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Evaluation of Materials

Proposed for Use in Space Flight

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Final Report

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Final Report

Testing of Flame Proof Paper

Purpose of the Study: To evaluate the primary irritancy and allergenicity of a flame proof paper proposed for use in space flight.

Methods: The study consisted of two phases of evaluation:

1. Animal studies
2. Patch tests on human volunteers

Phase I - Animal Study

To evaluate the primary irritancy and/or allergenic potential for the skin, standard patch tests were carried out on three adult guinea pigs. Each animal had two 2" square patches applied to the back after shaving. The patches were thoroughly soaked in tap water and additionally a small cotton pledget wet with tap water was placed over one patch on each animal to maintain wetness. The patches were secured in place with a non-porous plastic surgical tape (Blenderm), and remained in place for a period of one week and then removed. There was no evidence of irritation at this time. Following a two week rest period, the animals were again shaved and patches were reapplied in a similar fashion. These were again worn for a period of one week and then removed. There was no evidence of irritation or allergic contact dermatitis at the sites of the patches.

Phase II - Patch Testing on Human Volunteers

The paper was cut into 2" squares to be used for the patch testing. Two hundred adult male volunteers were patch tested to the material. Patches were applied to the inner aspect of the arm under nonporous plastic surgical tape (Blenderm). Eighty-seven of the two hundred volunteers wore patches which had been wet with tap water prior to application.

Patches were worn initially for a 48-hour period. Upon removal there was no evidence of a primary irritant reaction to the paper. Two weeks later identical patches of the material were applied for another 48-hour period. As before, there was no evidence of primary irritant reaction to the paper and there was no evidence of an allergic contact dermatitis to the paper.

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As a further test for development of allergic contact dermatitis, the maximization test as described by Kligman (The identification of Contact Allergens by Human Assay, J. Invest. Derm., 47:393, 1966) was carried out in an additional ten volunteers. In none of the ten men was there any evidence for the development of an allergic contact dermatitis due to the paper.

Conclusion: The flame proof paper provided by NASA does not appear to have either primary irritant qualities nor the potential for developing an allergic contact dermatitis in humans under the conditions of the experiment.