Fact or Fiction?

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Plating Mysteries: Part 2

Columnist's Note: This month, we continue our discussion on how various authors have used the finishing industry in their novels.

G. Hartzmark, *Bitter Business*, Fawcett Columbine (1995)

Patriarch and CEO Jack Cavanaugh, who built Superior Plating & Specialty Chemicals* into a stunning success, runs a tight ship, and sails it intrusively into the lives of his four children—all of whom have problems of their own. They really don't get along with one another, to put it mildly.

Cavanaugh, who inherited the business from his father, built it into one of the biggest operations of its kind in the country. Their main business was applying metal coatings like chromium, gold and brass on manufactured metal products—everything from shower doors to streetlights.

The plot involves the struggles of the would-be heirs to take over the business from their father. In the process, on two separate occasions, a woman dies unexpectedly in the women's restroom. One of the women is one of the family members. Here's a question: If on two different occasions, a young woman died of unexplained causes in the women's restroom of your plating facility, what might you think? My bet is that if your plating facility had cyanide on the premises you might think about cyanide poisoning. Well, you would be right, although it takes a good portion of the book to get to this discovery.

Turns out that the coroner never looked for cyanide when he performed an autopsy on the body of the first victim. Why not, you say? Here's some conversation between two of the folks in the book who are involved in trying to figure out what happened:

"If it was cyanide, how did they miss it when they autopsied the first victim, Cecilia Dobson?"

"They just didn't look for it. The Cook County Medical Examiner's Office doesn't routinely test for cyanide. It's too expensive to test every case. Usually the medical examiner has to request it."

"So they requested it for Dagny Cavanaugh [the second victim], but not Cecilia Dobson?"

"No. It was just an accident that they tested Dagny Cavanaugh. You see, even though they don't test everybody for cyanide, they test every fifth case for everything. It's part of their quality-control program. Any case with a number ending in a five or a zero gets a full toxicology screen—that's every toxicology test they can do, including the one for cyanide. Cecilia Dobson's case number ended in three, which is why she wasn't tested. In her case, the medical examiner suspected an overdose of street drugs, so they only ordered her checked for opiates. But since Dagny Cavanaugh's number ended with a zero, she got the full treatment, and they found cyanide."

Some observations: If the second victim's number hadn't ended in a five or zero, they would never have found cyanide, and it would have been one of those "perfect murders." Secondly, is this a routine procedure for police departments? I wrote my local Livermore Police Department but received no response.

Before explaining how the cyanide was delivered to the victims, here is some other dialogue from the book that you might appreciate:

"How could these deaths have been accidents? Cyanide isn't exactly the sort of thing you find lying around."

"If you work in a metal plating plant, it is. They get the stuff in 50-pound shipments at Superior Plating every week. It's the same stuff you read about jealous wives slipping into their husband's coffee in murder mysteries. According to the medical examiner's office, there was enough cyanide in both women to have killed an elephant. I stopped over at Superior Plating on Friday while the guys from the health department were there. You can't believe the number of poisonous chemicals they have just lying around.

**Editor's Note: This is a fictitious Superior Plating—we don't want to upset the many <u>real</u> Superior Plating outfits within our industry.*

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The company is required to keep something called an MSDS book—a loose-leaf notebook with a sheet for every hazardous chemical they use in the plant, with information on where it's kept and what to do in case it's accidentally spilled or swallowed. It's as thick as a phone book. If you worked there and wanted to kill someone, you'd have your pick of poisons."

Okay, so how was the cyanide delivered to the victims? Turns out that Superior Plating kept a perfume dispenser in the women's restroom. The murderer mixed cyanide with a compound called Fluorad, described as follows:

"Fluorad is a halogenated hydrocarbon, which is just a generic term for fluorinated hydrocarbon, which is related to chlorinated hydrocarbons. Those are the agents that environmentalists are currently going ape_ _ _ _ about—you know, things like PCBs, which are supposed to harm the ozone layer."

The Fluorad, a "surfactant" when mixed with cyanide and perfume, carried the cyanide molecules through a person's skin. So the victims, as part of their visit to the restroom, sprayed perfume laced with cyanide and Fluorad on themselves, and "poof"—that was it. Some last words on the power of Fluorad:

"Is it possible that Fluorad molecules would carry the cyanide molecules through a person's skin?"

"Oh, it's possible all right, and it wouldn't take too much Fluorad either. It's very powerful stuff."

"How powerful?"

"Let's put it this way: If you put a drop of Fluorad in a martini and then stuck your finger in the glass, you'd get drunk."

Lessons learned:

- If you are a woman who works in a plating shop, be leery of the perfume dispenser in the women's restroom. (Do plating shops have perfume dispensers in their women's facilities?)
- If you own a plating facility and really do have a perfume dispenser in your women's restroom, perhaps you might want to remove it.
- If you are a heavy drinker, lace your booze with Fluorad and you will consume much less alcohol (cost savings), and still get drunk.
- Perhaps those using copper cyanide plating should evaluate this magical Fluorad. Faster plating rates? Lower current densities? All kinds of magic.

K. J. Anderson & D. Beason, *Virtual Destruction*, Ace Books (1996)

Kevin Anderson worked at Lawrence Livermore National Laboratory (LLNL) for 12 years before he hit it big as an author—particularly of science fiction novels—including three best-selling "Star Wars" novels. Although *Virtual Destruction* does not involve plating, it involves the use of hydrofluoric acid (HF), which is familiar to some platers. For example, fluoride salts are used in tin-nickel plating solutions, some chemical milling formulations contain HF, glass is etched with HF, and HF has been used to help remove glass epoxy from drilled holes in printed wiring boards prior to plating with copper.

Another reason that this book was of particular interest to me was that it took place at LLNL (the place I retired from in 1997). As described on the cover of the book: "A taut science fiction mystery set inside one of the country's most sensitive installations. Science fiction so real, you would need top secret clearance to do better."

What better way to learn about the place where I worked than reading this novel!

Some key elements from the story include the following. An employee in the plutonium facility—a special area requiring even more security than other locations at the plant—is being harassed by others in the group. He decides to try and get even with the bad guys, so he adds HF to the liquid soap dispenser in the men's washroom.

HF can be very harmful and requires special caution in handling. If you've ever worked with it, you can probably imagine the horror of having it added to soap used for washing hands. Anyhow, before the bad guys get to the washroom to use the soap, two high-level managers show up to inspect the facility. They happen to use the washroom, and guess what? They both wash their hands with the soap. One ends up with burns on his hands, but what happens to the other is considerably worse. This second person—one of the villains of the story—tries to cheat on others in his group and evaluate their new chamber, which enhances reactions. You guessed it already. He puts himself in the chamber and, *voila*—painful, quick death from HF.

From the book: "Looks like HF poisoning—hydrofluoric acid caused those severe burns on his hands and face. According to our chemical toxicologists, HF penetrates the skin and begins eating away the nerves until it permeates the bones. Bad thing is, you don't even know it until too late. A five-percent bodily exposure is usually a fatal dose. This guy got it over 14 percent of his body. Pretty nasty way to go."

This concludes my collection of plating mysteries. If you've got some I've missed, please let me know. *P&SF*