Apr 5th, 1:30 PM - 1:45 PM

The effects of anti-sea lice drugs and pesticides on marine zooplankton

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The Environmental Effects of Anti-Sea Lice Pesticides on Marine Zooplankton

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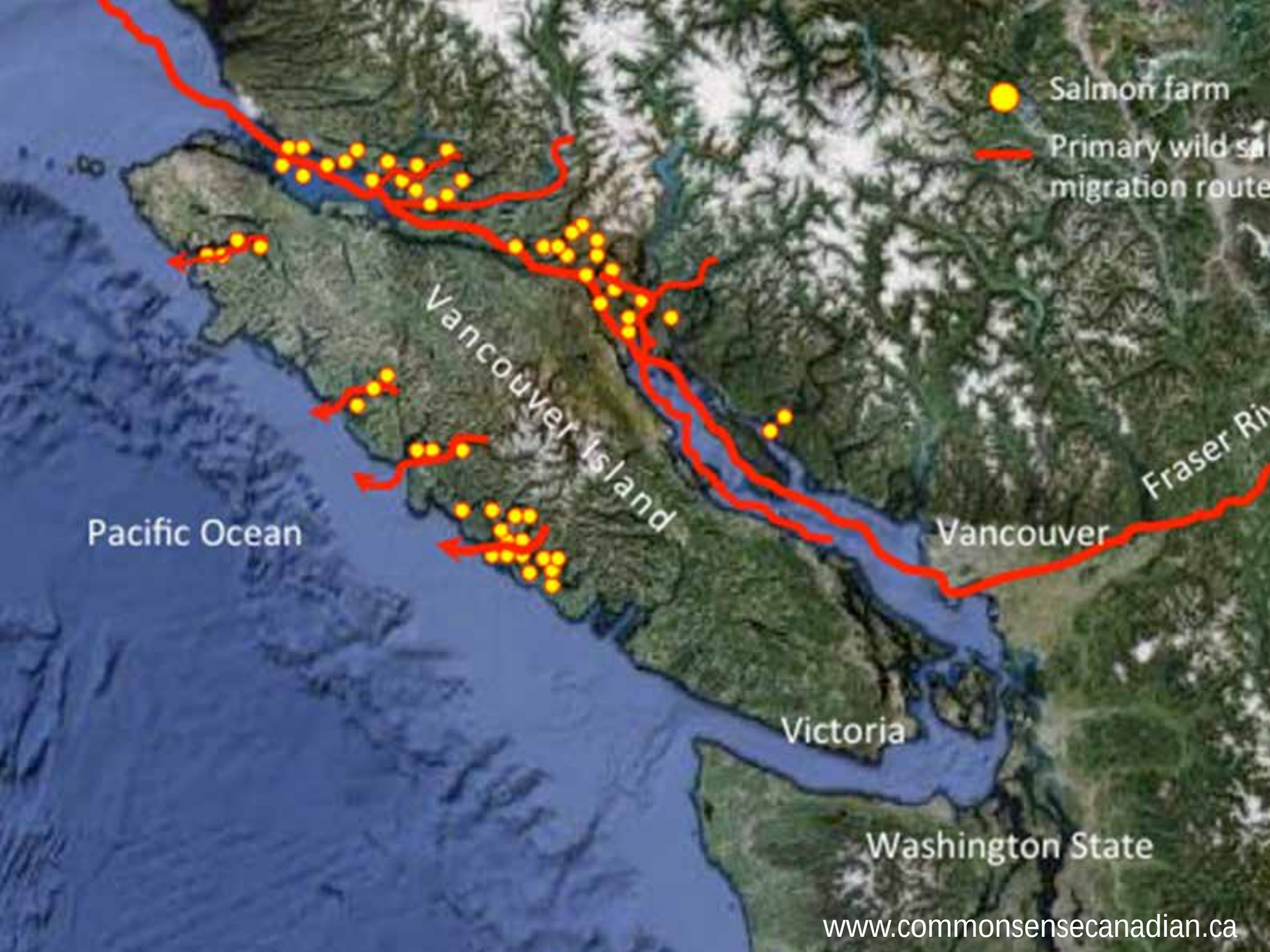
Simon Fraser University, Burnaby, BC

