



Announcer:

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

Ken Rayner:

Welcome to the *IHSA Safety Podcast*. I'm your host, Ken Rayner. Generally within Ontario, employers must protect workers from exposure to hazardous biological or chemical agents without requiring them to wear or use a respirator. Where exposure to these hazards cannot be avoided or effectively controlled at the source or along the path, as per the hierarchy of controls, employers must provide a respirator appropriate for the circumstances to protect the workers from exposure. How can an Ontario employer implement a program to address these hazards?

Well, to help us answer and address this question, I'm very glad to welcome back to the podcast IHSA's Occupational Hygienist, Jasmine Kalsi.

Jasmine Kalsi:

Thanks for having me, Ken.

Ken Rayner:

Oh, great to have you here, Jasmine. And I'll start off with the first question right away. Jasmine, is there a program available for Ontario employers to implement that'll help systemically address these biological and chemical hazards?

Jasmine Kalsi:

Yes, actually, employers do have the option to implement a respiratory protection program.

Ken Rayner:

Oh, a respiratory protection program, all right. Next question for me is, what is a respiratory protection program and why is it important?

Jasmine Kalsi:

In the simplest sense, it's a formal program that outlines the requirements for the type of respiratory protection required for given tasks in the workplace. So it pretty much just outlines expectations on respirators, filters, as well as responsibilities of different workplace parties, as well as training and education expectations.

Ken Rayner:

Okay. When would an employer be required to have this type of a program? And second question, I guess: what type of tasks would need to be done to warrant this type of program?

Jasmine Kalsi:

An employer would require this type of program when respirators are actually issued in the workplace. For example, if air purifying respirators are used in the workplace to protect against dust, such as particulate matter, or to protect against fumes or silica, then a respiratory protection program should be in place to outline pretty much the what, the when, the where, and the how. When we consider the hierarchy of controls, respirators fall under the category of personal protective equipment. Respirators are typically issued in the workplace when no other control may be feasible, may not be possible, or sometimes they do get issued to protect workers in addition to other engineering administrative controls in place. You could think of it as a collaborative approach in protecting a worker against airborne hazards.

Ken Rayner:

If we're talking about a program, there's definitely elements to a program. What are those elements of a respiratory protection program?

Jasmine Kalsi:

Under Regulation 833, so this is Ontario's *Regulation for the Control of Exposure to Biological or Chemical Agents*, elements of a respiratory protection program are specified. The program at minimum should be **expected**. Then just on a high level, I'll just list out the table of contents. The program should have a section on employer duties as well as other relevant parties, a section outlining respiratory protection requirements—this would include minimum standards for respiratory protection, the selection of the type of respirator, and filter requirements. This program should address what type of respiratory protection is appropriate, whether it be air-purifying or supplied-air respirators, as well as the relevant filters that would be required for a task.

Other elements include a section on how the respirator is to be used in the workplace and a section on fit testing. And lastly, a section on the care and maintenance of respirators.

Ken Rayner:

Okay. Are you able to speak on minimum standards? Are there particular types of respirators that are allowed in the workplace?

Jasmine Kalsi:

For minimum standards, when we consider respirators in Ontario—and it's pretty common across other provinces as well—the respirator should have certain approvals. In other words, a stamp or a seal of approval. In Ontario, under our regulations, so that is Regulation 833, respirators must be approved by NIOSH. NIOSH stands for the National Institute for Occupational Safety and Health. This is a United States federal agency. They're responsible for conducting research and making recommendation for the

prevention of work-related injury and illness. NIOSH has certain test methods for respirators and they are a certifying body. When the manufacturers make respirators, let's take for example 3M, they're pretty well known. Generally they would want to comply with NIOSH standards set out for respirators. For example, with 3M respirators, for the most part, you would expect to see a NIOSH rating associated with them.

The simplest analogy I can give is how we have our safety footwear—our steel toes. On worksites, employers would require our shoes to have that green triangle, which we all are familiar with. What that green triangle means is that the shoe has sole puncture protection with a Grade 1 protective toecap. To get that green triangle, the manufacturer has to meet CSA [Canadian Standards Association] standard on this. This is a CSA symbol. The same type of thing applies to the respirator: we want to see a NIOSH seal of approval on our respirators. But in the event that the respirator is not NIOSH approved, then in order to use that respirator in the workplace, you should be able to demonstrate that it has an approved by a testing agency other than NIOSH. You should also be able to have a qualified person to attest to the respirator provided that it gives at least equal protection to that of a NIOSH-approved respirator.

Ken Rayner:

Sounds like there's lots of different types of respirators on the market. How do you go about knowing which one will work best for your situation?

