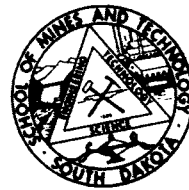


# RESEARCH REPORTS

## PERFORMANCE ANALYSIS OF PERMANENT MAGNET TYPE WATER TREATMENT DEVICES

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# RESEARCH REPORTS

## MAGNETIC WATER TREATMENT DEVICES

### EXECUTIVE SUMMARY

The Water Quality Association selected the South Dakota School of Mines and Technology to be the recipient of a study grant; the purpose of which was to evaluate the performance of permanent magnetic water conditioners in an environment representative of typical residential and light commercial application.

The objective of this research study is to quantitatively assess the effectiveness of permanent magnet type conditioners only. The first phase of the testing program was to develop a standardized series of tests that will be able to be duplicated at any time within acceptable experimental error and be acceptable to the academic community. These tests will demonstrate the accuracy or validity of the published performance claims regarding corrosion inhibition, scale formation, scale removal, and alteration of the physical and chemical properties of water. The second phase of the contract was the

actual testing of the devices under the testing protocol developed in Phase I. The devices were tested against their own performance claims and against the performance of conventional ion exchange treatment devices.

The study found that there is no change in the physical and/or chemical properties of water treated with permanent magnetic devices. The boiling point was not lowered; the surface tension measurements indicated no measurable difference between raw water and magnetically treated water; there was no evidence of a reduction of scale forming tendencies in water using magnetic devices; and the electrical conductivity of the water was unchanged. The calcium ion concentration of the water was unchanged by magnetic treatment, indicating that magnetic treatment could not be causing the precipitation of calcium carbonate.

—Dr. Dan D. Carda