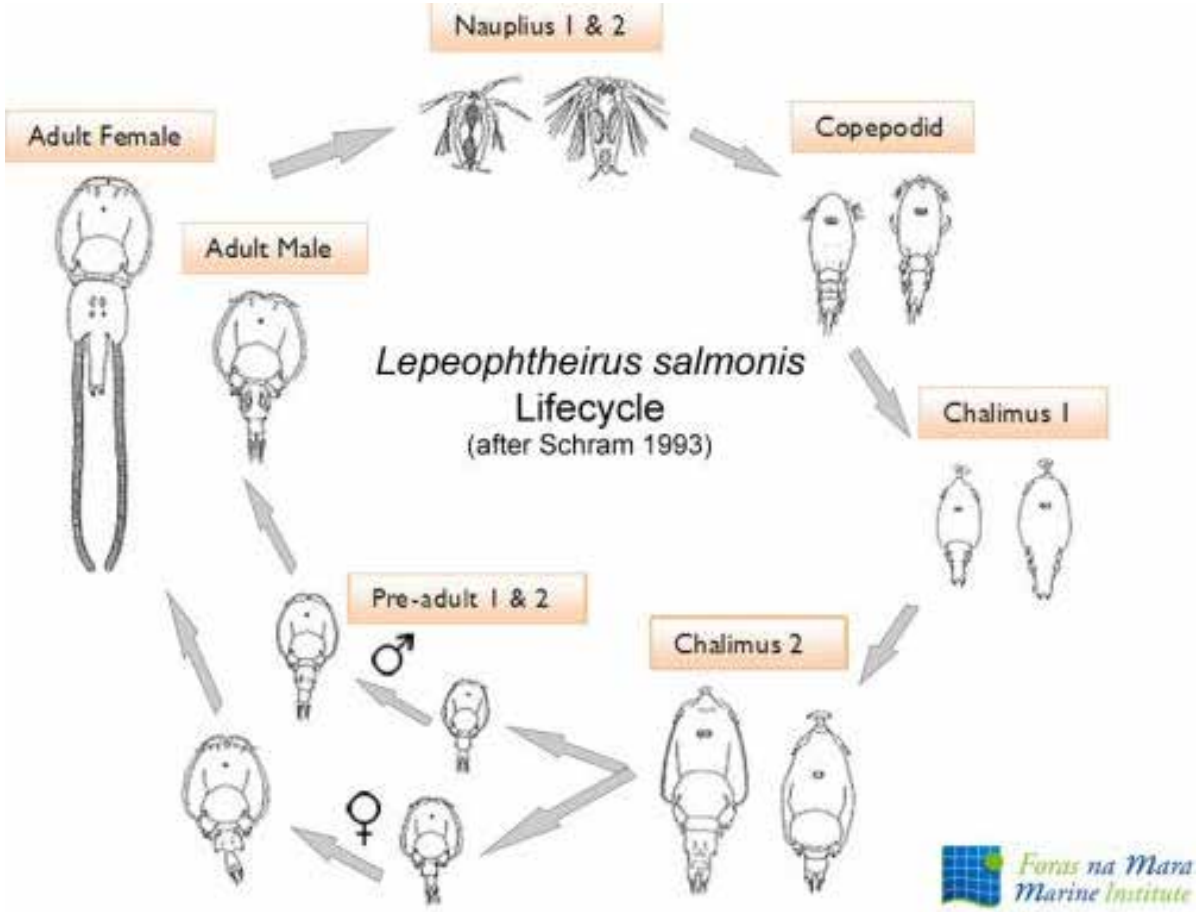
http://www.maritime-executive.com

Effect of sea-lice on salmon

https://fishpathogens.net


Salmon farm
Primary wild sa
migration route
Vancouver Island
Pacific Ocean
Vancouver
Fraser Riv
Victoria
Washington State
www.commonsensecanadian.ca

Sea-Louse Life Cycle

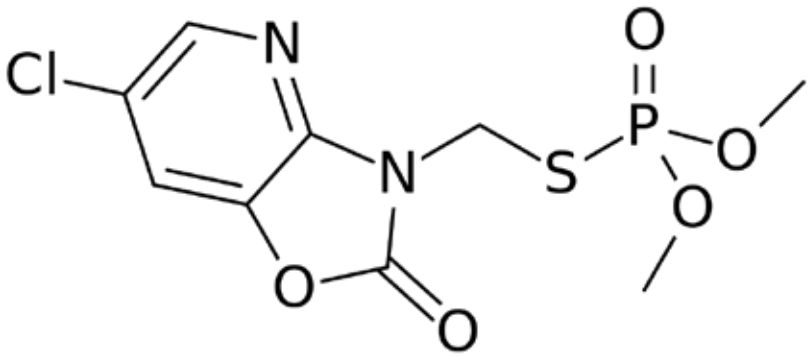


Available chemotherapeutants

- SLICE® (active ingredient: emamectin benzoate)
- Salmosan® (active ingredient: azamethiphos)
- Paramove 50® (active ingredient: hydrogen peroxide)

https://fishpathogens.net

Salmosan®

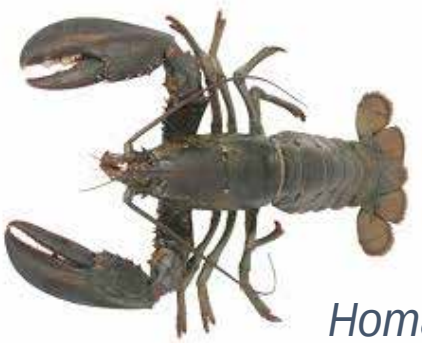


- Dose: 100µg/L for 30-60 minutes
- Log K_{OW}: 1.05
- Half-life in sea water: 8.9 days