Jasmine Kalsi:

Yes, I agree. There are a variety of respirators on the market, and it is important to know what type of respirator and filter would be sufficient to protect a worker against a particular airborne hazard. I would always suggest first, prior to respirator selection, to do a risk assessment. You want to determine what exactly your workers are exposed to, and this can be done through an air quality test, for example. Only after this determination can you select an appropriate respirator that can properly protect the worker.

Respirators come in different types. The two main categories, high level, are air-purifying respirators and supplied-air respirators. The main difference between the two is the way clean air is brought to the worker to breathe in. Air-purifying respirators have removed contaminants in the air that you're breathing in by filtering out any of those particulates. You would pretty much just wear a filter of some sort. Supplied-air respirators supply clean air from a compressed air tank or through an air line. In regards to filters, there are a variety of different types as well. You can have particulate-only filters. Particulate-only filters would only work for dust particles. Or you can have filters that protect only against organic vapours or filters that only protect against ammonia. But you can also have a combination filter which protects, for example, against dust and organic vapours. It's a combination filter that will protect against both types.

This is why I stress the risk assessment part. It's important, because it allows you to identify what workers can be exposed to. Knowing what type of contaminants are in the air will allow you to make this determination. That thought process just simplifies things a bit further.

One other important thing to mention about respirators for the selection process is to take into consider the assigned protection factor. In short, you've probably seen the abbreviation, it's known as APF. Each respirator has an APF assigned to it. This is a number which indicates in simple terms how well a

respirator can protect against a certain contaminant. The higher the APF, the higher the protection factor. Schedule 2, at the very end under Regulation 833, lists out the variety of APFs for different respirator types. It gives you the rating for the assigned protection factor for different respirators. For example, an APF of 10 means that the respirator should reduce exposure to airborne particles by a factor of 10. When we refer to Schedule 2, it specifies that powered air-purifying respirators, so like those backpack respirators that have a full facepiece, has an APF of 1,000. What this means is it would reduce the exposure to the airborne contaminants, whatever's in the environment, by a factor of 1,000.

Ken Rayner:

Wow, Jasmine, you covered a lot of information there, and what I really appreciated was that your recommendation is to diagnose before you prescribe. Because as I understand, an employer could—with all good intentions—if they don't diagnose the situation, could provide a worker with the wrong type of respirator in the event that they're being exposed to vapours. Well, as I understand, an air-purifying respirator isn't going to address that. It's not going to keep the worker safe, as opposed to one where they're being supplied the air, like you'd see on firefighters going into a burning house with those oxygen tanks on and the masks. They're not breathing in the smoky air, they're breathing it from the tanks, right? Love that recommendation. Let's diagnose the situation first before we prescribe the appropriate PPE or the appropriate controls at the source or engineering-wise along the path to address the hazards. Thank you. Excellent.

Now Jasmine, I understand there's fit testing that goes along with the respirators. When is this required, and can you just explain what fit testing means?

Jasmine Kalsi:

Sure. Workers should be fit tested to the respirator prior to them wearing it for a task. The whole point of fit testing is to see how well the facepiece of the respirator fits on the face of the worker. We have to keep in mind it's not a one-size-fits-all. Fit testing should be done at minimum every two years, or more regularly if you've lost or gained weight. Pretty much anytime there's a drastic change in the shape of your face, that's when you want to get fit tested again. This would also include, for example, if you've been fitted with dentures. The shape of your face changes a bit and so again, that's something you would want to get fit tested a little earlier than the two years if that change happens.

In addition to fit testing, workers should also carry out user seal checks, because we can't fit test every single time, right? Each time a respirator is worn, a user seal check also validates if a respirator fits you properly. Just keep in mind that user seal checks are not a replacement for fit testing. But after fit testing as the two years go on, you can always do user seal checks to just validate that everything is working as it should be. User seal checks pretty much consist of a positive and negative pressure check. A negative pressure check is when you block the inlet of your respirator with the palm of your hands and you breathe in. The respirator should collapse as you breathe in, and this validates the respirator fits fine. The positive pressure check is when you block the outlet of your respirator with your hand. When you blow out or breathe out, the respirator should pop out. If this happens, that means the respirator fits fine. Failed user seal checks should be that trigger or that indicator that something is not right with your respirator, and that it's at the point where you should be investigating further in terms of why.

Ken Rayner:

Sounds to me like for anybody that has to wear a respirator, this is an incredibly important piece of equipment and it absolutely has to be properly cared for and maintained. What's the process for that, Jasmine?

