an 7.31.2025

ROSEBURG CITY COUNCIL AGENDA – AUGUST 4, 2025
Public Safety Center (PSC) – Umpqua Room
700 SE Douglas Avenue, Roseburg, Oregon 97470

Public Online Access:
City website at https://www.cityofroseburg.org/your-government/mayor-council/council-videos
Facebook Live at www.Facebook.com/CityofRoseburg

See Audience Participation information for instructions on how to participate in meetings.

6:00 p.m. Special Meeting – Offsite Tours

6:00 p.m. – 6:15 p.m. Tour at Fir Grove

6:25 p.m. – 6:45 p.m. Tour at Roseburg High School

7:00 p.m. Special Meeting – Public Safety Center (PSC) – Umpqua Room

1. Roll Call

Tom Michalek	Andrea Zielinski	Jason Tate
Ruth Smith	Ellen Porter	Katie Williams
Zack Weiss	Shelley Briggs Loosley	

2. Department Items

A. Fir Grove Turf Field Project Authorization to Seek Grant Funding – Continued Discussion from July 28, 2025, Meeting

3. Adjourn

*** * * AMERICANS WITH DISABILITIES ACT NOTICE * * ***
Please contact the City Recorder's Office, Roseburg City Hall, 900 SE Douglas, Roseburg, OR 97470-3397 (Phone 541-492-6866) at least 48 hours prior to the scheduled meeting time if you need an accommodation. TDD users please call Oregon Telecommunications Relay Service at 1-800-735-2900.

AUDIENCE PARTICIPATION INFORMATION

The Roseburg City Council welcomes and encourages citizen participation at all of our regular meetings, with the exception of Executive Sessions, which, by state law, are closed to the public. To allow Council to deal with business on the agenda in a timely fashion, we ask that anyone wishing to address the Council follow these simple guidelines:

Comments may be provided in one of three ways:

- **IN PERSON during the meeting in the Council Chambers, Roseburg City Hall, 900 SE Douglas Ave.**
  - o Each speaker must provide their name, address, phone number and topic on the Audience Participation Sign-In Sheet.
- **VIA EMAIL by sending an email by 12:00 p.m. the day of the meeting to info@roseburgor.gov.**
  - o These will be provided to the Council but will not be read out loud during the meeting. Please include your name, address and phone number within the email.
- **VIRTUALLY during the meeting. Contact the City Recorder by phone (541) 492-6866 or email (info@roseburgor.gov) by 12:00 p.m. the day of the meeting to get a link to the meeting.**
  - o Each speaker must provide their name, address, phone number and topic in the email. Speakers will need to log or call in prior to the start of the meeting using the link or phone number provided. When accessing the meeting through the ZOOM link, click "Join Webinar" to join the meeting as an attendee. All attendees will be held in a "waiting room" until called on to speak. It is helpful if the speaker can provide a summary of their comments via email to ensure technology/sound challenges do not limit Council's understanding.

- Anyone wishing to speak regarding an item on the agenda may do so when Council addresses that item.
- Anyone wishing to speak regarding an item on the Consent Agenda, or on a matter not on the evening's agenda, may do so under "Audience Participation."

1. Speakers will be called by the Mayor in the order in which they signed up. The Mayor will generally call in-person speakers prior to calling speakers participating via Zoom. Each virtual speaker will be transferred from the "waiting room" into the meeting to provide comments, then moved back to the "waiting room" upon completion of their comments.
2. Persons addressing the Council in person or virtually must state their name and city of residence for the record.

TIME LIMITATIONS - A total of 30 minutes shall be allocated for the "Audience Participation" portion of the meeting. With the exception of public hearings, each speaker will be allotted a total of 6 minutes, unless the number of speakers will exceed the maximum time. In this case, the Mayor may choose to decrease the allotted time for each speaker in order to hear from a wider audience. All testimony given shall be new and not have been previously presented to Council.

Audience Participation is a time for the Mayor and Council to receive input from the public. The Council may respond to audience comments after "Audience Participation" has been closed or during "Items from Mayor, Councilors or City Manager" after completion of the Council's business agenda. The Council reserves the right to delay any action requested until they are fully informed on the matter.

ORDER AND DECORUM

Councilors and citizens shall maintain order and decorum at Council meetings. Any audience member may be directed to leave the meeting if they use unreasonably loud, disruptive, or threatening language, make loud or disruptive noise, engage in violent or distracting action, willfully damage furnishings, refuse to obey the rules of conduct, or refuse to obey an order of the Mayor or majority of Council. No signs, posters or placards are allowed in the meeting room.

All speakers and audience members should treat everyone with respect and maintain a welcoming environment. Please avoid actions that could be distracting such as cheering, booing, or applause. Please turn cell phones to silent and enter and exit the Council Chambers quietly if the meeting is in progress and take any conversations outside the Chambers.

