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TESTING VERIFIES TECHNIQUE FOR ANALYZING TASTE & ODOR-CAUSING AGENTS

[Midland, MI] -- A new, three-step technique for detecting taste and odor sources in bottled water has been shown effective in identifying and quantifying the agents at fault, down to the low parts per billion level. Verified by recent testing and confirmed in a blind study by a panel of judges, the process involves three exacting laboratory test methods to isolate, identify, and measure taste- and odor-causing components.

“This approach gives us a reliable way to find the problematic compounds, using a series of proven test methods,” said Gary Deborski, Market Development Manager for Impact Analytical.

“The combination gives us an excellent basis for making judgments on the sources of contamination and how to eliminate them.”

With staff members having as much as 35 years experience in taste and odor testing, the company is one of just a few analytical labs in the country with the expertise to not only generate test data, but also offer complex analysis, draw detailed conclusions and make recommendations for problem-solving.

“Two of our biggest strengths in plastics processing are taste / odor analysis and additives analysis,” commented Deborski. “Taste and odor are critical in food and beverage products, and we’ve developed many techniques for identifying and resolving those issues, including an experienced taste and odor test panel,” he said.

The bottled water market

The bottled water market represents big business, by any standard. According to the Natural Resources Defense Council, over half of all Americans drink bottled water, with more than a third of those indulging more than once a week. The NRDC reports that sales have nearly tripled in the last decade, with U.S. sales currently in excess of \$4 billion. Globally, the market was estimated to be worth \$14 billion at the *wholesale* level in the late 1990s, and it’s grown at a rate of about 8% each year since then, nearly twice as fast as other beverages.

Bottled water sellers rely heavily on their image of purity to market their products, which are perceived to be safer and of higher quality than tap water. Some consumers also report switching to bottled water because they find the taste and smell of tap water offensive. In both cases, avoiding undesirable taste- or odor-causing components is essential.

Test methods

“Overcoming taste and odor problems in bottled water requires analytical methodology capable of characterizing materials down to extremely low concentrations,” explained Eric Hill, taste and

odor chemist. “Any component contributing even a small effect is likely to be apparent in water, even if it might pass completely unnoticed in flavored beverages.”

To verify the new test regimen, scientists at Impact Analytical first conducted steam distillation/extraction on each packaging component of their store-bought samples of bottle water, which was reported as having an off-taste by a five-member panel. They followed with a class separation to isolate and identify the problem components. During this stage, a process known as capillary gas chromatography/mass spectrometry (GC/MS) is also used to identify oxidation products commonly formed during package fabrication, which could contribute to taste and odor.

The second part of the test sequence involves reverse-phase high performance liquid chromatography or HPLC, along with a UV detection system to gauge additive levels in the packaging materials. During this step, extracts of the bulk material are also analyzed by HPLC and GC/MS to further test for any additives and oxidation products.

The final stage is analyzing the packaged water itself for insights into the taste / odor source. Impact Analytical chemists perform an extraction on large quantities of the packaged water, trapping foreign substances and analyzing the resulting absorbent via thermal desorption-GC/MS to find any hydrophilic components that may be present. Taken together, these methods serve as a powerful tool for experienced researchers to identify problem compounds and possible sources, as well as make recommendations for their elimination.

NPE 2003

With considerable resources in polymer science, Impact Analytical will highlight its resident expertise in process engineering, packaging and materials testing this summer at NPE, the world's largest plastics and elastomers trade show. Sponsored by the Society of the Plastics Industry (SPI), the triennial event will be held June 23-27 at McCormick Place in Chicago, the largest exposition facility in North America.

Since 1971, Impact Analytical has delivered extensive problem-solving capabilities, detailed analysis and method development to customers in plastics manufacturing and processing. The company's experienced technical staff provides characterization of unknown materials, permeability testing, competitive product analysis, identification of impurities, investigation of product failures and supplier certification. The laboratory is registered under ISO 9001:2000.

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