John Balog: Good afternoon, everyone. Thank you for taking time out of your busy schedules. Most of us are working under a National Weather Service’s heat advisory. Please make sure that you’re hydrating during this intemperate weather, and again, thank you for joining us. I wanted to recognize our panelists and what I refer to as our advisors from the Office of Research and Development: Karen Jeans, Alex Chiu, Tony Laracuente, and George Lathrop. And from the Office of Research Oversight, Jim Trout. Also today our panelists or contractors Bill Arndt and Natasha Griffith. So again, welcome, everyone.  
  
These next few slides here are going to be a very rapid review of some of the key elements of the introductory webinar we did back in April. So I’m going to move rather quickly through these just to call out the highlights. The BRLBBP will provide the leadership over the biosafety and biosecurity program. We want to make sure that our laboratories are operating in a safe and secure manner with the focus on VA employees, surrounding communities, and our environment.   
  
And some of the key activities we’re engaging in now are communication of training requirements. We want to initiate training programs. This is a collaborative effort, so again, I’ll echo Parker’s entreaty at the beginning of the presentation. Please avail yourself of the survey after this presentation. We really appreciate your thoughtful comments. Personally, I learn more and develop better from hearing critical comments. I’ve developed a rather thick skin over the years. Of course, I’m sure many of you have similarly experienced the slings and arrows of the workplace when it comes to discussions of safety, and I think that’s a healthy thing. So again, our contactor is Totally Joined for Achieving Collaborative Techniques, and we thank them for their efforts.  
  
So in this collaboration, again, communication is the hallmark of any collaborative effort. We’ve got multiple modes of communication. Of course, this is the second in a series of three webinars, and we’re looking for topics for the next one. More about that certainly later on in this presentation. We’ve established an email inbox there for folks to communicate. And this is for programmatic issues that you may encounter. Pretty much at this point any query regarding biosafety and biosecurity that you’re uncertain about or you would like more information, or if a particular issue emerges, please let us know, and we will reach out to you in a timely manner. And we’ve also established a toolkit that is posted on our updated ORD biosafety and biosecurity web page. And we’re in the process of developing an email distribution list. Now, the purpose of this distribution list would be to send out timely and appropriate content from a myriad of sources. It could be from other email listservs, it could be government publications, white papers, references that have wide applicability to what we do in ORD.   
  
And that’s another example of the resources. And again, with the toolkit, we want to further develop that. And again, that’s going to require, or will greatly benefit at least from, your input to provide some source topics. Things that are particularly vexing, and it could be from a technical matter, it could be an administrative matter. We’ve got a plethora of experience from our panelists—Jim, Tony, George, Karen—a wealth of VA administrative experience and insights there, and this will be an effective way to communicate and get perhaps a streamlined approach to a solution to any issues you may encounter. And the updated website is here at the bottom of the screen.  
  
So at this point, I’ll turn it over to Parker to conduct a poll.

Parker Cunnean: And that should be appearing on your screen just now, and we’ll give everyone 30 seconds or so to answer that.

John Balog: Yeah, so there is a wealth of information out there, and we struggle to filter through the multiple emails and newsletters that we get, both electronic and even some of us still get them in print form. And it does take time, and I’ll admit that there are some that I just do not get to. But I do try to at least scan the majority of these to extract information that may be helpful to me and then collectively to us. And again, discussion is a great way to help solve problems.

Parker Cunnean: And those results should be visible to everyone in just a second.

John Balog: Okay, so congratulations to those folks who have taken the time to explore those toolkits. For those who haven’t, I strongly recommend that you look at those and review the content. There’s some very good technical information there, and keep in mind that these initial topics were prioritized based on the universal applicability of the information. So if there’s no new information for you in those toolkits, we would like, again, to hear what you might find useful.

Parker Cunnean: All right. And Natasha, we’ll hand it off to you now.

Natasha Griffith: Thank you very much. Hello, everyone, and welcome to ORD Biosafety and Biosecurity Webinar #2. We will kind of split the content a little bit. I will talk to you about Foundations of a Biomedical Research Laboratory Biorisk Management Program. Next slide, please.  
  
