

Formation of volatile compounds in cooking oil fume

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Abstract

When frying or deep-frying in commercial kitchens or preparing doughnuts in bakeries, different fats or oils are used to make the foodstuff edible and tasty. During these operations many volatile compounds and aerosols can be released into the surrounding air and can affect the health of the employees. Sometimes the respiratory tract is damaged in such a way, that workers have to give up their profession.

As an Accident Prevention and Insurance Association of the food-processing industry and the catering trade we are obliged to prevent such diseases and to keep our insureds healthy.

Therefore we must find out, what kind of volatile compounds will reach the breathing zone of the workers and what is about the concentration of these hazardous substances. Then we can develop solutions, how to make the air cleaner. That is either to minimize the formation of the toxicologically relevant compounds or to improve the ventilation system at those workplaces.

A lot of workplace measurements in kitchens and in bakeries were conducted with various equipment and ventilation systems. In that paper several results from measurements in kitchen are presented as also a series of tests with a doughnut fryer.

It can be shown that acrolein and aerosols are the key components when characterising such workplaces. Other experimental features like quality of the fat used or the amount of polar compounds and their influence on the concentration of acrolein and aerosols are going to be examined.