A COMPARATIVE HEALTH RISK ASSESSMENT FOR THE GENERAL POPULATION EXPOSED TO ALACHLOR AND BENZENE IN EUROPE

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Recently, alachlor (2-chloro-2'-6'-diethyl-N-methoxy-methylacetanilide), a herbicide used for weed control on corn, sunflowers and soybeans has been detected in the atmosphere of several rural and urban areas in Europe during and several weeks after its normal application time period (1–3). Levels of alachlor ranged between no detect (1/2 LOD = 0.08 ng m$^{-3}$) and a maximum of 17.83 ng m$^{-3}$ (3).

The objective of this study was to determine the risks associated with short-term exposure to atmospheric alachlor based on a 28-day inhalation toxicity study in rats. Risk was expressed in term of MOE by inhalation ranges between 186,951 (outdoor workers) and 98,735 (indoor workers), where MOE is defined as the ratio between the highest systemic level of exposure without any adverse effect in the experimental species and the absorbed dose in man derived from atmospheric monitoring data. Exposure was calculated using the maximum level of alachlor (17.83 mg/m$^3$) (3), 100% pulmonary absorption and physiological breathing-activity patterns for European populations. Health risks of alachlor were compared with the risks associated with exposure to ambient levels of benzene using the most appropriate short-term toxicological study (4) and 95th percentiles of average benzene levels reported by the European Environmental Protection Agency. For the maximum level of alachlor in air, the short-term MOE by inhalation ranges between 186,951 (outdoor workers) and 434,239 (adult females). These figures are compared against the MOE for benzene exposure in several EU countries. The risks associated with short-term respiratory exposures to alachlor are extremely low, including when food and drinking water sources are considered.

AEPIDEMIOLOGICAL VALIDATION OF ENVIRONMENTAL CANCER RISK ASSESSMENTS: A CASE STUDY IN POPULATIONS EXPOSED TO POLYCYCLIC AROMATIC HYDROCARBONS.

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Can epidemiology validate local environmental cancer risk assessments (RA)? We assessed this approach in populations exposed to polycyclic aromatic hydrocarbon mixtures (PAH) in 5 aluminum smelting and 5 other communities in Quebec. Lifetime lung cancer risks predicted for these communities on the basis of PAH and benzo(a)pyrene (BaP) levels measured in the 1990s were converted to annual incidence rates among women. We estimated the time required for these predicted rates to become statistically significant in this population, using a Poisson sample size calculation. This calculation was redone assuming 10 times higher historical exposures. Using the data used in risk characterisation process, methylmercury intake via the consumption of sea products seems high for a significant part of the French population and especially for children aged 3 to 8 years old. Concerning the feasibility of our method based on tail estimation, the use of Pareto tail adjustment is nonsense if PTWI is exceeded a given toxicological level.