

Common Cleaning Products May Increase Your Risk of Lung Disease

Analysis by [Dr. Joseph Mercola](#)

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STORY AT-A-GLANCE

- › Advertising may promise products are 99.9% effective against bacteria, make your appliances shine or give your laundry a clean, fresh scent; unfortunately, they may be using chemicals linked to dangerous health conditions and unregulated by the FDA
- › Research finds a link between health care workers using chemical cleaners once weekly and an increased risk of progressive chronic obstructive pulmonary diseases such as emphysema and chronic bronchitis
- › Bleach is one of the ingredients with links to lung disease, nervous system disorders, burns and chemically induced pneumonia; mixing bleach with other cleaners may produce deadly gas
- › Natural alternatives include borax, salt, baking soda and vinegar that may be used in varying amounts to whiten your clothes, scour off soap scum and clean your kitchen without fear of side effects from toxic chemicals

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Skillful advertising and colorful containers tempt consumers to purchase cleaning supplies that are filled with toxic chemicals and hazardous materials. Research from the Environmental Working Group (EWG) into more than 2,000 cleaning products¹ reveals the complete lack of oversight by the U.S. Food and Drug Administration (FDA) exposing you and your family to hazardous chemicals.

Manufacturers in the U.S. may use almost any ingredient they want in their products until enough consumer complaints and subsequent research links the product to dangerous health effects. Only then might the FDA add one more chemical to a short list of banned chemicals. However, manufacturers have over 100,000 chemicals from which to choose for their products. Less than 10% have been tested for human safety.

By comparison, the European Commission operates on a precautionary principle aimed at prevention, approving chemicals for consumer products only after they have been proven to be safe.²

Household cleaning supplies are one of several products that may increase your exposure to toxins. In the pursuit of cleanliness and sparkling chrome, you may inadvertently increase exposure to indoor air pollution, inhalation risks and contact absorption. In 2000, cleaning products were at the root of nearly 10% of toxic exposures reported to the U.S. American Association of Poison Control Centers.³

Cleaning products are not required to publish a list of ingredients on the bottle, even if they trigger skin rashes, asthma or are linked to cancer.⁴ Even on company websites, the information about a product line may be vague and incomplete. However, while many ingredients are not disclosed, it is difficult to mask the scent of chlorine bleach, now linked through scientific evidence to an increased risk of developing **chronic obstructive pulmonary disease (COPD)**.⁵

Chronic Lung Diseases Have a Significant Impact on Your Quality of Life

COPD is a medical term covering progressive lung conditions such as emphysema, chronic bronchitis, nonreversible asthma and some forms of bronchiectasis.⁶ Each of these diseases is characterized by an increasing difficulty with breathing, or "catching your breath." Breathlessness and coughing are not normal symptoms of aging, but are rather symptoms of a progressive disease that may ultimately claim your life.

Individuals who suffer from diseases that fall under the umbrella term of COPD may experience frequent wheezing, coughing, chest tightness and increasing breathlessness. Diseases that fall under the umbrella term of COPD touch the lives of nearly 30 million people in the U.S., many of whom are unaware they are affected. According to the COPD Foundation, these conditions may be triggered by smoking, secondhand smoke, fumes and chemicals.⁷

COPD affects nearly 1.2 million people in the U.K., 25,000 of whom die each year.⁸ It affects nearly 1 in 7 Australians over 40 years old and is the fifth most common cause of death in Australia.⁹ The two main diagnoses that fall under COPD are chronic bronchitis and emphysema.¹⁰

Jan Karlbon from Mesa, Arizona, shared with COPD News Today how she lives each day, explaining that simple acts of getting dressed (putting on a T-shirt and jeans) in the morning may take her 30 minutes and leave her physically exhausted.¹¹ She describes it "like somebody put duct tape over your mouth and your nose, and just cut a little hole and you're breathing through a straw."

The study evaluated risks associated with working with cleaning products. Although previous studies have linked exposure to these products with [respiratory conditions](#), Oriane Dumas, Ph.D., from the French National Institute of Health and Medical Research (INSERM) and lead author of the new study, believes:¹²

"The potential adverse effects of exposure to disinfectants on COPD have received much less attention, although two recent studies in European populations showed that working as a cleaner was associated with a higher risk of COPD. To the best of our knowledge, we are the first to report a link between disinfectants and COPD among health care workers, and to investigate specific chemicals that may underlie this association."

