



Announcer:

It's time for the *IHSA Safety Podcast*.

Ken Rayner:

Welcome to the *IHSA Safety Podcast*. I'm your host, Ken Rayner. Within Ontario's construction, transportation, and electrical utility sectors, workers are often exposed to a variety of airborne dusts and contaminants. These dusts and contaminants can potentially have short-term and long-term health effects. Ontario Regulation 833 lists the occupational exposure limits for a variety of chemical and biological agents. It is the responsibility of the employer to take measures to limit the exposure of workers to these hazardous agents. To help us better understand the actions that employers can take to address workplace chemical and biological hazards is IHSA's Occupational Hygienist, Jasmine Kalsi.

Welcome back to the podcast, Jasmine.

Jasmine Kalsi:

Thanks for having me back.

Ken Rayner:

Jasmine, always great to have you here. I appreciate all the information you share, and I learn every single time we do a podcast together. My knowledge increases, so I appreciate that very much. Jasmine, let's start out here: what would be an appropriate starting place for an employer seeking to better understand the nature of the chemical and biological agents present within their workplace?

Jasmine Kalsi:

As a first step, air quality testing or exposure assessment would be the ideal step to take for an employer looking to learn more about exposures to hazardous agents in the workplace.

Ken Rayner:

Okay. You're starting off with air quality testing. Why is that an important place to start?

Jasmine Kalsi:

It's important to carry out air quality testing in order to identify what workers are actually and exactly being exposed to in the workplace. For example, a worker can be cutting concrete for extended periods of time. The concern here would be exposure to respirable silica, but the only way to know what concentration they're truly being exposed to is by carrying out an exposure assessment, like an air quality assessment.

By having this information, we can compare it against the regulatory limits and assess to see if a worker is overexposed or not. We can also assess to see if controls, whether they're new or additional, are needed. The same concept applies when you're in the transportation industry, where exposure to carbon monoxide can occur when you're working with diesel engine exhaust, or when you're in the utilities industry, where you may be exposed to hazardous products related to lead and asbestos.

Ken Rayner:

Okay. Jasmine, what do Ontario's occupational health and safety regulations state regarding air quality testing?

Jasmine Kalsi:

Under Regulation 833—Ontario's regulation for the control of exposure to biological or chemical agents—there are sections on measuring airborne contaminants. In general, these regulations specify what measures should be in place to assess and determine airborne concentrations of biological or chemical agents in relation to workers. So, under our regulations, we have specific exposure limits that are set out. These limits include an eight-hour exposure limit. This is known as a time-weighted average. It's abbreviated as TWA. What this means is that a worker can technically work with a chemical agent without having any adverse health effects if they're at or below the average eight-hour concentration limit that's listed in the table. And then there's also a 15-minute exposure limit, and this is known as the short-term exposure limit. Now, instead of that eight-hour limit that I mentioned before, it's a 15-minute limit. So, when a worker is working with any type of hazardous agent or chemical agent, the worker would not be expected to have any health outcomes if they were exposed up to that limit for 15 minutes. Anything above that would be considered hazardous to their health. Then lastly, we have the ceiling limit, meaning that at no time is a worker allowed to be exposed to above that specified limit for that chemical agent.

The Ontario Table [of the Regulation] specifies these limits for a variety of hazardous chemical agents—but keep in mind that not all of the chemical agents that we can work with on a worksite are covered entirely in the Ontario Table. If a chemical agent is not mentioned in the Ontario Table, then we refer to the limits that are specified under the ACGIH [American Conference of Governmental Industrial Hygienists] Table.

When I say “ACGIH Table,” what this means is that the regulation refers to the exposure limits listed in ACGIH's 2017 publication. Just for our audience, ACGIH is the American Conference of Governmental Industrial Hygienists. They are a professional scientific association. They consist of industrial hygienists and they're headquartered in the United States. In simple terms, ACGIH establish exposure limits for chemical substances that workers can safely be exposed to over a working lifetime. So in our regulations—and you see this across different regulations across Canada and different provinces—we usually tend to refer to ACGIH's exposure limits for a variety of chemical agents, and we adopt them as our regulatory exposure limits. In general, in regards to air quality testing and when to carry it out, this can be done proactively by the employer. And the Ministry can also ask for this type of testing to take place based on their observations.

