

MicrotoxTM Toxicity Analysis
Short Course

January 23 and 24, 1986

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Offered for

Massachusetts Department of Environmental
Quality Engineering
Division of Water Pollution Control

Microtox™ Toxicity Analysis Short Course

S C H E D U L E

23 January 1986

Lectures

- Higgins Room (234 Marston Hall)
- 9:30-10:15
Dan Wagner
 - Biototoxicity tests
 - Comparison with Microtox
- 10:15-11:15
Doris Atkinson
 - Toxicity testing with Microtox
 - Interpreting Microtox data
- 11:15-11:30
 - BREAK
- 11:30-12:30
Dan Wagner
 - Sediment testing with Microtox
 - Environmental Engineering Program's Microtox Research
 - New Microtox applications
- 12:30-1:30
 - LUNCH BREAK

Laboratory

- 1:30-3:45
 - Teaching Laboratory (Room 5 Marcus Hall)
 - Demonstration of sediment extraction
 - Demonstration of Microtox testing
 - Data reduction and EC50 calculation
- Doris Atkinson
- Dan Wagner

24 January 1986

Laboratory

- 9:15-12:30
 - Teaching Laboratory (Room 5 Marcus Hall)
 - Sediment extraction
 - Interstitial water recovery
 - Initial dilution techniques
 - Rapid screening test
 - Basic toxicity test
 - Color correction
 - Data analysis

-Bring a calculator for the Laboratory sessions

Dan Wagner (413/545-2023)
Doris Atkinson (413/545-0685)

PARTICIPANTS

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MERITS AND LIMITATIONS OF THE MICROTOX SYSTEM

MERITS

- Statistically large test population
- Results compare favorably with traditional fish bioassays
- Reagents easily handled
- No need to maintain test organisms
- Test organisms grown and harvested under controlled conditions
- Results obtained within 1-2 hours
- Small sample volume requirements
- Test temperature and duration can be varied
- Less expensive than Daphnid and fish bioassays

LIMITATIONS

- Samples must be aqueous
- Color corrections may be required
- Particulates may need to be removed
- Measures acute toxicity only
- No one test organism can fully characterize the toxicity of a substance to other organisms

Table I. Percent Light Loss (% Δ) and Corresponding Gamma (Y) Values

% Δ	Y (Gamma)	% Δ	Y (Gamma)
2.0	0.020	54.0	1.174
4.0	0.042	56.0	1.273
6.0	0.064	58.0	1.381
8.0	0.087	60.0	1.500
10.0	0.111	62.0	1.632
12.0	0.136	64.0	1.778
14.0	0.163	66.0	1.941
16.0	0.190	68.0	2.125
18.0	0.220	70.0	2.333
20.0	0.250	72.0	2.571
22.0	0.282	74.0	2.846
24.0	0.316	75.0	3.000
25.0	0.333	76.0	3.167
26.0	0.351	78.0	3.545
28.0	0.389	80.0	4.000
30.0	0.429	82.0	4.556
32.0	0.471	84.0	5.250
34.0	0.515	86.0	6.143
36.0	0.563	88.0	7.333
38.0	0.613	90.0	9.000
40.0	0.667	92.0	11.500
42.0	0.724	94.0	15.667
44.0	0.786	95.0	19.000
46.0	0.852	96.0	24.000
48.0	0.923	98.0	49.000
50.0	1.000	99.0	99.000
52.0	1.083		

$$\% \Delta = Y / (1 + Y) * 100$$

$$Y = \% \Delta / (100 - \% \Delta)$$

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