

John J. McSheffrey
17 Cushing Street
Hingham, MA 02043
781-749-4124

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Town of Hingham
210 Central Street
Hingham, MA 02043

Attn: Conservation Commission
Carolyn Nielsen, Chairman
Charles Berry, Vice Chair
Daniel Coughlin
Scott Thompson McIsaac
Robert Perry
Nina Villanova

ENVIRONMENTAL ISSUES WITH ARTIFICIAL TURF FIELDS

Artificial Turf fields are established all over the world. Many states, cities and foreign countries are investigating the environmental issues associated with these fields regarding the safety to the people playing on the fields as well as surrounding environment. According to one manufacturer of turf fields, it takes 800,000 pounds of rubber crumbs and silica (240,000 pounds of rubber crumbs and 560,000 pounds of silica) to populate one field. Reading from another statement, a turf field manufacturer stated that each field has 25,000 tires, cut into crumbs on its surface. Exhibit # 1

A rubber crumb is about ¼" square, on average. The area of rubber on all of its sides is about .625" square inches of exposed rubber. There are literally in excess of 100 million rubber crumbs layered into a typical sports field, thus having exposed rubber crumbs in excess of billions of square inches. Exhibit # 2

The EPA (Environmental Protection Agency) has and is investigating the rubber tire crumbs on turf field surfaces (posted December 9, 2009 from the EPA). In their research, they have identified a number of chemicals and chemical compounds of materials that may be found in tires. In researching contaminants found in drinking water nationally. I have identified 19 of the top 100 contaminants in drinking water that are imbedded in tires. Exhibit # 3

During 2007, The State of Connecticut's Agricultural Experiment Station conducted research on the crumb rubber products which were cut from recycled tires. The Agriculture Experimental Station findings, using sophisticated state of the art measuring devices, such as Scanning Electron Microscopy (SEM) and Energy Dispersive X-Ray (EDS) equipment, determined that the tire crumbs did leach harmful chemicals into water. Among the elements they found leached

into water from the rubber crumbs, were zinc, lead, cadmium and selenium. All of these chemicals are found on the EPA's list of contaminants in the National Drinking Water Research Project. Exhibit# 4

The Town of Hingham's Comprehensive Waste Water Management Plan states that areas of sand and gravel exist in the land in Southern Hingham. The subsoil's make up allows water to permeate into the sand and gravel base thus allowing the runoff water to recharge the aquifer quickly. It is conceivable that storm waters will permeate through the turf fields and continue into the ground, carrying with it a variety of leached chemicals from the rubber crumbs. In addition, there will be excess water runoff from the fields. Since South Hingham sits on a sand and gravel base, the runoff water will quickly penetrate the ground and migrate toward the Fulling Mill basin potentially contaminating the wells in the Ward Street and Cushing Street vicinity and finding its way into the aquifer. Exhibit # 1 & Exhibit #5

The Commonwealth of Massachusetts' new Proposed Stormwater Regulations 314 CMR 21,00 will require managing of storm water runoff. Testing and controls will be required going forward. The Town of Hingham will be responsible for the costs of inspection and controlling the runoff from the proposed turf fields and any clean up that may be required. Exhibit # 6

As the manufacturers of these turf fields state in their literature, the base of the fields are designed to be permeable thus allowing storm water to penetrate through the rubber crumb/silica materials and leach into the ground beneath. The ground in South Hingham is a sand and gravel base and, as stated above, the storm waters will easily penetrate into the subsoil and, eventually, into the drinking water for the surrounding houses on Ward and Cushing Streets.

It is a well known fact that Massachusetts receives a large amount of acidic rain every year and Massachusetts bogs, wetlands and ponds carry a high Ph factor. It is well known that the acidic conditions (high Ph) in our waters will dissolve metals such as are carried in automobile tires.

It, also, is a well known fact that used tires are prohibited from being buried or deposited in any town's land fill due to their understood hazard to the environment. (Town of Hingham DPW)

All turf field manufacturers clearly state that their fields must be groomed and repopulated on an annual basis, depending on their amount of usage, with additional fill of the silica and rubber crumbs. Fields that receive heavy usage will be required to add between 5,000 to 20,000 pounds of material yearly.

According to "Athletic Turf News", Michigan States University's turf field required 20,000 pounds of fill annually. Exhibit # 7

Hingham's planned two fields are both scheduled to support a large usage of sports play on an annual basis. This sports play is necessary for income to make their budget numbers work. Thus, we could see a requirement for an annual refill of silica and rubber crumbs in the, conservative range, of 10,000 pounds annually.

If the turf fields require refills of silica and crumbs each year the question we must ask the Conservation Commission is “Where did the lost silica and crumbs go????”

Some of the fill went home in children’s sneakers and clothes (see the CDC guide lines on clothing used on turf playing fields). Some went into the surrounding crushed stone parking lots, some went in to the surrounding woods and some went into the surrounding wetlands.

With some simple mathematics we see that 10,000 pounds of field fill is only 1.3% of the original 800,000 pounds of fill. However, using the 70/30% mix required we see that there is a loss of 3,120 pounds of rubber crumbs annually. The loss of these crumbs, equal the loss of 325 tires annually!!!! Multiply that by two fields and that is 650 old tires being put into the surrounding Ward Street wood’s, the turf field’s crushed stone parking lot and the adjacent WETLANDS.

These tires will eventually add up to 6,500 old tires being left in and around the proposed turf field in the field’s ten useful years of life. The Ward Street turf fields will become a dumping ground for old tires

Additionally the rubber crumbs do not float in water, so it can easily be understood that a large number of crumbs (tires) will end up on the bottom of the wet lands and leach their metals into Cushing Pond and the water wells in the Ward and Cushing Street area as well as migrating toward the Fulling Mill Basin.

I urge the Hingham Conversation Commission to consider the facts listed here and prevent this project from moving ahead.

Respectively submitted,

Jack McSheffrey
17 Cushing Street
Hingham, MA 02043