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https://www.cityofroseburg.org/your-government/mayor-council/council-videos

The full agenda packet is available on the City's website at:
https://www.cityofroseburg.org/your-government/mayor-council/council-agendas

ROSEBURG CITY COUNCIL
AGENDA ITEM SUMMARY

FIR GROVE TURF FIELD PROJECT
AUTHORIZATION TO SEEK GRANT FUNDING

Meeting Date: July 28, 2025 | **Agenda Section: Department Items**
Department: | **Staff Contact: Ryan Herinckx, Director**
www.cityofroseburg.org | **Contact Telephone Number: 541-492-6730**

ISSUE STATEMENT AND SUMMARY
Staff have been working with Umpqua United Soccer Club (UUSC) and other community partners on improving the sports fields at the Fir Grove section of Stewart Park. The project is currently in design and will include two multi-use artificial turf fields, lighting, seating and fencing. Staff is requesting authorization to begin seeking and applying for grants to help fund the project.

BACKGROUND

A. Council Action History.
On August 24, 2020, Umpqua United Soccer Club (UUSC) (aka Roseburg Soccer Association) presented a conceptual plan to the Council and requested to make major field improvements to the soccer fields at Fir Grove. The plan included removing a section of the grass fields and replacing it with two artificial turf fields. Attachment 1 shows the changes to the existing Fir Grove Master Plan that were proposed at the August 2020 meeting. The Council unanimously approved the request by UUSC to improve the surface of the Fir Grove fields to artificial turf and add lighting and seating, with the condition that all funding is secured prior to beginning the project.

On June 10, 2024, the Council unanimously approved utilizing ARPA funding to proceed with the design and floodplain study for the turf improvements at Fir Grove Park.

B. Analysis.
Fir Grove has been used for sports fields for approximately 50 years. Fir Grove was home to youth and high school baseball fields until Sunshine Park was built about 25 years ago. The baseball fields were moved to the new Sunshine Park and Fir Grove was renovated to soccer fields.

This project will install two turf fields on the eastern portion of Fir Grove. One field will be sized to allow for high school and collegiate level soccer games and the second field for high school games. Both of the fields will be striped to allow for additional users that may include adult and youth soccer, lacrosse and football. The cross section of the field will

include a drainage layer, a shock absorption pad, pea gravel and an infill layer, see Attachment 2. Turf manufactures continue to make improvements to address environmental concerns providing several options from the traditional rubber “crumb” infill. These optional infill materials include crushed olive pits, cork, coconut and cellulose fibers. Manufacturers recently released a turf product that does not require an infill material. If funding is secured, the earliest construction would begin is the summer of 2027, staff will continue to monitor industry advancements in artificial turf and products used for assembly.

The project will also include field lighting, perimeter fencing of the playing surface and ADA accessible viewing areas at each field. The two turf sports fields will utilize 3.8 acres of the 236 acres that make up Stewart Park.

The western portion of Fir Grove will remain as natural grass fields and can be striped to facilitate approximately seven youth soccer fields, see Attachment 3.

The project is currently in design, and a floodplain impact study (HEC-Raz) has been completed. The study concludes that the project will have no impact to water surface elevations for the South Umpqua River. Working with Thrive Umpqua, an Umpqua Health Alliance Community Health Improvement Plan (CHIP) grant was obtained to cover the cost of an archaeological study, which will be required by the Oregon Parks & Recreation Department (OPRD) in the future if we are successful in obtaining a Local Government Grant. Archaeological studies are typically required prior to OPRD issuing a notice to proceed on a grant project. In the past, we have waited to perform this work until after a grant is secured. Thanks to the grant from Umpqua Health Alliance, we can get this step completed and get the project closer to ”shovel ready” prior to applying for additional grant funding.

At the July 3, 2024, Parks Commission meeting, staff brought an updated draft of the Five-Year Capital Improvement Plan (CIP) for Parks Projects. In this draft, the Fir Grove Multi-Use Field Improvement project is listed as a top priority, along with the Stewart Park Tennis/Pickleball Courts Project and the Brown Park Expansion Project, both of which are scheduled to be completed prior to winter 2025. The Parks Commission unanimously recommended adopting this updated Five-Year CIP for Parks Projects.

There is a high demand for field space, and by converting two fields to artificial turf and adding lighting, this will greatly increase the capacity of this space to serve more youth and adults in our community. This will benefit not only soccer but other users as well. In addition, the spectator areas will be ADA accessible. With the current field configuration, it can be difficult for spectators with mobility issues to navigate the fields.

Staff is requesting Council support to begin seeking and applying for grants to fund the capital construction. If approved, staff intends to apply for a SHARE (Supporting Health for All through Reinvestment) grant through Umpqua Health Alliance, which is currently open and due at the end of August, and a Local Government Grant from OPRD in early

2026. Staff would seek separate Commission and Council approval to accept any grants over the City Manager's authority.

C. Financial/Resource Considerations.
The current construction estimate for the project is $3,000,000. Parks projects are generally accomplished with a combination of grant funding, Park Improvement Funds and Stewart Trust Funds for those projects occurring within Stewart Park. This project may qualify for the use of Transient Lodging Tax as it will increase the ability to host tournament play and draw visiting competitors to the area. If authorized, staff intends to apply for $1 million each from the UHA and OPRD grant programs.

D. Timing Considerations.
The Umpqua Health Alliance SHARE grant program is currently open. Applications are due at the end of August.

