ICI NEW ZEALAND LIMITED

CORPORATE RESEARCH LABORATORY

BIODETERIORATION SERVICE

REPORT NUMBER: CRL/4/88:7/7036

Testing of Diesel Fuel Samples for Microbiological Contamination from a Truck Fitted with the "De-Bug" Unit

Author: G Hettige

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SUMMARY: The De-Bug treatment unit controlled the microbiological contamination in the truck. The tank fuel was constantly contaminated but on fitting the De-Bug unit, there was a dramatic reduction in the number of colony forming units of fungi and bacteria.

1. INTRODUCTION

Diesel fuel samples were collected from the fuel tank and water trap of an operating truck. Samples were taken before and after installing a De-Bug unit and submitted for microbiological testing at CRL.

This report outlines the overall efficacy of the De-Bug unit in an 'in-use' situation (cf CRL report number CRL/3/88:7/7021) (Ref. I).

2. EXPERIMENTAL

The following samples were submitted:

(i) fuel tank and water trap before treatment;

(ii) fuel tank and water trap after 7, 14, 21 days of installing the unit.

200ml samples were collected in sterile bottles. Duplicate volumes of fuel (50ml) were vacuum filtered aspetically using 0.45um and 0.22um membrane filters to isolate fungi and bacteria respectively. The filters were transferred to sterile Petri-dishes and selective medium was poured over the membranes. The Petri-dishes were incubated at 25°C for 5 days (fungi) and 2 days (bacteria)

The colonies were then counted and the results recorded as colony-forming units (CFU) per litre of fuel filtered (Ref. 1).

3. RESULTS

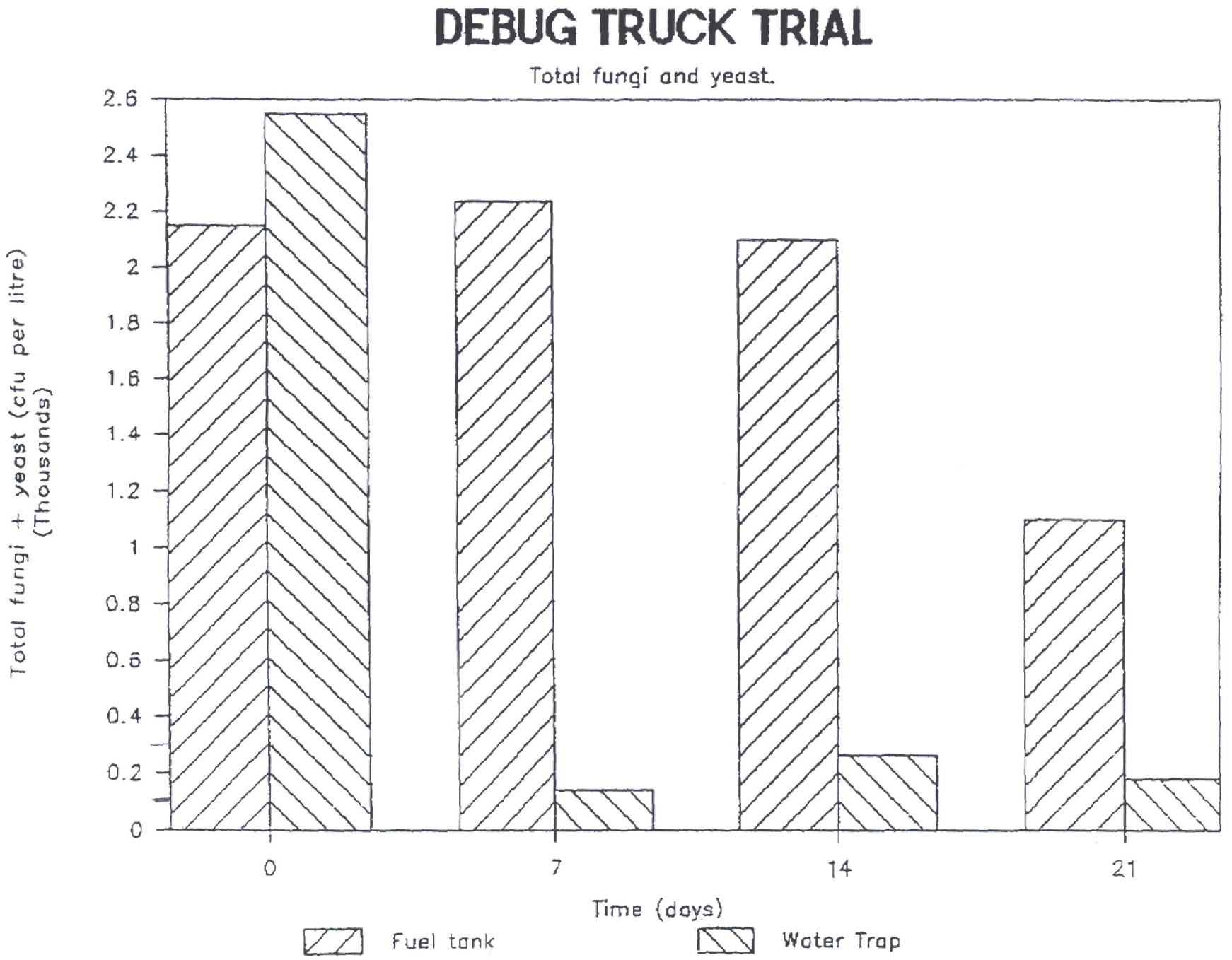
Table 1 shows microbiological contamination levels in diesel samples before and after installing the De-Bug treatment unit in a truck fuel system.

4. CONCLUSION

Table 1 and Figure 1 indicate that the water trap sample was highly contaminated with fungi before De-Bug treatment but the counts dropped rapidly after the installation of the unit.

It was evident that regardless of the contamination level in the tank fuel, the De-Bug unit cleaned up the system over the period tested.

Figure 1


DEBUG TRUCK TRIAL
Total fungi and yeast.
Total fungi + yeast (cfu per litre) (Thousands)
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
7
14
21
Time (days)
Fuel tank
Water Trap