Artificial Turf Fields

Artificial turf sports fields are quickly gaining popularity among community-based and school athletic programs around the United States. Since the Astroturf fields of the 1960's, the technology of synthetic field surfaces have vastly improved to the artificial grass and rubberized infill that is widely used in professional, collegiate, high school and city sports facilities today. The advantages of such surfaces include reduced maintenance costs (including watering, seeding, fertilizing, patching and repairing natural grass), the ability to rent and schedule fields year-round (no annual closures due to weather-related damage), and a higher level of safety from a consistent playing surface without divots, puddles and mounds.

Fields on Mercer Island

The Stadium field at Mercer Island High School was designed by D.A. Hogan & Associates and was installed by FieldTurf in 1992. FieldTurf is the leading manufacturer and installer of artificial turf in the nation.

In November 2007, construction was completed on the new artificial turf field at the South Mercer Playfields. The new field was designed by SLA Landscape Architecture, with base construction by A-1 Construction and synthetic turf installation by ProGrass LLC.

All aspects of the design and construction of both fields met industry standards for quality and safety.

Recent Safety Concerns

Recently, concerns about both the human health and environmental safety of synthetic fields have arisen in various cases nation wide. These include:

1. Exposure to lead from the coloring additive of artificial grass material
2. Leaching of chemicals from the fire retardant component of artificial surfaces
3. Unsafe temperatures due to the “trapping” of heat in the rubber infill material

In 2008, the Centers for Disease Control recommended testing of some artificial turf athletic fields for the presence of lead in the synthetic grass “blades.” Earlier this year, three artificial turf athletic fields in New Jersey were found to have potentially harmful levels of lead that could be absorbed by humans, but may only cause damage to individuals already exposed to lead (Delli Santi 2008). Lead chromate is used to preserve the coloring of some synthetic turf surfaces. After further investigation, the CDC found that the potential for hazardous lead levels occurs only in worn nylon and nylon-blend athletic fields. Polyethylene or polyethylene blend fields are not recommended for testing and have not been found to contain dangerous levels of lead (Delli Santi 2008).

Both the High School Stadium field and the South Mercer artificial turf field are comprised of a blend of 100% polyethylene materials. This substance has not been
found to contain harmful traces of lead. Proper drainage and routine maintenance of the field further aid in providing a clean and safe playing environment for users.

There is little research concerning the risk of chemicals from flame retardant substances in artificial field surfaces; specifically the possible presence of Polybrominated Diphenyl Ether (PBDE) flame retardants. PBDEs are present in a wide variety of household products including fabrics, carpet pads, computers, TVs, and furniture and are used to eliminate or slow burning or ignition of these products in the event that they are exposed to extreme heat or flame. Health hazards of PBDEs include affects to neurological development, reproductive impacts, and liver disorders (Department of Ecology 2006). Some research suggests that humans are most likely exposed to these via indoor dust or through various foods (DOC 2006). Some concern exists that rainwater filtered through the field and into the groundwater supply may be contaminated by PBDEs. Though more studies of this affect from sports fields are necessary, fields tested in San Francisco revealed no traces of PBDEs in the groundwater below synthetic turf fields (Fox 2008).

Specific testing conducted at synthetic turf fields in California did not find evidence of PBDEs in the grass or infill materials (Fox 2008). Further research is needed to reach a firm conclusion on the effect of the rubberized infill to groundwater, but at present, artificial fields have not been found to be a source of PBDE contamination in humans or the environment.

Extreme heat has also been identified as a potential risk associated with artificial grass fields. The usually black tire-rubber infill can trap heat from the sun creating a “heat island” on the field. Facilities measured in New York City on a day that was 89 degrees Fahrenheit in the shade reached 160 degrees on the playing field (Aubrey 2008). Turf manufacturers and sports managers do not recommend playing in such conditions and say that climate is always a factor in determining the safety of a sport. Luckily, the Pacific Northwest weather provides minimal risk for these extreme temperatures and field users are always encouraged to use common sense when it comes to playability. When Mercer Island city staff deems a sports facility unsafe, whether composed of natural or artificial grass surfaces, the City will close the field, posting signage to alert the public.

The City will continue to carefully review and assess various artificial turf products for their safety, health and environmental impacts as part of any potential future installation project(s).
Works Cited


