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The entry of chlorate into the food chain should be reduced

Updated BfR Opinion No 007/2018 of 15 February 2018

Chlorates are salts of chloric acid HClO_3 . Sodium and potassium chlorate used to be employed as herbicides but the use of plant protection and biocidal products containing chlorate is no longer permitted in the EU. Chlorate can occur, however, as a by-product when using chlorinated substances for cleaning or disinfection. According to the latest available findings, the likely entry path is the contact of foods with water that was previously treated with chlorinated biocidal products for disinfection purposes. Chlorate has been frequently detected in products such as deep-frozen vegetables, fruit juices and lettuce/herbs. The reason for the occurrence of chlorate in these products could have been processes such as the glazing of deep-frozen produce, the dilution of juice concentrates or the rinsing of herbs and lettuce with water containing chlorate.

Repeated exposure to chlorate can lead to inhibited iodine intake in humans. The European Food Safety Authority (EFSA) has derived a tolerable daily intake (TDI) of 0.003 milligrams (mg) of chlorate per kilogram (kg) body weight. A one-time intake of chlorate (acute exposure) has only a negligible effect on the inhibition of iodine intake but higher chlorate concentrations can result in damage to the red blood cells. Based on this effect, EFSA derived an acute reference dose (ARfD) of 0.036 mg per kg body weight for chlorate. The Federal Institute for Risk Assessment (BfR) concurs with these health-based reference values. The BfR also supports the lowering of the preliminary drinking water guideline value established by the World Health Organization (WHO) at 0.7 mg per litre (L) for chlorate. From the point of view of consumer health protection, a value of 0.07 mg per L is regarded as acceptable for a short period of time, but the concentrations in drinking water should be lower in the long term.

With the sensitive group of newly born babies and infants, the highest chlorate exposure has to be assumed when the children are fed exclusively with infant formula which was mixed with drinking water containing chlorate. In this case, the intake of chlorate could possibly exceed the TDI, but not the ARfD for chlorate. With occasional intake of drinking water with chlorate levels of 0.07 mg per L, health risks are unlikely, even for sensitive population groups, according to the latest available data.

The BfR recommends the assessment of individual findings with regard to the possible acute health impairment of consumers. Two calculation models are available for the assessment: the EFSA Pesticide Residue Intake Modell (PRIMo) and the German NVS II model (NVS II: National Nutrition Survey II). The BfR recommends that these models be used along with the acute reference dose derived by EFSA. The models should be adjusted with respect to the variability factors used in them, however.

The BfR also recommends that efforts be made to reduce the entry of chlorate into the food chain, thereby reducing consumer exposure at the same time. The EU Commission has proposed an action plan in this regard. The goal is to hold a joint discussion of the necessary steps with everyone involved with and affected by the topic of chlorate in the areas of plant protection products, drinking water, baby food and food hygiene. Consumers should not fundamentally change their eating habits, as the health benefits of fruit and vegetables remain undisputed.

The full version of this BfR opinion is available in German on <http://www.bfr.bund.de/cm/343/der-eintrag-von-chlorat-in-die-nahrungskette-sollte-reduziert-werden.pdf>

More information on the subject of chlorate at the BfR website

FAQ on chlorate of 15 February 2018
http://www.bfr.bund.de/en/frequently_asked_questions_about_chlorate_in_food-204084.html



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