So this webinar is intended to build off the previous webinar and will dive into more specific biosafety and biosecurity topics to support the VA Biomedical Research Program. So our purpose and objective for this webinar is to describe the purpose of a biomedical research laboratory biorisk management program, define the important terminology and definitions for BRMP, identify key responsibilities as well as activities that support research laboratory BRMP implementation as well as operation, identify general biosafety and biosecurity best practices in support of BRMP, and then recognize common biosafety and biosecurity challenges and solutions that are associated with BRMP implementation as well as operation. Next slide, please.  
  
So before we start, let’s just talk about a couple of definitions, and please note that these definitions are also included in the FAQs that are posted in the biosafety toolkit that John previously mentioned. So these definitions of laboratory biosafety and biosecurity also should be incorporated into your local standard operating procedures so everybody’s kind of talking the same language. And also related to the definitions to educational tools that are under development, those are also the definitions we will be using. So we are trying to use some common language in all the different tools that we have out there. So when we talk about laboratory biosafety, we talked about the really consistent application of safety measures that are there to minimize or prevent exposure to the person handling the agent, also laboratory environment as well, building occupants, and then further if you extend it to the community and the environment. To contrast that to biosecurity, really biosecurity is the risk- and threat-based control measures that are established to prevent the unauthorized access, misuse, loss, theft, intentional release of these valuable biological materials that could be pathogens/toxins, but as well as information, expertise, equipment, different technologies. And we also speak a lot about intellectual property that has the potential to cause harm to humans, animals, plants, environment, public safety, and, of course, national security. Next slide, please.  
  
So what I really would like to highlight here is that we are talking about difference in intent. So when we talk about laboratory biosafety, we talk about something that could occur unintentionally. So we are really not in a business of trying to have issues or cause spills in the lab and all of that, but we are all humans, and so incidents or accidents happen. However, if you contrast that with biosecurity, we are now talking about different intent. So this is some type of intentional potential release or use of these infectious materials. So just a big difference between the two is intent. Next slide, please.  
  
As I said, there are differences in biosafety and biosecurity, but there are also some overlaps that occur between the two. So I would like to make sure that even though the biosafety and biosecurity differ in intent, they also have areas of overlap. So a lot of practices and procedures that we worry about. We worry from the biosafety perspective as well as from biosecurity. Access controls, decontamination, and waste disposal are great examples. Because if we do have a waste that we want to dispose of and we could potentially be worried from nondecontaminated waste getting into normal or regular waste treatment potentially contaminating the environment, but we are also worried about the same waste and people being able to have access to that waste to obtain some potentially infectious materials. So you can see how from both ends we are concerned, so there’s that overlap. And of course, inventory of hazards is important so we know what’s where at any point in time. Next slide, please.  
  
So here’s just a quick introduction into laboratory biorisk management. So what I want to make sure that everybody understands, we will be talking in a later slide about this concept of risk in general. So when we talk about biorisk, so what really is a biorisk? So this is really a risk that’s associated with biological materials. So when we talk about biorisk, we talk about the effect of uncertainty that is expressed by the combination of the consequence of an event happening and the associated likelihood of occurrence of that same event where we have these biological materials that are the source of harm. So really—and you will see this in subsequent slides—risk itself beats a biorisk or any other risk is a function of the probability of an event happening and then the consequence of that event if it does happen. As I said before, we are talking here about biorisk, but risk could also be on the biosafety side, it could be on the biosecurity side, or could be on both. And so again, waste was a good example of how we can run into a risk that’s associated with biosafety but also with biosecurity. Next slide, please.  
  
So when we talk about laboratory biorisk management approach, there’s a process that we like to talk about. So we talk about assessing hazards, and I want to point out that hazard is different from risk, and we will see that in a subsequent slide. But we go to a phase of an assessment, so we look at the hazards and we identify those, and then we run through a risk assessment from the biosafety side, but we also run through a risk assessment from the biosecurity side. Once we assess the risks and prioritize those, we are going to move into a mitigation phase. So there are different ways to mitigate risks depending on what the risks are and how they are prioritized. So it could be biosafety manuals that we put in place in our laboratories, it could be some type of biosecurity plans, different standard operating procedures, and then we also a lot of times want to provide training for laboratory and support staff, have a waste management program in place so we can dispose of waste in a safe and secure way, and then also, like I said, there are different facility or laboratory signage or procedures that might be put in place in order to mitigate these risks. Once we did put in place those mitigation strategies, we do want to evaluate if those mitigation strategies are working that we put in place. And we can do that multiple ways. Some of the ways is by having these laboratory inspections, by having personnel report any incidents or accidents that might occur in the lab, and also of course having the management that reviews those plans that are in place. And again, last but not least, we need to plan for things that might go astray and how to address those. So to help us do those, we should have biosafety and biosecurity policies in place and then well-defined roles and responsibilities within the institution and beyond. Next slide, please.  
  
