

Advice 21-2020 of the Scientific Committee established at the FASFC on evaluation of the FASFC analysis programme for exogenous contaminants: A. (Heavy) Metals & Metalloids

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.

'Exogenous contaminants' includes a large group of parameters including (heavy) metals and metalloids, environmental contaminants (persistent organic pollutants), migrating components from materials and articles in contact with food as well as radiation and radioactivity. This opinion only covers control results and programmed analyses of (heavy) metals and metalloids in food, water, feed, fertilisers, soil conditioners and cultivation substrates, with the exception of heavy metals present as trace element or nutrient in food or feed. The analysis of the release of metals from metallic and ceramic Food contact materials and articles (FCM [#]) is addressed in a separate opinion on FCM migrating components.

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.

Conclusions & Recommendations

In the opinion, the different trends observed on the basis of the levels reported in the FASFC control programme for (heavy) metals and metalloids in different products of the Belgian food chain, are discussed in detail. It is noted that the trend analysis involves a number of uncertainties related to the sampling plan, the analytical method of the contaminant in question, data collection and reporting. It is not because a trend is observed on the basis of the statistical model, that the trend is also relevant. The detailed results of the trend analysis annexed to the opinion should therefore be interpreted with necessary caution.

The results of the trend analysis, which should thus be regarded as a pragmatic tool for the evaluation of the analysis programme, in combination with information from scientific literature and expert opinion, were assessed against the control efforts foreseen in the analysis programme 2020.

[#] The term 'FCM' does not include fixed public or private water supply equipment.

In spite of the reservations about the reduction in the number of programmed analyses of (heavy) metals and metalloids, in particular in foodstuffs, the Scientific Committee gives a generally favourable opinion with respect to the proposed analysis programme for (heavy) metals and metalloids in food, in water intended for consumption and used by operators, in animal feed, and in fertilisers, soil conditioners and cultivation substrates. The reasons for the reduction in the number of programmed analyses are not clear. It could be related to a change of priorities in control efforts or to a reduction in operational resources.

With respect to the analyses in foodstuffs, it is recommended to foresee analyses of aluminium in spinach and more analyses of tin in canned vegetables, in particular in tomatoes, additionally to the analyses already foreseen. It is recommended to continue the monitoring of aluminium in tea, in mushrooms and occasionally in food supplements, of total arsenic and inorganic arsenic in rice and molluscs, and of cadmium in fish, in (dark) chocolate and cocoa, and in rice. With regard to nickel, it is recommended to focus the analyses rather on foodstuffs of vegetable origin (vegetables, breakfast cereals and chocolate).

Regarding the analyses in water, the Committee considers the analysis of the following parameters less pertinent: parameters that migrate to water from pipes and fittings, such as antimony, lead and nickel, the indicator parameter aluminium and the parameters barium and mercury. The analysis of these parameters should no longer be programmed on an annual basis, but can be programmed on an occasional basis, thus freeing up space in the analysis programme for other, possibly more pertinent parameters.

With regard to the analyses in animal feed, a significant increase is noticeable in the level of arsenic, cadmium, mercury and lead in compound feed, including complementary feed. Mineral mixtures used as complementary feed, but also clay minerals used as additives in feed, appear to be an important source of heavy metals and arsenic. Despite a decreasing trend in the mercury content of 'fish, other marine animals, products and by-products', a further monitoring of the mercury content but also of the methylmercury content is recommendable. These analyses do not necessarily have to be programmed annually, but with some regularity.

Based on the control results, arsenic, cadmium, mercury and lead seem to be frequently found in fertilisers, soil improvers and cultivation substrates. An upward trend in their content is often observed in soil improvers, sewage sludge and certain cultivation substrates. Although few non-compliances have been reported, further monitoring of arsenic, cadmium, mercury and lead, which can end up in the food chain via fertilisers, soil improvers and cultivation substrates, is recommended in these matrices.

Finally, with the aim of a better valorisation and processing of control results, it is recommended to implement additional automatic quality control at data entry and to ensure consistency of units.

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