

You're a *what?*

Flavorist

by Kathleen Green

When's the last time you had ethyl butyrate? It could've been as recently as breakfast, if you drank orange juice. Ethyl butyrate is one of about 30 chemicals that Carol Militescu might use to enhance the taste of your favorite morning beverage.

Carol is a flavorist, or flavor chemist. Flavorists blend aroma chemicals, essential oils, botanical extracts, and essences to create natural and artificial flavorings for a variety of foods, beverages, and other products. Ethyl butyrate, for example, is a common aroma chemical; in conjunction with another aroma chemical, acetaldehyde, it's what gives orange juice its succulent quality. "All food has flavor," says Carol, "and we're trying to recreate those flavors using materials available to us."

Laboratory-created flavors do what their naturally occurring counterparts can't: provide cost-effective taste that withstands the processing, freezing, cooking, and other forms of preparation required by many of today's products. Compared with flavors found in nature, manufactured flavors often last longer, taste sharper, and smell better; they can also be formulated not to trigger people's food allergies.

Recreating flavors is complex work. Not only do people's taste preferences vary, but there are numerous possibilities for combining chemicals to achieve a desired flavor. "It's very subjective," says Carol. "Even if you have two flavors that seem the same, one of them could have a 1-page formula and the other a 2-page formula. You might think the flavors are identical, but how you put the chemicals together makes them very different."

Carol needs to know what's in a naturally occurring flavor before she can decide how to recreate it in the lab. Flavorists rely on the work of researchers who have analyzed about 80 to 90 percent of the components in most flavors. Armed with this information, flavorists determine

which components are important to an overall flavor profile. Then, flavorists attempt to duplicate the profile using mathematics, for calculating parts per million; chemistry, for choosing which substances to combine; and a lot of artistry—especially when developing "fantasy flavors," such as punch or orchard blends.

But long before they build flavors by combining chemicals, flavorists must understand how chemicals react with each other and change in different conditions. A blueberry flavor that's delectable in a beaker is worthless in a muffin mix, for example, if some of its chemical composition breaks down in the heat of an oven. "Flavor chemistry is only as good as your knowledge of the raw materials," says Carol.

The best way to ensure that chemicals behave as expected, of course, is to test them. For Carol, this means taking a solution she's created in the flavor-development laboratory over to the flavor-applications laboratory—the test kitchen—for a trial run. She works with the applications team to figure out how much flavor should be put in the product, then taste-tests the final result. A flavor that disappoints will be modified in the development lab.

Success in transferring a solution from the beaker to the end product is usually the norm for experienced flavorists like Carol. She's a senior flavorist in a flavor house, a company that creates and manufactures flavors for foods, confections, and beverages; pharmaceuticals, such as chewable medications and liquid prescriptions; oral care products, such as toothpaste; cosmetics, such as lip balm; "nutraceuticals," or nutritional products, such as vitamins and sports gels; and pet foods.

Carol has also worked as a flavorist in a beverage company's research and development lab. But most food and beverage manufacturers don't employ flavorists; instead, companies buy the flavors they need from flavor

Kathleen Green is managing editor of the OOO, (202) 691-5717.

houses. Flavorists from these houses, located primarily on the east coast but with a few in the Midwest and California, often travel to make presentations to food-manufacturing companies in an attempt to win contracts for supplying flavors.

Consequently, communication skills and an ability to work under pressure are nearly as important as knowledge of math and organic chemistry in this small but competitive industry. In addition, Carol considers patience, creativity, meticulous recordkeeping skills, curiosity, and an ability to stay focused to be vital for flavorists.

Collaboration with other members of the flavor-development lab is another necessity of the occupation. "Teamwork is essential," says Carol. "A flavorist wouldn't survive working alone." When you're creating a flavor, she says, you need others' feedback because you can't always decipher flavor subtleties on your own.

Creating flavors requires being able to "think outside the box," says Carol. This goes hand-in-hand with having enough confidence to try something different—even if you're just starting out. "No matter how senior I am in the lab, I still learn things from the technicians," she says. "I've always encouraged trainees to try."

Because of the range of knowledge and skills needed to build flavors, training to become a flavorist requires a minimum commitment of 7 years. That's in addition to any academic preparation. A bachelor's degree in a chemistry discipline might not be required to enter the occupation, but most trainees have one. Carol's degree is in chemical engineering.

Trainees spend their first 5 years in a flavor-development laboratory, learning the basics of the flavor industry. Working with at least two senior flavorists, trainees discover which chemicals are available for creating flavors and how those chemicals are used. Trainees hone their sensory skills as they gradually begin mixing chemicals for specific flavors. They also must learn the U.S. Food and Drug Administration's regulations that apply to flavoring agents.

At the end of the 5-year training period, trainees take an oral examination administered by the Society of Flavor Chemists' membership committee; trainees who pass become apprenticing members, and their employers usually give them the title of junior flavorist. Junior flavorists are supervised for another 2 years, but they have more au-

tonomy and begin taking on their own projects. Trainees take another oral exam after 2 years of apprenticing as a junior flavorist. Successful passage of the second exam entitles the flavorist to professional certification, and a certified flavorist receives the title of senior flavorist.

Beginning flavorists have much to learn, so they usually tally more than the standard 40 hours that senior flavorists log each week. "In the places I've worked," says Carol, "most trainees never watch the clock."

For flavorists, as for workers in most occupations, the investment of time and effort is likely to pay off as they advance from training to certification. There are no reliable earnings data for flavor chemists, but industry sources suggest that median salaries are well above the \$54,960 that the U.S. Bureau of Labor Statistics reported for chemists in 2003.

Another payoff for flavorists is seeing a product on the market that they helped to develop. "It's very rewarding," says Carol. "I really enjoy what I'm doing." 

Photos courtesy of Carol Militescu



Carol Militescu taste-tests flavors when creating them.