Update to Best Management Practices for Recycling Facilities During COVID-19 - Transcript

The Northeast Resource Recovery Association, your recycling nonprofit, held a second popular free webinar on December 18, 2020 to address questions and concerns about how municipalities can operate trash and recycling services as safely as possible during the COVID-19 pandemic. Reagan Bissonnette, NRRA Executive Director, was joined by Dr. Ben Locwin, an expert in infectious disease epidemiology. NRRA also held an original webinar with Dr. Locwin on April 15, 2020. The recordings of both webinars, along with the presentation slides, are available at https://www.nrrarecycles.org/covid-19.

The following provides a transcript of Dr. Locwin's presentation and the extensive question and answer session, including timestamps, for reference purposes. ***This transcript was automatically generated and has only been lightly edited, therefore it contains transcription errors. Please consult the webinar recording for the most accurate information.***

7:35 Dr. Locwin Presentation

So, again, thank you everyone for attending. This is an update on best management practices for recycling facilities during the Global Pandemic for Covid-19. As Reagan mentioned, the last one of these we did was just about exactly eight months ago.

And so, I would like to cover a handful of topics that are hopefully of importance and value to you so that this is a useful time for you to be able to spend especially during the Q and A where we address. Again, as Reagan mentioned, questions that have been submitted already as well as any that are solicited during this session. So what I'm going to cover includes background on the Sars Covid-2 viruses, and this is, again, similar to the background I presented last time, but assuming that everybody might want a refresher or if you haven't seen it before, I'll cover it briefly again today. Then what we said last time in the context of how to protect ourselves from COVID-19 in the community.

8:39
What guidance we're still recommending. What's effective? What isn't? And again, you know, trying to combat misinformation whenever possible. I'm going to talk about how the knowledge we have of the virus and treatment of illnesses and community cases has evolved over the past year with the pandemic. Then also, I'm going to talk briefly at the end about vaccines, the vaccines that we're currently using, other ones that are in development and how this pandemic will end which maybe some information that you haven't heard before. And then finally because promised we will end it with questions and answers so this whole topic will be the first four bullet points anyway. I'm going to finish relatively quickly to give you a good primer and background but then I would like to spend a lot of the time being able to address questions we have so that you feel more comfortable doing the work that you do.

9:38 Know Our Enemy: SARS-CoV-2

So talking about SARS-CoV-2 virus in order to be able to contend with any illness or infection to be able to prevent it to treat it. You have to know what exactly it is. So what we know about the Sars Covid-2 virus is that it's a Corona virus. And specifically, it's a beta corona virus that was derived from that population, and it transmitted across to humans, so it crossed species. It's an envelope virus. So if you look at the image on the right side, the envelope refers to this shell around it. And the envelope is covered it by lipid layer, so it includes two layers of fatty molecules and then protruding from those. All those spikes coming off are what indeed are called spike proteins. So it's these spikes that allow it to attach to the cells in your body, and then you become infected, so these spike proteins are interesting, because they also give coronaviruses their classic shape.

10:45

Now we've known quite a bit about coronaviruses for the last 60 plus years. So originally when this was termed a novel coronavirus, that was simply because this particular sars Covid-2 strain, hadn't been seen before. But it's similar to the merge, the Middle Eastern respiratory syndrome virus, and the original sars. Which was circulating over a decade ago. And interestingly with these other viruses, you know, though they share some of the same characteristics. How we treat them has to be a bit different in terms of if we had had produced a vaccine for the original sars COVID, 1 or 4 MERS. It's likely that it would not be effective for sars covid-2. So that's why this global pandemic had us kind of going in a little bit of a different direction.

11:38

This next image that I'm showing you is an electron micrograph picture of actual, sars Covid-2 viruses. And so, you can imagine this, what you're seeing, essentially, is a two-dimensional image looking top-down. So it looks like a circular shape with the spikes protruding out. And that's exactly why these are called coronaviruses, because the word Corona is Latin for crown. So if you kind of suspend your disbelief, these look like crowns from an overhead view.

12:12

Then this image is just kind of a blowup with a slice out of that section showing that inside the envelope, there's what's called the RNA of the virus. And so this particular virus, whenever you hear the term let us say genetic sequencing, it means that the internal mechanics and information within the virus, which is this coiled part you can see inside the coiled circle. That's basically been characterized and built out with instruments and computers to essentially be able to describe the sequence of genetic information that codes for this particular virus and it's about 30,000 individual letters long.

And so, you know the hope with, let's say cleaning. So if you clean your hands with soap, certain detergents or alcohol or Benzo laconia chloride, anything like that, the idea is that these viruses are particularly susceptible to cleaning agents because they have this envelope layer. So if the envelope is disrupted than the internal mechanics, this RNA material spills out, and so the virus cannot replicate any longer, because this 30,000 letter code spill's everywhere and disappears.

13:31 How Does SARS-VoV-2 Cause COVID- 19?

So what we do also know is that this is starting as an upper respiratory tract insertion. And also that surface cleaning is symbolic. So for the most part, when people are cleaning walls, and doors, and shelves and things, we haven't seen yet a confirmed case of contact, transmission, of covid- 19. And so the idea of getting a positive infection from a surface is very unlikely. And again, though, as far as cleaning surfaces, making sure that your hands are clean. It goes back to remembering that these coronaviruses are very fragile. They do have

this lipid bilayer envelope so any sorts of surfactants alcohol sanitizers will work very well to destroy the viruses.

14:27
So what happens is in this schematic here of the upper respiratory tract is it begins by inserting so you basically inhale respiratory droplets from somebody who's infected. There's a receptor, that's called Neuro Pilot one. It's in great supply on the internal lining of the nose, so the nasal pharynx region. Incidentally, this is why we swap your nasal pharynx for a Covid- 19 test. So if you were to go get a Covid one thousand tests, they have the long swabs. They do a nasal pharyngeal swab. And it's basically to try to lift a sample of mucus that contains the Messenger RNA from the sars Covid-2 virus.

