LETTER FROM DAVID BROWN, Sc.D.

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Re:  Response to the Massachusetts Department of Health concerning their conclusions concerning the safety of synthetic turf fields.

Dear Suzanne Condon and other members of the Massachusetts Board of Health,

I am writing to explain why it is important to protect children's health by avoiding the use of artificial turf fields.

The Massachusetts Department of Health letter, sent to the Medway Board of Health, regarding artificial turf provides an excellent summary of the minimal number of the studies that have been conducted to date, attempting to estimate the risk to young athletes of exposure to chemicals contained in artificial turf fields. If you look carefully at each of the studies cited and note the size of the crumb rubber sample tested, you will see the problem. The findings of each of the studies are based on a startling limited number (2 to 12) actual samples of crumb rubber (each weighing a no more than few ounces), on a small number of fields, most without any testing of the crumb rubber (4 to 6 fields at most). There is no study that is a comprehensive systematic assessment of the risk.

Instead, a natural experiment is being conducted in which thousands of children are being exposed on playing fields to rubber, 1) known to contain carcinogens and 2) documented to produce cancer in the workers in the tire manufacturing plants. The results of this human health experiment is to determine whether there is enough exposure to carcinogens in the synthetic turf fields to cause cancer in the children who play on these fields.

Now that there is strong indication that cancer has appeared in one segment of the student groups that have played on synthetic turf (soccer goalies in particular as well as others), the experiment is allowed to continue with health departments standing by until they can obtain positive statistical confirmation of the cancer hazard.

Crumb rubber infill contains a large number of chemicals known to be toxic to humans. These include chemicals associated with cancer, asthma, and other adverse health effects. There is no "safe" threshold level for exposure to carcinogens. The only way to eliminate cancer risk from these chemicals is to eliminate exposure. No existing study disputes the inherent hazard of these chemicals; the studies simply draw varying conclusions regarding the total amount that these chemicals pose to children who are likely to be exposed when they play on the artificial turf fields.

The bottom line is that nobody knows exactly what the mix of chemicals is in any given field containing crumb rubber made from recycled tires. Tires themselves are manufactured with a wide variety of chemicals. Fields may contain tires from a variety of sources, and there is no source of information to identify exactly what chemicals, and in what quantity, are present in any given field. No entity providing the crumb rubber provides any quality control, identification of source, or analytical analysis of the contents of the rubber used.

Children are more susceptible than adults to a variety of environmental hazards, for several reasons. Children's organ systems are developing rapidly. A toxic exposure during a critical window of development can have life-long consequences. Children's detoxification mechanisms are also immature, so an exposure that might not have an important effect on an adult could have an important effect on a child. In addition, children have many years in which to develop disease. Cancer, in particular, is a disease with long latency: disease can develop many years after exposure. For this and other reasons, it is particularly important to avoid carcinogenic exposures during childhood.

There has been no comprehensive assessment of the data on cancer among athletes exposed to crumb rubber from artificial turf exposures. However, the evidence collected to date indicates a basis for concern and an urgent need for closer scrutiny. Most notable is that the ratio of lymphomas and leukemia is the reverse of that expected in the general population for that age group. Such a reverse in the pattern of cancers present is
considered a signal that an active chemical carcinogen is present. Given the high stakes, it is prudent to take action to protect children from this known hazard rather than wait for definitive evidence of harm.

Thank you for your attention,

David R Brown Sc.D. Public Health Toxicologist and Director of Public Health Toxicology for Environment and Human Health, Inc.; Past Chief of Environmental Epidemiology and Occupational Health at Connecticut's Department of Health; Past Deputy Director of The Public Health Practice Group of ATSDR at the National Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia.