



FACT SHEET

Office of the
Assistant Secretary of Defense (Health Affairs)
Deployment Health Support Directorate

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Deseret Test Center Project SHAD

Copper Head (Update)

Project Shipboard Hazard and Defense (SHAD) was part of the joint service chemical and biological warfare test program conducted during the 1960s. Project SHAD encompassed tests designed to identify US warships' and ashore installations' vulnerabilities to attacks with chemical or biological warfare agents and to develop procedures to respond to such attacks while maintaining a war-fighting capability.

The primary purposes of Copper Head were to determine the percentage of aerosol penetration (and its relation to particle size) into an operational ship under three readiness conditions in a frigid environment; and, to compare biological cloud travel in a frigid environment with predicted cloud travel based on diffusion models for prevailing conditions.

Secondary objectives of the test were to determine, in a frigid, marine environment:

- a. if a ship's passage through biological aerosols generated by a current line-source, aerial spray-tank weapon system resulted in contamination of exterior and interior surfaces of the ship;
- b. if a betapropiolactone-spray system could be employed under operational conditions to decontaminate an interior compartment of a ship after exposure to a biological aerosol; and,
- c. the operational feasibility of an installed exterior deck-wash-down system in a frigid, marine environment.

The Department of Defense (DoD) is providing this information, at the request of the Department of Veterans Affairs (VA), to assist the VA in providing healthcare services to qualified veterans and to assist veterans in establishing service connection for disability claims. The Deployment Health Support Directorate (DHSD) collected this information from multiple sources and requested that the military services declassify it to allow its public distribution. The VA accepts this information provided on location, dates, units and/or ships, and substances involved in this exercise, which DHSD extracted from classified DoD records, and will provide it to individual veterans as necessary, but the VA cannot verify its accuracy.

Additionally, the test was conducted to obtain information on the performance of an Aero 14B spray tank jet aircraft weapon system disseminating *Bacillus globigii* (BG) over the open sea in a frigid, marine environment.

Ten trials were conducted during January and February 1965. For each trial, the biological tracer BG was disseminated from an Aero 14B spray tank mounted on an A-4 aircraft. A contractor C-47 aircraft attempted congruent releases of fluorescent particles (FP) just after the BG release.

The target ship for the test was the USS *Power* (DD 839). Copper Head was conducted in the Atlantic Ocean, off the coast of Newfoundland, Canada, in international waters from January 24 to February 25, 1965. The base of operations was the US Naval Station, Argentia, Newfoundland. Marine and contractor aircraft operated from Ernest Harmon Air Force Base, Newfoundland.

Following publication of this fact sheet in January 2002, we received input from veterans who were present during the Copper Head test. As a result of that information, the investigators located additional information.

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Test Name	Copper Head (DTC Test 65-1)
Testing Organization	US Army Deseret Test Center
Test Dates	January 24 – February 25, 1965
Test Location	Atlantic Ocean, off the coast of Newfoundland, Canada
Test Operations	To evaluate aerosol penetration into an operational ship and biological cloud travel in a frigid environment.
Participating Services	US Navy, US Marine Corps, Deseret Test Center personnel
Units and Ships Involved	USS <i>Power</i> (DD 839)
Dissemination Procedures	BG was disseminated from an Aero 14B spray tank mounted on an A-4 aircraft. A contractor C-47 aircraft attempted congruent releases of fluorescent particles (FP).
Agents, Simulants, Tracers	<i>Bacillus globigii</i> (BG) Fluorescent particles (FP)
Ancillary Testing	Exterior deck wash-down system
Decontamination	Betapropiolactone
Potential Health Risks Associated with Agents, Simulants, Tracers	<u><i>Bacillus globigii</i> (BG)</u> Now considered to be <i>Bacillus subtilis</i> var. <i>niger</i> , a close relative of <i>Bacillus subtilis</i> , this bacterial species was used as a simulant and considered harmless to healthy individuals. <i>Bacillus subtilis</i> and similar <i>Bacillus</i> 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

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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.)

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.)

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