

**Site Type:** Large Precious Metals Mining Operation

**Location:** Mountain Location - High humidity / Fog / Rain

**Equipment:** Haul Trucks, Underground Trucks, Cranes and Shovels

## Introduction:

A mine operator contacted us to consult on a fuel contamination issue on site. It was suspected that a fungal and bacterial, ("bug"), contamination was causing operational issues leading to high service costs and reduced equipment availability.

The symptoms associated with "bug" growth on this site were:

1. Spotting and fouling of primary filters.
2. Fouling of vehicle filters and low power issues.
3. High filter use in vehicles.

A site visit confirmed the presence of "bug" growth. At that time the storage tanks were treated with biocide FT-400 to eliminate the existing "bug" problem. Deliveries of fuel to the storage tanks were treated for a short time until the test volume of FT-400 ran out on site.

After treating with FT-400, the symptoms disappeared. The low power issues went from levels of 3 - 6 a day to around 0 - 1 instances a day. The primary filters were still clean and spot free after a month of service. Vehicle filter use was significantly reduced.

When the FT-400 treatment ended, symptoms began to return over the next month. Vehicle low power issues rose to 2 - 3 per day. The primary fuel filters again showed the characteristic spotting and staining associated with "bug" growth.

The key points that came from this work were:

- A. The fuel "bugs" are naturally occurring in the soil and water on the site, and so **they will be present** in the fuel tanks.
- B. The high rainfall and prevalent fogs **will ensure water enters** the storage and equipment tanks.
- C. The only way to reliably control "bug" and water issues is to treat and manage the fuel **on site**.

## Before Treating with FT-400



Fuel filters prior to FT-400

The photograph on the left, shows the condition of the primary fuel filter elements prior to treating with biocide FT-400.

The spotting and staining can be clearly seen. Along side the primary filters are the primary screens. These are showing the characteristic black “slimy” deposit associated with “bug” growth.

The hidden side of “bug” contamination can be seen in this photograph of heavy corrosion inside a vehicle fuel tank.

Bacterial and fungal growth can generate acidic compounds that accelerate corrosion of steel parts.

Corrosion of fuel injection components is often seen in serious “bug” contaminations.



Corrosion inside vehicle tank

## After treating with FT-400

The photograph on the right, shows the condition of the primary filters in fuel that has been treated with FT-400. In both photographs the filters had been in service for the same length of time, (about one month). In the case of the filters on the right, they were left in service.

The filter screens, (not shown), were also clean and free of build up.



After treating with FT-400



Filters from untreated and treated fuel

This photograph shows filters on the left from untreated diesel fuel, and on the right from fuel treated with FT-400.

The filters on the left show the effect of one month in diesel contaminated with “bug” growth.

The white filter on the right shows the filter appearance after one month in diesel fuel treated with FT-400.

The filter on the right is still fully serviceable.



## After FT-400 treatment stops



Filter 1 without FT-400 treatment

Filter 2 without FT-400 treatment

These photographs of the primary filters from units 1 and 2 clearly show the spotting and staining of “bug” growth. This has taken about one month to develop, and is consistent with past experience with untreated fuel.

A black sticky deposit present in the primary screens, was also present on the individual vehicle filters

The filter screen in this photograph clearly shows the black sticky deposit.



Filter screen 1 without FT-400 treatment

This short trial clearly shows:

1. “Bug” contamination causes operability issues and higher service costs.
2. FT-400 effectively controls “bug” problems and improves reliability.
3. “Bug” contamination will return and cause problems in untreated fuel.
4. Routine treatment with FT-400 controls “bugs” and improves profitability.