15:13
And so this particular virus connects to ourselves and our upper respiratory tract with what's called phase two, which is short for angiotensin converting, enzyme to receptors. So we all have these phase two receptors, again, in great supply in the upper respiratory tract, and so the virus's stick on and they're able to replicate from there. Then, after that, there's something called Type two transmembrane serine protease, which allows entry into cells and once it goes into the cells, the viruses attach with those spikes, the spike proteins. And they insert their genetic material, and they begin to replicate.

15:58 Distancing (6 Feet Isn't the Best)
So what we know is that it continues to be true with the most important preventive means in the pandemic and in this order are distancing. And, you know, again, I want to make clear that the six foot cutoff isn't really kind of the best practice cutoff. Six feet was originally designed because some of the initial thinking was that for droplet infections, there would be a six foot zone around an infected person where heavier droplet particles would drop before they were able to be aerosolized. But certainly, for aerosol transmission, which we know, Covid 19 participates in, any, greater distance than that is only an asset. So if you can get 10 feet away, even better, 15 feet even better than that. We've been able to recover active viral particles up to 27 feet away from people who are coughing who are infected with sars Covid-2. So it's not that there's a black and white line where six feet is, OK. and, you know, closer than six feet is bad. It's basically the greater the distance, the better the next in order of importance.

17:15
So if you think distancing the idea is the more distance you have, the more effective it is. So the further away you are from somebody who may be contagious, the less likely you are to become infected. If somebody is not in the vicinity than an infection can't transmit and occur.

17:33 Ventilation (think ACH)
So next in line, if you, if you can't prevent somebody from getting in closer proximity, is ventilation. And my note here, to think about air changes per hour or so, oftentimes in homes, the number of air exchanges per hour is less than one. Typically, you'd like to shoot for six air exchanges per hour or greater. Sometimes offices may have up to 12 or 20 or 25 exchanges, which is air exchanges, air changes per hour. But the more that you're able to exchange the air with fresh air and even better, if you can also be filtering the ventilated air. So, typically what's called Merv 13 filtration, which is a classification grade of air filtration. If you're going to use merv 13 filtration and your HVAC, then you can also be filtering particles out of the air. But the idea is if you've got an exchange of air via ventilation, it becomes less likely that you'll saturate the air volume with infectious respiratory particles.

18:46 Masks (Proper Practice)
Then, in order, comes masks. So distancing, most important. Next, make sure you have proper ventilation so that you're not recycling essentially the same air with respiratory droplets as other people who may be infected and then masks. So importantly, you know, masks can only work on people who wear masks properly. So if you see people that don't have masks over their nose, they're not providing any help. If your mask has air gaps, around the sides, you can feel air coming in around the top or bottom or sides. Then obviously, what that means is it's venting around the mask and it's not going through the mask matrix, so the mask can't do its job. So masks do provide some important protection when they're used properly.

19:37 Cleaning
Then kind of in last place, again, is cleaning, so especially frequent touch areas. So this would be something like, doorknobs, this would be frequent touch areas that other people might be likely to be in contact with, if possible, you could clean them. If they're at point of use and frequently touched by others, but, again, for the virus to transmit, you would have to touch an infected surface, then bring your hand into your mouth or into your nose, or into your eye in order to deposit the virus that way. So it's, like I said, a predominantly respiratory infection because you're much more likely to be sharing air with somebody and breathe in respiratory droplets.

20:27
Now, I will say by the way, that President Elect Joe Biden has so far called on Doctor Rachele Wolinsky to be the incoming head of CDC. And her plan is to encourage broad mask used in public well into 2021, by the way, just so you're aware.

20:49 Vaccines
Now, we'll do a little stop on the vaccines tour here. So, we know that in order to stop this pandemic, we're going to have to have immunity in the public. So, immunity can either happen through people who have been infected and recovered or it can take place via vaccination. And the trouble with allowing natural herd immunity to incur by infections is because we know what the severe illness rate and death rate is, state by state. And so, to allow it to progress, uninvaded essentially is unethical, and, obviously, we don't want to have an increase in ICU cases or an increase of deaths. And so, to have people be immune to the virus, but not experience the severe illness, is really the whole point of the vaccines being developed. So, it provides the ability to confer immunity to COVID-19, but doesn't bring with it the hazards of potential serious illness and death.

21:53
So, this is an image of Pfizer Covid-19 vaccine that I took for you. And this is a picture, a stock image of modern us mRNA, 12 73 vaccine. And so what we know is there are several major categories. So there's this so-called mRNA vaccine type. So if you've seen any of the news the last couple of weeks, these are the two vaccine types which are now available for emergency use authorization via the FDA. So, the Pfizer biotech in the modern vaccine both work using this mRNA technology. So what they do basically is they have, within the vaccine, a purified messenger RNA for the spike protein on the sars Covid-2 virus, and this messenger RNA, gets into your cells. And in the cytoplasm of your cells, your cell produces this material.

23:00
And so your body essentially produces antibodies against this mRNA from the spike protein. So your body, then, encounters the sars Covid-2 virus in the future, it already is primed to be immune because it detects the spike proteins and destroys the virus. There's another type of vaccine, Ad 26, which is short for adeno virus.

These are vaccines being produced by Astra Zeneca and University of Oxford in the UK, and also Johnson and Johnson via their subsidiary. Jansen is also making an adeno virus vaccine for covid- 19.

23:45
There's also a company called NovaVax working on a recombinant protein vaccine. So this one only has the for the purified protein from the virus in it and so that protein would be injected into the patient and then the patient builds an immune response to that proteins. So again it would make you immune if you ever encountered the real sars COVID virus in the future. So the Pfizer vaccine was granted emergency use authorization so it was granted FDA by the last Friday. And Moderna vaccine, which is also an mRNA type vaccine is expected to garner. They're FDA today. So that's the 18th of December.

24:35
So if that's the case we'll have to viable vaccines available for dosing now in New Hampshire. We've gotten, I think, an allocation of 14,700 vaccines, And so, so far, those are going to frontline workers. So, the distribution pathways and chains have kind of been decided, and then as the next batches come in, there'll be wider spread distribution for the rest of the public. Now, both of these vaccines coming out are extraordinarily effective. They've shown in their phase three clinical trials that they're between 94.1 and 95% effective, and both have very strong safety profiles. The most common events that people experienced with the vaccine were injection site soreness or redness, headache, that kind of thing, which usually resolves within a day or two.

