

Mike Taylor:

Hello, everyone. Welcome to the Greenberg Traurig workplace safety review podcast. I am Mike Taylor, the host of the podcast. I am the chair of the Greenberg Traurig OSHA practice group. And I'm based out of our Northern Virginia and DC offices. The title of today's podcast is OSHA's process safety management standard, a 30 year review. Today I have the distinct pleasure of interviewing my good friend, Dave Moore of Aquatech consulting. Welcome Dave.

Dave Moore:

Thanks very much, Mike pleasure to be here.

Mike Taylor:

We're really excited to have you here today. Dave is the founder and president and CEO of tech consulting group, a risk management consulting firm based in Vienna, Virginia, Dave has over 35 years of specialized experience in process risk management. Dave is a recognized expert in and frequent speaker on corporate risk management, including petroleum and chemical industry safety and security management. Dave has provided risk consulting services and training to industrial companies globally, not just in the us, including at upstream and downstream petroleum facilities, chemical plants, energy facilities, pipelines, pharmaceuticals, biotech, and other manufacturing plants handling hazardous materials. Dave is taught process safety and security courses for the last 35 years to many of the world's largest corporations. And as a consultant has been a consultant to OSHA DHS, uh, us EPA, U S uh, CC, uh, the American petroleum Institute, the American fuel and Petrel petrochemical manufacturers and the American chemistry council. Simply put you, we today, we have the O G of process safety management. Um, you know, it's kind of fitting that we're talking about PSM right now, Dave, because, uh, it's been 30 years since OSHA's PSM standard has been on the books, so to speak. Is that right?

Dave Moore:

Yes. Uh, effective 1992, actually. Wow.

Mike Taylor:

Time's phone by, um, Dave, for those listeners who may not know what process safety management is, how would you describe it to someone?

Dave Moore:

Well, uh, process safety is really, it's a framework of how to manage risk at facilities that handle highly hazardous chemicals, um, and in doing so it's a real disciplined, multi element way of organizing that effort with the goal of, uh, preventing loss of containment and, and energy releases that are uncontrolled.

Mike Taylor:

And do you have to have certain amounts of, let's say flammables onsite in one location or certain chemicals and another for the PSM standard to apply? Is that right?

Dave Moore:

Yes. Um, they have, uh, a list of toxic substances, however, on the flammables, um, it's by definition of the, of a flammable substance with, uh, a quantity and excess of a threshold quantity of 10,000 pounds.

Mike Taylor:

Okay. So that if you have 10,000 pounds or more of a flammable onsite in one location, for example, the PSM standard basically says you have to do certain things to make sure that your workers are safe, right?

Dave Moore:

Yeah. There's, uh, simply put there's, there are some, uh, ways that you can exempt yourself, but it's really driven toward where you have high concentrations of flammable or toxic substances that, uh, OSHA believes could produce, uh, uh, an injury to workers and due to what they would call a catastrophic release, where you could have like a big explosion. Yeah, the, the really the, the bane of the industry would be a release from containment, uh, resulting in, uh, uh, a explosion or a fire, uh, or a toxic release.

Mike Taylor:

Hey, Dave, how did the concept of process safety management first come about? In other words, what words origins?

Dave Moore:

Well there's, there was a series of incidents, but particularly in the 1980s and nineties, um, early nineties that were inspirational, uh, because they were very significant, the most, uh, famous one was in 1984, which was the volt pal India, uh, release of Methylisothiazolinone, which is toxic substance from the pesticide plant, where there were, uh, the largest number of fatalities on record from such a industrial accident. And it was clear after a series of these incidents that something better had to be done than the traditional ways of preventing incidents. And it was, uh, really, uh, industry themselves that, um, said that it's about having a systematic process, uh, that involves, uh, such factors is a risk assessment and integrity, uh, of the mechanical equipment, uh, including inspection and design and so forth, um, all working together in a, uh, strict disciplinary model. And that's the only way we were going to control these because processes are complex and there's opportunities for these kinds of accidents. And it just had to be better controlled.