So when we talk about biorisk management program planning, so again, there are different steps that we follow, and here are some examples. We want to talk about establishing these biorisk management policies and objectives. We want to make sure that we have resources needed to support implementation of the program. We want to define the roles and responsibilities as well as the authorities and who has that final say. We want to ensure clear communication to make sure that everybody understands what’s going on and there is clear communication about the actions that need to be taken in support of the BRM program and of course promote the continual improvement of the program itself. So it’s a continuous process that should be ongoing. Next slide, please.  
  
As I mentioned earlier, I would like to point out the difference between hazard and risk. This is one of those terminology things that we see a lot of confusion in the field about. So when we talk about hazards, we talk about source or a situation with a potential to cause harm. So really, think of hazard as a source of harm. That hazard could be biological, and we mentioned that when I said that we are talking about biohazards. For example, could be chemical, radiological, physical, or other. To contrast that, we also talk about risk, and I mentioned to you earlier that risk is a combination of the likelihood of an event occurring and then the consequence of that event if that event does occur. We also mentioned that there are different kinds of risk. We talk about biorisk, which is a risk involving those biological materials that are a hazard or source of harm. So this is one of those take-home messages. If there is anything you want to remember from this slide, please remember that there’s a difference between hazard and risk. Next slide, please.  
  
So we talked about different steps in a biorisk management approach, and one of those steps was assessment, be it a risk assessment or a biorisk assessment in this case since we are talking about biological hazards that could be a cause of harm. So when we talk about biosafety risk assessments, we’re going to talk about characterizing and evaluating those safety risks. We will take in consideration agents as being those biohazards but also activities and procedures that are associated with manipulation of those agents that we might be working with. And of course we will talk about making sure we ensure safety of staff, families, community, and the environment. But we also are going to talk about biosecurity risk assessment, which again, it is really similar but \_\_\_\_\_ [00:23:04] different components that are more on intent. And you remember the difference between biosafety and biosecurity. So again, we’re going to characterize and evaluate security risk agents being one component of those risks but also threats to stealing those agents or using them for malicious purposes. We are also going to ensure that we have secured facilities so access to those facilities is not so easy. So if we step outside of biorisk assessment and we talk about process of this risk assessment, I would like to highlight that the whole concept of risk assessment is not a new concept.   
  
So I want you to take an example that we do every day of crossing a street. So if we are going to take an everyday example of crossing the street, when we are doing that, we’re going to think about identifying hazards. And how do we do that? We think about if we are going to cross the street, what can hit us? What can hurt us? What is a hazard to us? So it could be a car, could be a motorcycle, could be a bicycle, could be a truck. So once we identify those hazards, we’re going to characterize the risks and see how fast those hazards are approaching. You know, are we running across a street that does not have a crosswalk, does not have a light sign, does not have a stop sign. And once we go around through that characterization of risks, we’re going to prioritize those risks. What can be at the highest, most impact, and the closest risk to us if we were to cross that street? And then we are going to determine if those risks are acceptable to us and the measures we potentially can put in place in order to cross the street. Are we going to cross the street and run across? Are we going to move maybe somewhere where there is a crosswalk and there is a light signal or a stop sign in order to feel that the risk of crossing that street is acceptable to us? So just want to point out that when we talk about biorisks, please keep in mind that the concept of risk assessment is not a new concept. We are just applying it now to our laboratory environment and a biological hazard. Next slide, please.  
  
