With all of the changes in engine oil formulations, does my engine oil have sufficient anti-wear protection for my vehicle?

The answer is a resounding, YES! Today's ILASC and API licensed engine oils are the best ever made. They possess additives to maintain engine cleanliness, resist oil thickening and minimize wear or scuffing.

Engine oil formulations contain Zinc Dialkyl Dithiophosphate (ZDDP) to help control wear and scuffing. ZDDP also provides oxidation control to minimize oil thickening and varnish deposits. Scuffing and wear occur in engines when loads are sufficient to temporarily rupture the oil film between two parts moving in relative motion. In the 1970's, engine oils typically contained 0.08wt.% Phosphorus (from the ZDDP). This was more than sufficient to protect the "Muscle Cars" of the 1960's and early 1970's. In the 1980's, due to emission control systems and vehicle aerodynamics, engine oil operating temperatures increased. This precipitated the need to increase the ZDDP to provide the necessary oil thickening control, there was no need for increase scuffing or wear protection. The increased levels of ZDDP resulted in typical Phosphorus levels of 0.12wt% in the early 1990's. Beginning in 1995 with API SJ phosphorus levels decreased because vehicle manufacturers where required to lengthen the warranty of the emission control system on the vehicles they manufactured. Phosphorus levels decreased again in 2004 with API SM. The Catalytic Converter, a key component of that system, is susceptible to poising by ZDDP. In order to obtain the necessary life out of the converter, to meet the EPA mandate, the engine manufacturers required reductions in ZDDP. Oil companies responded by incorporating newer base oils with better oxidation resistance that were not readily available in the 1980's and early 1990's. This allowed the oil companies to meet the required reductions in ZDDP to the engine manufacturers' benefit. We are now back down to the same levels of ZDDP used in the 1970's. In current oil the ZDDP will last longer because much less is decomposed as an anti-oxidant since modern ashless anti-oxidants are very good.

Joe Hotrod might ask: Alright, then why are there issues with valve train failures in high performance engines using today's engine oils? I would respond: Why do you want to blame the engine oil? Early failure of high performance flat tappet camshaft lobes can be due to improper break-in procedures, extremely stiff valve spring pressures, or excessive loads due to cam lobe design. In order to develop more and more power, the cam lobe designs continue to become more and more extreme. Original Equipment Manufacturers (OEMs) have used phosphate coatings to reduce the failure rate of not only high-performance camshafts, but also those found in today's average automobiles. Aftermarket camshaft manufacturers typically do not phosphate coat their camshafts (higher cost). Therefore proper break-in procedures must be followed to obtain the proper valve train life. Some procedures require the use of an assembly lube that is a weak substitute for the phosphate coating or surface hardening procedure. If the loads on the camshaft lobes are excessive, all the ZDDP in the world will not prevent premature failure of the camshaft! Reground camshafts need to be surfaced hardened if they are to survive the break-in period with minimal wear. The regrinding process can remove metal below the OEM