FACT SHEET

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Deseret Test Center

Blue Tango

Shortly after President Kennedy's inauguration in 1961, the Secretary of Defense, Robert McNamara, directed that a total review of the U.S. military be undertaken. The study consisted of 150 separate projects. The chemical and biological warfare review was known as Project 112. As part of the Project 112 review, the Joint Chiefs of Staff convened a working committee that recommended a research, testing, and development program for chemical and biological weapons. To oversee this program, the Deseret Test Center was established at Fort Douglas, Utah, in 1962. Both land-based and ship-based tests were conducted during the period 1962 – 1973. The Deseret Test Center closed in 1973.

The purposes of the Blue Tango test were to determine the decay rates of *Serratia marcescens* and *Escherichia coli* aerosols when released at ground level into a tropical rain forest environment, and when released from above the canopy of a tropical rain forest. The test was also designed to evaluate environmental factors affecting decay of the *Serratia marcescens* and *Escherichia coli* microorganisms.

In addition to *Serratia marcescens* and *Escherichia coli*, each trial also consisted of the biological simulant *Bacillus globigii* and fluorescent particles (FP) for tracking biological materials.

Blue Tango consisted of 20 trials with aerosol release below the canopy and 20 trials with aerosol release above the canopy. Each group of 20 trials comprised 10 trials with *Bacillus globigii* and *Serratia marcescens* and 10 trials with *Bacillus globigii* and *Escherichia coli*.

Dissemination in all trials was from E2-type nozzles with suitable pressurizing equipment. Above canopy releases were made from a 32-meter tower using equipment and procedures similar to ground-release trials.

Blue Tango was conducted in a rain forest located on the south side of Stainback Road, approximately four miles east of Kulani Honor Camp on the Island of Hawaii between January 18 and March 1, 1968.

Test Name	Blue Tango (DTC Test 67-6)
Testing Organization	US Army Deseret Test Center
Test Dates	January 18 – March 1, 1968
Test Location	Island of Hawaii
Test Operations	To determine the decay rates of *Serratia marcescens a*nd *Escherichia coli* aerosols when released at ground level into a tropical rain forest environment, and when released from above the canopy of a tropical rain forest. To evaluate environmental factors affecting the decay of *Serratia marcescens* and *Escherichia coli*.
Participating Services	US Army, US Air Force, and Deseret Test Center personnel
Units and Ships Involved	Not identified
Dissemination Procedures	Dissemination in all trials was from E2-type nozzles with suitable pressurizing equipment. Above canopy releases were made from a 32-meter tower using equipment and procedures similar to ground-release trials.
Agents, Simulants, Tracers	*Bacillus globigii* *Serratia marcescens* *Escherichia coli* Fluorescent particles (FP)
Ancillary Testing	Not identified
Decontamination	Not identified
Potential Health Risks Associated with Agents, Simulants, Tracers	*Bacillus globigii* Now considered to be *Bacillus subtilis var. niger,* a close relative of *Bacillus subtilis*, this bacterial species was used as a simulant and considered harmless to healthy individuals. *Bacillus subtilis*

	and similar *Bacillus* species are common in the environment, and are uncommon causes of disease. They have been associated with acute infections of the ear, meninges (brain lining), urinary tract, lung, heart valve, bloodstream, and other body sites, but always or nearly always in individuals whose health has already been compromised. Long-term or late-developing health effects would be very unlikely (except perhaps as a complication of the acute infection).(Sources: Tuazon CU, *Other Bacillus Species* (chap. 197), in Principles and Practice of Infectious Diseases, 5th edition (vol. 2), ed., Mandell GL, Bennett JE, Dolin R, Churchill Livingstone, Philadelphia, 2000, p. 2220-6; US Environmental Protection Agency, *Bacillus subtilis* Final Risk Assessment, February 1997, available at http://www.epa.gov as of October 4, 2002.) *Serratia marcescens* This bacterial species can cause acute infections of the urinary tract, lung, bloodstream, and other body sites. These infections commonly occur in individuals whose health has already been compromised, and often in patients who are already hospitalized. Long-term or late-developing health effects would be very unlikely. (Source: Eisenstein, Barry I., Zaleznik, Dori F., Enterobacteriaceae (chap. 206), in *Principles and Practice of Infectious Diseases*, 5th edition (vol. 2), ed., Mandell GL, Bennett JE, Dolin R, Churchill Livingstone, Philadelphia, 2000, p. 2303.) *Escherichia coli*, or *E. Coli* This bacterial species is a common inhabitant of the digestive tract but can also cause acute infection, especially when it gains access to other body sites, like the urinary tract, lung, and bloodstream. Long-term or late-developing health effects of E. coli infection would be unlikely. (Source: Eisenstein, Barry I., Zaleznik, Dori F., Enterobacteriaceae (chap. 206), in *Principles and Practice of Infectious Diseases*, 5th edition

	(vol. 2), ed., Mandell GL, Bennett JE, Dolin R, Churchill Livingstone, Philadelphia, 2000, p. 2299-301.) Fluorescent particles (FP) This compound was aerosolized as a tracer material for the dispersion of biological warfare agents because it had similar properties. There has been little scientific study on the toxicity of this compound when inhaled. A National Research Council (NRC) committee focused on the cadmium component as potentially most toxic. While higher concentrations and more prolonged exposures to cadmium are associated with the development of lung cancer, the concentrations and durations of exposure in the Army's tests were substantially lower. The NRC committee concluded that the risk of adverse health effects to populations in the area was low. (Sources: National Research Council [National Academies], Toxicologic Assessment of the Army's Zinc Cadmium Sulfide Dispersion Tests, and Toxicologic Assessment of the Army's Zinc Cadmium Sulfide Dispersion Tests: Answers to Commonly Asked Questions, National Academy Press, Washington DC, 1997, both available at http://www.nap.edu [as of October 1, 2002]).