



Chester County Health
Department

Pesticide Management
Discharge Plan
2020

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I. Permit Requirements

The PA Department of Environmental Protection’s (DEP) Vector Management designates the Chester County Health Department as an entity eligible to apply pesticides for mosquito control activities under Pesticides General Permit (PGP)# 0270741. Chester County is a sub designee of the PGP# 0270741 because day-to-day operational control of pesticide applications are funded and guided through a Department of Environmental Protection grant. As a designee of the permit Chester County must follow this pesticide discharge plan to minimize pesticide discharges to the waters of the commonwealth. The Chester County Health Department is required to keep this plan on file and forward a copy to the appropriate DEP regional Vector Management representative.

II. Pesticide Management Discharge Team

Mosquito and mosquito-borne disease	Evan Pilcicki
Revision of Pesticide Discharge Management Plan	Evan Pilcicki
Responsible for corrective action for effluent limitations	Evan Pilcicki
Pesticide Applicators	Seth Lisinski- PDA Cert. # 602443 Evan Pilcicki- PDA Cert. # 711099 Larviciding Assistant – Cert. # TBD

III. Pest Management Area Description

Geographic Treatment Area: County of Chester

Site Name	Triggering Event	Mosquito Species	Recommendations	Pesticide Used
Frick’s lock Peninsula	Spring/rainfall/flooding	Ochlerotatus trivittatus Psorophora ferox Aedes Vexans	Early Spring larval control	Aquabac/Bti 10lbs/acre Vectolex CG/Bs

Frick's Lock Boat Canal	Spring/rainfall	Above	Early Spring larval control	Aquabac/Bti 10lbs/acre Vectolex CG/Bs
Old SchuylkillRd	Spring/rainfall/ flooding	Above	Larvicide	Above
Towpath Park	Spring/rainfall	Above	Larvicide	Above
Black Rock Nature Preserve	Spring/rainfall/ flooding	Ochlerotatus Sticticus etc.	Early Spring larval control	Above
Treddyffrin Twp./Wilson Farm park	High temperature High sample collection/larval presence	Culex Restuans Culex Pipiens	Growth Regulator	Altosid/Methoprene
Barker Park	High sample collection/ gravid	Culex Restuans Culex Pipiens	Wetland/larvicide	Aquabac/Bti 10lbs/acre Vectolex CG/BS
Kardon Park	Spring/rainfall/ temperature	Culex Restuans Culex Pipiens	Early Spring larval control	Aquabac/Bti 10lbs/acre Vecotlex CG/BS

IV. Mosquito Surveillance

Site Selection:

1. Fixed Sites (see below)
2. Human Population
3. History of Infectivity
4. Complaints
5. Previous population surveillance history
6. Proximity to susceptible populations
7. Representation of habitat
8. Confirmed infectivity in the mosquito population

Surveillance Methods:	Start-End date	Frequency	Triggering Event
Gravid Trapping	May 1 st - June 1 st -end of September	10/week (weather permitting) 30/week Pre/post treatment	Routine Public Complaint Treatment
BG Sentinel Trapping	June 1 st -October	5/week	<i>A. albopictus</i> surveying
Light Trapping	April 1 st June 1 st -October	As needed Pre/post treatment	Public Nuisance Complaint Treatment
Larval/Pupal Dipping	April 1 st -October	As needed Pre/post treatment	Routine Public Complaint Treatment

Fixed Sites- The following sites shall have routine surveillance conducted on a weekly basis during the above-prescribed surveillance timeframes through Gravid Trapping **(G)**, BG Sentinel Trapping **(BG)**, or both **(G)(BG)**:

