Transcript for Jaroslav Sebek Interview

Virgil

So starting off here, what role have you played in facilitating the NIH Freezer Challenge?

Jaroslav

I helped organize the NIH Freezer Challenge, market the challenge throughout the NIH, combine the results, and submit to the international Freezer Challenge held by the International Sustainable Laboratories and My Green Lab.

Virgil

Awesome. In all of this you've probably gained insight into proper freezer management strategies. Why do you believe that proper freezer management as a concept is important, and how do you think the Freezer Challenge supports it?

Jaroslav

Freezer management is really important at the NIH because we have a lot of energy intensive freezers. Ultra-low temperature (ULT) freezers baseline, prior to the EPA introducing the Energy Star label for freezers, [was] approximately 20 kilowatt hours [per day]. Today, we have approximately 3500 ULT freezers in service. So the total energy consumption and resulting emissions are significant.

The Freezer Challenge helps reduce emissions and energy consumption by promoting best management [practices] to help increase reliability, reduce energy consumption, and reduce emissions.

Virgil

Gotcha. Just for like edification purposes, the reason why they're so energy intensive [is] because they're trying to cool all of that air to such a low temperature?

Jaroslav

Yes. We're trying to cool air from an occupied air temperature of around 70F (21C) to -80C (-112F).

Virgil

Yeah. Well, it's good that you've been on this because NIH has a lot of different cold storage units and that could definitely rack up in terms of energy and [emissions]. So as you've been working with the NIH and getting involved in the Freezer Challenge, [promoting] better freezer management, what would you say are the organization's main strengths when it comes to freezer management? And also, on the other side of the coin, what would you say would be the main weaknesses as well?

Jaroslav

The NIH does a good job of making sure that our freezers are functional to protect the samples, whether that's through repair or replacement. We do a really good job of [making sure] our freezers do what they're supposed to do. [However,] we do not do a good job of preventative maintenance. So, ensuring that we have to do less repairs and replacements.

If we do preventative maintenance then we can reduce the number of repairs and replacements and increase the freezer life without costly repairs and replacements. So we do a good job of responding and keeping freezers functional, [but] we don't do a good job of preventing failures in the first place.

Virgil

Right, I see. Do you think any of [those difficulties] spin into the Freezer Challenge itself? Or, when looking at getting the NIH involved in the Freezer Challenge, have there been any significant challenges there?

Jaroslav

The Freezer Challenge addresses the weaknesses by encouraging the preventative maintenance measures and defrosting that will allow us to be more reliable. So it helps address our weaknesses.

Virgil

Oh cool! So, for a lab to engage in the Freezer Challenge, [it] could help with them being more preventative maintenance[-oriented] and future-minded, helping to curtail some of those weaknesses. That's interesting!

Speaking of future mindedness and looking towards the future, what are your specific hopes for the future with regard to freezer management at the NIH and participation in the Freezer Challenge at the NIH?

Jaroslav

I think that every lab can benefit from the Freezer Challenge. Greater participation could enable the NIH to be in a position where we no longer have to make a concerted effort to improve our freezer management. Then we [could] work on other types of laboratory equipment. We've stuck with freezers because we still have a lot of opportunity to reduce energy, reduce operating costs, and reduce emissions just from that one piece of equipment.

Ideally, we will want to have these practices so integrated in the culture that we don't need to have somebody really try and promote this anymore and we can look at other equipment.

Virgil

Right, like orbital shakers and things?

Jaroslav

Biosafety cabinets, orbital shakers, centrifuges, incubators… There's a lot of energy-intensive lab equipment, not necessarily [with] as much [of] an impact as freezers, but still, there's a large opportunity

Virgil

Yeah. Closing out here, I always ask this in all of my interviews because I come from a limited perspective, so there [are] some things that I just don't know to ask about. Is there anything about [the] Freezer Challenge or freezer management, or any last ideas or words you'd like to share at all?

Jaroslav

Yeah! Across the institute level, we've had very low participation in the Freezer Challenge, so anything to help get the word out! Participate and help us share so that we can get greater participation. I'm gonna pull up some data here.

Virgil

Sure. While you're pulling up the data, did [the NIH] win the Freezer Challenge last year?

Jaroslav

We won the Freezer Challenge this year in 2023 as a government organization. We got honorable mentioned last year in 2022. We [also] won in 2021 and 2020.

Virgil

Nice!

Jaroslav

We've also had individual labs that have competed [against] other labs and won as well: Dr. Gottesman's Lab in NCI and the Comparative Genetic Section of NHGRI. So, what I'd say in addition to what we've already talked about is: we've slowly increased participation from 9 labs in 2019 to 65 labs in 2023.

While this shows a steady increase, recent evaluations by [the Division of Occupational Health and] Safety found that there were 4420 labs at the NIH. We're only at about a 1.5% participation rate at our best year in 2023. So we've got a lot of opportunity to expand the challenge and grow. Again, we need help in participation!

If you have any questions, let us know. Check out the NIH Freezer Challenge site and spread the word. Help us increase our participation and improve your own freezer reliability, reduce the NIH's overall energy consumption and emissions.

Virgil

Good points. Just one more question for you: in doing the NIH Freezer Challenge, is it difficult? It's got "challenge" in the name, it might be scary! Is it hard to do, or is it something that can be relatively straightforward?

Jaroslav

There's a bunch of different initiatives and each lab can choose how they participate. It's entirely, voluntarily on what which initiatives they want to take on. Some of those initiatives are challenging, [while others] are things that every lab should be doing anyway, such as defrosting your freezers, which the manufacturers of your freezers, if you look at the technical manual, will recommend that you defrost your freezer at least once per year or once your ice gets to a certain level of thickness. That's not frequently done at the NIH.

That's a very easy initiative that everybody should be doing. [However,] there a harder initiatives. Everyone can participate and how you participate is entirely up to your lab.

Virgil

Cool! Thanks so much for sharing about the Freezer Challenge!