



Assessment of the Potential Toxic Effects of Chemicals in Artificial Turf

Concerns have been raised regarding possible toxic effects of chemicals in artificial turf at Toronto public schools. As part of its review of artificial turf playing fields, the Toronto District School Board (TDSB) has examined these concerns and conducted background research to better understand the issues. The following summarizes findings of this investigation.

Concerns related to hazardous contaminants in artificial turf focus on the infill material (artificial “soil”) and the synthetic grass fibres. Infill in many artificial turf fields consists of crumb rubber made from recycled tires. Chemicals found in these rubber granules include polycyclic aromatic hydrocarbons (PAHs) and metals like lead and chromium. Lead and chromium have also been found in synthetic grass fibres. We have noted that these chemicals may also be present as background contaminants in soil that is used in natural turf fields.

A variety of public health agencies have examined whether such contaminants in synthetic turf fibres or crumb rubber infill pose a health hazard. We have reviewed a number of these studies, including the following:

- 1) The Public Health Branch, Montreal Health and Social Services Agency evaluated data from the scientific literature concerning the health risks of artificial turf materials¹. The evaluation found that “all these analyses indicate that exposure to chemicals while engaging in sports activities on artificial turf is low and that the risks to players’ health are not a concern”. The researchers therefore concluded that “the health risks for players who use artificial turf are not significant and that it is completely safe to engage in sports activities on this type of outdoor field”.
- 2) Four State of Connecticut agencies studied crumb rubber used on athletic fields². These studies, peer reviewed by the Connecticut Academy of Science and Engineering, found that levels of contaminants were below health risk targets.
- 3) The New York City Department of Health also reviewed the research³ and found that “health effects are unlikely from exposure to the levels of chemicals found in synthetic turf.” A fact sheet by the State of New York Department of Health⁴ cites a variety of studies by agencies in several jurisdictions that came to similar conclusions.

¹ http://www.nceeh.ca/sites/default/files/Outdoor_Artificial_Turf.pdf

² http://www.ct.gov/deep/cwp/view.asp?a=2690&O=463624&deepNav_GID=1511

³ <http://www.nyc.gov/html/doh/html/environmental/turf.shtml>

⁴ http://www.health.ny.gov/environmental/outdoors/synthetic_turf/crumb-rubber_infilled/docs/fact_sheet.pdf

- 4) The U.S. Consumer Products Safety Commission (CPSC) evaluated levels of lead from the synthetic fibres used in artificial turf fields⁵. This evaluation was prompted by findings of relatively high levels of lead in synthetic grass fibres in some fields in New Jersey. The CPSC concluded that while “small amounts of lead were detected on the surface of some older fields, none of these tested fields released amounts of lead that would be harmful to children”. The CPSC’s evaluation found that newer fields that used a different type of grass fibre had no detectable lead or a very low concentration of lead compared to the older product. **The older type of artificial turf which had higher lead concentrations is not in use by the TDSB or Toronto Parks Forestry and Recreation.**

While this research by highly credible public agencies provides reassurance that unacceptable health risks have not been associated with artificial turf fields, we have given serious consideration to these concerns, especially those associated with crumb rubber infill. For this reason, we are closely examining the use of alternatives to crumb rubber as the infill in future installations of artificial turf.

We have also considered closely the choice of synthetic turf fibres. We have noted that, prompted by recommendations by the U.S. CPSC, the American Society of Testing and Materials (ASTM) issued Standard Specification for Total Lead Content in Synthetic Turf Fibres (ASTM F2765 – 09)⁶. The ASTM notes that the Synthetic Turf Industry has voluntarily agreed to adhere to a standard of 100 mg/kg lead in synthetic turf fibres. In future artificial turf installations, TDSB is committed to purchasing synthetic turf that meets this standard and aims to source products with lead levels well below this threshold.

In an effort to procure the best artificial turf products on the market, from a health and environmental point of view, the Board will develop a “health and environmental impact scorecard” that will be used to compare bids in all future projects. The results of the scorecard, along with overall cost, will be used to evaluate bids in accordance with the Board’s procurement policy.

The Board will also monitor developments in the research and continue to explore potential risk mitigation strategies.

As detailed in the September 18 staff report on this issue, the decision to install artificial turf is taken only when natural turf is not suitable. In making such decisions, the factors detailed in this summary, along with those set out in the September 18 report, will be thoroughly weighed, to ensure that the choices we make are in the best interests of our community and our children.

⁵ <http://www.cpsc.gov/en/newsroom/news-releases/2008/cpsc-staff-finds-synthetic-turf-fields-ok-to-install-ok-to-play-on/>

⁶ <http://www.astm.org/Standards/F2765.htm>