



Announcer

It is time for the *IHSA Safety Podcast*.

Ken Rayner:

Welcome to the *IHSA Safety Podcast*. I'm your host, Ken Rayner. On this episode of the podcast, we're joined once again by Jasmine Kalsi, IHSA's occupational hygienist. Welcome back, Jasmine.

Jasmine Kalsi:

Thanks for having me, Ken.

Ken Rayner:

Oh, it's always great to have you here. We appreciate it. And joining us on the podcast for the first time is Shirly Yan, occupational hygienist at the Occupational Health Clinics for Ontario Workers, or as we affectionately call them, OHCOW, based out of OHCOW's Toronto clinic. So welcome, Shirly.

Shirly Yan:

Thank you for having me. Well, happy to be here.

Ken Rayner:

All right, great to have you both on this podcast to discuss silica exposure. Now, in construction, worker exposure to silica is of particular concern because silica is the primary component of many construction materials. And as we know, employers have a duty to protect their workers from silica exposure on construction projects. So on today's podcast, we're seeking to raise awareness of the hazards posed by silica on construction, and the measures and procedures that should be taken to control those hazards. And a new tool is coming in November from Ontario's occupational health and safety system, being led by OHCOW, to help identify exposure levels within the workplace. So Shirly, as the lead from OHCOW on this initiative, let's start with you. So Shirly, why should workplaces be concerned about silica?

Shirly Yan:

Thank you, Ken. So for silica, it is one of the most common hazards in the workplace, particularly in construction, oil and gas manufacturing, and agriculture industries. And because silica is a basic component in sand and rock, it is in the vast majority of construction materials.

And these are the common ones that you yourself can purchase from any hardware store, like concrete, tiles, bricks, and cement. And because of detrimental health effects of breathing in silica, and it's staggering based on CAREX Canada, which is a multi-institution team of researchers and specialists investigating carcinogen exposures, they estimated that approximately 380,000 Canadians are occupationally exposed to silica. And in terms of the health effects to workers, all of those 570 lung cancers are attributed to occupational silica exposure each year. And of those, 2.4 per cent of all the lung cancers diagnosed annually in Canada are from silica exposure from work. So that is a huge number and we are very concerned, and I will talk more about the current trend in terms of silica exposure because lung cancer is not the only one that we are worried about right now.

Going back to the construction industries, most occupational lung cancer associated with crystalline silica occurs among workers in the construction sector. So we are very concerned for that sector. In addition to lung cancer, silica can also cause silicosis, which is a scarring of the lung and is a very serious and irreversible disease. Chronic obstructive pulmonary disease, autoimmune disease, and chronic kidney disease are also some of the health effects from exposure to silica. And I want to specifically talk about silicosis at this moment because in the past we've always thought that it takes many years of silica exposure for symptoms to show in the workers. So we talk about lung cancer and that was the main one that we focused on in the past.

But recently we see the popular use of engineered stones. And these engineered stones are up to 97 per cent silica content. So now we are seeing a shift where workers who are as young as 27-years-old have developed silicosis from cutting and polishing engineered stones. And it was just last week that LA Times published a letter saying that California workers are developing silicosis and they've only worked in the industry for two years. And that is a very severe, quick turnover in terms of the health effects. And silicosis is incurable and irreversible, the only thing they can do is lung transplants. So for a 27-year-old, that it's life-damaging.

Ken Rayner:

Wow.

Shirly Yan:

Yeah. So as I mentioned, silica is naturally occurring and it's in so many commonly used material, the exposures are avoidable, so we have to live with it. The only thing we can do is legislative controls and reducing exposure. And that's the only way to protect workers, and that's why workplace leaders should be concerned about silica in their workplaces.

Ken Rayner:

Wow, absolutely. Those stats are staggering, particularly those that this is impacting young people after very little exposure. So this is obviously something we need to do something about. So glad we're having this podcast to raise awareness on it. Shirly, are there different types of silica and how can workers potentially be exposed to it?

