDs that have more information and experience in mosquito management?

<u>Voting Results</u>

Title	Yes	No	Abstain	Total
LE-4: Menu-based approach	5	15	0	**20**

Recommendation LE-4a: Alternative Menu-based Approach

Directive: *(iii) providing for local options regarding the use of pesticides*

Background

A menu-based approach in which mosquito management services are selected or rejected by municipal officials in the absence of data is contrary to a true IPM strategy and should not be prioritized. However, access to the baseline services of education and mosquito surveillance and testing should not be predicated on membership in an organized MCD. All residents and visitors should have equal access to accurate, timely, and impactful education regarding mosquito-borne disease and personal protection from mosquito bites. Likewise, routine and thorough mosquito surveillance and testing is critical for all municipalities in the Commonwealth regardless of their membership status in an organized MCD.

Recommendation

Funding and resources for education and mosquito surveillance, including testing for pathogens that cause mosquito-borne disease, shall be provided by the Commonwealth and conducted by an appropriate state agency (e.g., DPH, MDAR) or a college or university on their behalf in areas not currently served by a regional MCD.

MCDs could choose to continue providing mosquito surveillance services within their municipalities and would be reimbursed the costs associated with surveillance from the source of funding for trapping in municipalities not part of an MCD.

For towns that are currently part of an organized MCD, no changes shall made to the services provided or for which they have previous agreements.

Currently, towns can withdraw from an MCD through a procedure available on the SRB website. With notice to the SRB and Department of Revenue Division of Local Services of withdrawal, a municipality would not lose access to education and mosquito surveillance and testing services but it would not be conducted by the MCD.

If a municipality would like to join an MCD, there shall be a mechanism in place that allows for a discussion between the municipality and MCD regarding services desired and provided. If deemed appropriate and practicable, the MCD shall have the ability to admit the municipality to the MCD and provide limited services, such as only conducting surveillance, source reduction, wetlands management, and larvicide applications.

Voting Results

Title	Yes	No	Abstain	Total
LE-4a: Alternative Menu-based Approach	1	19	0	**20**

Recommendation LE-5: Pilot evaluation of environmental impacts

Directive: *(viii) providing for comprehensive annual evaluations of each season's mosquito control process, including the effectiveness of the process in controlling arbovirus and any effects of spraying on the environment, agriculture, and wildlife*

Background

Not developed.

Recommendation

The Commonwealth should establish a program to conduct research to evaluate mosquito control. This program would provide funding and support to independent organizations, such as universities, conservation organizations, and others, to study impacts of mosquito control and innovative mosquito control techniques in Massachusetts. This effort could take the form of a competitive grant process, with state agency input. Existing partnerships should be leveraged for this process. Specific research topics should include, but are not limited to, non-target impacts of pesticide applications and the effectiveness of currently practiced and innovative mosquito control techniques.

Considerations for implementation

Implementation of any aspects of this recommendation shall necessitate appropriate funding and provision of other resources.

- What organization is responsible for implementing this recommendation?
- Should the studies be limited to non-target impacts of chemical control, or be broader in scope? Should the research cover the full suite of mosquito control services?

Voting Results

Title	Yes	No	Abstain	Total
LE-5: Pilot evaluation of environmental impacts	3	17	0	**20**

Recommendation LE-5a: Comprehensive Evaluation Program

Directive: *(viii) providing for comprehensive annual evaluations of each season's mosquito control process, including the effectiveness of the process in controlling arbovirus and any effects of spraying on the environment, agriculture and wildlife*

Background

Not developed.

Recommendation

The new Mosquito Management Board should establish a committee to develop plans for the comprehensive evaluation of mosquito control, including potential improvements in data gathering and systematic analysis, identifying key data gaps, and supporting or promoting research to fill those gaps. Specific research topics could include, but are not limited to, non-target impacts of pesticide applications and the effectiveness of currently practiced and innovative mosquito control techniques.

The committee would make recommendations on the coordination of research and identification of potential funding sources.

Voting Results

Title	Yes	No	Abstain	Total
LE-5a: Comprehensive Evaluation Program	6	14	0	**20**

Recommendation LE-7: Increased transparency on sensitive habitat/rare species exclusions

Directive: *(viii) providing for comprehensive annual evaluations of each season's mosquito control process, including the effectiveness of the process in controlling arbovirus and any effects of spraying on the environment, agriculture and wildlife*

Background

The Natural Heritage & Endangered Species Program (NHESP) has guidelines on how rare species habitats are protected during routine and emergency operations. Those requirements should be part of the Mosquito Management Plan. The subcommittee does not recommend any changes in Massachusetts Endangered Species Act (MESA) or MESA regulations.

