



FieldTurf Tarkett Environmental Intelligence.

We see our sports surfaces as part of the world's ecological system - and make every effort to ensure that our activities respect the environment. All of our surfaces are developed, produced and installed with a concentration on sustainability and a commitment to protecting the environment. We call it Environmental Intelligence and we live by this principle in every way.

As part of the Tarkett group we have more than 100 years of flooring experience and have always taken the initiative when it comes to the environment. We continue our efforts to minimize our products' environmental effects over their entire lifespan.

We're even 'greener' than we look.

FieldTurf starts out as recycled plastic pellets, transformed into lush, grasslike fibers. Mountains of worn out tires are recycled into clean, safe, cryogenic rubber crumbs, which are brushed in between these fibers, providing a unique and durable infill system. Each FieldTurf field saves over one million gallons of fresh water every year. It needs no herbicides, fungicides or pesticides - eliminating some of the eight billion pounds of these harmful chemicals used each year in natural grass fields.

Maintaining a FieldTurf field produces no pollutants from lawn mowers or other equipment normally used to look after playing fields. FieldTurf can survive over ten years of daily abuse from football, soccer, baseball, lacrosse, rugby, field hockey, gym class, band practice and every other kind of event that takes place on it. It's made to take a beating, performing its duty safely and consistently, in any weather - day after day, year after year.

Safety First.

FieldTurf Tarkett has, at its core, a commitment to the health and safety of athletes and the environment. FieldTurf artificial turf is a product created solely to provide athletes of all ages a safe playing surface, regardless of heavy use or bad weather.

Since our first installation 15 years ago, there has never been a single incident reported of any sickness or injury, of any kind, anywhere in the world, as a result of contact with, ingestion of, or inhalation of any materials used in our turf.

The truth about lead in synthetic turf.

Recent reports surrounding high levels of lead in artificial turf may, on the surface, be alarming. However, simply put, FieldTurf is safe and the science is there to prove it. Let's review some of the extensive toxicology reports, testing, studies and supporting research.

1 - Background

Synthetic turf is, and has always been safe. In over 40 years of EPA oversight and OSHA-regulated manufacturing, there is no scientific or medical evidence that synthetic turf poses a human health or environmental risk from lead (or from any other material used in our products). While there were over 40,000 cases of elevated lead blood levels reported in children in 2006, there was not one case caused by synthetic turf and there has not been one single case reported since synthetic turf was introduced in the US marketplace over 40 years ago.



Dr. Davis Lee, Ph.D.

Lead chromate is a stable compound that was widely used by yarn manufacturers until around 2002 in the form of Chrome Yellow to create colorfast yarns that would not leach or "bleed."

Dr. Davis Lee, Ph.D, Synthetic Organic Chemistry, Executive in Residence at the Georgia, Institute of Technology School of Polymer, Textile, and Fiber Engineering, said, "If a green synthetic turf field containing lead chromate is still green, then the lead chromate is still in the yarn. If the Yellow Chromate had leached out, the field would likely be blue."

Yarns containing lead chromate were used (and are still found in) household and commercial carpet as well as in synthetic turf. The chemistry of lead chromate is completely different than lead carbonate that was previously used in household paint.

"Lead chromate is stable when encapsulated in the fiber into which it is extruded. Being encapsulated in the fiber, the lead in the lead chromate is not readily bio-available - meaning that even if the yarn breaks down, the lead in the complex compound which is lead chromate is not readily absorbed by the body," states clinical and forensic toxicologist, Dr. David Black, Ph.D., of Aegis Sciences Corporation.



Dr. David Black, Ph.D.

Lead chromate was chosen for use in the carpet industry because chemists and toxicologists consider it a safe compound when encapsulated in extruded yarn.

Yarn manufacturers began moving to alternative pigments in the late 1990's due to new European waste management regulations regarding disposing of heavy metals. According to Dr. Lee, "If synthetic yarns containing lead chromate are

burned, the lead in the lead chromate can be released into the atmosphere."

Even though there are no similar regulations regarding the disposal of carpet containing lead chromate in the US, nearly all synthetic turf became virtually lead-free by around 2003. Importantly, there were never any health concerns over lead chromate in synthetic turf either in the US or in Europe.

Until very recently, lead chromate has been used in bright yellows and reds in some FieldTurf logo applications and in some cases, in the pigment used in yellow yarn that makes up the lines on some FieldTurf soccer fields. Even though the use of lead chromate in these applications is completely safe, we have moved away from the use of any lead chromate to eliminate any confusion with our consumers over product safety.

