MEMORANDUM

Date: June 8, 2005 *revised September 28, 2005*

To: Lee Beck, U.S. Environmental Protection Agency, Office of Research and Development

From: Y. Hsu and D. Holoman, E.H. Pechan & Associates, Inc.

Subject: Development of VOC-to-TOG Conversion Factors
EPA Contract No. 68-D-00-265, WA No. 4-49

The process of calculating the VOC-to-TOG conversion factor for a given profile consists of determining the organic gases in the profile that are exempted from the EPA VOC definition and determining what portion of the overall profile is composed of these non-photochemically reactive compounds (e.g., methane, ethane, acetone).

The EPA definition of VOC and a list of exempt organic gases is available at http://www.epa.gov/ttn/naaqs/ozone/ozonetech/def_voc.htm.

Using this list, a database query computes the VOC-to-TOG ratio of the profile by subtracting non-VOC mass fractions from the TOG profile and dividing the sum of all species by this value. For example, if a profile contains 20% methane and 80% VOC , the TOG-to-VOC conversion factor is 1.25 (100%/100% - 20%). The resulting conversion factor is stored with the profile. It can be applied to an estimate of VOC emissions to estimate TOG emissions.

The conversion factors for composite profiles are prepared after the composites are developed.