25:37
But, keep in mind, the rollout for these, as I had said, based on the numbers that were allocated by state, the rollout will take quite some time before these. There'll be widely and freely available across all the states, so stay tuned.

25:55 Now connecting some of this to some of your work
I had been involved in some zero waste some recycling and Recovery initiatives and throughout calendar year 2020 and you know, there's a lot that's going on with the recovery side of things versus the disposable side of things. And as you may have noticed, you know during the pandemic it's become sort of expected that restaurants, retail outlets go to fully disposable. And that's not really a prudent or smart decision. It hasn't really prevented any covid-19 cases and it's really caused us a lot of environmental challenge.

26:42
So we know that there's eight million metric tons of plastic waste that enter the ocean every year, which is about one garbage truck full of plastic dumped per minute into the ocean. And models suggest to us that plastic waste will outweigh fish in the sea by 2050 and bring with it. A lot of microplastics so these are the very small plastic particles that can get into the digestive system or the respiratory system. Some areas use incineration, which is no better, because then there's vaporized plastic effluents.

27:19
So we've got a pandemic going on with plastics and micro plastics and PFS and other coatings. And so while we can vaccinate against sars covid-2, we haven't yet found a way to vaccinate ourselves against this idea of waste that isn't being recycled or recovered and the idea of throwaway. And so, you know, I think a lot of this really is the hard work and it occurs on much longer timescales, like decades in order to start to change behaviors across broad swaths of the population.

Question & Answer Session

29:05 There are four safety precautions in order of priority. I believe you said that is distancing, proper ventilation, masks and hand-washing. Is that accurate?

29:36
In order of priority distancing first, then ventilation, then masks, then hand washing.

29:57 What guidelines do facilities solid waste facilities follow? Do they follow the CDC? Do they follow the WHO, do they follow city mandates, where are they supposed to be looking for guidance of what they should be doing?

30:28
Typically, people are looking to the CDC for broad guidance, but it never gets specific by design to a particular workplace level. I know that OSHA had put out some guidelines in this past summer for workplaces. So I would say, you know, largely for facilities, I would suggest that OSHA's document is probably the first place to go. And then, of course, you know, if there are any particular guidances that a city has put out, you know, those may supersede or be an adjunct of two.

31:06 Reagan Bissonnette
OSHA did come out with some guidance that we covered in our first webinar. And basically, that is that even if solid waste facilities are handling, trash and recycling that they suspect may have Covid contamination, they are still supposed to treat that, like any other normal waste, but you're supposed to be wearing a proper, personal protective equipment. And so that means wearing gloves, wearing masks, covering basic precautions that we're supposed to take at all times, because you never know what's in the solid wastes coming through your facility.

31:48 Dr. Locwin
And I would also say, too, that more broadly speaking, about the point of this whole webcast and broadcast, you know, Reagan, Bonnie and I had a chat a couple of weeks ago. And we wanted to have this information out there and available to you before. You get kind of into the holiday push in case it can help with decision making for work or personal life, the last, you know, week rolling into the Christmas holiday, or over the Christmas holiday into New year. Or, frankly, you know, just through the winter into 2021. So, hopefully, we can touch on enough topics here that, that it provides that assistance to you.

32:31 Why are we still recycling during this pandemic?

32:45 Reagan Bissonnette
And what I would say is, recycling is still essential as, we have many, many communities that are safely continuing to recycle during the pandemic. And we really have relatively few cases of covid, New England wide compared to some other parts of the country. And it saves valuable land space. It helps communities avoid additional costs as well. So recycling is still important, even in a pandemic.

33:20 Dr. Locwin
Yeah, I couldn't agree more. I think, No, as we've talked about for the last nine months, even prior to the last webcast we did with NRRA myself. I mean, this, this is largely not a contact transmission illness. And so, I would suggest the question should be more along the lines of why should we how can we be recycling more

through this? And I believe that there were two emergency orders issued by New Hampshire Governor Sununu. The first one was to ban disposable plastic bags in the springtime. Maybe early summer. And then I had worked with some groups, also to sort of pressure against that, but so that was rescinded. I think maybe Emergency Order 74 something but that then retracted the ban on plastic bags. So that. Where did I get that wrong? The point is you can bring re-usable bags you can bring your re-usable bags to the grocery store again now, which quite honestly is always how it should have been. You know, we shouldn't have been worried about contact transmission coming from let's say a polyester fiber shopping bag causing a problem on a conveyor belts, the conveyor belt can't get ill, and there's no respiratory droplets there. So, I would say, you know, recycling and also protecting where we live, at large. You know, waste is the gift that keeps on giving, it doesn't go away because there is no way we throw away, we throw it away and it's still there somewhere, we live. On the surface of a sphere, we're in a closed system together.

35:17 What are best practices for keeping sorting line employees safe?

35:23
And I think we've already touched on some of that Which is the most important thing is providing that physical distancing, right spreading out staff so that they have space both from each other and from residents. So it really is more or less that simple. So, you know, on one hand, you can't separate from the public entirely, because there, there is necessarily the involvement of public interaction. But the more you can keep people beyond six feet, the more you can demarcate spaces, so people know where their boundaries are or should be. You know, maybe there's a place public leaves some things. So you don't have that may be as direct and interaction.

And when processing, to make sure there's enough spacing between workers, whenever possible, to set up ventilation so that you're trying to go well beyond six air exchanges per hour. You know, hopefully, there's some fresh air mixed in with that, But the idea is getting air flow through makes it much more difficult for respiratory particles to be shared with others. Or for you to breathe in someone else's droplets from coughing or talking or sneezing.

36:37 By far, the most questions we received in advance of the webinar were related to surface transmission. So, people still have a lot of concerns about what is the risk? The virus stays viable on a surface like plastics, cardboard paper and in many cases, some communities are still not fully recycling as much as they were before the pandemic because they worried about the possibility of acquiring the virus from handling recyclable materials. So, what can you tell us about?

