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MEMORANDUM

July 12, 2019

To: Vera Sung, Esq.

From: Matthew Baione, Esq. and Emma Theis, Law Clerk

Re: Chinatown Air Quality

Information on the air quality in Chinatown post 9/11 has been collected and reviewed in a number of studies. High air pollution, due to particulate matter emitted from the World Trade Center collapse, has left both immediate and long-term health risks for those in Chinatown. Key data and conclusions from various resources have been summarized below in support of this assertion.

The collapse of the World Trade Center resulted in the release of high levels of particulate matter. Particulate matter, also known as particle pollution, is the term for airborne mixed micro particles that can be made up of hundreds of diverse chemicals. Particulate matter can be further classified by their size, as either PM10 or PM2.5. PM10 is a particle with a diameter of 10 micrometers or less. PM2.5 is a microscopic particle with a diameter of 2.5 micrometers or less. For reference, an average human hair has a diameter of 70 micrometers; even the largest PM2.5 is nearly 30 times smaller than that. The smaller the particle, the easier it is to be inhaled; potentially reaching one's lungs, or even one's blood stream.¹ The U.S. Environmental Protection Agency (EPA) monitors these inhalable particles regularly to ensure that their concentration levels are not harmful to public health and the environment. Following the attacks of 9/11, the EPA conducted extensive, albeit not entirely comprehensive, evaluations of the resulting influx of particulate matter.

¹ Particulate Matter (PM) Basics, EPA (2018), <https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#PM>.

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The EPA monitored the air concentration and found increase measures of contaminants, such as particulate matter (PM), metals, polychlorinated biphenyls (PCBs), asbestos, dioxin, and volatile organic compounds (VOCs) undoubtedly due to the WTC's disintegration. Those exposed to the surrounding particulate matter, resulting from the collapse were found at risk of immediate, and possibly chronic, symptoms such as respiratory and cardiovascular issues. The first air samples were taken September 14, 2001, and Asbestos was detected; while other contaminants including Benzene PCBs, Lead, PM2.5, and Dioxin were detected for the first time in air monitoring conducted on later dates that month.² The first measure for all contaminants was also their highest.

These contaminants have been shown to have an adverse impact on the health of those within Chinatown and other parts of lower Manhattan. Hospital admission records from 1991 to 2001 of Lower Manhattan found an immediate increase in respiratory admissions after 9/11 and a delayed increase in cardiovascular (heart) and cerebrovascular (stroke) admissions, as well, compared to Queens (used as a control variable in this study).³

Another study found asthma rates of 14.4% in those who lived 1 mile from the WTC and a rate of 4.9% in those who lived farther, based on the survey of 352 parents and children coupled with spirometry tests conducted on 202 students from Chinatown elementary schools.⁴ This study

² U.S. Environmental Protection Agency (EPA). (2003) Summary Report of the U.S. EPA Technical Peer Review Meeting on the Draft Document Entitled: *Exposure and Human Health Evaluation of Airborne Pollution from the World Trade Center Disaster*. The National Center for Environmental Assessment, Washington, DC; EPA/600/R-03/142. Available from: National Technical Information Service, Springfield, VA.

file:///C:/Users/theis/Downloads/WTCPEERREVIEWREPORT.PDF.

³ Shao Lin PhD, Marta I. Gomez MS, Lenore Gensburg MS, Wei Liu MS & Syni-An Hwang PhD (2010) *Respiratory and Cardiovascular Hospitalizations After the World Trade Center Disaster*, Archives of Environmental & Occupational Health, 65:1, 12-20, <https://www.tandfonline.com/doi/figure/10.1080/19338240903390230?scroll=top&needAccess=true>.

