

Safety and Health in the Workplace – Verification of Flour Dust

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Flour dust is well known as an allergen causing occupational asthma. The so called “baker asthma” is a recognized occupational disease (BK 4301) in Germany. Unfortunately, it is not common to measure the flour dust concentration at relevant workplaces because a special threshold value is missing. However, a threshold for total dust does exist and total dust concentrations are controlled by measurements. So it is difficult to distinguish flour dust pollution from total dust measurements at selected workplaces nearby production sites like offices, storage rooms, etc.

To get these relevant informations, samples of total dust measurements from ordered filter systems were analyzed by a combination of electron microscopy, thermal analysis and a chemical colour change.

Flour dust is totally oxidized in the thermo balance at ~450 °C under synthetic air atmosphere. The total dust samples were inspected in a scanning electron microscope (SEM) prior and after thermal analysis runs. Other than the angular particles of the residual total dust particles, the rounded flour particles could not be longer observed. The missing blue/violet colour change by the chemical reaction with Lugol solution (iodine-potassium iodide) confirmed the SEM results [1].

The analytical results confirmed the flour dust pollution in the office and storage rooms of a bakery. A risk exposure against flour dust is not only given in the production area of a bakery, but in all other rooms too. An office worker of a bakery is not protected due to his job title from occupational asthma caused by flour dust.

[1] R. Arhelger, B. Brückel, M. Roth, D. Walter, *Gefahrstoffe – Reinhaltung der Luft*, submitted