

Regulatory News

The Sapphire Group Addresses Nasal Dosimetry Study to Determine Non-Cancer Assessment for Ethyl Acrylate

The Sapphire Group, Inc. has recently been engaged by the Basic Acrylic Monomer Manufacturers, Inc. (BAMM) to develop a non-cancer risk assessment for ethyl acrylate (EA) for the determination of safe exposure levels for workers and the general public. EA is an important acrylic monomer used in the manufacture of a variety of polymers and copolymers, which are ingredients in latex paints, binders, caulks, lubricating oils, plastics and other products.

Under the Hazardous Organic National Emissions Standard for Hazardous Air Pollutants of the USEPA, predicted concentrations of EA emitted from industrial facilities are being compared to acceptable chronic exposure concentrations. The goal of this project is to derive a Reference Concentration (RfC) for EA using a measure of an internal dose in the target tissue (the nasal epithelium).

In order to study the exposure differences between humans and rats, the scientists at Sapphire are combining the use of Computational Fluid Dynamics (CFD) and PBPK modeling. This represents a state-of-the-science approach for estimating target tissue dose within the nasal passages of rats and humans. CFD-PBPK modeling represents a relatively new quantitative tool for assessing the dose and response of chemicals that affect the nasal cavity. Past approaches relied on the extrapolation of dose between rats and people for chemicals like EA and did not take into account the real differences in the actual architecture of a human nasal cavity versus that of a rat.

Therefore, the resulting RfC from this new methodology provides a more accurate measurement and will allow the determination of exposure criteria that will remain health protective, while at the same time not overly restrictive. The results of this work are intended to be published in a peer-reviewed scientific journal and will be presented to the USEPA. The Sapphire Group anticipates that the results from the CFD-PBPK models will be used in a similar fashion by other regulatory agencies and that this approach will impact a number of other products in which the nasal cavity is the sensitive tissue.