

Starched fabric as protective cover for pesticide applications

■ RAJDEEP KAUR AND SANDEEP BAINS

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■ **ABSTRACT :** The garments worn by the pesticide applicators may not provide adequate protection to the skin, when contaminated with a sprayed liquid, unless the surface of the fabric has been treated in some way to reduce the penetration to an acceptable level. So, a study was conducted in which the cotton/ polyester blended samples were given barrier treatment with 10 per cent, 20 per cent and 30 per cent starch solution and pesticide was sprayed on all these samples. These pesticide contaminated cotton/ polyester blended samples were given different laundering treatments *i.e.* 5 per cent salt at 50°C, 5 per cent salt at 80°C, 2 per cent heavy duty detergent at 50°C, 2 per cent heavy duty detergent at 80°C. While comparing the transmittance, it was observed that the starched samples given barrier treatment with 20 per cent starch solution had more per cent transmittance value than the samples treated with 10 per cent and 30 per cent starch solution thus reducing penetration of pesticide to some level. Further, it was observed that washing cotton/ polyester blended fabric with 2 per cent heavy duty detergent solution at 80°C was the best condition from all the starched samples. Overall, cotton/ polyester blended fabric given barrier treatment with 20 per cent starch solution and laundered with 2 per cent heavy duty detergent solution at 80°C can be recommended for the pesticide applicators as it reduced the contamination.

■ **KEY WORDS :** Cotton / polyester blended, Fenvalerate, Spectrophotometer, Starch, Transmittance

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See end of the paper for authors' affiliations

Correspondence to :

RAJDEEP KAUR

Department of Clothing and
Textiles, Punjab Agricultural
University, LUDHIANA

(PUNJAB) INDIA

Email: msrajdeepct@pau.edu

Human pesticide poisoning has become major public health issue these days. Throughout the world highest levels of pesticide exposure are found in the farm workers, applicators and people living adjacent to heavily treated agricultural land. Pesticides are linked to various chronic diseases like cancers, infertility, kidney failure, reproductive problems and nervous disorders. Early symptoms of acute poisoning include weakness, nausea, vomiting, excessive sweating, salivation, headache, skin rashes, ocular problems and difficulty in walking (Mehler *et al.*, 1992). Later symptoms of severe poisoning may include unconsciousness, pulmonary edema, respiratory failure and death. Even a single episode of organophosphate intoxication has been associated with a persistent decline in neuropsychological functioning (Rosenstock *et al.*, 1991). However, firm conclusions on neuropsychological effects of chronic exposure to pesticides are difficult to draw since information is scarce, particularly in developing countries (London *et al.*, 1998). Both acute and

chronic effects are of great concern. However, chronic effects, including neurological and reproductive effects and cancer are more difficult to ascertain, although some studies have found associations between pesticide exposure and these chronic effects (Blair *et al.*, 1993).

To combat with such situations, the present study had been carried out to safeguard the pesticide applicators from the harmful effects of pesticides by giving barrier treatment to the fabrics to reduce the penetration of pesticides into the fabric.

Objectives:

- To study the barrier performance of starch as protective finish on cotton/ polyester blended fabric through the pesticide residue analysis.
- To compare the amount of barrier treatment for the protection of pesticide applicators.