After being downsized from two positions with large manufacturers and with chemical engineering jobs fleeing California in the 1980s, Barbara Yu just wanted to find a nice “safe” job that would allow her to keep her family in Los Angeles. So she took a job keeping track of hazardous materials and responding to chemical spills. Nice and safe.

“That’s what Columbia taught me,” said Yu. “Roll with the punches and go with the flow.”

For Yu, going with the flow today means being on call 24 hours a day to respond to hazardous materials releases and running toward many situations others would rather avoid. As head of the Los Angeles County Fire Department’s Emergency Operations Section, she is a first responder charged with keeping other first responders, and the general public, safe.

Leaking ammonia-filled rail cars, refinery fires, even suspected anthrax releases, fall under her responsibility but fortunately account for a small part of what she does day to day. “Usually it’s pretty quiet,” said Yu. “Only about 5 percent of the time the adrenaline goes up. The rest is preparation.”

An important part of that preparation is Yu’s chemical engineering background and her experience with industrial processes. When she first applied to the department, however, her interviewers thought they needed a chemist to simply help them decipher new regulations governing hazardous materials. Yu had to explain that, in her, they were getting much more—someone who understood manufacturing processes and the real-world applications of hazardous chemicals.

Today, when she responds to a call, that knowledge helps create what she calls an intuition of what is happening, and it commands the respect of other emergency personnel when seconds count and lives may be in danger. It also helps her prepare for the next emergency because as Yu describes her line of work, “It’s not if, it’s when.”