

## Test Results: Performs Like Conventional Gasoline

The California Air Resources Board (ARB), in cooperation with industry, has thoroughly tested cleaner-burning gasoline in a wide range of vehicles and equipment. The testing, completed in 1995, showed that *cleaner-burning gasoline performed as well as conventional gasoline in cars, trucks, and equipment.*

### On-Road Test Program

- From February through August 1995, the ARB and a panel of industry experts evaluated the performance and fuel system compatibility of cleaner-burning gasoline in 829 vehicles. As a control, researchers monitored 637 vehicles that used conventional gasoline.
- Over 5 million miles were driven on cleaner-burning gasoline.

### Test Fleets

- Consisted of vehicles, ranging from passenger cars to heavy-duty trucks, operated by Bank of America, California Department of Transportation, GTE, Pacific Bell (northern and southern California), the County of Sacramento, the City of Sacramento Police Department, and California State University at Fresno.
- Included pre-1981 to 1995 models with odometer readings up to 230,000 miles.

### Inspections

- ARB and fleet service repair technicians periodically checked test and control vehicles for any fuel-related problems. This included inspections of hoses, gaskets, fuel pumps, fuel tanks, and carburetors.
- Fleet records for the test period were reviewed for any fuel-related complaints and repairs.

### Gauging Normal Wear and Tear

- Maintenance and repair records from the participating fleets were evaluated for over 7000 vehicles similar to those used in the study. Researchers used this information on historical rates of fuel system problems to double-check the test results.

### On-Road Test Results

#### No change in performance

- Cleaner-burning gasoline performed as well as conventional gasoline in terms of driveability, starting, idling, acceleration, power, and safety.
- Comparison of fuel system repair rates for test and control vehicles showed no meaningful differences. For example, about 3 percent of the pre-1991 vehicles from **both** the test and control fleets had fuel system-related problems during the six month test.
- As expected, older, high mileage vehicles from both the test and control fleets had a higher rate of fuel system-related problems.

### **No new maintenance**

- No additional maintenance or special engine adjustments were needed for any of the vehicles running on cleaner-burning gasoline.

### **Small reduction in fuel economy**

- Compared to conventional oxygenated gasoline, average fuel economy was reduced by 1 percent.

## **Industry Test Programs**

Auto and oil companies, along with other equipment manufacturers, have also evaluated cleaner-burning gasoline.

- **Chevron U.S.A. Products Company** conducted an employee fleet study with an emphasis on older, foreign vehicles with high mileage. More failures were reported for the test fleet than for the control fleet. However, the rate of problems for the test fleet was not significantly higher than historical rates. Furthermore, combining the Chevron data with ARB test data did not change any of the test results reported above.
- **General Motors and Ford Motor Company** evaluated the effects of several cleaner-burning gasoline formulas on fuel system parts made of rubber and plastics, and on metal wear. Results indicate cleaner-burning gasoline does not adversely affect fuel system materials.
- **Dayco Products and EMCO Wheaton** tested cleaner-burning gasoline in gasoline-dispensing hoses and nozzles. The fuel's performance was equal to or better than conventional gasoline.
- **Harley-Davidson's** test program showed the use of cleaner-burning gasoline in their motorcycles caused no fuel-related problems.
- **Nissan Motor Company** tested the formation of valve and combustion chamber deposits in vehicles. There was no adverse deposit formation from cleaner-burning gasoline.
- **Texaco Refining and Marketing, Inc.**, in cooperation with the ARB, evaluated the effects of gasolines containing very low levels of aromatic hydrocarbons. The tests suggested that such fuels could accelerate the failure of some fuel system components in older, high mileage or extreme service vehicles. However, ARB doesn't expect gasolines with such low aromatic levels to reach consumers in California.

## **Off-Road Test Programs**

The ARB and industry also tested a wide variety of motorized equipment, including boats, snowmobiles, lawn mowers, leaf blowers, chain saws and some off-road construction and farm equipment.

- Industry participants included Arctco Incorporated, Briggs & Stratton Corporation, Mercury Marine, the Portable Power Equipment Manufacturers Association, and Tecumseh Products Company.
- Utility, lawn, garden, industrial, and agricultural equipment was tested at California State University, Fresno and the California Department of Transportation.
- Pleasure craft and small marine engines were tested at Lake Cachuma Boat Rentals as well as Paradise Watercraft Boat Rentals and South Shore Parasailing.
- Snowmobiles were tested at Lake Tahoe Winter Sports Center.

## **Off-Road Test Results**

- Available results indicate that cleaner-burning gasoline had no adverse effects on fuel-related parts.