Daffy Densities

All materials have characteristic densities. As long as the materials do not mix or react, the less dense materials will float on top of the more dense layers. This activity can be done as a lab or demonstration and uses 4 solids and 6 liquids to create a colorful column.

Materials
- Graduated cylinder
- Ethanol
- Dawn™ dishwashing detergent
- Dark corn syrup
- Vegetable oil
- Glycerin
- Water
- Food coloring (red and green)

Substitutions
- large vase (cylindrical)
- rubbing alcohol (green)
- liquid dishwashing detergent

OPTIONAL SOLIDS:
- Cork stopper
- Solid rubber stopper
- 1 small piece of lead
- 1 small block of oak wood

Procedure
Before you begin, add red food coloring to the water and green food coloring to the rubbing alcohol.

1. In order, slowly pour the following liquids into a graduated cylinder:
   a) Dark Karo syrup (pour without touching the container sides)
   b) Glycerin
   c) Dawn dishwashing liquid (blue)
   d) Water (with red food coloring added)
   e) Vegetable oil (yellow)
   f) Rubbing alcohol (with green food coloring added)

2. Add small samples of the solids listed above, in the order: a) lead, b) rubber, c) oak, and d) cork. Try to avoid mixing the layers.
Teacher's Notes

1. Other solids may be added and their relative densities determined. Suggested solids include: A new penny (made after 1986), candle wax, a wooden toothpick, a small block of pine, and an ice cube.

2. Students can complete this as a laboratory exercise. If given some densities as 'knowns', then they should be able to set approximate ranges for the other materials.

Disposal

All liquids can be poured down the sink. Solids may be reused.