http://www.vetcare.gr

Relevant Data- Salmosan ®

1 hour LC50: 24.8µg/L
10 day LC50: 0.216 µg/L



Homarus americanus

Temora longicornis

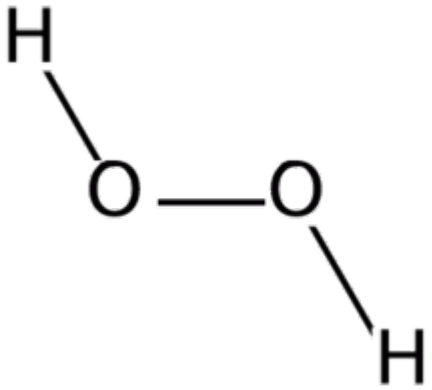
24 hour LC50: >10 µg/L

96 hour LC50: 0.52 µg/L

Mysidopsis bahia

Standard Dose= 100µg/L

Paramove50®



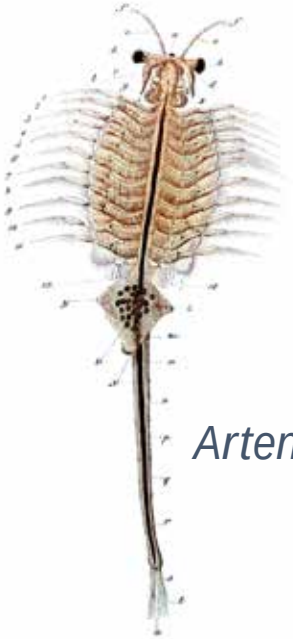
- Dose: 1200-1800 mg/L for 40 minutes
- Log K_{OW}: -1.5
- Half-life in sea water: 7 days

