

## **Filtering Air from the Outside**

*By Anthony*

After graduate school I was in charge of an analytical chemistry laboratory at Purdue University. I was constantly exposed to toxic nitric acid fumes for three years before I became severely disabled with chemical sensitivities in 1978. I was forced to quit my job and move back with my parents who had no understanding of my illness. Eventually, I bought a travel trailer, refurbished it with ceramic panels, and lived in various parts of the country from 1982 to 1995. When exposed to environmental toxins such as pesticides and herbicides I simply moved my travel trailer to a new location.

In 1995 my living situation changed when I moved back to live with my 84-year-old widowed mother in suburban New Jersey. I left my travel trailer in Arizona. When the neighbors started using herbicides, I bought six Austin Air machines, which use activated charcoal, and was able to filter out the herbicides to the point where I was not affected in the house. A few years later our neighbors started using the organophosphate pesticide Diazonon. All my attempts to remove the Diazonon with our Austin Air units proved ineffective and I had to move out of our house. Eighteen months later we sold the house and moved to Arizona.

About eight months ago we began experiencing the same problem when our neighbors in Arizona started using Diazonon. Because the Austin Air filters were not reducing the toxic load enough, we called another company, AllerAir. They recommended using a special anthracite-coconut blend of activated charcoal called Vocab-X. We bought 44 pounds of it and replaced the charcoal in two of the Austin Air units. There was no noticeable difference. AllerAir said we needed to take air from the outside and send it directly through our air filters and then into the house. This would create a positive pressure in the house. All air coming into the house would first be filtered. This is difficult to do with an ordinary air filter. However, AllerAir makes a special inverted filter which has an air intake that can be connected to a 6 inch hose or duct to draw air in from the outside.

The filtering system we built has an air intake located 8 feet above the roof. The air comes in through a metal duct inserted in a hole in the roof originally intended for an exhaust fan over the stove. The air intake duct bifurcates into two ducts. One connects directly to the inverted AllerAir filter which has 27 pounds of Vocab-X charcoal. The second duct connects to a box which surrounds the air intake part of two Austin Air filters. Air is drawn from the outside into the box, through the Austin Air machines, and is discharged into the house.

Each of the filter units when run at low speed draws 100 cubic feet of air per minute for a total of 300 cubic feet per minute (CFM). At this speed the air in our 650 square foot

house should exchange every 17 minutes. At medium speed the air would be exchanged every 8 1/2 minutes.

After using the system for almost 3 months I believe it has substantially but not completely reduced the amount of pesticides coming into the house. I would estimate that for a truly effective system one would need 50 to 60 pounds of charcoal for every 100 cubic feet of air per minute that comes into the house. A second improvement would be to raise the air intake duct from 8 feet above the roof to 18 feet above the roof.