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A study conducted by the Center for Disease Control showed that although the synthetic infill does not harbor MRSA, the greater number of turf burns due to the abrasive nature of the surface and combined with poor personal and wound hygiene as well as chronic misuse of anti-biotics has lead to increased incidence.

Environmental Aspects of Synthetic Turf

As an example of the growing popularity of synthetic turf, in NYC alone there are 4000 parks that currently have replaced asphalt with synthetic turf at 35 locations. Over the years the original single pile "carpet-like" Astro-Turf gave way to the in-filled system with long polyfilament fibers that are filled with various amounts of rubber and sometimes sand. The combination of the rubber infill and the padded backing underneath the field provide the resiliency. More recently, the infill industry is moving to the monofilament fibers that appear to have more durability, possibly increasing the lifespan of the system. There is little question that infill synthetic turf has revolutionized the industry, allowing for substantial increases in field use without (at least to date) significant increases in head and neck injury (a common indicator of player injury). With more than 3500 of these fields now installed in the US some questions are beginning to be raised regarding the use of synthetic turf; surface temperature, injury surveillance, MRSA Methicillin-resistant Staphylococcus aureus (a penicillin-resistant strain of Staph), and potential health hazards of the crumb rubber infill.

Surface Temperature: Temperature monitoring studies have found surface temperatures of synthetic infill systems to be as high as 160F on a 78 F day, while an adjacent grass field was 85F. There is some medical evidence that suggests temps above 122 F can cause skin injuries. Some have suggested irrigation as a means of reducing surface temperatures however studies have shown that while there might be an initial reduction of 10-15 degrees it does not last more than 45-60 minutes. Also measurements from Iowa State University suggest that relative humidity levels are as important as temperature measures.

Injuries: A 2007 study published in the British Journal of Sports Medicine indicated there were no differences in incidence, severity, or cause of injuries in soccer teams who played on grass versus infilled systems. A 2004 study likely looking at single pile carpet turf indicated 10% more injury compared to natural grass, yet head and neck injuries were greater on natural turf. The NCAA maintains an injury surveillance program that explores the risk of playing surfaces and monitors injuries.

MRSA: There has been an increase in concern over the spread of MRSA (a bacterium responsible for difficult-to-treat infections in humans) and some have associated it with synthetic infill systems. A study conducted by the Center for Disease Control showed that although the synthetic infill does not harbor MRSA, the greater number of turf burns due to the abrasive nature of the surface and combined with poor personal and wound hygiene as well as chronic misuse of anti-biotics has lead to increased incidence. The recommendation then would be to be sure to treat abrasions as any other wound with topical disinfectants. There does not appear to be a need for regular disinfecting of field surfaces however granular Tide and Snuggles fabric softeners (8 gallons per field) can provide some benefit.

Crumb Rubber Chemicals: There has been significant concern expressed in the last year

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CORNELL Turfgrass

Cornell University Turfgrass Times
New York Greengrass Association
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regarding the presence of toxic chemicals in the crumb rubber infill. There appear to be two primary issues; the potential for chemicals to leach out of the field and the exposure of the athletes to potential carcinogenic hydrocarbons. Leachate studies are currently focusing on zinc, sulfur, cadmium and lead being conducted at UConn. Exposure studies with toxic hydrocarbons are more substantiated claims. A 2007 CA study found cancer risks 1.2 in 10 million, well below the 1 in 1 million risk from a single one time ingestion. Another estimate from handwipes indicated that regular playground use and contact with rubber (more than would be expected on a field) created a slightly higher risk (2.9 cancers in 1 million).

Summary: Much more work is needed in these areas to better understand the risks and benefits associated with synthetic turf systems. Clearly many natural turf systems cannot sustain the same high traffic as synthetic turf, however improved natural turf management and regular re-sodding could be viable options for a comparable investment in synthetic turf.

Andrew McNitt, Penn State University and Frank S. Rossi, Ph.D.

Sports Turf Manual Now Available

The New York State Turfgrass Association (NYSTA) is pleased to announce that a practical guide to sports turf maintenance is now available. "Sports Field Management," written by Joann Gruttadaurio, is a hands-on manual for turf professionals who manage scholas-tic and community high-use sports fields. She received a grant for the project in 2005 from the New York Turfgrass Foundation, an endowment fund established between NYSTA and Cornell University to ensure the future of the turfgrass industry. It provides valuable information on how to maintain safe sports fields to maximize player safety and performance. This educational guidebook is a culmination of Gruttadaurio's 33 plus years experience as a former Senior Extension Associate at Cornell University. It includes information on routine maintenance practices, management programs, turf challenges and decisions, frequently asked questions, and sport turf management resources. In addition, a useful sports field assessment sheet is provided with a rating system to help sports turf professionals decide if they should continue current management practices or reassess their management programs. Illustrations, photos and tables provide clear and concise information on best management practices for sports field maintenance. "Sports Field Management" can be purchased for $15 plus shipping and handling: http://www.nysta.org/sportsmanual/orderinfo.html. Orders of two or more qualify for the discounted rate of $10 each. It is also available at no cost for sports turf professionals who are members of the New York State Turfgrass Association. For more information, contact NYSTA at (518) 783-1229.

NYSTA President, Owen Regan (left) and Sports Field Managment author Joann Gruttadaurio

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