After we do an assessment, as I mentioned before, and we are talking about next mitigation plans or mitigation strategies to deal with mitigating these biorisks in a concept of laboratory biosafety. So a lot of times we will talk about biosafety practices and procedures, and we’ll talk about these controls of biosafety. And so some of those are listed here for you. So a lot of times we will talk about engineering controls. These are really a physical structure. It could be your physical structure of a laboratory but could be also equipment that you are using in a laboratory environment in order to conduct your work in a safe way and reduce or prevent exposure to hazards. We also a lot of times will talk about administrative controls, and those can be different ones. We have a few examples here. It could be your policies, your standards, your guidelines that are used to control some of the risks. Some of the administrative controls could be also the policies you have in place for following standard operating procedures or some type of occupational health requirements or vaccination regimens. So they would also fall under administrative. But then also we will talk about these practices and procedures that are in place and have been shown in practice to be effective in reducing risks. And last but not least, we also talk about personal protective equipment. So the reason why these fall kind of last of the controls we talk about is not because they’re any less effective, but they are that last line of defense that stands between you and the environment or materials you might be working with. So personal protective equipment are devices that are worn by the worker in a laboratory that will protect against hazards in that laboratory environment. Next slide, please.  
  
Another important concept that I would like to point out, remember I told you if you can remember anything from one of my earlier slides to remember that hazard is not the same as risk. This is one of those other ones that I would like to make sure you remember. A lot of times, we see these misconceptions when we talk in a biosafety world, and that’s the difference between biosafety levels and risk groups. A lot of times people will use biosafety levels intermittently with biosafety risk groups, and they are not the same. So I just want to make sure that you understand that biosafety levels refer to physical structure, practices, and procedures, and the combination of those will play a role in determining a safe biosafety risk level to which you could be conducting your work. Biosafety risk groups or risk groups are just one component of an overall risk assessment that will help you determine what biosafety level you need to be working on or in. So please, please remember that biosafety level does not equal risk groups. Next slide, please.  
  
In order to kind of highlight and drive home that concept that biosafety levels do not equal risk groups, let’s just quickly run through the biosafety levels. So there are four biosafety levels. And so we talk a lot about biosafety level 1 and biosafety level 2 as being lower containment, and then we talk about biosafety level 3 and biosafety level 4 as being high containment. So biosafety level 1, what do we work with in biosafety level 1? This is really like your teaching labs. So we work with well-characterized agents that are not known to consistently cause disease in immunocompetent adult humans. And they also present minimal potential hazard to laboratory personnel and the environment. We see a lot of teaching labs operate in biosafety level 1 and some basic diagnostic labs at the time. Biosafety level 2, we work with agents that are associated with human disease and will pose moderate hazard to personnel and the environment working in these labs. Keep in mind that we build on all these mitigation strategies, practices, and procedures as we go higher in biosafety levels. So everything you have in biosafety level 1 you will have in biosafety level 2, except you will have some additional strategies to mitigate moderate hazards or moderate risks due to these hazards that we encounter at the biosafety level 2. In the biosafety level 3, we work with indigenous or exotic agents that might cause serious or potentially lethal disease through the inhalation route or exposure. So these can be transmitted through aerosols. For these agents, oftentimes we do have treatments and prophylactic treatments in place. When we move to a biosafety level 4, here we talk about working with dangerous and exotic agents that cause high individual risk. They can be transmitted via aerosols and they can cause life-threatening disease, they are frequently fatal or have a high mortality rates, and oftentimes there are no vaccines or treatments for those agents. We also a lot of times talk about new emerging diseases that we don’t know much about and we don’t have a vaccine or treatment for that we will park kind of into a biosafety level 4 until we do know more about those agents and can choose which level they would go to. Next slide, please.  
  
So now to contrast that with the risk groups, if you look at the risk groups here, so risk group 1, you will see a little bit of a similar language. However, when we talk about risk groups, we are focusing on infectious agents only. When we talk about biosafety levels, we are focusing on the agents partially but also on other practices/procedures that we have in place that determine that biological safety level that we can work safely with different risk groups or different agents that belong to different risk groups. So when we talk about risk group 1, we are talking about agents that are not associated with disease in healthy adult humans. And again, there’s a lot of different discussion in the biosafety community about what does it mean to be a healthy adult, so I will not open that can of worms here. When we talk about risk group 2, we are going to talk about agents that are associated with human disease which is rarely serious and for which preventive or therapeutic interventions are often available. Risk group 3 agents are associated with serious or lethal human disease for which preventive and therapeutic interventions might be available and a lot of times are. And then risk group 4 are agents that are likely to cause serious or lethal human disease for which preventive or therapeutic interventions are not usually available. A good example to differentiate between the risk groups and biosafety levels would be SARS-CoV-2 when it comes to clinical versus research use. So SARS-CoV-2 is currently listed as a risk group 3 agent. In clinical settings and diagnostic settings, we are operating at a biosafety level 2. However, when we are doing research in a research environment and working with SARS-CoV-2, we are working at a biosafety level 3. So again, it depends. For a biosafety level, we will take into consideration the infectious agents and the risk group that that agent belongs to, but we will also take in consideration other practices and procedures as well as physical environment before determining a biosafety level for each of those infectious agents. Next slide, please.  
  
