Bundesamt für
Verbraucherschutz und
Lebensmittelsicherheit

Abstract Report on the National Monitoring 2020

Joint report by the Federal Government and Federal States

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This Abstract Report presents a short overview about the findings of the analyses of foods, cosmetic products and commodities carried out in 2020. A full version of the Report on the National Monitoring 2020 is available in German from http://www.bvl.bund.de/monitoring. Abstract Reports on the National Monitoring from previous years can be downloaded from www.bvl.bund.de/monitoring_abstracts.

1 Summary

The Monitoring Programme is a system of repeated representative measurements and evaluations of levels of substances that are undesirable from a health point of view, such as residues of plant protection products, pesticides, veterinary medicines, heavy metals, mycotoxins, and other contaminants in and on foodstuffs, commodities, and cosmetic products. Further details about the monitoring programme are available from http://www.bvl.bund.de/monitoring_EN. In line with the General Administrative Provisions (AVV) for the 2016–2020 Monitoring Programme, the following foodstuffs, cosmetics, and daily use products from the population's representative market basket were examined in 2020 (market basket monitoring):

1.1 Food of Animal Origin

- Beef, kidney (incl. deep-frozen)
- Beef, liver (incl. deep-frozen)
- Beef, meat (incl. deep-frozen)
- Duck, meat (incl. deep-frozen)
- Emmentaler cheese (full-fat level)
- Fallow deer, meat piece (incl. deep-frozen)
- Freshwater catfish
- Goat, meat (incl. deep-frozen)
- Herring (Clupea harengus) sea fish
- Infant formula and follow-on formulae
- Lamb/sheep, meat (incl. deep-frozen)

1.2 Food of Plant Origin

- Apricot dried
- Apricot juice/nectar
- Bean green (incl. deep-frozen)
- Bean white/brown/black/red (dried)
- Blackberry (incl. deep-frozen)
- Brazil nut
- Carrot
- Cauliflower
- Cereal grits and breakfast cereals
- Corinth/Sultanas/Raisins
- Cucumber (salad cucumber)
- Currants red/black/white (incl. deep-frozen)
- Fig dried
- Garlic
- Hazelnut (incl. ground, grated, chopped, shaved)
- Kiwi
- Kohlrabi
- Lamb's lettuce
- Lemon
- Lettuce
- Lettuces (various kinds)
- Lime
- Maize grains
- Margarine
- Mustard
- Onion
- Orange
- Pea green
- Peanut oil
- Pear
- Potato
- Pumpkin
- Rice unpolished (whole grain rice)
- Rye grains / wholemeal rye flour
- Sweet cherry/sour cherry (incl. deep-frozen)
- Table salt
- Tangerine/clementine/satsumas
- Tomato juice
- Turmeric root spice
- Wheat bran
- Wheat flakes

Depending on what undesirable substances were expected, the foods were analysed for residues of plant protection products and pesticides as well as for contaminants (for instance, dioxins and polychlorinated biphenyls (PCB), per- and polyfluorinated alkyl substances (PFAS), polycyclic aromatic hydrocarbons (PAH), elements, mycotoxins, and nitrate).

1.3 Cosmetic Products

- Nail polish/base coat/top coat and mascara (examination for nitrosamines)
- Cream make-up/blemish balm/camouflage/cover stick and make-up/theatre make-up/carnival make-up (examination for elements)
- Face packs/masks (examination for elements)

1.4 Commodities

- Plastic items used for food consumption *(examination for melamine and formaldehyde)*
- Food packaging materials and items used for food consumption made of paper/cardboard *(examination for BPA)*
- Ceramic items and glass items used for food consumption *(examination for release of elements)*

In addition to the market basket monitoring, the seven following specific subjects were treated in the framework of the "project monitoring" part of the programme:

