



Styrene Information and Research Center (SIRC)

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**Styrene Information and Research Center  
Statement on “Identification of research needs to resolve the carcinogenicity of  
high-priority IARC carcinogens, IARC Technical Publication No. 42”**

In general, we agree with the International Agency for Research on Cancer (IARC)/National Occupational Research Agenda (NORA) technical paper calling for additional environmental health research on styrene. In fact, “styrene research is us.” Since 1988, the Styrene Information and Research Center (SIRC) has sponsored a comprehensive research program – some \$20 million worth -- to better understand the potential, if any, for styrene to cause cancer or otherwise affect human health and the environment.

Over this period, we have identified and filled through published, peer-reviewed research most of the science gaps that existed when SIRC came into being. We understand that some additional gaps remain, mainly to understand more fully why mice exposed to styrene develop tumors, while rats exposed to much higher levels and humans do not. We believe it is critical that any further styrene cancer research focus on this key question, and it is where the styrene industry is continuing its commitment to ongoing scientific research<sup>1</sup>.

Meanwhile, it must be noted that, collectively, the results of the extensive peer-reviewed research to date -- including studies of workers in styrene-related industries -- show that exposure to styrene does not increase the risk of human cancer. These studies included 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 thousands of times 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 2009, the *Journal of Occupational and Environmental Medicine* published results from a study that found no causal relationship between styrene and any type of human cancer. An

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<sup>1</sup> Information on this ongoing research may be found in the SIRC briefing paper, “Styrene’s Mode of Action,” available upon request to Joe Walker at [walkercom2@aol.com](mailto:walkercom2@aol.com) or 703-491-3301.

international “blue ribbon” panel<sup>2</sup> examined all of the human health literature on styrene and produced the authoritative report, “Epidemiologic Studies of Styrene and Cancer: A Review of the Literature,” on styrene’s human cancer-causing potential for consideration in regulatory and worker-safety decision-making.

“The evidence for human carcinogenicity of styrene is inconsistent and weak,” the authors concluded. “On the basis of the available evidence, one cannot conclude that there is a causal association between styrene and any form of cancer.”

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.”

Japanese and European regulators also have examined styrene’s cancer-causing potential and found little cause for concern, with neither classifying styrene as a human carcinogen.

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<sup>2</sup> The panel was led by Dr. Paolo Boffetta of the International Prevention Research Institute in Lyon, France, and included Drs. Hans Olov Adami and Dimitrios Trichopoulos of the Harvard School of Public Health, Boston; Dr. Philip Cole of the University of Alabama-Birmingham, and Dr. Jack S. Mandel of the University of Toronto. The report appears in *JOEM* Vo. 51, No. 11, November 2009. SIRC commissioned the report, with the findings delivered to federal regulators and SIRC concurrently.