

From: Darlene Cowart [REDACTED]  
To: michellepronto [REDACTED]  
Cc:  
Subject: RE: Peanut Corp. Kill Study

Sent: Mon 2/4/2008 1:03 PM

From: Michelle Pronto [REDACTED]  
Sent: Friday, January 25, 2008 5:20 PM  
To: Darlene Cowart; Lisa Grow; Wil Parker; Mike Jackson; Stephanie Fletcher  
Subject: Peanut Corp. Kill Study

Hi All,

FYI. Mr. Parker and I had discussion with Danny Kilgore today about a kill study on his roaster. We discussed putting boxes of peanuts through the roaster and checking APC, browning and lethality of known amount of microorganisms.

While roaster's ability to produce microorganism lethality is essential for equipment validation, one question remains, especially in real world setting of food processing plant. Should pathogens be introduced into the system during validation?

As an alternative to inoculating with pathogens, you can purchase biological indicators (BI). These biological indicators are used to determine the effectiveness of sterilization and come in many convenient forms. I have purchased spore strips for both dry heat and steam sterilization and have them in-house already. They are packaged in glassine pouches, which provide protection during transport post-exposure.

We know from literature that most *Salmonella* serotypes are killed at 60°C (140°F) after 2-6 minutes exposure or at 70°C after just 1 minute. The use of BI spore strips of *Bacillus atrophaeus*, a highly resistant microorganism used for dry heat sterilization verification with a D-value of 1.4 minutes at 160°C (320°F), should be more heat resistant and an acceptable alternative to inoculation with *Salmonella*. What do you think?

On Monday, I'm starting a lab study using oven at 3 temperatures of 295, 300 and 310°F with duplicate BI spore strips exposed to heat for varying times of 3, 6, 9, 12, 15 and 18 minutes. This should provide background data about the strips themselves. The strips have a certified population of  $10^6$  and we should be able to estimate survival/kill window after 7-day incubation is completed. From this data, we should be able to propose a kill study protocol for Peanut Corp.

Another lab trial study would have to be performed to check blanching temperature (175°F) effectiveness on BI strip. I suspect we would not be able to use them at that temperature. Also, the humidity levels in the roaster may affect the D-value and should be investigated.

If BI strips work and there is no question about their validity, then Stephanie could transport the strips to plant, assist in their exposure, transport back to lab and start incubation. I could also go down, if the company didn't mind the travel costs.

Michelle