AP2/2015 Shot Head

Oral Hearing Paper provided by

Billy Smyth

Galway Bay against Salmon Cages

OHara, Mary

From: Billy Smyth [billysmyth0@gmail.com]
Sent: 18 September 2017 12:37
To: Mary Ohara (Alab)
Subject: Fwd: Chilean Pestiicide study on crab larvae

Mary O Hara
Aquaculture Licences Appeals Board.

Dear Mary,

Could you please pass on to ALAB as additional information this recent scientific research paper on the effects that the 4 pesticides listed below have on certain Crustacean Larvae. This research paper would seem to contradict what Marine Harvest say in their Shot Head Integrated Pest Management/Single Bay Management Plan that Hydrogen Peroxide and Deltamethrin will have no harmful effects on the marine environment in Bantry Bay.
If these toxic pesticides are detrimental to Crustacean Larvae in other countries waters, then it is inconceivable that they are NOT detrimental to Crustacean Larvae in Irish waters.

Regards,

Billy Smyth
Chairman, Galway Bay Against Salmon Cages
Phone 0863511628

Lethal and sub-lethal effects of commonly used anti-sea lice formulations on non-target crab *Metacarcinus edwardsii* larvae

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Highlights

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- Cypermethrin, deltamethrin, and azamethiphos affected 100% crab larvae at concentrations lower than used against sea-lice.

- Hydrogen peroxide at the concentration used as an anti-sea lice treatment had lethal and sub-lethal effects on *M. edwardsii* zoea I.

- Repeated exposure to azamethiphos (0.0625–0.5 μg L^{-1}) increased mortality, but did not affect zoea I developmental time.

- Chronic exposure to hydrogen peroxide (187.5–1500 mg L^{-1}) had a lethal effect on larvae.

Abstract

The pesticides used by the salmon industry to treat sea lice, are applied *in situ* via a bath solution and are subsequently discharged into the surrounding medium. The effects of cypermethrin, deltamethrin, azamethiphos and hydrogen peroxide were assessed on the performance of *Metacarcinus edwardsii* larvae, an important crab for Chilean fishery. All larvae were dead or dying after 30 min of exposure to cypermethrin and after 40 min to deltamethrin at concentrations 100 and 20 times lower (0.15 and 0.1 μg L^{-1}, respectively) than the concentrations and exposure times recommended by the manufacturers (CRM) to treat sea lice. Azamethiphos affected all larvae at a concentration 10 times lower than CRM. Hydrogen peroxide had the lowest detrimental effects, but at the CRM, 100% of the larvae were affected. Sub-lethal effects, i.e prolonged developmental time, were observed at concentrations lower than CRM. Repeated exposure to azamethiphos (0.0625–0.5 μg L^{-1}) and hydrogen peroxide (188–1500 mg L^{-1}) had effects on survival. In conclusion, the pesticides used against parasitic copepod tested here, negatively affect non-target crustacean larvae. Due to the product's characteristics, the lethal effects of the pyrethroids probably are restricted to the time and area of application, while the action of azamethiphos may extend to a wider area. Current data are insufficient to accurately dimension the effects of these compounds in the field. More research is required to evaluate the consequences of prolonged developmental times and/or reduction in appendage mobility, so as the effects of these compounds on the pelagic and benthic communities.

Keywords

Cypermethrin

Deltamethrin

Azamethiphos

Hydrogen peroxide

Organophosphate

Crustacean larvae