We also talk about this concept of biorisk, and obviously if we do have and look at biorisk, we will have biorisk mitigation strategies. Those will be your concept of laboratory biosecurity. And some of those are listed here for you. So we a lot of times talk about physical security, and so we want to make sure that those facilities are secure, that there’s gates or fences depending on what you are working with, that you have some type of access controls into those environments, you have some alarms in place that will notify of unauthorized access, and similar physical controls that could be in place. We also a lot of times will talk about personnel security, and this is where those roles and responsibilities comes in play. We also go through employee vetting and screening, so we want to make sure that we address that concept of insider threat that has been more and more addressed these days. And then also managing any visitors or anybody that might be escorted in those areas. We also talk about material control and accountability. This is where that inventory management is very important. You also want to make sure that you have documentation and reporting requirements in case there’s discrepancies in the inventory. And then of course accountability policies and procedures that will take that in consideration. But also keep in mind that you do want to make sure that you have some system in place that will take care of storage as well as disposal requirements. So if you are moving your materials into long-term storage or if you are permanently disposing of those materials then that is also recorded into your overall inventory management. Transport security is another one where we see a lot of questions and potential issues, and this is all your shipping policies and procedures, internal versus external, so movement on infectious materials between different laboratories, different buildings, but also shipping them or receiving outside of the institution or the actual facility. And then there are training certifications that are available out there that provide guidance on how to do this safely. And then information security as well. We are concerned about identification on sensitive information, marking and labeling of those information, as well as overall storage requirements. Next slide, please.   
  
Some of the laboratory biosecurity challenges that we see a lot is securing sometimes these dangerous biological materials can be difficult. It’s not something that’s easily visible or noticeable, so they are really hard to necessarily count and track, so we want to make sure that we are conscious of that. Usually we will work with small amounts, and they can be difficult to keep track of. They can be relatively inexpensive to produce. Those infectious materials multiply rather easy. Detection is difficult. It’s not like your chemicals that you can detect with odor or radiological materials that you can take a Geiger counter and detect. Biologicals are a little bit more difficult to detect. And also they can be found in many locations. So they are in different research and diagnostic labs. We have these culture collections and repositories. We have infectious materials that can be found in the environment, people, animals. Waste is a big one. So because of the fact that they are also easy to find and easy to access, many laboratories are not necessarily accustomed to worrying about prioritizing security and might need to intentionally increase raising security awareness among staff, not just by safety but also biosecurity is important. And so one of those great examples of, in general, raising high security awareness is an example of select agents. So for those of you that have the pleasure of working with anything that’s select agents, you know that a lot of those security measures need to be put in place. Also data security is important when it comes to personally identifiable information. So for those of you that work in diagnostic labs that has access to patient information, so that’s another good example of these. Next slide, please.  
  
I would like to turn it over to my colleague, Bill Arndt. And thank you very much.

Bill Arndt: Thanks, Natasha. I’m going to touch on a few more challenges we come across frequently as well as some best practices to hopefully address those. So the first one I’m going to talk about here is the establishment of a culture of safety and responsibility at an institution. This can be a challenge, and there’s always a baseline understanding that safety is important amongst research staff and management. Everybody believes safety is important. However, often safety may not be prioritized as much as it should be. This can be due to a number of different factors such as funding, staffing, and in a lot of cases just it’s related to complacency, the feeling that nothing is going to happen to me or the lab because we’ve been doing this work for over 20 years and we know what we’re doing. I would say if this is the case, I wonder why mouth pipetting is no longer allowed in the laboratory. Just a thought. So things do change, safety practices do change, so it’s always important to keep aware of what those new safety practices are. And when trying to establish a culture of safety and responsibility at an institution, it’s really, really important that all staff from the bench-level researchers all the way up to management and leadership have committed to prioritizing safety and defining the roles and responsibilities all staff play in the safety program. Additionally, it’s also important that all staff are in agreement that safety is important, it should be prioritized, and that all safety procedures should be followed. The safety and security procedures in place are not meant to be a hindrance to conducting your work or your research. They are intended to make sure everybody can go home safely at the end of the day. And this is why it’s important that all staff comply with the safety and security measures in place, that a mechanism exists for staff to report any near misses without the fear of retaliation, and that an effective communication plan is used to respond to any incident in a timely manner. Next slide, please.  
  
