From: Dykstra, Elizabeth A (DOH)
To: Jennings, Jonathan (ECY);
cc: Clifford, Wayne (DOH);
Subject: Final DOH Comments Draft
Date: Monday, March 08, 2010 3:25:43 PM
Attachments: WA DOH Comments on ECT NPDES Draft Permit 9Mar10 Final.docx

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Jon,

Attached is a courtesy copy of DOH's official comments, which we'll be providing you with an official cover letter tomorrow. The comments provide our rationale behind our comments and suggestions.

Please give me a call if you have any questions or concerns.

Wayne and I will both be at Moses Lake tomorrow. Wayne would like to provide a brief oral overview of the comments tomorrow. We were wondering if it would be better to go first or last . . . ?

See you tomorrow – hopefully it won't be too painful!

r/

Liz Dykstra, PhD, BCE

Public Health Entomologist

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Please visit our Zoonotic Disease webpage

Public Health - Always Working for a Safer and Healthier Washington

DEPARTMENT OF ECOLOGY
MAR 1 1 2010
WATER QUALITY PROGRAM

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
PO Box 47820 • Olympia, Washington 98504-7820

March 9, 2010

Jon Jennings
Washington State Department of Ecology
Water Quality Program
Post Office Box 47600
Olympia, Washington 98504

Dear ~~Mr. Jennings~~: Jon

Enclosed are comments from the Department of Health for the Draft Aquatic Mosquito Control National Pollutant Discharge Elimination System State Waste Discharge General Permit. In general, we are very pleased with the progress the Department of Ecology has made in developing this permit. We are requesting some specific modifications to the draft language and provide you with the rationale for them in the comments as well.

Protecting public health and the environment is a value that we strongly support, and share with the Department of Ecology. Partnerships are the key to our public health system. The Department of Health is available to you as a resource as you craft your final language should you need any technical assistance regarding public health principles and science.

I hope you find our comments constructive and valuable. Please contact Liz Dykstra, Public Health Entomologist at 360-236-3388 or elizabeth.dykstra@doh.wa.gov, should you have any further needs from the Department of Health regarding this permit.

Sincerely,

Gregg L. Grunenfelder
Assistant Secretary

Enclosure

CH 3866

Washington State Department of Health
Comments to the Washington State Department of Ecology
Regarding the Aquatic Mosquito Control
National Pollutant Discharge Elimination System
State Waste Discharge General Permit

March 9, 2010

Background

The Public Health System Relies on Partnerships. The Department of Health (DOH) values its partnerships with other state and local agencies in controlling mosquito-borne diseases. We thank the Department of Ecology for providing us with opportunities for input in the development of the NPDES permit for mosquito control. We also thank the mosquito control districts (MCD) for their partnerships and work, without which a far greater number of the public would be at risk from mosquito-borne diseases. We have reviewed the draft permit and appreciate much of the language and recognize the efforts that have gone in to it. However, after thorough review, we have identified some key factors that we feel are still limiting its effectiveness in addressing mosquito-borne diseases in Washington State. We respectfully submit the following comments which we feel provide the balance between protection of health and the environment.

Prevention is Key to Public Health. The primary role of Washington State's Public Health system is disease prevention. Effective prevention of mosquito-borne diseases requires that mosquito control pre-empt disease occurrence in the population. Below you will find our requests for modifications to the permit that support a preventive approach to mosquito-borne disease prevention and control.

Mosquitoes as Vectors of Human Disease

All Mosquitoes are Potential Vectors of Disease. Mosquitoes contribute a significant proportion of the disease burden on the global human population. They constitute a significant public health threat not only because of their ability to vector disease agents while feeding on human or animal blood, but also from annoyance, distress, and secondary infections resulting from scratching bite sites. A single infected mosquito can pass viruses and other disease agents to many people. Wounds created at bite sites may allow secondary infection by bacteria, which can be exacerbated by scratching.

West Nile Virus has been Detected in Forty-Eight Percent of Washington's Mosquito Species in Other Areas of the U.S. There are 44 known mosquito species in Washington. Due to resource limitations, Washington tests only *Culex pipiens* and *Cx. tarsalis* for the presence of West Nile virus (WNV). The WA DOH only tests these two species because of studies indicating that they are the most likely vectors. They serve nationally as the indicator organism and, as Ecology is aware, public resources are extremely limited for current testing, and expanded testing is extremely problematic. DOH currently uses the laboratories at the University of California – Davis for mosquito testing, and mosquito samples are also tested for Saint Louis encephalitis (SLE) and Western equine encephalitis (WEE). No other species of mosquitoes are being tested and it is not known what role they may be playing in disease transmission. However, testing by the Centers for Disease Control and other states have found the following ***21*** (48% of all WA species) mosquito species found in WA that have all tested positive for WNV in other areas of the country.