Shirly Yan:

So as I mentioned, silica is naturally found in sand and stone. So, just going to the basics, the chemical is silicon dioxide, so it's basically made out of one part silicon and two parts oxygen. And these are the two most abundant elements in earth's crust. So we can't avoid it. And most people hear the terms of crystalline silica. It just specifically talks about the structure of how silicon and oxygen connects to each other. So it's a crystalline structure. Just want to get that terminology clarified. So there's many, many types of silica, but the two types that we are most concerned about in the workplace are the harmful ones to us, quartz and cristobalite. And what are we concerned about silica and why are we concerned? Sorry, let me start that again.

What we are concerned about is the airborne silica and the small silica dust that become airborne during work activity and that workers can breathe in, which is called the respirable silica. So this is the silica dust that is so small, small enough to enter the deeper lung region and the alveolar region. And that is the region where the oxygen is transported from the lung to the bloodstream. And then that's how your body's filled with oxygen basically. So imagine these cells in the lung die due to silica damage and then the lung wall thickens so much that oxygen cannot be transported from the lung to the bloodstream. You essentially cannot breathe. And that's the scary part of silica exposure.

Ken Rayner:

Okay. So in the province of Ontario, do we have legal limits to which a worker can be exposed to for silica?

Shirly Yan:

Yes, there is. So currently in Ontario under the *Occupational Health and Safety Act* or Regulation 833, there are occupational exposure limit set out. So as I mentioned, there are two types of silica that we are worried about and the number is different for the limit... Sorry, the occupational limit is different for these two types. So for quartz, the occupational exposure limit is 0.1 milligram per cubic metre. So that means that legally over an eight-hour work shift, that is the average exposure the worker can be exposed to without causing severe health effects. And that is for quartz. And for cristobalite it's 0.05 milligrams per cubic metre. So that is half of the occupational limit for quartz, because of the health effects due to cristobalite, which is more severe than quartz. The Silica Control Tool applies to all forms of silica, and the reason why we're doing that is because it's relatively rare for the workplace to know what specific type of silica they're exposed to.

And because it takes money and resources to go to take a sample from the work material and send it to the lab to analyze it, and you have so many different material that you could be using in the work site, different job task, it's almost impossible for the workplace to know exactly are they using quartz or cristobalite. So that's why for Silica Control Tool, we applied to all form of silica. So the exposure limits for this will be 0.05 milligram per cubic metre, and then the action level will be half, which is 0.025 milligram per cubic metre.

Ken Rayner:

So Shirly, you just mentioned something called the Silica Control Tool. Can we get in a little bit more about that? What is that and how can it help?

Shirly Yan:

The Silica Control Tool is a completely free tool that has all the resources that you will need to know about silica, and it has embedded inside more than 5,000 data points from various construction tasks. And you can use it to estimate your workplace silica exposure. And it has two sections where you can use it to estimate exposure without controls, and then you can add in controls to see what the exposure levels are after controls take place, so you can understand what kind of risk your workplace have and how can you control the risk of silica in your workplace.

Ken Rayner:

Okay. And maybe you can just walk us through whether the tool available now? When can employers access it? And maybe just walk us through sort of high level on how it works.

Shirly Yan:

Okay. So as I mentioned, it is completely free. It will be available to workers and employers in Ontario construction industries at the beginning of November. Specifically, the launch will be on November 3rd. So at that point, all workers and employers in the Ontario construction industry will receive full access to the Silica Control Tool and its associated data and output. So basically a worker or employer can register for an account to access the tool with their Workplace Safety and Insurance Board (WSIB) account number and company name. And once your account is set up, the tool will collect information about your job site and plan work activity you'll be performing at the jobsite. So there'll be about eight parameters the tool will ask. Which sector are you working in? What type of construction project are you doing? What material are you working with? Are you cutting, drilling, or chipping the material? So what task are you doing and the tool you're using? Are you working inside or outside or in a restricted area?

