Episode Title: Rev 10 GHS -- A Conversation with Karin F. Baron

Episode Number: 20231116
Publication Date: November 16, 2023

All Things Chemical® is a podcast produced by Bergeson & Campbell, P.C., a Washington, D.C., law firm focusing on chemical law, business, and litigation matters.

This podcast transcript has been lightly edited for accuracy. It is an approximation of the podcast audio, and the audio recording remains the definitive record.

Let us know about any topics you would like to hear about in future episodes at podcast@lawbc.com.

A full recording of the podcast is available at https://www.lawbc.com/rev-10-ghs-a-conversation-with-karin-f-baron/.

Lynn L. Bergeson (LLB): Hello, and welcome to *All Things Chemical*, a podcast produced by Bergeson & Campbell, P.C. (B&C®), a Washington, D.C., law firm focusing on chemical law, business, and litigation matters. I'm Lynn Bergeson.

This week, I welcome back to the studio Karin F. Baron, Director of Hazard Communication and International Registration Strategy at B&C and our consulting affiliate, The Acta Group. Karin and I discuss Revision 10 (Rev 10) of the Globally Harmonized System of Classification and Labeling of Chemicals, commonly referred to as GHS. A release of *any* GHS revision is a really big deal, and Rev 10 is no exception. Karin highlights during our discussion key elements of the revision, including changes to weight of evidence, the classification of ozone-depleting chemicals, precautionary statements, and much, much more. No one reports on GHS better than Karin Baron, and this episode covers Rev 10 as only Karin can. Now, here's my conversation with Karin Baron.

Karin, I want to welcome you back into the studio, and I'm very excited to speak with you today about one of my favorite topics, and that is GHS.

Karin F. Baron (KFB): Yes, thank you. Always exciting to talk about GHS.

LLB: It *is*. Well, before we dive into Rev 10 of the Globally Harmonized System of Classification and Labeling of Chemicals, fondly known as GHS, I wanted to spend a second reminding our listeners about what GHS is. I think at a super broad level, it's a voluntary global framework intended to assist stakeholders, like you and me and everyone listening, with classifying and communicating information on chemical hazards for consumer, occupational, and environmental exposures. That much is pretty straightforward. Based on our past discussions on GHS, I think we can state with confidence that GHS is a bit of a misnomer. It's by no means harmonized. But I also think we agree that it's certainly better than nothing. One of my questions, as we get this party started, is has Rev 10 moved the needle at all in harmonizing hazard communication, or conversely, has it added to the confusion?

KFB: That's a really great question, and it's complicated, because the idea behind, as you stated, the United Nations (UN) GHS is -- one, it's a framework. It's not law. And two, it *does* create harmonized criteria for how you classify a substance and a mixture into health, environmental, and physical hazard classes. But in addition to that, with each of those, it brings together harmonized elements, so we have the same statements about something that's causing corrosion in skin, and we have the same picture or pictogram about that same hazard. And we have an agreement that this is how we're going to label and communicate these hazards on safety data sheets (SDS) in both the worker and in the consumer marketplace.

But it was never meant to be kind of a one-and-done situation. The [GHS] Sub-Committee meets every six months, and they're always working on refining, revising, amending, creating elements to this. It is a working document. In that respect, any time we get a revised edition being published -- every two years, we get a new revised edition -- it's always going to help in some ways, but hurt in others and not hurt in a negative way, just because as countries decide to implement GHS, they're always going to be playing catch-up. No matter where we are within the scope of the countries adopting and implementing GHS, the UN framework is usually two to three steps ahead of where everybody else is.

They are providing additional tools -- and we'll talk a little bit more about some of that -- that I still think provide a lot of value to those of us who are working within this space on a day to day.

LLB: Yes. Fair enough. It sounds like any type of expectation regarding global harmony is probably unreasonable, but with each successive two-year rollout of another revision, we're getting closer to achieving the goal of making life more predictable, more uniform, and more harmonious with regard to hazard communication. That's good. That's good. Circling back to Rev 10 *per se*, what, in your view, are key changes that listeners should be most attuned to at this point?

KFB: Rev,10 -- like I said, they publish the new revised edition every two years, so the last time we had something was in 2021. What we've seen -- not just with Rev 10, but with, I want to say, it probably started around Rev 6, Revs 6, 7, 8, 9, and 10 -- we saw a big focus on a couple of key elements. One is physical hazards. Physical hazards are those hazards that deal with things that are flammable, or explosive, or oxidizing.

