

# PVC flooring in homes give rise to uptake of phthalates in pregnant women

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A new study in the SELMA project at Karlstad University, Sweden, shows that plastic flooring in the home is a source of phthalate uptake in pregnant women. Phthalates are considered dangerous by EU regulators.

PVC [flooring](#) often contains phthalates to make the plastic soft. Such

plasticizers are not firmly bonded to the material, but slowly leak to the environment over the life of the material and can therefore be routinely measured in indoor dust and air. The question then arises whether flooring materials made of softened PVC can give rise to uptake of such chemicals in humans. This has now been investigated in the SELMA study at Karlstad University.

The SELMA study follows about 2,000 mother-child pairs from early pregnancy through childbirth and up to school age for the children. The overall purpose of SELMA is to investigate how exposure to suspected endocrine-disrupting chemicals (e.g., phthalates) during pregnancy can affect children's health and development.

In the current study, the researchers collected information about the home using a survey of the families during early pregnancy. One question was about which flooring materials were found in the bedrooms and kitchen. The pregnant woman's urine was analyzed for the contents of metabolites from five phthalates. The study included 1,764 women and the analyses were adjusted for important background factors.

Analyses show that pregnant women living in PVC-floored homes had higher levels of metabolites from three phthalates (DBP, BBzP and DEHP) when compared to women living in homes with other floor materials such as wood and linoleum. There were also indications for a dose-response relationship, i.e., the more rooms with PVC floors, the higher the levels of these [phthalate](#) metabolites in the urinary pregnant women's urine.

"We know that the three phthalates—DBP, BBzP and DEHP—are used in PVC flooring [materials](#), but also in many other products," said Huan Shu, Ph.D., of public health sciences at Stockholm University, and principal author of the study. However, many older phthalates such as DEHP have today been replaced with other plasticizers in PVC.

Christina Rudén, a professor at Stockholm University says that these chemicals are currently on EU limitation lists and considered dangerous, and therefore will be forbidden. Carl-Gustaf Bornehag, professor at Karlstad University and project leader for the SELMA study, believes that these results show several basic problems with hazardous chemicals in goods and products. Although these chemicals are not used as much today, they're detectable in urine from all [pregnant women](#) in the SELMA study, which indicates that they are actually present. Another complicating factor is that [flooring materials](#) in a home have a lifespan of about 20 to 30 years, which means that exposure is likely for a very long time.

**More information:** Huan Shu et al. PVC Flooring at Home and Uptake of Phthalates in Pregnant Women, *Indoor Air* (2018). [DOI: 10.1111/ina.12508](#)

Provided by Karlstad University

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