WATER FILTER DEMONSTRATION

Science Film Festival

KEYWORDS

water treatment | environmental engineering | clean water | filtration | public health

Environmental engineers and water treatment workers design and operate systems that clean dirty water so that it can be safely used again. In cities, water comes to us through pipes from treatment plants, where experts clean it to remove dirt, germs, and chemicals. They also clean wastewater before releasing it back into rivers, lakes, or oceans. Clean water is essential for life—people, animals, and plants all depend on it. Green jobs in this field help protect public health, reduce water pollution, and ensure that our environment stays clean. As populations grow and water supplies face more stress from climate change, careers in water management and treatment are becoming even more important to keeping our communities safe and healthy.

AGE RANGE
6-8 years

LARGE GROUP DEMONSTRATION
(20+ participants)

DURATION
25 minutes

MATERIALS

- 2-liter plastic bottle
- Coffee filters (2-3 sheets)
- Cotton balls (1/4 cup)
- Clean sand (1 cup)
- Small pebbles or gravel (1/2 cup)
- Activated charcoal pieces (1/4 cup) - available at pet stores
- Dirty water sample (muddy water with food coloring)
- Clear containers for collection
- Rubber band
- Scissors

WATER FILTER DEMONSTRATION

Science Film Festival

PROCEDURE

Step 1: Prepare the Bottle

- Cut the bottom off the 2-liter bottle
- Remove the cap and turn the bottle upside down (neck pointing down)

Step 2: Create Filter Layers (from bottom to top):

- Bottom layer: Place coffee filter over bottle opening, secure with rubber band
- Layer 1: Add cotton balls (acts as fine particle filter)
- Layer 2: Add activated charcoal (removes odors and chemicals)
- Layer 3: Add clean sand (filters smaller particles)
- Layer 4: Add pebbles/gravel (filters large debris)

Step 3: Testing

- Pour dirty water slowly into the top
- Collect filtered water in clear container
- Compare before and after samples
- Discuss what each layer removes

Safety Note:
This is for demonstration only - water is not safe to drink!

WATER FILTER DEMONSTRATION

Science Film Festival

INSTRUCTIONAL GUIDELINES FOR FACILITATOR

- **Use large, clear containers for visibility**
- **Make muddy water with just soil and water - keep it safe**
- **Emphasize that filtered water still needs professional treatment**
- **Connect to environmental engineering careers**

LEARNING OUTCOMES

- **Understand water filtration basics**
- **Learn about environmental engineering**
- **Practice scientific observation**

EXTENSION SUGGESTIONS

- Learn about your local water treatment plant
- Test water quality at home
- Conservation water-saving tips