COUNCIL OPTIONS
The Council has the following options:
1. Authorize staff to begin seeking grant opportunities for the improvements to the Fir Grove section of Stewart Park; or
2. Request additional information; or
3. Direct staff to not begin seeking funding opportunities for the construction of the project.

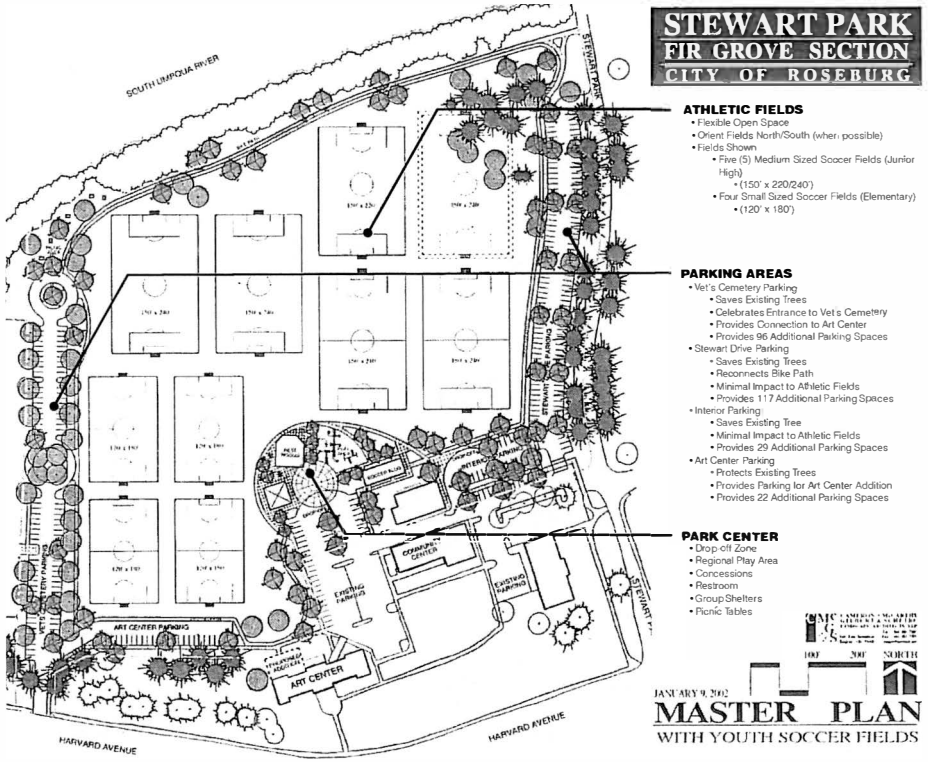
STAFF RECOMMENDATION
The Parks Commission discussed this at their July 16, 2025, meeting. The Commission recommended Council authorize staff to begin seeking funding opportunities for the turf field improvements at Fir Grove. Staff concurs with this recommendation.

SUGGESTED MOTION
"I MOVE TO AUTHORIZE STAFF TO BEGIN SEEKING FUNDING OPPORTUNITIES FOR THE TURF FIELD IMPROVEMENTS AT FIR GROVE PARK."

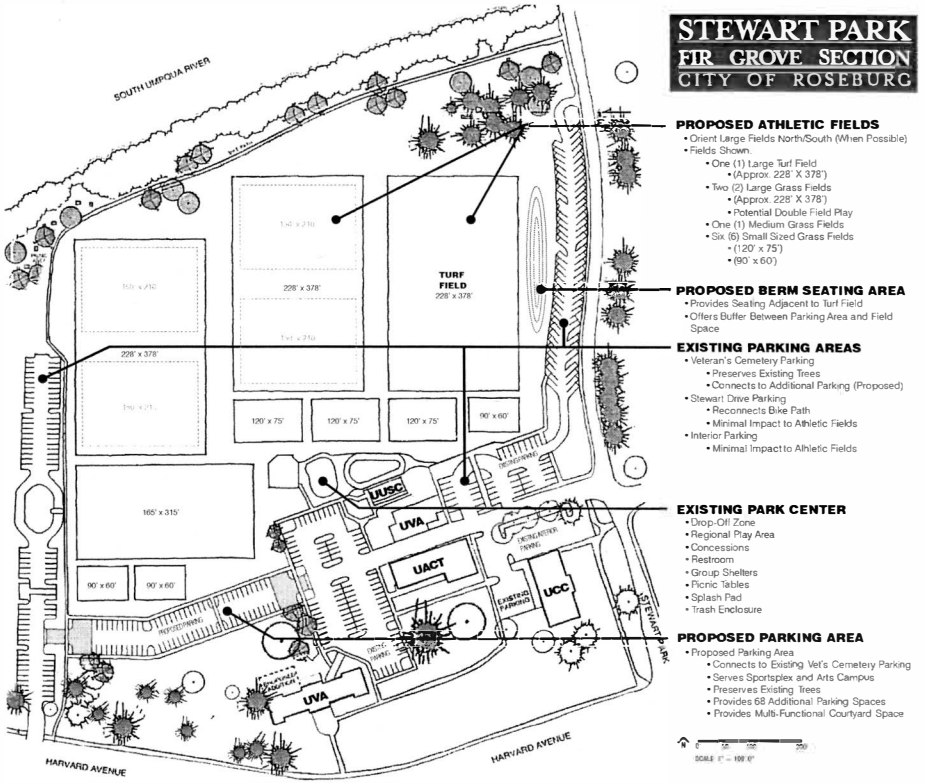
ATTACHMENTS:
Attachment #1 – Conceptual Fir Grove Plan update approved by Council August 2020
Attachment #2 – Turf Cross Section
Attachment #3 – Turf Field Layout
Attachment #4 – Councilor Michalek Information Regarding Artificial Turf

