

Perchlorates

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In June 2013 the German Institute BfR (Bundesinstitut für Risikobewertung) published the opinion regarding the safety assessment of perchlorates presence in foods¹.

Perchlorates are perchloric acid compounds, used in fireworks and fertilizers industries. Therefore, the use of these fertilizers is likely to be a main source of contamination in water and food, in particular in vegetables².

The so far available toxicological studies have demonstrated that the ingestion of perchlorate is related to its ability to competitively inhibit thyroid iodine uptake, effect that may cause changes of thyroid hormone levels. For this reason, potassium perchlorate has also been used for the treatment of some thyroidal pathologies.

Commission Regulation (EC) 1881/2006 sets maximum levels for certain contaminants in foodstuffs and Commission Regulation (EC) 2020/685 of 20 May 2020 amending Reg. (EC) No 1881/2006 as regards maximum levels of perchlorate in certain foods (**Table 1**).

Foodstuffs ⁽¹⁾		Maximum level (mg/kg)
9.	Perchlorate	
9.1.	Fruits and vegetables with the exception of: — <i>Cucurbitaceae</i> and kale — leaf vegetables and herbs	0,05 0,10 0,50
9.2	Tea (<i>Camellia sinensis</i>), dried Herbal and fruit infusions, dried	0,75
9.3	Infant formula, follow-on formula, foods for special medical purposes intended for infants and young children and young child formula ^{(3)(4)(*)} Babyfood ⁽³⁾⁽⁴⁾ Processed cereal based food ⁽³⁾⁽²⁹⁾	0,01 0,02 0,01

(*) young child formula are milk-based drinks and similar protein-based products intended for young children. These products are outside the scope of Regulation (EU) No 609/2013 (Report from the Commission to the European Parliament and the Council on young child formulae (COM/2016/0169 final)
(<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016DC0169&qid=1559628885154&from=EN>).

Table 1: Law limits issued by Commission Regulation (EC) 2020/685³.

Neutron proposal

Neutron performs the analysis of perchlorate by HPAEC-MS/MS technique, permitting to detect the residue with a limit of quantification of 0,002 mg/kg for most matrices.

This method is in compliance with Commission Regulation (EC) 2020/685 of 20 May 2020, that shall apply from 1 July 2020.

References:

1. Health assessment of perchlorate residues in foods, BfR, 2013.
2. Dietary exposure assessment to perchlorate in the European population, EFSA (European Food Safety Authority), EFSA Journal 2017;15(10):5043.
3. Commission Regulation (EC) 2020/685 of 20 May 2020 amending Regulation (EC) No 1881/2006 as regards maximum levels of perchlorate in certain foods.