Project 1:	Determination of the mineral oil components MOSH and MOAH in vegetable oils and fats
Project 2:	Pyrrolizidine alkaloids and tropane alkaloids in flours
Project 3:	Lead in sausages of game
Project 4:	Thallium in kale
Project 5:	Elements and PAH in matcha tea
Project 6:	"Leaf to Root" – pesticide residues in fully usable foodstuff of plant origin
Project 7:	Determination of cadmium, lead and other elements in quinoa

As far as comparison with results from earlier monitoring studies was possible, this was considered in the interpretation of findings. Yet, all statements and assessments in this report concerning the presence of substances that are undesirable from a health point of view, solely refer to the products, substances and substance groups examined in 2020. At the same time, it is not possible to estimate the entire exposure to certain substances because only part of the market basket can be examined per year, while the substances considered also occur in other products.

Altogether, the findings of the 2020 Monitoring Programme again support the recommendation of a varied and balanced diet, as this is the most practicable way to minimise the dietary intake of undesirable substances, which itself is, to a certain degree, unavoidable.

A total of 9,669 samples of products of domestic and foreign origin were analysed in the framework of market basket and project monitoring in 2020, including 8,641 samples of foodstuffs, 594 samples of cosmetic products, and 434 samples of consumer items (such intended for food contact or body contact). The findings are presented in the following chapters.

2 Foodstuffs

2.1 Residues of plant protection products and pesticides

2.1.1 Foodstuffs of animal origin

Residues of plant protection products and pesticides were quantifiable in 32.3 % of bovine liver samples and 16.5 % of duck meat samples. All levels were lower than the maximum residue levels (MRL) laid down in Regulation (EC) No 396/2005. As in the years before, residues detected in the products of animal origin were mainly such of ubiquitous, persistent organochlorine compounds. No quantifiable residues were detected in infant formulae/follow-up formulae based on cow's milk. The residues found did not indicate any health risk to consumers.

2.1.2 Foodstuffs of Plant Origin

The highest proportions of samples with quantifiable residues were found in tangerines/clementines/satsumas (90.7 %), cherries (90.1 %), and pears (89.2 %). Pumpkins (16.4 %), garlic (21.8 %) and maize grains (22.0 %) had the lowest proportions of samples with residues. A total of 6 out of the 27 foods and food groups examined did not carry any non-compliant residues, that is, such exceeding established MRLs. By far the highest rate of non-compliant residues occurred in Brazil nuts (23.5 %). Apart from that, dried beans (9.3 %) and whole grain rice (8.8 %) had high rates of non-compliant residues. In total 112 (2.7 %) maximum levels were exceeded in 4,189 plant samples. Some samples had more than one exceedance. 1.1 % of the samples of products originating in Germany were found with residues of active substances the use of which was not authorised in the relevant crop in Germany in 2020 (2019: also 1.1 %).
The risk assessment of the reported residue findings of carbofuran in lime and imazalil in orange cannot rule out an acute health impairment for children, by the current state of knowledge. Also, an acute health impairment for both children and adults cannot be precluded with regard to the reported residue findings of cis-heptachlorepoxy in pumpkin, glufosinate in potato, oxamyl in cucumber, and prothiofos in orange, at the current state of knowledge.
As regards the reported residue findings of chlorpyrifos (bean – white and green, pear, carrot leaves and carrots), dimethoate (blackberries, sour and sweet cherries), omethoate (blackberries, currants and sour cherries), propoxur (bean – white), and tricyclazole (basmati rice), acute health impairment cannot be excluded for both children and adults.
Overall, according to the assessment of BfR, an acute health impairment cannot be ruled out in a total of 22 of the 4,189 plant-based foods examined (0.5%). No indications of an acute health risk for consumers were found for any of the other residue levels determined.

