# Please Protect My Flagella

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Living in Annapolis, MD, the sailing capital of the US, boat soaps are an important contributor to water pollution and represent an important area for choice in how human behavior impacts the environment. The purpose of the experiment was to examine whether eco-friendly, versus standard, boat soaps are less damaging to an organism’s ability to respond to its environment. To test this question, I compared the swimming abilities of a single-celled green algae, Chlamydomonas (or Chlamy), a model organism, after exposure to two types of cleaning supplies (eco-friendly and standard) at varying concentrations. Healthy Chlamy swim away from bright light, while unhealthy do not. I recorded cell movement in response to light using a 0-3 scale (0 indicating no cells moved, 3 indicating the majority of cells moved). After 2 hours, I looked again at the samples to see if the amount of movement had changed. Increased cell movement would suggest the cells had adapted. Results supported my hypothesis showing that eco-friendly soaps are less negative than standard to cell survival. Cells exposed to eco-friendly soap were able to swim at 0.1% dilution. Meanwhile, barely any cells were able to swim in the 0.1% dilution for the standard soap. After 2 hours, cells in 0.2% for eco-friendly were growing back flagella, suggesting ability to respond. However, cells exposed to standard soap did not regrow flagella. In conclusion, eco-friendly boat soaps are less damaging to an organism's ability to respond to its environment than standard. Hopefully, this information will motivate those cleaning on or near water to use eco-friendly cleaners.

**Awards Won:**