

CMAD's APPROACH TO MOSQUITO CONTROL

The Cache Mosquito Abatement District uses an integrated approach to mosquito control which has been reviewed by experts in the fields of public health, toxicology, and pest management. Surveillance, larvacide, and adulticide along with education and personal protection are emphasized. Adulticide, which entails the use of malathion in extremely low concentrations to kill adult mosquitoes, is probably the one activity that gets most of the attention from the public. However, it's the smallest component of the integrated pest management program used by CMAD.

The majority of our abatement activities is in larvacide. Larvacide chemicals include *Bti*, a microbial byproduct that specifically targets mosquito larva. By using chemicals targeted specifically towards mosquito larva, CMAD can see a much more efficient kill rate while causing extremely minimal impact on other life forms. Larvacides also stay active longer—up to a month, in fact, while fogging for adults only kills mosquitoes that are active at the time of application. Currently, the District spends nearly threefold more time on larvaciding than adulticiding (fogging with malathion).

CMAD uses surveillance both to track the number and species of adult mosquitoes and to identify which areas have mosquitoes carrying the West Nile Virus. Carbon dioxide traps collect female mosquitoes overnight (only the females feed on mammals). Technicians collect the mosquitoes from the trap chamber (this is called a mosquito pool) and return to the lab to count them and to identify which species are present. In Cache County, the *Culex* species of mosquito carries WNV; if numbers are high and the pool tests positive for WNV, then the District will use malathion to control the adults in that area.

Due to a loss of funding from federal and state sources, the sentinel chicken flocks are not being used in 2009. Surveillance will be done only on the mosquito pools. CMAD purchased equipment that can be used to test for the presence of WNV in pooled mosquitoes. This will supplement the testing done by the state diagnostic lab and give us results quicker.

Fogging with malathion (using a truck-mounted pump to spray ultra-small droplets in the air) is and will probably always be part of the CMAD integrated pest management program. Because it is impossible for the District to use larvacide on every little puddle of water (remember, it only takes half a cup of water to be home for hundreds of mosquito larva), we do need to be able to quickly knock down high infestations of adult mosquitoes, especially when tests show that mosquitoes in that area are carrying WNV or other diseases.

The EPA (Environmental Protection Agency) and similar agencies both in the U.S. and Canada have estimated that exposure and risks to both adults and children posed by fogging with malathion are hundreds and even thousands of times below an amount that might pose a health concern. These estimates assume repeated spraying over a period of weeks, and also assume that toddlers would ingest soil and grass in addition to any skin or inhalation exposure.

Malathion is an organophosphate (OP) insecticide that has been registered for use in the United States since 1956. It is used in agriculture, residential gardens, public recreation areas, and in public health pest control programs. When applied in accordance with the rate of application and safety precautions specified on the label, malathion can be used to kill mosquitoes without

posing unreasonable risks to human health or the environment. The EPA has recently (2006) completed yet another study of malathion and continues to endorse its use in mosquito control.

However, EPA has also refined its characterization of the potential risk from *malaoxon*, a more toxic compound that is formed from malathion under certain conditions. Malathion present in untreated water will form malaoxon during the chlorination process in water treatment facilities. Hence, field technicians take care to avoid fogging in areas where the drift might reach water sources that would subsequently be chlorinated in a short period of time. Malaoxon can also form more slowly when malathion is deposited on hard, dry surfaces and exposed to air over time. The Agency's assessment shows that, even when considering the presence of malaoxon on surfaces following applications of malathion for mosquito control, the relatively low application rates and small droplet sizes used in these types of applications result in minimal exposure to people in the treated area.

In the past four years, a weekly fogging schedule was used primarily because the abatement program only began in 2005 and there were a lot of mosquitoes out there! This year, the District will rely more on surveillance results and citizen requests/reports of mosquito numbers to determine where and how often to fog. This presents a challenge to the District and the public to keep informed of when fogging may occur since a very few people feel they are extremely sensitive to the fogging. The District will post on their website every Monday the areas scheduled to be fogged that week (there is about a one-week lag between sending the mosquito pools and sentinel flock blood for WNV and other disease testing before we know what areas may need fogging). Because adult mosquito numbers rise dramatically shortly after the arrival of warm weather, fogging is generally done once a week in most areas.

How can you help in this effort? Make sure there is no standing water on your property; check toys, swingsets, and gutters that may collect even small amounts of water. If you have larger bodies of still water and would like to be sure they receive larvacide treatment, please contact CMAD and show the technicians how to reach the area.

And always remember to Fight the Bite: wear long sleeves and pants at dusk and dawn when mosquitoes are most active, and apply a mosquito repellent containing DEET or other approved repellent if you will be outdoors during those times.

How to contact us:

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Additional Information:

- ASTDR: <http://www.atsdr.cdc.gov/MHMI/mmg154.html>
- National Pesticide Information Center (<http://npic.orst.edu>)
- The EXtension TOXicology NETwork (<http://extoxnet.orst.edu>)
- EPA (<http://www.epa.gov/pesticides/health/mosquitoes/>)
- BRHD (<http://www.brhd.org>)
- CMAD (<http://www.cachemosquito.com>)