Recommendation

The subcommittee is considering a process to increase transparency regarding areas that are excluded from mosquito control pesticide applications due to the presence of rare species. To the extent possible while maintaining secrecy for rare species locations, the mosquito control/arbovirus control plan should include information on how exclusions for rare species are determined.

Considerations for implementation

Implementation of any aspects of this recommendation shall necessitate appropriate funding and provision of other resources.

Voting Results

Title	Yes	No	Abstain	Total
LE-7: Increased transparency on sensitive habitat/rare species exclusions	5	14	1	**20**

Recommendation PS-3: Inert Ingredients (Option 2)

Directive: *(ix) identifying known ingredients in pesticide products used for mosquito control, analyzing the ability, or lack of ability, to identify such ingredients, and making recommendations for determining such ingredients*

Background:

There are currently 4,555 chemicals or substances approved as inert ingredients by the EPA for "Food and Nonfood Use" or "Nonfood Use Only" (EPA InertFinder; https://ordspub.epa.gov/ords/pesticides/f?p=INERTFINDER:1:0::NO:1::). These lists contain substances reviewed by the EPA Integrated Risk Information System (IRIS) and found to be carcinogenic, compounds that are regulated by the Safe Drinking Water Act (SDWA) and the Clean Water Act (CWA), and compounds subject to the Massachusetts Toxic Use Reduction Act. It also contains fluorinated compounds such as para-chlorobenzotrifluoride (a compound designated by the state of California, but not the EPA, to cause cancer).

EPA sets minimum standards the states must adopt, although states have the ability to set stricter standards. Massachusetts regulates several chemicals under the CWA and the SDWA at more stringent levels than EPA guidelines. These include two chemicals with lower (more stringent) drinking water Maximum Contaminant Levels (MCLs) compared with EPA guidelines (Perchlorate and PFAS6) and at least 24 chemicals that have lower (more stringent) water quality standards for surface water contamination compared to EPA guidelines. These examples provide evidence that the Commonwealth of Massachusetts takes additional considerations into account when setting chemical regulations compared with the EPA.[1] With this in mind, the Commonwealth of Massachusetts should not defer to EPA's approval when it comes to the over 4,500 inert ingredients currently registered for use in the US.

Currently the Massachusetts Pesticide Board, Pesticide Board Subcommittee, established by the Massachusetts Pesticide Control Act of 1978, reviews pesticide products for registration in Massachusetts. This Pesticide Board Subcommittee consists of the following members:

- MDAR
- MDCR
- MDPH
- MDPH Division of Food and Drugs (currently known as the Bureau of Environmental Health Food Protection Program)
- Commercial Pesticide Applicator (appointed by the Governor)

[1] A couple MCTF Pesticide Selection Subcommittee members have expressed concern that Massachusetts does not have as robust a regulatory process for evaluating and setting standards for contaminants as EPA's process and EPA's process should be followed. One member stated that different states setting different standards creates challenges for the regulated community.

This board is a public body and subject to Sections 18 through 25 of Chapter 30A of the Massachusetts General Laws (M.G.L. c. 30A), the Open Meeting Law (although the Pesticide Board can hold an executive session pursuant to M.G.L. c. 30A, Section 21 which appears to be a closed meeting). Therefore, there is concern that if pesticide registrants include inert ingredient lists and percentages in their application, it would be made public. However, applications are sent to MDAR which initially reviews the application for administrative and technical aspects. It does not appear that MDAR's technical review is subject to Open Meeting Law, only the information that is presented to the Pesticide Board Subcommittee. It could be possible for MDAR or another body to review the inert ingredients for toxicological considerations and keep CBI confidential. They would only be able to present general information to the Pesticide Board Subcommittee such as a general decision on whether the inert ingredients were safe or not safe for application according to the label.

Recommendation and Rationale:

The appropriate state law should be updated/amended to provide appropriations and resources so the following changes can be made:

- The makeup of the Pesticide Board Subcommittee would be amended to include MassDEP as MassDEP is the agency responsible for setting regulatory standards for surface and drinking waters and is responsible for regulating toxic substances. MassDEP is often consulted on matters related to the Pesticide Board Subcommittee and this would formalize their involvement. If the creation of a board with an even number of members is seen as problematic, an additional public member may be added to the Pesticide Board Subcommittee.
- The updated/amended law should require that pesticide registrants, starting with the mosquito control products, include information about inert ingredients and their percentages in their product registration applications. This information would be reviewed in a confidential manner by MDAR, and by MassDEP as needed. These agencies would present only general information about the overall hazard assessments of the inert ingredients during an open meeting of the Pesticide Board Subcommittee so they would not disclose CBI.