Mike Taylor:

Yeah. I could imagine you don't have a huge explosion, particularly if the plant is adjacent to a residential community, lots of bad things could happen, not only the workers, but the public.

Dave Moore:

And then that's exactly why at the very same time, uh, Congress directed the EPA to develop a risk management program or RNP, which focused on that public risk, as you just mentioned. Um, and that was due to the authority that the two agencies have. And so they, they often interact, but, you know, if you're a industrial company operating these kinds of facilities with involving these chemicals, uh, regardless of the regulation, you have, you know, a responsibility for your workers and the public and the environment, as well as your own operational risk. In other words, you know, maintaining a safe operation, a reliable operation, and one that these kinds of events don't, uh, separate from injury, uh, they just simply don't affect the business. And that's the real trick is to get companies to see it beyond regulatory minimums.

Mike Taylor:

How'd you first get involved in process safety management?

Dave Moore:

Well, um, I was in the very early days, I decided that I wanted it to be a fire protection engineer, and I went to the university of Maryland program. And, you know, fire is really, uh, one of the number one, uh, incident incidents that we're trying to prevent fire and explosion. Um, I went to work at NFPA and then shortly thereafter, it Mobil corporation, which is now Exxon mobile. And that was essentially my job before they called it process safety management. We call it loss prevention engineering. There was no regulation. Um, we did it voluntarily because, uh, they had a good corporate conscience and they wanted to do the right thing. And I learned, um, in the early days, having spent seven years there in a corporate group that focused on supporting all of our operations, whether they're new facilities or existing, that this was, you know, the only way to do business. And so we, we tried to do everything that is today called process safety management. Um, during that time actually bowl Powell happened, and it was really inspirational for me to, um, be, uh, consulting in this space because there really was no dedicated consulting practice in America. Um, initially. And so I was a part of another firm and then, uh, Aquatech which I started in 94, uh, still it's really been my whole career is, uh, focusing on this issue.

Mike Taylor:

Yeah. That, that's very fascinating. Uh, tell us a little bit about your company. Aquatech you guys, um, do risk management consulting, um, and other things, are you located you're located in Vienna? Do you have some office spaces elsewhere too?

Dave Moore:

Yeah, we're, we're located here in Vienna, Virginia, and, uh, the reason being that it's close to Washington and, uh, we do assist clients with regulatory compliance issues, and it's often that we're able to visit into Washington easily and, and, and so forth. But also it's a, it's an important city and close to a lot of, uh, the industry. We have a Houston office, we have a Philadelphia office, and then we have a, uh, Dubai, uh, Mumbai, India and Shanghai, China office.

Mike Taylor:

Wow. And one of the fascinating things about you in my opinion is not only do you have a lot of work and do it knowing a lot of things in the us, but globally as well, how did you get involved in that?

Dave Moore:

Well, initially, um, you know, volt Powell of course, was an international incident and companies have been global for years, but as the movement to go global went even stronger. Um, we were somewhat fooled by, uh, our clients that we served in America asking for their assistance, uh, globally. And it became, uh, you know, 15 years ago has, uh, an unusual thing that we had at an international trip. But today it's about half our business. Um, even from the U S we serve global clients and have been in about 140 countries now. Wow.

Mike Taylor:

That's fantastic. So, in other words, for the audience, if you have a major, um, or refining client here in the U S and they're complying with a PSM standard, correct me if I'm wrong, the notion is they want to

do the same thing if they have a, uh, a plant overseas. And the concept is to make sure that they're doing overseas, what they're doing on the, uh, in the U S is that right?

Dave Moore:

Yes. You know, the, the voluntary side of process safety is, is essential. Um, smart companies have learned that this is good business, uh, it's necessary, and you have to maintain this equal standard, um, throughout your operations throughout the world. And that was one of the higher lessons, uh, of the Bhopal incident was, um, the idea that maybe the standard there wasn't as, uh, I, as it was for us operations. And so that's been one of the messages, um, certainly from industry for years is that we have a responsibility here, and it doesn't really matter whether you're, um, working toward a regulation internationally, they may not even exist. You just have to do the right thing.