37:14
Yeah, I would say there's really no other updates I can give you regarding what we know I think what we've known to be true throughout is that for sars covid-2 virus and any coronavirus in particular. These tends to persist on surfaces for a day may be, depending on the surface material, say, 24 hours, in some cases 48 to 72 hours. But that also doesn't necessarily mean that they're still infectious. So we have very sensitive methods to detect whether or not there is virus present on a surface. And those methods sometimes will falsely tell us. So, a false positive will falsely tell us that we've recovered some virus from a surface, but instead, you know, what we've recovered, basically is the RNA from the virus. And there's actually not an infectious viral particle on the surface. So it's, it's tricky, so we can recover viral genetic material for 24 hours from a surface, sometimes up to three days, but that doesn't necessarily and usually doesn't mean that there is infective viral particles on the surface.

Now, the more hostile the surface like recyclable materials, which could include corrugated cardboard, those can sometimes be more hostile to the virus so that they don't last as long. Um, sometimes the some metallic surfaces. Some plastic surfaces are a bit more hospitable, depending on the, on the surface condition, but, generally speaking, I would say, you know, about a day, two days, max. So again, though, if you, let's say, received a package and that package sat outside in a mailbox or on your deck or something and it was there for no, 1 to 3 days, let's say, are you bringing in a house? and don't open it immediately? There is almost no reasonable concern for any infectious viral particles to still be there. So you don't have to wipe down packages and boxes and things. If you've, in that case, left them to sit around because this virus, again, doesn't really last very long on surfaces.

39:45 Reagan Bissonnette
And again, that gets back to number one, priority, is keep people physically distanced. And surfaces should really be a much lesser concern.

39:57 Dr. Locwin
Yes. And again, too, remember that, that the virus can't jump, essentially, from your hands or from a surface to make you ill. So if you handle something that may be contaminated, what I would hope you would do anyway is what you would do for normal practice, which is, before you used your phone or before you had lunch, or did anything where your hands are coming near your face, you would sanitize them, or you would wash them with soap and water properly, not just rinse. So then you can't transmit the virus to your mucous membranes and your eyes, nose, or mouth. So, no, even if it is on a surface, doesn't mean that it's got an avenue to infect you unless you bring it to yourself.

40:48 Now, some people have specific concerns about what if you have a plastic bottle or another beverage container that has a liquid in it and the liquid might have had the virus. When you're bailing the container, the liquids spring up in the air. Is there a greater concern about getting the virus in that way?

41:20
Yeah, that would be this particular virus, again, very low probability. So there would have to be viable host cells, meaning human cells in the liquid, within which the virus was contained. Otherwise, if you just had viral particles from saliva in, let's say residue from soda, there's really nothing for the virus to replicate in because there's not a cell there. And so, you know, a lot of drinks are typically very low PH, like carbonic acid in soda, phosphoric, acid and soda. And those would be extremely hostile to any naked viral particles. So there's no data really on, you know, how long would an individual Sars, Covid-2 virus, live in residue of Coca-Cola? But my guess, based on physics, is that it's very much less than the 24 hours.

I'd be more concerned, frankly, with any of that liquid spilling out on any other given day, not even within the pandemic if it had norovirus in it or, um, can pile up actor, E Coli, or something. Some sort of foodborne illness that, you know, somebody with a GI infection may have had. So, that's probably something that would be more likely to still be alive in the liquid, but not really this virus plus. You know, depending on the nature of the work and what the PPE is. If you've got a face shield on mask, gloves, that sort of thing you would only be concerned with splashing of droplet particles, which then wouldn't really be as possible.

43:05 We had a number of questions come in regarding swap shops. And just to make sure everyone on the line is familiar with what a swap shop is, it's typically a small building or a shed. It has perhaps some tables or shelving inside where residents can bring items that are in good working condition that others can take

home and re-use to keep it out of the waste stream. And we've had a number of questions about whether or not it is safe to open swap shops.

43:34 Reagan Bissonnette
And what I'll say is that at least what we're seeing is that most communities still have those closed probably mainly because of the concern about social distancing but also just you know, the residents will be handling material with their hands.

43:55 Dr. Locwin
Yeah, I think again, this one, it's a great question. I would say, that, for the particular person who asked this, I think a lot of them are still kind of closed off, but for those that are still occurring, the distancing of the patrons of the public is really kind of the concern. So, getting more people gathered around out of interest is really where you've got more proximity and possible transmission. Again, with the surface contact and the low likelihood of persisting there, it's not so much from the virus persisting on a surface. You know, and it depends to if people have left something. I'm not sure how these are set up, but if people have left something and it's been there for, you know, a day or two or more, then you wouldn't really need to be too concerned about any viral residue on the material. It would just be if people are gathering around.

44:55 We had a few specific questions come in about textiles, so people are wondering about transmission of the virus on clothing or on mattresses that are handled. I'm guessing that might be more of a surface that's less hospitable to the virus based on what you had said. But can you speak specifically to that type of material?

45:20
Depending on the materials, some of those spun the fibers are our various polys, and so they're essentially plastic, but they're woven. And the expectation would be that they would be no, as likely to harbor growth as any other plastic surface now, because they are, you know, woven, and they've got greatly increased surface area. I think again, this one goes more into the bucket of I would be more concerned with transmission of gastrointestinal bacteria and viruses that are more likely to persist for longer amounts of time on a surface like this. So, in other words, there had been some studies looking at Swabbing, woven re-usable shopping bags, four material I think it was done out of University of Arizona. But the point is, you know, it's, it's possible to recover.

What would be foodborne infectious bacteria from bag like material like that, because by nature of the fabric, it picks up a lot of dirt. It kind of sequesters it away and keeps it there. But this particular virus isn't going to do very well on that surface, as we've talked about, so I would say, any risks could be less likely. This Covid-2 virus, and will be more anything else that would be on clothing and mattresses.

46:52 And then we have a host of questions related to masks. So first, in your opinion, is there evidence that cloth or disposable masks are better?

47:14
Yes. So there have been a lot of mask studies that were done, I would say, they know, there are varying quality methodology, But the short answer is the mask that works is the one that's going to be comfortable enough for full day, or, you know, or full shift to use where it's not adjusted. There are disposable masks where the mask material, the matrix. It's usually a spun olefin fiber, which is also what's used in surgical masks. That filtration material can work better than a lot of cloths like a singular double layer on.

