ing does not exist. Therefore, food producers sometimes label their products precautionary even if the contamination chance is negligible, leading to limitation of consumer choice and devaluation of the allergen labeling information. On the other hand, many unlabeled products fill the shelves that appear to contain allergens and indeed may pose a risk to the allergic consumer.

Probabilistic modeling using adequate consumption, concentration and threshold distribution data can be used to estimate the chance on allergic reactions within the (allergic) population itemized to the severity of the reaction. Recently, we computerized this time-consuming approach: the required input data and the probabilistic calculation procedure were programmed within SAS. Now we can easily and rapidly calculate the magnitude of the health problem of different concentrations of major food allergens in many food products.

The tool is already used in actual practice and, moreover, can be applied to establish concentration limits for (may contain) labeling purposes.

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R47
Toxicological assessment of complex chemical mixtures using the Threshold of Toxicological Concern concept

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Toxicological food safety assessment is currently performed by a sequential approach. This sequential approach often leads to unnecessary detailed research. For example, in analytical and toxicological studies, much effort may be put in the identification, quantification and in the toxicological characterization of certain constituents, while the exposure to these constituents may turn out to be too low to be relevant. On the other hand, for complex chemical mixtures or matrices it is unrealistic to identify and quantify the complete forest of peaks and perform a safety assessment for all peaks observed.

This situation asks for the development of novel approaches with increased efficiency for the assessment and underpinning of the safety of food products. By making better use of existing information and applying exposure driven safety assessment strategies (e.g. by using the Threshold of Toxicological Concern principle), time, animals, and resources may be saved. Moreover, in case we would be able to identify high-risk components in complex food products we would be able to fine tune the required level of detail of research for each individual discipline.

Currently, we are developing new analytical tools which are capable to exclude or determine the presence of high risk components (e.g. substances with structural alerts for genotoxicity) in complex matrices using mass spectrometric analyses following selective functional group derivatisation. Using these tools we aim to be able to assign specific functional groups in complex mixtures present at toxicological relevant concentrations, rather than performing time consuming peak-by-peak identification and quantification.

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R48
Correlation between frequency of micronuclei and status of folate and vitamin B_{12} in operating theatre staff

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Genotoxic effects of inhalation anaesthetics have already been described. Of special concern is the exposure of medical staff in operating theatre, which is chronically exposed to low doses of different anaesthetics. In this study a group of medical workers of different professions, exposed to anaesthetics, mostly sevoflurane, isoflurane and nitrous oxide, and matched, non-exposed control group was investigated for the frequency of micronuclei (MN). The aim of this study was to investigate whether a status of folic acid (FA) and vitamin B_{12}, as known factors of genome stability, influence a level of genome damage in studied groups. Frequency of MN elevated significantly ($p < 0.05$) in exposed group when compared to control (14.29 *vs.* 8.77). B_{12} concentrations were higher in control group (577.83 μg/L *vs.* 463.53 μg/L). Control group also had two times higher values of FA (10.15 μg/L *vs.* 5.89 μg/L). Age, duration of exposure or smoking did not show significant influence to MN frequency in the exposed group. Further investigations will include a larger group of both exposed and control subjects to ensure more reliable results.

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R49
Risk assessment and occupational exposure limits

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Exposure in the work-place may be a major contributor to the potential negative health effects from chemicals and public interest calls for regulatory action to minimise these negative health effects. Occupational exposure limits (OELs) are one regulatory instrument available. OELs mirror the risk assessment and risk management performed by the standard setting actors. However, risk assessment involves the evaluation and interpretation of primary data, and the outcome has been shown to differ for chemicals with similar health effects depending on agency. For instance in a previous study of more than 1300 OELs set by 18 different agencies we found that the accepted level of chemicals in the air varies significantly between actors. For several substances the OELs vary by a factor of 100 or more. The current work aims at identifying scientific or, if explicitly stated, policy motivated explanations by scrutinising the documentation for 14 individual substances. Criteria documents have been collected from 8 different organisations, although not for each substance. As expected, time for the risk assessment is an important factor as new information becomes available on the health effects of chemicals. The high level of the US OSHA exposure limits is also related to time of data review, an inert and complicated system has resulted in very few new exposure limits being set since the 1970s. Another finding is that whether the point of departure for an OEL has been a NOAEL or a LOAEL does not result in as large differences in implicit safety factors as expected.

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