Mike Taylor:

Right. What are some of the most interesting process safety management matters? You personally have been involved in over the, over the years? I know you're involved in an oil refinery explosion in Texas city, Texas over eight years ago.

Dave Moore:

Yes. The refinery, uh, following the incident, um, acted as a process safety expert, which is intermediary, uh, with, uh, part of an OSHA settlement. And we conducted a wall-to-wall assessment of the refinery. Uh, this was, uh, you know, a difficult time. It was a large loss of life. Um, and we were to help them to understand gaps they may have throughout the refinery, not just where the incident happened. And so we did that, um, and that was a monumental event in process safety history in that, from that point on, um, we thought differently about process safety and what all needed to be done

Dave Moore:

For me. The most interesting thing is that it's still interesting. Uh, there's, there's a global movement for process safety. So it seems every day we're helping a company somewhere in the world, um, or even in the United States that that we're making a difference and we're seeing some results. So most definitely, um, it is, it has become popular and people are appreciating, uh, that we have this history and that we, uh, we were there in business prior to the regulation being fully in effect. Um, and for many of us had been practicing for 30 to 40 years. And so, uh, it's really rewarding to be sharing that globally with our, with our clients.

Mike Taylor:

I can imagine you've been involved in, uh, a broad range of, of incidents over the years of, of high profile incidents, I shall say. Um, so you must have a lot of stories in that respect. Um, how do you think process safety has changed from a 50,000 foot level from when it first started to today?

Dave Moore:

Well, when it first started, I remember that people were discovering, what, what is it? And the first thing, the first thing they had to do is they had to understand it. You know, it was, it was often driven by the OSHA standard. So during the period of time, in the first few years, uh, between 92 and 95, 97 in that range, um, most people were, I call it in the process of discovery and initial work. And so there were, we help people to understand, for example, how, what is a HAZOP study, uh, and what do they

mean by some of these things? So we were helping to interpret and do very, very fundamental work and introduce the major corporations, um, their first ever such study or putting together programs as time

Dave Moore:

Went on, though. Uh, there was a bit of complacency in the, in the industry, or it seemed to be maybe for five or 10 years following that event. And that's why when the Texas city incident happened, it really took us all, uh, as a bit of a shock. Um, the complacency was because we felt we really had this under control and we understood it. Um, but the incident, uh, highlighted to us that even a company company that was as accomplished as they were, uh, and as capable as they were particularly, uh, at, at the time of the incident. And, and now that they could have such an incident.

Dave Moore:

So following

Dave Moore:

That, we realized there was a broader model of what constitutes good process safety practice. And there was a whole second wave of interest in the process safety industry we retooled. And now we believe we have a, uh, a best available model in particular. This was captured in the guidelines, the American Institute of chemical engineers center for chemical process safety risk-based process safety guidelines, where they outlined, uh, some 20 elements, which goes beyond the minimum elements of OSHA. Um, and so this is a excellent resource talking about the most modern view on what process safety is.

Dave Moore:

You have to focus on where the risks lie and not just be minimally compliant, and you have to focus your process, safety initiatives, uh, and drive them using metrics and good leadership. These were things that weren't mentioned in the OSHA standard explicitly, they're the tools of the trade of management. And so I think we learned to, uh, mature our viewpoint on process safety. And we did from really from that time on a better job of taking a more comprehensive view also, uh, that affected that company. So severely, uh, as well as other major incidents have done all the way to the boardroom. So now what I'm seeing is before, when I used to talk to fellow engineers at the plant, and now I'm talking to, uh, the C-suite or the board of directors about managing risk, as opposed to conducting a study. And this is a small regulatory issue that is similar to what we've had to deal with in the past. They realize now, and how critically important and how comprehensive this is. And I think they're doing a better job of bringing that up and down through the entire organization and aligning the organization to the goals of process safety in a much more formal way. So we've, we've grown up.