Fir Grove Section

Proposed Soccer Complex



Existing Master Plan



Proposed Soccer Complex

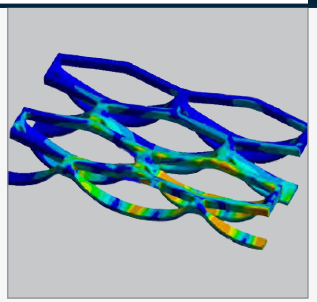
Current Campus Organizations:

① Umpqua Valley Arts Association Main Building (UVA)
② Umpqua Valley Arts Association Clay Studio and Imagination Station (UVA)
③ Umpqua Actors Community Theatre (UACT)
④ Umpqua Community College - Wooley Center
⑤ Umpqua United Soccer Club (UUSC)

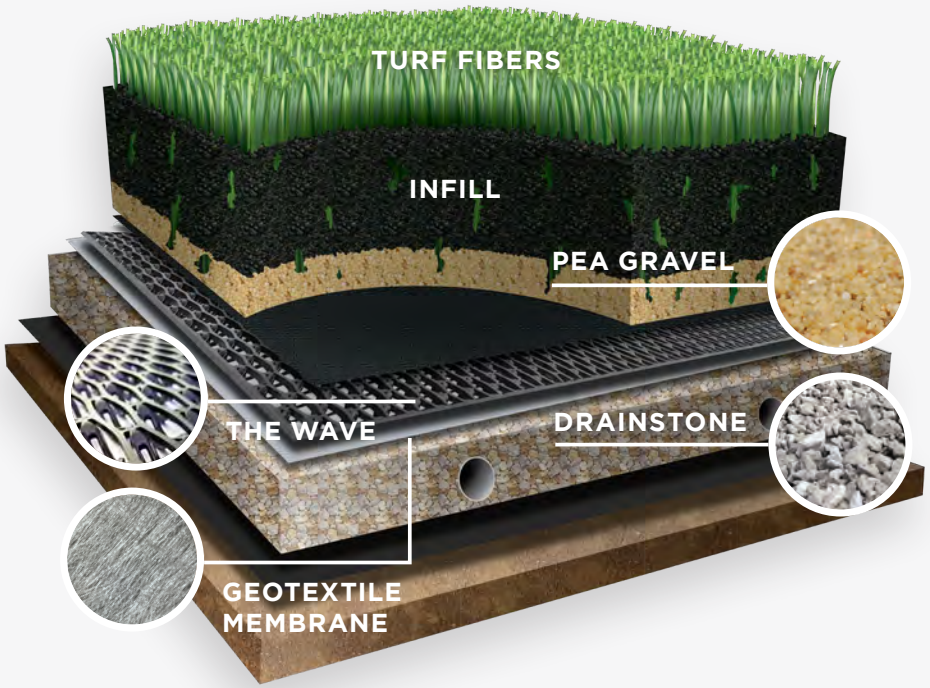
THE WAVE

THICKNESS	TILE SIZE	WEIGHT
14mm (+/- 1mm)	47.24″ x 31.5″	56 oz./sq. yd.

SHOCK ABSORPTION	>65%
SYSTEM GMAX	<100



The 14mm Wave pad is designed to enhance field performance and player experience by improving the turf system's shock absorption, energy restitution, and Gmax. The engineered geometry allows the Wave to capture and move forces away from the point of impact, reverberating energy through the ribs of the pad, away from the athlete.

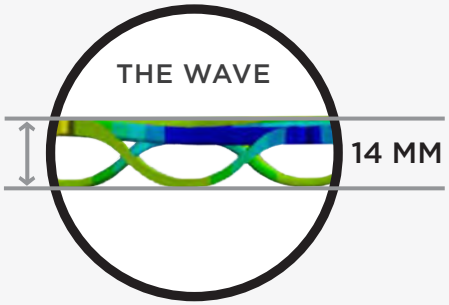


TECHNICAL CHARACTERISTICS

Injection molded tiles	
Recyclable polypropylene	
Permeability	>15oz/min
Tensile strength	>7MPa
Vertical deformation	7.6mm
Energy restitution	33.5%

