

CONTACT POINTS

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Occupational allergic contact dermatitis caused by aerosols of acrylate monomers

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UV-curable water-based acrylate lacquers have in recent years increasingly substituted solvent-based lacquers for wood surface coating. Several cases of occupational dermatitis from acrylic ink and lacquers have been described (1–6). Aerosols of monomers, still floating in the working area after spraying device has been turned off, introduce a special risk often unnoticed by the workers.

Materials and Methods

In 2005, a furniture factory changed from acid-cured solvent-based lacquer to water-based, UV-cured acrylate lacquer. To accelerate confluence, drying, and hardening, highly reactive acrylate monomers were added. The spraying plant was reused unchanged, but the new lacquer caused repetitive clotting of the nozzles. Several times on every shift, the paint supply was turned off, and the workers went into the cabin to clean the nozzles, the air of the cabin still floating with micro-aerosols. No other protective clothing than gloves were used during the cleaning procedure.

1–4 months after the acrylate lacquer was introduced, all 9 employees in the painting department who had all been cleaning the nozzles, developed an itching dermatitis with eryth-

ematic scaling. In 8 cases, eczema involved the forearm, mostly the volar side. In 2 cases, there was eczema on the neck. In 4 cases, the face was also slightly affected. In 1 case, eczema was localized only to the ankles. No cases of hand eczema occurred. None of the 9 workers developed respiratory symptoms. Despite annoying dermatitis, all employees had continued their work without sick leave. There were no complaints of dermatitis among workers or leaders occasionally passing through the department.

The safety data sheet specified a content of phenylbis (2,4,6-trimethyl-benzoyl)-phosphineoxide, pentaerythritoltriacyrylate (PETA-3) and pentaerythritoltetraacyrylate (PETA-4), all known as contact allergens. Only PETA-3 was commercially available for patch test. Patch test with European Standard and PETA-3 (Chemotechnique Diagnostics, Malmö, Sweden) were performed on the 9 subjects. Patches were removed and read after 3 days, with a second and final reading on day 7.

Results

All 9 tested individuals had positive skin reaction (++) to PETA-3. 2 subjects had positive patch reactions to nickel and 1 had positive patch reaction to tixocortol-pivalate. They previously had slight eruptions of dermatitis when exposed to jewellery and perfume. None of the other 6 persons had any history of dermatitis and did not react to the European Standard series.

Discussion

Sporadic and short time contact few times a day to aerosols with added highly reactive acrylate monomers seems to cause accelerated sensitization, resulting in contact dermatitis within a few months. Airborne allergic contact dermatitis from contact with vaporized monomer has earlier been reported but not arising as fast as in our cases (1, 2).

After alerting the company's safety organization to the hazards, PETA-3

and PETA-4 acrylates were substituted by less sensitizing monomers and in low concentration. The employees were instructed always to wear a full protective clothing and mask during work in the spraying cabin. The cleaning procedures were changed, and the use of pressurized air for cleaning was abandoned. During the first half-year after these improvements, no new cases of dermatitis occurred. Symptomatic treatment with topic steroids received by some of the employees could be abandoned, and the sensitized employees experienced only sporadic slight episodes of dermatitis.

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