Research Links Bleach and Quats With Lung Damage

In this study, researchers followed over 55,000 nurses who initially did not have a diagnosis of COPD, over a period of eight years.¹³ During that time nearly 665 nurses were subsequently diagnosed with COPD. An analysis of the participants led the researchers to conclude the nurses who used disinfectants at least once a week had a 24% to 32% higher risk of developing COPD than those who used disinfectants less frequently.

Even after the researchers controlled for age, weight, smoking and physical activity the link between the frequent use of cleaning products and COPD in nurses remained. Dumas commented on the necessity for further evaluation and careful consideration for the occupational hazards experienced by health care workers, saying:¹⁴

"Our findings provide further evidence of the effects of exposure to disinfectants on respiratory problems, and highlight the urgency of integrating occupational health considerations into guidelines for cleaning and disinfection in health care settings such as hospitals."

Further analysis of the particular products being used, through questionnaire and a matrix that assigned categories based on the type of task the nurse reported, found an association between specific chemicals and an increase in COPD. These chemicals were:

- Bleach
- Hydrogen peroxide
- Alcohol
- Quaternary ammonium compounds, also known as "quats" used for low-level disinfection of floors and furniture

However, while concerning for the many nurses who work in hospitals around the world, these chemicals are also frequently found in products used to clean your house. Dumas commented:¹⁵

"Some of these disinfectants, such as bleach and quats, are frequently used in ordinary households, and the potential impact of domestic use of disinfectants on COPD development is unknown. Earlier studies have found a link between asthma and exposure to cleaning products and disinfectants at home, such as bleach and sprays, so it is important to investigate this further."

Exposure to Vapors Not Limited to Your Choice

Exposure to cleaning chemicals you purchase and unwittingly use at home is concerning enough. However, vapors may also be seeping into your home without your knowledge. This means, despite your best efforts to remove toxins from your home, a toxic cloud may be coming in through the soil beneath your home.¹⁶ The cloud of vapors is called vapor intrusion, as the chemicals are unwanted and uninvited. These problems are being reported across the U.S. in rising numbers.^{17,18,19}

Gas may be trapped in the soil or groundwater around your home, in sewer lines or even just below your foundation.²⁰ This gas is formed after **toxic chemicals** are dumped into the sewer system, escape from storage facilities, accidental spills or as the result of the release of solvents into the environment from nearly 27,000 dry cleaners across the country.²¹

Gas moves in much the same way your vacuum cleaner sucks up dirt particles from your carpet. Suction is created as air moves from areas of high pressure to low pressure, driving gas into your home.

The first type of gas to be detected in homes was radon gas in early 1984.²² While it leaks into your home in much the same way, this gas is natural and not man-made. As with radon, the average person will not detect the odor of toxic gases. Professionals use sophisticated instruments to measure levels and determine safety for families and communities for both man-made and natural gas seepage into your home.

The most notorious of these toxins are benzene, trichloroethylene (TCE)²³ and tetrachloroethylene, also known as perc. **Benzene** has the benefit of being readily

biodegradable by soil bacteria, but perc and TCE degrade to vinyl chloride, a potent carcinogenic chemical that is persistent and mobile in the environment.

The U.S. Environmental Protection Agency (EPA) is not able to estimate the amount of vapor intrusion affecting homes, schools and workplaces, but they believe it is extensive.

There are currently 91 Superfund²⁴ sites where the EPA has determined there are unacceptable health risks associated with vapor intrusion. However, these do not include 4,000 other sites regulated under the Resource Conservation and Recovery Act or the estimated 450,000 contaminated properties²⁵ in the U.S.²⁶

The U.S. General Account Office suggests there are over 200,000 underground storage tanks that are not being appropriately managed. The movement of these toxic vapors has flown under the radar of public attention but now is receiving scrutiny from environmental protection experts and advocates. Unfortunately, while the EPA agrees there is a problem, there is no consensus on how to address the issue.

Testing for gas in soil and water is also challenging. The gases can drift in the soil and migrate even further through sewer lines. Concentration depths change across seasons or even over the course of the several days, necessitating multiple levels of testing to determine if there is an issue in a particular location.²⁷

Mixing Chemicals Creates a Dangerous Effect

Mixing cleaning products in your home may also create a dangerous chemical soup more hazardous than the original cleaner. Some of these chemicals you may have in your home, and they should never be mixed.

