

## Society For Risk Analysis Annual Meeting 2010

### *Risk Analysis in Action*

Poster Session: Exposure Assessment

**P.49 Atrazine in drinking water: Comparison of measured and estimated peak concentrations vs. acute health benchmarks.** *Shay E\*, Thuett K, Finley B; ChemRisk, LLC* [eshay@chemrisk.com](mailto:eshay@chemrisk.com)

**Abstract:** The herbicide atrazine was introduced in the U.S. in 1959 and has been applied extensively to corn, sugarcane, and soybean fields since that time. Concerns regarding potential contamination of community water systems (CWS), particularly in the Midwest, have resulted in the conduct of numerous multi-state monitoring programs, including the ongoing Atrazine Monitoring Program (AMP), which is overseen by the EPA and evaluates atrazine levels on a weekly basis during peak atrazine use (bi-weekly otherwise) for approximately 150 atrazine-vulnerable CWS. Questions have been raised as to whether the frequency of AMP sampling is sufficient to identify atrazine “peaks” that may exceed acute health-based standards. In this analysis, we compare measured atrazine concentrations in representative CWS to a range of acute (one-day) benchmarks: 1) the historical EPA standard (0.298 ppm) that is based on developmental effects, 2) a refined developmental-effects value (1.1 ppm) that incorporates updated information regarding database adequacy and body weight of pregnant women, and 3) a value based on neurological effects (5.8 ppm) that can be considered health-protective for adult males and non-pregnant women. We found that none of the AMP atrazine concentrations measured thus far exceed any of these acute benchmarks, and identified a several-fold margin of safety for a vast majority of the measurements. By applying exceedance fraction statistics, we determined that the “probability of noncompliance” with these benchmarks during non-sampled days is very low. We also describe a variety of factors that should be considered when evaluating atrazine monitoring data in exposure and health risk assessments: use of raw vs. finished water samples, household exposure models, selection of the most appropriate monitoring database (several exist), selection of surface vs. groundwater samples, and the evaluation of atrazine metabolites.