

CPE Narnia...Narnia Daycare Presentation to Westmount Public Consultation on Westmount Park: May 16,2007..presented by Prof. Gillian O'Driscoll, McGill University

Westmount Council proposes to install artificial turf in Westmount Park south of the bike path, from Melville to the tennis courts. The cost of the field will be 3.5 million (cost for the field, maintenance, loan financing and field disposal*¹) over 20 years. This cost is almost one million dollars more than it would cost to install new natural grass fields that are resodded every year.

Many of our children at CPE Narnia participate currently in the Westmount soccer program and many others will in the future. We are enthusiastic supporters of park use. However, we believe that there are significant health and safety issues associated with synthetic turf that make the large investment a poor choice for Westmount Park. Two of these are listed below.

HEAT CONCERNS

The city's Golder report asks the question "Will the synthetic turf generate more radiant heat than a natural field?" and responds with "It seems possible." This is a rather understated conclusion given that the Penn State study on which they base this statement (McNitt, 2007) found the temperatures of FieldTurf, the proposed surface for Westmount Park, to be 40 degrees hotter than grass and 35 to 60 degrees F hotter than the air.

FieldTurf, the proposed surface for Westmount Park, can be more than 40F hotter than grass and up to 60 degrees hotter than the air on a summer day (McNitt, 2007).

<u>Air</u>	<u>FieldTurf</u>
82F/28C	146F/65C.
78F/25.6C	136F/58C.
73F/23C	116F/46.5

(McNitt, 2007).

These findings indicate that third-generation artificial turf is hotter than asphalt (Brakeman, 2004; Williams and Pulley, 2004).

The temperature at which skin can burn is 44C degrees (112F) (Harrington et al, 1995). At temperatures above 60C (140F), skin burns occur in 1 to 6 seconds with the shorter time being for small children. The Royal Society for the Prevention of Accidents recommends a maximum temperature of 43 C (110F) for surfaces with which someone comes in prolonged contact. The recorded surface temperature of FieldTurf on a bright 80 degree day can exceed safe values by more than 20C (36F).

¹Westmount does not provide a cost for disposal except to say that it will be "substantial." The Sports Turf Managers of America estimate \$200,000 for disposal of the a field of the proposed size, without hazardous waste surcharges.

Adults describe temperatures above 42C as “hot” (Huyer and Corkum 1997). Many parents will have noticed that children perceive “hot” at much lower temperatures than adults; this is corroborated by the fact that they burn more easily than adults (Feldman, 1983) and suffer the effects of heat more quickly than adults (Bar-Or 0, 1989). This is because they: have a greater surface area to body ratio than adults, resulting in a greater heat gain from the environment on an hot day; produce more metabolic heat per mass unit than adults when running or walking and; have a lower sweating capacity, which reduces their ability to cool themselves (American Association of Pediatrics, 2000a). These physical characteristics render them particularly vulnerable to the extreme temperatures found on FieldTurf and similar products.

But how can this be correct when FieldTurf installations are happening throughout the country? The fact is that where rubber-sand infill turf is installed as an outdoor soccer field in hot summer climates, the surface should be thoroughly irrigated with water before games to keep the surface cool enough to play on. As the Golder report acknowledges, Dollard des Ormeaux was compelled to install sprinklers because their teenage athletes found the surface too hot. Given the available research this should have been no surprise. However, the cooling effects of water on FieldTurf last a maximum of 3 hours (McNitt, 2007). On a cool 73F day, thorough irrigation of FieldTurf reduced the temperature from about 115F to 60F, but within three hours the surface temperature had rebounded back to above 110 degrees, i.e. the temperature above which there is a risk of burns.

Sprinklers can work for the kind of facility at DDO, where the field is locked and is accessible only by reservation. In this situation, the cooling of the field can be timed to coincide with the field use. This will not work if the field is to remain a public playspace available to the community. Clearly, sprinklers can't be turned on throughout the summer every two hours as people are using it. The solution will be to lock the field; this decision will have the added benefit of protecting the 3.5 million investment from casual use by the people who paid for it.

RUBBER PELLETS

Another major concern is the rubber pellets. These are made of recycled truck and car tires, and contain high levels of polycyclic aromatic hydrocarbons which are considered in Europe to be known carcinogens (Swedish Chemical Inspectorate) and in the US suspected carcinogens. According to a study done by Crain and Zhang (2007) these pellets contain suspected carcinogens and heavy metals at levels that exceed what is permitted in the ground by the New York Department of Environmental Conservation due to their toxicity.

There are essentially no data on the effects of ingesting these rubber pellets. The Golder report cites one study (Birkholz, 2003) in which the authors claim it is unlikely that the digestive system is efficient enough to extract the chemicals. But this is the opinion of the authors with no supporting data offered. What this study actually found was that when water was exposed to tire shreds it became toxic to all species tested (bacteria, algae, invertebrates and fish).

The office of the Public Advocate in New York City has called for a moratorium on artificial turf installations until more research has been conducted on the effect of these dangerous chemicals in turf on public health. Public governmental institutions in Sweden and Norway have called for a moratorium on installations of any new field surfaces containing recycled tires; this is based on the chemical contents of the tires and the espoused goal to reduce exposure of the population to chemicals. The EU now forbids shredded rubber in every landfill in Europe.

