DIY Fan + Filter Air Cleaner
Clean, Healthy Indoor Air for ~$40

We worked with a mechanical engineer to ensure these are safe and effective! Make sure to use a newer fan (2012 - 2020) and keep the fan and motor clean - debris can cause overheating and fire.

MATERIALS:
- 1 – 20” Box Fan
- 1 – 20” x 20” MERV 11, 12, or 13 electrostatic air filter
- Tape or bungee cord to hold the filter in place

FILTER RATING CONVERSIONS:
- MERV 11 = FPR 10 = MPR 1500
- MERV 12 = FPR 11 = MPR 1900
- MERV 13 = FPR 12 = MPR 2200
(Home Depot’s Honeywell uses FPR and 3M’s Filtrete uses MPR rating system)

ASSEMBLY:
1. Follow the manufacturer’s instructions to assemble the Box Fan.
2. Place the filter on the back of the fan with the filter’s airflow arrow pointing towards the fan. When the fan is turned on it should pull air through the filter - see picture below.
3. Secure the filter with tape (masking or duct). Mark the date on filter or tape

Filter FAQs:
There are no 20” x 20” sized filters in stock. Can I still make a DIY fan + filter? Yes! A larger size filter will be just as effective as a 20”x20”, though a little bulkier and more expensive. A smaller size filter will take slightly longer to clean the air, but it is still effective.

The filter is a MERV 11 or 12 (or equivalent rating), but the packaging doesn’t say it removes PM 2.5. Will it still work? Yes! We teamed up with a mechanical engineer to test their efficacy, and they effectively remove PM 2.5 from the air. We’re not sure why that isn’t reflected on the packaging!

How long will the filter last? It depends on how smoky it is, but check the manufacturer’s recommendation. If it turns gray, it’s time to replace it.

Where do I place the filter, and how often should I run it? Place the filter in the middle of a small or medium sized room (~450 sf) where you spend a lot of time. Make sure the windows and doors are shut. Keep it away from the wall, curtains, or loose clothing to avoid starting a fire. The more you run the filter, the cleaner the air.

Are there safety concerns? Using an older model or using a fan incorrectly can cause a house fire due to overheating. Prevent this by using a newer fan (2012 - 2020), keeping the fan and motor clean, and placing it away from curtains or loose fabric such as dishcloths or clothing. Fan motors are designed to run 24/7 for 20,000 hours (83 days!) in a room that’s 104°F. After that, the motor will stop working or pose a fire risk. Keep the fan clean, place it properly, and don’t run it non-stop for 2 months to avoid fire risk.
For more information go to montanawildfiresmoke.org or missoulaclimate.org/summer-smart.html