And the duration of your work average per shift. If it's more than eight hours, the tool allow you to specify the number of hours. So as I mentioned before, the tool then will using all these parameters to estimate the crystalline silica exposure first without the control. So you receive an estimate exposure level without control. The tool then allow you to input the type of control you do have in your workplace. And then after the tool will recalculate taking these controls in your account and estimate exposure level with controls. If there's any residual exposures, the tool will recommend proper respirable selections and other personal protective equipment to control any remaining risk.

The beauty of that is, let's say you don't know what kind of control you can use or you don't have the resources, the tool will give you a selection of engineering controls and you can look through, you have the resource in it to see what type might work for your company, and then you can reduce the resources that you'll be using to implement the control. And at the end of the tool, you will compile all the information and all the outputs and generate your own jobsite-specific, task-based exposure control plan that can be saved in a PDF form.

Ken Rayner:

Okay, fantastic. So thank you to British Columbia for developing this tool and for testing it out and showing us the benefits. Thank you obviously to OHCOW and the ministry and IHSA for bringing it to

Ontario and having it ready. So this will be launched on November 3, as Shirly indicated, and we will have links on the podcast channel to direct you right to the tool. So Jasmine, let's bring you in here. Let's talk about how this can benefit the industries that IHSA supports and just let's get your opinion on the tool and how it can be used. I take it employers would want to use a tool like this, correct?

Jasmine Kalsi:

Yes. The Silica Control Tool, it can act as a resource for employers at any Ontario construction workplace, to assess the risk of exposure. So on construction sites, workers can carry out a variety of tasks where exposure to silica can occur, right? So some examples. So any tasks that involve chipping, hammering, drilling, of rock or concrete, even dry sweeping or pressurized air blowing of concrete rock, even sand dust. Anything related to road construction, tunneling, excavation, any earth moving of soils itself, these type of tasks are associated with silica exposure and potentially overexposure. So when we consider these type of tasks, we want to see if workers are potentially overexposed to silica. And this is a question employers may pose as well. And this is where the tool can come into play. So as Shirly described, it is completely online, it's quick and easy versus traditional air sampling collection process, right?

It can help employers access and use pre-existing exposure data at the click of a button. The tool itself also acts as an educational piece. It gives the opportunity to educate both the employer and the worker on silica exposure and control. So as Shirly mentioned, one of the outputs of the tool is an exposure control plan, which comes in a PDF format. So what it is it's a formal document outlining the exposures as well as the controls that could be put in place at the workplace to reduce exposures. So that's something that might play as a very important tool in the workplace because as soon as you enter all the type of work that's being carried out, your result is a product that you can actually put into place in the workplace that outlines everything an employer is doing to reduce exposures to keep exposure below the limits.

So another benefit of the tool is reducing the effort and cost for employers. Again, it could get expensive getting someone on to carry out air sampling using the traditional means. So it's quick and easy. You don't have to wait too long to set this up. As soon as it rolls out, just register and just enter in all the details. So the tool ultimately identifies processes which may lead to exposures over the allowable exposure control limit. It provides information about how to bring the exposure within the allowable limit if you are overexposed. And then again, it produces a corresponding exposure control plan for the user.

Ken Rayner:

Right. And Jasmine, from what I heard you say, you listed a whole host of activities and while you were doing that, I'm imagining that those are applicable on the majority of construction projects out there. So this isn't something that is finite and only happening in a small percentage of projects that occur. It sounds like that a good majority of the activities that are taking place, regardless of what type of construction you're in, silica can have an impact in the workplace. Correct?

Jasmine Kalsi:

Yes. It would have a wide application to construction employers.

Ken Rayner:

Right on. Okay. How about, are there any limitations for the tool that employers and workers should be aware of?

