

blow was caused by him running pell-mell into the shortstop," says Frank Vible, Monsanto's assistant general counsel.

Despite the debate, the suit was settled out of court in September, 1985. The amount of the settlement cannot be disclosed.

How hard is hard?

The Halbrook case may seem like the artificial vs. natural turf controversy is again being dredged to the forefront. That issue has been endlessly hammered into the ground it covers.

There's no denying the lush, green color of artificial turf shows up beautifully on TV...mud is non-existent...and it takes the abuse of rock concerts, tractor pulls, and rodeos, along with the usual sports wear-and-tear.

It also survives in domed stadiums.

But there's no denying the increased injury rates—from "turf toe" and infected abrasions to serious head injuries—its (yawn) predictability...and the scorching heat emitted from the artificial turf on hot days.

There's always room to debate. But, in the best interests of the players, the artificial and natural turf industries should stop arguing and each take a critical look at the questions raised by the Halbrook case:

- *How hard is hard?*

- *Should there be a standard for athletic fields?*

"There's a real question out there," Holland says. "To what extent does the hardness of the field play a part in injury?"

"The tendency is to blame something else...the athlete's condition, the risk of injury inherent in the sport, the equipment, the particular way the fall or injury occurred. Where do you draw the line?"

In researching the case, Holland found studies and cases involving abrasions and turf toe, but little on hardness.

"I was really shocked at the lack of information about field hardness," Holland says. "The bottom line is...is hardness an issue? That was the whole focus in the case and we found that it is an issue, so we tried to define the issue."

No excuse

Field hardness is becoming such an issue, in fact, that researchers at Penn State University have begun studying the hardness of natural fields.

Holland turned up several impact studies,



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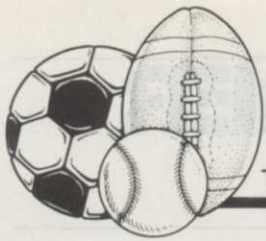
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and Halbrook dished out thousands of dollars for private studies to support his case.

Halbrook, a mechanical engineer, became consumed with the studies and documents trying to find answers to his son's wrongful death. "I read every one of them at least half a dozen times," Halbrook says.

They also discovered that in 20 years of making AstroTurf, Monsanto had never established a standard for hardness. But, then, neither had any other artificial turf manufacturer or the American Society of Testing Materials (ASTM), which has standards for most man-made products.

"Their excuse for failing to establish a standard in 20 years was to say that there's no standard on natural turf," Holland explains. "That's an improper perspective. They've created a product, put it in a different environment, and it works in a different way."

But Dr. Eliot Roberts, executive director of The Lawn Institute, says establishing a standard for natural turf fields will be necessary soon. With litigation getting out of hand, a law suit against a poorly-maintained natural turf field may not be far off.

In fact, it's difficult to even get university turf researchers to say, flat out, that natural turf fields are always safer than artificial turf fields.

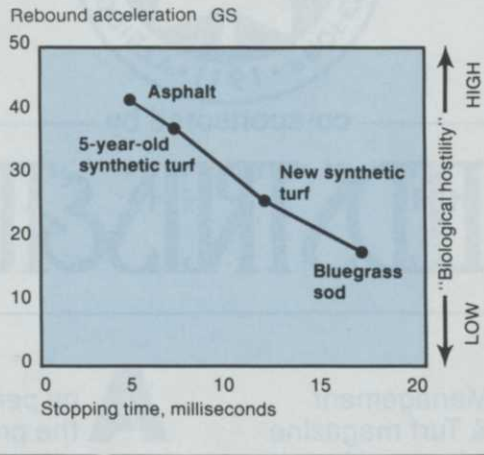
What may be true is that a new artificial turf field could be safer than a poorly-maintained natural turf field. But without standards in either industry, researchers hesitate to make blatant statements.

One of the most critical studies addressing this issue was published by Dr. Douglas Bower and Bruce Martin in *Medicine and Science in Sports* in 1974. The study, "Impact absorption, new and old AstroTurf at West Virginia University," looked at impact absorption effects on four surfaces: sod (well-maintained Kentucky blue grass about 1 1/2 inches high); new AstroTurf (glued down to 5-year-old underpad); old AstroTurf; and asphalt.