But again, it depends how well it fits and how comfortable it is because if you use a better mask but better, meaning the filtration grade is better, but it's got a lot of space around, it's leaking air, or it's one that's uncomfortable, or is heavy, and slips doesn't fit well, and you keep adjusting it, you're causing yourself more risk than if you didn't have a mask on in the first place. So, now, you're bringing everything from your hands, and the environment onto the mask, maybe the mask inner surface, so, the best mask is the one that you can leave on, and not touch, frankly.

But I would say for, for re-usable masks, some of the best ones are triple layer, where the outside is a polyester layer and then there's two cotton layers. Then, of course, there are real sorts of filtration grade masks that all work quite well. But again, it's got to be one that fits you as they use your very well.

48:55 We've had questions about how often a cloth mask should be changed out in an eight hour work day. I mean, is that realistic for people to be changing a re-usable mask throughout the day? Is that something that they should be concerned about?

49:14
I mean, I think I have seen it in some workplaces and we've created some protocols about that. I would say, generally speaking, most people are trying to wear the same mask through the whole day. Rule of thumb is if it's wet through respiration or perspiration or has become wetted because of external environment. Something splashes or drips, it should be changed immediately. Other than that, it can be kept on as long again as you're not touching the outside surface, which can then start to aggravate material and get it into the matrix. Or, you may be touching the inside of the mask, so the less you touch the thing. And it drives me crazy because I see a lot of people in different workplaces and things. And they're constantly adjusting the mask on the front and the sides. And it's really compromises the whole efficacy of that. And I've also seen a lot of people who've been out ill who have been doing that. So, not surprising.

50:14 All right, and then we also have someone who says, Many of the visitors to our site are using net gaiters or bandanas. And then there's another question about, Is it effective for someone to wear a face shield, if they have lung issues, and can't be wearing a mask for some reason?

50:35
Yeah, so the neck gaiters and bandana things interesting. Generally speaking, those are worse. So they are often one layer, and so that's really the problem. It's that there typically a very stretchy polyester material or a nylon wave, and when they stretch the, if you do this, like up against the light, If you, if you take a single layer, stretch it out, obviously, very rarefied the fibers. you see more light pass through. So where it's stretched, it's going to allow more transmission of air, and more transmission of whatever is in the air.

Even when they're double layered, the fact that they're both thin poly layers is not as good as other more absorbent materials. Then bandanas, which when you fold them, could be two layers of cloth. There are a couple of things going against them. One is that when you pull it tight and tie it, they don't have any sort of form fitting or shape fitting to them there. And that's really kind of adjustable, so there's always the gap around the knows where that's where a lot of the ear comes in. And then also, typically, the bandanas are left open at the bottom. So, most of the air is actually coming in around the bandana, not filtering through it. So those are sort of the worst approaches to any kind of masking or, or anything like that.

51:58
And then the face shield question. No, that's a tough one. So there aren't really any properly identified medical contraindications for wearing a, let's say, a cloth face mask. You know, there were questions early on if somebody with COPD or somebody with asthma are other breathing problems could get a medical exemption bucked. You know, and having lots of different advisory panel meetings with respiratory specialists and people who kind of do this for a living, what's become clear to me is that, know, this they're done on a case by case basis, but there's really no medical contrary indication that would stop somebody. As far as like, you know, to saturation problem. In other words, the person can't breathe enough to get enough oxygen through a mask.

So that's tricky because wearing a face shield obviously stops droplet particles. Now if you've got a saturated aerosol environment, then the face shield isn't stopping the ingress of air from around, and also if you're infected with anything. And let's say you're talking or you're coughing or just breathing, frankly, your respiratory particles, the larger droplets will get stopped on the inner surface of the face shield, But then the rest of it moves around in these airstreams, and goes out into the environment. So you know, they're not really doing any filtration of materials.

So I would say the face shields alone are kind of a worst case. In, in, in situations, if there is no medical need, I would say, then, it is what it is, and it's a bit riskier. But, you know, certainly the work workplace requires it to then having a face shield in addition to a mask for anything splash, a bowl or particulates or debris would also be warranted.

54:14 Reagan Bissonnette
I hope everyone on this call already knows this, but disposable masked people are putting it in with their mix paper. And we just want to get the word out, that their trash masks are trash, if they're single use masks, yes.

54:29 Now, we had a couple of questions come in about ventilation. So specifically, for example, for communities that have their waste picked up through curbside pickup and they've got employees who are sharing a truck, how concerned should employees be about the possibility of the virus being transferred within the truck between employees. Are filters enough to catch the virus or redistribute it?

55:02
Depends on what sort of truck you're talking about, because it depends on the HVAC in it and the type of cab infiltration. So they certainly may, the more recent and higher end, cabin filtration have HEPA, and the happen name itself, high efficiency particulate arrestants are designed to appropriately and properly filter down to a certain particle size within a distribution. If you had cabin air circulating through HEPA, the chances are it would do a good job of taking any droplets or droplet nuclei from respiration and filtering it out so that what was coming out of the events is cleaner than what, what went into the events.

If there's not known quality filtration or if there's none at all or not good filtration, then essentially, you know, what it's doing is just redistributing the Cabin Air. So, some best practices there instead of recirculation to having it on the slider to the fresh side. So, what you're getting, essentially, is coming in through, um, through the hood, through the, in air intake, It's very difficult, if you're sharing a truck as the question was over a shift or two, to basically not be sharing the volume of air with the person who's in the truck. So, it would be difficult to be. So I'm assuming a shift or two, you know, eight hours plus next to somebody in a truck, that would be a difficult situation to not transmit whatever the other person has, whether it's Covid- 19 or a cold or the flu, just by virtue of talking and breathing the same air for that amount of time.