Aedes cinereus
Aedes vexans
Anopheles freeborni
Anopheles punctipennis
Culex pipiens
Culex tarsalis
Culex territans
Coquillettidia perturbans
Culiseta incidens
Culiseta inornata
Culiseta impatiens
Culiseta morsitans
Culiseta particeps
Ochlerotatus canadensis
Ochlerotatus dorsalis
Ochlerotatus fitchii
Ochlerotatus japonicus
Ochlerotatus melanimon
Ochlerotatus nigromaculis
Ochlerotatus sticticus
Ochlerotatus trivittatus

Inadequate Adult Mosquito Control may Increase Spread of WNV. These species' exact roles in maintaining the virus in nature remains unknown due to the recent arrival of the virus in North America and the lack of research on the ecology and epidemiology of WNV in the various regions of North America, including Washington. Pathogen maintenance is a complex cycle, involving those vectors important in the amplification cycle as well as vectors important as bridge vectors from birds to mammals. Choosing to curtail control of these populations could actually enhance the circulation of WNV as well as other viruses, thereby increasing the risk of these viruses infecting human and animal populations.

Many of Washington's Mosquitoes are Capable of Transmitting Exotic Mosquito-Borne Diseases. The introduction of new disease pathogens into WA mosquito populations remains a constant concern. The recent introduction and spread of WNV across the country clearly demonstrates how quickly an introduced disease can become established in North America. This raises concerns by public health officials and vector-borne disease specialists about the risk of introducing exotic mosquito-borne viruses such Rift Valley fever, Chikungunya, and Japanese encephalitis. The first evidence of any of these diseases would show up in either the human or animal populations. If mosquito populations are not adequately controlled, the risk of an introduced virus becoming more quickly established is raised considerably. Restricting control efforts of mosquito species that may or may not be carrying disease causing pathogens allows amplification of the pathogen to occur unabated, which can result in a disease outbreak with associated morbidity and mortality that might otherwise have been prevented. Surveillance and research has demonstrated that the following WA mosquito species are capable of transmitting or maintaining the following disease causing pathogens:

Aedes vexans	Canine heartworm, demonstrated laboratory transmission of Rift Valley fever
Anopheles freeborni	Malaria
Anopheles punctipennis	Canine heartworm
Coquilletidia perturbans	Eastern equine encephalitis
Culex pipiens	SLE, WNV
Cx. tarsalis	SLE, WNV, WEE
Culiseta inornata	WEE
Ochlerotatus dorsalis	WEE
*Oc. japonicas**	Laboratory transmission of EEE, WNV and LaCrosse virus
Oc. melanimon	WEE
Oc. sierrensis	Canine heartworm
Oc. sticticus	WEE, SLE
*Oc. togoi**	Brugian and Bancroftian filariasis, Japanese encephalitis

*Introduced, non-native species

Preventing Disease through Mosquito Control

Effective Mosquito Control Should Follow Integrated Pest Management (IPM) Strategies. Mosquito control districts are made up of trained and certified pesticide applicators, who are accountable for how they apply pesticides to control mosquitoes. All MCDs should be implementing IPM techniques that use the least amount of chemical control possible. Achieving these goals requires them to conduct regular surveillance of mosquito populations to provide the information needed to determine when, where, and if adulticiding is actually necessary.

Pesticide Application is Required to Follow State and Federal Laws. The national system for regulating the use of pesticides, overseen by the Environmental Protection Agency (EPA), is through the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). Section 12 (2) (H) states*, It shall be unlawful for any person to use any registered pesticide in a manner inconsistent with its labeling.* The label is in fact the law and should provide direction that adequately protects human health and the environment – as is currently the case with nearly all pesticide uses in Washington. Should Ecology find that label directions are insufficient, we would be happy to work with Ecology on improved language for consideration by EPA.

Mosquito Control Districts fall under Chapter 17.28 RCW and should be expected to:

- Be staffed by trained and certified professionals
- Conduct regular surveillance of mosquito populations
- Know where mosquito habitats are within the district
- Conduct treatments based on mosquito population indices
- Monitor pathogens in the mosquito population, if testing is possible
- Conduct mosquito control using approved pesticides, applied according to FIFRA label
- Conduct mosquito control activities using sound IPM strategies
- Ensure that equipment is in working order, calibrated correctly, and applying correct application amounts
- Conduct insecticide resistance monitoring to determine if and where insecticide resistance is occurring

Impacts of Inadequate Mosquito Control

Private Resident Solutions may Increase Impacts to Public Health and the Environment. If MCDs are restricted in their capacity to conduct adult mosquito control, even when their monitoring indicates that adult populations are increasing, then the lack of mosquito control raises the risk of residents taking matters into their own hands and conducting treatment themselves of their properties, without regard to proper application amounts or use of IPM.

