Name _____   Class _____   Date _____

Can you swim in the Hudson River?

How has pollution changed in the last one hundred years in Hudson River ecosystem, as measured in Manhattan? By completing the following graphing activity, you should be able to answer this question to some degree.

Step 1: Open the Excel data set titled "DO and fecal coliform". You will see four sets of numbers: the year, the dissolved oxygen at the surface (top), the dissolved oxygen at the bottom, and the fecal coliform measurements.

Step 2: Create a graph that contrasts the dissolved oxygen levels in the Hudson River off of 42nd St., Manhattan, from about 1922 through 1997. The data represents surface and bottom average concentrations (mg/L) during the summer. Then, answer the questions below.

1. What year was the DO level the highest? The lowest?
2. Why is the surface DO higher than the bottom DO? Do you think this is the same throughout the Hudson River?
3. What can you say about the overall trend of dissolved oxygen in the Hudson River at this location? How does this relate to the health of the ecosystem?
4. Does this data tell you enough about the Hudson? What else would you like to know?

Step 3: Create a graph showing the changes in fecal coliform bacteria levels in the Hudson river at the same site at 42nd St., Manhattan between 1974 and 1999. You can do this by adding to the graph you made above, or making a second graph. We only have data starting in 1974, so you don't know what took place before that time. The New York State Primary Contact or 'swimming' standard is 200 cells per 100 mL, and the Secondary Contact Standard (for wading, boating, or fishing) is 2000 cells per 100 mL. Fecal coliform bacteria concentrations are indicators of sewage-related pollution, associated with untreated wastewater. The data collected represents an average of 8-14 samples that were collected during the summer. Then, answer the questions below.

1. What can you say about the overall trend in fecal coliform bacteria in the Hudson during the last 25 years?
2. When was the last time that the fecal coliform levels went above the primary contact standard levels? The secondary contact levels? What types of events might affect these numbers?
3. Based on this information, has the health of the Hudson River improved? Why or why not? Are you confident about your answer?
4. Does this data indicate that you could go swimming in the Hudson? Why or why not? What else would you like to know before making your decision?
5. Is there a relationship between the data on fecal coliform bacteria and dissolved oxygen levels? Why or why not?
6. Based on the graphs you completed and the information you received at the beginning of class regarding the Hudson River basin's population and effluent discharge, are you surprised about what you found? Explain your answer.