The Truth about the Existence of Microbes in Synthetic Turf System

Truth #1:

Microorganisms can be transferred to a synthetic turf field through a variety of sources.

On an average football weekend there are…

100 players on the home team
25 on the coaching staff
15 cheerleaders
150 marching band members
125 players and staff in the opposing team
150 opposing marching band members
15 opposing cheerleader
2 animal mascots
75,000 adoring fans

_____

75,580 people and 2 animals

That is an average of 70 thousand people who come into direct or indirect contact with your synthetic turf every weekend. Each person tracks in particles on their shoes, sheds skin cells and shares airborne pathogens with their surroundings. From the minute the field is installed, a synthetic turf field becomes a dynamic environment hosting microorganisms from a legion of sources introduced to it every day.

"Gram positive bacteria <like MRSA> frequently contaminate the inanimate environment and, therefore, surfaces and objects may serve as secondary reservoirs for cross-contamination" The Effect of Humidity on the Survival of MRSA on Hard Surfaces, **Indoor and Built Environment**, November 25, 2005

Organic contributions to the system…

By the nature of contact sports, organic matter can also be shed on a synthetic turf field. **Clothing fibers, sweat, spit, dead skin cells, chewing tobacco, vomit, blood and even urine** can be introduced into synthetic turf systems providing additional nutrients for microorganisms.

"We found that these bacteria have an extraordinary capability for survival in the environment. The viability was consistently higher on dried blood surfaces. For both of these environments, staphylococci appeared to lose viability between three and six months, while E. coli and P. aeruginosa survived longer." Survival of nosocomial pathogenic bacteria at ambient temperature, Microbiology Section - **Department of Veterans Affairs Medical Center**.

Truth #2:

Indoor and outdoor synthetic turf systems can sustain microbial life.

In order for microbes to exist they need four things:

1) Light - sunlight or indoor lighting

2) Moisture - sweat, rain, humidity

3) Nutrients – organic matter including dead skin cells
***The average human sheds 1 million skin cells a day*

4) A Receptive Surface

Synthetic Turf Systems – like locker rooms and wrestling mats - act as the receptive surface for microbes. Beneficial and harmful microorganisms can live in synthetic turf systems; introduced from other environments via the people who use the field, animals or simple airborne transmission.

"Experiments have demonstrated that MRSA can persist for long periods of time on surfaces, furnishings and sterile foods packaging, paper and foil in health-care settings, therefore measures that reduce its survival time on surfaces are worthy of consideration in the development of risk control strategies." The Effect of Humidity on the Survival of MRSA on Hard Surfaces**, Indoor and Built Environment**, November 25, 2005

Truth #3:

Weather won't eliminate microorganisms from surfaces.

Microorganisms can survive and reproduce in extreme weather conditions including near boiling water and extreme cold. Rain does not sanitize a surface.

"According to Clare Edelmayer, the infection control coordinator at Doylestown Hospital. Rain wouldn't be enough to get rid of the bacteria either, only if, Edelmayer said, 'it rained with disinfectant.'" **Philly Burbs** – April 30, 2006

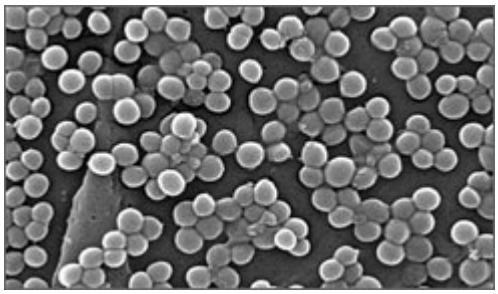
In fact, despite the hot sun, desert sands are great hosts for microbial life, according to a **Duke University** study published January 9, 2006. *"The arid desert is a teeming microbial Amazon. Their first ever continental-scale genetic survey of soil bacteria revealed that the primary factor that seems to govern the diversity of soil bacteria is soil pH. Thus acidic coils of the tropical forests harbor fewer bacterial species than the neutral soils of deserts."*

Truth #4:

The MRSA bacteria can survive for days, even weeks on surfaces.

"*Bacteria can remain in a synthetic surface for as long as three hours — about the average length of a football game — according to Clare Edelmayer, the infection control coordinator at Doylestown Hospital."* ***Philly Burbs*** - April 30, 2006

Methicillin-resistant staphylococcus aureus "is a hardy bug. The bacterium likes to grow in warm, moist areas of the human body, such as the nose and armpit or groin. It can linger on the skin without causing infection, waiting to enter through a cut or an abrasion. Unlike many other germs, it can also survive hours, possibly days on inanimate objects such as towels." ***LA Times*** – February 26, 2006



"All staphylococci tested survived for at least 1 day on all fabrics and plastics. Staphylococcal viability was longest on polyester (1 to 56 days) and on polyethylene plastic (22 to >90 days)." Survival of Enterococci and Staphylococci on Hospital Fabrics and Plastic, **Journal of Clinical Microbiology**, February, 2000

The Department of Pharmacy at the **Yamaguchi University Hospital** conducted a study of Survival of methicillin-resistant Staphylococcus aureus (MRSA) on naturally contaminated dry mops in October, 1996. It found that "*MRSA disseminated by patients over the environment can survive for several weeks on dry mops."*

Truth # 5:

Extreme temperatures are not an effective disinfecting strategy.

