1048-92-281 **Karen A. Yokley*** (kyokley@elon.edu), Department of Mathematics, Elon University, 2320 Campus Box, Elon, NC 27244, and **Marina V. Evans** and **Jane E. Simmons**. *Establishing metabolic changes in the rat during exposures of carbon tetrachoride and trichloroethylene through the use of physiologically based (PBPK) modeling.* Preliminary report.

Toxicological interactions of chemicals can affect metabolism, and changes in metabolism can be evaluated through mathematical modeling. Trichloroethylene (TCE) and carbon tetrachloride (CCl_4) are common contaminants in water and at superfund sites. A gas uptake system was used to collect metabolic data using F344 rats at various initial concentrations of TCE and CCl_4. This particular binary mixture pair is an example of metabolic synergy as opposed to the more common inhibition expected during exposure to multiple chemicals. A previously developed physiologically based pharmacokinetic (PBPK) model of CCl_4 was used to simulate chamber concentrations for the aforementioned mixtures. In order to fit chamber concentration data for CCl_4 when administered with TCE, the parameter of the maximum rate of metabolism (V_{max}) was increased. An increase of 2.8 times the V_{max} value from the original model of CCl_4 produced reasonable predictions for mixture data with higher concentrations of TCE, and an increase of 1.4 times the original V_{max} worked well at predicting CCl_4 chamber concentration for mixtures with 100 ppm TCE. The increase in V_{max} suggests that metabolism of CCl_4 is amplified by the presence of TCE and this amplification is dose-dependent. (Received February 09, 2009)