

Household bleach may raise chronic lung disease risk

By Ana Sandoiu | Published Monday 11 September 2017

Chronic obstructive pulmonary disease is a group of conditions that block the lungs' airflow and cause breathing problems. And new research suggests that common cleaning products may significantly raise the risk of these illnesses.

According to the latest estimates, nearly 15.7 million people in the United States have been diagnosed with chronic obstructive pulmonary disease (COPD) and the condition is reported to be the third leading cause of death among U.S. individuals.

Although smoking is probably the greatest risk factor for developing COPD, the Centers for Disease Control and Prevention (CDC) acknowledge that "exposure to air pollutants in the home and workplace" is a key risk factor for COPD.



Most of the products that we use to clean our homes may contain chemicals that are harmful to our lungs.

New research zooms in on common household disinfectants and their link to COPD risk.

Its findings were presented at the European Respiratory Society International Congress 2017 - held in Milan, Italy - by lead study author Orianne Dumas, Ph.D., from the French National Institute of Health and Medical Research in Villejuif, France.

Previous studies looked at the link between respiratory problems and disinfectant use. For instance, one study found that young adults who used household disinfectants were more than twice as likely to develop asthma than those who did not, while another study found that cleaners were at a higher risk of developing COPD.

But the potential negative effects of disinfectants on COPD risk have received insufficient attention, says Dr. Dumas, explaining the contribution of her and her team's study.

"To the best of our knowledge, we are the first to report a link between disinfectants and COPD among healthcare workers, and to investigate specific chemicals that may underlie this association," she says.

Studying cleaning products and COPD

Dr. Dumas and colleagues examined the data available on more than 55,000 nurses enrolled in the Nurses' Health Study II (NHS II), which is one of the largest studies ever conducted on the risk of chronic diseases in women.

NHS II started in 1989 and was carried out by researchers at the Brigham and Women's Hospital and Harvard Medical School, both in Boston, MA.

For this new research, Dr. Dumas and team selected working nurses with no history of COPD at the time of enrollment and followed them for a period of 8 years, from 2009 to 2017.

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Their exposure to disinfectants was assessed using a questionnaire and a matrix that categorized the disinfectants that the participants were exposed to according to their job or task.

The disinfectants examined included glutaraldehyde - which is commonly used to disinfect medical instruments - bleach, hydrogen peroxide, and alcohol.

The researchers also looked at quaternary ammonium compounds, or quats. These substances are widely used to disinfect non-critical surfaces such as floors and furniture and can sometimes be found in fabric softeners.

COPD risk raised by 22 to 32 percent

"In our study population," Dr. Dumas explains, "37 percent of nurses used disinfectants to clean surfaces on a weekly basis and 19 percent used disinfectants to clean medical instruments on a weekly basis."

During the 8-year follow-up period, 663 nurses developed COPD. To calculate the potential associations, the researchers adjusted for possible confounding factors such as smoking, age, body mass index (BMI), and ethnic background.

Dr. Dumas summarizes the findings, saying, "We found that nurses who use disinfectants to clean surfaces on a regular basis - at least once a week - had a 22 percent increased risk of developing COPD."

The risk increased up to 32 percent depending on the chemicals and the frequency with which they were used.

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. [It] is important to investigate this further."

— Orianne Dumas, Ph.D.

She adds, "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 healthcare settings such as hospitals."

Dr. Dumas also cautions that, given that the study is observational, it cannot explain causality. She highlights directions for future research, saying, "These are preliminary findings and more research needs to be carried out."

"In particular, we need to investigate the impact on COPD of lifetime occupational exposure to chemicals and clarify the role of each specific disinfectant. We hope to receive funding from the [CDC] to continue this important work."

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