All information that is protected as CBI under the Federal Insecticide, Fungicide, and Rodenticide Act ("FIFRA"), 40 CFR Parts 152 through 180 would also be protected during the Massachusetts product registration process.

Voting Results

Title	Yes	No	Abstain	Total
PS-3: Inert Ingredients (Option 2)	6	14	0	**20**

Recommendation PS-6: Consideration of Novel Risk/Exposure Scenarios

Directive: *(vii) promoting the use of the safest or minimum risk pesticides feasible and employing methods, including product disclosures or implementation of testing protocols and procedures, to avoid the use of pesticides containing per- and polyfluoroalkyl substances*

Background:

Pesticides are registered by the EPA and Pesticide Board Subcommittee. They are typically evaluated against a registration standard – a standard battery of various studies focused on toxicology and environmental fate that are meant to provide data on the potential risks to human health and the environment posed by the use of a chemical. The requirements may vary between products and are determined by pesticide category and intended use. For instance, if a pesticide is to be used on food, this triggers different studies in the registration standard. While a baseline, the registration standard cannot be expected to capture every potential scenario or risk.

Limitations to the registration standard include:

- Third-party studies are seldom available with the initial registration of a pesticide as the chemical has typically not been previously in use. While re-registration decision-making does third-party studies into account, the studies are often not of a quality or design so as to be useful.
- The registration standard cannot consider every possible species or ecosystem. In some cases, the combination of a particular species and ecosystem might result in a risk that was unanticipated in the normal course of registration/consideration.
- No standard can take into account every possible scenario by which a pesticide might cause harm. There are occasionally pathways or exposure scenarios which were not anticipated and are perhaps deserving of review in making decisions on use. In some cases, these scenarios may be particular to a given geography or ecosystem, often “novel” rather than widespread.

As an example, this MCTF Pesticide Selection Subcommittee has discussed concern associated with an exposure scenario related to the piperonyl butoxide (PBO). Previous studies have indicated that insecticide formulations that include the PBO synergist can cause increased toxicity of pyrethroid insecticides already present in the receiving waters and their sediments. This was the major finding of a 2006 study that sampled water and sediments in Sacramento, California, following aerial application of pyrethrins and PBO. PBO persisted for at least three days post spraying (sampling did not occur beyond three days) and the levels of PBO present synergized other pyrethroids, including bifenthrin, that were already present in the sediments.

This example is interesting as it points out an exposure scenario that is not typically considered in the registration process as it involves multiple application methods, multiple active ingredients (pyrethroids and PBO), and a medium not typically monitored in studies required for registration. Many other researchers have put forward such scenarios where they believe particular risks have been unaccounted for in the registration process or relating to the choice of a pesticide – synergies, particularly susceptible species, groundwater hydrology, indoor air impacts, etc.

Given that mosquito pesticides are applied by the government, over wide areas of land and very often on private property, a higher standard of consideration is warranted.

Recommendation and Rationale:

While it is beyond the scope, charge, and expertise of the MCTF Pesticide Selection Subcommittee to recommend that this particular exposure scenario be considered in choosing and/or limiting pesticides used for mosquito applications, members of the Subcommittee recommend that whatever group is charged with choosing mosquito pesticides to be used in the Commonwealth should consciously create a process where novel or otherwise unaccounted for risks can be put forward for consideration in the process. The technical experts in this group should be charged first with evaluating the validity and strength of the proposed concern. If it is deemed significant, the risk or concern should become part of the decision-making process.

Many of the novel exposures and risks that would be considered in the process would be emerging concerns among scientists and the public and may have only preliminary data available and not enough evidence to warrant changes in pesticide selection. Therefore, the MCTF Pesticide Selection Subcommittee also recommends that the Legislature create a line item in the budget specific to funding pilot studies to further investigate concerns about potential novel exposures and risks. The pesticide selection board could consider regular (annual or biannual) calls for proposals where scientists could propose studies to investigate an emerging concern or requests for proposals on specific topics as they arise.

Voting Results

Title	Yes	No	Abstain	Total
PS-6: Consideration of Novel Risk/Exposure Scenarios	8	12	0	**20**