Table 1. Effect of Altosid SR-10 on molting, limb regeneration and mortality in *Uca pugilator*

Treatment	Per cent molting	Avg. No. of days to molt	Per cent regenerating limbs	Per cent mortality
Control	53	37	43	47
Altosid[R] SR-10, 0.002 ppm	57	34	51	35
" 0.02 ppm	61	38	57	41
" 0.2 ppm	51	37	45	34

upon molting in *P. pugio*, at least in terms of duration of molt cycle. It is also true that no abnormalities in molting behavior of treated shrimp were observed and that no mortalities occurred in either treated or control shrimp.

While Costlow (1977) has studied the effects of Altosid upon early developmental stages in *Rhithropanopeus harisii* (Gould) (mud crabs), the results of this investigation indicate that it is without effect upon either mature fiddler crabs or grass shrimp at least insofar as the molt cycle in these organisms is concerned. This is perhaps all the more conclusive when one considers that both the crabs and the shrimp were exposed continuously to Altosid and that, in the case of the shrimp, they were exposed to a considerably higher concentration of Altosid than could be expected to result from its use in a mosquito control operation under field conditions.

References Cited

Costlow, J. D., Jr. 1977. The effect of juvenile hormone mimics on development of the mud crab, *Rhithropanopeus harisii* (Gould). *In* Physiological Responses of Marine Biota to Pollutants. (Eds. F. J. Vernberg, A. Calabrese, F. P. Thurberg and W. B. Vernberg). Academic Press, N.Y. p. 439–457.

Fingerman, M. and Fingerman, S. W. 1974. The effects of limb removal on the rates of ecdysis of eyed and eyestalkless fiddler crabs, *Uca pugilator*. Zool. Jb. Physiol. Bd. 78:301–9.

Freeman, J. A. and Bartell, C. K. 1975. Characteristics of the molt cycle and its hormonal control in *Palaemonetes pugio* (Decapoda, Caridea). Gen. Comp. Endocrinol. 25:517–28.

Henrick, C. A., Staal, G. B. and Siddall, J. B. 1973. Alkyl 3,7,11-trimethyl-2, 4-dodecadienoates, a new class of potent insect growth regulators with juvenile hormone activity. J. Agric. Food Chem. 21:354–9.

Miura, T. and Takahashi, R. M. 1973. Insect developmental inhibitors. 3. Effects on nontarget aquatic organisms. J. Econ. Entomol. 66:917–22.

Schaefer, C. H. and Wilder, W. H. 1972. Insect developmental inhibitors: a practical evaluation as mosquito control agents. J. Econ. Entomol. 65:1066–71.

Quistad, G. B., Staiger, L. E. and Schooley, D. A. 1976. Environmental degradation of the insect growth regulator methoprene. X. Chicken metabolism. J. Agric. Food Chem. 24:644–8.

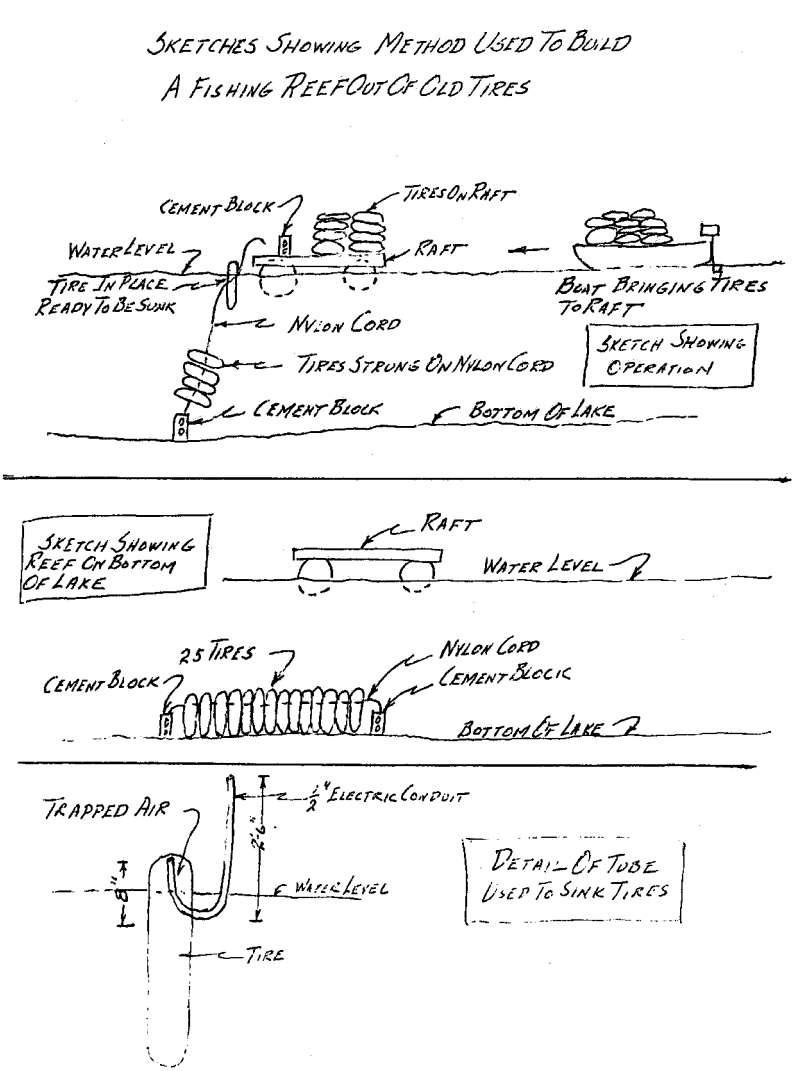
MOSQUITOES, FISH, AND OLD TIRES

R. E. DORER

Virginia Dept. of Health,
401-A Colley Ave., Norfolk, VA 23507

Virginia Beach, for the past few years, has been developing at a rapid pace. What were farms are now housing developments, shopping centers, etc. It has been said that the population is increasing at the rate of 1,000 per month and this has been going on for the past 18 to 20 years.

