

Scientific Study

Everyday Products Influence Indoor Air Quality

Toshiko Tanaka-Kagawa and fellow researchers in Japan discovered that volatile organic compound emissions from household products significantly influence indoor air quality.

A volatile organic compound (VOC) is any organic compound which evaporates readily to the atmosphere. Long after manufacture, these chemicals and petrochemicals emit vapors.

Some typical products which emit VOC's in the home include adhesives, air fresheners, carpets, cleaning chemicals, cosmetics, gasoline, moth balls, newspaper, paints/varnishes, photocopying, pressed wood furniture, sealing caulks, solvents, upholstery, and vinyl floors/curtains/tablecloths.

Many VOCs are harmful, contributing to smog and certain health problems including asthma, allergies, and multiple chemical sensitivity (MCS). Persons with respiratory problems, young children, and the elderly may be more susceptible to illness from VOC exposure.

Tablecloths and gloves, both of made of polyvinyl chloride, show the highest VOC emission rates. Jigsaw puzzles and play mats added more VOC's to indoor air than other toys and stationary.

Printed materials emit toxic compounds, including toluene, xylenes and ethylbenzene. VOCs such as benzene, toluene, ethylbenzene, and xylene are classified as hazardous air pollutants by the U.S. EPA.

Symptoms of VOC exposure include eye irritation / watering, nose irritation, throat irritation, headaches, nausea/vomiting, dizziness, asthma, and in

more severe cases, liver, kidney, and central nervous system damage.

Tanaka-Kagawa and colleagues state, "Identification and removal/replacement of sources of indoor air pollutants, such as volatile organic compounds (VOCs) and aldehydes, are most effective measures to reduce indoor chemical exposures."



This means using cloth tablecloths, safer toys, and storing printed materials out of the living area. In general, plastics, vinyl, and rubbers should be avoided. New carpeting, new paint, new furniture, chemicals stored in the home, idling automobiles, adhesives, new plastics or electronic devices all emit VOC's and should be minimized.

Other ways to reduce VOCs is to open doors and windows and use fans to increase ventilation, keep temperatures and humidity lower to limit offgassing, use no-VOC sealers to seal offgassing items, purchase an air filter and non-toxic cleaning products, and dispose of old paints or other chemicals stored in the home or garage.

A professional indoor air quality investigator or industrial hygienist can be consulted regarding VOC levels and what may be contributing most if ill health is present.

Reference

Tanaka-Kagawa T, Jinno H, Obama T, Miyagawa M, Yoshikawa J, Komatsu K, Tokunaga H. Evaluation of volatile organic compounds (VOCs) emitted from household products by small chamber test method. *Kokuritsu Iyakuhiin Shokuhin Eisei Kenkyusho Hokoku*. 2007;(125):79-85.