

California Environmental Protection Agency Office of Environmental Health Hazard Assessment

November 14, 2007

NOTICE OF ADOPTION OF UNIT RISK VALUE FOR ETHYLBENZENE

The Air Toxics Hot Spots Information and Assessment Act of 1987 (Health and Safety Code Section 44300 *et seq.*), requires the California Air Resources Board and the Office of Environmental Health Hazard Assessment (OEHHA) to provide assistance and technical support to Air Pollution Control Districts in regulation of local emissions of air pollutants. In particular, OEHHA is required to develop guidelines for conducting health risk assessments under the program (Health and Safety Code Section 44360 (b)(2)). These guidelines include recommended methodology for conducting chemical- and site-specific risk assessments, and health protective values (Reference Exposure Levels for non-cancer health effects and Unit Risk values for carcinogenic effects).

Following this process, OEHHA is adopting a unit risk value for ethylbenzene of $2.5 \times 10^{-6} (\mu\text{g}/\text{m}^3)^{-1}$ and an inhalation cancer potency value of $0.0087 (\text{mg}/\text{kg-d})^{-1}$. These values are based on the incidence of kidney cancer (renal tubule adenoma or carcinoma) in male rats. They are to be used in the Air Toxics Hot Spots program for estimating the cancer risk associated with inhalation exposures to ethylbenzene. An oral cancer potency value of $0.011 (\text{mg}/\text{kg-d})^{-1}$ is also adopted. The attached document, which has undergone public and peer review, and was approved by the Scientific Review Panel for Toxic Air Contaminants, describes the derivation of these values. The document consists of two parts. A toxicity summary is provided, which forms an addendum to OEHHA's Technical Support Document Describing Available Cancer Potency Factors for the Air Toxics Hot Spots program. An introductory section provides background information on ethylbenzene toxicity, emissions and regulatory treatment, beyond what is contained in the toxicity summary in the Technical Support document.

Ethylbenzene (CAS Registry Number: 100-41-4) enters the atmosphere both from emissions from industrial facilities and other localized sources, and from mobile sources. It is a natural constituent of crude petroleum and is found in gasoline and diesel fuels. It is also used as a chemical intermediate, primarily in the production of styrene. Ethylbenzene is already identified as a TAC as a result of its listing as a U.S. Hazardous Air Pollutant. For assessment of non-cancer effects, a Chronic Reference Exposure Level was adopted in 2000. Ethylbenzene was listed under Proposition 65 as a chemical known to the State of California to cause cancer on June 11, 2004, and was classified as Group 2B (possibly carcinogenic to humans) by the International Agency for Research on Cancer in 2000. A study by the National Toxicology Program (NTP, 1999) in rats was found to show *clear evidence* of a carcinogenic effect in male rats, and *some evidence* of a carcinogenic effect in female rats and male and female mice. This resolved some previous uncertainties and provided data that allow satisfactory cancer risk assessment. Accordingly, and in view of the importance of ethylbenzene as an air pollutant, OEHHA has developed a cancer unit risk value for use in the Hot Spots and TAC programs.