# Bird Health - Unique Bird Respiratory System

**Your respiratory system is not the same as your bird's.**

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Bird's don't use a diaphragm like people do.
Courtesy Cindy Jones, Texas

While airborne toxins can have a harmful effect on any person or animal, they are especially hard on birds. This, veterinarians believe, is primarily due to the bird's unique respiratory tract.

"The avian respiratory system is profoundly different from mammalian systems," noted Ken Welle, DVM, an avian veterinarian in Urbana, Illinois. A human's lung inflates and deflates like a balloon. In contrast, a bird's lung is fixed in place and doesn't expand and contract, Welle said.

Another difference is that "birds do not have a diaphragm like people do," said Richard Nye, DVM, a veterinarian in the Chicago area with a special interest in birds. The diaphragm, of course, is the muscle utilized in the human body when inhaling and exhaling. In contrast, Nye said, "a bird has to use its chest wall (the muscles and the ribs) to pull the air into its lungs and force the air out — similar to how a bellows works."

Proportionately, the surface area of a bird's respiratory system is also much larger than that of humans or other animals. That's because in addition to lungs, birds also have air sacs, and these extend into their abdomen, neck and bones. "The air sacs are designed to keep birds light for flying, and make breathing more efficient during flight," noted Greg Harrison, DVM, an avian veterinarian in Lake Worth, Florida.

When a bird breathes in, Harrison explained, some of the air is sent directly from the lungs to the air sacs. Then, when the bird breathes out, the oxygen-filled air from the air sacs passes through the lungs a second time as it exits. This means that each breath is basically sent through the body twice. A human's breath, on the other hand, only passes through the lungs once.

The end result is that birds take in a larger volume of air (by body weight) into their lungs and air sacs than people do. "The inhaled air stays in the bird's respiratory system longer," noted North Carolina avian veterinarian, Gregory Burkett, DVM. "Therefore when toxins are inhaled, they are in the respiratory system longer, and cause more damage, more quickly."