Evaluation of Sumilarv for midge control

Cities of Perth and Cockburn

Report and recommendations of the
Environmental Protection Authority

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Background

In 1987 a committee comprising representatives of Local and State government authorities was established to oversee research into more effective and environmentally acceptable methods of managing midges (Chironomid spp) in urban wetlands. The committee consists of representatives from the cities of Armadale, Cockburn, Melville, Perth, South Perth, Stirling, Swan and Wanneroo and the Departments of Conservation and Land Management, Planning and Urban Development and the Environmental Protection Authority

The results of the first two years research strongly suggested that midge populations are developing resistance to "Abate" (temephos), the only compound currently registered for midge control in Western Australia. Whilst the committee recognises that the long term solution to midge problems lies in reducing nutrient levels within wetlands, an alternative to Abate is required until this can be achieved.

A thorough review of the scientific literature on chemical control options for midge suggested that several alternatives to Abate exist. These included synthetic pyrethroids, granulated Bti (bacteria) and insect growth regulators. Further investigations concluded that insect growth regulators appear to be the most effective and environmentally acceptable agent for application in local wetlands.

In 1989 the Midge steering committee was granted permission by the EPA and the Department of Health to conduct a limited field trial of the insect growth hormone Sumilarv in North Lake. Sumilarv is not yet registered for insect control in Australia although an application is before the relevant Federal and State regulatory bodies.

The trial was carried out to determine the impact of Sumilarv on midges and a limited number of non-target organisms under local conditions. These results were extremely promising suggesting that Sumilarv may be an effective, economical and environmentally desirable alternative to Abate. The compound reduced adult emergences by up to 80 percent with no apparent impact on non-target organisms. These results appear to be consistent with overseas research.

What is Sumilarv?

Sumilarv is a juvenile hormone analogue that interferes with the development of certain types of insects. The compound upsets the normal balance of the natural hormones preventing the emergence of viable adults. In midges the hormone inhibits development at the pupal stage resulting in a gradual reduction in the density of the pest population.

There is little evidence that insect growth hormones are toxic to animals, birds or amphibians when used at field rates. Mammalian toxicity is extremely low and these compounds do not appear to bioaccumulate in fish.

Sumilarv is currently registered for control of housefly, mosquitoes, mothfly and midges in several countries including Japan, Argentina and Korea.

The current proposal

The Cities of Perth and Cockburn are now proposing further, more extensive field trials in late 1990 and early 1991. Murdoch University will carry out the investigations and have prepared a CER for the proposal on behalf of these agencies.

The objectives of the current proposal are to assess the effectiveness of Sumilarv against midges and its impact on non-target organisms in Lake Monger and North Lake. Both wetlands are highly eutrophic (nutrient enriched), there are severe midge nutrient problems during spring and the summer months and Abate is no longer a reliable control agent.

The field trials involve applications of Sumilarv at a rate of 10kg/ha on three separate occasions. The compound will be applied by outboard dinghy and a blower to Lake Monger or by helicopter to North Lake. A number of enclosures will be constructed in the littoral region of the lake where detailed studies of the impact of the compound on midges, non-target plankton, invertebrate and fish populations will be monitored. Further laboratory based toxicity tests will also be carried out at Murdoch University.

It should be noted that the proposed trials are not an alternative to the registration process. However the results of the investigation may be used to support applications for registration in the future.

Consultation

The Health Department of Western Australia, the Conservation Council and the Wetlands Conservation Society provided written response to the document. None of the above bodies opposed the trials in the nominated lakes. However the latter two point out the need for long term solution to the midge problem by managing water quality within wetlands.

Recommendation 1

The Environmental Protection Authority conciudes that the proposed trials as described in the Consultative Environmental Review are environmentally acceptable and could proceed subject to the proponents list of commitments and recommendations in this report.

Recommendation 2

The Environmental Protection Authority recommends that the proponents should advertise their intention to apply Sumilarv in North Lake and Lake Monger prior to the commencement of field work.

Recommendation 3

The Environmental Protection Authority recommends that the proponent should prepare a detailed report on the outcome of the trials for the Authority prior to July 1991.

Recommendation 4

The Environmental Protection Authority recommends that the proponent develop long term solutions for midge control based on the principals of Integrated Pest Management. Priority should be given to developing strategies for improving water quality within wetlands and drains.