Episode Title: An Explosive Conversation about GHS and Combustible -- with Karin Baron

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Lynn L. Bergeson (LLB): Hello and welcome to All Things Chemical, a podcast produced by Bergeson & Campbell (B&C®), a Washington, D.C., law firm focusing on chemical law, business, and litigation matters. I'm Lynn Bergeson. This week I sat down with Karin Baron, a Senior Regulatory Consultant here at B&C and with our consulting affiliate, The Acta Group (Acta®).

We tackle the somewhat daunting topic of combustible dust, a common workplace hazard that is far more pervasive than perhaps people think. Combustible dust poses an explosion hazard in a wide variety of industries, including food, plastic, wood, textiles, and many others. Karin helps us understand what combustible dust includes and then walks us through the somewhat complicated governance frameworks that have emerged among the Occupational Safety and Health Administration (OSHA), private standard-setting organizations, and the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). The space is crowded, but remarkably unclear, especially given the severity of the incidents that have occurred over the years. Now here is my conversation with Karin Baron.

Karin, it is so great to have you back in the studio today. You are one of our favorite people to speak with.

Karin F. Baron (KFB): Thank you.

LLB: Our topic today is an explosive one, combustible dust. The U.S. Chemical Safety and Hazard Investigation Board [or Chemical Safety Board, CSB] conducted a study. Granted, it wasn't super recently, but it gives a really good sense of how pervasive this problem is. It was in 2006. And the Board determined then that there were some 281 incidents between 1980 and 2005 involving combustible dust, resulting in a whopping 119 fatalities. Karin, from what I have read, the numbers continue to be high, both in terms of incidents and fatalities. Help us understand what combustible dust is and why is it so dangerous?

KFB: Sure. I don't want to get too deep in the weeds with this topic, but essentially what combustible dust is, it's basically any finely divided particle that under various conditions can catch fire and explode. And what's interesting about combustible dust is that the same conditions you need for a fire: fuel, in this case the dust; heat, any kind of ignition source; and oxygen, which we have an abundance of. But then you add in this concept of particles --

finely divided, small, solid particles -- that are in a sufficient quantity in concentration that when they're confined can produce an explosion, so it is an explosion hazard. What's so dangerous about combustible dust explosions is that often the primary event leads to a secondary event, so there's a chain reaction, which can be, as you noted, quite catastrophic.

LLB: Indeed.

KFB: Essentially, you need the same elements you need, but oftentimes materials that we don't usually associate with being a fire hazard can result in a dust explosion under these conditions.

LLB: We'll get to what some of these unique sources might include, because when I was reading up on this in preparation for our conversation, I was stunned at what might be considered fodder, if you will.

KFB: Right, exactly.

LLB: The CSB report resulted ultimately in the Occupational Safety and Health Administration (OSHA) initiating a National Emphasis Program, or NEP, as they're called. That was back in 2007. As I understand it, Karin, it was intended to address combustible dust. Again, these programs are implemented when a workplace situation arises that requires special attention to protect workers. My guess is, since it's a national program, does this mean that there are many different industries that are at risk of these combustible dust explosion hazards and warrant some sort of special focused attention by the federal government? Naturally, that includes OSHA. Help us understand what an NEP is, and why OSHA developed that, and what its standing is now.

KFB: I think what's interesting about this particular hazard is that it can exist across multiple industries and multiple processes, and often it's industries we don't associate as being hazardous in the typical sense. I mean, we're not talking about facilities that are handling flammable liquids, which have a good handle on how you store them, and manage them, and not put them out in the heat, and things like that. These are industries like sugar manufacturing and flour manufacturers. The food industry is a big impact here. Agricultural dust -- grain is a big industry that's impacted here.

But it's not just those. It's industries we don't typically associate -- metalworking, like dusts produced from aluminum. And we all know in our practical use, aluminum foil, we put that in the oven; we don't really worry about it. But aluminum is also a hazard when it is in this dust form and you have all these criteria coming together. I think the reason why this became the focus of this National Emphasis Program was because these were industries that we didn't typically associate with catastrophic explosion events. And these are the industries that were impacted the most by these events, and so that's kind of what you saw happening in that timeframe when these investigations were going on. Even as we walk into 2021 now in dealing with it, it's still present; it's still out there, but the awareness needs to be raised. And I think that's what you were seeing at that time.