PARAMOVE®
FOR SALMON LICE CONTROL

Relevant Data- Paramove 50®

Gill Damage and Mortality: 2380 mg/L

Atlantic salmon



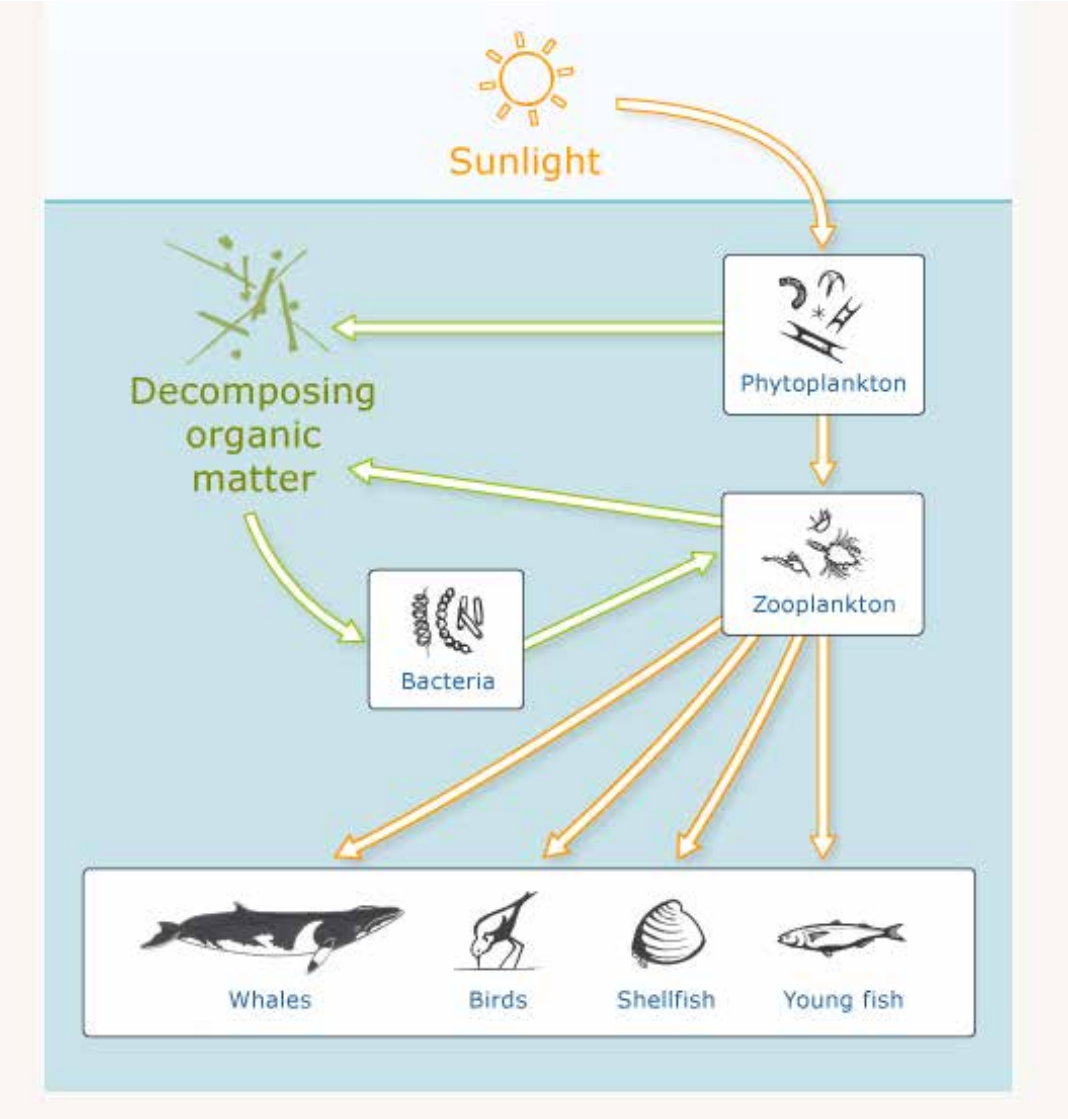
Artemia salina

24 hour LC50: 800 mg/L

Matthews et al., 1995

Standard Dose= 1200-1800 mg/L

Why Study Zooplankton?



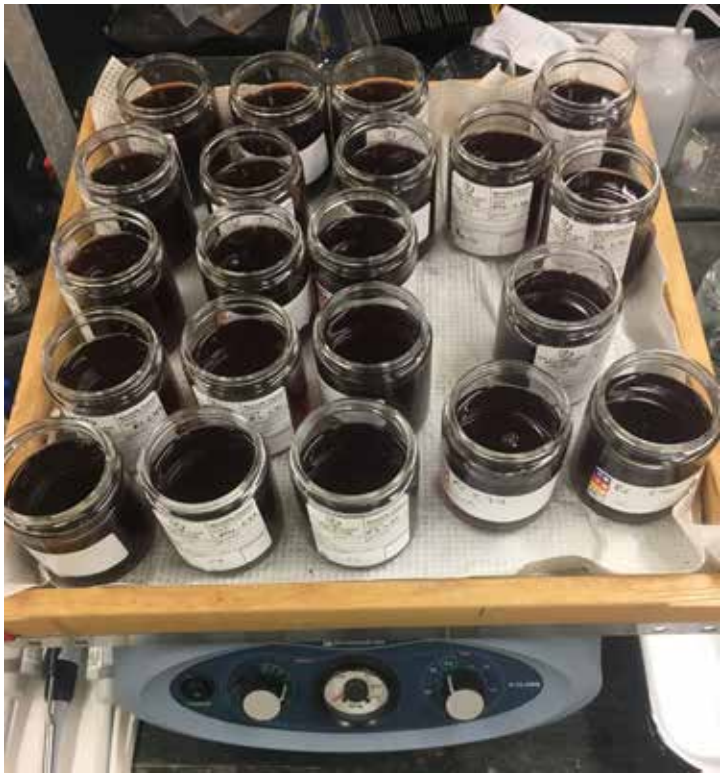
Objectives

1. To determine the lethal toxicity of Salmosan® and Paramove® 50 to zooplankton assemblages under realistic exposure concentrations and durations.

2. To determine the sub-lethal toxicity of Salmosan® and Paramove® 50 to one species of copepod under realistic exposure concentrations and durations

