

The Art of Engineering with Denise McIntosh

Episode 001: Beth Brock, Corporate Support for Environmental Management Systems, Compliance, and Sustainability for [Smithfield Foods](#) in Kansas City

[Beth Brock](#) got into engineering at a time when the industry didn't have many women. She and [Denise McIntosh](#) discuss obstacles women have faced working in manufacturing, how to handle those situations, and advice for young women entering the field.

Denise McIntosh *This is Denise McIntosh with Custom Powder Systems coming from Springfield, Missouri. And my guest today is Beth Brock, long time friend of mine, and now Corporate Support for Environmental Management Systems, Compliance and Sustainability for Smithfield Foods in Kansas City. Beth, thanks for joining us today.*

Beth Brock *Thank you.*

Denise McIntosh *So we're getting together today to talk about a few things about women in engineering, women in manufacturing. I'm not an engineer, but have been in manufacturing for a number of years. So we'd just like to kick around some things that maybe got us both to this career field. So one of my first questions, Beth, is how did you end up in the engineering field?*

Beth Brock *Well, I resisted it when I was younger because as I was going through high school, I graduated in 1981, and back then, it wasn't really done. There were some, definitely, women engineers, but it was not pushed. It wasn't stressed. My dad was a mechanical engineer and a PE with an MBA. And my older brother is a civil engineer with a Master's in mechanical. And he always knew what he wanted to do. And I'm like, "Man, Dad and Ed are both engineers. I am not going to do that. I'm going to be different." And I found out the hard way that what I was going to go into wasn't probably gonna work.*

And then I ended up starting work at [Eli Lilly and Company](#) and asked the HR folks, "I want to go back to school, what should I do?" They said, "engineering or chemistry." And I was like, "okay, not chemistry, so engineering." And I needed to go to [IUPUI](#), which is basically a branch of Purdue in Indianapolis. And they only had mechanical and electrical and I was kind of afraid of electricity, so mechanical. And so that's what got me started, going back to school and becoming a mechanical engineer. And I'm good at

analysis, problem solving, math. I got the physics award at IUP. It was inevitable that I do this. I just kind of ignored it until I was in my mid twenties.

Denise McIntosh *Interesting. So I was thinking last night and prepping for this podcast today, is a meeting you and I had, or maybe one of the first times we met at an ISP meeting in Florida.*

Beth Brock *American Glovebox Society, right?*

Denise McIntosh *That's right, it was American Glovebox. We took a break and we walked around the little area, found this little shop, found these very unique neck scarves...*

Beth Brock *Oh, that was at [ISPE](#). That was in San Diego?*

Denise McIntosh *Maybe. Well, I'll tell you what just impressed the heck out of me about engineers and how they think so much differently than I think. Because the woman in the shop showed us how to tie it, and I'm like, "I will never remember that." And that was way before we were doing videos on iPhones and all that stuff. And you simply took out a piece of paper and drew the steps to do it. I still have it. I can still tie it.*

And it just brought out to me the differences in how our brains work and how engineers just see things differently. And being trained as an economist, that was just way over my head.

Beth Brock *Well, growing up, our scratch paper, art paper were old blueprints, true blueprints, mind you, that my dad's company had discarded because they needed to be revised or too many were made. And so we drew on the back of them. So I was looking at blueprints at a very young age, not really knowing what I was looking at, mind you, but there they were.*

Denise McIntosh *So, when you started with Eli Lilly, what were some of the fun projects you got to work on?*

Beth Brock *Well, once I finished my engineering degree, I worked at [Tippecanoe Labs](#) in Lafayette, Indiana, which is a large bulk pharmaceutical manufacturing plant. And at that point in time, they pigeonholed mechanical engineers into HPAC projects. So because, you know, that's all we knew how to do. So I got to work on some HPAC replacement projects. I also did work on some steam projects, trying to optimize the steam lines in the different buildings. So I was mentored by another female engineer*

and just did basically some capital projects and some other things like that for some of the bulk pharma buildings. And I didn't like it.