LLB: I see, and I noted OSHA has a pretty good PowerPoint on its website talking about what is the first recorded or first documented dust explosion. It occurred in Turin, Italy, in a bakery in 1785, long before OSHA existed.

KFB: Long before OSHA.

LLB: But again, to your point, these are atypical workplace environments where one doesn't usually associate catastrophic consequences, derivative of somewhat mundane and not terribly exciting exposures in the workplace to, for example, flour.

KFB: Right.

LLB: So I understand. Was it thought that an NEP, or an emphasis program, would achieve the same goal as going forward with some sort of standard, which is the more common response from a regulatory perspective to identify, address, and abate a workplace hazard?

KFB: I think, looking back on OSHA and knowing what we know as we've walked through some of the lawmaking procedures, a notice of proposed rulemaking (NPRM) or even an advanced notice of proposed rulemaking (ANPRM) is a painfully slow process. I think the thought here was, "We need to raise some awareness. We need to draw some attention to this. Let's do it as quickly as possible." And an NPRM isn't always the quickest mechanism for OSHA for communicating potential hazards and educating the workers and the work environment on these conditions.

LLB: OSHA *did* issue an ANPRM back in 2009. So there must have been some kind of preliminary thinking anyway that, "Gee, maybe we should be going the rulemaking route." But I know that that ANPRM was eliminated, withdrawn, or just fell off the regulatory agenda in 2016. Any story to that? Or is it just somebody gave up the ghost and it hasn't reappeared on the reg agenda?

KFB: It's interesting because -- I looked, too, as we were exploring this topic, and it was definitely a focus for OSHA. It was incorporated into a lot of discussions. There was an expert forum in 2011, but it did just kind of fall off of the agenda sometime around 2016. But what's interesting to note is that while it may not be addressed in a specific combustible dust standard, there are a lot of standards that OSHA currently has that do address the various aspects of this hazard, like walking surfaces, emergency action, ventilation, obviously fire protection, which is an entire subpart. And then individual special industry standards, pulp and paper, in which cellulose, and pulp, and paper, wood, that's obviously a concern there. Sawmills and grain handling all have various aspects of addressing this. And then interestingly, in 2009, when the NPRM went in to amend the Hazard Communication Standard (HazCom Standard), combustible dust received an honorable mention. So if it's not necessarily addressed in an OSHA standard, as you and I were talking about before, OSHA mentions that it's part of the OSH Act and the general duty clause that may apply. Yes, it's definitely not on the agenda now, but I think it is addressed. It's just not addressed in one cohesive place.

LLB: Okay, that's very helpful to know that it's actually an identified hazard in the standards that do exist and are enforceable by OSHA, right?

KFB: Absolutely.

LLB: Well, tell us more about labeling elements in the HazCom Standard and what exactly is required there, if anything.

KFB: When OSHA was updating, or proposing to update, the HazCom Standard in 2009, the intent at that time was to align with the United Nations' (UN) Globally Harmonized System of Classification and Labeling (GHS). The revision that OSHA was basing its amendments off of was Revision 3, and OSHA noticed, rightfully so, that the UN GHS did not include

dust hazards or combustible dust explosion hazards. OSHA, wanting to be as protective, if not more so, than the current HazCom Standard, added combustible dust as a unique labeling element to its version of GHS at that time. And that raised a lot of questions in industry. So when the law was actually implemented in 2012, there were a lot of questions being asked about what does this mean? And so what you see in OSHA, what OSHA typically does, is they issue a letter of interpretation.

And in those letters of interpretation, they kind of talk about this hazard and how it should be addressed in labeling and safety data sheets (SDS). And what's kind of come out from this is discussions on not just those industries we were talking about before, but further communication in the supply chain, which has raised a lot of conversation with respect to, say, I sell a brick. My brick is a solid. I don't intend for my brick, obviously, to be a combustible hazard. But if my brick, or my piece of wood, or whatever it is, is then offered down the supply chain where it *is* intended to be broken into particles, or to be sliced or diced, or however it's intended to be used, and in that use it can result in a combustible dust hazard, OSHA has said that they expect that those labeling and SDS communication tools should include mention of that. And so you get into these deep concepts of not just addressing combustible dust hazard at the level of the manufacturer, but it's also understanding where your products are going in the downstream marketplace and whether the hazard could be generated at that downstream user's environment.

