

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

**FINDING OF NO SIGNIFICANT IMPACT (FONSI)
FOR BIO AEROSOL TESTING IN THE NEW YORK CITY 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 planned release of a particulate material, and tracer gases, at several locations within the Metropolitan Transportation Authority New York City Transit (MTA NYCT) subway system. The underground release locations include the following: Grand Central Station, Times Square Station and Penn Station. The releases are planned to take place one time daily from May 9 – 13, 2016. The purpose of the releases is to collect experimental data, through air and surface sampling measurements, to verify and upgrade the accuracy and capability of Argonne National Laboratory's computational airflow and dispersion models (the ANL Below Ground Model). The updated and verified models can inform response and recovery decisions/actions in the event of a hazardous biological material release in the subway. DHS is coordinating these efforts with MTA NYCT, as well as the New York City Department of Health and Mental Hygiene, New York Police Department Counter-terrorism Bureau, Amtrak, Metro North, Port Authority of New York and New Jersey (PANYNJ), Long Island Rail Road (LIRR) and New York City Department of Environmental Protection. MTA NYCT has evaluated and approved release of the particulate material and tracer gases.

Based on a detailed technical analysis presented in the EA, DHS finds that the Proposed Testing will not have a significant impact on the environment, either on individual release dates, or cumulatively. Therefore, an Environmental Impact Statement (EIS) is not required under the NEPA for the Proposed Testing. Details of the analysis and results can be found in the EA entitled "Environmental Assessment of Proposed New York City Subway Tracer Particle and Gas Releases for the Underground Transport Restoration (UTR) Project".

BACKGROUND

Mass transportation systems such as subways, with their ease of public access, are potential targets for the intentional release of hazardous materials that could rapidly spread throughout the system and endanger hundreds or thousands of lives. The DHS BioWatch Office has deployed collectors in the New York City subway that are designed to capture and, through confirmatory laboratory analysis, identify the release of a hazardous biological material. This capability enhances our nation's preparedness for responding to a terrorist event involving release of a hazardous biological material. The Proposed Tracer Particle and Gas Release Tests ("Proposed Tests") within the DHS UTR will further advance preparedness, through enhanced computer modeling techniques, by providing improved estimates of the boundaries and environmental surface levels of contamination following an aerosol release of a biological agent. Improved estimates will facilitate response and recovery decisions and actions by local, state, tribal and federal emergency managers.

The Proposed Tests identified in the EA include releasing a safe particulate substance, and inert tracer gases, in MTA subway stations shortly after weekday morning rush hours. Experimental data in the form of air concentration and surface deposition measurements will be made in approximately 55 subway stations in Manhattan, as well as two PATH stations, located in Manhattan. Measurements will also be made in Penn Station and Grand Central Terminal. Several outdoor locations adjacent to the aerosol release sites will also be sampled in a similar manner. Additionally, HVAC filters from approximately 10 subway cars will be sampled with assistance of MTA personnel. The results from these tests will inform enhancements to existing subway airflow and dispersion models enabling more reliable prediction of contamination in the system, including secondary transport mechanisms that could involve 'shedding' and

transport of respirable particles (e.g., from articles of clothing) that could expose others to a health hazard. An improved prediction of contamination extent and levels will improve the confidence of public health officials, facility managers, and emergency response and recovery officials in their decisions and actions following an event. Improved confidence in the scope and scale of a biological agent event will enable authorities to implement both better-informed, protective public health decisions and speedier recovery actions (e.g., remediation of subway critical infrastructure and assets needed to begin service restoration). Information of the type needed can only be acquired through tests in the subway's challenging operational environment. The Proposed Tests will release sugar-based (maltodextrin) or maltodextrin-coated amorphous silica particles of two sizes (2 and 6 micron average diameter, respectively) that encapsulate oligomeric sequences (<100 base pairs) of non-biological (i.e., synthetic, non-infectious) DNA (deoxy-ribose nucleic acid). The sugar-based surrogate for a biological agent, known as DNATrax®, was developed at Lawrence Livermore National Laboratory. DNATrax® has been classified by the Food & Drug Administration (FDA) as Generally Recognized As Safe (GRAS), with current commercial applications for food-labeling. Additionally, perfluorocarbon tracer gases will be released simultaneously. The tracer gases in the Proposed Tests have been safely released in past airflow tests (S-SAFE and Urban Dispersion Program) conducted by New York City authorities.

