

# Outdoor air may be dirty, but indoor air can be worse

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Think you can step inside to get a break from dirty air?

Think again.

The air inside your home can be two to five times as polluted as the air outside, according to the U.S. Environmental Protection Agency.

And since people spend as much as 90 percent of their time indoors, the quality of the air can make a big difference in quality of life.

Chemicals leached off painted walls and furniture, fumes from cleaning products, mold and noxious gases seeping in from the outdoors are some of the air contaminants that can find their way into your home.

Pollutants don't disperse and dilute in a sealed home as they would outdoors. Air pollutants that can accumulate indoors have been linked to worsened allergies, asthma, lung cancer and death, in the worst cases.

That's not to say your home is endangering your family. Every house is different, as are the sensitivities of the people living inside.

But taking a moment to consider what you breathe could put you on the path to better health.

"If you're going to be indoors 90 percent of the time, then you should pay attention to what's going on indoors," said Barbara Spark, indoor air program coordinator for EPA's Western region. "Indoor air is a lot more complicated than we first realized."

## Finding contaminants

The EPA first knew that indoor air quality was an issue in the early 1980s, Spark said.

Air sampling at homes around the country revealed that levels of many contaminants were two to five times higher inside houses than outdoors. That was true of homes in both polluted cities and pristine rural areas.

Because people spend so much time indoors, and because there's less space for pollutants to dilute, the risk of inhaling some contaminants can be up to 1,000 times higher indoors than outside, according to a 2005 report from the California Air Resources Board on indoor air quality.

"You think of a house as being a safe haven. But there are things in your house that can hurt you at some concentrations," said Derrick Denis, who is director of the Phoenix chapter of the Indoor Air Quality Association and vice president of indoor environmental quality for environmental consulting firm Clark Seif Clark.

Indoor air can be a mix of contaminants from both man-made and natural sources.

Indoor pollutants in Valley homes can include:

- Mold, which can grow even in dry desert air if there is some type of moisture or leak indoors.
- Household products and cleaners, which can be irritating depending on residents' sensitivity. For example, furniture or cabinetry made from pressed wood can contain formaldehyde, which leaches, or "off-gasses," from the surface of the product over time.
- Radon, a colorless, odorless gas linked to lung cancer that can leak into homes from the soil or rock below.
- Carbon monoxide, a colorless, odorless byproduct of combustion that can be fatal if undetected.

The Occupational Safety and Health Administration has standards for indoor air quality in workplaces. The state Department of Health Services works with EPA to improve indoor air quality in schools. But regulating household air quality is the responsibility of the homeowner.

"We can't regulate or inspect someone's private home," said Don Herrington, bureau chief for epidemiology and former head of the indoor air program at the health services department.

#### **'An investment in health'**

When Pam and David Mulligan bought a new home in Scottsdale three years ago, their first act before moving in was to open all the doors and windows and let the desert air circulate for two weeks.

Since then, they have remodeled the home piece by piece to replace potentially toxic surfaces with ones designed to improve indoor air quality.

They refinished the walls with pastel paint free of volatile organic compounds, the ingredients of ozone pollution. They tore out the synthetic living room carpet and replaced it with a slate floor installed with non-toxic sealant.

They sleep on organic cotton sheets, use natural cleaning products and hire an organic pest-control service to deal with the scorpions native to the hilly area.

The couple chose a health-conscious lifestyle based in part on David's job as chairman of the transplant division at the Mayo Clinic in Phoenix.

As a surgeon, he says, he sees more liver and pancreatic cancer now than at any point in his 12-year career. Though there's no way to conclusively link exposure to environmental chemicals to tumors, he said he wants to limit his family's contact with toxic substances.

"We have to be conscious of what we're exposing ourselves to," he said. "I look at it as an investment in health."

Poor indoor air quality can have a variety of health effects. Asthma, allergies, respiratory problems and heart conditions can be aggravated. Chemicals can irritate eyes and throats. Extreme cases of radon or carbon monoxide contamination can lead to lung cancers and premature death.

Indoor air pollution affects the same people affected by outdoor pollution: children, the elderly and people with existing respiratory problems. Severe cases can trouble even healthy adults.

However, indoor air experts caution against alarmism.

Though there are a variety of threats to indoor air quality, that doesn't mean they are all present in life-threatening quantities in your house. Indoor air just shouldn't be dirtier than the brown cloud outside, Denis said.

"The air in your house should be as good as outside," he said. "If you can't handle what's outside, you should move."

#### What do you think?

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#### Your comments

Carbon monoxide kills hundreds of people every year. I have read lots of literature on the subject and the best way to protect yourself and your family is to buy a carbon monoxide detector. The type you would buy at Home Depot or Lowes is alright but you really need a low level detector so you prevent sickness as well as death. I got one through Insight Air in Phoenix. (**Meaghan9832**, June 2, 2007 10:17PM)

During a remodel last year, in addition to a new heat and a/c system, we took a step that ensures the constant circulation of fresh air throughout the house--air that is filtered and cleaned through good old simple water before it comes into the house. It's old-fashioned evaporative cooling produced by today's technology. We had a MasterCool installed--it's controlled by a thermostat in the hall just like any other hvac system, it goes on and off as needed, changes fan speeds as needed, and empties and flushes itself out after every several hours of operation so you're never dealing with musty air. It can be used during all but the 2 or so months of high humidity around monsoon time, and we FREEZE no matter what the outside temperature. "Swamp coolers" have changed!! Give it a try with the newest technologies like MasterCool and you'll save money, too. It's very inexpensive to operate in comparison with 5 tons of refrigerated a/c grinding away and it's more comfortable and healthier--and I think quieter and less obtrusive. Hope this is a helpful idea for y'all. (**John7452**, June 2, 2007 07:05PM)

My good friends bought an air purification unit in tempe from Y2 air filter. It takes all the contaminants out of the air I think and I think they also have a whole house solution which may work better. My friends rave about how clean their air is. Their kid has asthma but hasn't had an attack since they bought the unit. The company has a website. (**Jason7629**, June 2, 2007 03:43PM)

I didn't know what pressed wood was and thought I'd share these different types of pressed wood. It's from Wikipedia, so may not be accurate.