- 15 Summer Way (G)
- 15-Marinelli Park (G) (BG)
- 15-Kardon Park (G) (BG)
- 15-E. Goshen Twp. Park (G)
- 15 St. Davids cemetery (*sp.*) (Easttown) (G)
- 15-Parquesburg park (G)
- 15-Parquesburg Episcopal Church (BG)
- Phoenixville Refuse Area (G)
- 15-Bridlewood blvd 100 (G)
- 15 Wilson Farm Prk. (G)
- 15-Strafford Park (G)
- 15-Charles Martin Park (G)
- 15-Spring Run Park (G)
- 15-Barker Park (G)
- 15-S. Church St. 103 (BG)
- 15-Kennett Sq. CCIU (G)(BG)
- 15-E. Phoenix Dr (G)
- 15 Byers Station (Graphite mine rd.) (G)
- 15-Jenners Pond Retirement Community (BG)
- 15-Albert Miller Mem. Park (G) (BG)
- 15-College Ave. Pump St. (G)
- 15-Greenfield Park (G)(BG)
- 115-Albert Miller Mem. Park (G)(BG)

Gravid Trapping-Gravid trapping shall be conducted on a routine basis as well as in response to public complaint/concern. Attention shall be given to known breeding locations, historically yielding high numbers of adult mosquitoes. Gravid sampling will occur before and after all adult control activities as well as when positive WNV samples are collected.

BG Sentinel Trapping- BG Sentinel trapping shall be conducted on a routine basis as well as in response to public complaint/concern. Attention shall be given to known breeding locations (particularly in urban areas) which have historically yielded high numbers of adult *Aedes albopictus* mosquitoes.

Light Trapping-Light trapping shall be conducted in response to public complaint/concern (mainly nuisance). Attention shall be given to known breeding locations, historically yielding high numbers of nuisance/flood plain type (section III) mosquitoes. Pre and post sampling shall be done in response to all adult mosquito control activity.

Larval sampling-Larval sampling shall be conducted on a routine basis as well as in response to public complaint/concern. Attention shall be given to known breeding locations and pre and post larval treatments. Elimination of standing water shall be attempted when possible.

V. Guidelines for Pesticide Use

Chester County will consider and document, when practical, alternatives to biological and chemical pesticides. Prior to the application of pesticides Chester County will evaluate the following management options, considering impact to water quality, impact to non-target organisms and pest resistance:

- A. **No Action**-If no evidence of mosquito breeding is found/observed upon inspection.
- B. **Prevention**-The public can obtain information regarding prevention of mosquito breeding via press releases, pamphlet handout and internet: www.chesco.org and www.westnile.state.pa.us.

- C. **Source Reduction**-Source reduction measures will be utilized when appropriate. Through cooperation with the general public and enforcement of the Rules and Regulations of the County of Chester.
- D. **Education**-Educational events held at the County of Chester can be used to educate the public on the best methods for source/breeding reduction.
- E. **Biological Control Agents**-Should be considered before chemical control when breeding sources (standing water) can be located.
- F. **Pesticides**-Use of chemical pesticides will be utilized when a public health threat (positive sample) is present or when sampling methods yield excessive (>150) numbers of nuisance mosquitoes (mentioned above), accompanied by a documented complaint and all other control methods are exhausted.

It is important to consider how each of these techniques can be employed in mosquito management. A-F must be considered, but might not be practical when managing mosquitoes for human disease.

Another important consideration is the use of surveillance to document thresholds and efficacy of applications. Specific information on thresholds can be found in Section VI. Other considerations should include species, vegetation density and previous application dose. It is also important to highlight other alternatives to pesticide usage such as habitat reduction or education/cultural methods employed.

VI. Thresholds

Factors	Threshold/Triggering Event	Recommendations
Uninfected Mosquito Vector	None	Locate larval source/Larval control
Infected Mosquito Vector	> 150 Culex Spp. And/or VI* of ≥ 300 >25 per host-seeking Multiple positive samples/same location	Source reduction/ Larval/Adult control
Human	1 Human	Increased Surveillance/ Source reduction/ Larval/Adult control

