

## VECTOR CONTROL WITHOUT CHEMICALS: HAS IT A FUTURE?<sup>1</sup>

BRUCE F. ELDRIDGE

Department of Entomology, University of California, Davis, CA 95616

Seldom has a topic created the degree of interest and controversy as has the topic of this symposium. I do not know why that should surprise anyone. Stories about chemicals are popular fare for journalists, especially stories involving the public's fear of them (Carlson 1989). The chemical industry makes up a very important part of the world's economy, and many people are dependent upon the chemical industry for their livelihood, either directly or indirectly. The chemical industry has made a major impact on just about every aspect of our everyday lives, from the cars we drive to the food we eat. Chemicals are also one of the favorite targets of environmental activists. It is difficult, in fact, to find people without strong feelings about chemicals in one way or another. So given this intense interest in the subject, why did the American Mosquito Control Association think it could select a topic such as this for a primary theme of its meeting without stirring up a cloud of controversy? Perhaps the program organizers felt that we were finally past the confrontational and emotion-charged period starting in the 1960s when it seemed that everyone felt they must declare for or against pesticides. Perhaps they hoped that as a scientific and educational association, we could tackle a tough issue such as this with light but without generating too much heat.

I have my own reason for agreeing to help organize this symposium with Mike Service. Many of us like to say that vector control without chemicals is one of our cherished goals. It is a stated goal of my own organization, and I know that many others have frequently given support to this concept. Perhaps it is appropriate for us to look at where we are in regard to vector control without chemicals—to present a progress report in a manner of speaking. Perhaps we should even look at the goal itself. Is vector control without chemicals a desirable goal, or rather should we think instead in terms of habitat improvement?

One of the things we ought to do at the onset of this symposium is to try to establish what we mean by the word "chemical". After wandering

through the interconnected definitions of chemical, chemist, and chemistry in Webster's Dictionary (Gove 1986), I realized that this approach is pointless. Within the context of this symposium, the general public probably would consider a chemical anything that is applied from a sprayer or duster of some kind, and smells bad. Some medical entomologists would consider *Bacillus thuringiensis israelensis* (*B.t.i.*) a chemical; others would not. But if *B.t.i.* is a chemical, then why is not *Lagenidium giganteum*? Methods of production and application do not differ radically between the 2 agents.

But quibbling over definitions obscures the real questions: What progress have we made in moving away from traditional approaches of vector control using chemical interventions, and what does the future hold in this regard? There can be no doubt that for whatever reasons, the use of conventional pesticides for mosquito control has diminished in many areas over the past few decades (Eldridge 1988). Can further reductions in use take place without significant deterioration of vector control programs?

During the next 2 hours, you will hear from a number of speakers representing a variety of points of view on this subject. John Mulrennan, of the Florida Department of Agriculture Bureau of Entomology, will talk about vector control without chemicals from the standpoint of public health. John Beidler, Manager of the Indian River Mosquito Control District (Florida), will present a vector control agency manager's perspective. Brian Federici of the Department of Entomology of the University of California, Riverside, will update us on the current status of research on microbial pesticides, and the future of these materials for vector control. Mir Mulla, from the same department, will discuss the future of insect growth regulators (so-called 3rd-generation pesticides) for vector control.

Repellents are certainly chemicals, and many of them smell bad, but they are usually not applied from a sprayer or duster. Roger Grothaus of S. C. Johnson & Son will tell us about the present status of deet, and provide evidence of its safety and the prospects for new insect repellents.

Dana Focks was going to speak about the application of modeling in controlling vectors without chemicals. Dana was unable to attend the

<sup>1</sup> This symposium was co-organized by Bruce F. Eldridge and Michael W. Service. Financial support, including publication costs, was provided by S. C. Johnson & Son, Inc., 1525 Howe Street, Racine, WI 53403.

meeting, and Fred Roberts has kindly agreed to address this same subject. Fred's district has used modeling extensively to make vector control decisions for many years. Jan Washburn of the University of California, Berkeley, will address the topic of natural regulation of mosquito larvae, and how this regulation relates to biological control of vectors.

Tony Jordan of the University of Bristol, U.K., will discuss the control of tsetse flies using attractants. Finally, Mike Service will conclude the symposium with a summary of the presentations, and, I hope, guide us through an interesting and useful discussion of the subject.

I doubt whether the subject of public health

pesticides will be any less controversial as a result of this symposium. However, I do hope that we will expose the audience to some new perspectives, and provide an update on the status of alternative approaches to vector control.

#### REFERENCES CITED

- Carlson, M. 1989. Do you dare to eat a peach? *Time Magazine* 133(3):24-27 (March 22, 1989).
- Eldridge, B. F. 1988. Conventional chemical pesticides for mosquito control: past and future. *Proc. Calif. Mosq. Vector Control Assoc.* 56:91-98.
- Gove, P. B. (editor). 1986. *Webster's third new international dictionary of the English language unabridged*. Mirriam-Webster, Inc., Springfield, MA.