

Advice 02-2021 of the Scientific Committee established at the FASFC on the evaluation of the FASFC analysis programme for exogenous contaminants: D. Various contaminants, irradiation and radioactivity

Background & Terms of reference

Within the framework of a periodic evaluation of the analysis programme of the Federal Agency for the Safety of the Food Chain (FASFC), the Scientific Committee has been asked to discuss the programming of the analyses with regard to exogenous contaminants in food, in water intended for consumption and water used by operators in the transformation and treatment process of food, in animal feed, and in fertilisers, soil improvers and cultivation substrates. In particular, it is requested (i) to verify whether control results reported between 2010 and 2018 point to possible trends, and (ii) to assess the implementation of the approach generally applied within the FASFC for the programming of analyses (i.e. the control efforts in terms of, inter alia, the chosen "matrix/hazard" combinations and the number of analyses programmed for these combinations) and to identify possible gaps within the analysis programme 2020.

'Exogenous contaminants' include a large group of parameters including amongst others (heavy) metals and metalloids, persistent organic pollutants, migrating substances from materials and articles in contact with food and also radiation and radioactivity. This opinion only covers programmed analyses and control results of benzene, (fraudulently added) melamine, ammonium, trihalomethanes and 1,2-dichloroethane, nitrate as well as irradiation and radioactivity.

Method

The programming of the analyses is evaluated on the basis of expert opinion in combination with information from scientific literature and an evaluation of possible trends in the FASFC control results. Possible trends are discussed by means of a trend analysis via logistic regression. The period under consideration concerns 2010-2018, but is -depending on the available data- shorter for a number of 'matrix/hazard' combinations. However, the trend analysis should be considered as a pragmatic tool for the evaluation of the analysis programme and the results of the trend analysis presented in the annex to the opinion, should be interpreted with caution.

Conclusions & Recommendations

Between 2010 and 2018 benzene was analysed in both food and water, but the FASFC analysis programme 2020 only contains analyses of benzene in water. Benzene was found in about one fifth of the analysed foodstuffs. The highest reporting frequency is observed for coffee (ground coffee, coffee beans and soluble coffee), followed by products and preparations from fisheries or aquaculture. Based on a trend analysis, an increase in benzene levels in coffee is observed, but a decrease in fish. Although the intake of benzene seems of little concern on the basis of literature data, it is recommended that these analyses, in particular of coffee, of products and preparations of fisheries or aquaculture, but also of flavourings, should be programmed with a certain frequency, for example every two year but not necessarily annually, given the harmful health effect of benzene.

Within the FASFC control programme, benzene was rarely found in water intended for consumption and water used by operators in food processing and processing (only in 1 to 2% of samples). Similar to food, it can be considered not to program these analyses yearly, but rather thematically or every two years.

Due to a too low reporting frequency for melamine in food and feed (< 1%), a trend analysis was found to be of little relevance. These analyses relate to the presence of melamine as a result of its fraudulent addition to make the nitrogen content, and thus the protein content derived from it, appear artificially higher (in other words, not due to migration of melamine from food contact materials) which is structurally very difficult to control. Moreover, there are currently no specific indications that such fraud is still taking place. The Scientific Committee therefore agrees with the fact that these analyses are not programmed on an annual basis. Similarly, it can also be considered not to programme these analyses every year for animal feed. A certain follow-up, for example every two years and, of course, in case of suspicion of fraud, with in the case of food specific attention for foods intended for infants and toddlers, remains appropriate.

The analyses of ammonium, trihalomethanes and 1,2-dichloroethane (ethylene dichloride) concern only water intended for consumption and water used by operators in the processing and preparation of food. No relevant trends are observed in the reported results of ammonium and 1,2-dichloroethane, but the trihalomethane content in both water intended for consumption and water used by operators shows an increase, and more specifically in table and in spring water and in well water respectively.

Based on the available information, the analysis of ammonium and 1,2-dichloroethane in water seems less pertinent, while analyses of trihalomethanes should be retained in order to monitor the content of by-products formed in case of water chlorination.

In the FASFC analysis programme nitrate is monitored in food and water. Based on the results reported between 2010 and 2018, an increase in nitrate levels is observed in spinach, particularly in frozen spinach, as well as in spring water.

Further monitoring of nitrate in green leafy vegetables (spinach and lettuce) and in foods intended for infants and young children, as well as in all waters from sources other than tap water, is recommended.

Food irradiation involves the exposure of food to ionising radiation (e.g. gamma rays or electrons) for a certain period of time in order to achieve a predetermined dose. Nothing of this radiation remains in the food and irradiated foods are not radioactive. Irradiation does therefore not belong to the "exogenous contaminants" and should be classified differently (e.g. under "quality and additives" or a new classification).

The control of food irradiation aims at verifying the enforcement of the current legislation on correct labelling of irradiated foods and the respect of the positive list of foods for which irradiation is authorized. Control results related to food irradiation are reported according to the 'compliant' or 'non-compliant' status assigned to the sample. Only 2.3% of the samples checked between 2010 and 2018 were found to be non-compliant. No trend analysis has been carried out.

The Scientific Committee has no remarks on these programmed analyses.

The analyses of radioactivity mainly concern the controls of ¹³⁴Cs and ¹³⁷Cs in food imposed by legislation. All food and feed analyses carried out in the period 2010-2018 yielded a compliant result. These analyses are currently under review. The Committee notes that sampling should focus on risk matrices originating from high-risk areas (e.g. fish from the Baltic Sea, game from Eastern European countries).

The full text is available on this website in dutch and in french.