LLB: When OSHA added these combustible dust labeling elements to HazCom, did they align then and are they aligned now with the U.N. GHS standards?

KFB: Not really.

LLB: I'm guessing this is the source of considerable confusion out there in the regulated community, right?

KFB: It is, and part of it was, as you and I talked about, this concept of dust explosion and the inclusion of a separate labeling element in the HazCom Standard in 2012, and then the lack of mention in UN GHS can be incredibly confusing. And when you look back at the history of UN GHS, you see mention of this hazard, but it's in the strangest place. It's not specifically defined. It's in the annex that talks about other hazards resulting in inclusion in a safety data sheet. It's not in the typical parts that we see defining physical hazards like Part 2 of UN GHS.

As we look at this, it's not until 2019 that it gets its own annex -- not even part of the hazards, but it gets its own annex -- where it's now defined, but that's in UN GHS Rev 8. At this time, OSHA has adopted Rev 3. So we're five revisions in the future, 2019, before it's even addressed at the UN level. But as I mentioned, it's not addressed at the UN level as a physical hazard that's part of their core hazard classes. It still remains a bit of a mystery as to how OSHA is going to amend because it's obvious that UN GHS, at this point in time, has no intention of including combustible dust as a separate hazard class.

LLB: As someone who interacts with the OSHA standards from time to time, particularly at the enforcement level, this strikes me as being spectacularly incoherent, especially for entities that probably do have combustible dust hazards and wish to do whatever they can to minimize them and make sure that they are being communicated in a way that prevents any type of catastrophic injury or loss.

I understand that Annex 11 is the GHS annex where these provisions are contained, but that is part of GHS Revision 8, and we're still on an earlier revision that doesn't incorporate these from an OSHA HazCom perspective. If I were a regulated entity and I was looking for the most coherent explanation of what I should be doing to be aligned with the general duty clause, which is my legal standard, right? There's no GHS -- or excuse me -- there's no OSHA standard, but there is this overarching general duty to ensure that I'm creating a safe and healthful work environment for my employees. Where do I look for that in the regulations?

KFB: It's definitely a patchwork. As I mentioned, there's a handful of standards that OSHA specifically mentions, but it's not easy. I will say, OSHA, as you did note, includes a lot of guidance on its website. There are a lot of details that they do provide, including just posters and quick cards and just guidance. There are private standards like NFPA, which have a tremendous amount of detail when it comes to how to address combustible dust. And then, if you're getting buried in the minutia of it, Annex 11, even though it's not part of OSHA's current rulemaking, does break it down in a more simplistic way, because typical to UN GHS is there's a lot of guidance with respect to decision trees, and yes/no questions you can ask, which give you a good place to start, but definitely, it's not going to be a one-stop shop.

You're never going to be able to go to just one place to find the full breadth and depth of what you need. But you start with, "Am I an industry that's impacted or do my products result in a potential for combustible dust explosion?" And then work your way through. And I will say that as OSHA earlier this year proposed to update the HazCom Standard, it does elaborate in that notice of proposed rulemaking a little bit further on this topic. It is interesting to see OSHA and the UN are trying to come to some alignment.

This was a long topic that was on the agenda at the UN subcommittee for a decade or more on how do we address this. And while incorporating it into an annex is not ideal, it's at least being incorporated now. And it gives OSHA something as they move forward in updating the HazCom Standard as they've always intended to do, some basis to add more detail into the HazCom Standard, which, again, just kind of reiterates and helps reinforce the fact that this needs to be addressed on an industrywide basis.

LLB: No, and you've just very eloquently interpreted the abundance of guidance out there in a very coherent way, Karin. The Annex 11 might be more aspirational for purposes of an OSHA kind of incorporation into HazCom. Let me throw one other element in here, because I know private standard-setting organizations have a role in this space, and that's the National Fire Protection Association, or NFPA. This NFPA 654, can you tell us a little bit about what that is and how does that align or not align or just participate in this area generally?

