

Building and Redesigning Your Own Air Filter

Objective: Create and test a homemade air filter to evaluate its effectiveness.

Materials Needed:

- Cardboard box
- Cotton wool
- Activated charcoal
- Scissors
- Tape
- Air quality monitor
- Fan

Procedure:

1. Cut the cardboard to fit over the fan.
2. Layer cotton wool and activated charcoal inside the cardboard.
3. Secure the homemade filter to the fan with tape.
4. Use the air quality monitor to measure initial air quality.
5. Turn on the fan and run it for 10 minutes.
6. Record the air quality reading after 10 minutes.
7. Evaluate the effectiveness of the homemade filter.

Data Collection Chart:

Initial PM Reading	Final PM Reading	Difference

Observations: How well did this filter work? How could you improve it?

Redesign: Redesign the filter to see if you can improve the design and effectiveness.

Sketch of New Design:

Materials List:

Data Collection Chart for New Design:

Initial PM Reading	Final PM Reading	Difference

Conclusion: Analyze the first design compared to your design. Which is better? Describe pros and cons of both devices. Why do you think the filters sold in stores are designed the way they are?