2 - Key Findings

Lead chromate has been used in a number of synthetic turf fields to extend the life of its colorfastness. Testing three fields in New Jersey with elevated lead levels, the NJDHSS focused on the bioaccessibility of synthetic turf, which it defines as "the fraction of a substance in a material that is soluble and made available for absorption" by the body. Findings validated the Synthetic Turf Council's position, based on science and expert opinion, that lead chromate's extremely low bioavailability prevents it from being readily absorbed by the human body.

From its tests, the NJDHSS reported that the amount of lead chromate contained in fibers from the three fields available for absorption in the intestine, which is where food altered by stomach acid is absorbed by the blood and lymphatic systems, ranged from 2.5% to 11%. We used the most extreme scenario, 11%, to calculate the amount of turf that would have to be ingested to equal the federal standard of 600 parts per million. In practical terms, it is virtually impossible for a child to be at risk from synthetic turf:

According to calculations made by forensic toxicologist Dr. David Black, a 50 lb. child would have to ingest over 100 lbs. of synthetic turf to be at risk of absorbing enough lead to equal the minimum threshold of elevated blood lead.

The Consumer Product Safety Commission's guidance states that young children "should not chronically ingest more than 15 micrograms of lead per day from consumer products." Putting these test results in perspective, polymer and fiber engineering specialist Dr. Davis Lee calculated that a child playing on the three New Jersey fields would have to wipe his fingers on the turf and put them in his mouth 750 times in a day to receive enough lead to equal the CPSC threshold level.

Dr. David Black performed the same tests as the NJDHSS, using the same protocol during late May, which showed an average bioaccessibility of 4%. The results of the two tests are similar and validate the safety of synthetic turf, including the synthetic turf NJDHSS reported to contain concentrations of lead chromate of between 3,400 and 4,700 part per million.

3 - The Facts

- Lead does not leach from synthetic turf.
- Bioavailability of lead from pigment is extremely low.
- Lead from dust at Ironbound (NJ) was tested and is not an inhalation hazard.
- Ironbound (NJ) children with regular exposure to the artificial turf field test normal
- Worker exposed to turf and particles for 30 years tests normal.
- Even assuming 50% bioavailability, the amount of ingested turf required to pose a risk is absurdly unrealistic.

The potential for hazard is determined by several factors, including bioavailability, the proportion of a chemical that is actually absorbed.

The City of Newark made blood lead testing available to children who played on the field. According to State of New Jersey Deputy Commissioner and State Epidemiologist Dr. Eddy Bresnitz, results concluded that the children had blood lead levels equal to or less than those tested in other areas of New Jersey who had not been exposed to other synthetic turf fields. Therefore, the Ironbound field did not result in elevated lead levels in the children from the Ironbound neighborhood.

The synthetic turf fields at the Old Tappan and Demarest High Schools, which initially had been closed, were sampled on June 6, 2008. The testing found lead in the green turf fiber at concentrations of 4000 mg/kg (Old Tappan field) and 6300 mg/kg (Demarest field).

However, when Dust Wipe sampling was conducted on the aforementioned Northern Valley (Old Tappan and Demarest) fields in New Jersey the results of the wipe test produced results between 10-35 µg/wipe which falls below the EPA guideline for dust on floors (40µg) and Interior Window Sills (250µg).

Both fields were subsequently re-opened.

4 - Wipe Testing, Explained

The hysteria can be attributed to improper testing methods. The test that has been conducted which is producing "high lead levels" is one that is done to determine the chemical composition of the fiber. Simply put, it does not assess bioavailability of potential health effects.

In this method, which is the Environmental Protection Agency (EPA) standard for hospitals and schools, a known surface area (1 square foot) of the field is wiped in both directions (up and down, back and forth) with a lead-free wipe. The wipe is then analyzed for total lead by the laboratory. This will give dust lead results in microgram of lead per square foot (µg/ft²). This result can be compared to the EPA and HUD floor dust clearance standard of 40 µg/ft². It should be emphasized that even this comparison is conservative, i.e. likely to over-estimate risk. The reason is that the dust clearance standard is based on daily year-round exposures of young

children in their homes, whereas exposures at the field would be mainly to older children and of less frequency.

5 - What The Experts Say

US Consumer Product Safety Commission

"There is no indication that exposure to the turf could pose any harm. We are not recommending at all communities shut down their playing fields."

The Center for Disease Control (CDC)

"Testing on FieldTurf fields have consistently shown 10-20 ppms or less than 5% of the lead level regarded as problematic."

"No cases of elevated blood lead levels in children have been linked to artificial turf on athletic fields in New Jersey and elsewhere."

The New York Department of Health and Mental Hygiene

"Based on existing HUD Guidelines and EPA standards, lead hazard risk assessments at these four DPR synthetic turf fields did not identify lead hazards."