But we also saw key changes to refining the health hazard chapters, specifically dealing with the approach for non-animal testing methods. What we see in Revised 10 version is that we have changes to specifically Part 2.17, which is Part 2, which is physical hazards. We see changes to Chapter 17, which deals specifically with desensitized explosives. There's a big change there.

What's been happening with these physical hazard chapters is two points that they've been considering: One, ensuring that there is alignment with how UN GHS approaches physical hazards with how we transport physical hazards under the transportation of dangerous goods. We're making sure that if I classify something as an explosive under Chapter 2.1, that that then aligns with how we would address explosives when I'm transporting them from point A to point B. We've seen a lot of changes, especially in the explosive -- desensitized explosive chapters. There's been a lot of changes of those between Rev 9 and Rev 10.

We also saw a lot of movement with aerosols over the last several revised editions. You are seeing some of that. It's not just specifically addressing when it's being moved in transport. It's also when it's outside the scope of transport, because GHS addresses not just the movement of materials from point A to point B; it deals with the handling of materials in your work environment and your consumer market. We did see a lot of that.

Then we saw some changes -- and we're going to talk more about those -- on non-animal methods. We'll talk more about what that means, but those were the two major revisions that we saw here.

LLB: That's helpful, Karin. In practical terms, for listeners who might be less familiar with GHS, what does this mean, practically speaking? It's not like these changes become operational by a date certain, right? Again, this is a global *framework*, so from a practical perspective, people will be moving -- or *countries* will be moving in the direction of implementing these changes, or not, correct?

KFB: Correct. That's what -- when you look at how each country adopts, into their own legislation, the framework, it's a stamp in time on which revised edition you get into law. For example, the United States, which adopted GHS into its law around 2012, and they based that off Rev 3, so we are well behind where the UN framework exists right now at Rev 10. As countries adopt and implement, or update, what we're seeing from -- if you were to take a big global picture -- most countries are either moving to revisions to around Revs 6, 7, and 8 appear to be what's happening. Again, that's based on timing, because if they started to talk about revising legislation or implementing legislation -- takes several years before it actually becomes in part of their law.

The trend right now is Rev 7. A lot of countries are going to Rev 7, and the United States is no exception to that rule. They did propose, as you're aware, to update -- I think it was in 2021 -- to update to Rev 7 with consideration for certain elements of Rev 8. When we look at Rev 10, I have not seen a single country jump on the Rev 10 bandwagon at this time, but that's because Rev 10 is just newly introduced. The expectation would be -- what happens with countries when they decide to update again? And that was part of the interesting aspect of the notice of proposed rulemaking with [the Occupational Safety and Health Administration] OSHA is that in 2021, they talked about this: How do we keep up to date with the UN? How do we continually update our regulation so that we are following the framework as it's intended to be followed? What I have yet to see is whether they're going to codify that, and specifically say every two years, the United States will update, or whether or not it's always going to go through this painfully slow process of notice of proposed rulemaking and final rulemaking, which takes several years for that to happen.

Rev 10 is out. No country is implementing at this time, but that doesn't mean it's not useful for a lot of the things that they added and they amended. It still provides utility, but it's just recognizing and acknowledging that you're bound by the law in the country you're operating within. You have to be cognizant of the fact that Canada is in Rev 7. Certain elements of the United States will eventually be in Rev 7. That's kind of what we're dealing with.

LLB: Well, that's why people need to refer constantly to you, Karin, because you have your finger on the implementation of whatever iteration of GHS applies in Canada, or Europe through CLP [Classification, Labelling and Packaging], or whatever, because it is very much a moving target, and countries implement at very different rates.

KFB: Yes, absolutely.

LLB: Rev 10 addresses -- based on my very cursory review -- the use of non-animal testing methods for the classification of certain health hazards, including the all-important skin and eye irritation. Maybe you can give our listeners some background on these points, as these are very important endpoints for a variety of regulatory frameworks here in the United States and presumably elsewhere. What's going on there with regard to the Rev 10 standards?

KFB: Yes, this is really interesting, because when you look at [hazard communication] HazCom law in general, it always talked about being able to determine whether hazard criteria are met *without* testing. That was a big part of it. It's actually established in several of the parameters within the introduction of the UN GHS framework, where it stipulates that you need to establish a way to use *all* of the data if you have animal data. But if you -- especially if you *don't* have animal data -- *in vitro* testing, human experience, epidemiological data, clinical testing, all of these things were built into the framework.

