PREVENTING THE SPREAD OF HANTAVIRUS EMPLOYING DUST ABATEMENT TECHNIQUES

Mary Santangelo
Code 6120
SEAP Project
August 9, 2005

HANTAVIRUS

- Identified in 1993
- Very rare, but very deadly
- Found within New World Rodents in North and South America

Cotton Rat

Deer Mouse

Marsh Rice Rat

Transmission

Places Susceptible to Virus

- Droppings
- Urine
- Saliva
- Bitten

Terrorist Tactics

Winds Can Carry Spores For Miles

Terrorists Delivery Methods

Military Base Camp

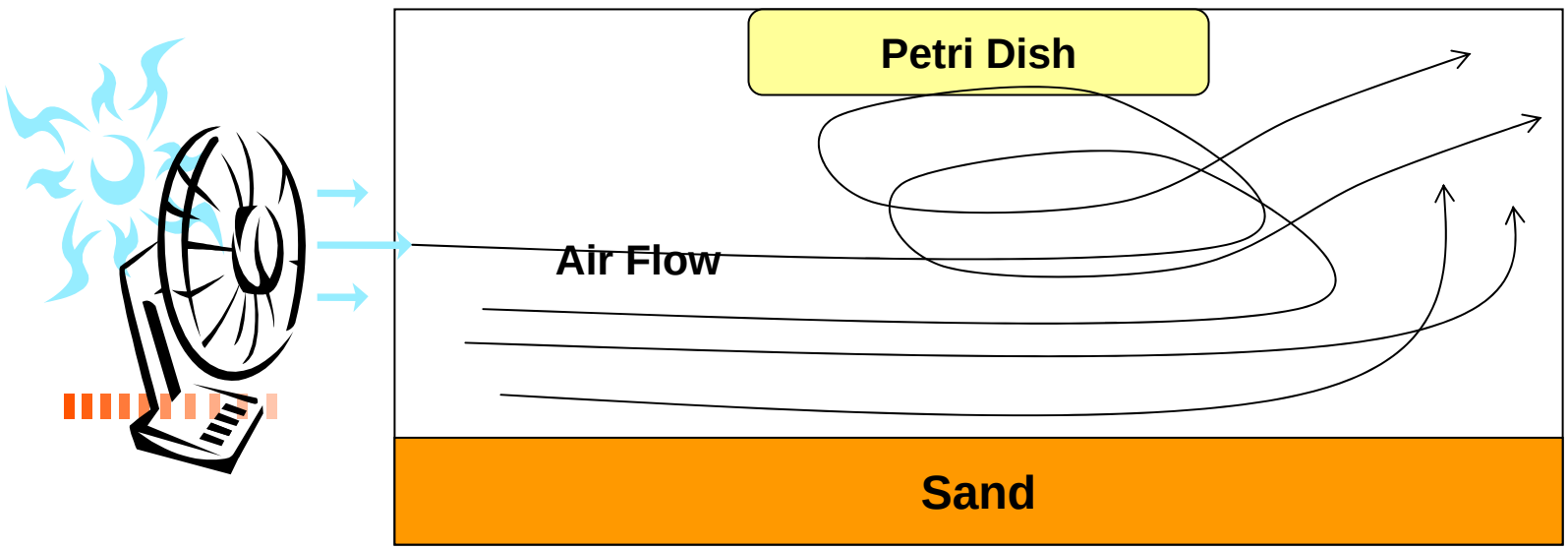
Current Solutions

- Prevent rodent- living areas
- Set up mouse traps
- Store all food in rodent-proof containers
- No known medical treatments

The Idea

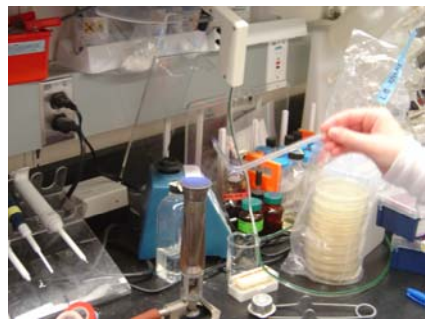
Surtac, a dust abatement product, could prevent the spread of bacteria; mainly, the hantavirus.

