Testimony

of

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regarding

Oversight: Are cancer rates increasing in 9/11 Responders?

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Good afternoon, Chairman Nelson, Chairwoman Chin, and members of the Committees. My name is Dr. Carolyn Greene, and I am the Deputy Commissioner for the Division of Epidemiology at the New York City Department of Health and Mental Hygiene. On behalf of the Health Department and Commissioner Farley, thank you for the opportunity to testify today on cancer rates among 9/11 responders.

As you know, the Health Department oversees the work of the World Trade Center (or "WTC") Health Registry and I represent the Health Department on New York City's World Trade Center Medical Working Group, which is co-chaired by Deputy Mayor Linda Gibbs and Commissioner Thomas Farley. I also am a co-author of the Registry's first cancer analysis among World Trade Center-exposed individuals which was published last December by the *Journal of the American Medical Association*, one of the nation's leading medical journals.

Including the WTC Health Registry study, three major studies examining the potential association between WTC-exposure and cancer rates among responders have been published to date in the scientific literature:

Researchers at the Fire Department of New York (FDNY) found a 19% increase in all cancer rates combined among WTC-exposed firefighters compared to non-exposed firefighters largely due to slight increases in three specific types of cancer: thyroid cancer, prostate cancer and non-Hodgkin's lymphoma. My colleague at FDNY, Dr. Prezant is here today to provide you with more details about his study which focused exclusively on male firefighters.

Researchers at Mount Sinai, who looked at a more diverse group of responders including police and construction workers, found a 15% increase in the rates of all cancers combined. Again, this increase was largely the result of confirming more cases of thyroid and prostate cancers than expected, and more cases of all blood cancers combined than expected.

At the time of their publication, the FDNY, Mount Sinai, and the WTC Health Registry studies analyzed only cancer diagnoses confirmed through 2008. Cancers typically take many years to develop and the authors of all these studies have stated that these very early results should be interpreted with caution, and that close monitoring of WTC-exposed individuals should continue.

The remainder of my testimony will focus on the WTC Health Registry's study. The Health Department has published more than 30 articles in the scientific literature documenting the health effects of the World Trade Center collapse on exposed individuals. Chronic respiratory problems and psychological distress are by far the most prevalent adverse health outcomes identified. We have long been interested in the question about whether exposure to the disaster has an effect on cancer and mortality rates.

The World Trade Center Health Registry has included questions about cancer on all its major surveys beginning in 2003-2004. In 2007, the Health Department first brought together an expert panel to discuss the potential impact of the WTC disaster on cancer rates and mortality. This included representatives from: the Fire Department of New York City (FDNY), the Mount Sinai School of Medicine, the New York State Department of Health, and the National Institute for Occupational Safety and Health.

The scientific literature offers limited information about the role environmental exposure can play in the development of different types of cancer, but we know that cancer usually takes many years or even decades to develop. As a result, it only became feasible recently for WTC researchers to begin preliminary analyses of cancer rates among 9/11 responders and others who were exposed to the WTC collapse.

In 2010, after starting the lengthy process of confirming cancer diagnoses, the Health Department and FDNY co-chaired a conference of national experts, including biostatisticians, environmental health scientists and cancer epidemiologists, to help address the complex methodological challenges associated with any early cancer investigation. This conference produced several recommendations which the Health Department then followed in our research. In addition, the Registry's cancer research team included one of these experts, Dr. Leslie Stayner, a professor of epidemiology and biostatistics at the University of Illinois's School of Public Health.

In 2003-2004, nearly 71,000 people enrolled in the WTC Health Registry. This population is unique because it includes both responders to the WTC disaster, people who lived, worked or went to school in Lower Manhattan, and passers-by on 9/11. In the Health Department's initial cancer study, we analyzed cancer rates among nearly 56,000 enrollees who were living in New York State on 9/11 with the objective of learning whether persons who were exposed to the WTC disaster have developed more cancers than unexposed persons of the same age, sex and ethnicity. This is the largest analysis to date among WTC-exposed persons, and it included nearly 22,000 responders. Half of these are City employees, including members of FDNY, the Police Department and our Department of Sanitation.

Although much of the information that the WTC Health Registry gathers through its surveys is based on self-report, our cancer study included only cancer cases that were diagnosed by health professionals and reported by state cancer registries. This method ensured the accuracy of case identification and also was used by researchers at FDNY and Mount Sinai in their analyses.

