

## FEATURE

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# Mercury and Water Don't Mix

### **Illinois Law Bans the Sale of Mercury Seals for Well Pump Applications Due to Environmental Concerns**

*Mercury is a very toxic element that can cause severe neurological health problems. Mercury can enter the human body through inhalation, ingestion, and skin absorption. Over the years there has been a growing concern with the use of mercury. Many environmentalists believe that the use of mercury in everyday products may have contributed to cardiovascular disease, autism, seizures, mental retardation, hyperactivity, dyslexia and many other conditions. Many states have enacted legislation that has reduced or eliminated the amount of mercury that a product can contain.*

Recently, in the interest of public safety, the Governor of Illinois signed new legislation (SB 1213), which was approved by the Illinois House of Representatives and the State Senate, banning the sale and distribution of "mercury seals" for water well pumping equipment. Due to the environmental and public health concerns, the Illinois Environmental Protection Agency (IEPA), Division of Pollution Protection, decided to add submersible motors to the mercury ban list after several mercury spills were reported throughout the country.

The mercury ban in the new law prevents the installation of a mercury seal commonly found in the Flowserve Corporation, Byron Jackson, Type "H" Submersible motor, which has been installed in many water wells throughout the State of Illinois. The Byron Jackson motors are unique as they are the only submersible motor manufacturer to offer a mercury seal option in a submersible motor. This design utilized mercury's unique characteristics to create a seal around the rotating shaft. This inhibits the intrusion of well water into the oil-filled electric motor housing, preventing a catastrophic motor failure. The Type "H" motors have 8.25 to 17.25 pounds of mercury located within the seal. Seals on a standard water-filled motor are not as critical. Well water can enter a water-filled motor without risk of immediate motor failure, unlike an oil-filled motor.

The mercury ban goes into effect on July 1, 2012. After that, owners of water systems will be required to install alternative seals, such as the industry standard mechanical seal found in all other submersible motors. According to the IEPA, owners will no longer be allowed to purchase, repair, or re-install the type "H" motor with a mercury seal. According to the law, if a submersible motor is pulled for servicing, the seal cannot be altered or repaired. If repairs to the motor are necessary, the IEPA will require that the mercury seal be replaced. In response to this new legislation, the Flowserve Corporation has decided to discontinue production and repairs to the

Type "H" motor with mercury seals as of July, 2012. They will make conversion to a double mechanical seal mandatory.

Owners will not be required to pull existing pumping equipment in order to become compliant. Owners of water systems will be required to become compliant with the law only when installing new systems or when repairs become necessary. There are several options available for compliance with the new law once a system requires repairs. When the pumping equipment is removed from the well for service, the Byron Jackson Type "H" motor can be retrofitted with a double mechanical seal. Another option is to adapt the pump to a water-filled, submersible motor with a standard mechanical seal, which is often seen as more environmentally friendly. Water-filled motors have been around for decades. Due to their reliability and availability, they are the most commonly used submersible motors in the world. They account for over 90% of all motors installed.

There are some important considerations when determining whether to convert the Byron Jackson to a double mechanical seal or to replace the motor altogether. When evaluating the cost of conversion of the Byron Jackson or replacement with a new water-filled motor, the prices are comparable. The choice of repairing the old motor or replacing it with new becomes compelling once you factor in the turnaround time for repairing and converting the Byron Jackson motor, which can be between 7 and 16 weeks. Typically, water-filled motors are readily available for immediate installation.

Our goal is to assure that all water operators are fully informed of the impact of this new law and to provide assistance in developing cost-effective solutions for achieving compliance. How do you know if you'll be affected by this legislation? Questions on the new law can be directed to Becky Jayne with the IEPA. You may also contact us directly. A simple site visit by a qualified service technician can help determine the law's effect on you. **-OC**