Supplementary File 4:
Extension Activity

Students should be split into 5 groups. Each group will make a "MicroGlobe" using the steps described above. However, each group will create a "MicroGlobe" with water at a different density that represents a geographical body of water. The water should be prepared by each student group and stored in a labeled jar with the group name and respective densities until use. The recipes for each are included below.

Group	Body of Water	Amount of Table Salt Added to 1 L of Water (g)	Resulting Salinity of Water (ppt)	Approximate Density of Water (g/cm^3)
1	Great Lakes	0	0	1
2	South Atlantic Estuaries	20	17	1.01
3	Open Atlantic Ocean	44	36	1.02
4	Open Pacific Ocean	44	36	1.02
5	Mediterranean Sea	49	40	1.03

Each "MicroGlobe" should be left untouched on a flat surface for 10 min so that plastic pieces can settle out. Without shaking the contents of the "MicroGlobe," students should count how many plastic pieces are at the surface, and how many pieces of each plastic type sank to the bottom. Students should also note if any plastic pieces are suspended in the water.

The instructor should provide each group with the density of water in the respective "MicroGlobe."

Now that each group knows the density of the "MicroGlobe" water, students should use the table below (Table 1) to determine which plastic polymers would sink or float in the "MicroGlobe." Student groups should then make a hypothesis about which plastic polymer types are in the "MicroGlobe" based on density. This activity can be completed on a separate piece of paper.

Table 1. Densities of common plastic polymers

Plastic polymer	Density (g/cm^3)	Plastic polymer	Density (g/cm^3)
Polyethylene	0.92-0.97	Polyoximethylene	1.41-1.61
Polypropylene	0.90-0.91	Polyvinyl alcohol	1.19-1.31
Polystyrene	1.04-1.10	Polyvinylchloride	1.16-1.58
Polyamide	1.02-1.05	Polymethylacrylate	1.17-1.20
Acrylic	1.09-1.20	Polyethylene terephthalate	1.37-1.45
Nylon	1.14	Alkyd	1.24-2.10
Polyester	1.24-2.30	Polyurethane	1.20