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## Concerns Grow but the Grass Doesn't

by Anne Schwartz

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In 1999, my son played on his first soccer team, a band of unruly five-year-olds called the Red Strikers who lost every game that spring. But I remember far less about the team than I do about the field they played on at Brooklyn's Parade Grounds. Hard use and neglect had left it as bumpy as a dirt road, with large bald spots that became puddles when it rained. My son invariably came home covered with either mud or dust.

So it seemed a small miracle when, a few years later, many of the Parade Ground's fields became some of the first in the city to be renovated with synthetic turf. The surface, made with green plastic "blades" packed with rubber crumbs made of shredded used tires, was beautifully smooth, cushioned and well-marked. It was durable and dried quickly after a rain, offering a lot more playing time to all the local teams clamoring for fields.

But some things bothered me. My son's cleats and uniform now shed little rubber pellets instead of dirt. Was there anything toxic in the bits of shredded tire that spread all over our apartment? The fields turned out to be brutally hot in summer, and the coaches at soccer camp warned the kids to bring extra water so they could withstand the heat. And then there was the loss of yet another connection to nature for urban children.

These concerns, as well as evidence that synthetic turf contributes to the urban "heat island" effect and stormwater runoff problems, have led elected officials and environmental groups to call for a time-out in the use of synthetic turf.

Today, Public Advocate Betsy Gotbaum and three environmental and parks advocacy organizations are releasing a letter to Parks Commissioner Adrian Benepe and Health Commissioner Thomas Frieden. It calls on the parks department to stop installing synthetic turf immediately and to make a schedule for replacing existing turf fields, which disintegrate within a decade. The letter also demands that the health department complete a review of the literature on the health effects of synthetic turf before the start of the spring sports season and calls for testing actual turf installed in the parks for contaminants.

On the state level, Assemblymember Steve Englebright has introduced [legislation](#) that would put a six-month moratorium on the purchase and installation of synthetic turf statewide until health and environmental agencies conduct a more rigorous study of the crumb rubber.

### The Trouble with Grass

Grass athletic fields require frequent mowing, watering, spraying for weeds, and litter clean-ups, and need to be reseeded every five years. At a time when the demand for playing space has exploded, the city's budget for park maintenance and staff remains tight, and the parks department has not been able to keep up with the maintenance of many of its more than 600 baseball, football and soccer fields. The advocacy group New Yorkers for Parks' annual [report card](#) on the conditions in 200 neighborhood parks consistently has found poor conditions in the city's athletic fields.

Grass fields must be rested on a regular basis and closed when wet. The [Central Park Conservancy](#) keeps its baseball diamonds verdant by shutting them all winter and resting them on a rotating basis throughout the rest of the year. This creates an impossible choice between preserving fields and providing enough playing time for the city's growing number of school teams and sports leagues. With childhood obesity increasing at an alarming rate, the need for places where children can run and play has become more important than ever. Groups already fight over the use of fields, as is evident from the furor over a plan that would have given private schools preferential use of new public playing fields on [Randall's Island](#).

The New York City parks department has embraced synthetic turf as a low-maintenance, cost-effective way to meet the city's growing need for playing fields that can stand up to heavy, year-round use. Since 1998, the department has installed synthetic turf on 77 fields (60 of them replacing existing natural fields), and it has contracted to convert 25 asphalt space to turf over the next few years, making New York the largest municipal

buyer of synthetic turf in the country.

Although the synthetic turf fields are more expensive to install than natural ones, the parks department says they are cost-effective when their life span and maintenance costs are factored in. A natural field costs an average of \$152,739 a year, versus a maximum of \$105,000 a year for synthetic turf, according to figures recently provided by department spokesman Philip Abramson. A new grass field with drainage, irrigation, rich soil and a special blend of grass seed costs \$690,000, with an expected five-year life span; yearly equipment, staffing and other maintenance comes to \$14,739. A synthetic turf field costs \$600,000 to \$1 million to install but has an expected ten-year life, plus \$5,000 in annual maintenance costs.

Critics question these cost assumptions, however. It is not yet clear how long the synthetic turf will last, noted Christian DiPalermo, executive director of [New Yorkers for Parks](#), which began noting the condition of synthetic turf fields as a separate feature in its 2006 parks report card. Also, the parks department's numbers do not include disposal costs, which could be higher than expected if it turns out that contaminants in the rubber crumbs require that they be handled as hazardous waste.

The parks department also highlights synthetic turf's positive environmental impact: It doesn't require watering, pesticides, fertilizers or mowing. However, according to [New Yorkers for Parks' 2006 report](#), "The New Turf Wars," the parks department may be overstating these benefits. It notes that although grass needs to be watered to stay healthy, "synthetic turf also performs better when watered." (In any case, few of the city's athletic fields have irrigation systems.) The parks department also makes minimal use of pesticides and herbicides on natural grass, according to the report.

Although the city has said that synthetic turf will be used primarily as a substitute for asphalt, most of the existing synthetic turf fields replaced natural fields. "However, in most cases, when synthetic turf replaces grass, it's because the grass is actually gone, having been worn away from overuse," said Abramson in an e-mail. "Thomas Jefferson Park in East Harlem is an example of a grass field that became a dust bowl, causing such severe asthma concerns in the community that local elected officials asked us to shut it down. Now, with the installation of a synthetic turf field, it is a wonderful asset for the residents in that area."