Virginia Beach is located in the coastal plain with the water table only a few feet under the surface of the land. The need for fill dirt has resulted in the excavation of many borrow pits. Soil is excavated from a tract of land sometimes to a depth of 20 or 25 feet; sometimes as large as 100 acres. The groundwater is kept out of the pit when it is in operation with a small pump. When the excavation is over, the pit is allowed to fill with groundwater and thus a manmade lake is created. Developers have then sold lake front lots for a premium price. There are as many as 50 such lakes in Virginia Beach varying in size from 2 or 3 acres to 100 acres.



One of the perplexing problems today is—what to do with old tires? They are not easily buried in a landfill. In Virginia Beach, the city charges tire dealers 35¢ per tire for disposal. The city splits the tires and then they can be buried in the landfill.

As we all know, old tires create mosquito breeding problems.

Old tires can be used to create fishing reefs.

Now let me bring all these points together. In Virginia Beach we have man-made lakes which can be developed into good fishing places. Virginia Beach has a problem of what to do with old tires. Mosquito control is bothered with old tires as prolific breeding places.

Two years ago, after consultation with the fish and game commission, an old tire reef was created in a 60-acre man-made lake at Mt. Trashmore; 550 tires were used. The lake was stocked by the state and the experience has demonstrated that the reefs are successful.

This project was undertaken as a Kempsville

Ruritan Club project. The members collected the tires, sank them, and the Mosquito Control District cooperated.

The following method was used:

1. The tires were stockpiled on shore.
2. The tires were transported by boat to a raft which was anchored at the site of the proposed reef.
3. A nylon rope was tied to a cement block and the block dumped overboard.
4. One tire at a time was threaded on the nylon rope.
5. The air was let out of the tire by the special air escape tube (this was the key to the operation) and the tire rapidly sank.
6. After sinking about 25 tires, another concrete block was ties to the nylon rope and dumped overboard.
7. Successive units were laid on top of each other.

Divers have observed the reefs and have reported fish around them and that there was a growth on the tires.

The pilot project has been considered successful and it is now planned to go into it on a larger scale. The extended plan will be basically a Ruritan Club project. They will collect the tires from certain tire dealers. They will furnish all the labor in sinking the tires. They will collect the 35¢ per tire which will be used to further their civic projects.

Mosquito control will assist by lending equipment and overseeing the project.

It can be seen that the benefits will be threefold: (1) Many old tires will be eliminated, reducing mosquito breeding places (2) the fishing will be improved and (3) the Ruritan Club will make money to advance their civic projects.

LARVAL MOSQUITO CONTROL IN PIPELINES WITH A MODIFIED NON-THERMAL AEROSOL GENERATOR

CLIFFORD RAY JOHNSON AND PAUL A. GIEKE

Eastside Mosquito Abatement District,
2000 Santa Fe Avenue,
Modesto, California 95355

Insecticidal dust applications have been used successfully in California to control adult mosquito populations in underground irrigation pipelines (Silveira and Mulhern 1961), but associated problems such as mosquito resistance to chemicals and dust handling difficulties have limited the usefulness of the method. Gieke (1976) provided an alternative method which has proved successful in controlling adult populations of *Culex pipiens* in irrigation pipelines. This paper reports on the effectiveness of this same method against larval populations of *Cx. pipiens*.

The cold fogger used in this study was described by Gieke (1976) and the same mixture and flow rate used earlier was used in these tests. Ten fl oz of Dursban 6-lb fogging compound were mixed with 118 fl oz of GB-1111 to make a 1.6-lb/gal solution. A flow rate of 7.5 fl oz/min (0.09375 AI/min) was used in all tests. Applications of 1, 2 and 3 min were employed against the mosquito larvae. Trials were conducted at various locations in the Eastside MAD. Six trials were conducted with the 1-min application period, and one each for the 2 and 3-min periods.

For each test, a premeasured 30-in pipeline was selected. Twenty 2nd and 3rd instar *Cx. pipiens* larvae (from the colonies of the University of California, Fresno, Mosquito Laboratory) were placed in 120 ml of distilled water in Dixie® cups. The suspended cups were introduced into the pipelines through surface standpipes at various distances from the application point and usually at the end of the pipeline. Controls were also established. The chemical was released at specific intervals of 1, 2 or 3 min, after which the blower was allowed to run until the white cloud of insecticide emerged from the last standpipe. All tests were conducted with an open pipeline. All tests were conducted with an open pipeline system (standpipes uncovered) (Gieke 1976). After exposure the cups were retrieved and transported back to the laboratory and observed at intervals for mortality.

Mortality was 100% in all tests (Table 1), and no mortality occurred in the control populations. During the 1-min test, with a mean distance of 480.67 ft from the point of release to the 1st cup, there was 100% mortality within 5 hr of application. The mortality at the second cup, mean distance 970.2 ft, was 70.8%. In 4 of the 1-min tests, a 3rd cup was used, mean distance 1380.6 ft, and a 50% mortality was achieved. With the exception of 1 trial, all larvae died within 24 hr of the 1-min application. With the 2- and 3-min applications, 100% mortality was achieved within 3 hr, regardless of pipe length.

The aerosol created by the modified cold