

Appendix 11
Log Kill Rate of Surrogate Organisms within Daschle Suite Fumigation

APPENDIX 11
Hart Building - Daschle Suites Fumigation
Preliminary Spore Dosimeter - Qualitative Data Trend Analysis (12/08/2001)

Daschle Room	Floor	Steri-Chart	Bs	Bst	Bc
120 (Cube 20)	6	-6 kill	-6 kill	-5 kill	
Mail Room	6	-6 kill	-6 kill	-5 kill	-6 kill
159 (Cube 59 Opposite Mail Room)	6	-5 kill			
155 (Cube 64/55)	6	-5 kill			
193 (Cube 93)	6	-6 kill	-6 kill	-5 kill	
187 (Cube 00/24/87)	6	-5 kill			
112 (Cube 12/60)	6	NS	NS	NS	NS
1H1 (Hall 1)	6	-6 kill	-6 kill	-5 kill	
1C1 (Closet A)	6	-6 kill	-6 kill	-5 kill	
1C2 (Closet B)	6	-6 kill	-6 kill	-5 kill	
1C3 (Closet C)	6	-5.5 kill			
1R1 (Bathroom)	6	-6 kill	-6 kill	-5 kill	-6 kill
613 (B1)	6	-5 kill			
613 (B2)	6	-4.5 kill			
1H2 (Hall 2)	6	-6 kill	-6 kill	-5 kill	
Stairs	6	NS	NS	NS	NS
613 A	6	-4 kill			
Hallway Outside	6	-6.5 kill	-6 kill	-5 kill	-6 kill
167 (Conf A)	5	-4 kill			
103 (Conf B)	5	<-4 kill			
174 (Cube 74)	5	<-4 kill			
175 (Cube 75/42)	5	<-4 kill			
100 (Cube 00/31)	5	<-4 kill			
109 (Cube 09)	5	-4 kill			
188 (Cube 88)	5	-4 kill			
106 (Cube 06)	5	-4 kill			
187 (Cube 87)	5	<-4 kill			
166 (Cube 66)	5	-4 kill			
107 (Cube 07)	5	-4 kill			
132 (Cube 32)	5	<-4 kill			
184 (Cube 84)	5	<-4 kill			
Daschle	5	-6 kill	-6 kill	-5 kill	
Reception Floor	5	-6 kill	-6 kill	-5 kill	

Reception Plenum	5	<-4 kill			
Reception Wall	5	-4 kill			
Internal Hallway	5	-5 kill			

Notes: Bs = *Bacillus subtilis* 10⁶ spore indicator strips; Bst = *Bacillus stearothermophilus* 10⁵ spore indicator strips; Bc = *Bacillus cereus* 10⁶ spore indicator strips; NS = Not Sterile B Sterile Control strips were growth positive, indicating contamination of the spore dosimeter array (possibly due to foot traffic during the preparation for remedial action). Composite log spore killing is indicated for each sample location (ex. B6 kill = a 10⁶ sporicidal effect).

Caveats: The data presented are preliminary composite qualitative levels of sporicidal effects at the designated sample locations. These data are subject to modification as further incubation time period datasets are analyzed. Possible laboratory cross-contamination of some indicator strips is still being assessed. There is no existing statistical or theory base to connect log spore dosimeter kill to anthrax contaminant remedial efficacy.

Introduction: A high density (3,147) of spore dosimeter indicator strips were placed throughout the Daschle suites to monitor sporicidal effects during the ClO₂ fumigation. The goals of the spore dosimeter study were (1) to utilize spore dosimeter arrays to assess the distribution of ClO₂/humidity during the fumigation, (2) to assess sporicidal bioeffects at all remedial treatment locations and (3) to guide post-fumigation environmental sampling activities.

Preliminary Analysis: The spore dosimeters have provided valuable efficacy and ClO₂/humidity distribution data for the Daschle fumigation. Several first-order data trends are apparent for these preliminary data.

1. ClO₂ sporicidal bioeffects were more pervasive on the sixth floor. Sporicidal sterilizing efficacy (10⁶ Bs kill or 10⁵ Bst kill) was observed at multiple locations on the sixth floor.
2. There was apparent heterogeneity of ClO₂/humidity distribution on the sixth floor resulting in lower bioeffects (10⁵ kill levels) at Cube 59 B Opposite Mail Room, Cube 00/24/87 - Ned, Tim and Nicole, Cube 64/55 B Laura and Jennifer, 613 (B1), 613 (B2) and 613 A. **These areas should be specifically sampled for residual contamination.**
3. **The stairs connecting the sixth and fifth floor and Cube 12/60 B Elisabeth and Jane should be sampled since there were no spore dosimetry results for these areas due to foot traffic contamination of the dosimeter arrays.**
4. Lower levels of sporicidal bioeffects were observed on the fifth floor. Several zones demonstrated high to moderate sporicidal effects (Daschle office, Reception Floor and Internal Hallway). **Directed sampling of the fifth floor, which is substantially less contaminated than the sixth floor, should focus on the Internal Hallway and Reception Plenum/Walls areas.**

The spore dosimeter data appear to be consistent with the distribution of the existing positive post-remediation environmental samples. Spot contamination is coincident with sixth floor areas where diminished sporicidal bioeffects were observed. Although very high levels of sporicidal bioeffects were observed in the letter drop zone, this source site is still sample positive. The qualitative level of contamination at this site appears to have been substantially

reduced as a result of fumigation. **Intensive post-remediation air sampling and reaerosolization studies (passive and active) should be conducted in the mail room and sixth floor internal hallway areas as soon as possible.**

Based on post-fumigation environmental sampling, ClO₂ fumigation appears to have substantially reduced the widespread anthrax contamination load to a few sample positive focal sites. This treatment may also have reduced the collateral risk of external anthrax transport from the Daschle suites. Additional air sampling of the sixth and fifth floors should be performed to assess the impact of fumigation on anthrax aerosols throughout the treated zone.