

'Something wicked (smelling)' this way comes—the science of fabrics and odors

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Tobi Richter and Professor Raechel Laing. Credit Sharron Bennett

Researchers from New Zealand's University of Otago have used advanced technology to find out why three common fibre types differ in how they take in and release body odor.

Using Proton transfer reaction-mass spectrometry (PTR-MS), the researchers studied cotton, polyester and wool and found that cotton adsorbed and released the least amount of [volatile organic compounds](#) (VOCs), whilst polyester was the worst offender in terms of odour binding and emission.

Adsorption is the process of molecules of gas, liquid, or dissolved solids sticking to a surface.

Professor Raechel Laing (Centre for Materials Science and Technology) and her co-authors from the Department of Food Science say three different patterns were observed: low relative [adsorption](#) and low overall release of the volatiles for cotton, high relative adsorption and continuous release of the volatiles for polyester, and high relative adsorption but low overall release for wool.

The different effects of VOCs on different materials could be explained by the action of [intermolecular forces](#) based on the chemical structure of the fibres, according to the research team.

Further investigations into the effects of antimicrobial treatments applied to fabrics and the VOC production from bacterial breakdown at the skin surface along with the adsorption and release capabilities of other common fibres such as viscose, and possibly silk, will help to increase product performance irrespective of a product country of origin, she says.

The findings appear in the US-published *Textile Research Journal*.

More information: Tobias M Richter et al, Textile binding and release of body odor compounds measured by proton transfer reaction – mass spectrometry, *Textile Research Journal* (2017). [DOI: 10.1177/0040517517725126](#)

Provided by University of Otago

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