

## CONCURRENT SESSION 6 – RADIOLOGICAL RESEARCH STUDIES SESSION

### Questions and Answers

- **Argonne National Laboratory:** Question for Jose: When you applied CsCl, how long until you performed the air blown decontamination? As you know, it is very hygroscopic and will soak water humidity from the air and dissolve itself, rendering it capable of soaking into skin. Have you considered this?
  - **Jose Mattei-Sosa, U.S. Army:** It was about half an hour. I was not so much worried about the atmospheric water as the grease of the pig skin, since it was refrigerated and it was getting warm. I was more worried about the Cesium getting more attached because of the grease than the actual skin. However, it was able to get off, even with the grease.
- **(2 questions combined for Michael Kaminski) Anonymous:** Question for Michael: Is this tool available for everyone, or just federal employees? **and Minnesota Department of Agriculture:** Question for Michael: Has this tool been shared with the REP section of FEMA/FEMA Regions? e.g., Minnesota is in FEMA Region 5. I am not sure if this tool is known of and some states might participate as Ingestion Planning Outreach required. Could this be a possible partner idea?
  - **Michael Kaminski, Argonne National Laboratory:** We are making the tool available to states, locals, and feds. The way to do that is to email me your request. Then we must pass those requests through DHS; usually we can get you access within a day. We have shared it with several FEMA employees including Mr. Garcia in the national office. We have briefed a number of FEMA state folks, including Region 5, through their Chicago office. So, we are doing briefings upon request. We are trying to get the word out, so if you are interested, please email me and we will work it out.
- **Argonne National Laboratory:** Question for Jeremy: Excellent work. Are you considering dry wipe decontamination also? Last year, our colleagues at the University of Hertfordshire, Professor Chilcott, presented the efficacy of dry wiping over wet decontamination and recommended dry wiping prior to wet decontamination.
  - **Jeremy Slagley, Air Force Institute of Technology:** Right now, we are just in the throes of developing different methods to assess decontamination efficacy. We are not ruling out dry wipes. So far, we have done radiological as well as biological and chemical stuff, using just what we could put together for patient decontamination, working with medics. So right now, we are looking at just water, however we are open to lots of other decontamination methods as we move forward. Good idea.
- **U.S. EPA:** Question for Sang Don: In 10 years of following Fukushima – you posed many of recommendations and observations towards the end – do you think these all equally apply to the situation in the United States, given our culture and rules and regulations, the way our inter-agency operates? It is a broad question, but what is your perspective on how those lessons learned from Fukushima apply to our situation in the United States?
  - **Sang Don Lee, U.S. EPA:** Thanks for the question. I have more recommendations, but I reduced it, I think, to those that are a higher priority to the United States. The presentation was about an hour, but I had to cut it down to 15 minutes. For the observations, you know the United States preparation is ahead compared to other countries, but some areas we still must work on. One thing we are mainly missing is the potential impact of natural areas. In Japan, they cleaned

up the full-scale remediation only for the inhabited area; they have not completed remediation in the natural area, including mostly the forested and mountain areas. The question is this: if you cannot remediate the contaminated forest, then how would you manage it? Now, we are facing the global scale – the problem of climate change. Some of the United States, the regions, have wildfires as their main issue; some areas have a lot of hurricanes and flooding and different types of natural disasters due to climate change. Frequency and magnitude are getting bigger. We are preparing for the response, but in the long run, when our inhabited area is ready to go back, and we can live, surrounding natural area is still contaminated, and we are going to have continuous threats from the climate-related disasters. It is still developing – we are trying to understand how to manage the natural disasters – but it is time also to link to the potential disasters like the nuclear power plant – how are we going to actually prepare for the contaminated natural area with natural disasters?

