

3M Transcript for the following interview: Ep 74 Exposure Standard Review

Process - Part 2

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Welcome to the 3M Science of Safety podcast presented by 3M Australia and New Zealand Personal Safety Division. This is a podcast that is curious about the signs and systems of all things work, health and safety, that keep workers safe and protect their health.

I am Mark Reggers, an occupational hygienist, who likes to ask the questions Why, How, and Please Explain.

Whether you are a safety professional, occupational hygienist, or someone with any level of WHS responsibility in the workplace, maybe you are a user of safety equipment or maybe you are a bit of a safety nerd who finds this stuff really interesting, then this is a podcast for you.

(R) Today, we continue our conversation with Jackii Shepherd from Safe Work Australia about the workplace exposure standard review process. Welcome back, Jackii.

(S) Thank you.

(R) We had a fantastic chat last time, getting into the process you've been going through. So, for those that haven't listened to that previous episode, can you please introduce yourself? Who are you and what do you do?

(S) I am Jackii Shepherd. I am Director of Occupational Hygiene Policy at Safe Work Australia and myself and my team, we do a lot of stuff about worker exposure; how to control worker exposure, how to measure worker exposure and how to do what you need to do under the model work health and safety laws.

(R) Now, we spoke a lot about this workplace exposure standard review process which has been going for many, many years. But just to summarise what we spoke about last time, why is this review process being undertaken?

(S) So, this review process is being undertaken because a lot of our workplace exposure standards are out of date. We haven't been able to look at them consistently or in a rolling schedule of reviews, and so we're looking at how we can do that now to make sure that all of our exposure standards are reflective of what we know now about chemicals and what we know now about how chemicals are used in Australia.

(R) When we talk knowledge, we're talking international knowledge research that's happening anywhere around the world, we want to feed that into that decision-making process, I'd imagine.

(S) Absolutely. In Australia, the way we use chemicals is really not that different to how they are used overseas, and we can tap into all of that expertise, all of that knowledge. We've got years and years of knowledge from different bodies who the only thing they do day in day out is set exposure standards. So, we want to be able to bring that into Australia so we've got the best workplace exposure standards that we can have.

(R) So, last time we spoke about this process, and we spoke about these particular sources from around the world. Now, I know there's primary and secondary sources that you're using to evaluate these numbers. So, what are primary and secondary sources and what makes them different from each other?

(S) When we looked at the bodies that establish workplace exposure standards around the world, not everybody is the same. Some of them approach things slightly differently. So, we wanted to have a look at who was out there, who was credible, who used the public consultation process, who used a scientific committee to come up with the standards.

(R) They've got rigour around their process by the sounds of it.

(S) Absolutely, yeah, and we also wanted to look at who communicated their thinking in their report, so they're really easy for people to pick up and follow how they got from the top to the bottom of a report. So, we had a look at all the bodies that were there, and we applied some set criteria, which is in our methodology for the review of the exposure standards, and we came up with five really good bodies who set exposure standards. They show the characteristics of a good scientific body, and we'll be able to use their information in this review.

(R) So, who are those five bodies?

(S) So, we have five bodies. We have the American Conference of Governmental Industrial Hygienists, the ACGIH. We have the DFG in Germany which again, I'm not going to pronounce their full name. We have the European Union Scientific Committee on Occupational Exposure Limits, known as SCOEL, the American Industrial Hygiene Association, the AIHA and the Health Council of the Netherlands. And all of these sources are what we are going to rely on in the first instance, to be able to inform our workplace exposure standards and notations.

(R) So, if each of those bodies have a number of a specific chemical, we'll use benzene just to pluck a chemical out of the air, that's where you stop? You're not going to be looking at other sources, if they've got good numbers that you're happy with?

(S) So, as with all scientific data comes uncertainty. So, we had to be able to make sure that where there is uncertainty for chemicals, we'd be able to fill those gaps.

