

Stuck in a Healthier Home

Home Sheltered Zone



Susceptible people, especially seniors and those with underlying health conditions, are sensitive to respiratory diseases, including the COVID-19 pandemic. These sensitive people often live with others who circulate in the population outside the home and may become infected. They may also rely on people coming into their homes to perform services.

Diseases can be carried by small particles that travel in the air. You can minimize the amount of air that travels from the rest of the home to a *sheltered zone* set aside for sensitive individuals, using physical barriers and intentional ventilation. The sheltered zone is based on the simple principle that air flows from high pressure to low pressure. So, the goal is to *increase* the pressure in the sheltered space compared to the rest of the home, so that air contaminants will not travel into the sheltered zone.

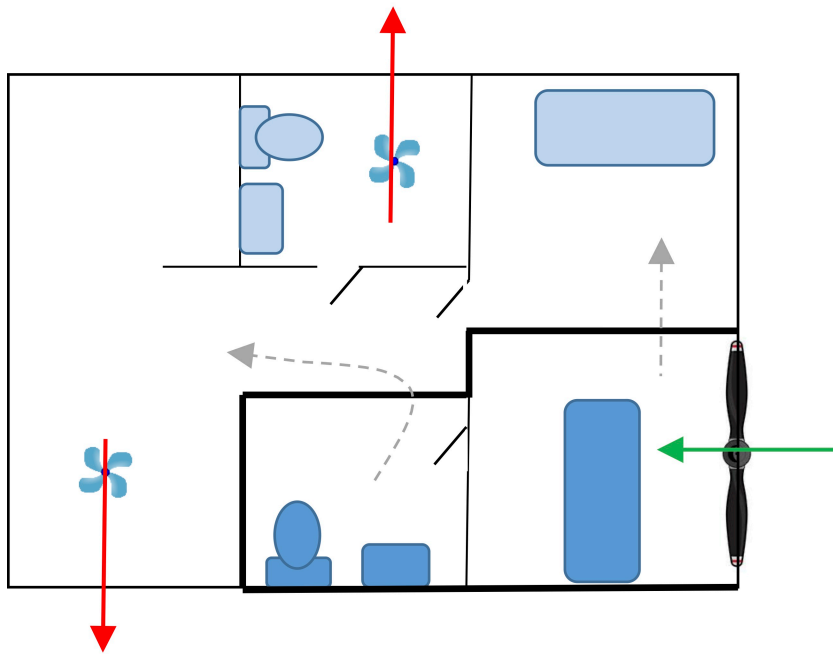
Another version of this document contains photos to show home components.

1) Separate a room.

- Choose the portion of the home you want to use as the sheltered zone.
- Keep doors closed between the sheltered zone and the rest of the home.
- Close off central-air system supply registers and return grilles in the sheltered zone, so that air from the rest of the home is not distributed to that area. Use tape, or tape plastic over the registers and grilles, in addition to closing the louvers. Make sure to follow CDC personal protection guidance when closing off these registers and grilles.
 - If you do NOT have a central-air system, you don't have to do anything else. For example, heating from radiators is fine because they do not distribute air.
- Door undercuts can be sealed with the same tape used for heating vents or stuffed with cloth.

2) Push outdoor air IN to the sheltered zone, exhaust air OUT of the rest of the home.

- Supply outdoor air to the room. Mount a box fan in the window, blowing inward, and seal the rest of the window opening with plastic or cardboard.
- Turn ON exhaust fans in the rest of the home. This will lower the pressure in the rest of the home. This includes bath fans, kitchen fans, laundry fans, and any other fans that take air from the home and blow it outside.
- Do NOT use exhaust ventilation, like bathroom fans, in the sheltered zone.



*Figure: Creating a **sheltered zone**, marked with bold borders. Green arrows show air pushed into the sheltered zone from the outdoors with a large fan. Red arrows show air pushed to outdoors from the rest of the home, using bathroom or kitchen fans. Gray arrows show how air will move from the sheltered zone to the rest of the home, pushed out by the low pressure in the zone.*

3) Keep the occupant comfortable.

- A suite that includes bathroom facilities is ideal, if available. If not, choose the room with the shortest path to the bathroom.
- You may need to consider alternative sources of heat or air conditioning for the sheltered zone.
 - If you use portable space heaters, use only models that shut off if they tip over, and keep all flammable materials away.
 - For air conditioning, you can use either window or portable room air conditioners. Portable room air conditioners have a duct that can be installed in a window to remove the heat from the room.

Interacting outside the sheltered zone

Susceptible people may need to leave the sheltered zone to eat, to use the toilet, or just for sanity. At these times, the separation from the rest of the home will be broken. Here are some ideas to keep the susceptible person as safe as possible.

- Close the door to the sheltered zone even when the susceptible person is absent to keep air from the rest of the home from flowing in.
- If someone enters the home for a short time to provide a service, wait an hour or two after they leave to enter the main body of the home.
- When a susceptible person has to interact directly with others, they should both wear masks.
- When a susceptible person will enter a space where others have recently been, such as a bathroom or kitchen, the surfaces should be cleaned first.

The sheltered zone is designed to isolate sensitive people from the rest of the house where people may be infectious. Air from the sheltered zone is likely to travel into the remainder of the home. If you want to keep an ill person apart from the rest of the household, please see “The Isolation Zone” instead.

Disclaimer: The sheltered zone procedures reduce the probability of airborne transmission from the rest of the home to the sheltered zone. No single action can guarantee that people won’t become infected. The information provided here is intended to supplement, not replace, CDC recommendations. CDC recommendations such as wearing masks, wearing gloves, hand washing, and rigorously cleaning surfaces are very important for susceptible people.

Paul Francisco is a researcher and trainer at Indoor Climate Research and Training (University of Illinois) and Energy Institute (Colorado State University). He teaches Healthy Homes to practitioners, and has chaired ASHRAE’s Residential Ventilation Standard (62.2), Environmental Health, and Residential Buildings Committees.

CDC = Centers for Disease Control and Prevention, www.cdc.gov/coronavirus/2019-ncov/

More resources for a healthier home:

English <http://www.humanenvironments.org/sphere/resources>

Español <http://www.humanenvironments.org/sphere/recursos>

SPHERE is a collaboration of communities, industry, public partners and scientists. We develop science, knowledge, and actionable solutions in the pursuit of healthy homes, health equity and resource efficiency.



This work is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/).