Pressed wood  
From Wikipedia, the free encyclopedia

Pressed wood is any engineered wood building and furniture construction material made from wood veneers, particles, or wood fibers bonded together with an adhesive under heat and pressure.

See also

- \* Engineered wood
- \* Fiberboard
- \* Glued laminated timber
- \* Hardboard
- \* Masonite
- \* Medium-density fiberboard
- \* Oriented strand board
- \* Particle board
- \* Plywood

(**Jacki5942**, June 2, 2007 11:23AM)

With all these pollutants in your homes, it sure is a good thing we got smoke out of bars and restaurants. Which reminds me, where are all these non-smokers who were supposed to be coming out of the wood work now that we have smoke free air indoors?! haven't seen them. (**Joe (4778)**, June 2, 2007 11:11AM)

We moved here from the Bay Area knowing the indoor air quality is so compromised by the lack of quality outdoor air. The recent Summit on Channel 15 proved that. We utilize negative ionizers called Elanra which have been around for two decades and are amazing for indoor pure air quality. (**ws7786**, June 2, 2007 09:21AM)

Creating ozone is bad? Thats kind of backwards don't you think? Ozone is very good for you. Its O3 (Oxygen with 3 atoms). Read this article: <http://www.borderlands.com/archives/arch/ozone.htm> (**Joe2817**, June 2, 2007 09:07AM)

Air quality is a huge growing issues. Basic small air purification units create ozone which is very bad. Hepa filters can only get particles to 3 microns. There is a new unit now being sold that can filter to .001 microns and is the best ever made. Check out [www.genanoinc.com](http://www.genanoinc.com) (**Robert6997**, June 2, 2007 08:07AM)

The outside is polluted from pollens, vehicle emissions, one of the biggest--Sky Harbor Airport, etc., now the inside of our homes mirror the outside. Are our homes now responsible for the outside air quality? For all the contaminates/gasses in materials used to build houses and ready them for sale, not to mention the dust construction puts in the air, to add to, and cause lung diseases--and the magnitude of new homes and buildings getting built each year--I say stop the building--it's hurting all the way around. Eating up our deserts, killing wildlife, and for what--money hunger builders--let's take a look at them for our air quality, inside and out, and put some responsibility on these rich guys to clean things up. (**Alan7767**, June 2, 2007 07:55AM)

"What families can do to protect themselves" is a valid point made; the article does not mention that there are things we CAN do. What is being described here is a very real disorder that is not being accepted quite yet by the allopathic medical community: Multiple Chemical Sensitivity. What can we do? Start by reading labels on products. If there is a lot of "chemese" that you don't understand, it may be bad for you. New carpet? Hardwood floors are healthier and easier to keep clean. Even linoleum will help keep mold from taking hold. Old school building? Health problems, often related to mold, build up in long-time employees, but your children are being exposed, too.

Do an online search on Chemical Sensitivity. There certainly are things one can do, but it requires being proactive rather than accepting that one is a victim and continue getting worse as the doctor keeps trying to mask symptoms, rather than eliminate causes. (**MaryK9667**, June 2, 2007 07:39AM)

According to the EPA link, homeowners can take three steps to improve indoor air quality:

1. Source control. Don't smoke indoors, seal things that contain pollutants (pressed board furniture, asbestos products), and adjust items such as gas stoves. This is probably the single most important step one can take.

2. Ventilate. Bring fresh air in; use kitchen/bathroom fans to ventilate air out. Be especially mindful when engaging in activities such as painting, wood stripping, etc.

3. Air Filters. The EPA doesn't take any position on whether or not air filters work. If consumers decide to use an air filter, they should be cautious about the type they use because many filters cause more problems than they solve. For example, air filters may redisperse collected gasses and particles, increase ozone levels (lung irritant), or soil walls and surfaces. The cost to run and maintain these air cleaners can be high, and the best cleaners are the most expensive.

(**John2500**, June 2, 2007 06:57AM)

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this is funny, 20 years ago, there were ads  
move to Ariozna for your sinuses...now this  
article is telling us to move, but WHERE...  
This is the last place for TB, ASTHMA< arthritis  
to move too...now those who moved here for  
their arthritis, are now developing lung disease  
because of our bad air..?(**anonymous4389**, June 2, 2007 06:15AM)

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This article fails to give any advice on what families can do to protect themselves. How about a second article about that?(**Renea2493**, June 2, 2007 06:10AM)

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What to do? What air purification systems are most cost effective? Can the typical home be "cleaned" satisfactorily with room-sized HEPA filters?

What about humidifiers too?(**Jim5972**, June 2, 2007 03:24AM)

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