## What's in That Turf, Anyway?

Nearly all of the synthetic turf installed in New York City is made of plastic strands woven into a porous backing and filled in with a thick layer of pulverized rubber for cushioning. Most of the safety concerns focus on the rubber crumbs. A surprisingly large quantity is used: The average soccer field contains enough of the crumbs to make up 27,000 tires.

The parks department maintains that the particles are inert and do not release any chemicals when inhaled or swallowed. The New York City health department, the New Jersey Department of Environmental Protection and the Connecticut Department of Public Health have all "essentially stated that these fields pose an unlikely health risk to the public and that there is no reason to stop installing these fields," Abramson said.

But a recent study conducted by the [Connecticut Agricultural Experiment Station](#), which found that toxic chemicals could vaporize or leach from the crumb rubber, recommended further research on the safety of the materials.

In the [study](#), commissioned by [Environment and Human Health, Inc.](#), a Connecticut nonprofit, researchers heated the rubber particles to 131 degrees Fahrenheit, about as hot as they would get in sunlight when the air is 88 degrees. The crumbs released four volatile organic chemicals known to irritate the skin, eyes and lungs. One of the chemicals is a recognized carcinogen suspected to have adverse effects on the endocrine, gastrointestinal, nervous and immune systems. Two dozen other chemicals were detected at lower levels.

When the researchers exposed the granules to water, they released zinc, cadmium and lead, raising the possibility that these potentially harmful metals could migrate from synthetic fields into the soil and groundwater.

## Creating 'Hot Spots'

Other concerns focus on the impact of synthetic turf on the urban landscape. Artificial turf offers none of the

natural advantages of grass or even dirt - cooling the air, absorbing and filtering rainwater and offering foraging spots for migrating birds.

Unlike grass fields, which cool the surrounding air by reflecting sunlight and evaporating water, artificial fields absorb and reradiate the sun's heat. Synthetic turf fields are some of the hottest places in the city, said Dr. Stuart Gaffin, associate research scientist at the [Center for Climate Systems Research](#) at Columbia University, who discovered this from NASA satellite maps when doing research on the urban heat island effect.

Over the last two summers, researchers visited the hot spots identified in the maps and measured just how hot the city's synthetic turf fields can get: as high as 130 to 140 degrees Fahrenheit. Synthetic turf is hotter than asphalt, said Gaffin.

This could have a particularly negative impact on temperatures in communities where a significant amount of natural surface is replaced by synthetic turf. One such example is the area around the new Yankee Stadium. [The stadium](#) occupies the site of Macombs Dam Park, a 20-acre rectangle that formerly contained well-worn soccer and baseball fields and a running track and was bordered by hundreds of mature trees. To replace some of that park's facilities, the city will build an artificial turf soccer field and track on top of a parking garage.

Another consideration is the impact of artificial turf on the city's combined [sewage overflows](#). In most of the city's sewer system, storm runoff combines with household sewage. During huge downpours, sewage treatment plants cannot handle the added rainwater, and untreated waste overflows into the harbor and rivers. Grass and dirt soak up rain, but synthetic turf fields, which are designed to drain quickly, very efficiently funnel rainwater into the sewage system.

Replacing natural fields with synthetic turf runs counter to the city's goal of increasing natural areas and permeable surfaces as a way to reduce stormwater runoff. This strategy is part of Mayor Bloomberg's [sustainability blueprint](#), and likely to be included in the stormwater management plan the city is [required](#) to adopt by the end of the year.

"If New York is serious about becoming a greener, more livable city by employing reasonable, cost-effective and environmentally sound stormwater management techniques, then the installation of artificial turf fields needs to be significantly curbed, if not halted altogether," Craig Michaels, an investigator with the environmental group [Riverkeeper](#) said in testimony at a December [hearing](#) before the City Council Committee on Parks and Recreation.

## Another Alternative?

The [Trust for Public Land](#), which has used crumb rubber-based turf at the 18 public school playgrounds it has [transformed into community parks](#), has said it will switch to a different type of turf for future projects, the Daily News [reported](#).

The parks department, however, has not suspended its use of synthetic turf with rubber infill, said Abramson, and opposes the proposed legislation to establish a moratorium on its use. However, he added, "As the technology advances, we are exploring alternative options, including carpet-style turf."

Given the realities of continued heavy demand for sports fields and limited funding for maintenance, synthetic fields seem here to stay. But advocates say the city needs to look more carefully at the full costs and the health and environmental effects, use synthetic turf where it is needed, such as on soccer fields that get the most wear and tear, and develop better maintenance strategies for grass baseball fields. They also call on the city to formally mitigate the installation of synthetic turf by creating new green space nearby.

"We live in a particular urban environment, and climate changes are going to make things worse," said Gaffin. "The last thing we need is to exacerbate it with our own urban planning decisions."

*Anne Schwartz, in charge of the parks topic page since its inception in 1999, is a journalist who specializes in environmental issues.*



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