MAIN ADVANTAGES

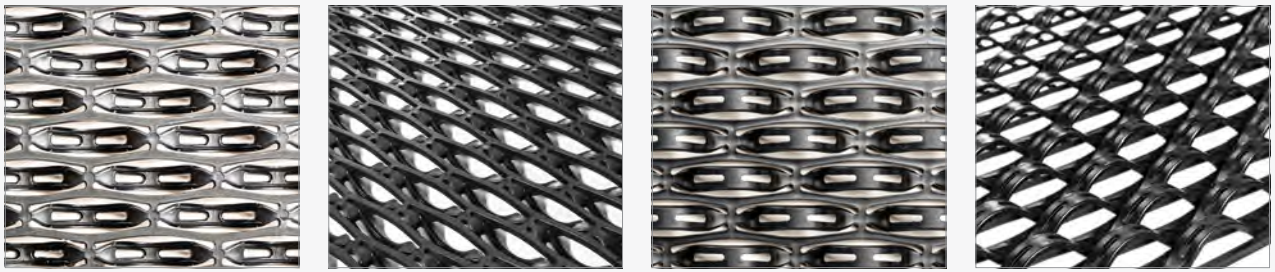
- Easy to install – no adhesive needed
- Superior foot stability
- Horizontal drainage; cost efficient and faster subbase construction
- Guarantees top performance level with 1.75″–2″ turf pile height

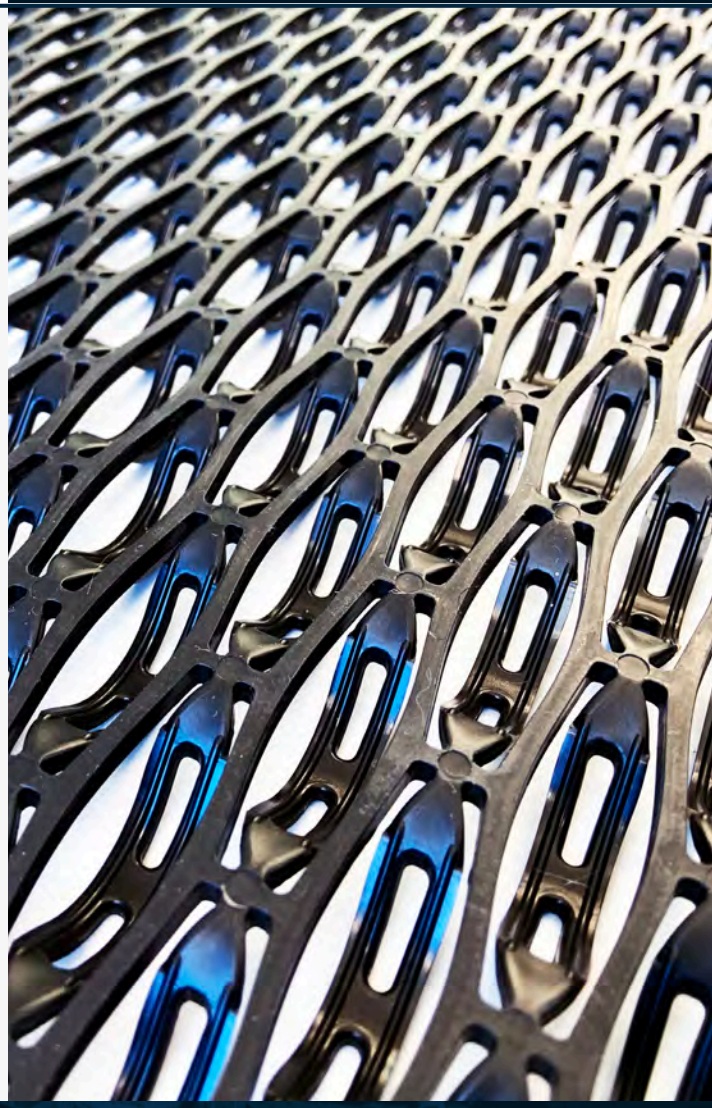


THE WAVE

THE WAVE

The Wave is a pre-fabricated pad designed to enhance athlete safety with optimal shock absorption. As players fall, the force of the impact is pulled down and reverberates through the engineered ribs and away from the athlete, rather than being returned straight back up. The Wave is a 14mm high density injection-molded polypropylene pad made from recycled material and is fully recyclable after use.