- *Increased Residential Pesticide Use.* Increased residential use of pesticides results in increased pesticide exposures and illnesses due to misuse. Pesticide illness surveillance data shows that *misuse of bug-bombs is a leading cause of non-occupational pesticide-related illness in Washington State. Conversely, a review of twenty years of this same illness data reveals only two events where illnesses were reported from professional mosquito control applications.*

- *Increase in Detrimental Impacts to the Environment and Public Health.* Inappropriate application of over the counter pesticides could increase impacts to the environment and public health compared to what would occur if MCDs are allowed to treat, using well managed, IPM programs. Such injudicious application of pesticides by multiple residents could eventually contaminate waters of the state, above and beyond what would otherwise occur if control was kept in the hands of certified professionals.

- *Increase in Pesticide Resistance in the Mosquito Population.* Injudicious use of insecticides contributes to insecticide resistance in mosquito populations, thereby making them more difficult to control should an outbreak occur and professionals are allowed to treat. Effective control measures will require an increased amount of product to obtain the same level of control, thereby increasing the risk of harm to fish and other non-target organisms as well as potential deposition into waters of the state. Research in California found that structural pest control and homeowner use of pesticides was the dominant source of pyrethroids that were implicated as the primary cause of toxicity in creek sediments of a suburban development (Weston et al. 2005. *Environ Sci Technol* 39:9778-9784).

Misting Systems are an Example of a Private Resident Solution that Does Not Follow IPM. The sale of outdoor time-released insecticide misting systems to homeowners and businesses as a means to control mosquitoes has become increasingly common. The number of websites advertising the sale and installation of these systems appears to be growing.

These systems use various synergized formulations of natural pyrethrins or synthetic pyrethroids that are dispensed into the environment at intervals determined by the user. Some systems also use minimum risk, FIFRA-exempt pesticides to control or repel mosquitoes.

The practice of dispensing pesticides at predetermined intervals without surveillance data guiding the treatment timing and application is not consistent with the sound IPM practices that underlie an effective and environmentally conscientious control program. Valid concerns exist that application of pesticides through these misting systems will have several undesirable effects.

- *Unnecessary insecticide use*. Users of these systems would not commonly have the resources to monitor the local mosquito species and density, or to evaluate the other parameters used to establish control thresholds in professional mosquito control operations. Thus, timed space sprays may result in needless insecticide applications, leading to increased costs to the consumer and potentially adverse environmental impacts.

- *Lack of efficacy data*. Other than testimonials, a historically unreliable source, there is little to demonstrate that these systems actually serve to control mosquito populations even when using demonstrably toxic insecticides. Furthermore, other materials marketed for use in these systems such as cedarwood oil, garlic and other “natural” products by law do not have to prove their efficacy to any regulatory agency.

- *Non-target impacts*. Timed-release sprays will negatively impact beneficial insect populations and other non-target organisms on site and through uncontrolled off-site drift.

- *Promotion of insecticide resistance*. The indiscriminate application of pyrethrins will continually select for resistance to the whole pyrethroid class of pesticides, all of which utilize the same fundamental mode of action. The synthetic pyrethroids currently play an essential role in the mosquito adulticiding component of integrated mosquito management programs that manage resistance formulation through rotation of pesticides of different modes of action and other methods. The potential loss of these compounds, resulting from widespread development of resistance, would seriously compromise the capability to control adult mosquito populations responsible for disease transmission or severe annoyance.

- *Risk of pesticide exposure*. It appears that safeguards to minimize the risk of direct contact with pesticide sprays by residents are lacking from many of these systems. Pyrethrins, though relatively safe compounds, bear the signal word "Caution" on the label, and the precautionary statements indicate that they may be harmful if inhaled. Labels also advise that pets and birds be removed and aquaria covered before spraying. Assuring homeowner compliance with these stipulations would be difficult, given that application of the pesticides is automated and can be overridden by the homeowner by means of a wireless remote.

- *Incompatible with integrated pest management practices*. The level of hands-off, automated control these systems promise may result in homeowners neglecting to use other methods to reduce local mosquito populations – even if encouraged by the installation technician. Practices such as removing mosquito larval habitats from the property or using personal repellents are essential to reducing human/mosquito contact. Neglecting these practices would, in turn, increase reliance upon the use of broadcast adulticides and propagate the unsound, one-dimensional approach to mosquito control these systems provide. Until misting systems are reconfigured so that surveillance drives the application, efficacy is demonstrated and drift is minimized, they should not be considered consistent with sound practices to promote public and environmental health and should be discouraged.

