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March 1977

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Merle H. Markley

Environmental Protection Agency

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Markley, Merle H., "REMARKS TO BE PRESENTED AT THE FIRST EASTERN PINE AND MEADOW VOLE SYMPOSIUM" (1977). *Eastern Pine and Meadow Vole Symposia*. 128.

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REMARKS TO BE PRESENTED AT THE
FIRST EASTERN PINE AND MEADOW VOLE SYMPOSIUM

Merle H. Markley
Wildlife Biologist, EPA, OPP, C&E Division
Branch of Ecological Effects
Hyattsville, Maryland 20784

Most certainly it is an honor to be invited to appear on the speaker's agenda for the First Eastern Pine and Meadow Vole Symposium. However, I was not aware of this assignment until receiving the program on March 3 which left me not only ill-prepared but also unfortunately in conflict with another series of meetings which will take me out of the area until March 16. Under these time constraints you will understand that the following comments are strictly my own.

Do not be mislead into thinking that my title as wildlife biologist makes me an environmental extremist. My formative years were all spent on an Oregon fruit farm growing apples, pears and cherries. I know full well the back-breaking routine of placing zinc phosphide baits in burrows and runways. We were fortunate in the West in having only the surface-dwelling variety of *Microtus*. A day spent in the field last November with Dr. Byers near Winchester convinced me that pine mouse problems can be much more serious.

Now we come to the orchard uses of endrin, a likely reason for instigating this meeting. A Rebuttable Presumption Against Reregistration has been issued against endrin. It is my own opinion that: First - endrin should be critically examined, use by use, with respect to effectiveness and alleged hazard to non-target animals, be they pets, domestic stock or wildlife; and secondly, that a careful and complete review be made of all economic benefits against the hazards identified in the earlier review. The notice which appeared in the Federal Register emphasized the occasional harmful aspects of use and failed to give much or any credence to benefits. Certainly there must be some value to the grower and financial reward to the manufacturer or the product would soon be taken off the market.

A prominent biologist, well versed in both experimental and field use of rodenticides, once related what is probably the key in any kind of a pest control program. The concept is equally valid whether control is the goal for boll weevil, codling moth or pine mice. We used to spray our apple and pear trees with lead arsenate until the leaves and fruit were white with residue but still we had some wormy apples. Some of you have been using endrin for years and find that it's not too effective any more. Even increasing the dosage or making several applications does not stop the debarking of apple roots or ground level stems. Just as with DDT on cotton insects or lead arsenate for codling moth on apples, the pine mice has developed resistance to endrin so that the ordinary application rates are no longer effective in some localities. The key, to return to my biologist friend's theory, is not to depend on a tool for control, but to have a tool kit, consisting hopefully, of at least four or five alternative compounds. Then it may be possible to set up a cycle or rotation scheme whereby each compound may be effective for 3 or 4 years, be replaced by another, and eventually the original material may again be effective.

Entomologists make use of this plan for insect control. We now have warfarin-resistant rats in about half our major cities and there is evidence of resistance in other species where a given material has been used for some years. So you are not alone in having a mammalian control resistance problem.

The tool kit for orchard mouse control, unfortunately, is altogether too limited. Zinc phosphide is the only other Federally registered alternative for orchard mice and its efficacy, particularly for pine mice, is subject to much controversy. That leaves us with only a series of State registrations for two anticoagulants, chlorophacinone, and diphacinone. The question of whether or not EPA will accept these without requiring additional efficacy or safety testing, to my knowledge, has not been resolved. Several other compounds, one already registered for commensal rodent use, show promise but will likely require extensive field testing. It would seem reasonable, where endrin is still effective, to permit a time extension on its use until adequate alternative compounds have been approved at the Federal level.

Several courses of action come to mind which might help solve the current mouse problem in Eastern orchards. One would be to encourage additional research, the other to give your problems more widespread publicity.

Endrin use in orchards would be considered a "minor use" since an estimated 80 percent of the compound endrin, is used on cotton. Therefore, the manufacturer would not be able to spend much money on orchard mouse control research and still realize a profit. Government spends a lot of money on research to control other agricultural pests. It already has both laboratory facilities plus experienced personnel and perhaps should be encouraged to take up the slack on orchard mouse control methods of product testing.

The fruit industry most certainly has State growers associations and probably a national association or other groups which have some understanding of the industry problems and needs. These are the kinds of publicity angles which might be most fruitful - excuse the pun.

Best wishes for a successful meeting, and may I reiterate - the opinions expressed herein are solely those of the author.