Mike Taylor:

Were you involved in the promulgation of the PSM standard, meaning did you testify or make any comments in the rulemaking process for the PSM standard? I don't think I've ever asked you about

Dave Moore:

That. No, uh, I did not. Uh, what I, what I guess I did is I was a, uh, I was a disciplined, uh, practitioner if you will, of, of the concepts. So I think my contribution to process safety was a lot of companies, um, would probably recall that we helped them with their very initial work, as I was saying earlier. And so,

uh, no, I have not other things we have, um, because of our success in process safety, we've helped department Homeland security on chemical security regulations we've helped in other regards. So we do that kind of work. And we actually use occasionally have worked, uh, directly with the government to try to make improvements. But, um, I was not part of the original team. There were one thing that's very clear is that industry, uh, framed process safety out literally themselves and, uh, was not afraid to recommend that to OSHA and OSHA was, I think, wise enough to accept industry's advice on what the best practice is, and then simply hold them accountable. The other thing about the process safety standard is industry knew that you couldn't prescribe everything that you need to do to operate a safe plan. It's impossible. It's too complicated. So they very wisely developed, uh, 14 elements that were a model that were what's called performance-based as opposed to a specification. And, uh, interestingly, that model holds up even today, at least as a regulatory, um, structure.

Mike Taylor:

You bet. So here's, you know, the cases that I have litigated PSM cases over the years, the difficulty that I have, or the problem I have with the way the standard is written right now, as you were saying, it's performance oriented. So for listeners who may not know what that is, it basically is, um, we want you to achieve X, but we don't know. We don't necessarily care how you get there as long as you do X. Um, and the problem with that from an OSHA enforcement perspective is that you may have one compliance officer shows up that says, well, I don't like how you achieved X. Um, and then the other compliance officer says, well, I liked that way that you achieved X. Obviously they're not going to be there at the same time. So I've often told clients that it's a recipe for OSHA citations, but on the other hand, as you were just saying, there's no way that OSHA could put down on paper, all the things that a company must do to make sure that, uh, they're either eliminating or materially reducing the risk of a catastrophic fire or explosion, if you will, which kind of leads me into, uh, my next question for you is, you know, after 35 years of working with clients on process safety management, uh, matters, what parts of the standard, um, do you think have been effective in reducing incidents?

Mike Taylor:

Meaning what do you think has worked well? Um, when, when the employer actually complies with that section?

Dave Moore:

Well, the core elements of all of the 14 elements that I espouse to is essential. Um, it's hard to say, right? Because, uh, the idea is that like a columns of a house, if, if any, one of these is not structurally sound, then there's a good chance that the root will collapse. But, um, the process has it, analysis elements is just in principle, the basis of the whole thing. You cannot manage risks that you don't understand. So the understand at risk, you have to identify a hazard and then you have to evaluate the consequences and likelihood, and whether the barriers you have or sufficiently strong to manage this and the whole thing being considered on a risk basis. So, um, that is a continuous process, uh, that is very, very fundamental without it. Um, you're, you're not certain that your program is addressing the risk.

Dave Moore:

Um, so process hazard analysis is one that I've seen has made a major impact today. Responsible companies it's, you know, simply put, they would never build a process without a thorough analysis, whether it's required or not, they would never change a process without a change control and re-

evaluation of those risks. And that's very satisfying to see people, uh, adopt, uh, that because 25 years ago, people had no idea in some cases what it has or even was, but I think that's been successful. Um, the mechanical integrity element is probably one of the most essential that while it's successful, it hasn't been fully successful because it's so challenging that I can't name a company that is, you know, perfectly in compliance with that. It's very, very difficult, um, that is in infection and testing, preventive maintenance sign, and this, this whole idea of compliance to all, um, recognized and generally accepted good engineering practices rag.