What we've seen is -- especially with other schemes like with the registration of chemicals in the European Union (EU) under my favorite, REACH [Registration, Evaluation, Authorization and Restriction of Chemicals] and then all of the influence REACH has had around the world -- we have a lot of testing going on, a lot more than I've seen for a very long time. GHS is very clear. You don't need to test a chemical to determine whether or not it meets the criteria. They have to build in a way to classify chemicals using not only data you might have had from older animal studies, but if you have newer data from newly developed *in vitro* or *ex vivo* methods, how do you interpret those data to determine whether hazard criteria or classifications are met?

What's been happening in several of the previous revised editions, and especially into this one, is just that: providing a framework for how to use all of the *in vitro* and *ex vivo* methods that have been developed and are being agreed upon at the OECD [Organization for Economic Cooperation and Development] level for using for some of these other schemes.

How do we use these then to classify into chapters like skin irritation? And in this one particularly, what they amended dealt a lot with the eye. It's the serious eye damage and eye irritation, where they incorporated new ways to evaluate the data that you've been presented. But also, they put in some beautiful tables -- they are really helpful -- that address the specific OECD methods that you might be seeing in a REACH registration.

There are two points that I think are really important about this. These tables are incredibly helpful for those of us who are trying to look at a testing result and determine whether or not it can actually classify within the criteria established. But it's also the flip side of that, because when you actually deploy a method like this, you hire a laboratory, or whatever, to do these testings for you, and then they give you back a report. They often include their interpretation of whether or not it meets the criteria for GHS. Now that you can put your finger on an actual table within the UN model, you can then argue (or not argue) against -- that's up to you -- as to whether that interpretation is in alignment with the thinking of the UN GHS Sub-Committee.

I think it provides a lot of useful tools for folks to navigate this space in a more meaningful way. It's very powerful to see what's happening, because they've been in Rev 9 with the changes with the skin. In Rev 10, we're seeing some changes to eye irritation, and we'll see

additional elements in skin sensitization, also part of this conversation. So very helpful. Again, even though the United States is in Rev 3, you could still use what Rev 10 produces to assist you in determining whether you have something that meets the criteria based on these figures and tables that they've provided.

LLB: Yes, it's very helpful, Karin, to know that there is a table in Rev 10 that is very helpful to hazard communicators in terms of assessing eye and skin irritation. That, in and of itself, is a helpful point for listeners to be aware of, even though it might not have any -- Rev 10 may not have any regulatory relevance here in the United States because we're still well below implementing Rev 10. But again, in terms of identifying *tools* that make our jobs easier, thank you for calling our attention to this table. That's great.

KFB: Yes, very helpful.

LLB: Another area that I know I'm especially interested in are the discussion on precautionary statements that are, again, intended to improve the user's comprehension while also taking into account the usability of these statements for label practitioners. Can you help us understand what's going on there with regard to these precautionary statements? And how has Rev 10 aided, or not, in their utility?

KFB: Precautionary statements -- kind of a love-hate relationship with these. This is part of the tool. You have harmonized criteria, so I'm looking through the criteria that tell me whether or not my substance or my mixture is considered, for example, as causing serious damage or causes corrosion to the eye. And then with that, they give you all of these SDS and labeling elements. This is where you create the beauty of harmonization, because everybody agrees to use the signal word DANGER. Everybody agrees to use a pictogram or a picture that looks the same. Everybody agrees to use a hazard statement that says, "Causes Serious Eye Damage."

Once you've established the criteria, then we start to see some uniformity around the elements. The precautionary statements are broken into four categories. They have prevention statements, response statements, storage, and disposal statements. With each hazard category, you now have these statements that deal with how to prevent, how to respond, how to store, how to get rid of. What's been happening -- and it's not just with Rev 10. It's almost every single revised edition. We get refinement, amendment, additions to these precautionary statements.

What we see is a movement to further, I guess, explain or provide additional verbiage that helps with preventing, and it helps with response. A good example is exactly that serious eye damage, where the current U.S. framework, the prevention statement -- and there's just one -- that says, "Wear eye protection and face protection." Seems pretty good, right? It's pretty reasonable. They didn't change that. That did not change at all. But what they added was another prevention statement that talks about washing your hands, and perhaps your face, or washing your hands thoroughly after you've *handled* something that can cause serious eye damage, and then also not touching your eyes, "Do not touch eyes." Those two prevention statements are part of this change.

