



MENT Take Out the Trash

Visitors use a magnet and floatation to separate screws, plastic, and aluminum from a mixture.



OBJECTIVES:

Visitors learn how recyclers take advantage of the different properties of materials, such as magnetism and density, to separate them from a mixture.

SCIENCE TOPICS	PROCESS SKILLS	VOCABULARY
Properties of Matter	Observing	Recycling
Density	Measuring	
Magnetism	Inferring	
Recycling		
Separation Techniques		



MATERIALS

See *Materials Prep*
for more details

(with amounts to have on hand)

- Four medium plastic cups
- One large plastic cup
- One large plastic bowl (or small plastic trash can)
- One rectangular plastic tray (from a microwave meal)
- One slotted spoon
- One magnet
- One 25-ml plastic scoop
- Small strainer
- About 1 to 2 cups of small zinc-plated screws and chains
- About 50 plastic coffee stirrers
- Two or three empty aluminum soft drink cans

Setup/Takedown Procedures

ORIGINAL SETUP

- Label three medium plastic cups “Separated Aluminum,” “Separated Plastic,” and “Separated Magnetic Pieces.”
- Label the large plastic bowl “Unsorted Trash.”
- Label the rectangular plastic meal tray “Sorting Tray.”
- Label the slotted spoon “Slotted Spoon.”
- Label the magnet “Magnet.”
- Prepare the “trash.” (See Materials Prep.)

WEEKLY SETUP

- Check to see that plenty of “trash” is available. If low on trash, prepare more. (See Materials Prep.)

DAILY SETUP

Set out the visitor instructions in a Plexiglas holder.

- There may be “trash” drying from the previous day’s use. Collect the dry “trash” and return it to the experiment tub.
- Fill the large plastic bowl 1/2 to 3/4 full of “trash.”
- If “trash” is running low, prepare more. (See Materials Prep.)

- Fill the large plastic cup full of water.
- On a tray, set out the following:
 - Three labeled medium plastic cups
 - Labeled plastic bowl
 - Labeled sorting tray
 - Labeled slotted spoon
 - Labeled magnet
 - Plastic scoop
 - Small strainer
 - Large cup with water (in which the strainer fits)

DAILY TAKEDOWN

- Set the separated plastic, screws and chains, and aluminum out to dry on paper towels. The “trash” should all be completely reusable.
- Empty the water cup.
- Clean all equipment and return it to the tub.

WEEKLY TAKEDOWN

- Store the dried “trash” in a 1-gallon resealable plastic storage bag.
- Return the dried “trash” and clean equipment to the tub.
- Clean the tray and leave it at the station.



RUNNING SUGGESTIONS

- ◇ Check the water cup and the “trash” from time to time to make sure they are full.
- ◇ The aluminum will float when initially put in water; however, once it is pushed down, it will sink.
- ◇ Ask visitors whether they can come up with other ways to separate the same trash or whether they can think of a way to separate other types of trash, such as paper or glass.

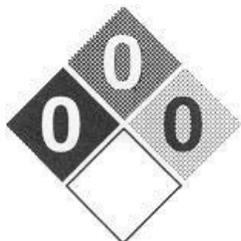


EXTENSIONS

Paper can be sorted using static electricity (from a balloon). Recyclers usually sort paper by hand because it must be separated by color.

Plastic and other materials can be separated by differences in density (see the “Plastics Recycling” display).

SAFETY & DISPOSAL



No special precautions are needed; follow standard lab safety procedures.

MATERIALS PREP

To prepare “trash”:



CAUTION: Be careful when cutting the aluminum cans. The pieces will be sharp.

- Mix equal parts of
 - zinc-plated screws and chains, (test for magnetism)
 - 3/4-inch pieces of #5 plastic (e.g., yogurt cups, butter tubs)
 - 1-inch by 1/2-inch pieces of aluminum can. (some non-magnetic stainless steel will also work)