August 29, 2007

Styrene Information and Research Center
Statement on the Carcinogenic Potential of Styrene

Since 1988, the Styrene Information and Research Center (SIRC) has sponsored a comprehensive research program to better understand the potential, if any, for styrene to affect human health.

The results of extensive peer-reviewed studies of workers in styrene-related industries collectively show that exposure to styrene does not increase the risk of cancer. These studies covered more than 55,000 people who worked with styrene in the United States and Europe over a 45-year period. The workers encountered exposure levels orders of magnitude greater than the very low levels detected in the environment. A lack of cancer-causing effects in these workers is a strong indicator that exposure of the general public to environmental levels of styrene should not cause health effects.

In addition, results from a state-of-the-art styrene inhalation study in rats showed an absence of carcinogenic effects. In a styrene inhalation study in mice, some lung tumor effects were seen. This was not unexpected, due to the sensitivity of the species to styrene and their high background rate of lung tumors.

Given the absence of human or rat tumor effects, subsequent research was conducted that shows that these effects are seen in cell types very prevalent and reactive to styrene in the mouse lung, but less prevalent and much less reactive to styrene in the human lung, indicating the effects in mice do not suggest a concern for similar effects in humans.

To date, no regulatory health organization has classified styrene as a carcinogen. In 1987, the International Agency for Research on Cancer (IARC) in Lyon, France, found that styrene was a “possible” human carcinogen. IARC reassessed styrene in 1994 and again in 2002 and kept the same classification. IARC, itself, stresses that its classifications are not intended for use as a basis for regulation or legislation.

In 1994, Health Canada and Environment Canada concluded that styrene is “non-toxic” for regulatory purposes. Canada considered styrene’s carcinogenic potential and, while regarding it as a possible carcinogen, found that it “does not constitute a danger to human life and health” and “does not constitute a danger to the environment on which human life depends.”

(more)

In 2002, the Harvard Center for Risk Analysis completed a styrene risk analysis, supported by SIRC, that found no convincing evidence that styrene causes cancer in humans.

The U.S. Environmental Protection Agency currently is reviewing styrene health effects under its Integrated Risk Information System (IRIS) program, and is expected to determine whether or not styrene should be classified as a carcinogen and, if so, at what level of regulatory concern. SIRC has provided results of the research it has sponsored over the last 19 years to help inform the IRIS process.

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