It's not only just wearing PPE [personal protective equipment]; it's acknowledging that once you've handled something, you should be washing your hands thoroughly. You should not touch your eyes. That's part of the prevention conversation. But in addition, the current response statements we have -- so say you get it in your eyes, what do you need to do? It

basically said, “Rinse cautiously with water for several minutes, and then immediately call a poison center or a doctor or a physician.”

What they’ve done is they’ve changed some of that to acknowledge that if you get this in your eye, you need to *immediately* rinse with water for several minutes. It’s just -- you can see the beauty of some of the refinement, that it’s just cleaning this up a little bit, making it more usable. But then also, they’ve changed it. Instead of immediately calling the poison center doctor “to get medical help” is the phrase that they added. You’re just seeing -- when they talk about this, this is what they mean. It’s just taking these existing prevention and response phrases and making them a little bit more in line to what you would expect to see in an emergency response situation -- what’s better in the workplace and consumer market, because they may not be wearing eye protection or face protection. That’s some of what’s happening with those.

LLB: That helps a lot. They’ve really just refined some of these statements to be very, very practical, honed by experience and a hard read in the clear light of day. Those sound very commonsensical to me.

KFB: Exactly. That’s exactly right. Yes.

LLB: I also know there are some specific provisions related to metal and metal compounds. Can you help our listeners understand what they might relate to?

KFB: Sure. Part 4 -- just to back up a little -- Part 4 deals with environmental hazards. Now, in the United States -- and I keep picking on the United States. OSHA -- it was not their mandate to pick up environmental hazards, so we didn’t even adopt Part 4. But for those of us who work in this framework, there are many countries that did implement Part 4. Part 4 contains two chapters. There’s Chapter 4.1 and Chapter 4.2.

Chapter 4.1 -- don’t take it lightly. There’s a *lot* of detail in Chapter 4.1. It talks specifically about hazards to the aquatic environment. And in there it’s talking about toxicity to all three trophic levels, so here they mean toxicity to fish, toxicity to aquatic invertebrates, and toxicity to things like algae. But it also talks about other, more complex things, like bioaccumulation and biodegradation. When we go back to the metal compounds, there is definitely an acknowledgment that these don’t behave the same way as other, more water-soluble compounds that are better in the environment, where the testing methods that we’ve used for years and years and years lend themselves to these types of tests, but it’s also an acknowledgment that you can’t just ignore it.

Annexes 9 and 10 specifically talk about how we manage, or what we can look at, to determine whether a metal or metal compound belongs under the criteria of Part 4.1. It talks specifically about you do need to consider these things. Talk about the solubility of them. You need to talk about the ionization potential of these -- pH, all of these very complex factors -- and then decide just because something doesn’t dissolve in the water column, it still could potentially be bioavailable. The example that they refer to in the introduction is considering metals in food. Both part of Annex 9 and *all* of Annex 10 are going to be addressing alternative test methods and approaches for how we manage to address metal and metal compounds. I will just say that Annex 9 is not exclusive to metal and metal compounds. It also addresses other problematic things that are poorly water-soluble and how -- some of the alternatives that we can be looking at to determine whether they meet the criteria that are established for this particular hazard endpoint.

LLB: Got it. That's very helpful, Karin. Thank you.

Another area that caught my eye is provisions related to the all-important concept of weight of evidence. Can you help us understand what this might mean in this context? We all know weight of evidence means a lot of different things in a lot of different regulatory and legal contexts, and it covers a huge swath of real estate. But what does it mean here in the context of hazard communication?

KFB: Here, when they talk about the concept of classification and the weight of evidence that they're looking at -- I actually find this kind of funny -- because in the Introduction, they talk about hazard classification, and it's just three steps. It's like three easy steps, which is --

LLB: -- I know, like A, B, and C, and you're done. Well, not so much.

KFB: It's so *easy*.

