# Water Treatment Newsletter

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## Prevent Off-line Cooling System Problems

Cooling tower systems that are shut down for winter or other long-term storage are highly susceptible to corrosion, fouling and uncontrolled microbiological growth if they are not properly prepared for lay-up. These phenomena can result in increased system maintenance and repair costs, and will frequently cause operational problems when the system is returned to service.

Probably the most pervasive and troublesome problem that results from improper cooling system lay-up is system piping corrosion. This corrosion results in the formation of iron scale or "pipe slag". When the system is started up, the pipe slag breaks off in chunks that plug distribution nozzles and decks, strainers and even condenser tubes. Following the proper steps when taking a system off line can prevent these problems.

**Cooling System Shut Down Procedures:**

1. Prior to shutdown, decrease cycles of concentration to minimize drop-out of dissolved and suspended solids after shutdown.
2. At the same time, add a non-oxidizing biocide at maximum label dosage, along with a dispersant or biofilm cleaner.
3. Add a post-film lay-up corrosion inhibitor and circulate through the system for as long a time as possible, preferably three or more days.
4. After shutdown, completely drain the system and power wash or flush all mud and debris from the tower basin.
5. If the condenser or heat exchanger is to be laid up wet, drain and flush the unit, then refill with fresh make-up water along with a non-oxidizing biocide and lay-up corrosion inhibitor at maximum recommended level.

Following these procedures will minimize cooling system storage problems, extend the useful life of system components and reduce or eliminate operational problems when the system is brought back on line.

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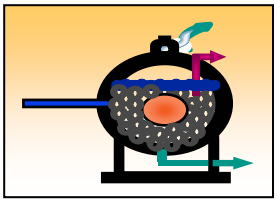
## More Boiler, Pressure Vessel Deaths



**COLUMBUS, Ohio** – Both the severity and number of accidents attributed to boilers and pressure vessels increased 1998 to 1999.

A report from the National Board of Boiler and Pressure Vessel Inspectors says the incidents increased 8% from 2,011 to 2,163. More than 85% of incidents were attributable to human error due to operator error, poor maintenance, low water condition, improper installation and faulty design or fabrication.

Deaths related to accidents increased from nine in 1998 to 21 in 1999. Thirteen of the fatalities were caused by human error. Incidents with injuries not causing death increased from a record-low 31 to 136. Human error was a factor in 73% of these incidents.

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