I’d also like to touch again on the importance of roles and responsibilities. This is one area that is extremely important if you want to ensure that you have a comprehensive biosafety/biosecurity/biorisk management program in place. Without defined roles and responsibilities that all staff play in the program, it will be nearly impossible for the safety program to be effective. Simply put, if the left hand does not know what the right hand is doing, how can they work together to complete whatever task you’re trying to do? So this is why one of the key things to consider when trying to improve safety at the facility is to make sure you clearly define roles and responsibilities and clearly promote that safety is important for the institution as a whole. And how do the staff members play their important roles in the program to ensure effective communication, to encourage and enable staff to ask questions, and to support a comprehensive evaluation of the program at periodic intervals as well. It’s always important to make sure that you’re constantly improving. And hopefully this will help minimize the likelihood that staff will unknowingly violate any established safety and security practices and procedures that are in place. Next slide, please.  
  
Okay, another challenge that often arises within safety and security programs is the concept between risk perception and risk tolerance. This is somewhat related to what I just talked about related to establishing a culture of safety. It is common nature for people to see things differently. We are not all the same, so we should not always expect people to see things the same way we do. This is especially important when it comes to risk. Determining risk is a subjective process, and people perceive risk differently. A risk that may be acceptable to one person may not be acceptable to another. This is very common, and we see this every day. For example, maybe this is the person driving 20 miles over the speed limit versus a person that only feels safe driving at the speed limit. And within the infectious disease research community, we see people who will jump at the opportunity to work in a high-containment lab like as BSL-3 or BSL-4 with some of the most dangerous agents in the world. However, there are other people who only feel comfortable working at biosafety level 2 with something that will not even make them sick. This is all determined by what a person considers to be an acceptable risk versus an unacceptable risk. And the reason this is an important concept to grasp is that all staff from the bench level all the way up to leadership should have a basic understanding of these concepts because what may be a risky procedure for another person may not be a risky procedure for another. And in many cases, it’s these perceptions of risk that can drive prioritization of funding. For example, this would be where research staff may request a new piece of safety equipment such as a BSE or an autoclave or something along those lines, and leadership does not necessarily see it as a priority and purchase the equipment. But that could just solely be related to a funding issue or it could be related to the fact that the people making the decisions on what to purchase may not fully understand the risks that are present or the importance of that equipment and why it’s needed. And this is where communication and really explaining what is trying to be accomplished is important for everyone to understand. Next slide, please.  
  
And that takes me into the last thing I kind of want to touch on quickly is communication. Communication is vital. It’s a team effort. If one member does not know what the other member is doing, it can use a huge amount of confusion. So that’s why it’s vital that you have a great communication network, you rely on multiple different communication strategies such as web based versus verbal communication, nonverbal communication. And it’s always important to also ensure that you have great communication externally as well in the event, for example, you need EMS or fire or police to show up. You want to make sure you know who to call in an emergency situation, and you want to make sure they know where to go as well. Next slide, please.  
  
Okay, so next steps and action items. So now I want to tackle the big question that many of you may have. How does all this information that you’ve been given in this webinar and in the first webinar, how does it apply to me and my institution? What can we do as an institution to improve our biosafety and biosecurity practices? Based on the information ORD has been able to gather up to this point related to the data calls, the program-assisted visits that have been conducted, and questions received from the field, there are two main topic areas that we would like facilities to focus on to try to improve some of the basic biosafety and biosecurity practices. And those two topics include laboratory signage and the use of biological safety cabinets. Next slide, please.  
  
