Pollution Exposure

Q: I'm exposed to polluted air at work that worsens my asthma. What can I do to prevent this?

A: Wear a protective mask which removes dust particles and fumes. The National Institute for Safety and Health (NIOSH, one of my employers) sets the standards for performance for respiratory safety products used in the workplace. Folks with asthma may use respirators (breathing filter masks) for a few minutes to hours at a time to reduce their exposure to allergens, particulates (respirable dusts) fumes, or chemicals. The most economical masks ($1 to $4 each) are those rated "N-95" meaning that they are 95% efficient at removal of respirable dust (and not resistant to oily particles like lubricants).

NIOSH states that when respirators are needed in the workplace that their fit must be tested to ensure that they are likely to protect an individual employee. However, respirator fit-testing is highly unlikely to be done by an individual with asthma. You will want to merely order a box of 10 or 20 of these masks from an internet source, or perhaps buy one at a local hardware store. For this reason, 3 PhDs at NIOSH in Morgantown, West Virginia recently tested 21 models of N-95 respirators on a group of 25 men and women with different types of facial structure to see which ones worked best to protect the majority of them without special fit testing.

I recently found a couple of the best fitting models on internet sites, available for purchase by the general public: the Gerson 2735 and the 3M 8210. I could not find the BBI/RX-2 or Technol 170-174 which were also among the top eight masks. Although I found many sites selling Moldex respirators (like their model 2300), the NIOSH study found them not to fit very well. Since the NIOSH testing, Gerson and 3M have added models with exhalation valves, which are recommended since they feel cooler and make breathing (exhalation) easier. The basic models remove particles well, but those of you who are sensitive to fumes (organic vapors, VOCs) should buy a respirator which also includes an activated carbon filter (although this doubles the price).

The Gerson 2747 (an improved 2735) has an exhalation valve and costs about $18 for a box of ten (www.gersonco.com or industrysafety.com). Even better is the Gerson 2737-OV/AG which adds an activated carbon filter which removes odors (organic vapors) and acid gases. Also highly efficient is the 3M 8210 for only $18 for a case of 20 masks; the 3M 8511 with an exhalation valve ($18 for a box of ten masks); and even better, the 3M 8577 with exhalation valve and activated carbon filter ($40 for a box of ten). After adjusting the nosepiece and straps, you can do a rough check for leaks as follows: Cup both hands over the front of the mask (to cover the filter media) and inhale. Do not push the mask against your face. The fit is good if the mask pulls in towards your face. If you detect any leakage of air, readjust the nosepiece and straps.