DEPARTMENT OF HOMELAND SECURITY
DIRECTORATE OF SCIENCE AND TECHNOLOGY
CHEMICAL AND BIOLOGICAL DEFENSE DIVISION

FINDING OF NO SIGNIFICANT IMPACT (FONSI) FOR BIO AEROSOL TESTING IN THE BOSTON AREA

Pursuant to section 102(2) (c) of the National Environmental Policy Act (NEPA) of 1969 and the Council on Environmental Quality regulations (40 CFR Parts 1500-1508) on implementing the procedural provisions of NEPA, the Department of Homeland Security (DHS) has conducted an Environmental Assessment (EA) on the release of a particulate material to test a system of newly developed biological detection sensors within the Massachusetts Bay Transportation Authority (MBTA) subway stations in Cambridge and Somerville. MBTA and DHS are coordinating these efforts with the Massachusetts Department of Public Health, the Cambridge Public Health Department, and the Somerville Health Department, with support from the Massachusetts Emergency Management Agency. Based on technical analysis presented in the EA, DHS finds that the Proposed Action will not individually nor cumulatively have a significant impact on the human environment. Therefore, an Environmental Impact Statement (EIS) is not required under the NEPA for the proposed action. Details of the analysis and results can be found in the EA for "*Bacillus subtilis* Particles to Challenge Bio-Detection Sensors in Subway Stations", dated 01/12/2012.

Mass transportation systems, with their open access, can be vulnerable to hazardous materials that could rapidly spread throughout the system and endanger hundreds or thousands of lives. DHS S&T has developed sensors designed to detect a release of hazardous biological material in the subway within 20 minutes. This previously unavailable capability will significantly enhance our nation's preparedness for responding to and recovering from a biological terrorist attack.

The Proposed Action identified in the EA includes releasing a harmless substance in the MBTA stations in order to demonstrate the detection system's operational performance. The results from these tests will provide the necessary confidence to public health authorities and facility managers that the sensor network will detect an incident. Initial tests of these sensors are planned for CY2012 to evaluate the performance of the system in the subway's challenging operational environment. The tests will use non-infectious, killed strain of bacteria, *Bacillus subtilis* (*B. subtilis*), that is approved for use as a day of harvest fungicide, and is found in common food products as well as pet and animal foods.

The alternatives evaluated in this EA include:

A. Conduct an aerosol release of known quantities of viable (live) *B. subtilis* within the subway system. These studies, to be performed at peak operational capacity for trains and passengers, are designed to most closely simulate the conditions that would likely exist in the event of a true bio-terrorist attack.
B. Conduct an aerosol release of nonviable (killed) *B. subtilis* particles for testing the sensors during peak hours. The killed material, because it is no longer an active biological substance, is considered a particulate or dust nuisance.
C. Conduct an aerosol release of nonviable (killed) *B. subtilis* spores for testing sensors during non-operational hours for the subway. The trains would be operated to mimic a peak schedule, but no passengers would be present in the stations.
D. Directly inject viable (live) *B. subtilis* spore aerosol into a single sensor during operational hours for the subway, and capture all of the test material within the sensor such that it does not enter the subway station environment at all.

Due to the potential human health and safety risks posed by the presence of MBTA drivers, passengers, and sensitive populations that include immune-compromised riders, Alternative A is not recommended. Implementing the use of nonviable material, as outlined in Alternatives B and C, will ensure the health

and safety of all subway riders, including sensitive populations, without compromising the results of the testing activities. Alternative C, performing testing during non-operational hours, will allow for greater control of the operational environment (such as scheduled train movements) which will enable a more quantitative analysis of test results. Alternative D presents no potential adverse human health or safety impacts; however, the procedure as outlined will only generate a portion of the data necessary for complete performance analysis. Thus, Alternative C is the Proposed Action.

Because the Proposed Action involves the release of a biological substance into the human environment, a thorough analysis of the potential effects on human health and the environment was performed and documented in the EA. Scientific analyses in the EA determined the Proposed Action would not cause significant impacts on human health. *B. subtilis* is ubiquitously found in soil and air and is generally considered to have no pathogenic potential in humans. The microbe is already a common element of food products consumed by the general public and used in food preparation. More detail on the analysis of *B.subtilis* can be found in the EA. The EA also contains analysis regarding the potential for indirect environmental effects caused by the potential exposure of terrestrial wildlife by movement of the material via airflow out of subway tunnels and into the surrounding environment; the effect to nearby economic, cultural, recreational and historic properties; and the effect to any minority or low income communities. The scientific analyses in the EA found that the Proposed Action would cause no significant impacts in any of these key areas. Public input was solicited with an online posting of the EA and a 6-week comment period, closing June 15, 2012, as well as a public forum on May 16, 2012 in Cambridge, MA. Public input submitted through these methods did not result in any changes to the conclusions of the EA or the Proposed Action.

Together, all analyses indicate that no foreseeable direct, indirect, or cumulative effects on human health and safety, any current or future MBTA stations, or surrounding areas or resources are anticipated as a result of the Proposed Action. Based on the information presented in the EA and FONSI, DHS concludes that the Proposed Action will not individually or cumulatively have a significant impact on the human environment and an Environmental Impact Statement (EIS) is not required under the NEPA.

7/13/12
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