Chromium(VI) release from leather and metals can be detected with a diphenylcarbazide spot test - DTU Orbit (22/12/2018)

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Along with chromium, nickel and cobalt are the clinically most important metal allergens. However, unlike for nickel and cobalt, there is no validated colorimetric spot test that detects chromium. Such a test could help both clinicians and their patients with chromium dermatitis to identify culprit exposures. To evaluate the use of diphenylcarbazide (DPC) as a spot test reagent for the identification of chromium(VI) release. A colorimetric chromium(VI) spot test based on DPC was prepared and used on different items from small market surveys. The DPC spot test was able to identify chromium(VI) release at 0.5ppm without interference from other pure metals, alloys, or leather. A market survey using the test showed no chromium(VI) release from work tools (0/100). However, chromium(VI) release from metal screws (7/60), one earring (1/50), leather shoes (4/100) and leather gloves (6/11) was observed. We found no false-positive test reactions. Confirmatory testing was performed with X-ray fluorescence (XRF) and spectrophotometrically on extraction fluids. The use of DPC as a colorimetric spot test reagent appears to be a good and valid test method for detecting the release of chromium(VI) ions from leather and metal articles. The spot test has the potential to become a valuable screening tool.

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