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Topic of the Speech:

Assessment of Electrostatic Potential Resulting from Friction between Fabric Samples made of Natural Fibers and Fabric Samples made of Synthetic Fibers

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Professor Uwe Reischl is a Professor in the Department of Community and Environmental Health at Boise State University, USA. Dr. Reischl is a public health physician with research interests in occupational health, ergonomics and human factors. He received his undergraduate and graduate training at the University of California at Berkeley obtaining the Ph.D. degree in Environmental Health Sciences from the School of Public Health. He received his medical training at the University of Ulm in Germany where he obtained the M.D/Ph.D. degrees in clinical medicine.

Professor Reischl's current international research collaborations include projects with the University of Zagreb in Croatia, Hong Kong University of Science and Technology, and Soochow University in China. His research publications have focused on the physiological consequences of protective clothing, heat-stress, sweat evaporation characteristics from fabrics, and UV and IR radiation penetration through clothing ensembles. Additional areas include disaster preparedness planning research, asynchronous telemedicine applications in medicine and physiological monitoring of workers

ABSTRACT SUBMISSION
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Assessment of Electrostatic Potential Resulting from Friction between Fabric Samples made of Natural Fibers and Fabric Samples made of Synthetic Fibers

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ABSTRACT (NO MORE THAN 500 WORDS:)

Synthetic fibers are known to be a major source of electrostatic potential occurring on clothing. The electrical properties of synthetic and natural fibers are determined by their chemical composition and polymer structure. Environmental factors such as humidity, temperature, and friction can influence these properties. Due to the insulative characteristics of fabrics, fibers are able to keep their charge for relatively long periods. This can lead clothing to cling to each other, attract dust, and create discharge shocks. To reduce these issues, suggestions have been proposed to mix garment layers made of natural fibers with garment layers made of synthetic fibers. To test this concept, the electrostatic potential produced by combinations of fabric samples made of synthetic fibers and fabric samples made of natural fibers were assessed.

Sixteen permutations of four fabric types were tested under controlled laboratory conditions. The fabric samples included panels made of 100% Polyester, 100% Nylon, 100% wool and 100% cotton. All combinations were evaluated using the same friction protocol (triboelectric effect).

The results showed that wool and cotton both exhibited the lowest electrostatic potential while the polyester sample created the highest potential, even when paired with fabric samples of cotton and wool. This suggests that layering synthetic fabrics with fabrics made of natural fibers will not reduce the electrostatic potential created by the friction of synthetic fibers.