# Bird Safety Corner

## Indoor Air Pollutants

Indoor air pollution is a huge topic, with lots of conflicting information out there about how best to keep the air in your home safe and healthy for you and the humans and non-humans you share your home with. While the health comments in this column are directed towards humans, remember that adverse effects on birds are often even worse.

There are three basic control strategies to reduce indoor air pollution. The first, **source control**, is directed toward eliminating sources of pollution. Heating strategies in the home, a major source of indoor air pollution, are discussed in another column. A number of these columns have already discussed household items that emit fumes and gases. We will also be discussing the ill effects of smoking around birds in another column.

The second control strategy is **good ventilation**, which is pretty obvious and won't be discussed in any detail here. The third strategy is **air cleaning**, which can be broken up into electronic air cleaners and mechanical air filters. Mechanical air filters, including HEPA filters, are discussed in another column. Note that air cleaning removes particles, but not gases, so air cleaning in and of itself does not ensure clean air in the home.

## Electronic Air Cleaners

Electronic air cleaners include ozone generators, ion generators, and electrostatic precipitators.

**Ozone generators** are sold as air cleaners. Ozone is an oxygen molecule with three oxygens rather than the usual two. Ozone is much more reactive than regular oxygen, and therein lies its danger. Ozone causes respiratory irritation, with symptoms of chest pain, cough, shortness of breath, and throat irritation. It also reacts with other chemicals to produce emissions which are harmful to health. So if ozone is bad, why do we hear about a hole in the ozone being bad? That's because ozone up in the atmosphere protects the earth from damaging ultraviolet radiation from the sun. Ozone down on earth, however, is a different story.

Manufacturers of ozone purifying systems claim that ozone reacts with harmful chemicals and makes them inactive. This couldn't be further from the truth. When ozone combines with chemicals, it often produces by-products which are more harmful than the original! These by-products are sometimes reactive themselves, causing even more damage. Ozone also does not remove dust or pollen from the air, and does not inactivate bacteria, viruses, or molds. Some manufacturers claim that ozone purifiers remove odors, but this also rarely, if ever, occurs. Ozone itself has a bitter odor that anyone who owned an old fax or printer remembers, since

those devices produced high levels of ozone. So bottom line, ozone purifying systems are not effective and are not safe. If you have any ongoing doubt about the issue, the EPA warns against the use of ozone generators: **www.epa.gov/indoor-air-quality-iaq/ozone-generators-are-sold-air-cleaners-assessment-effectiveness-and-health**. Case closed!

**Ion generators**, also known as ionizers, have become more popular as ozone generators have fallen out of favor. An ionizer produces positive or negative ions into the air. These ions attach to particles in the air and give them a charge so that they settle out of the air onto walls, furniture, and floors. Since these particles are still present in the environment, they often become resuspended with human activity, such as walking and vacuuming. There is also concern that ionizers cause increased lung irritation since ionized particles are more easily deposited into the lungs than non-ionized particles. Effectiveness also varies widely between machines.

**Electrostatic precipitators** also produce ions, but, in addition, have collector plates which are oppositely charged. Air is drawn through the devices so that ions attached to particles land on the collector plates. This prevents accumulation of particles on surfaces and in the lungs, as with ionizers. The downside to electrostatic precipitators is that they produce ozone, with all the associated negative effects. They do work better at removing particles than ionizers, however, so are preferred over the former.

Given the choice, however, **mechanical filters** are the **most effective and safest** devices for removing dust (including feather!), tobacco smoke, pollen, and fungal spores, so your money is better spent on those devices. HEPA and other mechanical filters are discussed in more detail in another column.