Role of Outbreak Response Planning

The Department of Health's West Nile Virus Outbreak Response Plan Provides Guidance to Communities with No Mosquito Control District. The intent of DOH's WNV Outbreak Response Plan, including the six Alert Levels, is to provide mosquito control guidance for communities and health jurisdictions *with no mosquito control districts*. DOH expects MCDs to have their own IPM plan that they follow, using All Known and Reasonable Technologies (AKART) and FIFRA label directions to conduct mosquito control. The Alert Levels in the WNv Outbreak Response Plan are intended as a guide for communities and local health jurisdictions that do not have the benefit of MCDs addressing mosquito control.

Resource Limitations

Effective Mosquito Surveillance Resources are Limited. The President's 2011 proposed Federal Budget eliminates the entire $26.7 million currently allocated nation-wide towards funding vector surveillance, testing, and reporting at the state as well as federal level. If this budget is implemented, DOH will have no funds available to provide testing of mosquito samples or dead birds for the presence of WNV or any other pathogen. The majority of local health jurisdictions have already reduced or eliminated their zoonotic and vector borne disease programs due to budget restrictions, leaving surveillance to DOH and

MCDs, or resorting to passive surveillance of reported equine and human cases to determine if WNV is in their jurisdiction.

Future Mosquito Surveillance may Rely Solely on Mosquito Control Districts. It is clearly possible that in the near future the only testing for WNV in mosquitoes will be done by those MCDs who have the Rapid Analyte Measurement Platform (RAMP) testing systems and can afford to purchase the test strips to perform the tests. The RAMP system is only capable of testing for WNV, so monitoring for other mosquito borne diseases, such as SLE and WEE, will essentially end. Loss of funding will severely impact disease surveillance and monitoring, which in turn will impact adult mosquito control as currently proposed in the permit. The proposed wording that stipulates presence of pathogen-carrying vectors will further restrict adult mosquito control due to a loss of disease surveillance information.

Permit Restrictions Combined with Reduced Detection of WNv May Increase Impacts to Public Health and the Environment. As WNV settles into the environment and becomes less detectable, minimal infection rates and viral detections will be much less likely to reach the levels the proposed permit requires; thereby creating a situation that would severely reduce adult mosquito control efforts. This would not mean that other pathogens may not be present in the mosquito population; the only way these pathogens will be detected however, will be when or if human or animal cases occur. At that point, adult mosquito control efforts will be behind the curve, resulting in more adulticides being applied in a reaction to an outbreak rather than less adulticides applied as part of a systematic, preventive IPM strategy.

<u>Requested Changes to Draft Permit</u>

Because of these concerns, WA DOH recommends the following changes to the proposed NPDES permit:

a. **All mosquitoes are potential disease vectors or may play a role in maintaining a disease in nature**. Do not differentiate between nuisance and vector mosquitoes. Replace all statements that differentiate mosquito species with "nuisance" or "vector" with "adult." All mosquito species that feed on humans are potential disease vectors and should be treated as such.

b. **Section S4D.3.e** - Change "public health emergency" statements to "public health threat". The emphasis here is again on permitting prevention from the threat (proactive), as opposed to response to an emergency (reactive).

c. **Section S5.A** - Delete statements on nuisance mosquito control. Ecology should focus on what the NPDES permit allows, and not include statements on what cannot be done. We suggest the following language:

   Incidental discharge from adulticiding is allowed provided the FIFRA label is followed and application is in accordance with an IPM plan. Direct discharge of Adulticides and their residues used for mosquito control to waters of the state is not permitted.

d. **Sections S4.B.2.a-b and S5.B** – We do not feel it is Ecology's role to make a determination of a public health threat. Public health threats should be determined by either a state or local health officer. We suggest that Ecology include statements indicating that a public health threat is determined in consultation with a state or local health officer.

e. **Section S5.B.3** – Remove the statement "and follows available DOH vector control guidance (e.g. the West Nile Outbreak Response Plan where the trigger for adulticiding is Alert Level 3)" so that the statement reads "A Permittee that is an organized mosquito control district (chapter 17.28 RCW) may use adulticides to control adult mosquitoes provided it is part of an Integrated Pest Management program including population monitoring, larval control, biological control methods, and breeding source reduction."

f. **Section S5.B.4** – Add the statement "and follows available DOH vector control guidance (e.g. the West Nile Outbreak Response Plan where the trigger for adulticiding is Alert Level 3)" so that the statement reads "A Permittee that is not part of an organized mosquito control district (chapter 17.28 RCW) may use adulticides to control adult mosquitoes provided DOH makes the determination that adulticiding for vector mosquito control is necessary to protect public health due to an overriding public health concern or that the Permittee follows available DOH vector control guidance (such as the West Nile Outbreak Response Plan where the trigger for adulticiding is Alert Level 3)."

g. **Include language that allows for new products recently registered and labeled by EPA**. Several new products appear to be even more environmentally friendly than current products and the permit should have language to allow for their use.