⁴ Anthony M. Szema et al., Post 9/11: *High asthma rates among children in Chinatown, New York*, 30 Allergy and Asthma Proceedings 605–611 (2009), <https://www.ncbi.nlm.nih.gov/pubmed/19772715>.

further indicated that in 2003, the WTC health registry showed asthma prevalence in children. This is a strong contrast to the 2000 US census that showed “ethnic Chinese in New York City...were reported to have the lowest levels of asthma compared with other ethnic NYC neighborhoods.” Furthermore, Chinatown’s asthma rates are higher than other groups at 29% versus the general NY reference rate of 13%. The study concluded that the high air pollution, exacerbated by the toxin exposure on 9/11 may account for the increased asthma rates. The authors of these findings repeated this experiment seven years later to show the persisting rates of asthma increase affected by air pollution concentration.⁵

One study found that WTC PM2.5 was proven to have an inflammatory effect on cytokine. Cytokines are small proteins that play a large role in cell signaling. This inflammation of cytokine that resulted from the WTC’s particle pollution levels may be a cause of airway injury and their presence a possible indicator of lung injury. The resulting cytokine development due to WTC PM2.5 levels may be the basis of the severe long-lasting health effects for those within the Exposure Zone.⁶

In an interview conducted by Lan Trinh with concerned Chinatown residents, Jeanie Chan expressed her feelings on the way air quality control was handled in her area after the attacks.⁷ Chan details her personal experience with the thick cloud of toxic air she encountered in her neighborhood. She states that the port authority had high readings of contaminants and that information was hidden from the public. There was a strong desire to get Wall Street, an economic powerhouse, up and running, but these efforts to expedite this process was to the

⁵ Am Szema et al., *Persistently Increased Asthma Rates among Children in Chinatown near Ground Zero: Air Pollution Data*, C61. *Pediatric Asthma* (2009).

https://www.atsjournals.org/doi/abs/10.1164/ajrccm-conference.2009.179.1_MeetingAbstracts.A4819.

⁶ Bushra Naveed et al., *WTC PM2.5 Stimulates A More Intense Inflammatory Response In Human BAL Cells Than Other Ambient PM2.5 From NYC And Surrounding Environs*, *American Journal of Respiratory and Critical Care Medicine* (2010),

https://www.atsjournals.org/doi/abs/10.1164/ajrccm-conference.2010.181.1_MeetingAbstracts.A1158

⁷ Jeanie Chan as interviewed by Lan Trinh, *Air Quality/Health In Chinatown*, *Ground One: Voices of Post 9/11 Chinatown*, (2010), <http://911chinatown.mocanyc.org/videos.html>.

detriment of those living in the area of Chinatown. In attempts to bring about economic normalcy, there was insufficient address to the environmental issue at hand. The EPA and Department of Environmental Protection (DEP) showed where air testings were conducted at a community hearing that she attended, but Chan was not satisfied with their claims. Chan lamented that her residential building, one of the largest in the neighborhood, was never monitored.

Another testimony, from Pam Chin, detailed her experience with the poor air quality. Chin recalled being awoken by the smell of smoke.⁸ She worked and lived in the area. She, along with countless others, was breathing in the toxic air for three months, not receiving air purifiers until January. She was told there was no Asbestos but questioned that claim. She was right, considering that Asbestos was the first contaminant the EPA detected back on September 14, 2001. There was clearly either poor communication or deception involved when informing the public of these issues. The smell of burning metal lingered and winds brought the plume of smoke further into the Chinatown area. Stories, such as this, have been documented in a myriad of oral histories shared from those within the community.

Chinatown had already been dealing with air quality issues, having the highest levels of diesel pollution in all of New York City back in 1996. Communities with high levels of diesel particles are already susceptible to high asthma rates and the further contamination from the WTC collapse exacerbated these environmental issues the community was already facing. The Chinese Progressive Association (CPA) has addressed a variety of issues that Chinatown faces, including this one at hand. The CPA surveyed the community and found an extremely high concern within the community for the environment and an expressed desire to make a change. The CPA's study also found one in five households had a member who was suffering from Asthma (508 households studied).⁹ The CPA championed the cause by testifying at a hearing regarding post 9/11 air quality and asthma in Chinatown, which resulted in the EPA expanding the borders

⁸ Kenny Lam & Edmund Lee, *Oral History, The Air Quality*, http://911chinatown.mocanyc.org/reflection/131_Student_Project/Air_Quality_Book_6_website.swf.

⁹ Mae Lee, *Clearing the Are in Chinatown*, Reimagine Movements Making Media, <http://www.reimagineerpe.org/node/166>.

of their post 9/11 residential environmental testing to include lower income residents. A feat that was far more accommodating to Chinatowns demographics, with thirty-one percent of residents live below the poverty level.