Denise McIntosh *Okay. So where did that take you then?*

Beth Brock *So one of the things that was going on, so that plant, obviously being a bulk manufacturing plant, had a lot of nasty chemicals and was subject to OSHA Process Safety Management standard. So there was a process safety team that basically talked about the different process hazard reviews that needed to occur, and planning for those, and the engineer from our plant engineering group that was on the team, wanted somebody else to do it. And so I volunteered and I participated on that team and then Lilly corporate decided to totally revamp their process safety management system globally. And so I was asked to participate on that project as one of the team leaders. And I did that for, I think it lasted a couple years. I led the team that designed all the requirements for Lilly for our process hazard analysis, process safety information, facility siting, and hazard assessment.*

And that's when I fell in love with safety. And that's when I decided that's what I wanted to do was environmental health and safety thing. So that was my first step into it. And then from there, I was asked to basically be the process safety management engineer for the site. And then I got pulled into the environmental group because there was an opening there and they wanted me to do that. And so I did that. So I ended up doing quite a few different positions, in environmental health and safety and that became my love. So I got out of project management and into environmental health and safety. I think my engineering degree helps me understand the systems, but also helps me organize thoughts and analysis and things that you need to be able to do for environmental health and safety.

Denise McIntosh *So along the way, what have been some of the most challenging obstacles you've encountered either as a woman engineer, or a woman in manufacturing, or both?*

Beth Brock *Well, definitely in manufacturing, it's definitely a male dominated world. There were a handful of female engineers. There were the times where it was a little condescending, you know, from some of the males. I think probably the one time that really sticks in my head, though, is I was meeting with a department head, I think it was our construction manager, and it was one of those weeks where I was, you know, my emotions were on edge and I thought I had done a lot of good communication on this project. And I kept everybody in the loop, including the operators and what was going on. I think I was doing a tank replacement or something and I got upset during the*

meeting, and when I get upset my eyes leak and I can't help it, it's not something I do on purpose. I'm not trying to get sympathy. It's, you know, a female hormone thing males do not understand. And it freaked the guy out. He didn't know what to do. And then the construction manager that was in the meeting with me told me, "You can't do that." And I just looked at him and I said, "Do you think I did that on purpose?" I did not do that on purpose. I fought it. And, you know, it's just, I think that was just, it's just like, they don't understand sometimes that happens and don't get freaked out. I'm okay. It's just a thing that happens.

Denise McIntosh *It's part of our communication I think.*

Beth Brock *Kind of, yeah.*

Denise McIntosh *It's nice to know that it's happened to you because it's certainly happened to me.*

Beth Brock *I think, you know, and it just depends on, you know, where my head is and what's been going on and sometimes I can stave it off and sometimes I can't. I felt very personally... Insult is not the right word, but I thought, "Wow. I thought I was doing fine. And now you're telling me I haven't been communicating and I've been writing it on the whiteboard and telling it at the morning meeting and doing all this stuff." And I didn't really understand what more I could have done, and that when I get frustrated and sometimes even upset with myself thinking, "Oh, how did I fail at this?", that's what happens. So, it's definitely, you know, people think, "Well, they're just trying to get sympathy or, you know, trying to get me to lay off or..." No, that's not it.*

Denise McIntosh *Part of our communication. And to me over the years, the difference in leadership from women to men is our ability to use empathy.*

Beth Brock *Correct, yeah. And even our mannerisms in meetings. And I can still remember being on the lead team at Tippe and as the environmental team leader, having a lot of important stuff to share because of the large environmental footprint we had. You know, big Title V permit. We had hazardous waste treatments, disposal permit. We had a lot of stuff and we had to do a lot of reporting. So there was a lot to cover there. And I was told that I just didn't come across well in the meetings. I didn't act like I knew what I was talking about. And I think it's because of the way as I'm speaking, I may be also thinking about, you know, "What am I going to say next?" And so I may look like I'm thinking through it, but it's just my personality, how I deliver things, and how I work. And they want to pigeonhole you into the sort of BS attitude that men bring to*

meetings. And they're going to say, "Well, by gosh, it's this, this and this." And even if they don't, even if they're wrong, you know, so I'm not that way.

