

When It Comes to Vodka, the E-Nose Knows Better

BY AL MARTINEZ

It didn't take a "D" in high school chemistry to tell me that I had no aptitude for science. I had known it since I was 10, when a combination of home chemicals I had mixed together for fun caught fire and almost burned down the kitchen.

It was during the Depression and not a good time to set fire to anything that was going to cost money to repair. I was told never to touch any chemicals anywhere ever again for my whole life or I would go to hell and the devil would eat me.

I mention this as an excuse for failing to apply the scientific method to a recent vodka-sniffing test I conducted at home. After having that failure pointed out in a barrage of e-mails, I followed up with a more orderly method of determining the danger of vodka fumes. Call it Vodka Sniffing II: The Sequel. It involved the cooperation of Pasadena's internationally renowned Jet Propulsion Laboratory, an electronic nose that has been tested in space and the physical chemist who helped create it. We're talking big time here.

Some weeks ago, fumes from a bottle of 80-proof Russian vodka caused the evacuation of the Fluor Daniel engineering company in Aliso Viejo.

The bottle had been sent by one employee to another and it broke either in shipping or handling. Its fumes drifted like fairy mist into the air.

Six mail-room workers complained of wooziness from the vapor, so the company's buildings were evacuated. A hazardous material team ultimately determined that it was not a toxic substance from Syria but fumes from a bottle of booze.

I wondered why vodka vapor could make anyone woozy and bought four different brands of vodka to sniff for myself. It was after I wrote about it, mentioning the names of the four vodkas, that I was informed that none of the vodkas was Russian, which was the culprit at Fluor Daniel. "A scientist, you

ain't," one person wrote, summing up the general attitude of all the others. So I turned to more sophisticated means of testing.

I learned that Dr. Margaret Ryan at JPL was creator of an air-sniffing device that had gone into orbit with John Glenn aboard the space shuttle Discovery four years ago. It consists of 32 sensors capable of detecting chemical spills or leaks aboard a space craft. Scientists at the California Institute of Technology developed the sensors, and a team created by Ryan developed the e-nose.

I won't go into her background except to say that her amazing qualifications as a chemist have not dulled a keen sense of humor. Why else would someone who wrote "Internal Reflection Flash Photolysis Study of the Photochemistry of Eosin at TiO₂ Semiconductor Electrodes" allow a journalist into her lab carrying a bottle of vodka?

After leading me on a tour of the place, Ryan, 51, showed me the e-nose. It's about half the size of a cigar box and contains a pump and a computer in addition to the sensors.

A smaller version, Nose 2, is due out in November.

The vodka I brought with me was 80-proof Stolichnaya, a Russian beverage its drinkers refer to as "Stoli," as in, "Slide me down a shot of Stoli, barkeep, and the babe on the third stool too."

But before we tested the booze, we used the e-nose to determine the differences, if any, between Coke and Pepsi. Ryan poured an amount of each into separate beakers and connected them with plastic tubes to the e-nose. Each product was tested individually. Margie Homer, a 39-year-old physical chemist, sat at an attached computer and called up the data that detailed the results.

After studying a maze of mysterious, multicolored graphs and lines on the screen, and determining there was a substantial difference, Ryan stepped back and announced, "Pepsi has less of something than Coke."

Not exactly the stuff of Nobel Prizes, but enough for now. It would take

weeks to determine what Coke had more of than Pepsi and it wasn't worth the time unless you were Mr. Pepsi.

After exchanging stories of the disgusting alcoholic mixtures we drank in college, it was time to test the (shudder) dangers of vodka fumes.

To begin, we smelled the vodka with our human noses with no ill effects. Then Ryan tested the vodka through the e-nose, first with lab alcohol, then with a bubble wrap often used to transport fragile items, and finally with another plastic wrap they referred to as "the pink stuff."

Nothing happened at first, but then as the pink stuff began soaking up the vodka, the computer graphs registered a chemical reaction. We took turns smelling the concoction and waited.

After a few moments, Ryan said, "It went right to my brain." Margie Homer said, "It's affected my eyes." JPL Publicist Carolina Martinez said, "I feel a little woozy," then added, "but maybe it's because I missed lunch." I had a slight headache.

"You know what," Homer said, "we're talking each other into it."

That was one of the suggestions made following the Fluor Daniel event, that one person reacted to the fumes and the others suffered from mass vodka hysteria.

"No," Ryan said, "it's the pink stuff soaking up something from the vodka." Homer finally agreed: "The vodka reacted to the pink stuff and created pink-stuff fumes we didn't like."

There you have it. More weeks would have been required to refine the testing, but I doubt that either Ryan or JPL would have allowed it. I left the bottle of Stoli there for possible future experimentation in combination with the pink stuff.

I'm done with science now. No sense in further risking the possibility of going to hell and being eaten by the devil.

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