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Testimony of Environmental Defense to
The Joint Committee on Public Health
Of The Massachusetts State Legislature

On House Bill 2227
An Act Relative to Reporting on Health Effects of Particulate Matter
July 25, 2007

Submitted by
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Thank you for the opportunity to testify on this issue. Environmental Defense strongly supports H.2227 and urges the Committee to give it a favorable recommendation. This bill calls for a comprehensive study on high risk zones for human exposure to traffic-related particulate matter from roadways and rail lines. The data collected will help mapp out risk zones throughout Massachusetts and prioritize future particulate matter reduction actions. By enacting legislation to study the respiratory and cardiovascular disease and cancer incidences within these exposed populations of high risk zones, Massachusetts will move an important step closer to providing healthy air for all who live and work here, particularly for the 212,000 children in the Commonwealth who suffer from asthma.[i]

Environmental Defense is a national non-profit environmental organization with 500,000 members around the country and over 7,000 members and activists in Massachusetts. Since 1967, we have linked science, economics and law to create innovative, equitable and cost-effective solutions to society's most urgent environmental problems. We appreciate the opportunity to comment on this bill, as reducing the health impacts of particulate matter pollution are a priority for our organization.

It is the right time to enact this bill. Over the last ten years, numerous public health studies have shown that air pollution exposure levels are greater close to roadways than are typically reported through regional air pollution measurements. Despite this, to date, federal air pollution regulations have tended to focus on regional or city-wide pollution targets, rather than street-level exposures.[ii]

Within these street-level risk zones, vehicle emissions are concentrated at levels higher than background concentrations, and the risks of various diseases, including cancer, heart disease, and respiratory ailments, can increase. The good news is that solutions are available now to reduce particulate pollution by 90%. This bill will allow Massachusetts to evaluate and map the health impacts of street level exposures on the populations within 500 feet of any roadway with high traffic congestion and to specifically look at the impacts of fine and ultra fine particulate matter. Because they are less than one-fortieth the thickness of a human hair, these tiny soot particles are

easily inhaled deep into the lungs and pose particular dangers. With the information collected under this bill, the Commonwealth will be prepared to effectively implement particulate matter pollution reduction solutions and technologies where they can have the greatest impact.

Massachusetts Citizens Need Cleaner Air

A Need to Focus on the Roadways

Many studies have found a strong correlation between living near roads with high traffic and asthma[iii] as well as other respiratory diseases like bronchitis.[iv] Furthermore, research demonstrates that living near traffic sources can adversely affect lung-function development in children.[v] Not only do these analyses suggest that exposure to vehicle emissions triggers asthma attacks, but a growing body of laboratory and epidemiologic literature implies that vehicle emissions, especially diesel emissions, may play a role in initially causing asthma.

Epidemiologic studies have consistently shown that people with higher exposures to roadway air pollutants have more hospitalizations for asthma, more respiratory symptoms, and poorer lung function. A review of 20 studies published between 1993 and 2000 found all but one showed that higher exposures to roadway pollutants, especially heavy-truck exhaust, were correlated with worsened asthma, decreased lung function, and more symptoms of asthma.[vi] Subsequent studies have confirmed this correlation. For example, a 2001 study showed that exposure to moderate traffic pollution was associated with increased inflammatory markers and decreased lung function in children.[vii] A study in Roxbury, Massachusetts, found that exposure to fine particulate matter and polycyclic aromatic hydrocarbons (a constituent of diesel emissions) was associated with asthma hospitalizations.[viii]

A Growing Asthma Epidemic

Indisputably, air pollution both causes and aggravates a myriad of health problems, from cancer to strokes and premature death. But the most visible health impact of air pollution is asthma. Asthma is a chronic respiratory disease that affects over 20 million Americans, a number that has been increasing at an alarming rate. Over the past 25 years, the national asthma rate has doubled – making it one of the fastest growing health problems in the United States.

In 1980, an estimated 7.1 million Americans (including approximately 2 million children) suffered from asthma.[ix] More recent estimates from 2005 suggest that approximately 22.2 million people (6.5 million children)[vi] are currently diagnosed with asthma while an alarming 31.3 million people (9.2 million children) had been diagnosed with asthma at some point in their life.[xi]

In addition to the health impact on individuals and their families, asthma's increasing prevalence also directly impacts society and the economy in particular. In the year 2003, millions of Americans suffered from asthma attacks resulting in 13.6 million physician office visits, 1.8 million emergency room visits, and an additional 1 million outpatient hospital visits.[viii] Asthma also led to an estimated 14.5 million lost workdays for adults and 14 million lost school days for children. In 2003, these direct and indirect asthma-related costs translated into an estimated economic burden of $16.1 billion for the United States while asthma remains the most common reason that children miss school.[ix]

Asthma Attacks Massachusetts

No region of the country is immune to the increasing prevalence of asthma, but the disease is acutely felt here in Massachusetts. Particularly hard hit are children and residents in low-income urban communities where asthma hospitalization rates are significantly above both the national and state averages. Lifetime childhood asthma rates in Massachusetts were recorded at 14.6% in 2005, and adult rates in the Commonwealth were recorded at 14%.[x] In fact, the Centers for Disease Control consistently finds Massachusetts' overall asthma rates to be among the highest in the nation. In 2001, the Bay State achieved the dishonorable distinction of having the second highest rate (9.4% of Commonwealth residents compared with 7.1% nationally) of current prevalence of asthma in the country,[xi] an alarming trend that continues today.