Ken Rayner:

Right. And when you say “Ministry,” you mean the Ministry of Labour, Immigration, Training and Skills Development?

Jasmine Kalsi:

Yes.

Ken Rayner:

Wow. You covered a lot there, Jasmine, in terms of the time-weighted average, the exposure limits that someone can be exposed to, or the short-term effects, or the ceiling—in terms of how long someone can be exposed to these elements. So this is serious, and I can appreciate why air quality testing has to start first. How would an employer know what would need to be assessed? What tips do you have for them?

Jasmine Kalsi:

To determine what needs to be assessed, there are many resources that you can consider. As a first step, you can always review the safety data sheets that you have in your WHMIS [Workplace Hazardous Materials Information System] program. In the safety data sheet, you want to look under the Chemical Composition section. There, the data sheet would usually specify what exact chemicals workers are working with. You can also look into previous claims data within your company. You can also review relevant literature, any past exposure assessments done within your company, or within the industry. You can also review IHSA's *Occupational Health Risks* document. This is a diagnostic toolkit. It's intended for physicians and primary healthcare providers. Workers can also use this toolkit for their own reference. It sets out various hazards and potential outcomes of exposure for a variety of trades that are actually mentioned in this document.

Another resource is by NIOSH. NIOSH is the National Institute for Occupational Safety and Health. This is also an organization that is based in the States. NIOSH has an online tool, and it's referred to as the *NIOSH Pocket Guide to Chemical Hazards*. This is something I use a lot as well. It has information on a variety of different hazardous agents. I use this resource a lot, because it presents key data for chemicals at a click of a button. So if I'm looking up a chemical, it'll give me information on its trade names, exposure limits, testing methods, any physical state data, what the boiling point is, and the freezing point. It'll give concise information on exposure routes as well as respirator recommendation. So I definitely recommend checking it out. It's a great resource, and it's free to access.

Lastly, I would also suggest that employers speak with their workers, to get an idea what they're working with and to ask the workers if they have any concerns: are they experiencing any symptoms when working with any particular substances or chemicals?

Ken Rayner:

Wow. Terrific recommendations, Jasmine. Thanks so much. So we'll make sure that we have IHSA's *Occupational Health Risks*, the diagnostic toolkit for physicians and primary health providers, as well as a link to the *NIOSH Pocket Guide to Chemical Hazards* on our podcast channel for this episode. Terrific

guidance. Jasmine, what other factors need to be considered when conducting air quality exposure assessments?

Jasmine Kalsi:

You would also need to determine who would need to be assessed. This plays into your risk assessment. You would need to identify which tasks and which workers are at risk. Some questions you can ask yourself or your team in this process are, "Which workers are using the hazardous product that's in question?" And another question you can ask is, "Okay, how often are workers exposed to that hazardous agent?" You want to look into frequency of exposure. Is this something that they work with every day? Is it a weekly or monthly thing? Or is it rare—is it a yearly thing? And then we also want to see how long they work with the product. Do they work with it for 12 hours, 10 hours, eight hours, one hour, or even 15 minutes?

Another question would be if you considered workers who work in the vicinity. For example, if I'm at my workstation cutting concrete and my co-worker is about eight to 10 feet away from me doing a different task. Are you also considering if they're exposed to a hazardous agent, and do they need to be assessed as well? So there are a few questions or factors to consider as you set up your exposure assessment.

Ken Rayner:

Yeah, I appreciate that, Jasmine. Kind of like second-hand smoke—who else is being impacted by this? Not just the worker themselves. So that's great guidance. You know at IHSA, Jasmine, we certainly advocate for standards. Standards for occupational health and safety, management systems, such as COR®, or training standards. It helps to ensure consistency. Are there any particular standards that need to be followed for air quality testing?

