



Memo

To: Sal Dassaro, Jerry Raymond
From: Dag Gonzalez
Date: October 30, 2001
Subject: Research

The research we are conducting focuses on three areas: anthrax physiology, currently available systems for sanitizing and sterilizing, and practical measures that can be implemented by mail and receiving operations. Our ongoing efforts have yielded extensive information that we are sharing with our colleagues. We make no assumptions that our broad analysis, using numerous unrelated sources, will be completely factual. We have been successful drawing conclusions based on industry standards and information from reliable sources, like CDC and JAMA. The following are a few sites that we think contain some very useful information:

ANTHRAX BIOLOGY

Chin MD, James. Control of Communicable Diseases Manual, American Public Health Association, 17th ed, 2000 - www.anthrax.osd.mil/site_files/topten/apha-chin-anthrax.htm

DISINFECTION AND STERILIZATION STUDIES (O3 AND UV)

Bacterial Destruction Chart AB-115 - <http://www.uvp.com/pdf/ab-115.pdf>

Penn State University Studies - <http://www.bio.psu.edu/people/faculty/whittam/research/cure.html> -

Ozone Disinfection of Ventilation Air - <http://www.bio.psu.edu/people/faculty/whittam/research/two.htm>

Filtration of Microorganisms - <http://www.bio.psu.edu/people/faculty/whittam/research/three.htm>

Bactericidal Effects of Airborne Ozone - <http://www.bio.psu.edu/people/faculty/whittam/research/one.htm>

Gregoriades Ph.D., Operation of a Typical De-Germinator in Time and Energy to Inactivate or Destroy 90%+ Bacteria, Queens College (New York) - www.purenatural.com/dguv.html

Ricci, Mark. "How Ultraviolet Light Disinfects" - <http://users.erols.com/markricci/newpage1.htm>

INSTITUTIONAL STUDIES

Rajan MD., TV *Anthrax as a Biological Weapon*, American Medical Association, May 12, 1999, vol 291, No. 18.

CDC Guidelines for State Health Departments, U.S. Army, Public Health Training Network, CDC, Food and Drug Administration, Satellite broadcast, September 21-23, 1999. Revised October 14, 2001.

Biosafety in the Microbiology lab - www.cdc.gov/od/ohs

Guidelines for the Surveillance and Control of Anthrax in Humans and Animals www.who.int/emc-documents/zoonoses/whoemczi986c.html

CNN Interactive - <http://www.cnn.com/interactive/health/0110/anthrax/frameset.exclude.html>

ATF, Suspect Letter and Package Indicators - <http://www.atf.treas.gov/explarson/information/indic.htm>

Anthrax in Humans and Animals - www.who.int/emc-documents/zoonoses/whoemczi986c.html

**ULTRAVIOLET ENERGY LEVELS AT 254 NANOMETER WAVELENGTH REQUIRED FOR
99.9% DESTRUCTION OF THE FOLLOWING MICROORGANISMS**

UV ENERGY IN MICROWATT-SECONDS PER SQUARE CENTIMETER

BACTERIA

PSEUDOMONAS AERUGINOSA (LABORATORY STRAIN) 3900

AGROBACTERIUM TUMAFACIENS 8500

PSEUDOMONAS AERUGINOSA (ENVIRONMENTAL STRAIN) 10500

BACILLUS ANTHRACCIS 8700

RHODOSPERILLIUM RUBRUM 6200

BACILLUS MEGATERIUM (VEGETATIVE) 2500

SALMONELLA ENTERITIDIS 7600

BACILLUS MEGATERIUM (SPORES) 52000

SALMONELLA PARATYPHI (ENTERIC FEVER) 6100

BACILLUS SUBTILIS (VEGETATIVE) 11000

SALMONELLA TYPHIMURIUM 15200

BACILLUS SUBTILIS (SPORES) 58000

SALMONELLA TYPHOSA (TYPHOID FEVER) 6000

CLOSTRIDIUM TETARI 22000

SHIGELLA DYSENTERIAE (DYSENTERY) 4200

CORYNEBACTERIUM 6500

SHIGELLA FLEXNERI (DYSENTERY) 3400

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ESCHERICHIA COLI 7000

STAPHYLOCOCCUS EPIDERMIDIS 5800

LEGIONELLA BOZEMANII 3500

STAPHYLOCOCCUS AUREUS 7000

LEGIONELLA DUMOFFII 5500

STREPTOCOCCUS FAECALIS 10000

LEGIONELLA GORMANII 4900

VIRUSES

LEGIONELLA MICDADEI 3100

BACTERIOPHAGE (E.COLI.) 6600

LEGIONELLA PNEUMOPHILIA 3800

HEPATITIS VIRUS 8000

LEPTOSPERA INTERROGANS (INFECTIOUS JAUNDICE) 6000

INFLUENZA VIRUS 6600

MYCOBACTERIUM TUBERCULOSIS 10000

POLIOVIRUS 21000

PROTEUS VULGARIS 6600