SOME THOUGHTS ON WATER

by Greg Hackenburg

Chloramines, Chlorine, and Chlorophenolics

"A foreign substance is introduced into our precious (beery) fluids without the knowledge of the individual, and certainly without any choice. That's the way your hard core Commie works."
– Jack D. Ripper in Dr. Stranglove

There was a recent discussion on the Louisiana Homebrewer's Facebook Group that deserves some wider exposure. It was noted that in recent Louisiana homebrewing competitions there has been a large number of beers with signs of Chlorophenolics. This is noted by plastic, vinyl, and possibly medicinal flavors. Obviously, it is a flaw, unless you like the taste of plastic and vinyl.

What causes it? Chlorine in the brewing water, and specifically in our case, something called Chloramines. Both are added to water as a disinfectant. And both compounds can be taken up by the yeast and produce the plasticy Chlorophenolic flavors. Chlorine on its own is not so bad; carbon filtration easily removes it and it is usually off gassed during the boil. Years back, the usual culprit for the flavors was from the use of household chlorine bleach as a sanitizer. Now we have Chloramines, and they are not so easily removed.

Recent State regulations (brain eating amoeba, anyone?) have led to an increased use in many municipal water supplies. This includes Jefferson and Orleans. The good news is that the levels appear to be pretty low, low enough that I've yet to hear of any problems, including brain eating amoebas. However, that can change, and Chlorophenolic are potent, noticeable in extremely small amounts.

Chloramine is a compound of chlorine and ammonia. The benefit as a disinfectant is exactly what makes it a problem; it stays in the water and is hard to remove. So, if it does rear its head, what can we do? Unfortunately, once in the beer, you stuck with it, but it can be prevented in your next batch.

Bottled water? Yeah, there's that.

Filtration is another option, but it's a bit more difficult than chlorine. You need and "active" or "catalytic" carbon filter, not the standard carbon filter, and a long contact time. So an extremely low flow rate is needed. How slow? It depends on your filter, but most advise rates that would put a serious dent into your brew day. Some of you out there have fancy-pants reverse osmosis systems, and think you have no need to worry…not so fast! Not all systems have the required active carbon portion, and the flow rate still applies. Check your system specs.

Next is chemical removal and we have two methods. The one snag is would really helps to know how much Chloramine is in your water. The easily available water reports do not list the amount, and as with chlorine, the amount probably varies over the year. But all hope is not lost. From what I can deduce 3ppm seems to be an upper limit. Considering we are not really seeing Chlorophenolics locally, we are probably well below that, but we will look at the worst case.

The first is Metabisulfite otherwise known as Campden Tablets. They can be either potassium metabisulfite or sodium metabisulfite, and are available at any homebrew shop. One tablet will treat and chemically remove up to 3ppm of Chloramines in 20 gallons of water. It works in minutes, and the by-products are negligible. The tablets are most often used in wine making to kill off wild yeast, and they do remain active for a while. Winemakers typically wait 24 hours to pitch the yeast. Our level is about 1/20th of that, and some claim mashing and the boiling of the wort drives it off. But you may want to let the water sit overnight to be sure.

The second is good old Vitamin C. It keeps scurvy at bay, and takes out both chlorine and Chloramines. It can be bought as granules, also labeled as "Ascorbic Acid". I've gotten mixed information on the quantities required. Sticking to sources that actually recognized that some sort of chemistry was involved, it appears that 10mg per gallon should clear out the Chloramines. It works in seconds and, again, the by-products are negligible. The plus is you are good to go with no worries about your yeast, downside is it is more expensive than Campden Tablets.

A caveat; there was some good info as it applies to homebrewing, but not a lot. Much of what I found was from aquarium enthusiasts, companies trying to sell you something, and those worried about the contamination of their precious bodily fluids. As more municipalities use it, I would expect some better information to start coming out. Also, accurate amounts listed in a water report would be a big help. All in all, at this point, if you begin to see problems from your tap water, Campden Tablets seem the best solution.