DEADLY WATERS LAB

PLEASE READ ALL INSTRUCTIONS CAREFULLY

WRITE FIRST AND LAST NAME IN SPACE PROVIDED ON EACH PAGE

Today's lab will be an exploration of bioaccumulation and biomagnification. You will play the role of toxicologists researching water pollution in a Northern Saskatchewan Lake. It will be your job to determine the pollution levels of 10 different pollutants and to project the damage that this pollution will have on the ecosystem and the organisms within it.

PROCEDURE

1. Come to the front of the room to collect a spoonful of many coloured paper circles on a paper plate. Every spoonful will be a random collection of paper. The circles on the plate will be a model of the lake waters collected by you as researchers. Each colour of paper circle will indicate a different type of pollution present in the water sample.

2. After collecting your "water sample", you will have to sort and count the circles of different colours.

3. Record the colour and number of pollutants in **Table 1** provided below.

4. Once you have recorded the values in the table above you will be producing a bar graph of all the pollutant levels on the graph provided (See Graph Page)

5. After creating your graph compare your graph to levels of another group. Notice that each graph will be unique.

6. Looking at your finished graph, record each pollutant number that was found to be above 2 squares high on the graph in **Table 2** provided below. These pollutants will be the ones at high enough levels to be harmful to the wildlife habitat and bioaccumulate. For each pollutant at a high enough level, calculate the PPM.   (1 square on the graph = 0.000001 PPM)

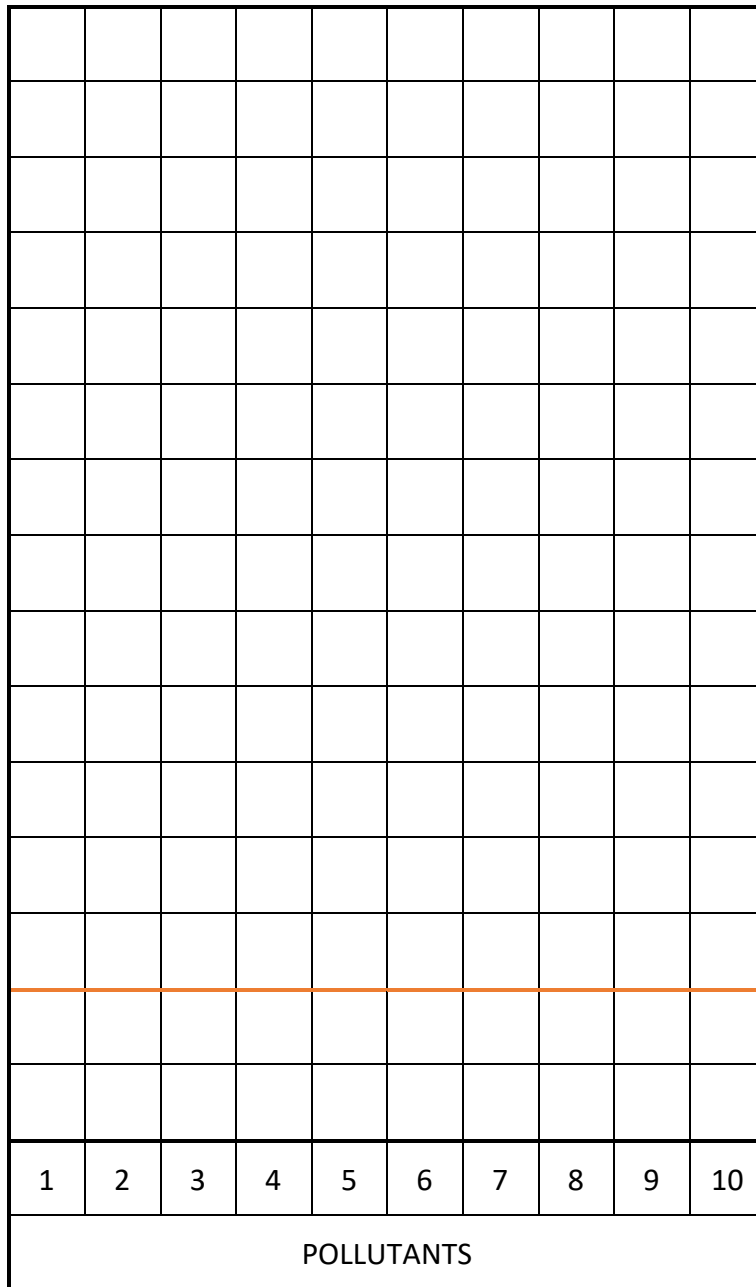7. Complete questions on the question sheet.

QUESTIONS

1. Pick two pollutants that were at harmful levels (Table 2) and calculate how much accumulates at the different levels of the food chain.

                                                    Sample 1   Sample 2

          Fish Eating Birds (13 X)

          Large Fish (4 X)

          Minnows (13 X)

          Zooplankton (13000 X)

          Water (PPM – Table 2)

2. Why are pregnant and breast-feeding women told not to consume fish or shell fish?

3. If such small amounts of toxins can lead to deadly effects on species of high trophic level, what would be the impact of large amounts of toxins?

Table 1: Measurements of pollution present in lake water sample.

Pollutant	1	2	3	4	5	6	7	8	9	10
Colour of Pollutant	Yellow	Pink	Purple	Green	White	Red	Brown	Blue	Orange	Black
Amount of pollutant Present										

Table 2: Pollutants at harmful levels.

Pollutant	How many squares high on graph?	PPM (squares x 0.000001 PPM) (show the calculation)

GRAPH OF POLLUTION LEVELS IN THE LAKE

1	2	3	4	5	6	7	8	9	10

POLLUTANTS

(Each square = 0.000001 PPM)