So, we had a look at what kind of uncertainty would be there and uncertainty can come from too little information. It can come from too much information. It can come from not quite understanding where the policy lies for that particular body. So, we also then had a look at some secondary sources that we'd be able to use to fill the gaps. So, the criteria for these sources of course is going to be a little bit less stringent, because they're not going to be the ones that we're absolutely relying on to gather this information. So, we looked more about what outputs they had, whether or not they were developed by consensus, whether the primary sources might rely on some of this information when they looked at exposure standards, and sometimes just where that body have some really good quality toxicological or epidemiological evaluations that would be able to fill in some of this uncertainty. When we applied the criteria, we ended up with 11 secondary sources.

(R) Quite a few more.

(S) Quite a few more, but when we've got such a wide range of chemicals that we're looking at, 11 is a really good number.

(R) So, who are some of these secondary sources you refer to?

(S) So, some of these are ... we've got NICNAS, the National Industrial Chemical Notification and Assessment Scheme, which is Australian, the Australian Pesticides and Veterinary Medicines Authority, the APVMA and the AIOH position papers, which are also very good. We've also got the European Chemical Agency, ECHA, the US National Toxicology Program and the US EPA.

(R) Is IARC, so the International Agency for Research on Cancer ... I'd imagine that would come into it when we start talking about carcinogen notations.

(S) They are absolutely on that list, yes.

(R) So, you mentioned before about this uncertainty that comes in with all kinds of chemicals and risk assessment side of things. What happens if you've got all these

sources, but there's really high uncertainty value with what you're trying to evaluate?

(S) Each of the evaluation reports will come out with a recommendation. So, the recommendation could be to retain the value that we've got. It could be to amend either the value or the types of parameters that we've got, or it could be an interim value. So, an interim value is where the uncertainty is too high. We don't have enough data. The data is really unclear. We can't put our finger on what that critical effect really is. Then we can recommend an interim value and go and do a broader search of the data that's out there. Because we're having to look at 727 chemicals in one bulk review, we've had to scope what data we use quite finely. So, we're not going to ignore that there might be other critical articles, scientific journals, reports out there that we might be able to look at. So, when the uncertainty is too large, we can go and do a broader look at what information is out there and come together with a better recommendation.

(R) So, review these 700 plus chemicals, so then we'll have a number, what the number is with uncertainty values, and then maybe a second process to delve deeper into whatever that number ends up being. Is that a high-level description of what you described there?

(S) Yeah, when we come across it, absolutely, because we still want to make sure that each of these exposure standards are looked at and that we've got a way forward. And if that way forward is to do a deeper review, let's go and do it.

(R) You mentioned in our previous chat about these notations that come along with workplace exposure standards, such as carcinogens, sensitizers, skin absorption. That's been part of this review, or the interim process that you're looking at?

(S) Yes. We also want to make sure that the notation information that we give is based on evidence that's available. So, we've got four notations that will come out with each chemical or possibly, depending on what the chemical is like. We've got our carcinogenicity notation, which is fairly self-explanatory.

(R) That'll be the IARC source most commonly, I'd imagine.

(S) Actually, we are looking at the GHS. So, if a chemical is classified as a carcinogen, according to the GHS, which is our classification system under the model work health and safety laws, it will have a Carc notation. The IARC reports are certainly used when carcinogenicity is the critical effect, because we need to look at what's the mechanism of carcinogenicity. Is it relevant for humans? But when it comes to the notation, we're relying on the GHS classification. There's quite a lot of consistency there, but sometimes they'll be a little bit different. And it's the same with the sensitisation. We're looking at the GHS classification for that, and we're relying on very specific sources that undertake classification to inform that. So, if in the evaluation, we come across some carcinogenicity data, we find that it is cancerous in mice and it might be relevant for humans, but we don't have a Carc notation. We're also highlighting that to go and have a review of that classification, because the sensitisation and carcinogenicity, there are really high impact outcomes and we want to make sure that while we've got the data, we're going to use it. So, the next one is the skin absorption. So, the skin notation is very important because when we talk about exposure standards, we're generally talking about workers being exposed as they breathe the chemical in. The chemicals that need a skin notation are ones that can be absorbed through the skin. So, a worker could possibly be exposed through two routes of exposure; breathing it in and skin, which means they might be getting a higher dose than what we think. So, internationally, the bodies don't apply a skin notation consistently. They don't look at exactly the same data. They don't weigh the data in the same way. So, we needed to come up with a consistent criteria to be able to look at what data's there to apply a skin notation. For the skin notation, there's no GHS classification to apply a skin notation. There's no way that the GHS looks at skin absorption as a hazard. So, we had to look at this a little bit differently. When we looked internationally, when we look at our primary and secondary sources, there was no consistent application of a skin notation to chemicals. So, we've developed set criteria to be able to apply that skin notation and recommend it. When we looked

