



The Safe Use of Enzymes in the Bakery Supply Chain

Enzymes are able to cause respiratory sensitization, and sensitization may cause respiratory allergy in individuals exposed repeatedly to sufficiently high airborne concentrations of enzyme dust or aerosols. There is no scientific evidence that enzymes are skin sensitizers by skin contact or cause sensitization by ingestion.

Respiratory allergy caused by enzymes is similar to the respiratory allergy caused by well-known allergens like grass pollen, house dust mites or cat dander, and the symptoms from an enzyme allergy are also similar to the symptoms known from allergies towards grass pollen, house dust mites, cat dander etc.

Amfep (The association of Manufacturers and Formulators of Enzyme Products) as well as Fedima (The European federation of manufactures and suppliers of ingredients to the bakery, confectionery and patisserie industries) have been aware of this safety risk for workers in bakeries, flour mills and bakery ingredients providers. Both Amfep and Fedima are providing safety stewardship to companies using enzyme products. Experience for more than 40 years in the detergent industry has proven that enzymes can be safely used in working places.

In bakeries not only enzymes are used, but also wheat flour and other additives. Also these substances can induce respiratory symptoms.

Respiratory symptoms resulting from exposure to enzymes and by extension to other bakery ingredients can be controlled by proper process control, product formulation, and adequate handling instructions to avoiding dust or aerosols.

Reducing exposures to total dust in the bakeries, flour mills and bakery ingredients providers will definitely reduce the likelihood of work related respiratory symptoms. It is of key importance to prevent enzyme handling activities which are creating aerosols. A qualitative exposure assessment should be conducted as part of the risk assessment.

Amfep and Fedima are welcoming initiatives like the Dutch "Arbocovenant" (sector agreement on working conditions) and "A Baker's Dozen" from the Federation of Bakers in the United Kingdom. These initiatives have led in The Netherlands to the publication of the "Handbook on Dust Control",



illustrated with dust control plans and videos for the 3 sub-sectors. We refer to the website <http://www.blijmetstofvrij.nl/handboek-stofbeheersing> for further information. The guidance “A Bakers Dozen” can be found at: <http://www.bakersfederation.org.uk/>

Very detailed guidelines for control of enzyme exposure in production facilities can also be found in the “Guidelines for the safe handling of enzymes in detergent manufacturing” published by the international Association for Soaps, Detergents and Maintenance Products (AISE, 2013).

This guideline was developed for the detergent industry, but the principles stated are generally applicable and should be used by all industries.

Enzyme suppliers can advise or provide more detailed information and support related to the specific enzyme preparation and the handling situation, especially when it comes to conducting a qualitative and/or quantitative exposure assessment.

On behalf of AFES, the Amfep/ Fedima Enzyme Safety working group

August 2015