KFB: NFPA is a private association that addresses fire protection. They have very detailed standards for not just combustible dust, but for a multitude of hazards, including how you store flammable liquids, how you manage this space. OSHA often defers to these standards in its own regulatory framework, noting that these standards are incredibly robust and incredibly detailed when it comes to how to manage and handle and identify these types of issues, but it's not law. When it's mentioned in the standard, it's usually mentioned as guidance. The law is obviously OSHA, but oftentimes OSHA will defer to NFPA. Unfortunately, being an outsider kind of looking in, you can't access NFPA standards without a subscription. So I think it becomes a bit problematic for OSHA, especially when we're talking about publicly available details for folks within the industry to be utilizing standards that are on a purchase-for-pay type system. So while OSHA does utilize them,

mention them, defer to them, essentially these are not standards that you and I can go out and grab a copy of it right now and review it and utilize it. It is a subscription-based service.

LLB: For pay, right. I want to make sure I understood you. There are actual cross references in the OSHA standards to NFPA?

KFB: At times. I've seen it in -- I have seen it, but often what's interesting about those is that I know when I was dealing with some issues with flammable liquid storage and how -- it's very involved; I don't want to get too deep into that.

LLB: We could go on for hours here, Karin. People probably don't want us to, but I know *you* could.

KFB: The standard that's actually mentioned when you're looking in the OSHA standard and you're looking at flammable liquid storage and you're looking at the specific details and minutia of it, they mention an NFPA specific document, but that one may not even be the most recent one. Like anything, it's a set point in time, and you have to be cautious about how you review and evaluate, because OSHA may have included NFPA Standard 301, for example, and that may not be a true standard, so don't quote me on it. But NFPA, a living, breathing organism, will have updated and revised that standard, and maybe they sunset that standard and created a new standard. So I think it becomes problematic for OSHA to continue to reference these when, as we mentioned before, actual change to law and incorporating new standards into law is incredibly tedious and a very time-intensive operation under OSHA.

LLB: Understood.

KFB: Yes. If you're looking at their combustible dust information on their website, you will see mention of many -- I think there's either three or four NFPA standards that they do mention on that website -- but then they also have their own guidance documents and their own reference documents that they produced.

LLB: NFPA is a very highly regarded, well-respected private standard-setting organization, and their documents are very useful. But I think your word of caution there when you see it in a reg, it's probably just cross-referenced as an illustration of standard setting or a group of standards. It might be illustrative and helpful, but certainly not enforceable because they're not publicly available and couldn't possibly be held to a legally enforceable standard because they aren't even publicly available. I get that.

KFB: And when you look at enforcement overall, just from a big-picture perspective from OSHA, the number one, number two, number three, often most cited is HazCom, some aspect of HazCom. I think when you talk about enforcement, when you talk about OSHA, you need to be recognizing that while NFPA has an incredibly robust program for addressing combustible dust, they're not going to cite you for lack of following NFPA. They're going to cite you for a violation of HazCom, because that's probably the standard that they're looking at when they're addressing this concern, or another standard -- ventilation, or housekeeping under some of the other standards, like, I think it's 22, or something like that.

LLB: Speaking of HazCom, I think I saw that OSHA recently sent another round of request for comment on the HazCom, and there's a public hearing, an open public hearing in September. Is that correct?

KFB: Correct, yes.

LLB: Do you expect this to be on the agenda, or is this kind of a recurrent theme? And there's always a lot of activity in the combustible dust area. But as you suggested, the glacial pace of updating GHS and aligning it with OSHA is a very slow, laborious process. Is this something that could be accelerated under the Biden Administration, or do you not see that happening?

KFB: No, and I think when you look at what OSHA proposed to update with respect to combustible dust in the NPRM, it's just not that controversial. It's more clarifying in its nature. So they proposed a definition, which wasn't included in the original HazCom 2012. That definition is based on the revision --well, they say Revision 7, but I couldn't find it. I actually found the definition in Annex 11 of Revision 8. And it's --

LLB: Okay! You heard it here, folks.

KFB: I looked for it. I couldn't find it. But then they also are just suggesting some minor modifications to the statements that you include on the label, which are clarifying in nature. To me, of all the changes that were proposed earlier in 2021, this is probably the least controversial and the most helpful. So these changes, in my view, help clarify rather than cause concern for industry with this element. Yes, definitely.

LLB: Excellent. Well, that's good to hear.

KFB: Honestly, the NPRM that they issued earlier in 2021, a lot of the elements are meant to clarify. There are some that are not, but there are definitely -- this was one where -- I view this more as helpful. This is a more helpful update. We always appreciate definitions in regulatory.

