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EQUIPMENT FIRE PREVENTION: HOW ARE WE DOING?

Fire: prevention

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INTRODUCTION: Logging equipment insurance costs are skyrocketing, largely due to equipment fires, especially during the summer season. Summer provides dry, hot conditions that will increase the possibility of equipment or job site fires. Equipment and job site fires are all too common and can be devastating. At a minimum they create downtime and expensive repairs, and they may result in complete loss of equipment, as well as devastating wildfires. So what can we do to reduce or prevent these huge losses?

RECOMMENDATIONS: The two biggest factors that cause fires on equipment are poor housekeeping and lack of good maintenance. Logging operators have control over both of these factors. We can provide good maintenance and good housekeeping; it's just a matter of taking the time to do it in a systematic and timely manner. Michael Riegert, a Special Investigator for West Bend Mutual Insurance, created a checklist that can help you set up a periodic inspection of your equipment to prevent or reduce the likelihood of fires. Below is a summary of that checklist.

General Housekeeping:

- Periodic cleaning of the engine and other enclosed areas of equipment to clean out debris, accumulations of oil and grease, or a combination of them is critical to reducing fuel for fires. Also, clean away the accumulation of leaves and twigs around exhaust systems. These become tinderboxes when the heat from the exhaust dries them, and the exhaust itself can become hot enough to ignite them!
- Areas around drive shafts, external bearing areas, external braking systems on older machines — keep those areas free of grease and oil that can be a magnet for dust, leaves, and twigs and a source of fuel for fires.
- Cleanup after a hydraulic or other oil leak — do it now to avoid possible problems later.
- Machine surfaces — keep them free of oil and debris accumulation, not only to help prevent fires but to create a safer environment for the operator.
- Periodic steam cleaning — essential to keeping those small cavities free of debris and to keep the whole machine clean. Clean more frequently during softwood processing, dry periods, or in the fall when leaves are dry. It's also a good idea when excessive oil leaks occur within the machine framework.
- With the addition of cooling fans for engine compartments, more dust is likely to be moving within those compartments; therefore, more frequent cleaning is recommended. **ALWAYS REMEMBER THAT DUST MOVING THROUGH THESE AREAS CAN CAUSE STATIC ELECTRICITY — AN IGNITION SOURCE!**

Fuel Systems:

- Fuel Tanks — check around the entire tank for leaks or seepage.
- Fuel Lines — check for leaks, cracks, and sharp kinks. Individual cylinder/injector feed lines that restrict fuel can restrict proper fuel volumes and starve that cylinder, creating substantially more heat in the engine compartment.
- Fuel Pumps — check the fittings, especially the compression ring couplings, for cracks and leaks.
- Fuel injectors — check the feeder lines. Line tees that are braised easily crack, especially when we adjust connections.
- Pressure Regulators and Electronic Metering Systems — always check for proper function. Excessive internal pressures can create leaks and other problems.
- Fuel Feedback Systems and Fuel Reclamation/Vapor Collection Systems — these systems are not pressurized, but vapors can create an extremely volatile situation.

Transmission and Power Steering Systems:

- Fluids — transmission and power steering fluids are flammable, so be sure to handle them with care, especially

around the filler tubes. Also check for venting system seepage and for transmission case/power steering cylinder/line leakage that can create fuel for fires.

Engine Area:

- Oil Leaks — cause sticky surfaces where dust and debris can accumulate, creating fuel for fires. A fire is just waiting to happen. Leaks will occur in a variety of areas on an engine, including any gasket or seal area, breather tubes, and oil lines. Check the engine compartment frequently, and correct any problems as soon as possible.
- Radiant Heat — especially in engine compartments with cooling fans. When equipment is turned off, the cooling fans automatically shut down, and radiant heat rises dramatically. Also, vapors from oil breathers, batteries, etc., can accumulate during this time. Radiant heat can contribute to spontaneous combustion or other types of ignition and start a fire long after the operator has gone home.

Braking Systems:

- Be sure to check for friction-type heat buildup and brake fluid leaks, especially on older machines that do not have internal braking systems.

Exhaust Systems:

- Manifold and Piping Systems — check for debris, proper routing, and holes within the system.
- Be aware that it is possible that catalytic converters may be installed on diesel engines within the next five years. If so, they will create another extreme heat source that we'll need to deal with.

Electrical Systems:

- Routing — be sure proper protection is provided in all areas where wires need to go around, alongside, or through the machine framework.
- Connections and Resistance — resistance creates heat, and anything that interrupts or suppresses current flow creates resistance. Block connectors, wire that is too small, corrosion, and bad connections all create resistance.
- Shorting — be sure all circuits are fused properly. Check your circuitry for bare or broken wires, bad connections, etc. One of the biggest problems is associated with installing additional equipment and direct-wiring it, such as radios, window fans, etc.
- Switches — be sure they are able to handle the voltage and amperage. Always use in-line fuses.

Hydraulic Systems:

- Leaks — the biggest problem with hydraulic systems. Hydraulic oil accumulation is much too common, and oil can follow machine framework and get into areas that are hard to access for cleaning. Check for leaks daily and repair them immediately.
- Be sure all hoses are long enough for their applications. Hoses will shorten when internal hydraulic pressure is applied, so always allow ample length of hose.

So, how are you doing in your efforts to prevent fires on your equipment?

CONCLUSION: Remember, equipment fires need three elements to burn — ignition source (heat), fuel, and oxygen. In fire prevention, we can't do much about the oxygen. But are you doing all you can to control the other two — ignition source and fuel? These recommendations for preventing equipment fires are generic. Please consult your equipment's operator's manual for specific preventative maintenance and housekeeping steps you can take to prevent fires.

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