THERMOBLEND®

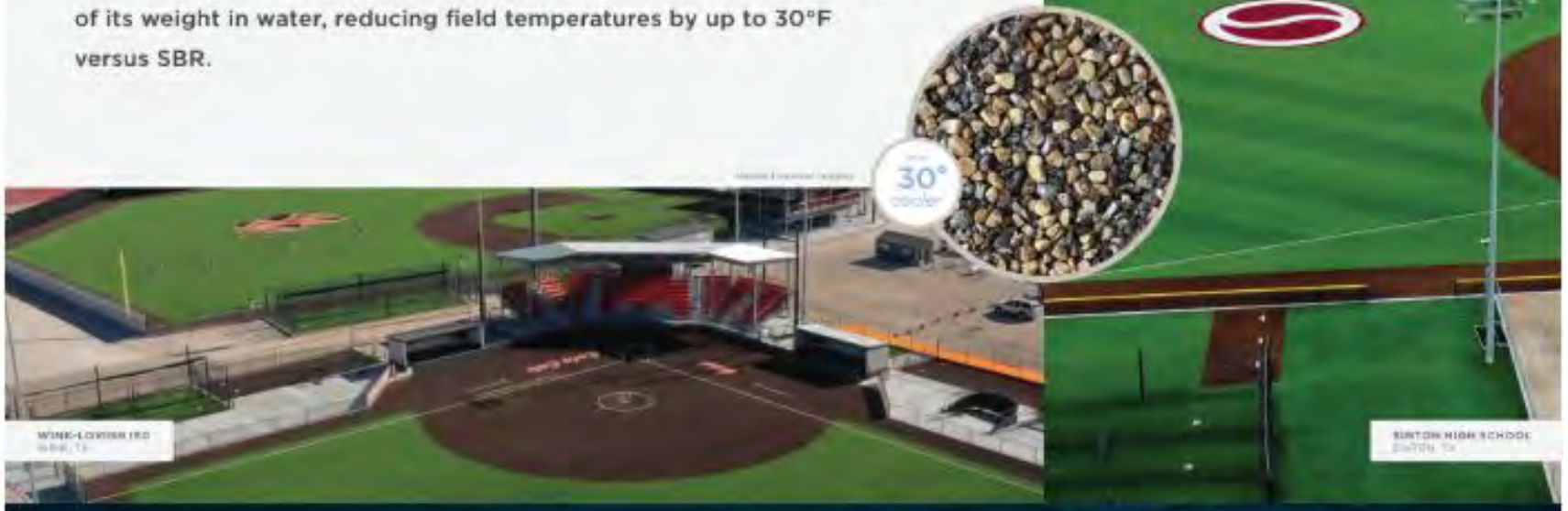
ECOTHERM & ELIA

Hellas

A TENCATE COMPANY

THERMOBLEND INFILL

Thermoblend® infill combines cellulose from recycled materials and olive particles into an infill mix with dramatic temperature reduction. The materials enable the infill to absorb, store, and slowly release water. Thermoblend is highly hydrophilic – acting like a sponge to absorb 62% of its weight in water, reducing field temperatures by up to 30°F versus SBR.



BUILDING FOR SPORTS FROM START TO FINISH

1-800-233-5714 | hellas.com

THERMOBLEND®

ECOTHERM & ELIA

THERMOBLEND® INFILL

Thermoblend combines cellulose and olive particles into an absorbent synthetic turf infill that reduces field temperatures by up to 30°F. No irrigation is required. Particle sizes range from 0.5 mm to 2.5 mm.

- REDUCES TEMPERATURES
- SUPERIOR FOOT STABILITY
- PREDICTABLE SURFACE
- HIGHLY PERMEABLE
- ABSORBS WATER

KEYED CONSTRUCTION NOTES: (#)

1. CONSTRUCT NAILER BOARD CURB PER DETAIL 1/SD.1 (APPROX 2440LF).
2. INSTALL SUBBASE AND BASE SECTION FOR TURF AREA PER SECTION DETAIL. COORDINATE WITH HELLAS CONSTRUCTION AS NEEDED.
3. CONSTRUCT 20'x90' CONCRETE ADA VIEWING AREA PER DETAIL.
4. CONSTRUCT CONCRETE SIDEWALK PER DETAIL 1/SD.1
5. INSTALL 42" FENCE PER MANUFACTURER'S RECOMMENDATIONS. SEE FENCE NOTES THIS SHEET.
6. INSTALL BLACK, ELKAY (OR APPROVED OTHER) DRINKING FOUNTAIN PER DETAIL 4/SD.2 COMPLETE WITH LOCKING HOSE BIB AND DIRECT BURY ADAPTER.
7. INSTALL LIGHT POLE PER DETAIL 4/SD.2 SEE GENERAL NOTE #7 THIS SHEET.
8. INSTALL DUAL SIDED SCOREBOARD. TYPE AND STYLE TO BE DETERMINED.

HATCH LEGEND

- NEW CONCRETE
- NEW TURF

FENCING NOTES:

1. HEIGHT: FENCING AROUND ENTIRE IMPROVEMENT AREA SHALL BE 42" TALL.
2. FENCE TYPE: FENCING TO BE BLACK VINYL-COATED 9-GAUGE CHAIN LINK
3. FABRIC: MESH OPENING OF TENNIS COURT AND PICKLEBALL COURT CHAIN LINK FABRIC TO BE 1 3/4" WITH 9-GUAGE WIRE
4. POSTS: POSTS SHALL BE A MIN. OF 4' DEEP, 8' ON CENTER AND EVENLY SPACED. TERMINAL POSTS TO BE 3" IN DIAMETER AND LINE POSTS TO BE 2 7/8" IN DIAMETER AND 40 WEIGHT OR EQUIVALENT. TERMINAL POSTS TO BE AT CORNERS AND ON BOTH SIDES OF GATES.
5. BRACING: 1 5/8" 40 WEIGHT OR EQUIVALENT TENSION WIRE ON BOTTOM OF MESH FENCING
6. ENTRY GATES: FENCE GATES SHALL BE A MINIMUM OF 4 FEET WIDE WITH HINGES THAT PROVIDE FULL 180° SWING FROM CLOSED TO OPEN POSITION.
7. MAINTENANCE GATE: TO BE DOUBLE GATES TOTAL OF MIN. OF 8' WIDE OPENING.
8. CLEARANCE: GROUND CLEARANCE SHALL BE NO MORE THAN 1 INCH.