Denise McIntosh *Right. Right. Or even if they really haven't thought it through.*

Beth Brock *Yeah, exactly. And I am a kind of person who likes to be honest and no BS, and, "It is what it is." And I think that a lot of men don't see that as being a competent person. I don't know why, but I kept getting that feedback.*

Denise McIntosh *I think you're right. I think it is the difference in the way we communicate. And I think a lot of women in leadership positions, because we have families and responsibilities elsewhere, and we cut to the chase.*

Beth Brock *Exactly. We don't have time.*

Denise McIntosh *We don't have time to skirt and chase around the rabbit hole.*

Beth Brock *Right.*

Denise McIntosh *So you've mentioned a mentor or two. Tell me about those.*

Beth Brock *Well, my first mentor at Tippe as an engineer was another engineer in the group. And she had only been there a couple of years. They probably assigned her to me because she was also female. And it was okay. She was around for questions just on logistics and things like that. But as I went along in my career, I developed some, I guess, less formal mentoring relationships. For example, with the project manager that ran the whole process safety management improvement project was a good person to bounce things off of. He was very in the loop on what leadership was thinking and saying, and what they were doing behind closed doors that they may not tell us to our face, how things they thought things were going. He became one of my champions and really kind of helped me along through different career transitions in the EHS world.*

I think also just other, you know, as I interacted with other folks that were easy to relate to, developing sort of informal relationships there. I didn't really have a formal mentor until much later. They really revamped the Lilly mentorship program and would assign us formal mentors. Usually, it was somebody that was manager, director, or above. So it was really hard to find time to meet with them. 'Cause they're very busy. I did have an excellent one, Mark Wood, who was a higher up in the EHS world at Lilly.

And then Elanco was really friendly, really awesome, very supportive. When we did get a chance to talk, I got a lot out of it. I'd say the other thing that I got a lot out of was when I was asked to be a mentor for some younger women engineers, and just looking into their minds, and how they're interacting, and how it was for them at that time entering the engineering field, new out of college or fairly new out of college. And that was a, it's definitely always a two-way relationship. You learn from them, they learn from you. And I enjoyed that quite a bit.

Denise McIntosh *Absolutely. So how do you think things have changed over the course of your career for women, either in engineering or manufacturing?*

Beth Brock *Well, I think there's so many more women in the field now. And it looks, it seems to me, so, you know, as things developed along with Lilly, and I've seen it here at [CRB](#), you see it in organizations like ISPE course, the [Society of Women Engineers](#) has been around for a long, long time. But you see more women interest groups forming, and it's not just sitting around talking about, "If you have a baby, what that does to your career." It's about everything. It's about the stuff we've just been talking about, how you interact with difficult people, things like that. So I've seen more and more advocacy and groups, and it's a shame that we still have to do that to this day, right? We should all be able to just be people, but we're not there yet. So, I think it's great that we're able to form these groups and bonds.*

And even with, for example, with [ISPE Women in Pharma](#), it's not limited to women. Men can come to these things too. And they can learn from what we say and if they think to themselves, "Oh gosh, I do that too," maybe it's going to help them be better. Or maybe they have another aspect that they could share with us as to why it is, and we understand better. So I think I just see a lot more going on in that manner. Of course, a lot more efforts to encourage young women to get into the field, to, versus, you know, when I was first, definitely high school age, but even up to when I first started going back to school, it was still less common for women to be going into these fields.

