



## **APSE™ Mosquito Control Testing**

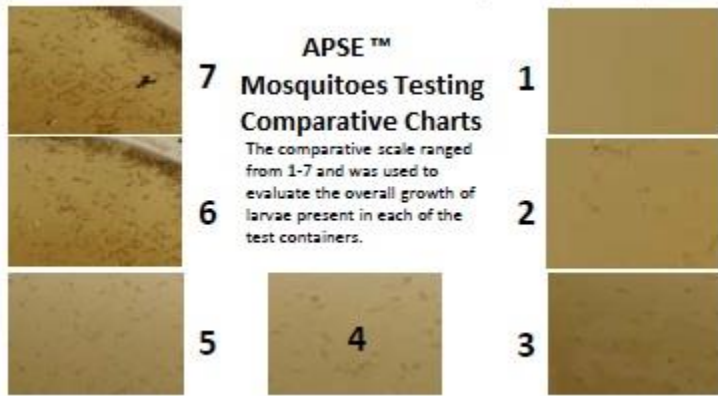
**December 15, 2010**

The purpose of this evaluation was to test the ability of the APSE™ chemical to control the production of mosquito larvae in open containers in a natural outdoor setting, conducive to the reproduction of mosquitoes, over a three month period.

### **Test Procedure:**

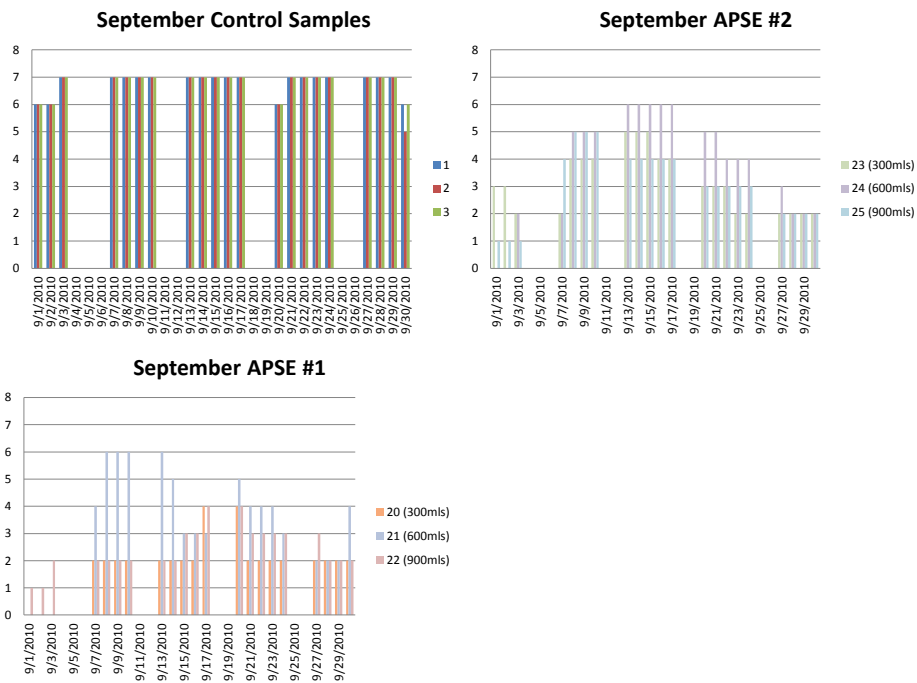
Twenty grams of micro-organisms and nutrients were added to each bucket of approximately 2 gallons of water being tested. Three (3) control buckets were left untreated for the duration of the test. Four different versions of APSE™ were added to buckets at 300, 600 and 900 ppm. The buckets were then placed outside 15 feet apart from each other, and allowed to sit open in hopes of attracting mosquitoes to lay eggs. The buckets were monitored, and the treated buckets were compared to the control buckets.

In this test of the APSE™ product line, four (4) different versions of the product were tested at three different dosages to determine its ability to control the production of mosquito larvae outdoors. The dosages of APSE™ in this test were 300, 600 and 900 ppm. In each case each observation was compared to the control buckets. The duration of the test was three (3) months. A comparative scale was used to evaluate each container during the course of the testing. This scale ranged from 1 - 7, with 7 representing the largest population of larvae observed. The following is a pictorial representation of this chart showing examples of each larvae population.