at the type of data that was available, we also needed to look at the weighting of that data, because there's lots of information that you can use to apply a skin notation. So, we also looked at the hierarchy of effects, including whether or not through the skin absorption it was a systemic effect, it was a local effect, and what data we have is wide and broad ranging. We've got animal studies, human studies, in vivo, in vitro and even now in silico. And the fourth notation is a new one. So, this is the immediately dangerous to life or health.

(R) Most commonly known as an IDLH level which I was going to ask about that number, because we don't really see that in current workplace exposure standards, but definitely do in other international sources.

(S) Yes, so the IDLH is for non-routine situations in the workplace. It's really common for emergency and rescue services when we have an industrial accident, when you have a spill, when you have a loss of containment. So, these values are really important because if something happens, which at every workplace we don't want it to happen, but it may, we've got this information that will give you a value where you know we're going to have some problems. It's also really important for emergency and rescue services to know what chemicals they're dealing with and how they can protect themselves, so we're also adding the IDLH. And we're going to source that from the US National Institute of Occupational Safety and Health.

(R) NIOSH, for those that love their acronyms there. And I know from a respiratory protection point of view, a lot of stuff I do day-to-day is we use that IDLH level when we need to go to a supplied air type situation, where we need the highest level of protection, because all hell's broken loose, so to speak, when as you say a truck's rolled over or non-containment. So, that's critical information that workplaces need to know to select appropriate controls for their emergency situations.

(S) Absolutely.

(R) So, we're talking 700 plus chemicals. Are you actually removing any through this whole process? I know there's been lots of information but is some of this information helping us to go, "We can actually take this off the list."

(S) Yeah, so one of the things we looked at was what do contemporary Australian workplaces look like? How are chemicals used, handled, stored, generated and disposed of in Australia? And we put together some criteria to be able to identify what chemicals we have evidence of use in Australia, or evidence of a legacy effect because sometimes chemicals move out of use, but we've still got them sitting in a back cupboard somewhere. So, we wanted to make sure that we're going to still cover that kind of situation. So, we put together some criteria using the available lists that we've got from NICNAS, from the APVMA to be able to see what chemicals we currently use and what ones we might be able to take off. It's really important when we're looking at the model laws, and the exposure standards that are mandatory under those laws, to make sure the chemicals we have on this list are appropriate for a compliance framework.

(R) So, a workplace exposure standard, once it's set, you've been through this big process, what documentation is going to come along with that workplace exposure standard, because I know at the moment, if you look online and it's fairly light on with the rationale and the reasoning, which is all the stuff you're going through with this review, what information will you be providing?

(S) Each chemical is going to have an evaluation report. So, that evaluation report is going to outline all of the data that we've relied on, all of the decision making that we've made; the critical end point that's driving the recommendation for the value. So, we'll be able to have a really good searchable data base. So, we've currently got the Hazardous Chemicals Information System, HCIS, which has two sides; one for GHS classification and one for the workplace exposure standards. We're going to upgrade that and we're going to be able to have it as a fully searchable, you find your chemical, you can find an evaluation report that will support that, and you're also going to be able to link across to the HCIS side as well.

