



The most important factor in setting up a cooling system maintenance program is using a source water you know meets ASTM (American Standards Testing Materials) and engine manufacturers specifications for use in engine coolant. Source waters that fall short can cause very serious engine damage. Because geographic location and environmental conditions can greatly affect source water properties, even water that has passed specification testing should be re-tested periodically to identify any changes in composition.

GEOGRAPHIC LOCATION

Different areas of the United States are more prone to higher levels of certain contaminants than others. High chloride levels are usually found in coastal areas and in the South and Southwest. High sulfate levels are usually found around coal mining operations in areas such as Texas and southern California. Areas with low rainfall tend to have “hard water” due to higher levels of calcium and magnesium. Where rainfall is heavy, the water will usually be more acidic.

ENVIRONMENTAL CONSIDERATIONS

Drought

Drought has occurred around the world throughout history. In 2002, most of the United States was experiencing severe drought conditions and suffering from extremely low water tables. Lower water tables cause higher concentrations of contaminants – and some geographic areas can be affected more than others.

If a source water only marginally meets specifications, severe drought can result in contamination levels too high for supplemental coolant inhibitors and antifreeze to hold them in solution. In contrast, seasons of severe rainfall elevate water tables, increase the erosion of lake and river banks and rock formations and drastically change the amount of contaminants and suspended sediment present. The water becomes cloudy and saturated with hard minerals such as calcium, magnesium, lime or hard metals. If not properly filtered, the source water will produce scale at high temperatures that can easily clog an engine's cooling system and result in cracked heads, head gasket failure or plugged radiator and/or oil coolers.

Heavy rainfall can also change a source water's pH. Water with low pH will become acidic with exposure to heat. Acidic water will attack iron, copper and aluminum components. Testing will indicate any need for the addition of a pH feeder that will bring the water's pH back to an acceptable level.