Experimental Design



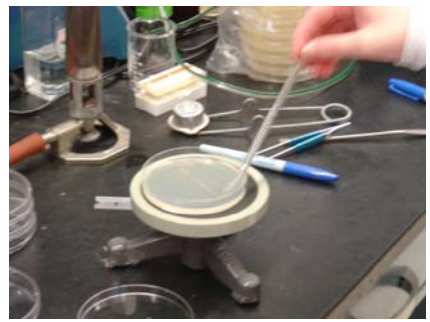
Experimental Procedure

1. Collected, dried, and sifted sand with a 0.5mm sieve



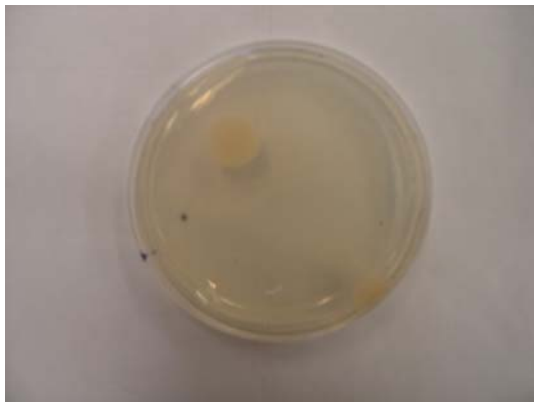
2. Prepared bacteria spores

3. Treated soil with bacteria (2.5×10^6 cfu/g of sand)

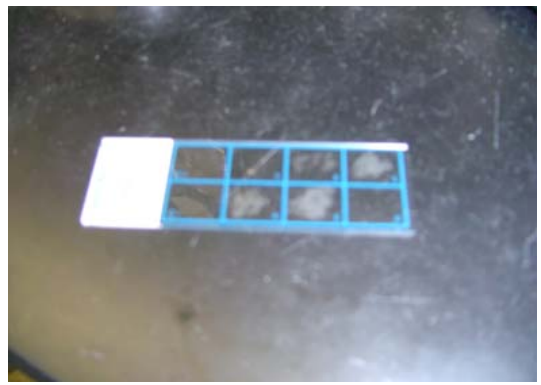


Experimental Procedure

4. Treated surfaces with Surtac™ and Soiltac™ products and induced air flow

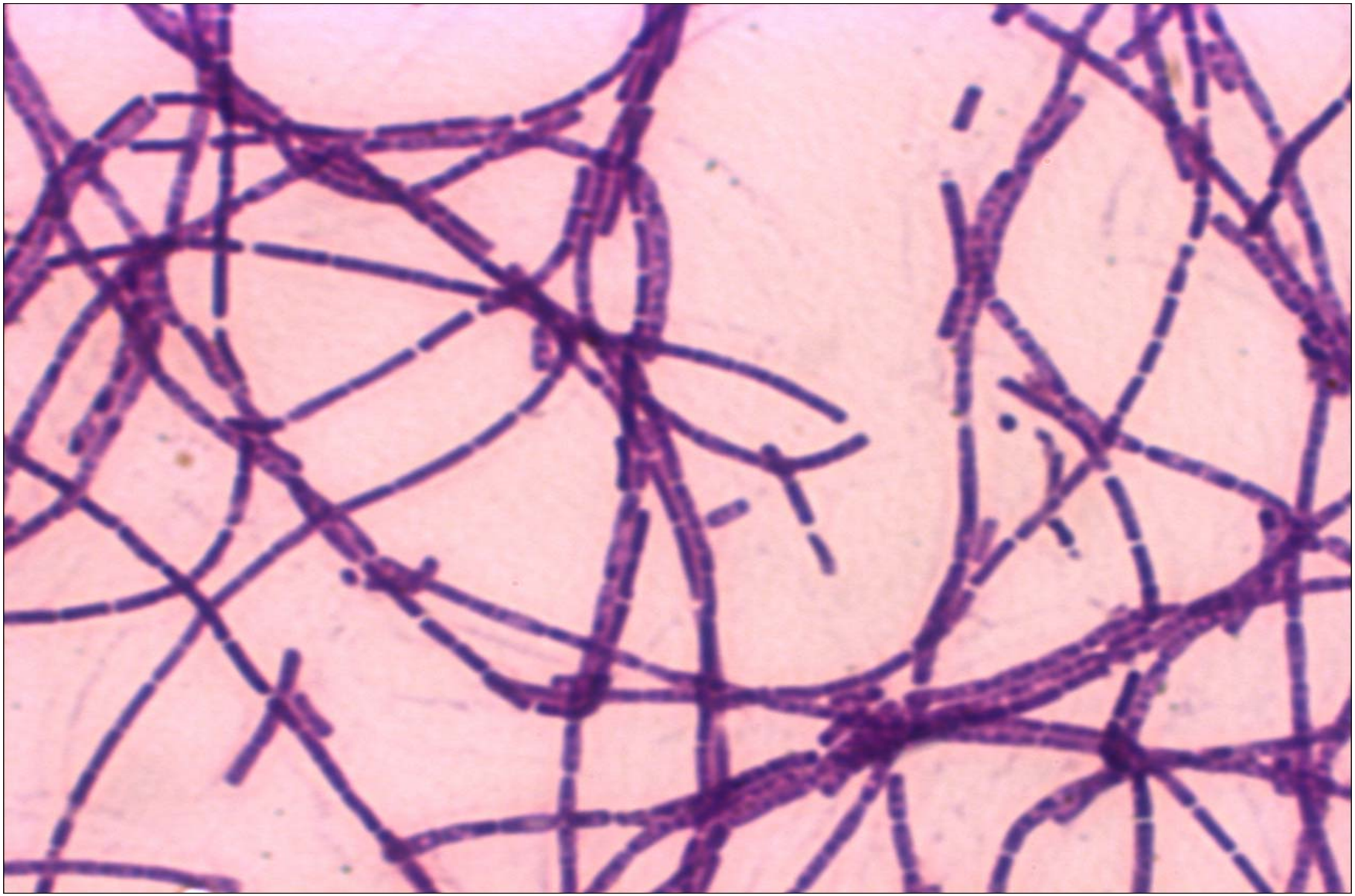