Sampling

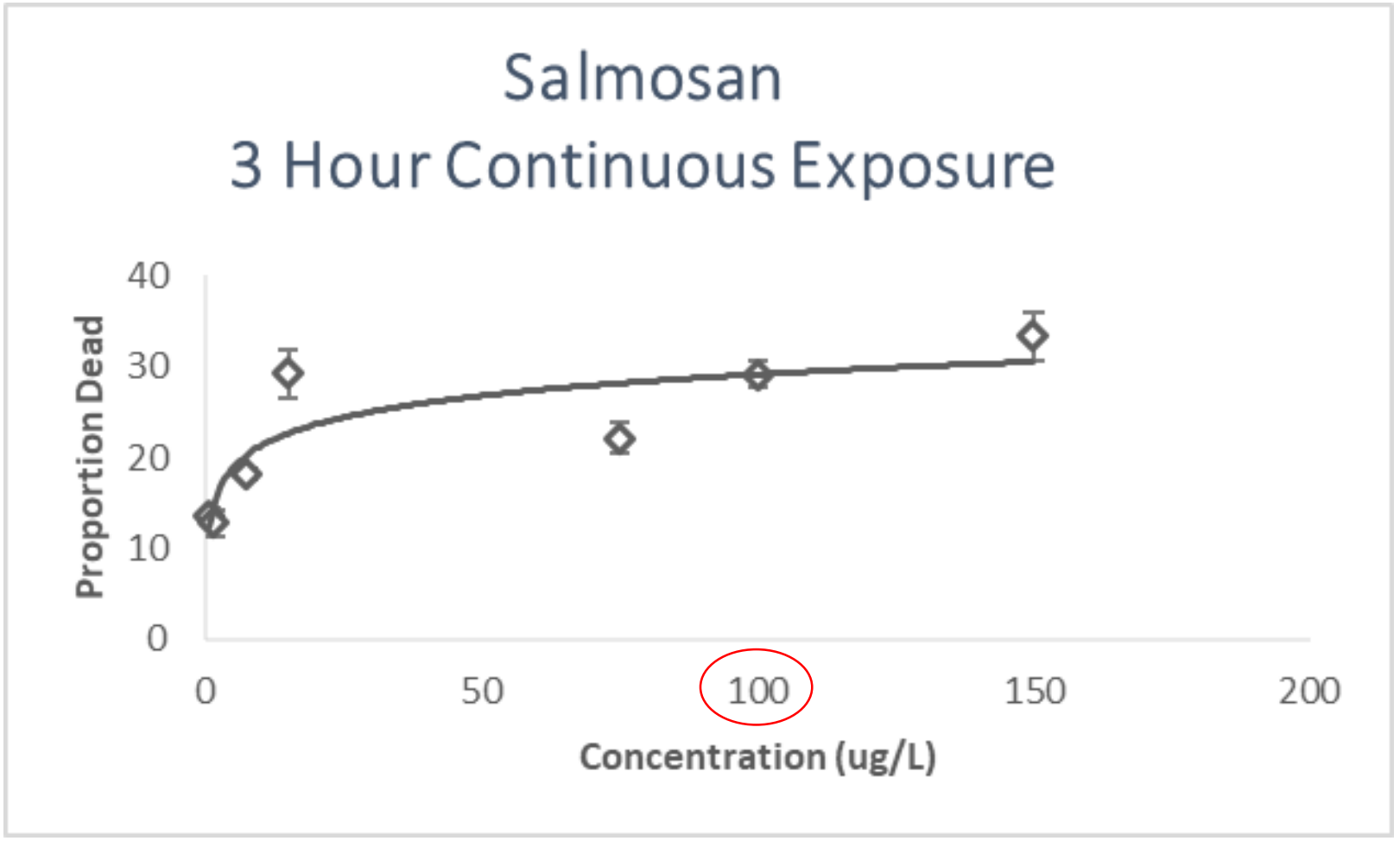
Methods

