



### Purpose and sponsor of this study

This study is part of a five-year (2012-2017) program to develop and promote technologies and methods to help urban transit systems restore service rapidly in the event of a biological agent attack. These experiments will build on previous subway airflow studies conducted in Washington DC, Boston and New York City. This program is sponsored by the U.S. Department of Homeland Security (DHS) Science and Technology Directorate (S&T) and Office of Health Affairs (OHA).

### Scientific objectives

There are two primary objectives. The first is to directly measure the spread of material within the subway system by collecting air samples following the release of harmless gas and particulates (i.e., tracers). A better understanding of the spread of these materials within the subway and the greater urban environment will help in characterizing hazardous material releases originating in the subway, whether they are intentional or accidental. The second objective is to measure the amount of particulate materials that settle on the ground and other surfaces. Accurate assessment of this deposited material is critical to assessing the contamination and possible hazards in the initial phase of emergency response as well as clean-up actions.

### When and where this experimental study will occur

The study will be conducted over the course of five days, from May 9-13, 2016. There will be a single 20-minute release period of tracers in multiple subway stations, starting at 11 a.m. each day. Release locations include any two of the following stations each day: Grand Central, Times Square and Penn Station subway platforms. Particulate and gas sampling will occur in approximately 55 subway stations over a four-hour window following the tracer releases.

### Tracers to be used

There will be safe, non-toxic gas and particle tracers used in these tests. The gas tracers include three perfluorocarbons (PFT). The particulate tracers include particles primarily composed of maltodextrin sugar or silica particles that are tagged with small amounts of (1) non-biological (i.e., synthetic, non-infectious) DNA (deoxyribonucleic acid) to allow their detection at very low concentrations; and (2) a commonly-used optical brightener to permit their detection in real time.

### Frequently Asked Questions

#### Does this study pose health risks to residents of New York City?

No. The tracers used are colorless, odorless and biologically inert, non-toxic materials. They have been used in numerous other studies both indoors and outdoors to assess airflow and contaminant spread. The maximum concentrations are many times lower than the most conservative exposure limits, and decrease very rapidly with distance from the tracer sources. A full Environmental Assessment was conducted by DHS and a Finding of No Significant Impact was the outcome. These documents are available online at <https://www.dhs.gov/publication/environmental-assessment-proposed-nyc-subway-tracer-particle-and-gas-releases>.

The DEA and FONSI on the use of these materials can be downloaded from the DHS Web Site: <http://www.dhs.gov/national-environmental-policy-act>. For more information, email: [mtanycttest@hq.dhs.gov](mailto:mtanycttest@hq.dhs.gov).



### Who will benefit from this program?

These tests will provide a direct benefit to transit officials, as well as emergency management professionals from NYC and surrounding communities, by providing information they can use to determine strategies for evacuation, shelter-in-place, ventilation, characterization, decontamination, and other incident response activities. While the contaminants of primary concern are chemical or biological agents that may be deliberately released, these studies will also help in understanding the airflow characteristics of smoke or unintentional spills of chemicals or fuels.

### What will the sampling equipment look like in the subway system and transit facilities?

Movement of the tracers within the subway and outdoors will be determined using a variety of equipment located in over 55 stations and a few selected outdoor locations. The sampling equipment will consist of small box units that pull air through filters to collect particles, pull air into bags for later gas analysis, or interrogate air internally using ultraviolet light. All test equipment will be clearly marked and will not disrupt normal activities, or pose an inconvenience or hazard to the public.



### Why was New York City selected for these tests?

The NYC Subway is the largest subway system in the United States, with many complex stations and numerous ventilation paths. Airflow in the NYC Subway has been measured in two previous experimental studies (August 2005 and more recently in 2013) making interpretation of subway measurements more straightforward. Finally, the testing team has the full support of the Metropolitan Transportation Authority (MTA) New York City Transit (NYCT), New York City Police Department (NYPD), New York City Department of Health and Mental Hygiene, Amtrak, and the Port Authority of New York and New Jersey. The cooperation and assistance of these key stakeholders are essential for the success of these experiments.

### Was this study evaluated under the National Environmental Policy Act?

Yes. In accordance with the National Environmental Policy Act (NEPA), DHS conducted an Environmental Assessment which resulted in a Finding of No Significant Impact for the release of these tracers. The Environmental Assessment evaluated the potential for environmental impacts from the testing program, such as any potential impacts to human health, sensitive natural biological resources, and air quality. In addition, the New York City Department of Health and Mental Hygiene reviewed the NEPA documentation for the program and provided their support for the release tests. These documents are available for review at: <https://www.dhs.gov/publication/environmental-assessment-proposed-nyc-subway-tracer-particle-and-gas-releases>