GENERAL NOTES:

1. CONTRACTOR TO REFER TO GEOTECH REPORT REFERENCED ON COVER SHEET. IN CASE OF CONFLICT WITH THESE PLANS, THE GEOTECH REPORT SHALL TAKE PRECEDENCE.
2. CONTRACTOR TO ADHERE TO CITY OF ROSEBURG ALLOWED WORK HOURS AND NOT REQUEST TO DO WORK OUTSIDE THOSE HOURS.
3. CONTRACTOR TO CONFIRM ACTUAL DEPTHS OF DRAIN ROCK WITH HELLAS CONSTRUCTION PRIOR TO INSTALLING DRAIN ROCK TO INSURE PROPER EXCAVATION HAS BEEN COMPLETED TO MAKE FINISH GRADE SHOWN ON PLANS.
4. PLEASE NOTE ALL LANDSCAPING AS SHOWN IS FOR REFERENCE ONLY. ALL LANDSCAPING WILL BE COMPLETED BY OTHERS AFTER THE PROJECT IS COMPLETED.
5. NAILER BOARD CURBING SHALL BE INSTALLED AROUND THE PERIMETER OF THE TURF FIELD.
6. CONTRACTOR SHALL CONNECT SEATWALL PERF DRAIN TO FIELD STORM DRAIN SYSTEM AT NO ADDITIONAL COST TO THE OWNER. PLEASE NOTE THAT THIS CONNECTION IS NOT SHOWN ON THE PLANS EVEN THOUGH THE CONNECTION NEEDS TO BE MADE.
7. LIGHTING SHOWN ON THESE PLANS ARE SCHEMATIC IN NATURE AND ARE ONLY TO SHOW THAT LIGHTING IS NEEDED. LIGHTING DESIGN BY OTHERS. SEE THOSE PLANS FOR SPECIFIC DETAILS.

CALL BEFORE YOU DIG !
ONE CALL: (800) 332-2344
OAR 952-001-0010 THROUGH
OAR 952-001-0090

0' 15' 30' 60'
SCALE: 1"=30'

i.e. civil structural surveying architecture planning

i.e. Engineering, inc.
809 SE Pine St
Roseburg, OR
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REGISTERED PROFESSIONAL ENGINEER
OREGON
ALEX M. PALM
FOR REVIEW ONLY
EXPIRES: 12/31/2024

Rev.	Date	Dwg	Description

FIR GROVE SYNTHETIC TURF SOCCER FIELDS

572 STEWART PARK DRIVE
ROSEBURG, OR 97471

SITE PLAN

SCALE: AS SHOWN
MARCH 05, 2025
ISSUE: 50% REVIEW

PROJECT NO. 0149-230
DRW: DTM
CHK: AMP

C.2

DaveM Mar 06, 2025 Z:\JOBS\0149-City of Roseburg\149-230 Fir Grove Turf Field\DESIGN\CADD\0149-230_C2.dwg

TYPICAL SOCCER FIELD LAYOUT

BEMIS-VANCOUVER Engineering Dept.

What is before us is to allow fund raising to finance ~~two~~ ~~synthetic~~ ~~turf~~ ~~fields~~ ~~on fir Grove~~ ~~GRASS~~ ~~Fields~~ the removal of two ~~gra~~ natural grass fields and ~~install~~ ~~two~~ replace them with ~~A~~ Plastic.

The advantages of Plastic fields are many: They can be used more intensly, Less maintence, ~~It~~ Turf is monomorphic (the same throughout) Soccer Balls Bounce the Same, roll the same, throughout the field; No dirt clods to alter the course of the BALL.

Perhaps two Plastic fields will allow more tournment opportunity. This will bring more people to Roseburg. These people will bring money to Spend at our hotels, restraeants, gas stations and convience Stores.

Players won't be getting any mud on them.

I am sure there are Some other benefits that come into play.

Now Let's Look at the down side of Plastic Fields. First and formost People in Roseburg Love the outdoors and natural Surroundings. Plastic fields do not fit into that Senario.

Artificial turf gets old and requires upkeep. Then it needs to be removed, taken to the dump and then new stuff will have to be purchased to replace it. Who is going to be around to pay for that. It Lasts 8 to 10 years.

It is expensive 10-12 dollars a square foot. Real grass Sod costs 4-5 dollars a square foot.

Artificial turf and its infill has been shown to contain a myrid of harmfull chemicals: Benzene, Arsenic, Styrene, PaHs, Lead, Zinc, Cadium, chromium benzathiazole, hexane, toluene, formaldehyde, Phthalates, Crystalline Silica, Latex, Particulate matter, Per-polyfluoroalkylated Substances (PFAS)

turf gets hot up to 150°F it becomes a heat island that can warm up areas around them.

Natural GRASS fields actually capture carbon

out of the air even more than a field of trees. Grass feels good. It is natural, Nice to walk on, sit on, Have a picnic. If you are a fisherman you can walk on it at night and catch Some WORMS.

Little Kids can run around on it barefoot and feel the grass and mud squish up between their toes.