Project 06: "Leaf to Root" – Pesticide residues in fully usable foodstuffs of plant origin
The results of examination of fully usable vegetables show that the leaf green differs significantly from the connected tubers or beets, as regards pesticide residues.
The proportion of residue-free leaf samples was lower compared to tubers or beets of the respective vegetables. At the same time, multiple residues were found more often. A comparison of the frequency of quantitative findings of 12 active substances in leaf and tuber/beet sub-samples shows higher levels in the leaves compared to the tuber or beet. This could be explained by the large differences in the surface-to-volume ratio, or, in the case of carrots, by the way of growth (beet almost entirely underground). The results also indicate that systemic action of a product, such as described for azoxystrobin, difenoconazole, dimethomorph or metalaxyl, does not lead to uniform distribution of residues in all parts of the plant.
It is therefore not sufficient to examine only the tubers or beets for residues of plant protection products, since the findings cannot be used to infer the levels in leaf green. In future, the leaf portions of plants should be examined more often and further data should be collected, as use of these portions as food seems to be on the advance.

2.2 Quaternary ammonium compounds

DDAC levels higher than the maximum level of 0.1 mg/kg were observed in two samples of bovine liver (1.715 and 0.22 mg/kg). In the remaining 18 samples, levels of BAC and DDAC were not higher than 0.07 mg/kg. The residues did not signal any health risk to consumers.
With temporary maximum levels (Regulation (EU) No 396/2005) set for the time being, BAC and DDAC will continue to be subject to enhanced surveillance in the EU, and thus subject to the Monitoring Programme, in order to improve the relevant data basis.

2.3 Chlorate

Proportions of samples with quantifiable chlorate contents were highest in apricot juice/nectar (54.8 %), green beans (33.3 %), and lettuce (33.3 %). The specific maximum residue levels applicable since June 28, 2020 (Regulation (EU) 2020/749) were not exceeded. The maximum concentration measured was 0.39 mg/kg in a sample of Roman lettuce. The concentration in one sample of lime exceeded the specific MRL set in accordance with Regulation (EU) 2020/749. The residues did not provide any indication of a health risk to consumers.

2.4 Perchlorate

Brazil nuts had by far the highest perchlorate findings among the foods examined in 2020. The EU reference level ruling established by the Commission's Standing Committee in 2013 provides that Brazil nuts be classified in the product category "Other food". As the reference levels still apply in the 2020 Monitoring Programme, the reference level for perchlorate in Brazil nuts is 0.05 mg/kg. This reference level was exceeded in all 27 Brazil nut samples.
With the entry into force of Regulation (EU) 2020/685 amending Regulation (EC) No 1881/2006, binding maximum levels of perchlorate are applicable to certain products or groups of products, including fruit and vegetables, tea products, and infant and young children's food, in all EU Member States from 1st July 2020. However, the new regulation does not provide for a general maximum level for "Other food" (previously, reference value 0.05 mg/kg). Nuts, such as Brazil nuts, are thus not covered by the current regulation. Given the relatively high levels of perchlorate in Brazil nuts, setting a binding maximum level for nuts at EU level should be considered.
In addition, perchlorate was sometimes detected with higher concentrations in leafy vegetables (lamb's lettuce, endive, and oak leaf lettuce) and in green beans. However, the contamination situation has improved compared to previous years. Only one sample of endive, one sample of oak leaf lettuce, and one of green beans exceeded the reference value. The rest of the sampled foods of plant origin had mostly no, or fairly low quantifiable perchlorate levels.
Given the minimisation requirement laid down in Article 2 of Regulation (EEC) No 315/93, every effort should continue to be made to minimise the perchlorate content in foods as much as possible, in accordance with the ALARA principle.

2.5 Dioxins and polychlorinated biphenyls (PCB)

Levels of the sum parameter for dioxins (WHO-PCDD/F-TEQ) and for dioxins and dioxin-like PCBs (WHO-PCDD/F-PCB-TEQ) were inconspicuous in the deer meat and duck meat samples tested. Three of the beef meat samples tested exceeded the action value for dioxin-like PCBs. Two samples of bovine liver with labelled origin in Germany exceeded the maximum level for total dioxins and d-l PCBs. Sum parameter levels of six non-dioxin-like PCBs were inconspicuous in the samples examined. Levels did not significantly change compared to previous years. Rates of non-compliance with legal maximum levels in bovine meat and liver, deer meat, and duck meat samples taken at trade level were low.