LLB: Exactly, and there's a *there* there. I think people cling to it because it's clear and unambiguous, right?

KFB: Exactly. Exactly.

LLB: So, Karin, as always, you are just a beacon of clarity on these very, I think, sometimes less clear topics for people like me, mere mortals when it comes to HazCom, GHS, and OSHA regulatory matters. But when someone comes to you and says, "Look, I know I've got a combustible dust hazard in my work environment," what do you recommend to your clients in terms of getting the best possible approach down to identifying, managing, and avoiding the hazards from combustible dust?

KFB: I think the first place to start is to verify that you actually do have a combustible dust, and I think this has been part of the gray zone that we've lived in, at least in HazCom, since 2012. The warning for combustible dust has become, to me, very synonymous with the Proposition 65 statement, where it's just kind of showing up everywhere because nobody's really sure when they should or should not include it, so they're including it.

I think my recommendation is to verify that you actually do have a combustible dust. And as I mentioned, OSHA does provide a lot of guidance on this, but they have this laundry list of items that may or may not be accurate, unless you have actual data or evidence confirming that that's what you're dealing with. And there are valid ASTM, which are just standard methods, to determine whether your materials, the materials that you're either handling in

your workplace or producing for further use downstream, create or *could* create the potential for a combustible dust explosion, because that's what we're talking about here. Then once you're able to determine that you actually have a known hazard, it's managing that, in this case, it's not necessarily the triangle, but if you don't have a dusty environment, it makes it very difficult to generate a combustible dust explosion.

LLB: That's very logical.

KFB: It seems pretty logical. Clean up. But you also need to be aware that the normal mechanisms for cleaning and how you describe those mechanisms on your safety data sheet may not be the usual that you would think. Sweeping is a bad idea. You need to be using protocols that address the fact that you don't want to disperse those particles in the air. So it's identification, and then it's always going to be elimination of the hazard. And in this case, it's the dusty environment. It's just ensuring that workplace operations and cleaning protocols address the potential to disperse these particles in the air. Because if you don't have the fuel, then it's very difficult to cause the fire.

LLB: Again, you make it sound so remarkably clear and logical. I'm just always amazed that there is an abundance of GHS, and OSHA, and NFPA standards that sometimes are somewhat difficult to reconcile. But it does sound like on the good news side, there's an abundance of information for regulated entities to access and understand, identify, prevent, accurately summarize under the HazCom Standard, right?

KFB: Absolutely. I always tell people, "If the HazCom Standard isn't providing all the clarity you need, often look to the source of how it was developed." And in this case, while UN GHS Revision 3 has little to no mention of explosions, and dust hazards, and dust explosion, and how you prevent it, and how you identify it, we now have this great tool with Annex 11 in Rev 8 that can serve as a good starting place. And then the OSHA website, it is probably one of the best.

Props to OSHA because you and I deal with a lot of government agency websites, and the OSHA website has this great A to Z index on their web page. And if you click on it and you just look under C, combustible dust, you're going to come to a multitude of guidance documents, and consensus standards, and helpful tools that can also educate you and your workers on this particular topic.

LLB: That's an excellent recommendation. The OSHA website on GHS might have a thing or two to say. Our website at lawbc.com and look for GHS because, Karin, you have populated the website many times on a variety of topics, one of which includes combustible dust. But the other resource is people can call *you* because nobody knows this space better than you do, Karin.

Once again, having you in the studio to talk about a topic as pervasive yet as kind of arcane, a little bit, on the regulatory side of the equation, and standard-setting side of the equation, as combustible dust just gives me renewed respect for the breadth and depth of your knowledge in this space. Really appreciate you being here, Karin. Is there anything else you think our listeners should hear, or understand, or look for on this topic?

KFB: I would just keep watching OSHA as we move through this latest NPRM process. As you mentioned, the public hearing is in September. As folks monitor that, monitor our website for updates on these standards and what's going on in the world of OSHA.

LLB: Great. Karin, thanks again for being here today. Really enjoyed our conversation.

KFB: My pleasure. Thanks, Lynn.

LLB: My thanks again to Karin for speaking with me today about combustible dust. We hope this discussion underscores why combustible dust poses such a pervasive workplace explosion hazard and clarifies the overarching governance systems pertaining to combustible dust under OSHA and GHS standards and by private standard-setting organizations.

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