Megan Sandel, MD, MPH
Asssistant Professor of Pediatrics
Boston University School of Medicine
Co-Director, Center for Healthy Homes and Neighborhoods
Boston University School of Public Health
Boston Medical Center

91 E. Concord St
4th floor
Boston, MA 02118
Telephone: 617-414-3680
Fax- 617-414-3679
megan.sandel@bmc.org

July 24, 2007

The Honorable Susan Fargo
Committee on Public Health, Senate chair
State House Room 504
Boston, MA 02133
phone 617.722.1572

The Honorable Peter Koutoujian
Committee on Public Health, House chair
State House, Room 130
Boston, MA 02133
Phone 617-722-2130

Dear Representative Fargo and Koutoujian,

As a pediatrician and researcher in Asthma and a member of the Boston Urban Asthma Coalition (BUAC), I write on behalf of the Coalition to inform you of our support for House Bill 2227 *An Act Relative to Reporting on the Health Effects of Particulate Matter*, and to urge that this bill is afforded a favorable report from your committee. Diesel exhaust pollution is a major concern for our group because of its effect on asthma in urban communities, and we eagerly await your decision on this issue. **As a pediatrician, I often say I can prescribe many things to help with asthma, but I cannot prescribe the air they breathe.**

Established in 1997, the BUAC has assembled a diverse and representative group of community participants, all concerned with the rising impact of asthma. Asthma, the most common chronic disease of childhood, imposes a disproportionate burden on urban populations. While the prevalence of childhood asthma is 8% nationally, it reaches 20 to 30% in Boston and is the most common reason for pediatric hospitalization at Boston Medical Center. The Asthma Coalition serves as a clearinghouse and network for those individuals and groups committed to reducing the impact of asthma in Boston. Participating organizations include community activists who work alongside scientists and physicians to develop new approaches to prevention and intervention.

Diesel exhaust is the largest single source of vehicular airborne particulate matter. Research from the real world, epidemiologic studies, tell us that that it harms the respiratory tract.[1] A study of California children published earlier this year indicates that living within 500 meters of a freeway and the associated air pollution exposure can permanently impair lung development.[2] Further, infants who live near stop-and-go diesel fueled bus and truck traffic are much more likely to wheeze when compared to other infants

living further away from this exposure.[3] Two studies have shown that children exposed to particulate air pollution face a 3-fold increase in chronic cough.[4,5] Exposure to diesel exhaust increases the likelihood of developing asthma in childhood. Asthma has been shown to be more frequent in children living within 100 meters of a freeway.[6] Exposure to diesel exhaust makes existing asthma more severe; preschool children with asthma are more likely to be hospitalized if they live in areas with high vehicular traffic.[7] The level of DEP in ambient air has been associated with increased emergency room visits and medication use by asthmatics of all ages.[8] Even in patients taking our most effective anti-asthma medications, inhaled corticosteroids, DEP exposure increases airway obstruction and irritability.[9]

Finally, exposure to particulate pollution also increases allergy, which in turn fuels asthma. For example, high rates of allergic sensitization are found in children who live near heavily traveled roads[10] and in children who play more than 1 hour daily near major traffic throughfares.[11]

Research from the basic science laboratory has given us a sense of how diesel exhaust particulates harm the respiratory tract. Ranging in size from 2.5 microns to less than 0.1 micron, DEPs can easily navigate the human respiratory tract. The particle surface is studded with hundreds of chemicals and transition metals, potential toxins, and with allergens.[12] In vitro animal and human research studies have shown that DEPs promote the development and intensity of airway inflammation, the basic pathology of asthma and allergy. These studies have shown that exposure to DEPs increases antibodies, cells and the cascade of chemical signals that mediate inflammation in the airway.[13] Further, DEPs operate synergistically with allergen to induce allergy. In the laboratory, when allergen (e.g., dust mite) is administered together with DEPs, only one-fifth as much is required to induce an allergic reaction.[14]

Diesel exhaust particulates have a clearly demonstrated negative effect on respiratory health. Uncontrolled diesel emissions raise the prevalence of asthma and allergic disorders and increase the suffering of those with these diseases. We ask you to act favorably on House Bill 2227 *An Act Relative to Reporting on the Health Effects of Particulate Matter*. Thank you for your time and your consideration of our views on this matter.

Sincerely,

Megan Sandel MD MPH

References:

1. J Allergy Clin Immunol. 2005; 115:229.
2. Lancet 2007; 17;369(9561):571-7
3. J Allergy Clin Immunol 2005; 116(2):279-84.
4. Am J Respir Crit Care Med 1994; 155:104209
5. Am Rev Respir Dis 2989; 139:587.
6. Environ Res 1997; 74:122-32
7. Arch Environ Health 1994; 49:223-7.
8. Intern Arch Allergy & immunology 2001; 124:109-12.
9. Eur Respir J 2001; 17:909-15.
10. Monaldi Arch Chest Dis 1998; 49:406-11
11. Epidemiology 1996; 7:578-82.
12. Clin Exp Allergy 1997; 27:246-51.
13. Eur Respir J 2001; 17:909-15.
14. Allergy 2006; 61:581-8
15. J Allergy Clin Immunol 1999; 104:1183-88.