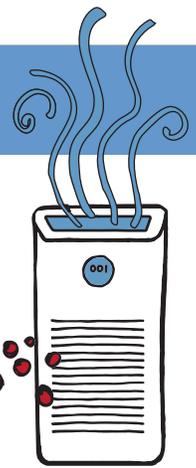


# Safety First: Ventilation Basics



## VENTILATION BASICS

Supply as much fresh or filtered air as possible; exhaust air to the outside or clean it with high-efficiency filters; control airflow to move air up and away from people: these are three ways ventilation can reduce risk for spread of airborne contagion.

**Keep windows open** whenever workers and diners are present if this can be done safely. Be sure all **HVAC systems** are **fully operational, performing as designed, and recently serviced and cleaned**. Clean filters if they are a cleanable type, and be sure they are properly fitted and sealed to prevent air from bypassing them. **Optimize the number of air changes per hour** your system is providing; a rate of four to six air changes per hour has been suggested as a reasonable target to reduce risk for spread of airborne infection in restaurants. **Increase the percentage of fresh air your system** supplies to the maximum feasible. **Upgrade to the highest MERV grade filters** your system can handle, preferably at least MERV-13. Consult a qualified, trusted HVAC engineer or contractor to determine air changes and the highest MERV grade filter your system will support.

**Portable air purifying units** can be used to supplement existing HVAC systems and to compensate for the lack of an HVAC system in situations where one cannot be installed. Look for units that provide **at least four to six air changes per hour** and **discharge air upward** vertically, rather than horizontally. There is **no need to buy costly add-ons** like ultraviolet filter cleaners, titanium di-oxide, ionization, or carbon filters. **What matters most is high-efficiency HEPA filters**. If units are too noisy, you can run them at a lower speed to reduce noise. But be aware that their ratings are based on operation at full speed: anything lower will decrease the number of air changes and therefore their effectiveness.

**How many portable air purifying units will you need?** As a rough rule of thumb, assuming a 10-foot ceiling, allow one unit operating at 100 cubic feet per minute per table, or one unit operating at 200 cubic feet per minute between every two tables. Set units on the floor venting upward. In practice, the correct number of units should be based on careful calculations: a link to an easy-to-use calculator can be found [here](#). Calculations must be based on the airflow produced at the fan speed you will use day to day, not the maximum airflow the unit can produce at the highest fan speed.

Properly designed and installed **upper-room ultraviolet germicidal irradiation** may also be considered in situations where an existing ventilation system is inadequate and cannot easily or affordably be upgraded, or where there is no existing ventilation system.

**Portable, movable Plexiglass or polycarbonate cough and sneeze barriers** can be used to block horizontal airflow between tables and divert airflow upward. Their lower edge should be below table or waist level—about 18 inches above the floor—and their upper edge should be at least 5 feet above the floor. Install as many barriers as possible between tables. It is especially important to **interrupt airflow that is moving horizontally** toward a wall-mounted return air grille. This will reduce the likelihood that airborne contaminants will be carried from one table to another. A qualified and trusted HVAC engineer, architect, or environmental engineer can help you place barriers to be sure you don't inadvertently worsen the problem.

