

NCW 2007: The Many Faces of Chemistry

Career Profile: Fire Department Hazardous Materials Administrator

by David Parker

Describe your present position.

I am the Administrator of the Hazardous Materials Division of the City of Santa Clara Fire Department. The Division's primary functions are:

Helping facilities store, handle, and use hazardous materials safely. For facilities that refuse to follow Fire Code safety regulations, we work with the county and city attorneys on investigations and enforcement.

Training firefighters to respond to chemical releases, and responding with them. We provide input on technical tactics and strategy on site, and may don personal protective equipment and help abate the hazards.

Santa Clara is in the heart of Silicon Valley, where companies manufacture semiconductors, circuit boards, and do metal plating that becomes part of the computers, cellular phones, iPods, watches, cameras, or scientific instruments that we use every day. A wide variety of interesting, exotic, and sometimes highly toxic chemicals (arsine, phosphine, tungsten hexafluoride, chlorine trifluoride, and hydrogen selenide for example) are used to manufacture these products.

Did you get to your present position because of your background in chemistry and area of specialization or did life experience(s) take you there?

Education, experience, interests, and an inclination toward things new and interesting led me to my position.

I have always been interested in science, so chemistry was a natural undergraduate major for me. My first job out of college was in new product development for a consumer products company. After a few years, increasing amounts of federal regulation necessitated more emphasis on chemical safety, so I joined our product safety group. Here I reviewed our raw materials and finished products for safe usage by both our manufacturing personnel and consumers.

A few years later, I saw an announcement that the Santa Clara Fire Department wanted to hire a chemist and was puzzled and intrigued. What would a chemist do in a fire department, I wondered? I scheduled an appointment with the fire chief and the two chemists already on the staff to find out what they did. The opportunity appeared new, different, interesting, multidisciplinary, exciting, and helpful to people and the environment. Twenty-three years later, the job continues to evolve and meet these criteria that initially attracted me.

In what areas of chemistry did you specialize?

My master's thesis was in physical organic chemistry. I synthesized molecules of varying steric hindrance, heated them

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photo by Craig Allyn Rose Photography

David Parker briefs the media at a five-alarm fire.

to induce isomerization, and measured kinetic and thermodynamic properties. My Ph.D. dissertation involved organosilicon azides.

Do you use chemistry on a daily basis? Describe what you do on a day-to-day basis.

I use my knowledge of chemistry and the scientific method on a daily basis, although we have no supply of chemicals or a laboratory. We have no "routine" days. We could go from reviewing plans for chemical storage, handling, and use in a startup photovoltaic panel manufacturer, to inspecting the integrity of underground diesel storage tanks at an Internet server farm, to teaching an introduction to weapons of mass destruction class to firefighters, to responding to media questions at a fire that started in a school science lab.

Describe the personal skills that have played an essential role in your present position.

Personal skills and interests I have found useful include: scientific curiosity, logical thinking, problem solving, interpersonal and communication techniques, interest in things that are new and different, doing things "better, faster, and cheaper" (the mantra of Silicon Valley).

What advice do you have for those who wish to pursue this or some other nontraditional career path?

Follow your heart, passion, dream. Research the job. Talk to and shadow someone who is doing it now. What skills, interests, education, experience, and personality do they think are necessary to succeed? Volunteer if necessary. Two of our former volunteer student interns are currently employed as Hazardous Materials Specialists in a nearby fire department.

How and where can readers learn more about this type of career?

All fire departments in Silicon Valley employ chemists, but the phenomenon is rare in other areas. Most major corporations hire environmental, health, and safety personnel. Industry is a good place to start this type of career. The American Chemical Society has a Chemical, Health, and Safety Division (CHAS). CHAS publishes *Chemical Health & Safety*; find it in your library or subscribe. CHAS has sessions at the American Chemical Society national meetings—attend and get involved.

Are there other thoughts or lessons learned that you would like to share with our readers?

Think about things you like to do and don't like to do. What aspects of those things make them enjoyable or unpleasant? Go through the same exercise for careers you are consider-

ing. Where are there overlaps? Where are there conflicts or gaps? Maximize positive overlaps; minimize conflicts.

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Related Resources

1. Terezakis, Emanuel G. The Role of Chemistry in Firefighting. *J. Chem. Educ.* **1981**, *58*, 698.
2. *J. Chem. Educ.* Staff. JCE Classroom Activity: #34. Burning to Learn: An Introduction to Flame Retardants. **2001**, *78*, 328A.