Jasmine Kalsi:

Yes. In hygiene practice, there are certain standards that must be followed. NIOSH has developed standards of procedures for carrying out air quality exposure assessments. In hygiene practice, these are generally referred to as "NIOSH methods," and they're commonly followed. These methods set out certain testing procedures. They'll specify things like what type of equipment you need or your flow rates for any type of particular contaminant you're trying to assess. There are other methods that can be used as well. This includes methods by OSHA. They're the Occupational Safety and Health Administration, also from the States. As well as from the EPA, which is the Environmental Protection Agency, also from the States.

I know a lot of these resources are from the States, but again, they are tried, they're tested, and they're well researched. It's quite common to refer to these methods for standard procedures, and they are well accepted in industry.

Ken Rayner:

Excellent. Okay. So you've done a great job covering the "what." How about the "who" in terms of who can carry out these exposure assessments, Jasmine?

Jasmine Kalsi:

Generally, you want someone who is qualified and knowledgeable. You want to ensure that whoever carries out air quality assessments, they're actually competent and know how to do so. There is a lot of technical experience that is required. So, you want to look for someone who is knowledgeable, trained, and experienced in industrial hygiene practice. If you're looking out for certain designations, these can include the ROH, which is a Registered Occupational Hygienist®; or even CIH, which is a Certified Industrial Hygienist.

Ken Rayner:

Okay. And what about IHSA? What about our association, Jasmine? Do we provide air quality testing? And if so, what's the process?

Jasmine Kalsi:

Yeah, we do. This is something that we have brought back recently. I could break down the process in a few steps just to simplify it: step one would usually involve the scoping meeting. During this step, we would visit your work site and we would carry out a preliminary walkthrough survey to assess the initial level of risk of whatever contaminants of concern that are brought up by the employer. And this meeting will allow the hygienist to determine a sampling strategy for air quality testing, as well as determine how many samples are needed. The scoping meeting is complimentary. It usually takes from about one hour to 90 minutes. For members of the IHSA, you just have to note that no testing takes place during the scoping meeting.

After the scoping meeting takes place, step two is a proposal. Once this is done, IHSA will send you a service proposal that will outline the costs and deliverables based on the findings from the scoping meeting. We send the proposal out to the client, and the client signs and returns it to us. We then book a date for the assessment, which leads to step three.

On assessment day, we arrive on site at the agreed upon time. Equipment calibration is done and the workers are set up with their samples and the testing equipment. Sampling is typically done for the duration of the shift. And at the end of the shift, the hygienist removes the samples from the site and from the workers, and then the samples are shipped to the appropriate laboratory for further assessment and results.

The last step in this air quality assessment is the final report. The end deliverable is the assessment report. It summarizes exactly what was sampled, the testing methods that were followed, as well as any applicable recommendations on control measures that were identified or that were observed during assessment. All this information can be found on IHSA's *Occupational Health* topic page. If you're interested in setting up a scoping meeting, feel free to reach out.

Ken Rayner:

Excellent. And that's the *Occupational Health* topic page at www.ihsa.ca. We'll have a link for that on the podcast website. Jasmine, fantastic information. I really appreciate it. Knowing that about 90 per cent of our 157,000 members—so 90 per cent of our membership, which includes 157,000 employers that have fewer than 20 employees—those organizations most likely do not have an Occupational Hygienist,

someone of your experience and expertise, as part of their team. So for you to be able to provide this guidance and knowledge and share it with our membership, I find of great value. So thank you very, very much. I appreciate you being here.

Jasmine Kalsi:

Thank you.

Ken Rayner:

And thank you for listening to *the IHSA Safety Podcast* and our episode on the basics of air quality testing in the workplace. 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:

The *IHSA Safety Podcast*. For more episodes, tips, and all things safety, go to ihsasafetypodcast.ca. Thanks for listening.