The particulate alternatives evaluated in the UTR project EA include:

- Particulate Tracer Alternative P1: Aerosol release of DNA oligonucleotides ('oligos') encapsulated in soluble maltodextrin particles (maltodextrin with oligos is referred to commercially as DNATrax) and tagged with a fluorescent Optical Brightener (referred to as DNATrax-OB). DNATrax-OB allows for quantification using PCR and fluorimetry, but not culture methods.
- Particulate Tracer Alternative P2: Aerosol release of P1 attached to amorphous silica particles (referred to as DNATrax-OB-Silica). DNATrax-OB-Silica allows for quantification using PCR and fluorimetry, but not culture methods.
- Particulate Alternative P3: No particulate released.

Because the Proposed Tests involve the release of a particulate substance into the human environment, a thorough review of the potential effects on human health and the environment was performed and is documented in the EA. The review of available scientific information regarding exposures, summarized in the EA, has determined the Proposed Tests will not cause significant impacts on human health or the environment. The information reviewed and summarized in the EA also included available animal, environmental decay, and pre-existing usage data.

As indicated, DNATrax presented in Particulate Tracer Alternative P1 was developed for food labeling and has been classified by the FDA as GRAS. The primary component, maltodextrin, is used in several commercially-available products such as sweetening agents (e.g., Splenda®) and protein shakes. Because the DNA oligo sequences are selected from natural sequences, they do not produce proteins and are therefore considered safe. The Optical Brightener (OB) is also considered safe and is used commercially in detergents, cosmetics and paper products. Amorphous silica, the primary component in Alternative P2, is used commercially as an anti-caking agent and a carrier for liquid active ingredients in human and animal nutrition. Particulate Tracer Alternative P2 enables fine control of a larger particle size than Alternative P1. Two discrete particles sizes in the respirable range are desirable for airflow and dispersion modeling purposes. Particulate Alternative P3 Particulate Alternative P3 is not recommended because the objectives of the UTR Proposed Tests cannot be accomplished through tracer gases releases alone. Tracer gases will not deposit on surfaces, unlike the Particulate Tracer Alternatives P1 and P2. Therefore, Alternative P1 and P2 are the proposed actions.

With respect to the tracer gas releases, three alternatives have been evaluated in the UTR project EA:

- Gas Alternative G1: Release of sulfur hexafluoride (SF₆) gas within the subway system. Sulfur hexafluoride allows for real-time measurements using infrared spectroscopy and laboratory measurements using Gas Chromatography Mass Spectroscopy (GC-MS).
- Gas Alternative G2: Release of SF₆ gas and three perfluorocarbon tracers (PDCB, PMCH, and mPDCH). The three perfluorocarbon tracers allow for higher sensitivity compared to SF₆ due to their

extremely low presence in the subway background. SF₆ background levels in New York City are considered high owing to local power plant emissions.

- Gas Alternative G3: No gas released.

Because perfluorocarbons are not known to cause adverse health effects, even at high concentrations, no OSHA PEL, ACGIH TLV, or Acute Exposure Guideline Level (AEGl) have been established. Gas alternative G1 has been deemed impractical due to high background levels of SF₆. Gas Alternative G3 is not recommended as this will not enable comparisons of transport in the subway system with past tracer gas dispersion studies (S-SAFE, Urban Dispersion). Therefore, G2 is the proposed action.

The review of available information regarding potential adverse impacts to human health or the environment summarized in the EA found that the Proposed Tests would cause no significant impacts. Public input was solicited through an online posting of the EA and a 30-day comment period, and the final document has been posted online. The UTR Proposed Tests will include public signage, informational handouts, and security details provided by the NYPD at key locations.

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

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DATE


DONALD BANSLEBEN, Ph.D.
CHEM/BIO R&D BRANCH
CHEMICAL AND BIOLOGICAL DEFENSE DIVISION
SCIENCE AND TECHNOLOGY DIRECTORATE
DEPARTMENT OF HOMELAND SECURITY

4-20-16
DATE


MR. IAN ROSENBLUM
CHIEF, ENVIRONMENTAL SAFETY AND HEALTH BRANCH
CHIEF ADMINISTRATIVE OFFICE
ADMINISTRATION AND SUPPORT DIVISION
SCIENCE AND TECHNOLOGY DIRECTORATE
DEPARTMENT OF HOMELAND SECURITY

4/20/16
DATE


DR. TERESA POHLMAN
DIRECTOR, SUSTAINABILITY AND ENVIRONMENTAL PROGRAMS
OFFICE OF THE CHIEF READINESS SUPPORT OFFICER
DEPARTMENT OF HOMELAND SECURITY