Now, certainly, it's done, places like Mass General Brigham, the giant hospital system for Mass General Hospital, and the surrounding satellite system. They've gone to merv 13 filters with their events. The hospital workers, obviously, are wearing full PPE with goggles, with N95 masks, with sleeves and gloves. And all this. And they're able to do so in an environment where there are ill patients and not become ill. But unless you kind of go to that level of extraordinary PPE Use, you know, sort of assuming you would sit next to somebody in a truck for a full day, even with a mask on both of you and no, not have a likelihood of getting ill is that would be pretty unexpected.

57:43 And in terms of ventilation, for many of our facilities, they have sort of a warehouse. They don't necessarily have ventilation systems and doors, but they might have big open doors, you know, bay doors that are open. Is there anything else that they can be doing to enhance ventilation during the winter months, I'm thinking of unheated spaces?

58:15
Yeah, I mean, I think that maybe the unfortunate to hear answer is industrial fans. So they make standing fans, and I don't know what other ventilation is near the doors, but you know, upon opening the doors, increasing, the airflow, which exchanges the air. So if you think back to the model that I showed on the slides, if you, if you imagine your workspace from an overhead view, wherever there are corners or there's areas farther from, let's say the open bay doors or from the ventilation air coming in, those corners, are those less likely to have the air that's stirred up and circulated and exchanged. So, even though you might have air exchange by an open door, if you're 50 feet away from that door, there is almost no air exchange. So, you know, putting some industrial fan in place to be able to circulate the air through the facility and then back out, makes sure that it circulates everywhere where it needs to, where there are people working.

Then, the unfortunate side that I mentioned, right, is this time of year, nobody wants to turn on a fan when you've got outdoor air. That's 18 degrees Fahrenheit.

59:29
OK, because if you've got to eat, let's say you have a pretty warm space, and everyone's comfortable, and you open a door, and it depends how big the spaces, but it's 20 feet away, it's, it's 100 feet away. Nobody who's not near the door is going to get any benefit of an heiress change. If you, if you could look at that from some of the Airflow calculation, models that are done, let's say, again, from like this overhead view, there's a little air circulation right around the door. And then, the rest of the spot, because you've got air of a different temperature, you've got the warm air, which, which is less dense, and it's sort of trying to push out to do heat exchange. And the cold air is more dense, and it's sinking and circulating under. there. It's not going very far, so the vast majority of that space is using the same air all the time. Unless you force it around.

1:00:24 We have some questions about testing and vaccines. One question regarding testing, and I know this has come up a few times, that I've heard of is, Is a negative COVID test a safe pass to go back to work? And when should you get tested to actually get reliable test results? Then, of course, there's different types of tests.

1:00:49
Yeah, so, if you get a, so originally, how this was written was that it was supposed to be two negative tests that were within a day or two apart. And that way, if you had a test that was falsely negative, the second test would pick up the fact that you were actually still positive. So, by having two tests in sequence, you increase

the probability that the result is accurate. And that's since changed because tests are hard to come by and they've been expensive and the results have been slow. Um, so, oftentimes going in for the test means you've got to, let's say, go through an illness. You go to get the nasal pharyngeal swab, and then they get subjected to a TQ PCR test and the PCR test is extraordinarily sensitive. And so one of the issues is, while the tests have gotten better and more accurate, there's still a lot of error in the tests.

Um, but they also the PCR test, in particular, We'll show that you are still positive for up to three weeks, and sometimes more, but weeks after you've recovered and aren't necessarily infectious anymore. So a lot of times, people try to go back to work too quickly. So, as soon as their, let's say, fever breaks, or, you know, the head cold symptoms start to go away, they say, oh, I feel fine, I'm going to go to work. But they're still infectious, and so they're coughing and sneezing and talking near everybody. So, we want to make sure people aren't going back while they are still shedding illness.

But the flip side is if you've got a PCR test, that's so precise, that it's able to detect residual viral RNA weeks after you're not contagious anymore. That's sort of the issue that we've been in. So generally, if you, if you get a PCR result that's negative. You should be presumed to be OK to return to work. Because what tends to happen is the opposite cases that the PCR tests will tell you that you are still positive even after you've been ill and recovered and are no longer contagious.

Um, generally speaking, if anybody kind of needs to know some of the numbers, and there's really not good data around even from the CDC, but if you have a COVID 19 infection, it takes about 17 to 21 days, 17 to 20 days, before you should be considered non infectious and well enough to, let's say, go back to work. So, even though you might feel well after a week or maybe two weeks, this idea of it's basically almost three weeks from the time where you start to feel symptoms, until you shouldn't really be around other people.

1:03:45 OK, So moving on from testing to looking at the vaccine and immunizations. There are questions about, can we expect that solid waste operators are going to receive the vaccine before the general public as essential workers?

1:04:10

Yeah. Good question. I think that depends on so how this all works is with the Emergency Use Authorization the FDA confers with ACEP, which is the Advisory Committee on Immunization Practices. And they decide which groups of people should get it first. So, it's, you know, frontline health care workers, it's geriatric the elderly people who are at greater risk of severe infection or death. And then beyond that, I'm not sure we're different work groups falls. So, it kind of depends state by state and kind of nationally. The politics of which groups of workers get jockeyed to what position in line for availability of the vaccines.

1:05:03 As vaccines roll out, how should we see that? How should we think about that impacting recycling operations? So, you know, does that mean the facilities will be able to start lessening precautions? And what type of timeframe?

1:05:23

No, that was kind of why I put that note about doctor was Shell Wilensky, Rachele Lansky into the presentation. So, she will be the incoming head of the CDC, and she's an Infectious Disease Specialist out of Mass General. And so she's going to be taking on the mantle of this big job. And I think she's my opinion as she's going to approach it, pretty conservatively as she's already suggested to her family members, that there'll be still using masks well into 2021.

So I think, you know, the only real good information I have is, is sort of my opinion based on that, which is, when the presidential administration changes, there'll be kind of another strong push for, for continued and further masking. And even with the vaccines, because the rollout is, is, to some degree, limited by availability and distribution, it's going to be months before enough people are vaccinated for it to kind of matter a great deal. So we're probably going to all still be doing what we're doing until.