For instance, mixing **bleach** with an ammonia-based product produces a toxic chloramine gas, exposure to which may trigger chest pain, wheezing, shortness of breath and pneumonia.²⁸ Ammonia is commonly found in glass and window cleaners or interior and exterior paints, making bleach a poor choice for cleanup after painting.²⁹

Combining bleach with an acid-based cleaner produces chlorine gas, which when combined with water will make hydrochloric and hypochlorous acids.³⁰ Even low levels for a short time will result in irritation to your eyes, nose and throat. Higher-level exposure will result in chest pain, vomiting, breathing difficulty and chemical-induced pneumonia.

Vinegar is a mild acid, and mixing bleach with this common household liquid can result in chemical burns of your eyes and lungs.³¹ Other acid-based products include drain cleaner, toilet bowl cleaner and automatic dishwasher detergents.³²

Bleach will also react with oven cleaners, hydrogen peroxide and some insecticides to produce toxic gas. Mixing bleach with products that contain isopropyl alcohol, such as rubbing alcohol, can produce gasses that have the potential to damage your nervous system, eyes, lungs, kidneys and liver.³³

Ultimately, mixing any two cleaners or drain cleaners together is dangerous as the chemicals combine in a way not intended by the manufacture. The dangers inherent in the use of over-the-counter cleaners is high enough without the additional risks associated with mixing unknown chemicals.

Bleach Is Not Effective on Mold

Bleach has been a common cleaner in many homes as it's cheap and appears to do the job rather well. However, the price you ultimately pay with your health is not worth the few minutes you may save using more natural products.

For instance, although areas touched by bleach appear to come out white (especially when the bleach spills on your clothing!) what is underneath doesn't always change. Bleach is effective only on a nonporous surface, which means it doesn't soak in to areas where mold commonly grows.³⁴

This means that when you use bleach on **mold growth** over caulk around your tub or on wood, you'll notice the mold appears to "disappear" for a short time but then reappears in the exact same spot. Mold spread roots deep into porous surfaces to ensure survival,

but the properties of bleach prevent it from soaking in and killing the mold. Thus, only the surface gets white, but the internal mold remains to grow another day.

Keeping Your Home and Yourself Clean, Naturally

Avoiding toxic chemicals is challenging in a world that has developed hundreds of thousands of chemicals used in cleaning products, industrial manufacturing processes and personal care products to name just a few. The strategies outlined in my previous article, "[Keep a Clean House With Nontoxic Cleaners](#)" can help reduce your toxic load. Consider trying some of these suggestions to clean your home using simple products you may already have in your cabinets.

- **Borax** — This form of [baking soda](#) acts as a whitener and will boost your detergent power. Add between one-fourth cup and 1 cup to your laundry, depending on the size of your load.
- **Vinegar** — A weak acid, this common liquid is a natural cleaning substance that also deodorizes. Consider adding between one-fourth cup and one-half cup to your laundry with your detergent and wash as usual. Don't mix the borax with vinegar in the same load as they neutralize each other. [Vinegar](#) is also a good general all-purpose cleaner for your kitchen and bathroom.
- **Scouring powder** — Make your own safe scouring powder for soap scum in the bath by combining 2 parts baking soda, and 1 part each of borax and salt.

Always read labels on the products you purchase. Even on products labeled "green" you may encounter toxic chemicals you don't want in your home. Avoid anything marked "danger" or "poison" and choose products that have specific ecological claims,³⁵ such as "biodegradable in three to five days," as opposed to just labeled "biodegradable." Consider this recipe for bleach alternative courtesy of Beyond Toxics:³⁶

Bleach Alternative Formula

This recipe makes enough for one load of laundry. Keep lemon juice separate until ready to use. Combine all ingredients into a plastic container, and shake once or twice before adding to the wash.

Ingredients

- 1/2 cup Basic Liquid Formula (see below)
- 1/4 cup borax
- 1/4 cup lemon juice, plus 6 drops lemon essential oils

Basic Liquid Formula

Ingredients

- 2 1/4 cups liquid castile soap
- 1 tablespoon glycerin
- 3/4 cup water
- 10 to 15 drops essential oil of your choice

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