This first initiative or activity that we would like to see the facilities do would be to review the current laboratory signage in place at the facility. So it is recommended that all biomedical research laboratories review their local laboratory safety manuals to verify the information provided is accurate and sufficient to enable staff to develop and post the appropriate laboratory signage on all the doors. And one area to specifically concentrate on would be the biohazard signage. This has been an issue in many places. There is specific information that is recommended to be included on biohazard signage such as the hazards present, the biosafety level, the PPE requirements for entry, and these are based on best practices and guidance documents such as the BNBL, you know, the biosafety and microbiological and biomedical laboratories that the CDC and NIH publishes, as well as the ORD recently released a biohazard signage template that is included in the biosafety toolkit that was mentioned a number of times. So these would be a great reference for the safety personnel who are responsible for reviewing and modifying the existing signage practices and procedures at the facility. Based on the facility’s updated signage practices and procedures, a survey should be conducted of all the biomedical research laboratories to determine if those labs are in use and to ensure that the hazards, the PPE, and all the information required to be on the biohazard signs is accurate based on the activities that are occurring in those spaces. Next slide, please.  
  
Some additional activities that could be included in this area for this initiative would be to ensure that a hazard signage SOP is created at the facility and that it includes procedures for how to address biological hazards, chemical hazards, radiological hazards, and physical hazards such as lasers and sounds which are quite common in many research laboratories. Additionally, PIs and research safety should review the hazards present in the labs and create or modify any laboratory signs that may be needed based on the information that is more up to date and accurate. And those signage should be posted on all laboratory doors so staff are accurately informed of the hazards present in the laboratory and the requirements for entering that space. And lastly, it’s important to make sure a requirement is set, be it in an institutional policy or in the procedure, to review those signs on a regular basis to make sure that information stays accurate. Next slide, please.  
  
All right. The second initiative relates to the use of biological safety cabinets. It’s very common for biological safety cabinets to not be used correctly, and in many cases, the SOPs in place at the facility fail to address certain issues that come up frequently when using an SOP such as startup and shutdown or decontamination and such. And so similar to the previous initiative I just touched on, it is recommended that a review of the biomedical research laboratory BSC SOP and training materials be conducted to identify any gaps in existing procedures and the training materials to address some of the common issues that are frequently seen with cabinets such as overcrowding, working from clean to dirty, decontamination, and other topics such as that. The institution should develop and modify the biosafety cabinet procedures and any associated training materials to address the gaps that were identified. And similarly, it would also be good for the facility to survey any existing BSCs at the facility to ensure that they are being actively used or if they’re inactive, they’re certified or not certified, and to keep a record such as that to help with operations and maintenance of the laboratory. Next slide, please.  
  
All right. And then the other activities associated with this would be to create and modify your local BSC operations and maintenance SOP to include various procedures such as proper usage, decon, certification, repairs; develop and track BSC training for current and new staff to ensure they are properly using the BSCs; and to establish a local requirement to regularly review proper BSC usage, training, certification, maintenance, and inspections. Next slide, please.  
  
Thank you. John, I will turn it back over to you.

John Balog: Okay, thanks Bill. Here’s the references, and the materials will be available. Next slide.   
  
Here’s, again, the email box. Please review, and we look forward to your input on this and your communications. Next slide.  
  
Some references for you. Next slide.  
  
And again, here’s the archive site where you can view this. Thank you all for this. And at this point, we’ll look at the question box. And I saw a question in there to make the toolkit available, and the link has been provided. And let’s see. I’m not seeing any other questions. So I’ll turn it over to the panelists. Tony, Alex, any comments you’d like to make? Any questions? Any points? Jim, Karen? Okay, hearing none, then I look forward to our next session. Again, please complete the survey, and I’m really interested in suggestions for content on the toolkit as well as for our next webinar. Now, we’re looking to be more focused in our next webinar on something that is actually happening. One of the things we’ve discussed is perhaps IBC SRS and safety officer interactions and maybe have some more pointed information to provide, some suggestions on best practices. And with that, I’ll ask Parker if he has any closing comments.

Parker Cunnean: No, I think that’s mostly it. As John mentioned, we do appreciate if you fill out that survey. I did see a few folks didn’t get a copy of the slides. I will send those out to everyone again directly for those who didn’t receive it and share the webinar archive link as well. But with that, I want to thank the panelists and thank all of the guests for attending as well.