

Water Quality and Laundry Problems

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This paper has been altered (...) by me, Charlie Sutherland, only to clarify some terms and show how our Charlie's Soap relates to the report. My comments are indented and in red.

Research on laundering has shown that many factors affect the cleanliness of the wash. One often ignored factor is the quality of the water used. Several laundry problems are directly related to minerals, organic matter, and other impurities in the water supply. Some laundry problems may have similar symptoms but more than one possible cause. To determine if a combination of factors or water quality alone is responsible for your laundry problem, consider your equipment, water, products and procedures.

Problem: Hard Water

Laundry Symptoms:

- Dinginess or graying, yellowing
- General soil build-up
- Stiff, harsh feel to fabrics
- White or gray streaks on colored fabrics

Calcium and magnesium are usually the minerals that make water hard. The greater the concentration of these minerals, the harder the water. Hard water doesn't clean as effectively as soft water. In hard water much of the detergent added to the washer goes to soften the water instead of to clean the clothes. This means that more detergent must be used than in soft water. Softening water by using more detergent has two drawbacks; it is expensive and if the detergent contains phosphate it can add to water pollution. Heavy duty liquid detergents will remove soil in hard water almost as effectively as powdered phosphate-built detergents and they do not contribute to water pollution. Normally, non-phosphate powdered detergents and soap do not perform satisfactorily in hard water.

Charlie's Soap is generally quite good, but very hard water needs some extra attention.

Solution: To prevent the problems caused by hard water, First, use water as hot as recommended for the fabric since all detergents perform better at higher temperatures in any quality water.

Second, soften the water. Water may be softened in the washer with nonprecipitating ion-exchange water conditioners*), commonly sold in grocery stores simply as water conditioners.

These are the phosphates you were just warned about.

Water softener systems which exchange sodium for calcium and magnesium may also be connected to the water supply lines for the washer, the kitchen, or for the entire house. However, persons on sodium-restricted diets should consult their physicians before adding a water softener system to lines that supply water for drinking and cooking because the sodium content of the water will increase.

To remedy problems that have already occurred, fill the washer with the hottest water appropriate for the fabric. Add extra detergent and one cup on nonprecipitating *(phosphate) water conditioner. Agitate just long enough to wet the clothes. Soak overnight or for about twelve hours. Drain and spin without agitating. Launder using regular cycle, no detergent, and one cup of nonprecipitating *(phosphate) water conditioner. If needed, repeat the launderings using one cup of nonprecipitating

*(**phosphate**) water conditioner and no detergent until no suds appear during the rinses. In order to remove all dinginess it may be necessary to launder with one cup nonprecipitating *(**phosphate**) water conditioner and chlorine bleach if safe for the fabric, following package instructions for the amount of bleach to use.

Solutions using Charlie's Soap	
Mild hard water	2 scoops of Charlie's Soap Powder
Moderate	1 scoop of Charlie's Soap Powder plus up to ¼ cup of washing soda, borax, or simple oxygen bleach
Severe (recommended)	1 scoop of Charlie's Soap Powder plus up to 1/8 cup of phosphate*

Problem: Rusty water or red water

Laundry Symptom

- Yellow, red or brown stains
- Yellowing, especially when chlorine bleach is used

Rusty or red water is caused by iron. Iron may be dissolved in the water or may be suspended as particles, or iron bacteria may cause the problem. The iron may come from the water supply or from a water heater or metal parts in the well that are rusty.

Solution: Replacing a rusty water heater may solve the problem. Dissolved iron may be removed by water softening equipment, special iron-removal equipment or filters, chlorination and filtering through sand and carbon, or by aeration followed by sand filtration. Chlorination and filtering also removes iron bacteria. Chlorine reacts with the dissolved iron to form particles of iron (an insoluble precipitate) which do not dissolve and settle out of the water. If the precipitate is formed in the washer by the use of chlorine bleach during laundering it will be deposited in the fabric and cannot be removed.

To remove rust stains from white and colorfast washable fabrics, use a commercial rust remover. Follow product directions. Do not use commercial rust removers in the washing machine. Be sure all traces of rust remover are rinsed from the fabric. An alternate method is to sprinkle salt on the spot and dampen it with lemon juice. Dry articles in the sun, then rinse. Test procedures on a hidden portion of the article first, since they may cause color change. Take non-colorfast fabrics to a commercial laundry for professional treatment.

Problem: Turbid water

Laundry Symptoms

- Yellowing and dinginess

Turbid water has very fine particles of silt, clay, or organic material in it. Normally, this problem is prevented by water treatment plants. It may be a problem for small private water supplies.

Solution: A filter is needed to collect the suspended particles before the water enters the lines. If you do not filter the water, nonprecipitating *(**phosphate**) water conditioners added each time the washer fills may help hold the particles in suspension and away from clothes.

Stains and yellowness from turbid water may be removed by laundering with bleach appropriate for the fabric.

Problem: Acid water

Laundry Symptoms

- Red, reddish-brown, green, or blue stains

Acid water is caused by a variety of conditions, the most common being carbon dioxide dissolved in the water. The stains on fabrics are caused by the corrosive action of the water on pipes. The type of metal used in the pipe determines the color of the stains.

Solution: The problems of acid water must be corrected with chemicals and filters. For example, a soda ash solution feeder or a bed of coarse limestone chips will raise the pH of acid water.

Metallic stains on fabrics may be difficult to remove. Treat red or reddish-brown stains as rust stains. Blue or green stains may respond to bleach if it is safe for the fabric.

More Than Laundry

Water quality affects more than laundry. It may also affect your health, the taste and odor of the water, as well as the operation and life span of appliances. If you suspect you have water quality problems, have your water tested and take the steps necessary to improve the quality. There are a number of places to have water samples tested, usually for a fee. Some large cities have water quality testing laboratories associated with their health departments that may provide sample analysis. Many commercial testing laboratories also test water samples. The Texas Department of Health routinely analyzes home water samples for bacterial contamination and performs certain chemical tests upon referral by a physician. The Soil and Water Testing Laboratory of the Texas Agricultural Extension Service also tests water for salts and some other impurities.

*** (The "non-precipitating conditioners" this report recommends are phosphates. They are very useful and safe when used sparingly. Phosphates are nutrients for bacteria and algae and are good for septic systems and the environment in small doses. When used carelessly and in large quantities such as in fertilizers, they can indeed cause depletion of oxygen and choking of streams and ponds by too much algae growth)**

The phosphates recommended are either TSP (tri-sodium phosphate), STP (sodium tripolyphosphate), or TKPP (tetra sodium pyrophosphates) and they are available at you local paint store.

References

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