Denise McIntosh *Yes. So one of the questions that I had on my list was, "What was the most patronizing thing anybody had ever said to you in your job?" And I'll give you my example because I started in the ag field and, of course, that was very atypical for a woman to be in the ag field, particularly in the seventies. And one of my customers in Iowa in the ag field, when I went in one day, wanted to know how I felt about taking a man's job. And I was so dumbfounded that I couldn't answer. And I, the next time I was there, I said to him, "Well, I grew up with three sisters on a farm, no brothers, we all got college educations. And I really think that my father who paid for those college educations intended for us to use them." And he never asked me that again.*

Beth Brock *Yeah, so I thought of a couple examples. So when I was leading the team for the process safety management project, we had a couple of Lilly employees, a couple of, a consultant. And then the guy that was running the project hired two full-time people to work in his group on process safety. And one of those was assigned to my team. And he would contradict me quite frequently in meetings. And, you know, here he's coming in cold from the outside of Lilly. And he was saying things and I, you know, I already, we had already gone a certain amount in the project and we were, you know, we knew what Lilly expectations were and how they wanted things done. And so there was some framework for us to work under. And he just, I would say, "No, that's not what Lilly wants or whatever." And there was just a lot of arguments. And he finally stopped, and then, I don't know, a month or two later, he said, "You know, when I first started on your team, I just didn't think you knew anything." Now, I don't know if that's 'cause I was a woman? I kind of think it might've been. But, I'm trying to remember, I think it was all guys on my team anyway. So, you know, and I just thought, "Well, that's awesome. Why did you bother to tell me that?" You know?*

But, and then, you know, another time would have been when I was appointed the leader of the environmental regulatory group there, which was a group of about twenty people responsible for compliance in all aspects. I was, you know, "Oh, you just got this job because you're a woman and they needed to put a woman in leadership." And so I, you know, I always felt like that was such a slam. It's like, "No, I have qualifications."

Denise McIntosh *You have the credentials.*

Beth Brock *Exactly.*

Denise McIntosh *You've earned them. But I have experienced that over the years too, of, "This is a test just to challenge you, that you really belong here. Do you really have the experience?" I was in the sales field for a long time. And one of my, I used to have a lot of my competitors ask me how I managed to get, you know, an order away from them. And I think they thought I was doing something nefarious perhaps. But I, frankly, worked harder than they did.*

Beth Brock *Yeah.*

Denise McIntosh *And I would bring information to my customers about what was happening in the marketplace. And because I was an economist, I understood the whole concept of supply and demand and when was a good time to buy product, and when was a good time to store product, and when was a good time to just wait and see*

what the market was going to do. But it was always interesting to know what was going through some of their minds thinking that I was not really for real. But I think that's changed over the years too.

Beth Brock *Yes. But I feel like women have to prove themselves more than men do. I think at first, and it depends on the environment and the group, but I feel like, people kind of hold back, men will hold back and say, "Well, I'm just going to wait and see what she really knows."*

Denise McIntosh *Yes.*

Beth Brock *Versus just looking at another guy and going, "Well, he knows what he's doing. He's fine."*

Denise McIntosh *Well, and I suppose it has to do with the industries that we've chosen and because there weren't women when you and I started. There were very few.*

Beth Brock *Yeah.*

Denise McIntosh *So how do you, what has your involvement with ISPE and the Women in Pharma, how has that impacted or improved or...?*

Beth Brock *Well, my involvement with ISPE started back in around 2008. And so right about the time we met. I got involved with some of the containment aspects and immediately got included in the Containment Community Practice Committee and, you know, there were women there. So there was, you know, Krista Myers from CRB and Stephanie Wilkins. And so immediately I'm in with a group that's not just all guys. And it just, it was very affirming to be able to be appreciated for my technical knowledge and input was welcomed and not questioned. So that was before Women in Pharma was started, you know, long before. But I felt like it was just a more inclusive atmosphere. And I'm sure there's probably portions of ISP that maybe wasn't like that, but definitely in the containment group we were.*

And then just developing that network through giving presentations, and being at the conferences, and being a participant versus just a member. I think that is what was really critical for me is I immediately got involved and didn't just sit at a conference and not get involved and volunteer. So actually I wouldn't have my job with CRB had I not gotten involved with ISP 'cause that's how I met a lot of CRB people. So Bill Jarvis was on the containment committee and, you know, once I moved out to Kansas City, I was

even able to engage CRB as a firm that we use for some projects there at [Elanco](#) Kansas City.

