What is unleaded petrol doing to my engine?

Tetra-ethyl lead, although somewhat unfavorable to the environment, was an essential sacrificial lubricant and heat dispersant between the valves and valve seats preventing Valve Seat Recession especially on the older cast iron and even some aluminum cylinder heads.

Valve Seat Recession occurs mainly on the exhaust valve where high temperatures (in excess of 800°C) combined with the constant impact of the valve on the valve seat result in a welding between the two surfaces breaking tiny particles from the seat to form an abrasive iron oxide globule on the valve. This abrasive action causes more and more wear until the valve recedes into the head.

With the phasing out of LRP it is important to use a lead replacement additive such as Wynn’s Valveguard to act as a protective heat dispersing lubrication layer between the valve and seat. Valveguard provides better valve sealing and is stable at high temperatures, it is a boundary lubricant not to be confused with the hydrodynamic upper cylinder lubes or valve train lubricants which will not protect against Valve Seat recession.

Yes, petrol does go stale.

In as little as 3 weeks, fresh petrol can start changing its chemistry due to oxidation, often accelerated by the presence of dissolved metals in the fuel. This process presents itself in the formation of gums and varnishes which clog up the fuel delivery jets especially in carburetors, making starting difficult, as well as peroxides which can eat away at metals and rubbers in the fuel system.

Incombustible deposits foul up the combustion chamber while the oxidized fuel (often darker in colour) becomes denser making the air fuel mixture too rich leading to running problems.

By using a Fuel Stabiliser in the fuel when an engine stands over prolonged periods, prevents this oxidation as well as corrosion allowing better combustion and performance.