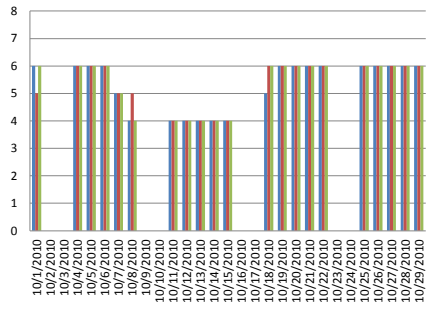
**Observations:**

During the three months of testing regular observations were made of the test and control buckets. The results of these observations are displayed graphically below:

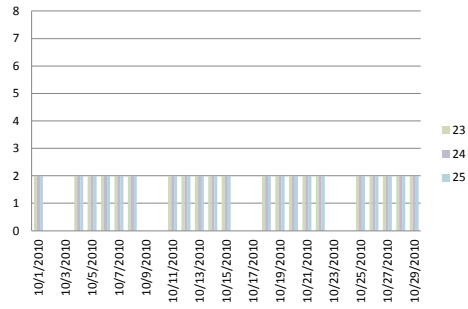


The initial effectiveness of products 1 and 2 appeared to require approximately 3 weeks before the full benefit of the product was achieved.

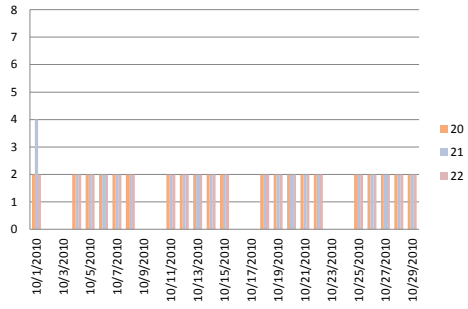
October Control Samples



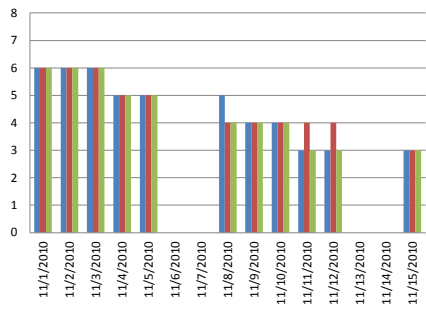
October APSE #2



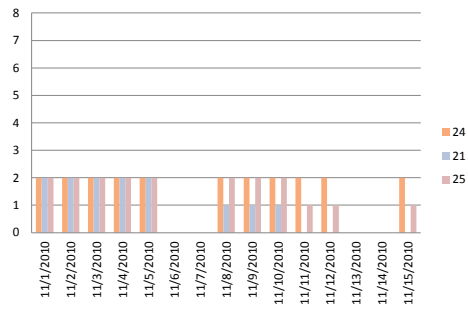
October APSE #1



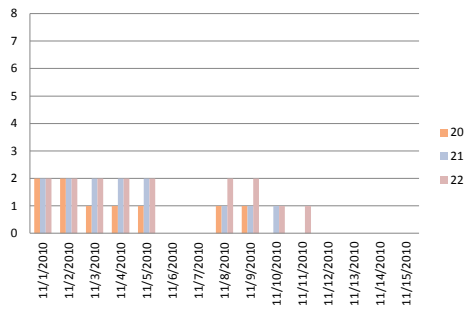
November Control Samples



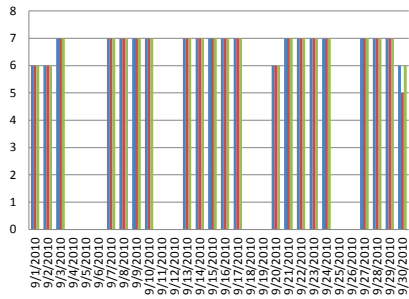
November APSE #2



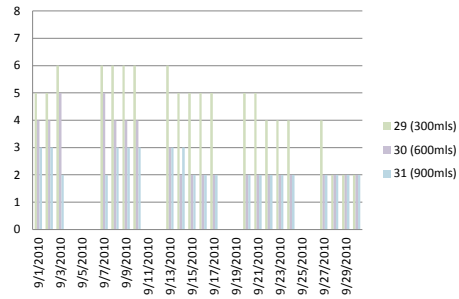
November APSE #1



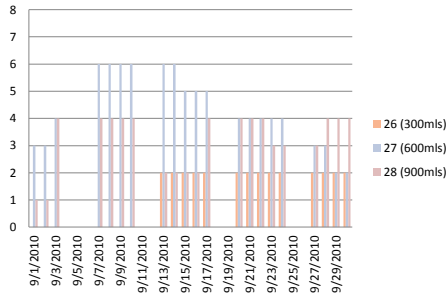
**September Control Samples**



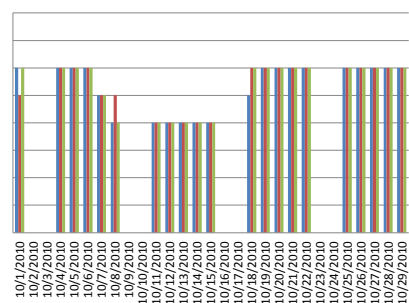
**September APSE #4**



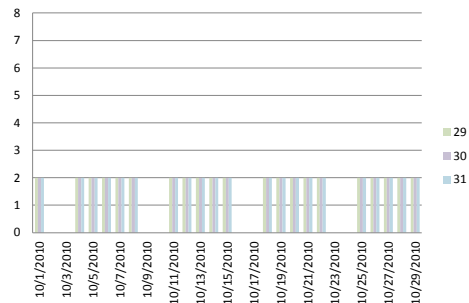
**September APSE #3**



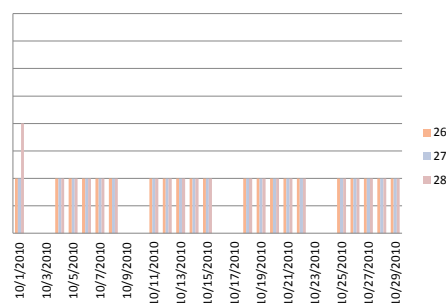
