

Short Communication

An epidemic of isothiazolinone sensitization in a flax spinning mill

PAT PODMORE

Department of Dermatology, Anderson House, Altnagelvin Area Hospital, Londonderry BT48 8JW,
Northern Ireland, UK

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Flax spinners working with frames continually have to reach up and down to repair breakages in the thread and, as a result, their forearms are alternately wet and dry. This leads to a high incidence of a characteristic irritant contact dermatitis, which manifests as a patchy red eruption on the forearms. The hands, which are constantly wet, tend to be spared. Protective clothing is virtually impracticable: gloves, due to the dexterity required to knot the thread; sleeves, because water tends to leak in at the wrist.

Case Reports

Between April and May 1995, 20 out of a work force of 100 spinners developed a “new rash”, consisting of blistering of the fingers of both hands. 6 of these 20 also had the typically patchy forearm rash, normally seen in about 6–8% of the spinners each year. All 20 were tested to standard and cosmetics series. 7 showed positive reactions to Kathon® CG.

Discussion

The increased number affected and the change in clinical pattern suggested a new allergen. Following the patch test results, it came to light that the factory had been trying to replace formaldehyde with a new biocide, Acticide® SPX, a 1.5% mixture of 5-chloro-2-methyl-1-4-isothiazolinone-3-one and 2-methyl-4-isothiazolin-3-one. This is used at a concentration of 0.05% to 0.15% in aqueous solution to provide microbiological protection to paints, adhesives, cellulose solutions, polymer emulsions, fillers, pottery glazes, inks, metalworking fluids, etc.

Acticide SPX was introduced in January 1995, the first cases being seen 2 months later. Not all the 100 spinners had been exposed to the new biocide; the extent of exposure was difficult to determine as it was being tried out in only some of the frames. The true incidence of dermatitis was probably higher than 20%.

Chlorination of isothiazolinones makes them potent sensitizers (1, 2). A similar epidemic was reported by

Kawai et al. (3) in a textile finishing factory, from a new isothiazolinone, 4,5-dichloro-2-n-octyl-4-isothiazolin-3-one. This biocide, like other isothiazolinones, does not cross-react (1, 4). These biocides have both cosmetic and industrial uses and have at least 30 different trade names (5, 6). There have been some reports of airborne distribution due to isothiazolinone use in paints (4, 7). The reported frequency of sensitization varies from 0.4% to 8.4% (8), with the European frequency believed to be about 3%. Despite sensitization persisting even after total avoidance of exposure, patients may tolerate wash-off preparations (10). Safe concentrations are thought to be: leave-on preparations 7.5 ppm; wash-off 15 ppm (11). Our patients were being exposed to trial concentrations between 7.5 ppm and 22.5 ppm.

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