

ISOBUTYL NITRITE, β -PICOLINE, AND SOME ACRYLATES

VOLUME 122

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, 5–12 June 2018

LYON, FRANCE - 2019

IARC MONOGRAPHS
ON THE EVALUATION
OF CARCINOGENIC RISKS
TO HUMANS

GENERAL REMARKS

This one-hundred-and-twenty-second volume of the *IARC Monographs* contains evaluations of the carcinogenic hazard to humans of isobutyl nitrite, β -picoline, methyl acrylate, ethyl acrylate, 2-ethylhexyl acrylate, and trimethylolpropane triacrylate.

Exposure measurements and biomonitoring studies have shown that workers and the general population are exposed to these agents. Three of these agents were evaluated previously in Volume 71 (methyl acrylate and ethyl acrylate) and in Volume 60 (2-ethylhexyl acrylate) of the *IARC Monographs* ([IARC, 1994](#); [1999](#)), when the Working Group evaluated methyl acrylate and 2-ethylhexyl acrylate as *not classifiable as to its carcinogenicity to humans* (Group 3) and ethyl acrylate as *possibly carcinogenic to humans* (Group 2B). Since the previous evaluations, new data have become available, primarily in experimental animals, and these data have been included and considered in the present volume. Epidemiological data were lacking for five of the agents and only one study was available for ethyl acrylate. A summary of the findings of this volume appears in *The Lancet Oncology* ([Kromhout et al., 2018](#)).

Chemicals with a high production volume

All four acrylates evaluated are “high production volume” chemicals. Sparse quantitative data were available to characterize exposure to most of these agents in the workplace

or general population. Occupational exposure occurs primarily through inhalation and dermal contact during production and use as intermediates. Exposure of the general population occurs through food, consumer products (e.g. latex paints), and from materials (e.g. furniture and floor polishes) containing these agents.

Evaluation of data on the mechanisms of carcinogenesis

In its evaluation of data on mechanisms of carcinogenesis, the Working Group used the procedures first introduced in Volume 112 of the *IARC Monographs* for assessing the strength of evidence with respect to 10 key characteristics of carcinogens ([Smith et al., 2016](#)), and for reviewing data from large-scale toxicity-testing programmes ([IARC, 2017](#)).

References

- IARC (1994). Some industrial chemicals. *IARC Monogr Eval Carcinog Risks Hum*, 60:1–560. Available from: <http://publications.iarc.fr/78> PMID:[7869568](#)
- IARC (1999). Re-evaluation of some organic chemicals, hydrazine and hydrogen peroxide. *IARC Monogr Eval Carcinog Risks Hum*, 71:1–315. Available from: <http://publications.iarc.fr/89> PMID:[10507919](#)

IARC (2017). Some organophosphate insecticides and herbicides. *IARC Monogr Eval Carcinog Risks Hum*, 112:1–452. Available from: <http://publications.iarc.fr/549>

Kromhout H, Friesen M, Marques MM, Sergi CM, Abdallah M, Benke G, et al.; International Agency for Research on Cancer Monograph Working Group (2018). Carcinogenicity of isobutyl nitrite, β -picoline, and some acrylates. *Lancet Oncol*, 19(8):1020–2. doi:[10.1016/S1470-2045\(18\)30491-1](https://doi.org/10.1016/S1470-2045(18)30491-1) PMID:[30700372](https://pubmed.ncbi.nlm.nih.gov/30700372/)

Smith MT, Guyton KZ, Gibbons CF, Fritz JM, Portier CJ, Rusyn I, et al. (2016). Key characteristics of carcinogens as a basis for organizing data on mechanisms of carcinogenesis. *Environ Health Perspect*, 124(6):713–21. doi:[10.1289/ehp.1509912](https://doi.org/10.1289/ehp.1509912) PMID:[26600562](https://pubmed.ncbi.nlm.nih.gov/26600562/)