

CONCURRENT SESSION 1 – BIOLOGICAL AGENT DECONTAMINATION

Questions and Answers

- **DEVCOM CBC:** Question for Corey: Have you considered DOE to reduce the number of experiments?
 - **Corey Collings, First Line Technology:** Certainly, that would have been beneficial to us in this process, but this has been a 3-year process and these experiments were designed by the committee with the needs of a broad range of stakeholders.
- **Anonymous:** Question for Corey: Have you tested using natural water sources which might have high natural organic matter load?
 - **Corey Collings, First Line Technology:** We have not; we would expect to see a reduction in efficacy, but it would be hard to quantify it.
- **DEVCOM CBC:** Question for Corey: Any thoughts on why malathion did not get oxidized to maloxon?
 - **Corey Collings, First Line Technology:** We use malathion as a surrogate for BX because we have extensive data with pre-existing formulation on both BX and malathion. We know that the full formulation is very effective on both of those compounds, so we use that as a baseline. We believe the case is that we do not have enough oxidant available to fully destroy the malathion, and we are also fighting solubility issues in that the malathion is extremely insoluble. We have a reduced amount of surfactant, which in the formulation, helps overcome that.
- **DEVCOM CBC:** Question for Corey: Is the formula something that has been approved by the U.S. Food and Drug Administration (FDA)?
 - **Corey Collings, First Line Technology:** No, we are still in an early pre-market stage in this project. Phase 2 is ongoing and perhaps we will be able to present those results next year. We are looking at this as a decontamination soap primarily as a physical removal and then destruction in the effluent. We are not trying to destroy contamination on the skin.
- **U.S. EPA:** Question for Corey: How much of a reduction in efficacy can be expected when working with the chemical on skin vs the wet chemistry experiments that you showed?
 - **Corey Collings, First Line Technology:** That is Phase 2 of this project and has been completed but not released yet. Please contact me directly and we can get you that information.
- **U.S. EPA:** Question for Joseph Myers: Have you looked at efficacy against partially permeated VX or other CWAs? Think of paint/sealants/plastics. Could it degrade a permeated chemical?
 - **Joseph Myers, Chemical Biological Center:** Certainly; primarily in the realm of decontamination, the quicker you can apply a decontaminate the more efficacious it will be. In cases where permeation has occurred, the decontamination formulation does have a solvent component that should extract (depending on time) then the reaction materials should go to work with decontamination.
- **U.S. EPA:** Question for Joseph Myers: Is there a point in time after application where the ClearDecon is hard to remove with water? Or does that not matter?
 - **Joseph Myers, Chemical Biological Center:** The longer that ClearDecon can be left in place, the longer it allows the reactions to take place. As the formulation itself is similar to paint, it will eventually dry, at which point it does become a little bit more difficult to rinse off with water, but we have seen up to one month and it still rinses off with a small amount of water.

- **Anonymous:** Question for Joseph Wood: You mentioned that you had to construct your own UVC device to do the lab testing. Has the market changed? Do you expect this to be "off-the-shelf" ready soon?
 - **Joseph Wood, U.S. EPA:** I do not think so; when we built the LED lamp we use, that was around three years ago, I think there is more LED/UVC/off-the-shelf technologies out there that are probably more geared toward disinfection. To get to the bacterial spores like anthrax requires a much larger dose. There may be stuff off-the-shelf out there, but I doubt it.
 - **Siena College:** Question for Joseph Wood: Was the distance between the LEDs that you chose the closest that could be achieved due to the physical size of the diodes?
 - **Joseph Wood, U.S. EPA:** Good question. We worked with an engineering company to design, in cooperation with the LED manufacturer, the engineering team suggested the design looking at things like cost and power output of the lamp itself. The LED fabricator and the engineering team did some modeling of the UVC intensity as a function of distance from the LED bulb, so the design is based on that work.
 - **U.S. EPA:** Question for Ehsan: Is forced germination prior to chemical lysis worth the effort/cost? Seems efficacy was not improved by attempting to force germination.
 - **Ehsan Gazi, Defence Science and Technology Laboratory:** Germination, the way we applied it, was for 24 hours, and we got ~3log germination then applied the decontaminant. We found that the net benefits of that process were less efficient than just applying the decontaminant logistically and efficaciously. The main reason for that was because the germination alanine is oxidized by the decontaminant itself. That resulted in a loss of efficacy and an increase in volume. I think germination could have a benefit in other combinations. If germination is used in a completely different way of inactivated spores, not easily oxidized, it may be easily activated. There is a small logistical advantage of actually employing germination.
 - **Anonymous:** Question for Ehsan: Were the impacts of rainfall part of your outdoor test?
 - **Ehsan Gazi, Defence Science and Technology Laboratory:** Yes, I actually did design experiments to try to minimize the interaction between our surfaces contaminated and the rate of precipitation. We aim to have canopies that cover these treated coupons to protect them from the rain. The canopies failed and we did have rainfall. When we did the recovery, we found that the rainfall did not significantly affect the number of spores on these surfaces compared to our population controls in the laboratory. We believe based on that data that the spores, when they were dried on the surface, were very well attached, and the precipitation that we had during the trial did not affect those spores.
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