But here, when we specifically refer to weight of evidence, they're talking about looking at the data, and then determining whether those data are of good quality. Looking at the consistency of the data, putting together both positive and negative observations, looking at data in not only animals, but also looking at epidemiological data. When they say here, "weight of evidence," that's what they mean by "weight of evidence." We're looking at all of the available information that we have. We're also making sure that that information is valid, that those studies were conducted using good methodology, that it is actually performed based on a recognizable method. Then you're also looking at the mechanisms, the mode of actions of the study results. You're looking at observations. All of that goes into overall weight of evidence.

But then further into certain chapters of the UN GHS, they will actually point out for more complex endpoints reproductive mutagenicity, carcinogenicity, some of the key points about mode of action and some of these mechanisms, because I think we can all agree that even if a study was well conducted in an animal species, it may not -- from a weight of evidence approach -- have any impactful meaning in humans. There are anatomical differences. There's a lot that goes on there, so that's what they mean here about weight of evidence. It's just ensuring that you're looking at the big picture of everything that's been presented to you and then determining if the criteria are met. Just because you have a health outcome in an animal may not equate to -- based on all of the other data presented -- meeting the criteria that GHS has then developed. It's somewhat what I mean.

This comes up -- this weight of evidence argument comes up time and time again. Titanium dioxide is a good one, where it is looking at the overall big picture of everything we know and determining whether the criteria are met.

LLB: Let's switch gears a little bit to talk about Rev 10, GHS, and the EU changes to CLP. What specifically has the Sub-Committee program of work identified as priority for the next revisions? Can you help our listeners understand the impact of the EU changes to CLP that entered into force in April of this year? And before you answer that, maybe you can talk about the relationship between GHS and CLP generally, because I know I get asked that from time to time, but you can answer it much better than I can, Karin.

KFB: Sure. CLP is the EU Classification, Labeling, and Packaging Regulation. Whenever I introduce it, I always say it's somewhat based on UN GHS.

LLB: A little bit.

KFB: It's somewhat based. Conceptually, yes, there are a lot of GHS elements built into CLP, but CLP is far more complicated. CLP has a lot of elements that are part of EU law that would not be part of the UN GHS framework. For example-- there is an annex of mandatory classification and labeling for specific substances. They have a list of substances, and if you have that substance, you have to classify according to that annex. That's one divergence from the UN, because the UN is a criteria-based approach, but at this time, there is no, "This is how you classify benzene." That doesn't really exist in the UN framework. But what has happened is the EU, under the Chemicals Strategy for Sustainability, has started to look at its green chemistry, its scope, where it wishes to go with the CLP regulation, and a few years back started talking about this concept of unaddressed hazards. So things that were not part of the UN GHS, things that were not currently part of CLP, and some elements that they added to CLP were already being discussed as part of REACH under the EU. They were just kind of acknowledging that CLP needs to be the central place for classifying hazards. They amended CLP to add Persistent, Bioaccumulative, Toxic (PBT); very Persistent, very Bioaccumulative (vPvB), which were already part of the REACH registration criteria. That's just creating some alignment between their frameworks. Then they added Persistent, Mobile, and Toxic (PMT); very Persistent and very Mobile (vPvM).

Then they brought in endocrine disruptors, and they brought in endocrine disruptors for human health and endocrine disruptors for the environmental health, which have been an ongoing discussion not only in the EU but at the UN level for a very long time. With that, the European Commission (EC) did ask the GHS Sub-Committee to also consider working these in the part of the UN GHS framework. It was part of a paper that they presented, I believe, in 2022, so in advance of CLP amendments that went into force in April of this year.

Where this becomes complicated is that the UN GHS is -- its delegates -- each one has its own vote. It's how do we sit down, and prioritize, and establish? How do we look at all of the other things that are going on at the UN GHS Sub-Committee level, and work these in? And then if we *do* work them in, how *do* we work them in? It's not an overnight thing, because even when we look back, this is not unusual. The U.S. delegates did ask the UN GHS Sub-Committee decades or so ago to consider explosion dust hazards, because they wanted that to be a focus, and they felt that that wasn't appropriately addressed. The UN GHS Sub-Committee did pick up and work -- took about ten years, I heard, for them to finally add a -- it's a specific chapter.

It's not even incorporated into Part 2, 3, or 4, which are physical health and environmental. It's just an annex to the GHS that specifically addresses "other hazards" and talks about explosion hazards. Just because the EU Commission wishes to see these things added, how it actually gets added is really going to be interesting, and from a priority setting, that's been part of their conversation now.

