



Sloan Career Cornerstone Center

Profiles of Chemical Engineers



Maria Angelo

**Area Consultant
DuPont
Deepwater, NJ**

Education:

B.S. - Chemical Engineering, Pennsylvania State University

Job Description:

Area consultant, supporting the manufacturing process, the wastewater treatment process at the plant.

Advice to Students:

"Just stick with it. The coursework is hard, but it pays off in the end. Chemical engineers are still in demand."

Video Transcript:

"I'm an area consultant. Basically, I'm supporting the manufacturing process, the wastewater treatment process at the plant, and I'm also on special assignment for some work we're doing plant-wide for waste minimization. In this particular assignment, my daily function is the special project that we're looking at waste minimization across the plant or reduction of waste loading to the treatment plant. So we're actually going into the process, the manufacturing areas and looking at what they generate, how they generate it, and how it's treated, and whether that makes the most sense."

Interview:

Angelo: I work at the DuPont Chambers Works Plant. I'm an area consultant. Basically, I'm supporting the wastewater treatment process at the plant. I'm also on special assignment for some work we're doing plant-wide for waste minimization.

Q: What are your daily job responsibilities in your current position?

Angelo: In this particular assignment, my daily function is the special project on waste minimization across the plant or reduction of waste loading to the treatment plant. Right now we have one of the largest industrial waste treatment plants in the United States, and we have a certain amount of investment on the ground. So we're looking at ways to maximize the use of

"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

that investment. How can we reduce the investment and still meet the requirements of the commercial business that we support for waste water treatment? So we're actually going into the process-the manufacturing areas-and looking at what waste they generate, how they generate it, how it's treated, and whether that makes the most sense or if there are other means of treatment that we can provide or help them design that will be effective for the plant.

Q: What does a typical day look like for you?

Angelo: Well, in this assignment, it's very desk-oriented, with the exception of going out into the areas. Typically, I'll come in and check my e-mail to see what emergencies happened overnight. Is there anything that I need to respond to? Answer a couple of phone calls. There's a half-hour morning meeting three days a week. So if it's Monday, Wednesday, or Friday, I go to that. What has happened overnight, what happened over the weekend, what's going to happen during the day, and making sure jobs get planned well. Then I go into my specific tasks, that's usually going over data that I've received from the areas, going over flow diagrams, trying to quantify these waste streams, calling the people in the areas who've provided data, asking questions, going out to their buildings if that's necessary to understand what the process is doing, and then meeting with the other people on my team. We all work together on deciding what the next steps are going to be, how we are going to address this problem, and what the different issues are that we all handle.

Q: Who do you work with on a daily basis?

Angelo: I work with another chemical engineer and a mechanical engineer on the team. They're basically doing the same thing I'm doing. We've split the plant up into three areas. We also have a financial adviser-analyst on the team, and she's looking at the economics of the data that we're generating. We have an environmental engineer on the team who's helping with modeling the treatment plant and taking the data that we generate and putting it into that model to see how it works. We also have another wastewater engineer on the team who is an expert in biological treatment of wastewater. She's a resource for the technical issues that come up as we consider different things and changes to the plan.

Q: What things have you done prior to this work assignment?

Angelo: I've been with DuPont for about seven years. I started as a process engineer in the Seaford plant and the nylon plant down there. After that assignment, I came up to Chambers Works and was an environmental coordinator. Since that assignment five years ago, I've been doing environmental work. I was an environmental coordinator for a fairly large business unit. I then was an environmental engineer in our remediations subsidiary for over a year, and then I went to a fluor products plant in Michigan where I was the environmental and occupational health manager.

Q: What is environmental engineering all about?

Angelo: I've really focused more on the environmental compliance side of things rather than the environmental engineering design side of things. That's what I like to do. To me, the regulations are there for a reason. They're important, and it's important that we understand how to best meet them, and understand their implications, both from a business standpoint

"Profiles of Chemical Engineers"

and an environmental standpoint. I really have been focusing on regulatory compliance, permitting, reporting, and auditing, and making sure the plant is doing the right things. That has really been the gist of it for the last five years. When I was in remediation, it was a little bit more project-oriented. But it's the regulatory side that I really enjoyed and will continue to focus on.

