



Sloan Career Cornerstone Center

Profiles of Chemical Engineers



Mindy Morack

Chemical Engineer
U.S. Navy
Indian Head, MD

Education:

B.S. - Chemical Engineering, Pennsylvania State University

Job Description:

Chemical Engineer

Advice to Students:

"I think the co-op is very important. I also think that even if you don't co-op, whether you do research or if you maybe go to a plant and visit, find out something about what you're going to be doing and make sure that it's what you want to do."

Video Transcript:

"The units I'm working on are cartridge actuated devices. They are units that are used in the aircrew escape systems in aircraft. We get the units in and then perform vibration, shock, temperature, humidity and altitude simulation, cycling, and then we fire the units as if they were actually being fired in the aircraft. Then we have to use data analysis on the results of that testing to make sure that these units will perform when they're needed. I do a lot of writing. Like this past week I've been writing specifications, performance specifications for these units."

Interview:

Morack: My name is Mindy Morack, my job title is chemical engineer. I work for the Qualification Branch. When the units come in, we qualify them and perform testing, witness qualification testing, and qualify units.

Q: What are the units that you're referring to?

Morack: The units I'm working with are cartridge actuated devices. They are units that are used in the air crew escape systems in aircraft. They propel the sequence. It starts when the pilot pushes a button, it goes through a certain sequence until he or she actually gets out of the plane. They're kind of similar to bullets.

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Source: "Careers In Chemical Engineering" © American Institute of Chemical Engineers

Q: Okay, so you're dealing with explosives. Is that really the product you're dealing with?

Morack: Yes, we're dealing with the explosives themselves, the explosive part of the sequence.

Q: What are some of the specific responsibilities of your job?

Morack: It comes in different sequences. We start with the qualification testing. We get the units in and perform vibration, shock, temperature, humidity, and altitude simulation cycling, and then fire the units as if they were actually being fired in the aircraft, or whatever their use is. Then we have to use data analysis on the results of that testing to make sure that these units will perform when they're needed.

Q: How do you use chemical engineering in this work?

Morack: The job I do is more of a general engineer. I do more program management than chemical engineering. The engineering that I've gotten from my education is more towards the writing abilities, the problem solving. It gives me a better viewpoint on what I'm doing, like if I'm doing some testing and the results show this, I can say, 'Well that's because of the chemicals that are in this unit.' I can relate it that way.

Q: Do you have a typical day here?

Morack: I do a lot of writing. This past week I've been writing specifications, performance specifications for some of the units I'm working with. Most of it is behind the desk. Very little is actually witnessing the testing. Most of it is documenting the testing.

Q: What process did you go through to get this job?

Morack: I have a friend who works at the shipyard for the Navy. The government has a system where you can go in and see vacancy announcements; she saw them and called me. Then I had to call this number to get the information so I could apply. Then they interviewed me for it.

Q: You work for the Navy but you're not enlisted?

Morack: No, I'm a civilian. The workforce at Indian Head is mostly civilian, I'd say 80 percent. In the building where I work, there are very few enlisted officers.

Q: What do you like about working for the Navy?

Morack: I'm a government employee. It's a very stable position. Even if something happens to my position, I could probably find another one on station or somewhere else for the government. I feel that this environment here at Indian Head allows me to perform to my fullest potential because there is supervision, but not so much that it's restricting.

Q: What college courses did you find to be most helpful, in terms of your work now?

Morack: I had a technical writing course that was very helpful. I had one course that was a design course—we designed a butane plant. You had semi-annual reports for the class that you had to give a presentation on and tell how far you are along. That was also helpful since you do a lot of report writing.

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Q: Were you involved in any extracurricular activities?

Morack: I was involved in three fraternities. I was a sister at Alpha Gamma Delta and I was in Sigma Phi Iota, which is a music fraternity, and I was also a little sister of Alpha Chi Sigma, which is a chemistry fraternity.

Q: Were there any skills or experiences that you took from your extracurricular activities that you're able to use now?

Morack: Yes, from being in those fraternities I had a few leadership positions. I was treasurer at one, and it gave me experience working with other people in a team environment. That's very useful here.

Q: What about internships or co-op experience? Did you have any?

Morack: I didn't have any internships or co-ops but I wish I would have. I felt like a co-op when I first started working here at Indian Head because I had just come straight from school to go into the engineering environment. I spent a lot of that time learning the basics of working as an engineer.

Q: What are some of the other areas that you are involved in at work?

Morack: I qualify my work as being mostly in mechanical engineering. I deal with vibration fixtures. There are a lot of materials involved in that. I had a Material Science course that really helped me understand a lot of what's going on. If I hadn't had that, I wouldn't be able to understand any of it.

Q: Do you deal much with budgets or manage other people?

Morack: We deal with cost estimates, and budgeting is involved in that because you have to give a cost estimate for your program. That involves all the overhead you're managing, all of the report writing, everything. I had a chemical engineering course-a cost estimating course-and that helped out with that.

Q: Who are some of the other people you work with on a day-to-day basis?

Morack: I work with some contractors. I'm working, right now, with a contract with Pacific Scientific. They're producing the units and I'm just witnessing the testing of those units. I deal a lot with my co-workers in my branch, asking them questions about what I'm doing, for different viewpoints, and they give me ideas and advice. Some of them are chemical engineers, some are mechanical. There's a chemist in my division. Everybody's different.

Q: If you could go back to your freshman or sophomore years in college, what are some of the things that you would differently or that you would do the same?

Morack: I would definitely have pursued a co-op more. I applied for a couple of co-ops and then I didn't get any, I figured I was too far along and that I shouldn't worry about it. If I had done it over, I definitely would have pursued it more.

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Q: Is the work environment here tense?

Morack: Every program that I have is really important because you know that in the end, whatever device you're doing, if they don't work 100%-if there's one unit that doesn't work-a person could die. You know you've got to be very careful with what you're doing, very meticulous, and you can't miss anything. It's the most tense when you're making important decisions, like when you finish a qualification testing and you have to say 'Yes, this unit is available to be used and it will work when it's used in this application.' That's when it has to be serious, because people's lives depend on that decision. But otherwise it's not tense. It's a nice environment.

Q: Does it feel like you're working on a naval base.

Morack: If anything, it feels like I'm far from it. I've worked here a little bit over a year and, since I've worked here, I've never seen a naval ship, or been on one. I've seen a helicopter that they use, but that was only because I pursued that myself, it was not part of my job. It's nice to see the overview, because the units that you're making are used on these things, but you can't picture it until you actually see it in person.

Q: What do you wish you had known when you were a freshman in college?

Morack: I wish I had known that I would actually be doing chemical engineering. I think the co-op is very important. I also think that even if you don't co-op, whether you do research or if you maybe go to a plant and visit, find out something about what you're going to be doing and make sure that it's what you want to do. I think it's important to be focused because, in engineering, you can't be unfocused. You've got to take 18 credits a semester and it's very difficult.

Q: Do you use a lot of team skills in your work now?

Morack: Oh, yes, there are so many aspects of my position where I need, maybe, a mechanical engineer's advice. If you don't work well with people, you're not going to get that and you can't do the best job that you can. I couldn't perform my job if I didn't work with other people.

Q: How do your parents react to what you're doing?

Morack: They're scared. They know what I went to school for. They know that I'm a chemical engineer and I work with explosives. Just the term 'explosives' scares them.

Q: How safe do you feel?

Morack: Perfectly safe. There are a lot of safety precautions you have to do. Whenever you're at the testing, you have to wear safety equipment and, as long as you're careful, nothing will go wrong. If you're careless, something could go wrong. That's something you have to think about whenever you're working with explosives.

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