Toxicologist Barbara D. Beck

"In interpreting the health risk from these results, it is important to recognize that people do not ingest the actual turf fibers. The NJ and EPA soil standards of 400 mg/kg are based on an assumption that small children may ingest approximately 100 mg of soil per day through hand to mouth activity. Thus, comparing the concentration of lead in the turf fiber to an acceptable soil lead concentration is not an accurate way to evaluate the human health risk from exposure to lead in turf fibers and is likely to overestimate risk, because the turf fiber is unlikely to be ingested (if at all) to the same extent as lead in soil."

The best way to evaluate exposure to lead on synthetic turf fields is to evaluate the dust present on the surface of the field. When people play on the field, they may get dust onto their hands or other exposed skin, and transfer the dust into their mouth through normal hand to mouth activity. Thus, the primary route of exposure we are concerned with is ingestion of dust. Lead has no appreciable absorption through the skin, and the inhalation of dust from the field is expected to be minimal, as any dust is likely to adhere to the turf fiber or rubber crumb padding rather than becoming airborne."

(Dr. Beck is a lecturer in Toxicology at Harvard; Former Chief of Air Toxics Staff in Region I EPA; Fellow, Interdisciplinary Programs in Health at the Harvard School of Public Health)

New Jersey Department of Health

The following is an excerpt from an article which describes the events surrounding the closing of Montville's artificial turf field after the first test found 852 ppm of lead -- more than double the state-issued safe standard of 400 mg/kg. However, once the problem wipe testing was done the field was re-opened...

Montville OKs use of field after latest lead test - Daily Record (May 8, 2008)

Patrick Guilmette, a representative for PMK, explained at Wednesday's meeting that the lead levels that were discovered are isolated to the core samples of the turf, and did not appear in the samples of dust, wipes and blades of artificial grass taken from the field.

"In other words, the lead is encapsulated in the fibers inside the turf and not leaching out to the surface to be ingested," Guilmette said.

Township Health Officer, John Wozniak also received an e-mail Wednesday from James Brownlee, State Director of Consumer and Environmental Health Services. Brownlee confirmed the negative results from the fiber, dust and wipe samples, as discussed with Wozniak, in the e-mail.

But Brownlee recommended that the township discontinue watering the fields to limit dust, in light of the negative results. He also noted that if the matrix which binds the turf is not breaking down, watering the fields is not necessary.

"My recommendation would be to just have field managers monitor each field and look at potential degradation results that may result in matrix material becoming accessible," Brownlee wrote.

Based on the state's recommendation, the committee voted in favor of re-opening the fields without restrictions.

6 - The City of New York Department of Health and Mental Hygiene

Lead hazard risk assessments were conducted at four DPR synthetic turf fields from 3/11/08 to 3/12/08 by the Department of Health and Mental Hygiene (DOHMH). The risk assessments were conducted in accordance with The United States Department of Housing and Urban Development (HUD) "Guidelines for Evaluation and Control of Lead-Based Paint Hazards in Housing" (HUD Guidelines) by a DOHMH Associate Public Health Sanitarian and EPA certified Lead Risk Assessor.

The risk assessments included a visual inspection of each site and collection of environmental samples for lead in dust, bare soil and deteriorated paint.

Applicable Regulations and Guidelines

The following stringent test method was used to determine the bioavailability of the encapsulated lead in the fields:

- EPA 40 CFR-745.65(b) defines a dust-lead hazard as surface dust in a residential dwelling or child occupied facility that contains a mass-per-area concentration of lead equal to or exceeding 40 µg/ft² on floors or 250 µg/ft² on interior window sills based on wipe samples. All dust wipe samples were compared with the EPA limit of 40 µg/ft² on floors.

Based on existing HUD Guidelines and EPA standards, lead hazard risk assessments at these four DPR synthetic turf fields did not identify lead hazards. Some sample results indicated the presence of lead in the synthetic turf carpet fibers in the fields at West 27th Street and 10th Avenue, West 103rd Street and Riverside Drive, and East 120th Street and Park Avenue.

NOTE - Even though the total lead concentrations in the turf fiber exceeded soil criteria, New York City concluded that, because of the low lead in dust concentrations, none of the four fields tested represented a lead hazard.

7 - Field Testing at Northern Valley

The synthetic turf fields at the Old Tappan and Demarest High Schools were sampled on June 6, 2008. The testing found lead in the green turf fiber at concentrations of 4000 mg/kg (Old Tappan field) and 6300 mg/kg (Demarest field).

However, when Dust Wipe sampling was conducted on the aforementioned Northern Valley (Old Tappan and Demarest) fields in New Jersey, the results of the wipe test produced results between 10-35 µg/wipe which falls below the EPA guideline for Dust on Floors (40µg) and Interior Window Sills (250µg).



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