

Stray voltage

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measured from metal structures interconnected by the neutral to different earth points although all of these metallic structures connected to the neutral will be at almost the same voltage level."

The researchers explained although the stall framework, cow-contact equipment and milk pipeline system are bonded with the neutral at the service entrance, the floor grate over the manure gutter, the reinforcing steel in the cow platform and the milker's pit, and the stall support posts may be in direct contact with earth under the parlor — a different potential level.

"Different surfaces in the parlor or electrically discontinuous parts of the stall and milking system can all be grounded yet can be at different voltage potentials," they said. "Current can flow through an animal touching different voltage points (hooves standing on earthed

parts and body contact with metal feeder, milking equipment and stall frames)."

"The milker usually is not aware of this small voltage because he is well-insulated by rubber boots and has a higher resistance (less effective) hand electrical contact to the metal. The animal, with moist and sensitive mouth, hooves, and udder, is a good path for electrical current," the researchers noted. "Some dairymen have detected such voltages when fresh cuts on the hand have exposed sensitive nerve ends."

According to Shenk, cows suffering the anxiety of stray voltage in the milking parlor or stanchion stall tend to hold up 5 to 20 percent of their milk. This withdrawal of milk ietdown, he suggested, can lead to mastitis where subclinical problems are lurking.

"The stray voltage distorts the teat, causing the sphincter muscle

to invert. This damage lasts for the entire lactation, and in some cows the inversion won't turn back," says Shenk. "This opens the teat end to accept outside bacteria through the streak canal."

Once a dairy producer has eliminated all the usual causes for nervous cows with low production, how can the farmer check for stray voltage?

According to Shenk, stray voltage detection falls back into the dealers lap, although the majority of dealers are not familiar with the problem yet.

Other stray voltage detectives might also include electric company technicians, county agents, and electrical contractors.

Instead of a magnifying glass, these detectives study the problem with a multi-range voltmeter/milliammeter, measuring different voltage potentials, from bulk tank to floor drain, drinking cup to gutter grate, etc.

Shenk notes electrical codes allow a 3 to 4 volt tolerant level. "But, we've got problems if we get

a 0.3 volt reading when measuring the different plane levels in a parlor," he says.

What can be done if stray voltage is above the levels felt to be tolerated by dairy cows?

According to Shenk, rewiring will solve the problems of 75 percent of the stray voltage incidence. This rewiring will insure

proper grounds and will bond the various surfaces in the milking area to the grounding conductor to create one voltage plane.

In some cases, it may be necessary for the farmer to invest in an isolating transformer, purchased from the power company, to correct the problem.

Water conservation kit available

LEBANON — More than 50 homeowners, municipality officials, farmers, and well drillers turned out recently for the Lebanon County Rural Development Committee meeting.

Highlighting the program was a talk by Tom Fiddler of the Pennsylvania Department of Environmental Resources, providing tips on how to conserve water. He announced the availability of a water conservation kit through

D.E.R. designed to save water in the bath and kitchen.

The kit includes a plastic bag which holds 3 to 4 quarts of water.

According to the D.E.R. spokesman, the kit can save about 200 gallons of water every day. The kit costs only 50 cents.

To order the kits, write Water Conservation Kit, Box 1467, Evangelical Press Building, Harrisburg, PA 17120, or contact the local Conservation District office.



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