I see you're putting me on the spot to predict the future for the next webcast, but, I mean, I would say at least till May, I would say, depending on how I've seen some of the vaccine distribution networks. Sort of what they're looking like, by into next summer, we may have a relaxation in the states of mass requirements and businesses opening up and less restrictions around proximity and things. So that this will allow restaurants and bars and other places to also do more business. But I think it's going to be several months into 2021. We're doing the same thing, and then it's going to kind of lightly start getting lifted as more people are vaccinated, so, know, what the future's going to look like, is, we're going to probably start seeing, you know, a ticker on the news of proportion of people by state and county, by state of people who've received the vaccine. So now, instead of like case infection rates and death, we'll get different kinds of models, which are number of people vaccinated and now protected.

1:07:43 So the last category of questions we got an advance, because we're still going through those are related to cleaning and decontamination. So, if a facility experiences an employee who test positive and was known to be ill at work, what should they be thinking about in terms of decontaminating the workspace that that others may have been in contact with?

1:08:26
Yeah, so we had addressed this last one too. I think, you know, if everybody's been masked, if there's reasonable ventilation, I wouldn't be concerned that I should test everybody in the facility because they may have of, they may have contracted it. It would be more a matter to me If you make sure you're wearing your PPE if you try to stay away from people in general, if you've got ventilation that you've upgraded or done something with so it's a little better and somebody has it.

I would kind of think, well, maybe they shouldn't have traveled for Thanksgiving. So thank goodness, I still feel OK, you know, unless I don't, and then they're out and ill. And so the other questions have been, should we test everybody, does everyone go out? And the answer is probably no. Because it probably didn't transmit at work. And then what I would do is if there's a workspace, frequent touch items, again, you know, a tabletop pens, keyboards, anything like that that person had been known to use. I would make sure those are sanitized, again, because it's just smart thing to do. And then, if somebody else is in that space, the only other way that they could have been infected was to have shared air with that person at the time.

So the idea is if you have continuous ventilation, that volume of air around the workspace has already been long changed, you've cleaned everything that person is basically touched, and then things like if there's a shared restroom, or something, you know, just making sure clean. The restroom door handles faucets on a regular basis. But again, this time of year, that's just good practice. If you have a bathroom shared by 10 people, you want to make sure that not everybody's sharing what everyone else had.

1:10:14 What tips do you have for keeping the workplace clean and safe, and then also, helping employees remember to be doing that cleaning?

1:10:27

No, a lot of companies who have done this a lot more than I have, have sort of landed on the fact that they should have cleaning check sheets. So if you look at fast food restaurants and rest area, bathrooms and, and convenience stores, they have got their sheets on the door where there's rows and, you know, every hour or something, somebody has to clean and sign off.

I think probably a lot of times, people just game those, and they fill them in like four blocks at a time, but assuming that they're well managed, I would suggest that's probably the best way to have a reminder. You know, if somebody's duty, it is to do that. And there's a way to kind of keep up like every 30 minutes or every hour or every three hours or something. Somebody has to go in and clean the bathroom spray down. The faucet handles spray down the paper towel lever. Spray down the door, handles inside and outside, and then they sign off that they did it, the sign off, you know, to try to say, did you or didn't you because you signed it, To me, isn't really where I focus my concern. To me, the interesting part about that is, it's a reminder, like, oh, yeah, it's, it's now two o'clock, somebody's supposed to clean the bathroom.

1:13:00 Someone wants to know if a heat pump bringing in outside air with a filter, effects a healthy air exchange rate.

1:13:12
Yes, depending on how that's set up, where it is in the room, the situation of it, the orientation. It's probably only good, especially if it's filtered. So I, so, I guess if it's directly duct to outside you bring in fresh cold air, it's heated up and circulated in the room, the warm mayor is going to help with the circulation of the air in the room by virtue of the temperature differential plus the air flow. So, it'll definitely help as far as trying to force the air exchange that filtration, like I said. Also helps. But no convection in the room will help to get the corners, where often things, you know, aren't getting cleared out, but I think the idea of bringing it in directly from fresh air and warming it no clearly is the idea behind ventilation. It's not to try to re circulate the same room air, but to bring in outside air.

1:14:0 We did have a question about textiles, transmission by textiles, and you covered that.

1:14:0
Yeah, we did, but I'll briefly touch on it again. So, textiles that would handle as they're normally handled, I would sort of presume that any textiles coming in could be contaminated with anything. It's not that I would worry about COVID-19, because, again, that particular virus won't do well within textiles, but, you know, more things like prior blood borne pathogens or gastrointestinal illnesses, things like that.

1:14:45 We have an operator asking about attendance at recycling station. They check licenses to ensure only residents are using recycling center. Since the practice involves relatively close contact, what extra safety measures beyond masking should be incorporated? Like are gloves needed, etc.

1:15:24
So masks for sure, keeping people as far away as possible if it's a drive up, you know, or whatever. Um, if the booth is, let's say, heated to have the ventilation or a fan inside directed out so that there's positive pressure in the booth going out, so that the incoming air from the customer isn't coming in is probably the next best thing. So, so keeping the people further away ventilation, positive pressure outward from the booth. And, yeah, if you touch anything that the customer had contacted, just make sure that, you know, you sanitize appropriately, but Other than that, it should be covered.

1:16:12 You talk about virus longevity. Is it based on air temperature? You know, we have to really cold temperatures. I mean, obviously, the more people are inside, but is the time that the virus survives based on temperature?

1:16:29
No, there's: yes, to some degree. But what we consider to be kind of hot and cold, the viruses tend to have a much more tolerable range for the simple fact that they're not actually alive. They're basically just these capsules, full of genetic material. So they can tolerate pretty hot temperatures, which is why like if you wanted to put your masks in an oven to decontaminate, it's got to be pretty warm. They can be recovered again on surfaces from pretty cold temperatures. Generally speaking, the dryer the areas and the colder the areas. What ends up happening is people have runny noses, your nasal. Here's what happens, your nasal cavity gets dry, and in dry cold air, the colder air is less able to hold moisture, so, it's less humors. Your nose doesn't like this very much, so it tends to secrete more snot. And so, in that dripping, people are sniffling more, they talk more with droplets. They blow their nose more. So there's more potential for exchange of particles.

