

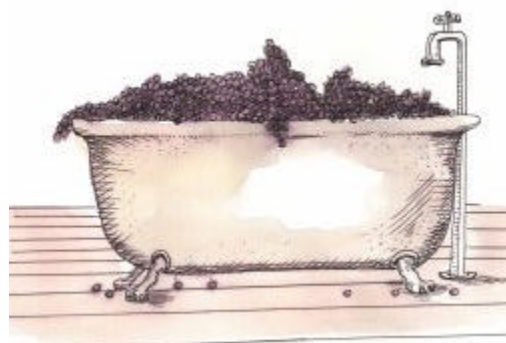
Beware bathtub wines

Janet Raloff

Here's a healthy tip for home vintners: Save the bathtub for cleaning your body – not for storing crushed grapes.

A 66-year-old Australian man paid a high price for his habit of periodically tapping a pair of bathtubs for winemaking: periodic bouts of intense abdominal pain, constipation, and mood swings for more than 2 years.

The incident came to light when the home vintner started canvassing the medical profession for respite from the pain. Despite a host of costly endoscopies, colonoscopies, ultrasound scans, and computed tomography scans, the source of this man's discomfort eluded local health professionals. At the same time, the man reported feeling "different." Not only did he frequently experience drowsiness and confusion, but his short-term memory waned. The man's medical charts showed he was also suffering from personality problems; they described him as irritable, aggressive – even 'paranoid.' During the man's rapidly spiraling deterioration, he also developed severe headaches and began to lose some feeling and strength in his limbs. With time, he became unable to do any type of work.



Bob Savidge

Eventually, successive doctors began testing the man's blood for heavy metals and uncovered a gradually increasing accumulation of lead. It peaked at 98 micrograms per deciliter, or roughly 10 times Australia's cutoff for acceptable amounts of this toxic heavy metal.

In retrospect, concluded Sam Mangas of the Adelaide (Australia) Department of Human Services and his colleagues, this man had classic symptoms of acute lead toxicity.

Telltale tub stains

In scouting the source of the man's poisoning, Mangas and his colleagues took samples of water, dust, and food from the man's home. None were very high in lead. His stores of wine proved another story.

The wines exhibited variable but high concentrations of lead, and the amounts increased with successive batches.

That's when the bathtubs' role emerged.

Together with a friend, the patient had crushed grapes and then stored the acidic juice and skins for a week in a pair of bathtubs prior to further processing. It turns out that the enamel coating on the lead-based tubs was not impervious to the juice.

On one, Mangas' group found, the enamel was visibly pitted, and portions below the juice's "high-water mark"

actually sported a lead-enriched powdery residue. Dust wipes of the tubs' dry surface confirmed them as a source of lead.

Swipes of the tub used in making the most contaminated wine gleaned 3.2 milligrams of lead from a 400 cubic centimeter surface. Assuming a uniform distribution of lead on the tub's surface, "we estimate that at least 240 milligrams of weakly adherent or powdered lead was available for dissolving into the next batch of wine," Mangas' team reports.

With a pH of 3.8, the grape juice had an acidity level somewhere between cola and vinegar. Apparently, it was sufficiently acidic to leach metal even through the enamel glazing.

A few batches of homemade wine that the men bottled in 1999 and 2000 ended up with 11 to 14 milligrams of lead per liter – or 55 to 70 times the limit permitted in Australian wines, according to a report in the April *Environmental Health Perspectives*. However, the researchers add, lead may not totally explain the man's sickness, since they also found high concentrations of tin and antimony – two other toxic metals – in the tubs' enamel.

In the end, the patient disposed of both tubs in a licensed waste dump. He and his chum now crush and "pre-ferment" their grapes in a stainless steel vat. The result: Lead tainting in their most recent batch was below 0.2 milligrams per liter.

References:

Mangas, S., *et al.* 2001. Lead poisoning from homemade wine: A case study. *Environmental Health Perspectives* 109(April):433.

Further Readings:

Raloff, J. 1996. A gun barrel is not a wine glass. *Science News Online* (November 2). Available at http://www.sciencenews.org/sn_arch/11_2_96/food.htm.

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