Jasmine Kalsi:

Yes, respirators should always be handled as per the manufacturer's directions. Generally you always want to store them away from any extreme temperatures. This applies to both hot and cold environments. You should never just leave them out and open in your work area. You should never just leave them on top of your workbench, for example. You should always, after the end of your shift, if you're done using it, put them in a sealed container or bag. You should always also make a point to inspect your respirator prior to donning it. You also want to note if there are any defects. Check the straps, check the valves, and check the filters. If anything is ripped or damaged, if your straps are stretched out or they're not elastic anymore, you want to ensure you can either replace those components or replace the respirator entirely. You want to remember, and, Ken, you alluded to this as well, this is the piece of equipment that is preventing you from breathing in hazardous agents. You want to make sure it's protecting you right

Ken Rayner:

Right on. Jasmine, my next question is a bit subject to me because I have had facial hair for about 20 years. What about that? What happens if I have facial hair and I want to put on a respirator? How do I go about that? Is that a potential issue?

Jasmine Kalsi:

For any tightly fitting respirator, the expectation is that there should be no facial hair along the lines of where the respirator sits on the user's face. There are some acceptable facial hairstyles, and this is something that we can attach onto the podcast, Ken. NIOSH released an infographic, which I like to share with the audience. It depicts illustrations of various facial hairstyles that are commonly acceptable, or not acceptable, when you want to wear a tight-fitting respirator. I definitely recommend for you to download that and check that out to see.

Ken Rayner:

Okay. We could start a whole new trend here. Maybe it's going to become fashionable, facial hairstyles that go along with respirators. What do you think, Jasmine?

Jasmine Kalsi:

Oh, yeah.

Ken Rayner:

Okay. Jasmine, what other aspects should be considered in the respiratory protection program? There's got to be more than just what's been discussed.

Jasmine Kalsi:

Yeah, so the other point that we still have to discuss would be the training and education aspect as well as program review. It's important to train and educate workers on the purpose of their respiratory protection. This includes, again, educating workers on when to change out filters. As you know, each filter, whether it be a chemical cartridge or a particulate filter, it has a service life. You want workers to know when they're supposed to change the filters and what the process of getting a new filter looks like. Workers should also be educated on filter limitations. Each filter has a limitation. Filters can only protect against select contaminants. Workers should know which agents their filter can protect against. For example, a respirator equipped with a particulate filter for dust will not be protective against the task of, for example, spray painting. You would want an organic vapour or a combination filter that does organic vapours and dust at minimum to protect against that type of task.

Then the other aspect to consider is that workers should know about the limitations of their respirators, so that's that facepiece aspect. Respirators are suited for certain tasks and chemical agents. For IDLH conditions—IDLH means “immediately dangerous to life or health”—an air-purifying respirator would not be helpful at all. One example of an IDLH condition is an atmosphere where oxygen is deficient. There's not enough oxygen. You wouldn't wear an air-purifying respirator in this case. It's not to supply you fresh air. It's not going to supply you fresh oxygen. In this case, for example, you would want a supplied-air respirator. Generally that would be something you would use as a respirator for that type of task. You also have to consider your APFs as well.

Then lastly, as mentioned before, workers should be educated on user seal checks, their importance, as well as cleaning protocols to keep the respirators in the best condition. Lastly, we have our program review. As with any occupational health and safety program, periodic review of the program should be done. This would include reviewing the risk assessments, the respirators currently in use, and assessing whether there been any new tasks. Has there been any new equipment, materials, or processes that have been added in the workplace or the worksite where respiratory protection needs to be re-evaluated or changed? The note is that there's always room for improvement, and regular review can help build an effective respiratory protection program.

Ken Rayner:

Excellent. Okay. Jasmine, let me go back just to that abbreviation, IDHL: immediately dangerous to life or health. I take it anytime that's seen it should be a warning sign to employers that this is obviously very important. As you talked about an oxygen deficient atmosphere, it made me think of someone going underwater. Going underwater with an air purifier is not going to do anything. You need air supplied to you.

Jasmine Kalsi:

Right.

Ken Rayner:

Wow. Great. Great advice. All right. Jasmine, what about IHSA? Do we have any resources for respirators that an employer can go to on our website?

Jasmine Kalsi:

Yeah, we have some resources on respirators. You can always visit our Occupational Health page on IHSA.ca. Some examples of our respirator related resources—we have a poster on respirator basics, and we have a variety of safety talks covering fit, maintenance, as well as inspection of respirators. If there are any specific questions on respirators, you're always more than welcome to reach out to me directly at jkalsi@ihsa.ca.

Ken Rayner:

Okay, and that's J-K-A-L-S-I@I-H-S-A.ca.

Jasmine Kalsi:

Yes.

Ken Rayner:

Fantastic. Jasmine, thanks again for all your amazing guidance and recommendations in regards to occupational health. We always appreciate having you on the podcast.

Jasmine Kalsi:

Thank you.

Ken Rayner:

Thank you to the listeners for listening to *the IHSA Safety Podcast* and our episode on respiratory protection programs. Be sure to subscribe and like us on your podcast channel. Visit us at ihsa.ca for a wealth of health and safety resources and information.

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