



Sloan Career Cornerstone Center

Profiles of Chemical Engineers



Marcella Goodnight

**Process Engineer
Genentech
San Francisco, CA**

Education:

B.S. - Chemical Engineering, Ohio State University

Job Description:

Process Engineer

Advice to Students:

"Even though you may be in your first and second year, I feel that you should do whatever you can to obtain internships."

Video Transcript 1:

"In my case, a process engineer works with the process science people, the researchers who design the process, and the manufacturing people. And we spec out the equipment or I spec out the large scale equipment required to manufacture the product. For cell culture fermentation, the process deals with making up the nutrients to support the cell growth, growing the cells in large tanks that we call fermenters, and then my job extends to the initial stages of the recovery, the purification and the harvesting of the, of either the cells or the protein the cells excrete."

Video Transcript 2:

"Something that is important to look for when you're choosing a company is to work with a manager who you feel very comfortable with because, regardless of how great the company is, if you don't like your manager, your job is not going to be very fun."

Interview:

Goodnight: My name is Marcella Goodnight. I'm a process engineer at Genentech.

Q: What does a process engineer do?

Goodnight: For my type of work, it involves specifying equipment for process applications. So it's not really choosing the ingredients that go into the process, it's more like choosing the

"Profiles of Chemical Engineers"

Prepared as part of the Sloan Career Cornerstone Center (www.careercornerstone.org)
Source: "Careers In Chemical Engineering" © American Institute of Chemical Engineers

equipment. Once the process science people, manufacturing science, and research people spec out the process, then I spec out the equipment for it.

Q: Where did you learn the communication skills that you use daily?

Goodnight: Communications in a technical field is something that was part of all the courses that we took. In each course, we either had to convey exactly what we were doing or somebody had to convey to us what they wanted us to do. When we started to work in teams, that was something that was also necessary. They gave us guidelines in the basic courses and we would just reuse them or modify them to our own skills as we went along.

Q: Who do you work with over the course of a project?

Goodnight: We interact with the validation people. Once we design a process, we have to ensure to the FDA that it's something that is safe, and we work together to come up with the documentation to ensure that the equipment is safe and that it functions properly. We also interact with some of the process design folks and the researchers.

Q: How did you find your first job after college?

Goodnight: Well, this is my second job. But, what happened was, the college of engineering at Ohio State brought in a lot of potential employers, for just engineering in general, and the college of chemical engineering also brought in potential employers. They came to the campus and interviewed maybe two months before we graduated. I had probably 50 interviews between both the colleges, and my first job was from a plant trip that I accepted at Abbott Laboratories. When I got there, I really didn't know what I wanted to do when I graduated. I had no idea what chemical engineers did. So when I got to the plant trip, I really decided that I liked the place and that I wanted to work in the pharmaceutical industry.

Q: How did you find this job?

Goodnight: I had a friend who was coming out to California, and my husband was getting transferred out there. My friend told me about this job. When I interviewed here, I thought that it was so different from the typical large-scale corporate job that I decided this would be the best place for me to work.

Q: What does Genentech do with pharmaceuticals?

Goodnight: Genentech performs large-scale manufacturing of biotech products. That's mainly what I'm involved in-the fermentation of bulk material, and the initial phases in the recovery process.

Q: What do you find most rewarding about your job?

Goodnight: Well there's a lot. I like the people that I work with-that's very important to me. There are engineers who don't like to work with people, but I'm on the other side of that. I have a deep respect for the people who I work with. Even more than that, they're fun to work with. That's the most important thing. Another aspect I really like about my job is that I'm getting paid

"Profiles of Chemical Engineers"

to do something that I like. I really like designing the process equipment-I love tinkering with these big toys. Stainless steel is very pretty, especially when it's polished. Every time I get equipment in I'm just like a little kid at Christmas. I can't wait to open it and start testing it.

Q: How did you decide that you'd like to be a chemical engineer?

Goodnight: When I was a junior in high school, my chemistry teacher talked to me about career choices. I told her that I was very interested in chemistry and math and that I was thinking about a career in chemistry. She told me that since I have an aptitude for chemistry, physics, and math to try engineering. That's pretty much how I got into the program at Ohio State. When I started school my freshman year, I always had dreamed about going to a cosmetic company and working for a company like Revlon or Maybelline. But when I graduated, the jobs were in the petrochemical and pharmaceutical industry.

Q: What is a typical day like for you?

Goodnight: It comes in waves. When we're doing the design of a project, then my days are typical for design. When we're doing construction, they're drastically different than they were in design, and start-up is also different. Currently, I'm doing a start-up of a clinical manufacturing plant. So my typical day involves coordination with other groups to see what equipment they're going to be using, coordination with the automation group to find out what they can support us on, and coordination with the manufacturing area to make sure that we have the utilities that we're going to require.

Q: What does a process engineer do?

Goodnight: In my case, a process engineer works with the process science people, the researchers who design the process, and the manufacturing people. We spec out the large-scale equipment required to manufacture the product.

Q: What specific types of processes do you work with?

Goodnight: For cell culture fermentation, the process deals with making up the nutrients to support the cell growth-growing the cells in large tanks that we call fermenters. My job extends to the initial stages of the recovery, the purification, and the harvesting of either the cells, or the protein the cells excrete.

Q: How do you stay current on developments in the field of chemical engineering?

Goodnight: Well, Genentech deals with a lot of state-of-the-art technology. We have in-house technical seminars that we go to every other week. But my department also promotes going to at least one technical seminar a year. Also, I never thought I would do this, but I subscribe to Chemical Engineering and I read it quite frequently.

Q: Do you depend a great deal on computers?

Goodnight: Yes, that's something that Genentech promotes-being aware of computers or having a computer consciousness. We deal a lot with Macintosh and do a lot of what we call

"Profiles of Chemical Engineers"

Apple-Sharing. My work involves a lot of computer work, whether it's doing initial equipment design with computer sketches, or developing Excel spreadsheets on process descriptions that were documented.

Q: What courses from your curriculum were most helpful to you?

Goodnight: There are courses that I wish I had taken more seriously. Courses that I would have taken, I think in hindsight, would have been in electrical engineering. When I was a freshman and sophomore in college, I kept on thinking, 'If this is my list of curricular requirements, then it doesn't seem like I'm going to need the electrical portion of it.' But when you get out, you realize that everything interacts with everything else. Sometimes I'm required to review electrical drawings and I'm completely out of my field and I have to ask somebody for help.

Q: How do you see your career path evolving?

Goodnight: I see myself doing this type of process engineering for the next four or five years where I'm actually doing the technical work-a lot of running around, managing details. After that, I'm still not sure whether or not I would want to go into technical management-not necessarily management of other engineers, but of a tech support group or a small number of engineers. But I just don't have any ambition to be in management right now.

Q: Did you have a mentor?

Goodnight: In my first job, I did have a mentor. That's when I started to think about what I would have as ten-year goals. Ever since then, I've always had a straw-man target for what I wanted to do. Here I have a lot of mentors. My direct manager is one. I think that something that is important to look for when you're choosing a company is to work with a manager who you feel very comfortable with because, regardless of how great the company is, if you don't like your manager, your job is not going to be very fun.

Q: What advice would you offer to someone interested in becoming a chemical engineer?

Goodnight: Even though you may be in your first and second year, I feel that you should do whatever you can to obtain internships. Even if you are selected for a field that you think you're not interested in, if that's your only choice, then I would strongly advise you to do that. When I was graduating, companies were looking for engineers who fit their personality. What they were looking for as their number-one priority was attitude and personality; the second thing was grades, and a very close third was the experience that you had.

"Profiles of Chemical Engineers"