Daphnia Dose/Response Bioassay
Data Form

Name _____

Date _____

Chemical tested _____

100% concentration _____ mg/L
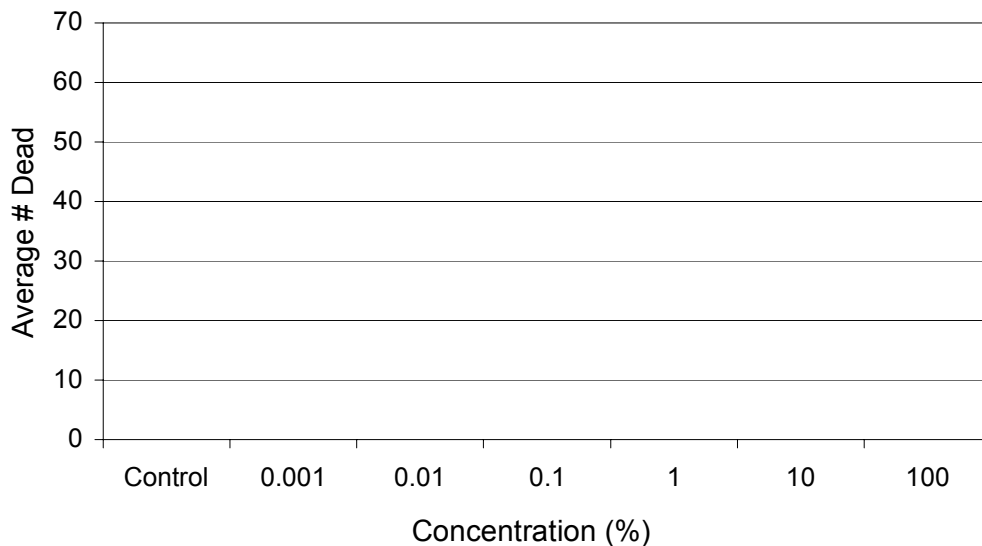
Length of experiment _____ days

Constants (such as temperature and light) _____

Table 4a. *Daphnia* Bioassay Results

Concen-tration (%)	Concen-tration (mg/L)	# Dead after 1 hour			# Dead after 24 hours			# Dead after 48 hours			Average # Dead after 48 hours
Control											
0.001%											
0.01%											
0.1%											
1%											
10%											
100%											

Make a bar graph showing the average # dead Daphnia after 48 hours:

Figure 4a. *Daphnia* Bioassay Results

Some questions to consider: (Please answer using full sentences.)

1. Did at least 80% of the *Daphnia* in the control beakers survive? If not, what would you recommend doing differently next time to try to get a better survival rate?

2. Did the rate of *Daphnia* survival respond in a predictable way to concentration? Describe any trends you observed.

3. Do any of your data not fit the trends you observed? If so, can you think of any reasons why these data might lie outside the range you would expect?

4. What LC_{50} would you estimate for your experiment with *Daphnia*? LC_{50} = ___
   (If it is impossible to estimate the LC_{50} from your data, please explain why.)

5. What can you conclude about the toxicity of the substance you tested? Is this what you expected? Was your hypothesis supported by the data?

6. Think about whether any of the *Daphnia* might have died for reasons other than poisoning by the chemical you tested. What other factors do you think might possibly have killed some of them?

7. If other students carried out a dose/response experiment using the same chemical, did their data follow the same trends as yours?

8. Based on this experiment, would you say *Daphnia* would provide a useful bioassay organism for water samples from the environment? Why or why not?

9. If you were going to repeat this experiment, what would you do differently? How might you improve the experimental design to reduce the variability of your data or lead to more reliable results?