

24 November, 2022

Follow-up of the re-evaluation of sulfur dioxide (E 220), sodium sulfite (E 221), sodium bisulfite (E 222), sodium metabisulfite (E 223), potassium metabisulfite (E 224), calcium sulfite (E 226), calcium bisulfite (E 227) and potassium bisulfite (E 228)

Disclaimer

- This plain language summary (PLS) is a simplified communication of EFSA's follow-up to the re-evaluation of sulfur dioxide-sulfites (E 220-228).
- Its purpose is to enhance transparency and inform interested parties on EFSA's work on the topic using simplified language.
- Anyone interested in the more analytical results and interpretation, should consult the full EFSA opinion which can be found [here](#).

Sulfur dioxide-sulfites – an overview

- Sulfites are naturally found in some foods and are also commonly used food additives.
- They are used to maintain appearance, increase shelf-life and prevent the growth of hazardous microorganisms (e.g, fungi, bacteria).
- They are commonly added to fruit juices and wines.
- The sulfites used by the food industry are sulfur dioxide (E 220), sodium sulfite (E 221), sodium bisulfite (E 222), sodium metabisulfite (E 223), potassium metabisulfite (E 224), calcium sulfite (E 226), calcium bisulfite (E 227) and potassium bisulfite (E 228).

What was EFSA asked to do?

- EFSA is responsible for providing independent scientific advice on food additives to EU risk managers and policy makers.
- The former EFSA Panel on Food Additives and Nutrient Sources added to Food (ANS Panel) completed a [re-evaluation of sulfur dioxide-sulfites \(E 220-228\) in 2016](#).
- At that time, the Panel noted [several uncertainties and limitations](#) in the available data and concluded that the group [acceptable daily intake](#) (ADI) was adequate but should be considered temporary while more data were generated.
- Following the recommendation on data gaps by the EFSA ANS Panel, the European Commission (EC) issued a call for additional data.
- EFSA was mandated to redo the safety assessment for sulfur dioxide-sulfites based on industry data and carry out an extensive literature review.

ISSN: 1831-4732

© European Food Safety Authority, 2022

Reproduction is authorised provided the source is acknowledged.



The EFSA Journal is a publication of the European Food Safety Authority, an agency of the European Union.



How did EFSA carry out this work?

- In response to the request, the EFSA FAF Panel re-assessed sulfur dioxide-sulfites based on:
 - data submitted by the food industry;
 - an extensive literature review of studies published between January 2014 (overlapping the end of the coverage of the 2016 re-evaluation) and March 2022;
 - an additional literature search which was conducted for pre-2014 inhalation studies not included in the 2016 re-evaluation, investigating [endpoints](#) identified as relevant for human health
 - the literature search was subsequently extended to include pre-2014 oral studies investigating neurotoxicity.
- A [margin of exposure](#) (MOE) approach was used to assess the risks at the current exposure levels.
- The Panel also carried out a risk assessment of the toxic elements arsenic, lead, and mercury present as impurities in sulfur dioxide-sulfites based on data submitted by industry.

What are the outcomes?

- Since 2016, few data have been generated to address the identified shortcomings.
- The existing ADI was withdrawn because adequate toxicity data were not available.
- The calculated MOEs raise some safety concerns for high consumers of foodstuffs that contain sulfites.
- Maximum limits for arsenic, lead, and mercury in sulfur dioxide-sulfites should be reduced in the EU specifications and a maximum limit for cadmium should be introduced.

What were the limitations?

- The main issue was limited data availability as no new data were generated by industry following the recommendations of the 2016 re-evaluation.
- In addition, only limited new data were retrieved in the literature search.

Implications and recommendations for public health authorities

- Current sulfur dioxide-sulfite usage levels may be of concern.