



Above: an image of the phytoplankton Amphidinium

# Effects of Varying Atrazine Concentrations on the Growth of *Amphidinium sp.*

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Above: image of the pesticide atrazine

## INTRODUCTION:

- Phytoplankton are the base of many food chains in the ocean
- Atrazine is a widely used pesticide, that contaminates runoff water and is known to affect phytoplankton growth rates.

## QUESTION:

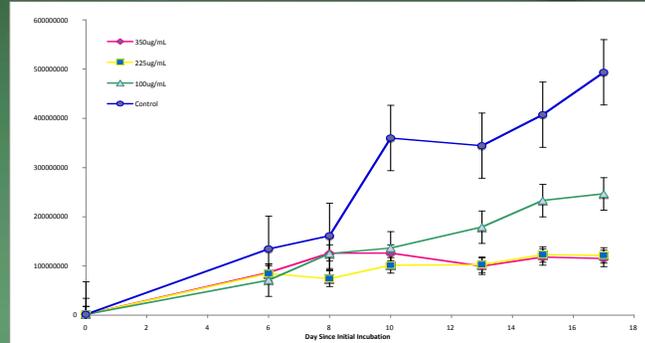
- What is the effect of different concentrations of atrazine on the growth rate of *Amphidinium sp.*, an affluent phytoplankton in the Charleston harbor

## METHODS:

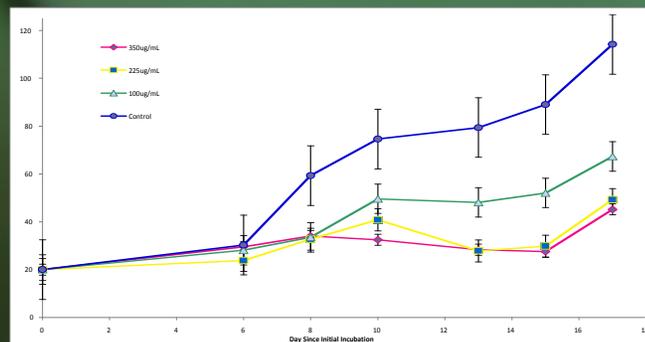
Culture (each replicated 3 x)	amount of phytoplankton	atrazine concentration
1	300 ml	350 mu g/L
2	300 ml	225 mu g/L
3	300 ml	100 mu g/L
4	300 ml	0

- The cell count concentration was calculated using a hemocytometer and chlorophyll concentrations using a flourometer, six times over the next two weeks.
- Methods were taken from and replicated using techniques previously established by Delorenzo, 2007.

The cell counts were conducted with a hemocytometer. Counts were made using standard techniques. Below is the graph of the average number of cells in the cultures of varying atrazine concentrations



The amount of chlorophyll A was measured using a flourometer. The amount of chlorophyll A directly correlates with the amount of phytoplankton in the samples. Below is a graph of the average change in phytoplankton biomass over time for each concentration of atrazine.



## RESULTS SUMMARY:

**Control:** The control had a steady increase in cell count and chlorophyll concentration with a slow in growth occurring on days 10-12.

**100\_mu g/L:** Had a slower growth in cell count and chlorophyll. The cell count had a good steady growth. Chlorophyll had a growth spike in days 8-10 and 16-18.

**225\_mu g/L:** Chlorophyll increased other than days 10 - 13 where it decreased. Cell count increased at a slow steady increase except in days 6-8.

**350\_mu g/L:** Chlorophyll increased to day 8 then restarted growth after day 15. Cell count decreased at day 10-13 and increased after that.

## INTERPRETATION:

- Any increase of atrazine concentration, decreases the amount of growth the phytoplankton can sustain.
- The secondary dip in growth that occurred around the 8-12 day range for all concentrations must be due to a lack of space and/or nutrition.
- As more pesticides are used for agriculture the larger the impact humans will have on phytoplankton growth.

## BIBLIOGRAPHY:

Atrazine induced species-specific alterations in the sub cellular content of micro algal cells. Original Research Article *Pesticide Biochemistry and Physiology*, Volume 87, Issue 1, January 2007, Pages 47-53 Jeannette A. Weiner, Marie E. DeLorenzo, Michael H. Fulton

### Acknowledgments:

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