Q: As an environmental manager, who did you work with?

Angelo: When I was in Michigan, I was the only environmental resource at the site, and of course, no one knows everything. So it was really important to network. So I worked with our environmental lawyer and environmental experts in the engineering group who knew about water treatment and permitting from a technical point. They helped me with negotiating with the state on permits and writing permit modifications when that needed to be done. I also supported the wastewater treatment process that we had at that plant, and worked with environmental people at other sites. Whenever you make an interpretation on a regulation, you want to get multiple inputs on that because outcome of that interpretation can be very important. You want to make sure you do the right thing, so you're constantly talking to different people. I was in a couple of different environmental networks, both for the state of Michigan and within DuPont.

Q: How did college prepare you for your job responsibilities in Michigan?

Angelo: It didn't get me ready for it technically, because it's a totally different skill set. I had to learn the regulations on the job. I got thrown into the environmental coordinator position, and it was up to me to understand and learn what was going on. From an academic perspective, the chemical engineering background helped a lot because, one of the big things that you're dealing with in environmental is waste generation. Well, it's really hard to understand waste generation if you don't understand how the process is generating the waste. My chemical engineering background really provided that enhanced understanding of the processes. To me, college doesn't necessarily teach you an academic specialty. It teaches you how to think and how to learn.

Q: Can you elaborate on how you picked up on the legislation job requirements?

Angelo: Trial by fire. When I first got the job, I tried to read regulations and absorb them. Well, that's really hard to do. For me, the easier way to learn the regulations was as people came to me with questions, I'd research the answer to their questions, that way I would absorb the part of the regulation that they needed to know along with the things that weren't applicable that I waded through to get the answer. I just absorbed everything much more easily that way. I learned by researching questions and getting to know people and learning from them.

Q: What did you do during college that helped prepare you for your work as a chemical engineer?

Angelo: It actually goes back a little further than my freshman year. When I was in high school, I wanted to be a chemistry major. Then I participated in a program the summer between my junior and senior year, that gave me the information that caused me to choose chemical engineering as my career path. So, I knew my senior year I wanted to go into chemical

"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

engineering. Through my four years in college, the summer assignments I took were the things that prepared me the best. That would be the thing that I would recommend the most to college students: If you can get into a co-op program, do it. If you can't get into one, find summer jobs that are in industry or find out if there are summer intern programs you can get involved in, because not only does it give you a flavor for industry and how it works, but it also helps you know whether you want to stay in that field or get additional schooling in a different field. When I was a sophomore, I thought I wanted to get a master's degree in biomedical engineering. Then, I worked at Air Products as a summer student and realized that I didn't want to get a master's degree, I wanted to work in industry. That internship shifted my thinking, and that was really valuable.

Q: If you had to hire a young chemical engineer to work on your team, what would you be looking for in that person?

Angelo: Because we're a wastewater treatment plant, any kind of wastewater treatment coursework would definitely be an added bonus to someone new being brought into the team. I didn't have wastewater experience when I came into the plant, but because of my manufacturing experience and environment experience, it was a fairly smooth transition into the group. I don't know what the opportunities were for coursework along those lines. But if someone's interested in an environmental career without getting an environmental degree, looking for those kinds of courses would definitely be a help. I would look for someone who's very easy to get along with and gets along with people. That can be hard to tell from a discussion or an interview sometimes, but that's real important because I'm working with different people every day, and I'm not always coming at them from the best point. I'm not always someone who they want to see because of the type of project that we're doing. It's not intrusive, but it's more work for them to generate information for me. You really have to rely on people skills to help them understand that what we're trying to do is important, and to persuade them to help us do our project.

Q: What advice would you offer to someone who wants to be a chemical engineer?

Angelo: Just stick with it. The coursework is hard, but it pays off in the end. Chemical engineers are still in demand. When you come out of college, I would caution people against having too much attitude. Since it's the hardest engineering curriculum, it's very easy to get an attitude, especially if you come from a good school, with good grades. But when you come into industry, you're a 'low man.' You don't know anything. You really need to rely on people to help educate you, because the academic background is a real small piece of what you need to know to be successful in your job. So keep an open mind when you come into the workplace- there are a lot of people who can teach you a lot more.

"Profiles of Chemical Engineers"