2.6 Perfluorinated and polyfluorinated alkyl substances (PFAS)

Levels of the PFAS analysed in lettuce samples were below the analytical limits of quantification, while PFOA and/or PFOS were quantifiable in a small portion of the beef

samples. Levels of PFOS, PFOA, PFNA and PFHxS measured in herring were lower than found previously. Conspicuous in herring was a comparatively high proportion of samples in which PFNA and/or PFHxS were quantifiable.
In the light of the significantly lower health-based guidance value derived by EFSA in 2020, it is strongly recommended to further optimise official analytics of single PFAS substances in order to reach lower limits of determination. It is also necessary to extend analytical methods to other matrices, in particular to foods of plant origin.

2.7 Polycyclic Aromatic Hydrocarbons (PAH)

Both benzo(a)pyrene and total PAH-4 levels were low in the tested samples of margarine and turmeric. PAH levels in turmeric have decreased compared to 2014. Commission Regulation (EU) 2015/1933 amending Regulation (EC) No 1881/2006 set EU-wide harmonised maximum levels for both benzo(a)pyrene and the sum of PAH-4 lead substances in dried spices for the first time. All turmeric samples had concentrations below the legal maximum levels for benzo(a)pyrene and for the sum of PAH-4 lead substances. The analytic results in turmeric show that the introduction of maximum levels for spices has led to further efforts to reduce the PAH contamination in this food, in line with the ALARA principle.

Project 05: PAH in matcha tea (partial results, for elements see in the respective paragraph)
As regards PAH findings, there is no acute need for action from a toxicological point of view. There were, however, some non-compliant samples, so that further observation seems to be useful here.

2.8 Mycotoxins

2.8.1 Aflatoxins B1, B2, G1, G2, M1

Levels of aflatoxins were below the detection limit in all samples of table mustard examined and in most samples of dried apricot. One sample of dried apricots (0.8 %), however, exceeded the maximum level for aflatoxin B1. On the other hand, 5 samples of hazelnut (4.1 %) were detected with aflatoxin concentrations exceeding maximum levels. Some very few concentrations detected in dried figs, Brazil nuts, and turmeric also exceeded maximum levels. The findings show that, apart from the representative studies carried out here, attention should continue to be paid also to the risk-oriented analysis of aflatoxin levels in nuts, dried fruits and spices.

2.8.2 Ochratoxin A (OTA)

OTA contents in wheat flakes, wheat bran, hazelnut, Brazil nut, tomato juice, dried apricot, and table mustard were in the majority lower than the limit of determination (≥ 88.4 % of tested samples). Where maximum levels were applicable, these were not exceeded. In contrast, currants/sultanas/raisins and turmeric root spice were found with some non-compliant concentrations and with a comparatively high percentage of samples with quantifiable concentrations. In dried figs, the proportion of samples with quantifiable OTA was significantly lower than in previous monitoring studies, but that of samples with OTA contents higher than the permitted maximum level of 8 µg/kg had roughly doubled compared to 2014. The findings show that, apart from the representative studies carried out here, attention should continue to be paid also to the risk-oriented testing of figs and spices for OTA.

2.8.3 Deoxynivalenol (DON)

Examination of wheat bran, wheat flakes, cereal grits and breakfast cereals for DON produced no conspicuous findings. It is recommended that bran products be regularly checked for DON content in order to be able to better assess development of consumer exposure.

2.8.4 Fumonisins B1 and B2

Examination of cereal grits and breakfast cereals for fumonisins B1 and B2 did not reveal any non-compliant levels. Occasional testing in the framework of the monitoring programme appears to be sufficient.