There are many commonly held myths that staph can be killed by normal hot or cold temperatures. However, research demonstrates the abilities for this hardy bug to endure through both extreme heat and cold.

In the study, "Survival of Salmonella typhirmurium and Staphylococcus aureus in eggs cooked by different methods" it was found that "*it took 12 minutes of boiling to destroy Staph aureus. Scrambling for 1 min at 74° C (165° F) was required for the complete destruction of S. typhimurium and 2 min at 78°C (172° F) for Staph aureus."* (***Poultry Science***, *July 1983)*

"In the production of Bulgarian sour milk Staph aureus was shown to be viable, remaining active for seven days at 2° (35.6° F) to 6° C (42.8°F)." sited in the **Bulgarian**, "Development and resistance of staphylococci in Bulgaricus milk" 1976.

Truth #6:

High contact sports increase chances for skin abrasions and tissue damage – entry points for MRSA and other harmful bacteria.

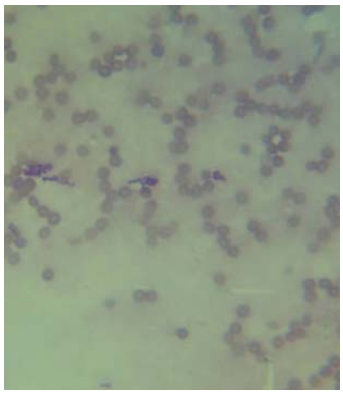
"*Even more alarming, resistant bacteria are breaking out to infect healthy people outside the hospital ward…the staph super strain that almost killed young Jewaun Smith didn't come from a hospital visit at all, doctors believe. He probably picked it up beforehand, and it was even more virulent than the hospital version. This same staph bug has rippled through the National Football League, infecting muscular limbs skinned by artificial turf.*" **Forbes**, June 19, 2006

In a **New England Journal of Medicine** study "A Clone of Methicillin-Resistant Staphylococcus aureus among Professional Football Players" February 3, 2005 it found that "*One important player-level factor was skin abrasions, or turf burns. All MRSA skin abscesses developed at sites of turf burns on areas of the skin not covered by a uniform. These abrasions were usually left uncovered, and when combined with frequent skin-to-skin contact throughout the football season, probably constituted both* ***the source and the vehicle for transmission."***

"Players who sustained turf burns have a ***risk of infection that was 7 times higher*** *than for players without turf burns,"* according to a study of college football players conducted by **Clinical Infection Diseases**, April 2004.

Truth #7:

Microorganisms can affect the functionality a synthetic turf system.



Synthetic turf systems can be negatively affected by a variety of bacteria, fungi and molds. In extreme cases, these microorganisms can form bio-films in the infill. These bio-films settle in the infill and inhibiting drainage from the field. This becomes a vicious cycle since the increased moisture in the infill leads to even better breading conditions for more microorganisms.

There are also cosmetic problems caused by various molds and bacteria like odors and stains. Odor causing bacteria can also cause fields to have a pungent smell which is unpleasant for the athletes, coaches and fans. Over time, some microorganisms can also cause staining and discoloration of the turf.

The turfaide Solution

Truth #1: Microorganisms can be transferred to a synthetic turf field through a variety of sources.

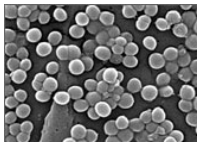
SOLUTION: ***With TurfAide protecting your field, microbes are destroyed on contact and cannot survive on the field.***

Truth #2: Indoor and outdoor synthetic turf systems can sustain microbial life.

SOLUTION: ***While you can't eliminate light, moisture or nutrients from the environment, treating your field with TurfAide creates a non-receptive surface so that microbial life cannot be sustained.***

Truth #3: Weather won't eliminate microorganisms from surfaces.

SOLUTION: ***Weather cannot eliminate them, but the advanced antimicrobial in TurfAide can!***



Truth #4: The MRSA bacteria can survive days, even weeks on a surface

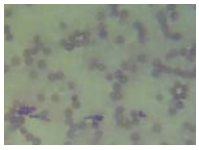
SOLUTION: ***The antimicrobial in TurfAide has been proven effective against the MRSA bacteria destroying the bacteria upon contact.***

Truth # 5: Extreme temperatures are not an effective disinfecting strategy

SOLUTION: ***The antimicrobial layer in TurfAide remains effective and stable in temperatures up to 400° F.***

Truth #6: High contact sports increase chances for skin abrasions and tissue damage – entry points for MRSA.

SOLUTION: ***TurfAide eliminates the turf as a point of transmission.***



Truth #7: Microorganisms can affect the functionality a synthetic turf system.

SOLUTION: ***The antimicrobial in TurfAide has been proven effective against a very broad spectrum of bacteria, mold, mildew, fungi and algae.***