Dave Moore:

Again, it's just very difficult for people to be on top of and to fully understand and to, uh, keep up with the maintenance and inspection required, uh, of that those companies that have emphasized those two elements, uh, really have a great opportunity to control risks. Um, remember though, just a design and a, an analysis and recognition of hazards doesn't mean that you have that risk under control. So the rest of it comes from good operating procedures, good, safe work practices, so forth. And those are two other elements that are specifically named, um, hot work practices and operating procedures, but I would step back. And what we've learned is it's really about good safety leadership, good safety culture, good operational discipline. And unfortunately these are things that are not named, uh, directly by the regulations. Um, they're, I'm sure expected. Um, but the, the industry's view today of what constitutes a best practice is, uh, additional elements, um, to what the OSHA standard has, has prescribed all these years.

Mike Taylor:

Yeah. I know that, um, the chemical safety board is this issued, uh, maybe in the last week or so new guidance materials on what the CSB chemical safety board believes are best practices for process safety management. Uh, would you, if you had your magic pan and could change the PSM standard, what would you change? Would you add some of these best practice requirements that you think would help the, um, the foundation of PSM?

Dave Moore:

Well, uh, first off, people have to fully comply with what we have, you know, and, and that's challenging. Um, it's hard to measure some of these things, uh, like process safety culture. I'm not certain how suitable it would be for a regulation that they come in and they try to assess your culture. Um, and site give you citations for that. Whereas we know as safety professionals, that process safety cultures is a fundamental and an essential aspect of a successful program. I could have all the elements in place. I could have all the mechanical parts of my process, uh, on paper, but the culture does not, um, support. Maybe I have a lack of leadership support, uh, or a lack of board support and a completely different set of, uh, of objectives and an agenda that doesn't align with process safety. So it's not only these technical elements, right?

Dave Moore:

And that's the, that's the hard part is what we realize over the years is that we've kind of matured where originally the elements were about, let's say components, technical components of, of a sensible program, but they alone don't make for a successful experience. You need these other elements. So for example, the center for chemical process safety, espouses, uh, the idea of some of the things I mentioned, like operational discipline, making, making sure that people are following these requirements, um, safety culture, and, uh, the communication with your leadership, um, fracking

metrics and communicating that all the way up, perhaps to the boardroom. These are not necessarily things that are required or maybe should be required in a regulation, but mark companies good to adopt those. So I'm less of one to add to the existing regulatory burden than I am to try to see companies, um, realize the benefits of this broader set of requirements. And don't, don't target, um, the minimum compliance to OSHA.

Mike Taylor:

You know, it was very interesting because what you're saying, I think is where we could use an areas of improvement. If you will, kind of like my kid brings a report card home, and I get, uh, something that says areas of, uh, provement of improvement needed is getting the, um, corporate structure, more involved and concerned with an a buy-in of PSM. Um, because without that, you can do everything you can on paper, but if you don't have a commitment from the top down, it makes it difficult to, um, facilitate and make sure that you've running a safe operation.

Dave Moore:

Yeah. It's the foundation for success. Um, companies that we work with that are leaders in process safety. That's a second nature. Now. They, they have formal, uh, adoption and appreciation of these principles. There is no argument. Um, we've helped some companies. And this is the interesting thing is, uh, let's say in one case, I could say that I helped the chemical company that had a, a typical, uh, scenario for us would be that they had, uh, an inspection from a regulator and it didn't go well. And they realized that they had literally a dysfunctional program. It was there on paper, but on a, an audit or an inspection from a regulator, they found considerable number of things wrong. And so we, we were brought in because, uh, the question is, uh, well, we want to get the regulator satisfied because they were actually threatening, uh, uh, closure of the facility.

Dave Moore:

This particular case was in Europe. And it was, it was clear that the things that the regulator found with a tip of the iceberg, we did a deeper dive and found a wider number of things. And it was interesting for us because their vision of what they expected of us at first was this go. And then as we got into it, we had to, um, express to management, uh, that it's a larger issue, including, uh, cultural issues and compliance, the people's feeling of the necessity to comply. And, and after a number of cultural surveys and other areas, they not only appreciated it, but they had us help them. And then we came back periodically and now, you know, 10 years later, we've been there three times. And I can remember distinctly that first meeting and the pressure they were under and their vision was small.