2.9 Plant toxins

Project 02: Pyrrolizidine alkaloids and tropane alkaloids in flours

In this project, pyrrolizidine alkaloids (PA) were determinable in approximately 3.2 % of samples and tropane alkaloids (TA) in 2.8 % of samples. While PA were quantifiable in millet, chickpea and rye flours, TA was only quantifiable in millet flour. One can conclude that contamination of flours with PA or TA occurs rarely, and that by-plants harvested with the actual crop are obviously removed in subsequent cleaning steps.

2.10 Elements

The monitoring tests showed mostly low levels of the elements analysed (lead, cadmium, arsenic, aluminium, and nickel; as in selected samples mercury, chromium, thallium, copper, selenium, manganese, and zinc). The concentrations measured were in the majority comparable or lower than in the years before. Maximum levels for lead and cadmium laid down in Regulation (EC) No 1881/2006 were not, or only in very rare cases, exceeded in almost all product groups examined.

In infant formulae/follow-up formulae based on cow's milk, levels of lead and cadmium were below the demanding EU-wide maximum levels. This is to be welcomed, given infants' and young children's enhanced sensitivity to lead and cadmium.

High element levels were found only rarely in certain substance-matrix combinations. Bovine kidneys were conspicuous with regard to cadmium. 6.5 % of the bovine kidney samples exceeded the maximum level for cadmium. The kidneys are the main organ to store cadmium in the animal organism, which is why high levels of cadmium may well occur in bovine kidneys. Since the findings were still rare, the probability of health impairment for the small part of the population that regularly consumes bovine kidneys can still be considered as low. Lead, too, appeared in higher concentrations in bovine kidneys. The legal maximum level for lead in bovine kidneys was exceeded in one sample. Bovine liver had very high levels of copper, the same as in previous years. Maximum residue levels under the EU Pesticide Residues Regulation (Regulation (EC) No 396/2005) were exceeded in 65 % of bovine liver samples. However, the enhanced copper levels and enhanced proportion of non-compliant residues in bovine liver samples are attributed primarily to the intake of copper-containing feed additives and to physiological enrichment of copper in the liver, rather than to plant protection products residues in feed.

Turmeric was found with higher levels of lead, aluminium, thallium and chromium. Compared to 2014, however, lead, thallium and chromium have decreased in turmeric. This may be attributable to improved processing techniques.

Higher aluminium levels were also found in dried fruits, rye, maize, wheat bran and tomato juice. Nickel, too, was found in dried fruits and wheat bran, but also in legumes (peas) and hazelnuts at higher concentrations.

Project 03: Lead in sausages with game

Sausages containing game may contain high levels of lead, and thus significantly contribute to consumers' exposure, even with low amounts of consumption. Various international bodies (e.g. EFSA 2010, JECFA 2011, ATSDR 2020) were unable to define an intake amount without health risk for consumers, as regards the most critical health effects. So, occasional intake of foods carrying high lead levels can already contribute to a long-term increase in the human body's load with lead, thereby increasing the health risk. In this project, lead was quantifiable in 72 % of samples. The legal assessment is difficult. We consider it necessary to introduce a legal maximum level for lead in game meat and, where appropriate, for products derived from game. Game meat-based foodstuffs should be regularly monitored for their lead content.

Project 04: Thallium in kale
The studies carried out under this project confirmed that kale may have higher levels of thallium than other vegetable species. Compared to the data obtained in 2012, thallium levels in kale were found slightly higher in 2020. Even though the small amount of data did not allow a safe statistical statement regarding the influence of the location and type of cultivation, it was recognisable that the few samples originating in proven proximity to a thallium-releasing establishment carried higher levels of thallium than samples originating further away from such places. Kale samples from conventional farming contained less thallium than those from organic farming.
Due to its toxicity, thallium intake should on principle be kept as low as possible (ALARA principle). Against the background of the BfR's recommended limit of total thallium uptake of 10 µg maximum per day, as well as the known enrichment in brassicaceans especially in kale, introducing a legal maximum level for thallium in this product group is rated purposeful. Furthermore, kale should not be cultivated in thallium-contaminated areas.