Jasmine Kalsi:

Yeah, like with any tool, there are some limitations. So there's some things to keep in mind. So the Silica Control Tool is not a replacement for any professional advice or job site air monitoring test. So it can't replace as you would have a consultant that actually will carry out occupational hygiene testing. But again, it's a good tool for carrying out any risk assessments to determine, "Hey, is there any further investigation that I need to be doing?" So the good news is the Ministry of Labor Inspectors do acknowledge this tool as a best practice tool, but again, there may be a need for additional testing should you see overexposure repeatedly for whatever details you put into the tool. So that's something to keep in mind. Another one is a tool does not provide a conclusive output for every possible silica producing process. So meaning that it does not cover every type of task.

So one of the good things about the tool is if there is a potential task that's missing because you're allowed to pick from a series of tasks what is applicable, what is the work you're doing? Are they drilling? What type of equipment they're using? You're allowed to pick on the tool. But for whatever reason, if that task or the material or the equipment is not present on the tool, you're able to submit further information on the tool itself to be like, "Hey, it's missing this task or this type of equipment." And then it goes back to the developers to see, "Hey, can we add this to the list where an output can be produced?" Meaning can recommendations be produced from it? So just to keep in mind, it does not cover every type of silica producing task. It does cover majority, but sometimes there are some it doesn't cover.

Another limitation is, as Shirley mentioned, the occupational exposure limits. So it does use a protective exposure limit of 0.05 overall for all types of silica. So the user must understand what material they're working with to ensure this tool and its recommendations are applicable for those type of tasks. So again, it's a good idea to know what type of material you're working with and understanding of the actual exposure limits and what they mean. And one of the last limitations is the tool only considers one task at a time. So when you review results, you need to consider adjacent tasks that are occurring. So if I'm working in my station here and I could have my coworker that is possibly five feet down, so the tool wouldn't consider my coworker, it'll just consider me. But obviously when we look into the ambient air, the concentration of exposure itself, if my coworker is producing any silica producing type of task where that could also bias my results as well, I could be overexposed as well. So that's just something to keep in mind.

Ken Rayner:

Okay. And Jasmine, for our membership, is IHSA going to be providing any additional resources on the tool and how it can be used? Are we going to be doing that?

Jasmine Kalsi:

Yes, so we are currently working on some resources for users for the tool itself. So keeping in mind the rollout date is in the first week of November, we are working on resources that can provide some better understanding of the tool. So some of these resources include a webinar on how to use the tool, resources on understanding what silica is, where potential exposures can occur, as well as understanding the occupational exposure limit as well as how you can register for the tool itself. So they are currently a work-in-development, but I would suggest to keep an eye out for any communications that are coming from IHSA in the coming weeks. So this will be something that'll be free to access and download at the reader's disposal.

Ken Rayner:

Okay, thank you. And Shirly, maybe we can just come back to you just to finish up the podcast. So just to make sure that, I'm hoping that we've got some employers or workers that are interested in this, want to use the tool, what information do they need to have as they fill out the form and get access to the tool? What information do they have to have ready to input into that tool, and then where can they find it?

Shirly Yan:

Okay, so for workers and employers, they just need to have their WSIB account number and their company name as well, their own email. I just want to emphasize that every account is private, so the account will be created for that specific email. So whatever you do in that account will be private and you can access the tool right now, or sorry, you can learn more about the tool at the Prevent Occ Disease website at preventoccdisease.ca.

Ken Rayner:

Okay. So Shirly Yan from OHCOW and Jasmine Kalsi from IHSA, thank you very much for being part of this podcast and introducing this new tool to help us combat silica exposure in the workplace. Thank you very much for being here today.

Shirly Yan:

Thank you very much.

Jasmine Kalsi:

Thanks, Ken.

Ken Rayner:

All right, and thank you to the listeners for listening to the *IHSA Safety Podcast*. Be sure to subscribe and "like" us on your podcast channel and visit us at IHSA.ca for a wealth of health and safety resources and information.

Announcer

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