

TCA Update

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Introduction

Traditional wine bottle closures, those made of natural bark cork, have since the 1970s taken the fall for faulty, or tainted wine, where 2,4,6 tri-chloro-anisole, TCA for short, leached into the wine inside the bottle, giving it an off-putting musty, wet cardboard-like aroma and flavor. Recent strides in scientific testing and sensory threshold analyses have focused an industry facing a down-cycle on acknowledging and identifying that the problem goes well beyond the cork, and on taking action to prevent potentially compromised product from hitting the marketplace.

What is TCA?

TCA is a group of chemical compounds known as chloro-anisoles and is naturally occurring in the environment. TCA is commonly known as the leading cause of "corked" wine, so called as natural bark closures infected with TCA were thought to be the primary vehicle of transmission into the wine. At high levels (measured now in parts per trillion), TCA imparts a musty or moldy character to the wine or, at low levels, simply suppresses the wine's fruit characters. TCA is a naturally occurring compound and is not known to cause any health risk. Normally, a glass of wine has about the same TCA as a glass of orange juice, unless either is tainted. It's all really a matter of personal sensory thresholds, those of recognition and, ultimately, rejection.

Where is TCA Found?

A few years ago, the naturally occurring TCA was under the radar of even the most sophisticated labs in the USA, Australia, and France. Recent technological advances include the ability to micro-measure the compound in parts per trillion and to micro-analyze sensory threshold perception levels. This research led to the manufacture, and even partial acceptance, of some costly non-traditional closure alternatives, including the twist-off-screw cap (TOSC) and agglomerate closures made of cork particles and resin. Almost overnight, we have learned that the problem is global and environmental, not case specific to cork production, and that a wine in taint-free synthetic, partially or fully natural, or even a screw-cap finished bottle may still very well be "corked," or tainted with TCA.

TCA is everywhere. It's in the water. It's in the air. TCA is commonly occurring in wood and any wood by-products such as paper. It is in our homes and offices, our hospitals, grocery stores, libraries, factories and wineries.

Wine drinkers may have encountered TCA in a recent bottle or glass, while non-wine drinkers—the other 98% of the US population—may have encountered it in cider, bottled water, tap water (any form of chlorinated water), beer, orange juice, olive oil, bananas, peaches, and even in those little pre-peeled carrots so popular today.

In the wineries, it could be anywhere cork or cork by-products, wood, paper products, or chlorine are used—in the wood barrels, the insulated tanks, the pipes, the refrigeration units, the floors, the walls, the cardboard boxes, the wooden storage and shipping pallets, and building insulation.

Chlorine facilitates TCA development. Its wine and food industry-wide usage, primarily as a sterilizing or sanitizing agent, is a red flag. It spreads from recently mopped floors or equipment onto wooden walls, wooden pallets, onto cardboard boxes as small as egg cartons, and from there inside the cartons. Chlorine is not good to use in any confined environment; it volatilizes quickly into the air or quickly settles into any organic material. Many wineries routinely began using chlorine bleach as a sanitizing agent in the 1960s, as did cork producers. Ironically, cork producers discovered the chlorine connection as one source of TCA in cork more than 15 years ago and began using a peroxide solution instead ever since.

Corrective Action

Owners and winemakers should perform a thorough check of the environment. Bring in the experts; isolate the source(s). Napa's Beaulieu Vineyards identified the source of its problem in one single humidifier. Sonoma's Hanzell has isolated it to the sanitizing use of chlorine on the floors and drains in the cellar, then spread by the rubber hoses. Create a realistic, targeted plan of action, execute it, and then follow up aggressively with continued QC checks and procedures. Like *brettanomyces* and volatile acidity, a little bit of TCA goes a long way. Also, for those using screw caps, if your "gasket seal" plastic liner under the metal cap is polyethylene, consider Mylar or polyurethane instead. Polyethylene sponges up TCA.

Conclusion

The wine industry is so caught up in the numbers game, and this is no exception.

Recognizing that wine is one of the simple pleasures of life, Gordon Burns, Technical Director and President of ETS in St. Helena, says, "Wine is a complex, organic product and it would be incorrect to rate wines simply by comparing TCA levels. More to the point, there's no single, fixed TCA number that determines whether a wine is good or bad."

It was only recently that I learned that even a screw cap-finished wine could be "corked," or "screwed," the word the sommelier community is rapidly minting. Centuries ago, sommeliers pre-tasted the wine and food of royalty. Out of this came the tradition of sommeliers pre-tasting wine in restaurants, checking for faults. With the advent of the screw cap in the dining room, many sommeliers, myself included, thought perhaps we would have one less task to perform. Think again. We, as an industry, have come so far, but, in the scheme of things, have taken only one step on a walk to the sun.