Project 05: Elements in matcha tea (partial results, for PAHs see corresponding paragraph)
This project was carried out as a screening with a smaller number of samples (69 samples), in order to obtain a first survey. Nevertheless, the findings allowed to confirmed trends known beforehand. Periodic consumption of matcha green tea powder poses a risk of significant exposure to aluminium. The extent to which the aluminium content is geogenic should be studied on site. Growing regions are confined, which means that high aluminium contents would also have to be expected in future. Otherwise, other sources of entry would have to be considered. This problem should be monitored and further data collected.
As regards lead contents, one must also note, that matcha green tea powders show relatively high levels, compared to foods in general, and could thus contribute significantly to consumers' exposure to lead. These levels, too, should urgently continue to be observed. To what extent lead levels are exclusively attributable to geogenic causes must be observed on the basis of how levels develop. Health risks must be considered. Investigations should therefore be repeated at regular intervals and with larger sample numbers in the framework of consumer health protection.

Project 07: Determination of cadmium, lead and other elements in quinoa
Levels of cadmium and lead were low in the quinoa samples tested. Both the median value and the 90th percentile value of the lead concentrations were well below the maximum level of 0.2 mg/kg. With cadmium, too, both values were below the applicable maximum level of 0.1 mg/kg. As for the other elements examined, no conspicuous findings were noted either. The data collected in this project can serve as an important basis for decision in further discussions at Codex Alimentarius level about the introduction of maximum levels.

2.11 Nitrate

As in previous studies, lettuces still had high nitrate levels. Appropriate measures to reduce nitrate levels in lettuces should therefore be continued. Enhanced nitrate levels were also found in kohlrabi. The median values in kohlrabi were comparable to median nitrate levels in lettuce. Consumers should nevertheless by no means restrict their consumption of vegetables, according to a FAQ compilation issued by the BfR on nitrate and nitrite in foods, but pay attention to widely vary their choice of vegetables.

2.12 Mineral oil components

Project 01: Determination of the mineral oil components MOSH and MOAH in vegetable oils and fats
Due to the carcinogenic potential of mineral oil aromatic hydrocarbons (MOAH), both EFSA and the BfR hold that the intake should be minimised. To this end, it is imperative to

comprehensively and continuously collect data on mineral oil components in various food product groups.
The data collected in the framework of this project show that the studies should be continued and extended to include other food product groups, to the end of taking stock of mineral oil components in individual food groups. The findings may provide a basis for analysing the sources and possible paths of entry of MOSH/MOAH in the respective food group, and initiating necessary efforts for appropriate minimisation measures. For vegetal edible oils, Stauff et al. discuss technical deodorisation as a mean to reduce mineral oil components in edible oils. Yet the authors point out that as by current scientific and technical knowledge, only volatile MOSH and MOAH with carbon number less than or equal to C24 can be reduced.
It is clear from this project that the prescribed minimum determination limit of 2 mg MOAH/kg vegetal edible oil or fat is already very well met by the laboratories. With a view to minimisation of MOAH contents in this food category, the progress made in the analytic field (optimisation of analytical methods and further improvement of equipment technology) is to be estimated very positive.

3 Cosmetic Products

3.1 Nitrosamine in nail polish/basecoat/top coat and mascara

The statistical indicators for N-nitrosodiethanolamine (NDELA) in mascara in 2020 were lower than in 2015. This might indicate a trend reflecting that manufacturers have taken measures to reduce nitrosamine levels. In nail polish, on the other hand, statistical indicators for NDELA as well as for N-nitrosodimethylamine (NDMA) are mostly at a slightly higher level, compared to 2018.
All cosmetic products are subject to what is called the minimisation principle, as regards the nitrosamine content. The data obtained in the 2015, 2018, and 2020 monitoring studies should provide a sufficient basis for deriving technically avoidable levels of nitrosamines in mascara and nail polish.