Dave Moore:

You know, it was like, get the regulator AHPRA back. And here in the end, it was about process. Safety is, is good for business, and we want to expand. And now that one facility is expanding the, uh, message of process safety from the success they had there globally throughout the whole organization in countries that don't even have anywhere near a regulatory requirement. Um, multinational companies, uh, as very, very large ones that are American that had been through this for years and European companies and particularly, um, this is what they do. And, and it's become a business advantage know companies that can avoid these, these, uh, major incidents. The business case for process safety is, is profound. Um, by the way, that CSP best practice guidance that they turned out was actually called best practice guidance for corporate boards of directors and executives. And although it was targeted to the offshore oil and gas industry, that was only because of the 10 year anniversary of the Macondo.



Dave Moore:

Well, for awhile that they, it was their largest ever investigation, chemical safety board. And so they want it to hit home that this is still an issue. Um, and if you read that, which is on the csp.gov website, I think you'd see that it doesn't just apply to offshore operations. Um, it applies really to any company. And I, uh, I know that their investigation focused on this as well, 10 years ago, but what they're basically saying is we're still seeing this as an essential problem. And it's until corporate leadership, including all the way to the board level, um, is truly embracing this, that you're just not gonna see a step change for the better. So I, I think that's an interesting, uh, memo that they've turned out. Normally they would turn out more technical guidance or investigations. This one is right on point of what we're talking about.

Mike Taylor:

Yeah. Clearly this seems to be the gap for lack of better word for PSM. Um, that needs to be filled, uh, is getting the corporate management and directors involved in and, um, uh, bought, you know, they're actually buying in to process safety management, because as you were saying without that, uh, you can put all the documents together that you want, but it's still not at the end of the day, not gonna make that much of a difference without corporate buy-in,

Dave Moore:

It's going to be harder. Put it this way. There's a lot of, a lot of good people, um, that have that do individual outstanding jobs. You know, even if leadership isn't supporting them, we see that every day. But the fact is that if they had leadership behind them and there was really good communication and it was, and it was an expectation of excellence as opposed to an expectation of minimal. Um, I think there's, their job is profoundly easier and you get better performance. So we see some companies by the way, uh, Dow chemicals and example that, uh, truly have used these, these tools to drive their global operational risks, um, to probably 10% of what it was 30 years ago. And then continuing on with a goal of driving it to zero, zero process safety incidents. And, um, and you know, this is, this is what I'm talking about, as opposed to only being concerned, you have to comply with any legal requirements such as the OSHA standard.

Dave Moore:

But I think the importance of the OSHA standard to me was that it, it, it put that hammer there, you know, that it was in fact required. And, but, but they have a general duty clause as well as an expectation through things like rag gap that you're continually trying, you know, to minimize risks to the work that workforce. And that is probably never going to end if there ever is a change in the OSHA standard. And someday there will be, it's not going to get less restricted, it's going to get more restrictive. Um, so, you know, responsible mark companies, um, would voluntarily do everything they could do so that the regulation is, is simply woven into their, um, attitude about process safety. Uh, it's not something that they're opposed to, or, or having to make a huge change in their business. It's, it's just the way we do business it's and that makes, um, the whole thing a lot less onerous,

Mike Taylor:

Right? And what's going to be interesting to see over the next 10 years with process safety management is whether companies begin to do this more and more voluntarily or, uh, and or whether OSHA and EPA for that matter, uh, amend, uh, they're restricted, they're respected standards and include requirements for corporate boards and directors and executives. Um, but we'll see what happens in the next 10 years.

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Hey, Dave, I really appreciate you, um, being on the podcast today, uh, very, very informative. We are so honored that you could make it here today, and we very much appreciate you.