

# **Ethanol Effects on Permeation**

**Harold Haskew & Associates, Inc.**

**425 W. Huron Suite 230**

**Milford, MI 48381**

**June 15, 2000**

# Tasks

- **Literature Search**
- **Estimate the Vehicle Technologies Mix in 2003**
- **Estimate the Plastic Tank Fraction**
- **Design a Program to Establish Aromatic Permeation Rates**
- **Design a “Quick” Test Program to Estimate Ethanol Permeation Rates**

# **Literature Search for Permeation Effects (rates) with Ethanol**

**A review of the SAE technical Papers for the last 20 years is suggested. The deliverable would be a summary of the various findings, with annotation and a summary overview. This task could be completed within 30 days from the contract award.**

# **Estimate the Technology Mix of the Vehicles in CY 2003**

**1980 – 1988 Carburetor models**

**1980 – 1992 Early Fuel Injection Models**

**1992 – 1996 Late FI (pre enhanced evap)**

**1995 – 2002 Enhanced evap models**

# **Estimate the Plastic Tank “fraction” of Vehicles in the 2003 Population**

**The task concerns establishing the fraction of vehicles by model year and technology that have plastic tanks. Vendor contacts and cooperating vehicle manufacturing firms would be polled to make such an estimate.**

## **Establish permeation rates for aromatic content**

**The first part of this study would be a literature search, and a survey of contacts within the materials industry, to see if there is relevant data currently available.**

**A second part might involve the design of a simple test program to quantify aromatic sensitivity.**

# Design a “quick” test program to estimate permeation rates

The estimation of real-time permeation rates with Ethanol fuels will require relevant data. A quick test program is indicated. HH&A will design such a program, perhaps using fuel tanks from in-use vehicles, and proper stabilization.