3.2 Elements in cream make-up, camouflage, cover stick and make-up including theatre make-up/carnival make-up

Element levels in 92.1 % of the samples examined were below the orientation values for technically avoidable levels of arsenic, antimony, lead, cadmium, and mercury, as published in the *Journal of Consumer Protection and Food Safety* in 2016. As these elements are prohibited in cosmetic products, levels should continue to be lowered by careful selection of raw materials and good manufacturing practice, and should periodically be monitored. The data obtained in the 2018, 2019 and 2020 monitoring studies should provide a sufficient basis for deriving technically avoidable grades of nickel in the different product groups.

3.3 Elements in face packs/masks

Only 47 % of the aluminium silicate-based face packs/masks sampled did not exceed the orientation levels for antimony, arsenic, lead, cadmium, and mercury in cosmetics. The orientation levels for the elements arsenic, lead and cadmium were sometimes very clearly exceeded. A major part of the samples also showed higher levels of barium, chromium, cobalt, and nickel. Official controls should place this issue more into the focus.

4 Commodities/Daily Use Articles

4.1 Migration of melamine and formaldehyde from melamine formaldehyde resin, urea formaldehyde resin and phenol formaldehyde resin from plastic items intended for food consumption

Of the samples examined, 5.4 % exceeded the group-specific migration limit (SML (T)) for formaldehyde, and 19.8 % exceeded the specific migration limit (SML) for melamine in the third

migrate. The release of formaldehyde and melamine from melamine-formaldehyde resin (MF) tableware with alternative natural filler was higher than release from conventional MF tableware. In addition, the release of melamine significantly increased in both product groups as migration studies were repeated under hot bottling conditions. So, one has to assume that – in line with what the BfR's opinions No 012/2011 and No 046/2019 said – these consumer goods are generally not suitable for repeated use in contact with hot foods.

4.2 Bisphenol A in food packaging materials and items used for food consumption made of paper/carton/paperboard

Only 62.7 % of the samples examined complied with the 0.05 mg/kg limit recommended by the BfR for migration of BPA to foodstuffs in June 2019 (BfR Recommendation XXXVI). The BfR does not support migration levels of more than 50 µg/kg into foodstuffs. This does not necessarily mean an increased health risk, however. Apart from that, the findings showed that the substitute bisphenol S is already used to a wider extent. Still, only 58.6 % of the samples would have complied with the recommended limit of 0.05 mg/kg for transition of BPS to foodstuffs, as listed since April 2021.
This subject should receive more consideration in the context of official surveillance, and could also be repeated with a view to analysing the trends of the bisphenols examined.

4.3 Release of elements from ceramic and glass articles intended for consumption of foods

99.6 % of the samples complied with the maximum release levels for lead and cadmium. Release of elements from ceramic articles intended for food consumption can therefore be ruled as low, with a view to the current limit values. As the European Ceramics Directive is being revised at present, the measuring results were also evaluated with regard to the recommended limit values of the European Council's Resolution CM/Res(2013)9. These are close to the limit values for ceramic articles currently being discussed at EU level. In total, the guidance limits were observed in 89.1 % of the samples. While the percentage of samples not complying with guidance limits for individual elements was at times well below 10 %, it was conspicuous that one quarter of the samples of flat ceramic items exceeded the guidance limit for lead release, the maximum excess level being 86 times the guidance limit.
In its opinion No 043/2020 of 21 September 2020, the BfR recommends that tolerable release amounts used in the assessment of element release from ceramic products should be significantly lower than those set out in the Ceramics Directive, and that the list of release limit values should at least be extended by a limit for cobalt. With regard to the sensitivity of children in particular, the BfR recommends manufacturers to pay attention to low levels of element release in ceramic dishes for children.
The findings of these studies show that, after the Ceramics Directive has been revised at the European level, official surveillance should place still more focus on compliance with the new limit values for element release from ceramic articles, maybe also by including this subject in a national coordinated monitoring programme.