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New EU regulations define maximum nitrate levels for foodstuffs

Regulation (EC) No. 1881/2006 was amended and substituted by Commission Regulation (EU) No. 1258/2011 on December 2, 2011. This increases the maximum nitrate content that is allowable in fresh lettuce and spinach. The maximum level of nitrates (NO₃) has risen from 4,500 to 5,000 mg/kg in fresh lettuce and from 3,000 to 3,500 mg/kg in fresh spinach.



Nitrates occur naturally in plants and they can transform into nitrites and then react with amines and amides to produce N-nitroso compounds. Such compounds have been linked to possible causes of gastric, esophageal, nasopharyngeal, and bladder cancers. Vegetables that are green and leafy, such as lettuce, spinach, and arugula contain higher levels of nitrates than are typical. The nitrogen fertilizers and light intensity used in their cultivation are the main factors responsible for the nitrate content in these vegetables.

Due to differences in the climate across the EU, it was not always found possible to achieve consistent nitrate levels in fresh lettuce and spinach under the previous maximum levels, which were set in 2006. To resolve this problem, Regulation 1258/2011 was introduced to marginally ease the maximum nitrate levels:

1.1 Fresh spinach (*Spinacia oleracea*): Maximum Level 3500 mg NO₃/kg

1.2 Preserved, deep-frozen or frozen spinach: Maximum Level 2000 mg NO₃/kg

1.3 Fresh Lettuce (*Lactuca sativa* L.) (protected and open-grown lettuce) excluding lettuce listed in point 1.4: Harvested October to March - lettuce grown under cover: Maximum Level 5000 NO₃/kg; lettuce grown in the open air: Maximum Level 5000 NO₃/kg

1.4 Iceberg lettuce: Lettuce grown under cover: Maximum Level 2500 NO₃/kg; Lettuce grown in the open air Maximum Level 2000 NO₃/kg

1.5 Arugula (*Eruca sativa*, *Diplotaxis* sp., *Brassia tenuifolia*, *Sisymbrium tenuifolium*): Harvested October to March: 7000 NO₃/kg; Harvested April to September: Maximum Level 6000 NO₃/kg

1.6 Processed, cereal-based foods and foods for infants and young children: Maximum Level 200 NO₃/kg

A study to assess the risks was carried out by the [European Food Safety Authority \(EFSA\)](#) in 2008. This concluded it was unlikely the new maximum levels would result in any appreciable health risks and that the benefits from eating vegetables should remain unaffected. The EFSA performed another study in 2010 to investigate potentially acute effects on infants and young children of nitrate exposure at the new maximum level. The EFSA concluded that cooked spinach is more likely to be consumed by infants than lettuce and that neither the current nor new maximum levels of nitrates are likely to pose a health concern, whereas at higher levels the risk could not be entirely discounted. The EFSA also reported there is no scientific data to indicate a health risk for young children consuming spinach and lettuce at the new maximum levels of nitrates.

About SGS Food Safety Services

[SGS Food Safety Services](#) can help you by checking the concentration of nitrates in vegetables throughout their global network, using a spectrophotometric technique and other methods of testing. The spectrophotometric technique has a Limit of Detection (LOD) of 0.12 mg/kg and a Limit of Quantification (LOQ) of 0.40 mg/kg.

If you need more information, please do not hesitate to contact the SGS food safety experts.

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