**October Control Samples**



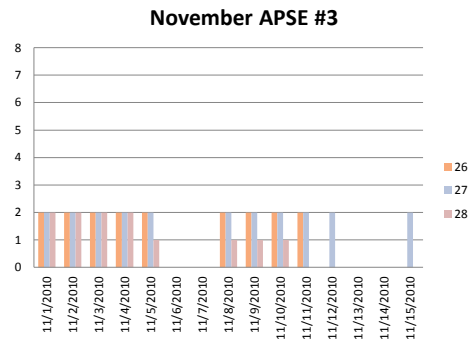
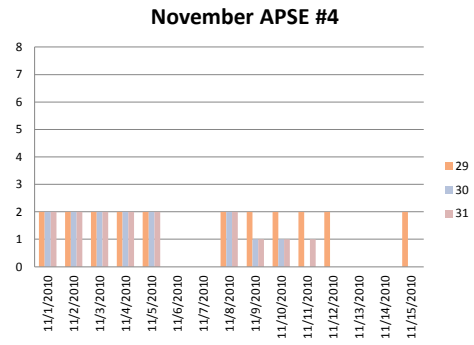
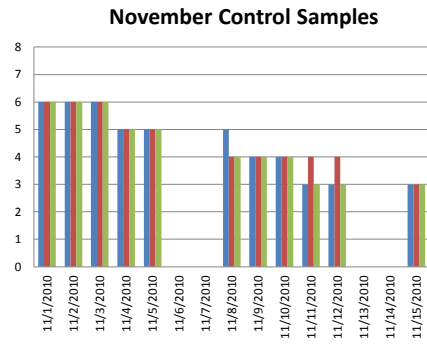
**October APSE #4**



**October APSE #3**



The initial effectiveness of products 3 and 4 appeared to require approximately 3 weeks before the full benefit of the product was achieved.



There did not appear to be a marked difference in the performance of the different versions of APSE™. The overall results were almost identical for each product version and dosage.

**Conclusion:**

APSE™ reduced the overall production of mosquito larvae by over 60% when compared to the controls in this experiment at all dosage ranges and product strengths. The product is extremely effective in the control of mosquito reproduction. These test results are deemed to be conclusive and reproducible based on Standard Methods.

*Dustin Smith*  
 Chief-Microbiologist  
 HML, Inc.  
 912 W. McGalliard  
 Muncie, IN 47303  
 765-288-1124