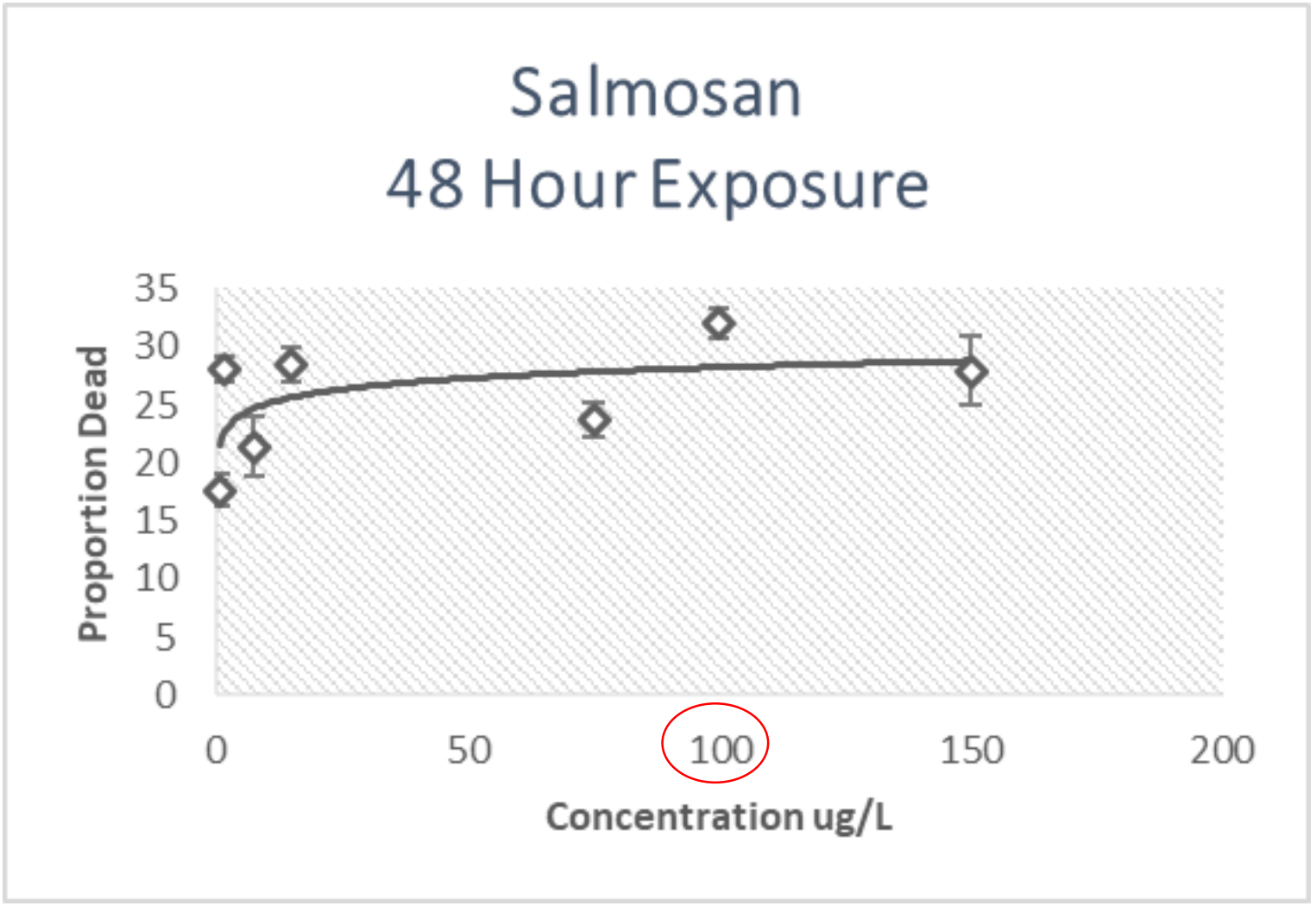


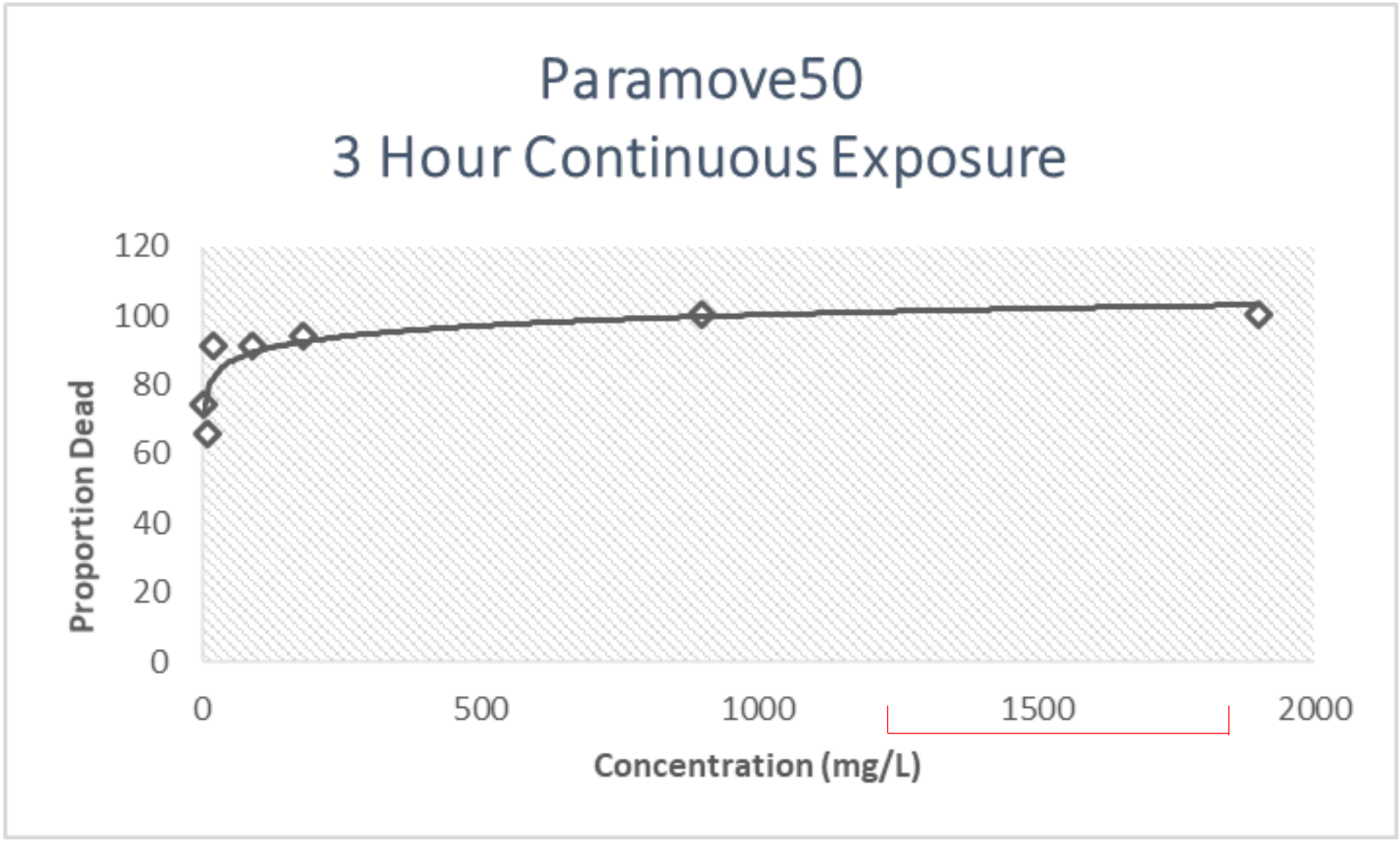
Analysis

