

WORLD HEALTH ORGANIZATION
INTERNATIONAL AGENCY FOR RESEARCH ON CANCER



***IARC Monographs on the Evaluation of
Carcinogenic Risks to Humans***

VOLUME 94

**Ingested Nitrate and Nitrite, and
Cyanobacterial Peptide Toxins**



LYON, FRANCE
2010

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This publication represents the views and expert opinions
of an IARC Working Group on the
Evaluation of Carcinogenic Risks to Humans,
which met in Lyon,

14–21 June 2006

2010

IARC MONOGRAPHS

In 1969, the International Agency for Research on Cancer (IARC) initiated a programme on the evaluation of the carcinogenic risk of chemicals to humans involving the production of critically evaluated monographs on individual chemicals. The programme was subsequently expanded to include evaluations of carcinogenic risks associated with exposures to complex mixtures, lifestyle factors and biological and physical agents, as well as those in specific occupations. The objective of the programme is to elaborate and publish in the form of monographs critical reviews of data on carcinogenicity for agents to which humans are known to be exposed and on specific exposure situations; to evaluate these data in terms of human risk with the help of international working groups of experts in chemical carcinogenesis and related fields; and to indicate where additional research efforts are needed. The lists of IARC evaluations are regularly updated and are available on the Internet at <http://monographs.iarc.fr/>.

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Intensive use of nitrogen fertilizers in crop culture and manure from animal feeding operations may be significant sources of nitrate in some regions like Brittany, France, leading to eutrophication and the excessive growth of green algae. The growth of peptide-toxin-producing cyanobacteria is favoured in waters where eutrophication occurs.

Ham, bacon, and some sausages are preserved with salt and sodium or potassium nitrite. Ascorbate is often added to inhibit the formation of *N*-nitrosamines before the cured meat is eaten. *N*-nitrosamines can also form in the stomach unless inhibited by vitamin C or other antioxidants. Kiwi and citrus fruits are rich sources of antioxidants.