The study found the "new AstroTurf surface approximates, but does not equal, a grass field in impact absorption capability...5-year-old AstroTurf surface has significantly decreased ability to absorb impact compared to the new AstroTurf."

IMPACT ABSORPTION OF SURFACES

Rebound acceleration and stopping time of a 16-pound indoor shot put on four surfaces, West Virginia University, 1974.



Alan Halbrook (right) and attorney Dan Holland examine less than half the documents in the case of Scott Halbrook's death.

The West Virginia study showed after only five years the surface had decreased dramatically. Parker Stadium's AstroTurf was six years old, the pad underneath eight. Besides the usual wear, ultraviolet light can break down synthetic surfaces and bacterial degradation can literally eat away the pad.

A standard for all

Dr. Bower, chief of sports medicine at West Virginia University Medical Center, completed an updated study in July. His results have not yet been published. But Bower is a big advocate of standards in all sports fields.

"I would like to see a standard for playing surfaces for specific sports," says Bower. "If artificial surfaces can meet that, fine."

Of course, Bower points out, a standard for a baseball field would differ from a football field or soccer field. But, he says, the standards should be set using good natural surfaces, not artificial turf, as a guideline.

Bower's research is unique. Although most companies "test" their own products, little objective research has been conducted.

Monsanto's Vible says he doesn't believe a standard is necessary for artificial turf, because it is "an essentially safe product."

"There is no vehicle for producing a general standard," Vible says. "There is no artificial turf trade association. ASTM has standards most of us abide by."

Holland points out, however, that ASTM has test standards, not safety standards, which take into consideration human tolerance. Besides, there's no requirement for companies to abide by test standards.

Penn State University graduate students Trey Rogers and Rich Henderson, under the di-

rection of soil science professor Don Waddington, are measuring natural field hardness with a portable Clegg impactor. With this instrument, Rogers and Henderson will test fields under different conditions.

They will try to determine exactly how much affect various turf management methods, such as aeration and mowing height, actually have on the hardness of the field. Besides management methods, the researchers will check if turf species and root systems affect field hardness.

Henderson's tests so far have shown a decreased peak



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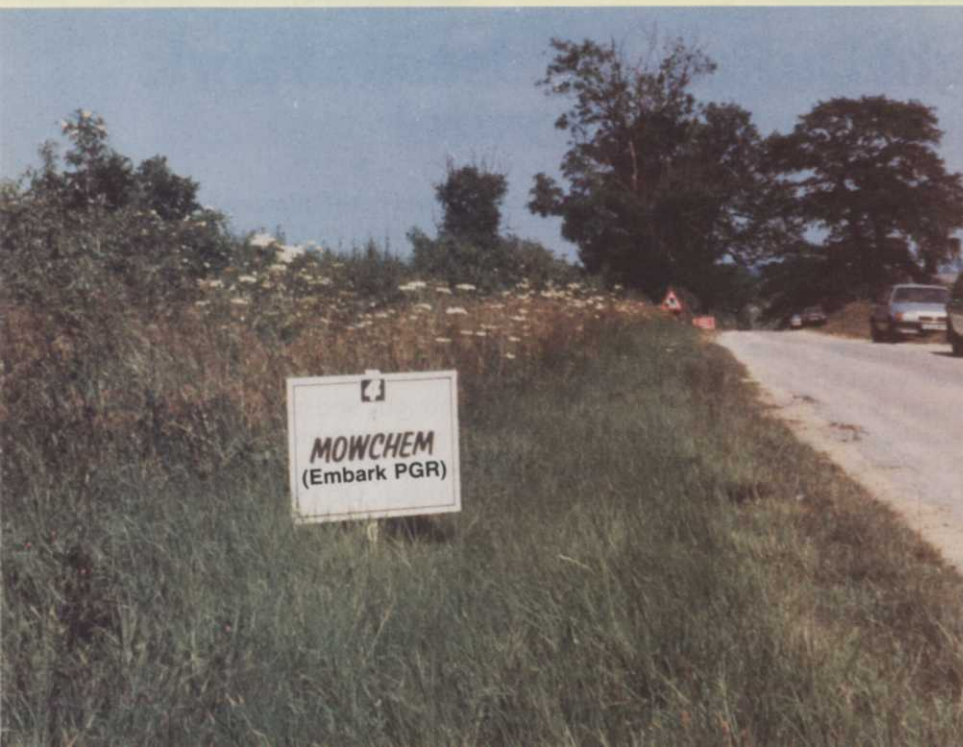


