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REPORT

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Practical test on MDI-exposure using the product "Soudafoam Gun"

Test item

A tin spray can (750 ml) supplied by the client and commercially labelled *Soudal "Soudafoam Gun"*. According to the bottom of the can the batch no was 775474 and the expiry date was 09/09/2009. The product is a one-component polyurethane mounting-sealing foam. A supplied foam gun was used for the test.

Objective

Our task was to determine if any isocyanates could be detected during practical use of the product.

Performance

The test was performed in a laboratory hall of approx 10 x 15 m and 6 m to the ceiling. The room was mechanically ventilated.

A test rig made of wooden boards was used. The construction had five gaps; 2 cm wide and 10 cm deep and at a total length of 10 m. The total gap volume was thus 20 dm^3. The back of the rig was closed by a wooden board. Just before the test, the gaps were sprayed with water, according to the clients instructions.

A test can was shaken for half a minute and the gaps was filled by means of the supplied foam gun to somewhat more than half full, one by one until the can was almost empty. Weighing of the foam can before and after use gave a net content of 584 g used in the gaps.

During the use of the product, the exposure for isocyanates were measured close to the operator by the "DBA-method". The sampling point was situated approx 1 m away from the test rigg at 1.6 m above the floor. The sampling method uses dibutylamine solved in toluene as a reagent for isocyanates. The sampled air was drawn at a flow rate of 1.0 L/min through impingers containing the DBA solution. The sampling was continued to a total period of 20 min. (See photo 1 for sampling set up). Prior to test, a sample was also taken from the air, at the same position in order to confirm that no background levels of isocyanates were present.

Analysis of the samples were made by "Institute for Chemical Analysis Nordic AB", using a HPLC-MS method, developed for isocyanates.

Photo 1. Air sampling in impinger at left in front of test rigg with expanding foam.

Results

No airborne isocyanates could be detected during the 20 min sampling period, covering the work operation and some time thereafter. For the isocyanate "MDI" (*4.4'-metylenediphenyl-diisocyanate)* this corresponds to an air concentration of less than 0.0003 mg/m^3; or 0.3 µg/m^3.

Comments

The detection limit for MDI (and other isocyanates) were very low and giving measurable air concentrations well below the actual Swedish threshold limit value for MDI in workplaces of 0.03 mg/m^3 (=30 µg/m^3), as a time weighted average for a full working day. Thus, having a detection limit at a level of 1 % of the Swedish workplace limit value, any risk for unhealthy airborne isocyanate exposure could not be detected during the test.

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