Factors	Threshold/Triggering Event	Recommendations
Horse	1 Horse	Increased Surveillance/ Source reduction/ Larval control/ Adult control
Nuisance	> 100-Routine > 100-Complaint Aedes Vexans Ochlerotatus trivittatus Psorophora ferox Aedes Albopictus Ochlerotatus Japonicus	Growth Regulator/Methoprene(flood Plain) Larval Control/Adult control
Larval Mosquito	1 Larvae per dip	Source reduction/ Methoprene/growth reg./ Larval control
<i>Aedes albopictus</i>	≥25	Source reduction/Growth Regulator Larval Control/Adult Control

*Vector Index (VI) is an estimate of the abundance of infected mosquitoes in an area and incorporates information describing the vector species that are present in the area, relative abundance of those species, and the WNV infection rate in each species into a single index. The VI is calculated by multiplying the average number of mosquitoes collected per trap night by the proportion infected with WNV, and is expressed as the average number of infected mosquitoes collected per trap night in the area during the sampling period. The VI value is identified using a tool provided by PADEP.

VII. Product Choice and Rate

Product	Target	Habitat	Rate
Permanone RTU	Adult Mosquito	Air Column	.66-1.5 oz/acre
DeltaGard	Adult Mosquito	Air Column	1.5oz/acre
Vectolex CG	Larval Mosquito	Organic water	5-20lbs/acre 20-80lbs/acre

Product	Target	Habitat	Rate
			Waste tires/Stp's
Spheratax SPH	Larval Mosquito	Organic water	5-20lbs/acre 10-20lbs/acre For extended residual
Aquabac	Larval Mosquito	Organic water	10-20lbs/acre
Altosid/Methoprene	Larval Mosquito	Organic water	1 briquette/100sq.ft.
Agnique	Pupae	Water Surface	1 squirt/50 sq. ft.
FourStar	Larval Mosquito	Organic Water	1 Briquette/100sq.ft.
AquaDUET	Adult Mosquito	Air Column	.66-1.5 oz/acre
Vectoprime FG	Larval Mosquito	Organic Water	1.25-20 lbs./acre
Vectomax FG	Larval Mosquito	Organic Water	5-20 lbs./acre
Vectomax WSP	Larval Mosquito	Organic Water	1 pouch per 50 sq. ft.

Products are chosen based on the life stage of the mosquito and the application habitat. Pretreatments in areas that are expected to hold water throughout the season are an important tool in suppressing mosquitoes throughout the year. Careful measurement of the treatment area must be made in order to apply the correct amount of pesticide needed to achieve efficacious mortality in the mosquito population.

If action thresholds have been exceeded and the mosquito population is unable to be controlled through source reduction, application of pesticides is warranted. If pesticides are chosen to control mosquitoes, the primary method is through the use of biological pesticides. *B. thuringiensis israelensis* and *B. sphaericus* are important tools mosquito control professionals have at their disposal. *B. thuringiensis israelensis* and *B. sphaericus* will kill larval mosquitoes within 24 hours of application. *B. thuringiensis israelensis* has no residual effect, while *B. sphaericus* has a residual effect because of the spore's thicker cell wall. Both bacteriological strains have excellent environmental profiles and do not impact non-target species. Another important tool for the control of larval mosquitoes is Methoprene. Methoprene is an environmentally safe product and has a proven track record of excellent results. Methoprene is a hormone disrupter; therefore larvae must be reared out to adults in order to judge the final efficacy of the application.

None of the aforementioned products in this section will impact mosquito pupae. When pupae are present, monomolecular films must be used to achieve mosquito control. These films have the potential to impact other aquatic organisms using surface tension.

Pesticide Resistance- Pesticide application records and product choice shall be reviewed and/or considered for all treatment events. The area in question will be sampled pre and post treatment to insure effectiveness of the control event. A rotation of Bti, Bs, and methoprene products will be utilized in larval control activities. When considering chemical control, all label instructions and recommended application rates and intervals shall be utilized to avoid a resistance to any one (1) control product. Products chosen for these uses are applied by the aforementioned equipment in section V. which are closely monitored and regularly calibrated. Pesticide resistance testing may be conducted throughout the season.