Which one is priority? How do we establish priorities? Then, based on everything else they wish to accomplish, how do they fit this in? From what I've heard, they are placing kind of a higher level of importance on endocrine disruptors because it's also something that the OECD wishes to see as well. We are going to look at endocrine disruptors first, but it's important to say it may not end up being added into UN GHS as its own chapter. They may look at the existing chapters of UN GHS and determine whether we just need to make additional guidance. Some of those tables and figures and decision trees we were talking about before for *in vitro* methods, they could determine that endocrine disruptors belong in

maybe specific target organ toxicity, and they specifically address it there. It'll be really interesting to kind of watch to see how this comes about and if they're able to agree on an approach, and then what that approach actually ends up being, but I wouldn't expect to see it in Rev 11, 2025 maybe, maybe Rev 12? But it takes time; these things take a lot of time. Mm-hmm. These are not uncomplicated things. I mean, it seems to the EU, they did what they wished to do. They took their definitions, they took their interpretation, and they implemented into CLP, and that is the law -- that everybody who is part of the EU member states now has to transition into accepting and adding, but they did it in a way where it's part of the CLP legislation, it's not at the UN GHS, and it's not part of any other regulatory framework that I've seen at this time.

LLB: Yes. That's super helpful, Karin. How these issues get sorted out ultimately is very diffuse, and you have to be really on your game to understand how some of these priorities might be reflected in the next iteration of GHS. But it might be in the form of an annex or additional guidance, and, to your point, some of the charts and the graphs that are added as tools for the regulated community.

KFB: Exactly.

LLB: How might the same kind of rationale or concept apply with regard to the classification of ozone-depleting gases and other similar chemicals that, as you and I both know, are the subject of considerable chemical control, regulatory action, or restriction under other regulatory frameworks? How is that constellation of chemical hazard addressed in Rev 10?

KFB: Rev 10 includes Chapter 4.2, which is Hazardous to the Ozone Layer. The way that chapter was written, it specifically says any controlled substance that's listed in the annexes to the Montreal Protocol are considered as meeting the classification criteria as hazardous to the ozone layer. But one of the interesting things that has kind of been discussed and is currently being considered as a working plan -- which I would expect to see this sooner than endocrine disruptors -- states that there was an amendment to the Montreal Protocol in 2019, where they started to consider things that contribute to global warming.

The annexes to the Montreal Protocol are not just specifically talking about things that destroy the ozone. They're also discussing things that contribute to global warming potential. So what the UN GHS is now considering is how do we revise Chapter 4.2, including the fact that the chapter's named Hazardous to the Ozone Layer and addressing more atmospheric systems, looking at this distinction between something that destroys the ozone versus something that causes global warming potential. We're going to separate, create some refinement, new categories, acknowledge atmospheric systems, and then that will be part of revisions to Chapter 4.2.

But it also speaks to -- in my mind, and this is complete speculation, we have Chapter 4.1, which we talked about, which is aquatic hazards to the environment, which includes concepts of bioaccumulation and biodegradation. But they've always been very specifically weighted on the aquatic environment. Now we have a refinement to Chapter 4.2 on atmospheric systems, so at some point, there is going to need to be more discussion points around some of these other "forever chemicals" and how we incorporate, or refine, or address these and whether they belong in this hazard class. To me, this is where it feels it belongs, but it's not inherently clear, based on Chapters 4.1 and 4.2, how you would put it in there, so I suspect we're going to see some of that in the future as well.

LLB: Okay. That's helpful to know. Maybe as a general takeaway, is there any general advice or key messages that you can give our listeners as to what to watch for and how best to prepare for Rev 10? I recognize that this is not a next year or even the year after kind of thing here in the United States. But again, directionally, where should our listeners be focusing their time and attention, recognizing what *you* know about Rev 10?

KFB: I think when we look at Rev 10, if a country that has never implemented GHS starts a legislative process now, it may consider Rev 10. I haven't seen that, but if another country that was in discussion about potentially creating a revision or updating, they may consider Rev 10. From an implementation perspective, every two years we get a new revised edition. The items that get added are part of the work plan and the agendas that are occurring at the GHS Sub-Committee, which meets every six months. If you're curious to see what's happening, all of that information is available. If you're curious to see where their priorities are, it's on their agenda. But I'll tell you, some of those agenda items have been on there for years and years and years and years. That's because this is not a simple process.