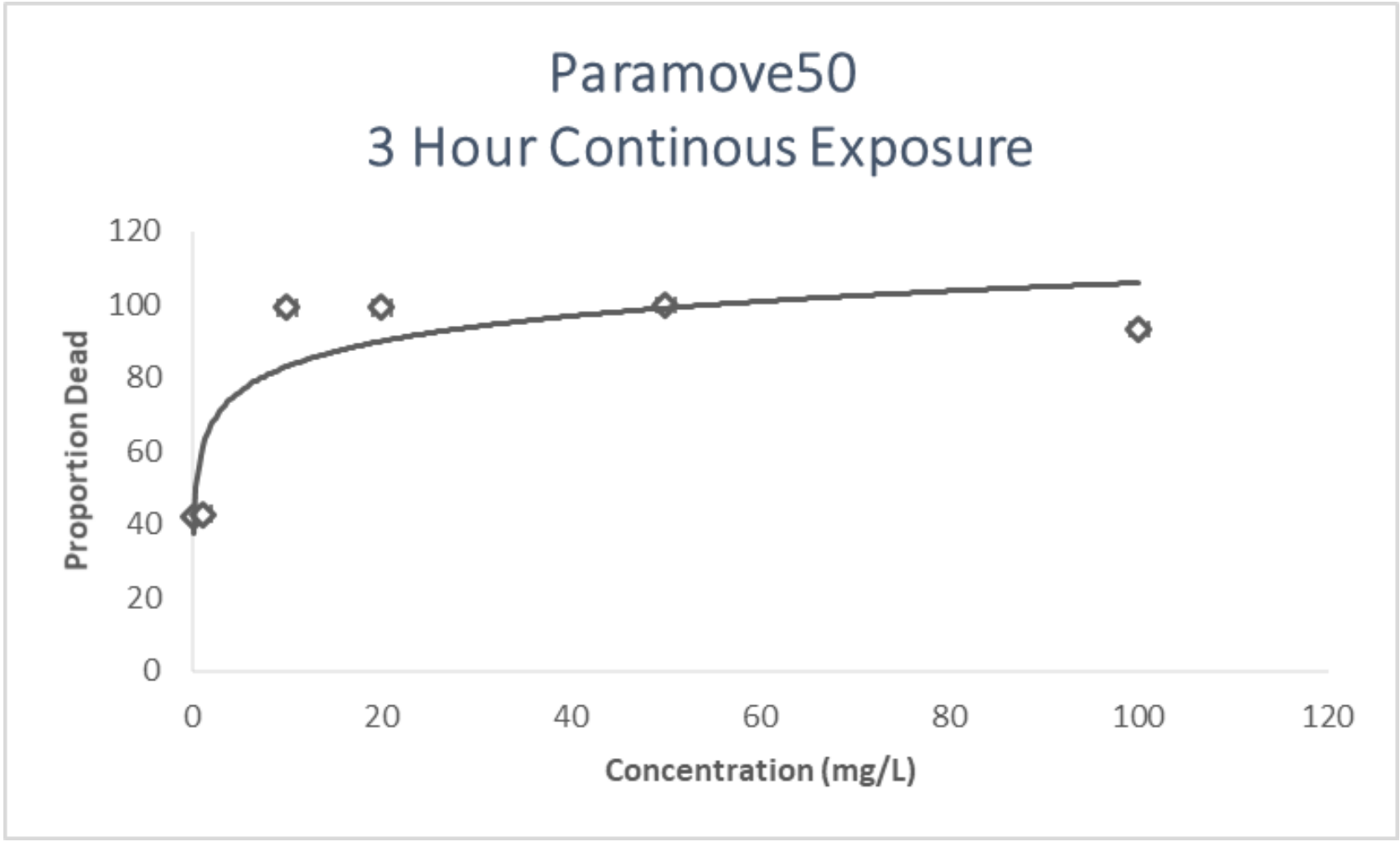
Based on protocol by Elliott and Tang, 2009

