



## How the Oil Analysis Program (OAP) Works

OAP is a 4-step process:

- (1) Registration
- (2) Sampling
- (3) Analysis
- (4) Diagnostic Reporting

### Step 1 – Registration

1. Begin the OAP process by purchasing a sampling kit. Simply call Oil Analyzers Inc. at (715) 395-0222 for pricing information or to order kits (and a sample pump if desired). You may purchase kits singly or in quantities of 10, 25, 50 or 100, with lower per-kit prices for larger orders.
2. Upon receipt of your order, OAI will immediately send out your sample kit, which includes sample container, sample information form, mailer and complete sampling and mailing instructions.

### Step 2 – Sampling

1. Read the Oil Sampling Procedures included in the kit.
2. Fill out the Sample Information Form completely.
3. Take a sample (minimum: 2 to 3 oz) using the convenient instructions included in your kit. See page 7 of this brochure for more information on sampling.
4. Close and seal sample container **tightly**.
5. Using the mailing instructions included in your kit, send the filled sample container and the Sample Information Form to OAI in the supplied mailer.

### Step 3 – Analysis

Upon receipt of your sample at the Oil Analyzers Inc. laboratory, all requisite testing will be performed. All analyses include determination of viscosity, fuel dilution (if applicable), water, dirt content, fuel soot contamination (if applicable), plus spectrochemical analysis for 21 trace elements to determine component wear, airborne dirt,

anti-freeze contamination (if applicable), and oil additive concentrations.

The analyses also include a neutralization value determination - Total Base Number, TBN (primarily for gasoline and diesel motor oils) or Total Acid Number, TAN (non-crankcase lubricants). Oxidation values and nitration values (if applicable) are also determined.

### Step 4 – Reporting

1. OAI will mail your analysis report on the business day following receipt and testing of your sample. For even faster results, simply request on the Sample Information Form that your report be faxed to you. Be sure to include your fax number.
2. If your analysis uncovers a critical problem, such as pending equipment failure, a technician will telephone you directly to advise you of the situation and recommend a course of corrective action.

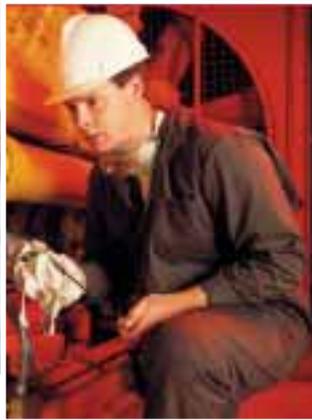
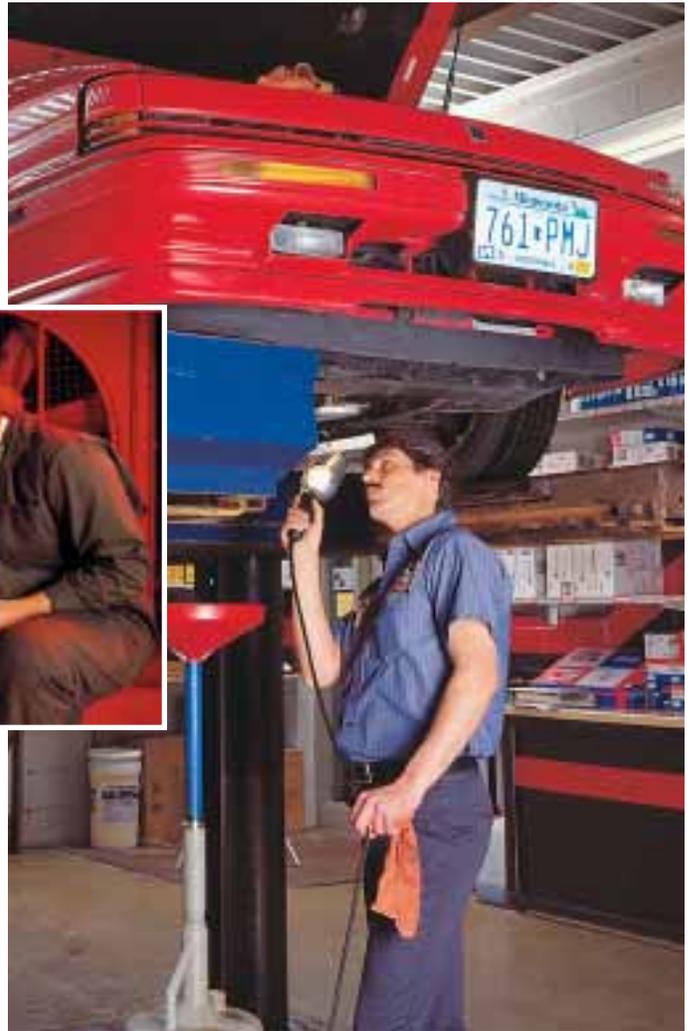
## The Sampling Process

### Trend Analysis

A single sampling analysis is useful in providing information when critical failure conditions exist. However, trend analysis is a better tool for estimating the useful life or overall condition of your engine or equipment. Trend analysis samples are taken and analyzed at regularly scheduled intervals. Comparing the most recent analysis to previous reports on a given machine shows the development of trends. Monitoring these trends enables early detection of internal abnormalities. Tested values falling within acceptable limits may show a pattern of subtle variance, which could signal a developing problem.

Machines of the same type will accumulate contaminants and wear at different rates. Performing trend analysis on each machine is the most effective method of giving you an internal look at your equipment and enabling you to deal with developing problems before they become catastrophic situations.





## Sampling Methods

1. The component sampled should be brought to operating temperature prior to sampling. This will assure that the insoluble and semi-soluble material is suspended evenly throughout the system. Samples taken from components that have been inactive for long periods are not representative.
2. Sample should always be taken in the same manner and from the same point.
3. Do not sample a component directly after an oil change or after a large amount of makeup oil has been added.
4. Use a clean, dry, unbreakable container. Never reuse containers or sampling tubing.

Collect your sample using one of the three following methods:

### 1. Sample Pump Method

Request a sample pump when ordering your sample kit.

The pump will come with complete instructions and will enable you to draw a sample quickly and easily. Seal the bottle tightly.

### 2. Sample Valve/Petcock Method

The valve should be wiped clean and any stagnant oil should be drained prior to catching a sample run. Seal the bottle tightly. Wipe bottle clean.

### 3. Oil Drain Method

Clean the area around the drain plug thoroughly to avoid sample contamination. Allow oil to drain for three to five seconds prior to catching a sample. Place a clean, dry sample bottle in the oil stream and fill to within  $\frac{1}{2}$  inch of the top. Seal bottle tightly. Wipe bottle clean.

## Sampling Tips

- For best results, oil samples should be taken immediately after equipment shutdown, while the equipment is still at operating temperature. Never sample a cold engine and always make sure the oil has been well circulated before taking a sample. Dirt, water and other debris tend to settle to the bottom of the reservoir while light fuels tend to float. This separation will compromise your analysis.
- Good locations for sampling include an oil gallery, the engine crankcase, the drain plug or dipstick tube and the equipment reservoir or sump.
- When taking oil from industrial machinery through a bottom drain, be careful to draw oil until your sample has a uniform, representative appearance.
- Use samples from the drain pan or oil filter only as a last resort. For a failed engine that has had the oil drained, a drain pan or oil filter sample may help detect the cause of the failure.
- Avoid prolonged skin contact with used oil. Wash exposed skin with soap and water after exposure.

**Caution: Engine crankcase oil temperatures can exceed 200°F. To avoid personal injury, use protective equipment such as gloves, safety glasses and protective clothing.**