From the perspective of advice, I would say if you're really having a hard time getting to sleep at night, you should definitely be scoping out the agenda of the next GHS Sub-Committee. They usually meet in July and December -- almost always in July and December -- so you can look to see what they're discussing, what the agendas involve. But I wouldn't expect another revised edition for two years, so we're going to wrap our heads around what's in Rev 10, and then we're going to see how countries adopt or do not adopt -- because appreciate that there were a lot of options for countries at the time that they were choosing to go to Rev 7 and 8, and most are landing on 6 and 7, and little bits and pieces of 8, but they're not picking up 8, which is interesting. Why not just pick up 8?

But anyway, that's what we're seeing, so I don't know if countries are going to take to Rev 10 and opt to update or implement. It really just is a reflection of what happened in 2023, and that's the best you can do. But it does not mean you should ignore it completely because, like I said, if there are things you're trying to navigate within Rev 3 and you're looking at the OSHA HazCom standard and you're not quite clear, Rev 10 might provide you insight into how you might approach that criterion.

LLB: No, that's super helpful. You've already partially answered my next question, which is where can listeners go for more information? I always urge people very interested in hazard communication generally to just watch for your memos and postings on this subject on our website, Karin, because you issued a very long memo on Rev 10. I think that was in --

KFB: -- it was right after it got published, so it was sometime in --

LLB: It was right after May. I remember.

KFB: Yes, I think August. I'm going to say August.

LLB: It was in late August. Right. You keep our listeners engaged just writing on this subject and periodically inserting information into our monthly update and also stand-alone updates. But are there other things to watch for in addition to your own writings on the subject?

KFB: I think the one that everybody's waiting for is OSHA. Right now, we're aware that the proposed revision to the HazCom standard has gone to the Office of Management and Budget. We expect the final rule. I would be shocked if that happens at the end of -- I

thoroughly do not expect it in 2023, but I would say early 2024 -- we'll be seeing that final rule.

In that, I'm curious to see, not only how they decided to update the whole entire standard, but this concept of future updates and what their intent is with keeping up to date with the UN Framework. Health Canada also, this past January, updated to Rev 7 with elements of Rev 8. Keep a look in the *Canadian Gazette*, keep looking in the *Federal Register* to see what the intents are. But my guess is once a country lands on Rev 7, it's going to be a while before they consider an update to the next revised edition.

Now that a lot of countries have settled on Revs 7 and 8, I wouldn't expect to see a huge movement in the next couple of years of countries implementing anywhere beyond that. Just keep a lookout in the places. But a lot of countries are really good: Australia's very good; New Zealand's very good. Luckily, it's all English, so you can pay attention.

But another interesting place to keep your eye on is the UK [United Kingdom], because the UK -- clearly when they left the EU, they left at a specific time and place. Whether or not they actually agree to follow what the EU has done with the changes to CLP within the GB [Great Britain] -- CLP is another one that we're going to be watching over the next couple of years.

LLB: Is that coalesced around 7 and 8 as well?

KFB: Mostly I want to say that's more 6, 7.

LLB: Okay. Got it.

KFB: It's the consideration of not only the mandatory list of substances and the fact that the UK has purposefully diverged, but they're not exactly one to one anymore. And then whether the UK decides to take on endocrine disruptors and PBT, vPvB, PMT -- all of that --

LLB: Yes, all of that.

KFB: Yes, all of that -- before the UN actually decides to address some of this. I don't know. That's going to be a really interesting thing to be watching. The HSE does a fabulous job -- that's the Health Safety Executive in the UK -- of keeping their website up to date, so it's easy to track and follow to see what they're up to. Yes.

LLB: Very helpful, Karin. Great discussion. I know we can always count on you to rationalize this very complicated area, and I am confident you will be back in the studio as soon as OSHA drops the final -- whenever that is --

KFB: Whenever that is.

LLB: Let's hope it's sooner rather than later.

KFB: Yes, definitely.

LLB: Thank you so much, Karin. Really appreciate your thoughts as always, and your expertise in this very complicated area.

KFB: Thank you. Take care.

LLB: My thanks again to Karin Baron for speaking with me today about Rev 10 of the GHS. As promised, Karin delivered on the highlights of Rev 10 and advised our listeners what to look for and how best to prepare for the newest revisions of GHS.

All Things Chemical is produced by Jackson Bierfeldt of Bierfeldt Audio LLC.