6. Incubated and counted colonies present on petri dishes



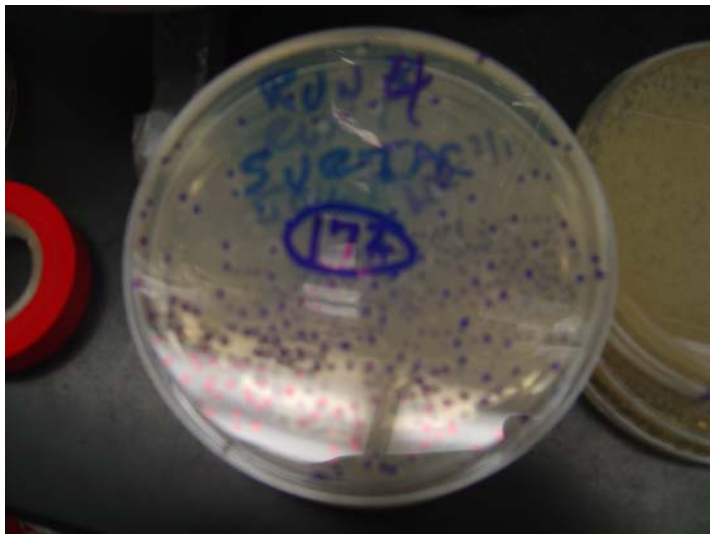
7. Performed a Gram stain

Anthrax Sterne Strain



Results

Number of Colony Forming Units (cfu) Present After Incubation Period of 24h			
	Trial 1	**Trial 2**	**% Reduction**
Surtac™	172	203	>81
Soiltac™	608	810	>29
Control	» 1000	»1000	0



Acknowledgements

- James Wynne
- Chris Lloyd
- Will Straube
- Arthur Snow
- NRL SEAP program