VIII. Assessing Environmental Conditions

Weather conditions are diligently monitored before, during and after all control events. A weather reading instrument (Kestrel) is utilized to record conditions such as temperature, wind speed, direction, and precipitation. All conditions are recorded for treatment record.

Pesticide label instructions are closely followed with regard to ambient air temperatures and wind speeds. Specifically, Permanone RTU, no applications shall be conducted at temperatures below 50 degrees F, and is recommended to be applied during the cooler hours of the night or early morning. No chemical/ULV applications shall be made during a rain event.

Treatments for adult mosquitoes occur in both urban and rural areas of the county. Applicators always turn off equipment when near a stream or waterway of the Commonwealth. ULV applications will be >500 feet from any PADEP designated HQ or EV stream.

IX. Ground Adulciding Procedures

- A. Follow label instructions. Apply when insects are most active and meteorological conditions are conducive to keeping the spray cloud in the air column close to the ground. Do not apply when air temperature is less than 50 F.
- B. Spray during periods when ground level wind speed is equal to or greater than one mph and does not exceed 10 MPH. Apply when thermal activity is low. Do not apply when it is raining in the treatment area.
- C. Beekeepers requesting notification are contacted prior to spraying their area to help protect their colonies. Pennsylvania beekeeper location and contact information can be found at www.paplants.state.pa.us
- D. Other individuals requesting notification are contacted prior to spraying their area.
- E. Local government, hypersensitives, Pennsylvania Emergency Management Agency, county 911 offices and statewide representatives are notified prior to any truck mounted ULV event.
- F. All individuals appearing in the Department of Agriculture hypersensitive pesticide registry must be notified if the application occurs within 500 feet of the property listed. Specific regulation regarding the notification of hypersensitives can be found at www.paplants.state.pa.us
- G. A "lead" truck shall be utilized to alert the public that a control/ULV event is taking place. The lead truck can be utilized to provide pre warning for approaching people, pets, bodies of water, streams, rivers etc. for which the ULV equipment operator can stop the machine from spraying anything directly.
- H. ULV trucks and equipment used in the pesticide application process shall be stocked only with the amount of product to be used during the application, avoiding unnecessary spills in the event of an accident or mishap.

X. Equipment Maintenance and Calibration Schedule

Properly serviced and calibrated equipment is essential in eliminating unwanted discharges of pesticides and the most efficacious control of mosquitoes. All application equipment will be calibrated prior to the first treatment of the year and serviced as per the manufacturer's guidelines.

Equipment	Purchase Date	Manufacturer	Calibration Date	Service Date
Mozzie Fog	2008	Adapco	May 2011	Yearly
Zephyr Duo	2008	Adapco	May 2011	Yearly
Maruyama backpack sprayer	2003	Maruyama	NA	Yearly
Promist Dura	2017	Clarke	Annually in April/May	Yearly
Stihl SR450 backpack sprayer	2017	Stihl	NA	Yearly

XI. Adverse Incident Reporting, Spill Response and Monitoring

Notification:

Emergency # 911

DEP Regional Biologist-Chick Clark #484-250-5114

Chester County Hazardous Materials Response Team #610-344-5000

Chester County Health Director #610-344-6233

Prevention:

All vehicles used for the transportation of pesticides shall contain a spill kit to be used for clean-up in the event of a spill, including the following:

- A. Oil dry/cat litter (absorbent material)
- B. Rubber gloves
- C. Safety goggles

- D. Disposable trash bags w/ties
- E. Shovel
- F. Absorbent Socks
- G. Large leak proof bucket/container
- H. Push broom

Reporting:

Non-target organisms shall be visually monitored for signs of detrimental affects from pesticide use. Dead or disfigured organisms observed in or at the application site shall be reported to the appropriate DEP Regional staff mentioned above.

Spill monitoring shall be documented in the internal WNV database within five (5) days of application.

XII. Record Keeping

1. Pesticide application records are entered to the DEP database found at <http://www.wnvc.state.pa.us/wnv/> following ALL CONTROL ACTIVITIES.