Maricopa County

Environmental Services Department

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M E M O R A N D U M

Date: **August 17, 2004**

To: **Fulton Brock, Supervisor, District One**

From: **Al Brown, Director**

Subject: **Alternatives to Anvil Pesticide**

This memo is in response to your August 9, 2004 memo requesting additional information about Anvil. Anvil is the pesticide currently in use by the Maricopa County Environmental Services Department for control of adult mosquitoes. It is a synthetic pyrethroid. The pesticide is applied using ultra low volume equipment commonly referred to as "foggers". The pesticide is dispersed in very small (5 to 25 microns) diameter droplets, and appears as a fog or mist. In addition to the attachments, this memo includes your questions and the responses from the Environmental Services Department.

1. **Provide a survey of alternative mosquito pesticides being used in other counties across the country.**
   We reviewed reports from available jurisdictions around the country. These range from five counties in Illinois to Florida which has a mosquito control district in each county. From the information reviewed, most jurisdictions use larvicides and adulticides to control mosquitoes. Some jurisdictions have elected to not apply adulticides. Several studies have shown there is an elevated risk of humans acquiring a mosquito-borne disease in jurisdictions that do not apply adulticides or in those jurisdictions with no control program. Most jurisdictions, including Maricopa County, regard adulticide application as the last option for mosquito control. An integrated mosquito management approach is practiced in Maricopa County. This emphasizes public education, source elimination and use of natural and low toxicity larvicides. We base our decision on the application of adulticide using ground foggers on several factors including citizen complaints, mosquito trapping, arbovirus surveillance and human cases. There are two classes of pesticides that may be legally applied for control of mosquitoes for public health purposes. They are organophosphates and synthetic pyrethroids. Of the jurisdictions that apply adulticides, we were unable to find any that use chemicals other than organophosphates or synthetic pyrethroids.

2. **What studies have been done that lead local leaders to choose a product other than Anvil.**

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The decision to use a specific pesticide for adult mosquito control is made locally. The first selection requirement is EPA registration of the pesticide for control of mosquitoes for public health purposes. There are many pesticides that may be legally applied to urban areas. These are found in the attached table. Jurisdictions choose among the products based on local environmental conditions such as the mosquito species, presence of environmentally sensitive habitats, terrain, presence of water bodies, developed land use, effectiveness, toxicity, availability and cost. Many jurisdictions continue to use organophosphate pesticides such as malathion for ground fogging. These pesticides produce a slightly better kill of mosquitoes and cost much less than synthetic pyrethroids. However, organophosphates at high doses are generally more toxic to humans than synthetic pyrethroids. Of the mosquito control agencies that apply adulticides, our research found that they all used either organophosphates or synthetic pyrethroids.

3. **What are the costs associated with these alternative products.**
   The least expensive pesticides are organophosphates. The cost is approximately $38.00 per gallon but is 100% active ingredient. The three most commonly used synthetic pyrethroids range in costs from $24.00 to $44.00/gallon. Natural pyrethrin is not available in the large quantities needed for coverage of hundreds of thousands of acres. It is available in smaller quantities for organic farmers or private uses. The price per gallon for this product is approximately $100-200 per gallon and requires 24% Piperonyl Butoxide.

4. **Provide a list of all agents (inert included) found in Anvil 2 + 2.**
   Sumithrin [3-Phenoxybenzyl-(1RS,3RS,1RS,3SR) 2,2-dimethyl-3-(2-methylprop-1-enyl) cyclopropane-barboxylate] **2 percent**

   Piperonyl Butoxide [Alpha-(2-(1-butoxyethoxy)-4,5-methylenedioxy-2-propyltoluene]
   2 percent

   White Mineral Oil **40 – 75 percent**

   Aromatic Hydrocarbon **20 – 50 percent**

5. **Provide a monthly update on your efforts to get the word out regarding the reduction of breeding sites, precautions for avoiding mosquito bites, partnerships with cities and associations, etc.**
   The combined efforts of the Department of Public Health and Environmental Services Department have resulted in more than 56 media releases, media appearances, press conferences and public presentations during this mosquito

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season. We have reproduced over 300,000 pamphlets, door hangers posters and other information pieces. A July survey conducted by the Rocky Mountain Poll, indicated 98% of our residents are aware of the West Nile Virus issue. We continue to develop our public education campaign. Through the assistance of MAG, the public information officers from all area cities are working together with us. Al Macias has mobilized several PIOs from various County departments. We are also retaining a contractor to help. I will work with the Chairman's office to provide Board members periodic reports on our progress.

Attachments:

Discussion of Pesticide Alternatives for Mosquito Control in Maricopa County
Reference list
Spreadsheet Comparing Mosquito Control Alternatives
Map of Areas Fogged for Mosquitoes between August 1, 2004 and August 12, 2004

cc: David Smith
Jonathan Weisbuch, M.D., M.P.H.
Chairman Andrew Kunasek
Supervisor Don Stapley
Supervisor Max Wilson
Supervisor Mary Rose Wilcox