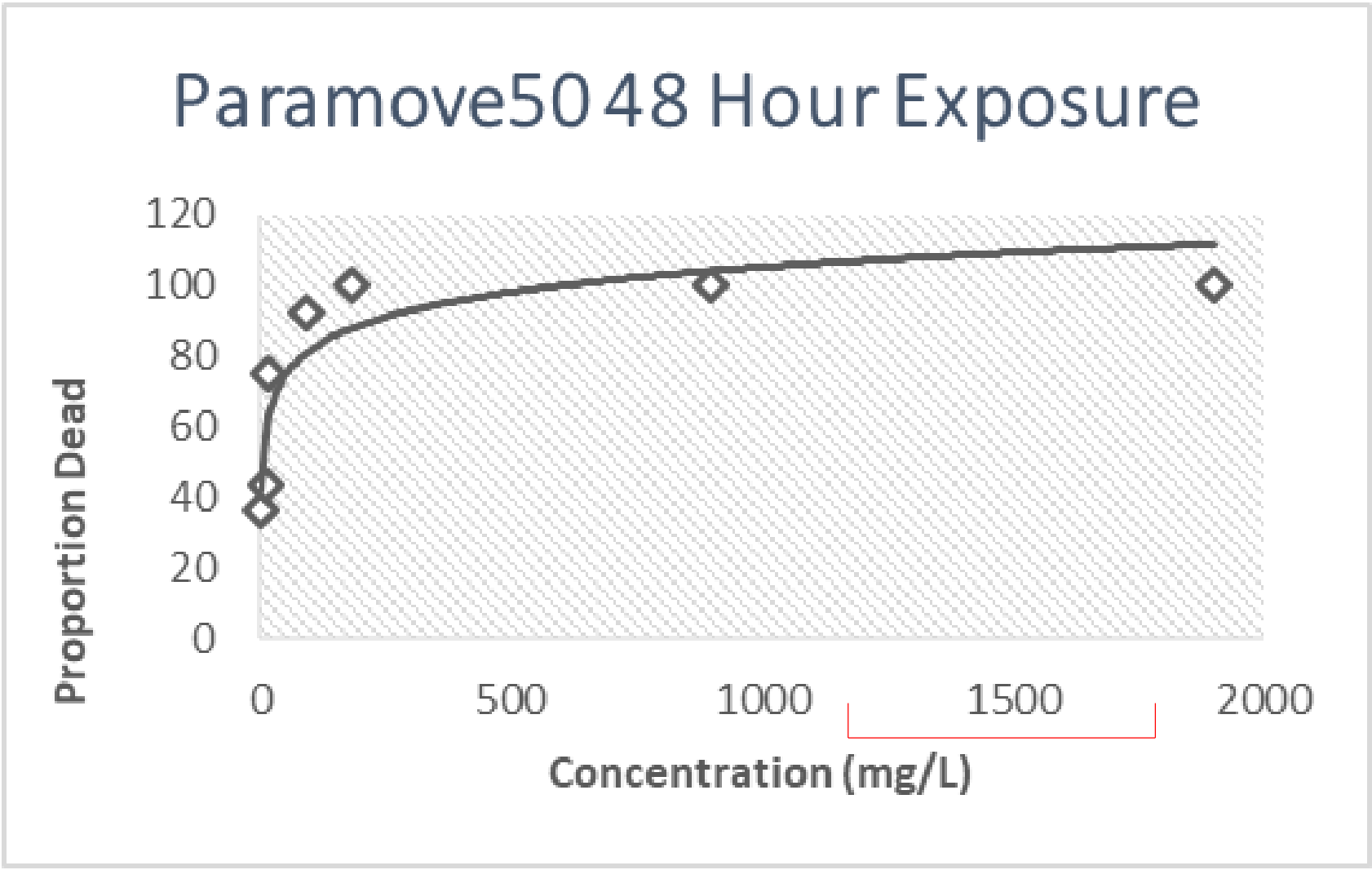
Analysis


Salmosan
3 Hour Continuous Exposure
Proportion Dead
40
30
20
10
0
0
50
100
150
200
Concentration (ug/L)


Salmosan
48 Hour Exposure
Proportion Dead
35
30
25
20
15
10
5
0
0
50
100
150
200
Concentration ug/L


Paramove50
3 Hour Continuous Exposure
120
100
80
60
40
20
0
Proportion Dead
0
500
1000
1500
2000
Concentration (mg/L)


Paramove50
3 Hour Continous Exposure
Proportion Dead
120
100
80
60
40
20
0
0
20
40
60
80
100
120
Concentration (mg/L)


Paramove50 48 Hour Exposure
120
100
80
60
40
20
0
Proportion Dead
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500
1000
1500
2000
Concentration (mg/L)

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https://themeaningofwater.com

Acknowledgments

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Questions?