Um, in dryer air too respiratory droplets tends to cast farther because in humid air there are very they're microscopic particles of moisture that tend to slow things down, and that's not the case and dry air, so the temperature is not so much an issue, because the virus can tolerate it pretty much. It's more a matter of colder drier. Air tends to allow the virus to travel further if somebody respiring it and the dryer air makes people have more nasal and mouth secretions too.

1:18:13 With the 14,700 doses in New Hampshire of the vaccine, is that 14,700 vials? Or since it takes two doses are we've vaccinating only 7,350 people?

1:18:35
So the initial rollout was doses, and he's quite right. So that would have been 70, you know, 71, 7200 cases, because each person requires two doses. With that, we've since been on an expanded distribution supply chain. So I think, at the moment, I honestly don't know the numbers. I apologize for that. I mean, honestly, I don't think anybody does, at the moment because there's so many individualized, isolated entities who have different parcels of information. There's not like one centralized nerve center, unfortunately. But I think we're on the order of more than 15 to 20,000 people's worth now that that will be distributed in, in New Hampshire, so. Well, that includes the two doses for each. So, it's, it's gone up since that original from last week.

1:19:32 Do we know yet how long the immunity lasts, either from getting the infection or from getting the vaccine?

1:19:46
Yeah. Good question. So what we do know, so there's a lot we don't know. Well, let me back that up even more. Anybody who says, you no longer learning every day, we still don't know so much. That's total fiction. We've known about coronaviruses for six decades. This one's not really two different and not really too special, how it is acted in public and how the Publix reacted to it and how it's, um, presented heterogeneous Lee. Some people with almost no symptoms and some very severely and death is, is quite interesting. But, you know, what we do know is that Corona, viruses, 10 to 15% of the cases every year They come in to ERs, colds and flu sort of symptoms are from Corona viruses in general.

So if you sampled the blood of almost anybody for, and you kind of can't do this, but if you could, if you could do this instead, have you been exposed to a coronavirus, You know, in the last few years? Almost everybody,

the answer would be yes, and it's caused some kind of cold symptoms. There's some thinking that you've got cross protectively from that. And that is, if that happens, that you're less likely to get severely ill from this. And in some cases, maybe that's not true for some people.

As far as duration of immunity, what we do know from the medical literature is, there's one case. We're a male, presumably got infected one time, And then about 170 days later was re-infected. So both tests the first one and the one. So that's like six months about. The next one, about six months, later, when he got ill, again, was also positive. Now, it's possible that one of those two tests could have been a false positive meaning. He didn't actually have coven the first time, had some other illness, got well, then got ill again six months later and tested positive for the first time. And that was the only real COVID infection he had. If we take it at face value, then that means the shortest known immunity we know about, is that it's about six months. We also know though, from prior infections with coronavirus, that it can be up to a year, two years, three years.

So, I don't know yet because we're still in year one, but it will be interesting to see if people who've had it now at, will they still be immune to it? March, April, May, June, July through this 2021. The presumption is yes. Some of the smartest people I've heard from on the topic are suggesting, and it's a guess, that they're sort of hoping suggestion slash hope that it's about maybe 2 or 3 years. And same with the vaccine. There's no reason to suspect that the vaccine immunity is any less durable. Then what would you have from getting in and recovering? So the hope is that these vaccines will last for maybe two years, three years. And we don't, honestly, we don't know that the Phase three trials that that concluded they were very successful, that's really the best data we have is that it's worked very well and that it's been very safe.

Now, we have to look at all those people who are vaccinated because they continuously get monitored. And if in the next six months or a year, they start getting ill again, then we'll say, OK, it's looking like the vaccine lasts for X amount of time.

1:23:20 We've had a number of questions come in about masks, and I know earlier you talked about the less protection with Gaiters and Bandanas. Can you remind us, once again, the best mask or face covering should operator wear when interacting with the public? Should it be the disposable one with the metal clip or is the cloth one acceptable?

1:23:45
Know, my answer will probably stand as the one that's a combination of not corner cutting but comfortable so that you'll use it. Because if it's a mask that keeps slipping or you don't use it properly, it's not going to help. If you're somebody who says, Yeah, that's nice, I'll wear anything you tell me. Just make sure it's the right kind of mask, I would say, if you get one that's, this can be disposable three layers of cloth or the outside is a polyester fiber, which is hydrophobic. Then the inner layer is cotton which is hydrophilic. So when you have respiratory moisture, a cotton layer will absorb that, so you don't have a wet face. And then there's typically an inner third layer, which is some sort of, could be another cloth, but it filtration material. That helps it to filter better. And then, again, the fit test. If it's got the medal even better, because that lets you fit it nicely here, where there's always an air gap.

Making sure that it fits well. And if you breathe in and out, like, couple of times rapidly, and it sucks in and out, are you feeling air venting anywhere and if so, either get a different mask or figure out how to secure it so that you don't feel that.

1:25:00 How can it be handled when you are vigilant in your sanitation and limiting your exposure, yet a co-worker travels outside the state and visits friends? As a scientist, please answer that question.

1:25:21
That's the million dollar question. We can't stop people from being people, I guess, we can't keep people from themselves. And this happened the Thanksgiving holiday to where we have seen a spike in cases attributable in time to people traveling for Thanksgiving even though they were told not to. Um, now, can we really tell them not to? Now, and everybody has a unique situation. So, I know, personally, personally, several cases of COVID 19, not like, oh, I heard if somebody had it, I know, I would say on the order of, let's call it 12, 10-12, I can immediately think of who, around the time, from four days after Thanksgiving to maybe a week plus afterwards, we're positive at home very ill, couple of them, almost nothing sniffles and cost. Some very ill. But basically directly attributable to, like they had to go see somebody for Thanksgiving because they thought the rules didn't apply to them.

So the only thing, you know, like I've said to them, that you can do, is protect yourself. Be your own best advocate. Tell people to stay away if they're too close to you. If there's any way you can influence them or your boss, tell them not to come into work because they just traveled outside the state. Because, you know, people are going to continue to do what people do. And it's one of those, decide in haste repent in leisure sorts of things where people want to make a decision that they like, and they have to suffer the consequences. But unfortunately, those consequences also fall on all of us.