Physicians, hospitals and laboratories report cancer diagnoses to registries in each of their states. We contacted cancer registries in 11 states where more than 95% of our enrollees now live and asked the cancer registries to match our enrollees against their databases. They provided us with information on all confirmed cases of cancer among these people.

In our initial analysis, we included all new cancers diagnosed between 2003 and 2008. Since cancers associated with environmental exposures take many years to develop, we

believed that cancers diagnosed from 2007 to 2008 were more likely to be related to 9/11 than those diagnosed earlier. Therefore, we analyzed these later cases separately from those cancer cases occurring before 2007.

In order to determine if the number of new cancer diagnoses was higher than it would have been if the WTC collapse had not occurred, it was extremely important to select a comparison population that was similar to our study population. We chose residents of New York State because the majority of our enrollees continue to live here. We also adjusted our analysis for age, gender and race, which is standard practice in epidemiology.

Our analysis confirmed 439 cancer diagnoses among 22,000 responders from 2003 to 2008, which was approximately the number that would be expected had the WTC disaster not occurred, based on our comparison population of New York State residents. However, in our separate analysis for 2007 and 2008, we did find statistically significant increases in three of the 23 specific types of cancers we examined: prostate cancer, thyroid cancer and multiple myeloma, a type of blood cancer. We found 67 cases of prostate cancer (20 more than would expected in our comparison population); 13 cases of thyroid cancer (seven more than expected); and seven cases of multiple myeloma (five more than expected). The other 20 types of cancer did not show statistically significant increases, but we should point out that during the same period, we also found six *fewer* cases of lung cancer than would be expected (20 instead of 26).

It is unclear why we and other WTC researchers found more prostate and thyroid cancers in our study population of responders than we expected. Radiation, an environmental exposure that has been associated with thyroid cancer, was not present at the WTC site and scientists have not yet found *any* environmental exposures conclusively associated with prostate cancer. It is possible that the increases in prostate and thyroid cancers may result from the fact that first responders, who generally are well insured, are screened for health problems more frequently than other adults in New York State, and thyroid and prostate cancers are often identified by health screenings like these.

For example, responders enrolled in the federal WTC Health Program, which includes both the FDNY and Mount Sinai cohorts, routinely receive computed tomograms, also known as CT scans, of the chest. These tests can pick up thyroid cancer, which may explain the increase in diagnosed thyroid cancer. More frequent screening with prostate-specific antigen tests could also explain the increase in diagnosed prostate cancer among responders, although it did not appear that responders in the WTC Health Registry were more likely to have their cancer diagnosed at an earlier stage than our New York State comparison population.

Increases in multiple myeloma, the second-most commonly diagnosed blood cancer in the United States, among WTC responders may be more plausible from a biological perspective. Blood cancers take less time to develop than solid tumors, and they have been associated with benzene, a chemical found in jet fuel which was released into the environment when the two planes crashed into the World Trade Center. In addition,

Mount Sinai published research in 2009 confirming multiple myeloma diagnoses in eight responders, four of whom were younger than typically expected at the time of diagnosis.

At the recommendation of our experts, we also performed our analysis by level of exposure to the WTC disaster, classifying responders who arrived at the WTC site on 9/11 or who worked more than 90 days at the site in the high exposure category. We did not find that people with more intense exposure were more likely to get prostate cancer, thyroid cancer, or multiple myeloma, but it is important to note that our ability to measure an individual's exposure level, similar to that of other WTC researchers, was limited because all exposures in the wake of the disaster were self-reported.

Unlike our previous studies of asthma, PTSD and other health conditions that were clearly related to WTC exposure, we are not able to say at this early stage whether the increases we found in prostate cancer, thyroid cancer and multiple myeloma are caused by WTC exposure. As I said at the beginning of my testimony, the follow-up period for our study ended in 2008, which means that most cancers would not have had time to develop. Looking at all three of the studies completed to date, it is still too soon to reach any firm conclusion about whether we are seeing cancer increases in 9/11 responders.

The WTC Health Registry, FDNY and Mount Sinai all have received federal funding to continue our cancer analyses. We plan to conduct our next analysis among enrollees in 2014, at which time state cancer registries will be able to confirm cancer diagnoses through 2011; a full decade of post-9/11 cancer data for WTC responders will be available for analysis. As the Health Department continues to accumulate more years of cancer data, we will publish new findings as soon as we are able.

Thank you for the opportunity to testify, and I would be happy to take any questions.