IARC listed ethyl acrylate in 1986 based on the NTP studies showing forestomach tumors in rats and mice. BAMM has asked IARC on multiple occasions to reevaluate its cancer classification, taking into consideration the extensive science that caused NTP to reverse its cancer classification decision. In 2007, the Head of IARC’s Carcinogen Identification and Evaluation Group expressly acknowledge that BAMM members “make a good case that a re-evaluation of ethyl acrylate may result in a different classification,” but IARC has not yet undertaken that reevaluation because of competing priorities.

In 1999, an IARC Working Group reviewed ethyl acrylate and other animal forestomach carcinogens to determine their predictive value in assessing carcinogenic risks to humans. Describing the ethyl acrylate situation, the Working Group concluded generally that:

the relevance [of rodent forestomach tumors] for humans is probably limited for agents that have no demonstrable genotoxicity and that are solely carcinogenic for the forestomach squamous epithelium in rodents after oral administration, since the exposure conditions are quite different between the experimental animals and humans. (IARC 2003, p. 13).

With respect to ethyl acrylate, the Working Group stated further that it “appears to be clastogenic to mammalian cells in vitro but not in vivo” and described it as:

an example of a chemical that induces forestomach tumours in both sexes of two species of rodents when given by gavage, but only after prolonged exposure. When delivered by inhalation, in the drinking-water or by skin application, ethyl acrylate does not increase the incidence of tumours at any site. (IARC 2003, p. 11).

Accordingly, ethyl acrylate matched the Working Group’s description of an agent of little relevance to human carcinogenicity. The Working Group cited a review by two National Institutes of Environmental Health Sciences (NIEHS) researchers, which concluded:

There is no evidence of carcinogenicity of ethyl acrylate when given by inhalation to rats and mice. There is no evidence of carcinogenicity of ethyl acrylate in skin painting studies in outbred or transgenic mice. Ethyl acrylate is clastogenic in vitro but not in vivo. Ethyl acrylate does not bind to deoxyribonucleosides in vitro. Ethyl acrylate is not mutagenic in bacteria. Ethyl acrylate reacts spontaneously with glutathione and protein sulfhydryl groups in many tissues including the forestomach. Ethyl acrylate at doses that produce forestomach tumours also produces evidence of toxicity. Further, it appears that a certain time of sustained hyperplasia of the forestomach is required for effective tumorigenesis of ethyl acrylate in the forestomach of rats. (Boorman and Sills, 2003).
The IARC Working Group’s conclusions indicate that the rodent forestomach tumors induced by ethyl acrylate are not relevant to humans.

BAMM will continue to encourage IARC to reevaluate its cancer classification of ethyl acrylate. The extent and magnitude of human exposure is an important criterion for IARC when setting priorities. Because human exposure to ethyl acrylate is very limited, it is difficult to predict when IARC might reconsider its outdated cancer classification of ethyl acrylate.

References:

1. Letter from Vincent Cogliano, PhD, Head, Carcinogen Identification and Evaluation Group, 5 April 2007.


**Disclaimer**

This document is not intended to be comprehensive. It is provided solely as background information and should not substitute for an up-to-date Safety Data Sheet or research should specific regulatory or other legal questions arise. It is not intended to be a statement of legal requirements when using or handling acrylates. Although the information is believed to be accurate as of the last update, new information may become available and regulations frequently change, and no warranty, expressed or implied, is made concerning the contents. In addition, many states and localities adopt their own regulations, which are not covered by this summary or on the BAMM website. In all events, the user should consult applicable laws and regulations, as well as their supplier’s Safety Data Sheet, for current information and requirements. **NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY, OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN.**