

Considering the impact of the indoor chemistry cocktail

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A pair of researchers, one with the Chinese Academy of Sciences in China, the other with the University of Toronto in Canada has revisited the topic of indoor chemistry and its impact on human health. In their Perspective piece published in the journal *Science*, Sasho Gligorovski and Jonathan Abbatt suggest that more research should be done to

determine what chemical reactions are occurring in homes and building, because as it stands now, no one really knows.

As the researchers note, there is an awful lot of chemistry going on in homes, offices and other buildings. People use shampoos, conditioners, deodorants and perfumes, and apply lotions. They wear clothes that have been treated with chemicals to make them last longer. They walk on carpets treated with [antifungal agents](#), cook foods filling the air with chemicals, and use various compounds to clean dishes, surfaces, floors and windows. In short, humans introduce a lot of chemicals into their homes and bodies on a regular basis, and little is known about the impact of these chemicals on health. Gligorovski and Abbatt point out that it is also unclear what happens when such chemicals are combined. Are there unknown reactions going on all around us, creating new materials or gases that we are touching or breathing? It appears, they suggest, that the answer is yes.

Recent studies have shown, for example, that some of the chemicals in cigarette smoke react with gas-phase nitrous acid in the home and are absorbed by surfaces such as wood furniture. In another study, researchers found that using chlorine bleach promotes oxidizing conditions throughout indoor spaces as it makes its way into the air. Its gases can oxidize other surfaces and are torn apart by UV light, resulting in the formation of reactive radicals. In addition to studies of household [chemical reactions](#), the authors highlight another study showing that the oxidative ability of the air is affected by a half-hour of human occupancy.

The authors suggest more study is required on indoor chemistry to find out if it might be causing harm.

More information: An indoor chemical cocktail, *Science* 09 Feb 2018: Vol. 359, Issue 6376, pp. 632-633, [DOI: 10.1126/science.aar6837](https://doi.org/10.1126/science.aar6837)

, science.sciencemag.org/content/359/6376/632

Summary

In the past 50 years, many of the contaminants and chemical transformations that occur in outdoor waters, soils, and air have been elucidated. However, the chemistry of the indoor environment in which we live most of the time—up to 90% in some societies—is not nearly as well studied. Recent work has highlighted the wealth of chemical transformations that occur indoors. This chemistry is associated with 3 of the top 10 risk factors for negative health outcomes globally: household air pollution from solid fuels, tobacco smoking, and ambient particulate matter pollution (1). Assessments of human exposure to indoor pollutants must take these reactive processes into consideration.

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