Yet Westmount City Council argues that the FieldTurf surfaces, which would contain rubber crumb from more than 20,000 tires, is safe because other communities have installed them. The widespread use of any chemical does not render it safe: there are numerous historical examples of this fallacy -- asbestos, thalidomide, DDT. In fact, in light of the evidence of the dangers of chemicals that are still widely used in other communities, Westmount forbade use of cosmetic pesticides in its parks. Artificial turf is the ultimate pesticide: it kills everything underneath it, and its benefits are almost entirely cosmetic since the main concern of an overplayed grass field is not injury, since the rates of injury in youth soccer on natural surfaces are extremely low (less than 3% of kids sustain an injury of any kind over the course of a full season (American Academy of Pediatrics, 2000b). Thus the decision to install toxic chemicals and an artificial surface on natural grass flies in the face of the forward thinking, leadership environmental position Westmount took under a different administration more than ten years ago.

These rubber pellets by the way will not simply stay on the field. They are subject to static cling to the extent that many field managers recommend using gallons of fabric softener on the field to reduce the tendency of the pellets to cling to socks and skin (Fouty, 2005). For our children, what this means is that they will be taking these pellets home on their clothes. Thus, even for children who are not themselves at an age where they will ingest these pellets, they will bring them home to their younger brothers' and sisters' environments.

Finally, the Golder report claims that the toxicity of the rubber crumb is unlikely to affect us since the groundwater that it drains into is not a source of human drinking water. However, this groundwater does affect animals, trees and aquatic life. A study published in 1993 immersed used tires in water for as little as five days; the tires were then removed and toxicity of the water evaluated by its effect on rainbow trout. The water was found to be lethal to the trout, even 8 days after the removal of the tires (Day et al, 1993). A subsequent study of tire particles found significant toxicity to aquatic organisms at concentrations close to predicted environmental concentrations (Wik and Dave, 2006). These findings do not support the claim that there is no leaching of toxic compounds into the water. Thus, whether or not human drinking water is affected by the tire contamination, it is reasonable to expect that the water available to other life forms will be.

SUMMARY

Let's find a solution for the soccer players that does not involve digging ourselves into a deep fiscal hole to jeopardize our kids' health and reduce the already limited green space in Westmount.

REFERENCES

- American Academy of Pediatrics Policy Paper: Climatic heat stress and the exercising child and adolescent. *Pediatrics* (2000a) Vol 106. pp. 158-159.
- American Academy of Pediatrics Policy Paper: Injuries in Youth Soccer: A subject review. *Pediatrics* (2000b), 105:659-661.
- Bar-Or O. (1989) Temperature regulation during exercise in children and adolescents. In: Gisolfi C, Lamb DR Eds. *Perspectives in Exercise Science and Sports Medicine. II. Youth, Exercise and Sport*. Indianapolis, IN: Benchmark Press: 335-367.
- Birkholz DA, Belton KL, Guidotti TL. Toxicological evaluation for the hard assessment of tire crumb for use in public playgrounds: a case study. *Journal of the Air and Waste Management Association* (2003)53: 903-907 (funded by the Tire Recycling Management Association of Alberta).
- Crain W and Zhang J. Hazardous chemicals in synthetic turf: follow-up analyses. *Rachel's Democracy & Health News* #992, Apr. 12, 2007
- Day KE, Holte KE, Metcalfe-Smith JL, Bishop CT, Dutka BJ. Toxicity of leachate from automobile tires to aquatic biota. *Chemosphere*, 1993, 27(4): 665-675.
- Feldman KW. Help needed on hot water burns. *Pediatrics* (1983) 71: 145-6.
- Royal Society for Prevention of Accidents
www.rospa.com/productsafety/articles/temperature.htm
- Harrington WZ, Strohschein BL, Reedy D, Harrington JE, Schiller WR. Pavement temperatures and burns: streets of fire. *Annals of Emergency Medicine* (1995) 26: 563-568.
- Haymes EM, McCormick RK, Buskirk ER. Heat tolerance of exercising lean and obese prepubertal boys. *J Appl Physiol* (1975): 39: 457-461.
- Huyer DW, Corkum SH. Reducing the incidence of tap water scalds: strategies for physicians. *Canadian Medical Association Journal*, (1997) 156(6): 840-844.
- Kjelgren R and Montague T. Urban tree transpiration over turf and asphalt surfaces. *Atmospheric Environment* (1998)32: 35-41.
- McNitt A (2007). Evaluation of playing surface characteristics of various in-filled systems. Cropsoil.psu.edu/mcnitt/infill7a.cfm (accessed May 2007).
- Fouty A. "A sport's field manager's perspective: synthetic turf construction considerations: maintenance, costs and concerns. Synthetic Infill Seminar, Detroit MI, May 11, 2005 (cited in Brakeman, 2005, "Experts spell out the true cost of synthetic turf

maintenance. Athletic Turf News, May 24, 2005:
www.athleticturf.net/athleticturf/article/articleDetail.jsp?id=162975.

Brakeman L (2004) Infill systems spark debate at STMA conference.
<http://www.athleticturf.net/athleticturf/article/articleDetail.jsp?id=85955>. (accessed May 2007)

Swedish Chemical Inspectorate, 2006.
www.kemi.se/upload/Trycksaker/Pdf/PM/PM3_06eng.pdf (accessed May 2007).

Wik A, Dave G (2006) Acute toxicity of leachates of tire wear material to *Daphnia magna* – variability and toxic components. *Chemosphere*, 64(10): 1777-1784.

Williams CF, Pulley GE. (2004) Synthetic surface heat studies.
spectre.nmsu.edu/dept/docs/turf/brigham%20young%20study.pdf (accessed May 2007)

Sports Turf Managers Association http://www.stma.org/_Files/_Items/STMA-MR-TAB2-1416/Docs/STMA%20SyntheticTurfGuideHI.pdf.