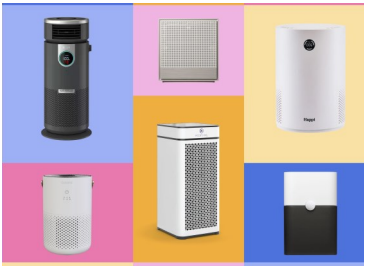
GUIDANCE FOR PURCHASING AN AIR PURIFIER FOR YOUR HOME

WORLD BANK GROUP
Managing Director & WBG Chief Administrative Officer
Health & Safety Directorate

Quick Guide

THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP

Choosing the right air purifier for your home



The first questions to ask as part of the selection of an air purifier is how you want to use it, what size space do you have, what systems do you currently have within your accommodation? All of this impacts on what you purchase.

How much space you want your device to clean as you may only want to do one room or multiple rooms? Small devices are effective only in small, enclosed areas, whereas larger devices are most effective in larger areas. If you want to clean the air in a single room of 40m^2 then a device that is rated for that size is acceptable, however if your space is 120m^2 a device that cleans 40m^2 will not be effective, as the number of air changes per hour would be inadequate. A larger device its better than multiple small devices.

Filters and Filtering

The air purifiers generally use mechanical filtration, where the filters physically trap the pollutants as the air passes through them. Many air purifiers will have two filters: a prefilter, which catches large particles, and the main filter, which traps smaller particles. The most important filter is the main filter.

Prefilters: some are washable and others are disposable, they need to be replaced more frequently, but also extend the life of the main filter.

Main filter: A high-efficiency particulate air (HEPA) filter is preferred. HEPA filters trap 99.97% of particles that are 0.3 microns (millionths of a meter) or larger in size.

Some devices state a "HEPA-type" filter, but it may not be an actual HEPA filter. They will likely still filter well but may perform poorly when compared to actual HEPA filters. When selecting a purifier check that it uses HEPA filters or "True" HEPA filters.

Some purifiers have additional filters, often made of activated carbon, that traps gases, volatile organic compounds (VOCs) and odors. These extra filters can be helpful if you live with a smoker or have pets, and odors you want removed. Not an essential requirement.

Some air purifiers may have disinfection or sanitization processes that rely on ionizers or ultraviolet (UV) light, or other descriptions, in many cases the effectiveness of these devices is inconclusive. They may also produce ozone, which is a lung irritant that could make any breathing-related problems worse. Not an essential requirement.

PURCHASING

The up-front cost of your air purifier is an important purchasing decision, however there will likely be additional costs to consider. Filters will need replacing on a regular basis, bigger devices use more electricity.

Filter-replacement costs vary from machine to machine. Some have very expensive filters that last for years, while others use cheap filters that have to be changed frequently. Plus, while some of the prefilters are washable, the HEPA filters themselves are disposable and must be entirely replaced. Check the cost of the replacement filters before you purchase and see if additional filters may be purchased as part of the sale. Avoid buying end of line devices as replacement filters may be unavailable.

Final Selection

There is no single air purifier that will suit every scenario. When looking to purchase an air purifier, always look first at the recommended room size it will treat and filter type to determine if it fits your specific needs.

When you have decided that, consider the secondary features such as noise level, energy costs, replacement filter costs and frequency of use.

Technical Specifications: Home based air purifiers

Home based air purifiers or Portable air purifiers can be evaluated by their effectiveness in reducing indoor air pollutants. Here are some of the technical specifications for selecting a home-based air purifiers / portable air purifier:

Air purifiers remove particles by capturing them on filter materials. Choose the air purifiers which utilizes:

- HEPA (High Efficiency Particulate Absorbing) Filters. A true HEPA filter will filter 99% of particles sized 0.3 micron (micrometers) or larger.
- Alternatively, MERV rating is also sometimes used to classify filters, in this case MERV-16 is preferable.
- Centrifugal Fan which is energy efficient and generates uniform airflow.
- Inlet at a bottom level and outlet at the top with air stream facing upwards. This way the air purifier absorbs particles at floor level and the outlet at top creates circulation in the room that pushes the air down to floor level.
- Air Exchange Rate (AER) of 0.5 air changes per hour or above depending on the size of the room.
- Noise level below 50 decibels (dB / dBA).

Questions?
Contact us at:
OH_Safety@worldbankgroup.