- **Defence Research and Development Canada:** Question for Jose: Can you comment on post decontamination capturing and managing the radioactive particulates on skin coupons, since the method is using vacuum (e.g., 20 psi) for decontamination efficiency. Cross contamination might be a concern.
  - **Jose Mattei-Sosa, U.S. Army:** For the full scale, I have it really thought out, I am just wanting to get funding to do it. Basically, how I envision the whole thing is that a soldier/national guardsman would decontaminate the person and it would all go into a tube, like an industrial dust collector or something like that. So, all the particulates would basically go into a 55-gallon drum and the vacuumed side of the air would go to a 0.2 micron filter. That is what would capture it and also filter out the air at the same time.
- **U.S. Nuclear Regulatory Commission:** Question for Michael: After the Fukushima accident, Japan developed 11 broad decontamination plans for each township and 100's of site-specific surveys and plans for individual properties. Do you see your tool as a policy tool, a logistics tool, or both?
  - **Michael Kaminski, Argonne National Laboratory:** We designed it envisioning it as a logistics tool. Then, as we started to move forward into development, we saw that it can have very successful use as a planning tool – on planning committees – if that is what they mean by policy, then I think yes, the answer is both. We are running scenarios right now and hypothetical situations with those that we are doing the briefings with – and that is what we are looking for in terms of feedback – given the tool's capabilities, how do you see that it can be used in your region or in your planning sessions?
- **Anonymous:** Question for Jeremy: You discussed some possible recommendations for clothing removal (i.e., use wetting agent first). Are there any plans to test these using your experimental setup?
  - **Jeremy Slagley, Air Force Institute of Technology:** As Jose was saying, when the funding comes, yes. Right now, we are in the midst of biologicals. However, we are definitely looking at not just the wetting agent, but also a fixant. So, as we move forward from a biological surrogate on to live-agent stuff – which should happen in this next fiscal year – then we are looking at efficacy of just some sort of a fixant to keep it stuck while we remove clothing for a patient or whoever else. Various ideas pop up but again – maybe it can be a host of possible ones that you could get from a local hardware store or beauty supply or something that would work well enough. It does not have to be this exact furniture polish or whatever. As long as it is something that sticks the particles down so we can hold them as we are disposing of it, that might work. That is something that we are considering looking at as one of the possibilities – just hosing it down and then creating a low-level radioactive waste that we have must contain.

- **U.S. Nuclear Regulatory Commission:** Question for Sang Don: In your opinion, what are the most significant needs for widespread contamination recovery planning in the United States? Are these challenges we should be addressing now or are they better addressed post-accident?
    - **Sang Don Lee, U.S. EPA:** To me, the number one thing for our nation's preparation is holistic preparation. We have the pieces of development and improvement; now it is time to holistically look at – and then prepare for – this really large-scale of instant response. Most of the recommendations that I proposed during my presentation are for preparation (before the incident). However, some of the items I think should go as we respond, such as critical infrastructure cleanup. It is better to think ahead, but with the incident, we probably do not know which critical infrastructures will be impacted. So, as we respond, we have to make a quick decision of how to do that or which one to clean up first. Second thing is something like stakeholder engagement for remediation. This is more of the social aspect or community recovery as a whole. It is very difficult to prepare what to do up front before the incident because each community could have different impacts, different population characteristics, and different economic status. Each community is different. It is important before, when we are preparing, that we open our eyes and ears to listen to them, but after the incident, it is very important to quickly engage with them and try to understand what they need, then try to make a decision at the same time we are responding to the incident.
  - **Anonymous:** Question for Jose: What are your next steps? Do you plan to test other materials or scale up?
    - **Jose Mattei-Sosa, U.S. Army:** I would love to scale up. However, as with everything, funding comes in. We have worked on some avenues within the U.S. Army, but we are still looking for funding to try to scale up and do that type of fun stuff.
  - **Anonymous:** Question for Michael: What is the schedule for input and/or updates to the information (i.e., technology, economic info) in the tool? Continuously? Annually?
    - **Michael Kaminski, Argonne National Laboratory:** Our plan is – up through the development period (which is going to end in September 2022) – we will have the ability to perform revisions on any of the data that is actually included in that package. We are negotiating right now on how the tool will be hosted. One option is a live hosting where we will have the ability through the remaining performance period (and it could be year-by-year) to make revisions in the tool. Another is deployment of a static pack of the tool where the data would be frozen. We are not sure yet, is the quick answer. However, we are hoping that we will have the support to make any minor or major corrections as we move forward through the years. We will see.
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