So I got to know more people, and that was all because of ISPE. So I wouldn't have known to hire them because Lilly always hired a different company. And so I think it's really helped me meet a lot of very smart women in the pharmaceutical field. And then with Women in Pharma starting up, it's really allowed more and more, you know, the people that are leading that effort, they are brilliant. You know, some of those ladies are, like, way up and way smarter than I am. And they're just, it's very impressive where their careers have taken them.

Denise McIntosh *So going off of perhaps our work time, what do you do outside of your job that fills your soul?*

Beth Brock *Well, about six years ago, I was looking for something like that because I was working a lot and I was the only health safety environmental person at the Kansas City site, and trying to do everything, and I needed an outlet. So I found a place that gives therapeutic horseback riding lessons to folks with special needs. And I started volunteering there and that snowballed into being the volunteer coordinator. It also led me to start taking my own lessons, and the conventional side of the program at that ranch. And now I teach three nights a week sometimes, and Saturdays, and it's my passion. If I could make a living at it, that's all I would do. Not that I don't enjoy using my technical knowledge, but there is nothing like seeing those kids smile on the top of those horses, and joking around with them, and just having fun with them. So that's what I do. That and going out and giving my own horse a hug.*

Denise McIntosh *I grew up with horses and got to have one as an adult myself. They are special creatures.*

Beth Brock *They are, they reflect your emotions. They know when you're not feeling okay. And that's pretty cool.*

Denise McIntosh *Yes. Well, thank you for doing those things. If you could go back to your younger self, is there anything you'd do different in your path?*

Beth Brock *Well, probably if I'd have been super smart, I would have just gone straight into engineering out of high school and not taken the circuitous route that I did. But on the other hand, I wouldn't know some of the things I know because of what I did. So I think it all builds you to who you are. It just would have been a little easier path. But as a young engineer, I think one of the things is, you know, you're around all these mostly*

guys and they're all doing their engineering thing and they're all there, you know? And you feel like if you ask a question, especially as a woman, you might be viewed as somebody who doesn't know what they're doing or shouldn't be in the position you're in. I think just knowing that it's okay, "I don't have to know it all." Because you don't learn everything in college.

Ask for help, be proactive to find mentors right away, identify people who can help you technically, and then identify people who can just help you in a personal way, whether it's with your career or just handling the people you work with, or even balancing life and work. I already had a son when I finished my engineering degree. He was in second grade in my first year as an engineer. So I already had a pretty active outside of work life, you know, because as you can imagine, you know, second graders they're already into soccer, and baseball, and basketball and all that stuff. So it was, I think also because of the path I took here. I am older, and so I'm not really the same age as the engineers entering the field. And I felt like, "Well, I'm older. I should act like I know stuff." And so I think really it's about, you know, having the confidence that it's okay. It's okay to say you don't know and go find out and go ask questions.

Denise McIntosh *Well, and I've experienced that asking questions just is such a great way to communicate because people like to talk about what they do and how they do it. I guess I have been a lifelong question asker because it just feels like it's a way to start a conversation, it's a way to continue a conversation, it's a way to learn so much about people.*

Beth Brock *Yeah.*

Denise McIntosh *And you're right. Asking for help is, I explain that to our people practically every week, is that it is not a sign of weakness to ask for help.*

Beth Brock *Right.*

Denise McIntosh *It is a sign of strength.*

Beth Brock *Yes.*

Denise McIntosh *Well, Beth, thank you very much.*