



Styrene Information and Research Center (SIRC)

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Sept. 30, 2010

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

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. To date, no regulatory organization anywhere in the world has classified styrene as a known carcinogen.

The aforementioned peer-reviewed 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.

A SIRC-commissioned update of the most authoritative epidemiology study of styrene workers should be completed by the end of 2010; it will increase the “years at risk” to 500,000 from 350,000 and is expected to further validate styrene’s lack of human carcinogenic potential.

Based on the large and still growing body of scientific evidence pointing away from a concern for styrene’s potential carcinogenicity, the European Union concluded in its Registration, Evaluation, Authorisation and Restriction (REACH) risk assessment report on styrene¹ that “there is no clear and consistent evidence for a causal link between specific cancer mortality and exposure to styrene,” and that “no further risk management activity under (the REACH program) is required.”

A recently published SIRC-supported study by a panel of internationally recognized epidemiologists reports: “The available epidemiologic evidence does not support a causal relationship between styrene exposure and any type of human cancer.” The study, “Epidemiologic studies of styrene and cancer: A review of the literature,”² led by Paolo Boffetta

¹ European Union Risk Assessment Report, Styrene, *Draft for Publication, June 2008*, and its Annex XV Transitional Dossier http://echa.europa.eu/chem_data/transit_measures/annex_xv_trans_reports_en.asp.

² Paolo Boffetta, M.D., M.P.H., International Prevention Research Institute, Lyon, France; Hans-Olav Adami, M.D., Ph.D., and Dimitrios Trichopoulos, M.D., M.S., Ph.D., Department of Epidemiology, Harvard School of Public Health, Boston, Mass.; Philip Cole, M.D., Dr.P.H., School of Public Health, University of Alabama, Birmingham, Ala., and Jack Mandel, Ph.D., M.P.H., Dalla Lana School of Public Health, University of Toronto, Ontario, Canada.

of the International Prevention Research Institute, appears in the peer-reviewed *Journal of Occupational and Environmental Medicine*, Volume 51 (2009), published by the American College of Occupational and Environmental Medicine.

Previously, 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.

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.”

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. The U.S. National Toxicology Program also currently is examining styrene’s carcinogenic potential. SIRC has provided results of the research it has sponsored over the last 22 years to help inform the IRIS and NTP processes.

In 1987, IARC classified styrene as 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. SIRC believes that this IARC classification is unwarranted by the growing body of scientific evidence³ pointing away from a human cancer concern for styrene.

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³ The Styrene Information and Research Center (SIRC) currently is supporting cutting-edge research to explain why mice develop lung tumors from styrene exposure, but humans do not seem to; a briefing paper on this styrene mode-of-action research is available on the SIRC Web site, www.styrene.org. SIRC has commissioned some \$20 million worth of research examining styrene’s potential health effects since its founding in 1987.