

As far back as the early 2000s, Exhaust Gas Recirculation (EGR) Valves started to show up on Class 8 diesel engines. By 2006 they had become common. By 2007 they were mandatory. Industry wide, the EGR Valve is cooled by engine coolant. This is done to get a more condensed air charge out of the hot exhaust gasses into the combustion chamber. The problem that has been created is that either the valve or seals have a tendency to fail. Unfortunately, the failure most commonly occurs after the New Engine Warranty has expired.

During oil analysis, Potassium and Sodium will be found *together* in the diagnostic report when there is coolant present in the oil. Typically, there will be no water found in an oil analysis report from a failed EGR Valve, since the coolant enters the intake through the EGR system and water is burned in the combustion chamber. In the combustion chamber, water is distilled and goes out the exhaust. The solids left behind from the antifreeze are then picked up by the piston rings in the engine and deposited into the engine oil.

Having coolant contamination in engine oil is a serious issue that should not to be taken lightly. Coolant contaminants will cause bearing failure. The only way to detect Potassium or Sodium in oil is with oil analysis. Additionally, having the diagnostic results while the truck is still in the service bay provides the opportunity to make the timely and affordable repair instead of sending the driver down the road blissfully unaware of the damage that is being done to his engine every mile he drives.

Replacing an EGR valve costs about \$1,000 and replacing an EGR engine will cost about \$30,000. The tow bill alone will cost more than the cost of several years of oil analysis. Just recently we had a driver call us about high Potassium and Sodium. He has been doing On-Site oil analysis for years without a major issue. This time his report showed coolant in the oil. The EGR valve was inspected, found to be faulty, and replaced. An alternative was to do nothing and ruin the engine by taking out a rod bearing. He would have ended up broken down on the side of the road wondering how he was going to pay his bills and how to come up with \$30,000 for a new engine.

Frank Nelson is an Owner Operator with one truck, one source of income; driving his truck. Frank had a problem in his newly acquired used truck; the EGR Valve had sprung a leak and was contaminating his engine oil with antifreeze. While he drove, his engine was quietly self-destructing. The contaminated engine oil was already starting to cause minor bearing wear.

Fortunately for Frank, he has been doing regular oil analysis and he caught the problem early. He replaced his EGR valve at the dealership (They did not change the oil). Frank had the oil changed after the next analysis was done. He was worried about the minor bearing wear and had it analyzed again in 7,500 miles. The second report still showed some Potassium and Sodium, but at a greatly reduced level. There was no more lead or tin. Frank felt good about the engine in general. The contamination proved to be carry-over from the previous oil change. Two more oil changes down the road and all is well.

Frank says that doing oil analysis every oil change is the cheapest insurance and best money he has ever spent to insure that he can make a living driving his truck.



“On-Site Oil analysis saved me from potential bankruptcy. We found the problem, we fixed the EGR and my Christmas Holidays will be filled with peace of mind and not with financial disaster”, said Frank Nelson, Owner Operator.