(R) That's going to be very helpful for occupational hygienists, safety professionals, workplaces, just having that information to know why it is what it is and the rationale that you've been through, so I'm actually quite excited, as probably most other occupational hygienists and safety people are. So, we've set all these numbers; 700 plus chemicals. How do we avoid what's happened in the past where a number's been set, what's going to trigger a review?

(S) So, previously, reviews have been triggered ad hoc. We might have one of our Safe Work Australia Members raise a chemical as an emerging issue. We might have some changes internationally and then what Safe Work Australia would do was we would go away and have a look at that one chemical. Now, that we've got this methodology in place, now that we're doing this massive project to update all of them, we're now then also going to put in place a rolling schedule of reviews. And it also makes sure that we are keeping up to date with what's happening internationally, with what's happening with the scientific understanding of chemicals.

(R) So, we've spoken quite a lot about primary sources and secondary sources and reviewing everything that they're doing as far as all these other countries and bodies. But is Safe Work Australia actually reviewing stuff themselves, rather than just using other people's work?

(S) So, we're actually engaging a group of experts to do the evaluations because we're policy people. We don't necessarily have the resources and the time available to do all of these evaluations. So, we've got a really great team of experts at WSP who are undertaking the evaluations. We also have an amazing independent peer reviewer who is internationally renowned, and he's looking at every evaluation report, what information we've gathered, whether or not the reasoning is sound, and whether or not he agrees with the recommendation. Then on top of that, we're using the public, the experts, all of Australia to be able to give us some feedback on what we've done and how it applies to them.

(R) We mentioned in the last episode about the consultation process, and that's what's coming through to my ears right now. This is a really robust consultation stakeholder process, not just in Australia, but internationally. So, it's fantastic to see the process, the rigour that is being taken, so when we do get these numbers, whatever they end up being, for the chemicals that are being used, that there's some real backing behind why it is and I'm pretty excited about that, to tell you the truth.

(S) That's good.

(R) So, to tie these two chats we've had up together, what are some of the key takeaway points you'd want to leave with our listeners again?

(S) I know that lots of the things that we've talked about in these past two are a bit techy, could be seen as a little bit scary for people who don't quite understand what workplace exposure standards or toxicology is. So, one of the things I want to leave with our listeners is that it's not scary. All the information that we've gathered, the methodology that we've put together, all of the different aspects that come together to put a recommendation for a workplace exposure standard are in our draft evaluation reports. You can have a look just at the first page and see what is driving that value. Is it irritation? Is it cancer? Is it neurotoxicity? These are really important things, that as a duty holder, you need to understand about the chemicals that your workers are working with. So, don't be scared. Jump on the Engage platform. Jump on the Safe Work Australia website. Send us an email.

(R) The thing I just want to add to all of that is that whatever the number ends up being, if you don't do something in your actual workplace to put controls in place, it doesn't make a difference how low or how high a number is, you need to do things in your workplace to control the hazard, which is the important part of what we're talking about, to protect the workers. So, I think I just wanted to tie that up with that. You've got to do something about it to make a difference and that's a key

takeaway hopefully that you have got from our couple of chats. So, thank you once again, Jackii for coming in, and hopefully you've enjoyed yourself.

(S) I certainly have. Thank you for having me.

(R) Well, thanks for listening everyone. You can get in contact with the show by sending an email to scienceofsafetyanz@mmm.com. If you have any questions or topic suggestions or need help in your workplace when it comes to PPE, 3M are certainly here to help. You can also visit our website, 3m.com.au/sospodcast for further information on the workplace exposure standard review process we've been talking with Jackii about, as well as information on all our previous episodes. Be sure to subscribe, rate and review and share through Apple Podcasts, Spotify, Google Podcasts or wherever you get this podcast from. And as Amelia Earhart said, "The most difficult thing is the decision to act. The rest is merely tenacity." Thanks for listening and have a safe day.