Next Steps

By carrying out a comprehensive study now, we will be maximizing the effectiveness of future initiatives to protect our health and environment, promote cost-effective business solutions and invest in the future of our state. Massachusetts needs to take legislative action this year to continue its commitment to protecting the air quality and public health of all residents.

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[i] Asthma Regional Council. *Asthma in New England Part II: Children*. January 2004.

[ii] The US Code of Federal Regulations (CFR) 40.CFR.58.

[iii] Edwards J. et al. 1994. Hospital Admissions for Asthma in Preschool Children: Relationship to Major Roads in Birmingham, United Kingdom. Archives of Environmental Health, 49: 223-227; Duhme H. et al. 1996. The Association between Self-Reported Symptoms of Asthma and Allergic Rhinitis and Self-Reported Traffic Density on Street of Residence in Adolescents. Epidemiology 7(6): 578-582; Lin S. et al. 2002. Childhood Asthma Hospitalization and Residential Exposure to State Route Traffic. Environmental Research, 88 (2):73-81; Lwebuga-Mukasa J.S. et al. 2004. Association between Traffic Volume and Health Care Use for Asthma Among Residents at a U.S.-Canadian Border Crossing Point. Journal of Asthma, 41(3): 289-304; Oyana T.J. et al. 2004. Spatial Relationships Among Asthma Prevalence, Health Care Utilization, and Pollution Sources in Neighborhoods of Buffalo, New York. Journal of Environmental Health, 66(8): 25-37; Oyana T.J. et al. 2004. Geographic Clustering of Adult Asthma Hospitalization and Residential Exposure to Pollution at a United States–Canada Border Crossing. American Journal of Public Health, 94 (7): 1250-1257; McConnell R. et al. 2006. Environmental Health Perspectives, 114 (5): 766–772.

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[v] Gauderman W.J. et al. 2007. Effect of exposure to traffic on lung development from 10 to 18 years of age: a cohort study. Lancet, 369 (9561): 571-577.

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[vii] Steerenberg, et al., Traffic-Related Air Pollution Affects Peak Expiratory Flow, Exhaled Nitric Oxide, and Inflammatory Nasal Markers, 56(2) Arch. Environ. Health 167 (2001).

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[ix] Centers for Disease Control. *Surveillance for Asthma-United States 1980-1999.* March 2002.

[x] National Center for Health Statistics, Summary Health Statistics for U.S., National Health Interview Survey, 2005. Available at: http://www.cdc.gov/nchs/fastats/asthma.htm

[xi] Boston Public Health Commission. *Health of Boston 2003*. June 2003.

[viii] National Hospital Ambulatory Medical Care Survey, 2004 Summary. Available at: http://www.cdc.gov/nchs/fastats/asthma.htm

[ix] National Heart, Lung, and Blood Institute Chartbook, U.S. Department of Health and Human Services, National Institute of Health, 2004.

[x] Asthma Regional Council. *The Burden of Asthma in New England.* March 2006.

[xi] Behavioral Risk Factor Surveillance Survey, 2001.

[xii] Data retrieved from EPA website: http://www.epa.gov/air/data/

[xiii] Berkshire County, Middlesex County and Suffolk County are all borderline non-attainment for PM (http://www.epa.gov/air/data/)

[xiv] Environmental Defense. *Cleaner Diesel Handbook.* 2004.

[xv] Environmental Protection Agency. Regulatory Announcement: Direct Final Rule and Notice for Proposed Rulemaking for Amendments to the Nonroad and Highway Diesel Fuel Regulations. EPA420-F-05-029. July 2005. Available at: http://www.epa.gov/otaq/regs/fuels/diesel/420f05029.htm.

[xvi] Environmental Defense. *Cleaner Diesel Handbook.* 2004.

[xvii] Environmental Defense. *Cleaner Air for America: The Case for a National Program to Cut Pollution from Today's Diesel Engines*. 2005.

[xviii] http://www.masspike.com/bigdig/background/airpollution.html

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[xx] U.S. EPA National Clean Diesel Summit 2005. Presentation by Staci McLennan, Ohio Environmental Council. Available at: http://www.cleanfleetusa.net/cfusa/presentations/3P_McLennan.pdf.