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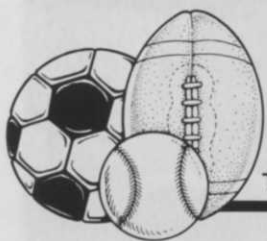
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Scott Halbrook

deceleration with the presence of turf and with core cultivation.

If the research is conclusive, it could help determine a standard on natural fields.

"The hardness aspect comes into the play of the game," says Waddington. Many players claim, for example, that the evenness of artificial turf allows them to run faster.

Protective instincts

How much does the field actually affect play? Halbrook argues that players adapt their actions to field conditions.

But, he questions, when kids are put on artificial turf, do they realize they're essentially playing on asphalt, or does the green carpet make it seem like grass? If an athlete thinks he's playing on grass he may lose his natural protective instincts to defend himself in a fall.

"If you're playing basketball in the street, you know you're playing on asphalt," says Holland.

"I can't believe that if Scott knew he were playing on frozen turf or hard packed clay that he wouldn't have put his elbow down," says Halbrook. "When you aerate it loosens the soil, makes it less compacted. The grass is yea-high," he says, signalling an inch or two with his fingers. "You water it to maintain it. Everything you do to maintain a nice green field gives cushion to the field. That also gives

more shock absorbancy. If it's brown, it shows immediately."

If a standard for athletic field hardness is established, all athletes would be aware of the type of surface they are playing on and its degree of hard-

ness, whether artificial or natural.

Athletic field managers, researchers, and artificial turf manufacturers need to work together in establishing such hardness standards. Because one death is one too many. **WT&T**

AN ACT OF GOD?

You've heard it before. Injuries are beyond your control. But experts tell WT&T that the athletic field manager can make his field safer. Here's how.

by Heide Aungst, associate editor

At high schools and grade schools throughout the country, it's a well-kept secret. Those who dare to whisper the truth are quickly hushed.

"It's an act of God," they're told. God's will.

But injuries on natural athletic fields are not all "acts of God." The truth is that many could be prevented. Injuries are frequently caused by poor field construction, cheap seeding, and haphazard management practices.

Young athletes, at the mercy of "responsible" adults, are falling on jagged rocks, twisting ankles in undulations, and tackling each other on hard, compacted fields.

Penn State University has published possibly the only study dealing with the relationship of field maintenance to injuries. In December, 1984, professors Don Waddington (soil science), John Harper (agronomy extension), Chauncey Morehouse (physical education/director of the Sports Research Institute), and William Buckley (health education), published the study "Turf management, athletic-field conditions, and injuries in high school football."

The researchers evaluated varsity and practice fields at 12 Pennsylvania high schools for soil properties, field surface (undulations, stones, roughness), vegetative characteristics, and maintenance factors. They collected injury data throughout the season. (Only 10 schools turned in complete injury statistics.)

Of the 210 injuries reported, 44 (20.9 percent) may have been caused by field conditions.

Waddington says the study has been criticized for being on such a small scale, but it clearly illustrates that a connection exists between field conditions and some injuries.

The problem results from school administrators assigning someone, such as a janitor, without proper knowledge, to care for a field. Administrators often cite budget restrictions as the reason for failing to hire qualified field managers.

"My attitude is you can't afford not to pay someone," says Dr. Henry Indyk, extension specialist in turfgrass management at Rutgers University. "I can use the same philosophy in hiring a teacher in the school system. An athletic field is a very important part of a kid's education."

The budget also is to blame for lack of proper equipment and fertilizer.

Some corners can be cut to manage a safe athletic field at low cost. But, other factors should never be neglected.

Get advice

The first step in either building or renovating a field is to consult a local extension agent. "I don't know how many people know we're here," says Dr. Dave Chalmers, extension agronomist at Virginia Tech. "We're recognized more in rural areas, than urban."

Extension agents can be found at