I do not think Athletes like playing on a Plastic. The first plastic field was put in at the Astrodom in 1966. Hence the name astroturf. Then it flourished. Until the players in the NFL Rose up and said: We do not like it. It is too injurious. Finally the NFL has been reconverting to GRASS. International Soccer is doing the Same.

The Surface is too hard. The abrasion to your skin is terriable. Your feet can get stuck in it with a resultent ankle or knee injury. Ground impact with your head is more Likely to cause a concussion.

A Lot of this information I have gathered from the institute for Exposoic Research Mount Sinai School of medecine

BEMIS - VANCOUVER Engineering Dept.

I am not against applying for money to fix up the soccer fields at FIR GROVE PARK. We could have the best field in the STATE. We could create a level, crowned field, with correct drainage, and perhaps even below ground irrigation. Oregon State University's Ag. Dept. Created the grass at the rosebowl. I have been on that field. It is beautiful.

It is unfortunate that we are tasked with makeing this decision so herriedly. I asked for permission to put it on the agenda as a "talking point" five weeks ago. At least we have a chance now to critically anaylize the Pros and Cons. I would suggest that, at least we amend or change the motion to be put forth next meeting. To move to allow the raising of funds to IMPROVE two SOCCER Fields at FIR GROVE PARK.

Lets keep it natural.

Yours truly,
Tom MICHALEK

Icahn School of Medicine at Mount Sinai

Institute for Exposomic Research

Playgrounds and Fields over Hazardous Artificial Turf Surfaces

Children are uniquely vulnerable to harmful exposures from artificial turf surfaces because of their unique physiology and behaviors, rapidly developing organ systems, and immature detoxification mechanisms.

Mount Sinai Health System has established itself as a national authority on the safety of artificial turf and artificial playground surfaces, in terms of both advocacy and research.

Sarah Evans, PhD, MPH, a faculty member in The Mount Sinai Children's Environmental Health Center at the Institute for Exposomic Research, fields calls weekly from communities around the country considering whether to install artificial playing surfaces at a school or public park.

> "We know that chemicals are present that wouldn't be allowed in products for children," says Evans, Assistant Professor in the Department of Environmental Medicine and Public Health at the Icahn School of Medicine at

Sarah Evans, PhD, MPH

Mount Sinai. "Manufacturers say the data on safety is inconclusive, so we should continue to use the products. We argue the opposite. Unless we can prove that these surfaces are safe, children should not be playing on them."

Studies of the composition of artificial play surfaces confirm the presence of carcinogens and neurotoxins including polycyclic aromatic hydrocarbons (PAHs), benzene, and lead. Exposure to these chemicals are associated with cancer, learning disabilities, behavioral problems, and lower IQ, according to Evans.

Evans advocates for the use of natural grass for playing fields and wood chips for playgrounds.

Artificial playing surfaces are also associated with a higher rate of injury. They are rougher on skin and cause more dermal abrasions compared with natural grass. Cuts and scrapes, in turn, can lead to direct chemical exposure, with chemicals absorbed into the bloodstream, says Evans. In addition, the plastic and rubber in artificial surfaces raise the temperature in the play area, which can lead to heat-related injuries such as heat stroke and burns.

"A turf field is a heat island, just like a paved parking lot," says Evans, whose research is focused on the impacts of early life environmental exposures on nervous system development and child behavior.

Professional sports players and teams have been vocal about their preference for natural grass, which is associated with fewer knee and ankle injuries, according to Evans.

School board members and parks and recreation officials often claim that artificial play

The Turf is Artificial, But the Harm is Very Real

SEPTEMBER 16, 2024 |
By Mara Silgailis and Amy Goldsmith

States/Regions:
New Jersey

Related Priorities:
Toxic Chemicals

Related Campaigns:
Clean Water For All in NJ
Preventing PFAS Pollution
Safer Chemicals for Safer Families and Communities

Tags:
toxic chemical
turf

Artificial or synthetic turf is finding its way onto more athletic fields and playgrounds, but it is not without controversy and real concerns of safety. When comparing natural grass to artificial turf, Clean Water Action believes the evidence is clear –- natural grass is a better and safer option for both people and the environment.

What is synthetic turf?

Synthetic or artificial turf is made up of several layers, including plastic grass blades, plastic backing that holds the blades in place, and infill that provides cushioning, weighs down the turf, and helps the blades stand upright. Until recently, all infill was made with recycled ground up tires called "crumb rubber".

Artificial turf contains hundreds of harmful chemicals like lead, heavy metals, benzene, arsenic, Volatile Organic Compounds (VOCs), PFAS, and phthalates, some of which are cancer-causing (carcinogens), neurotoxins, and/or endocrine disruptors. Even new "safer" alternatives for the turf infill contain carcinogens and neurotoxins (e.g., lead, PAHs). Unfortunately, there are gaps in what we know about synthetic turf because manufacturers are not required by law to reveal all of the chemicals used.

The grass blades and backing in synthetic turf is made with the use of PFAS (known as "forever chemicals"). PFAS chemicals are endocrine (hormone) disruptors and linked to decreased sperm count, as well as increased rates of infertility, risk of cancer, immune disorders, and more. Some manufacturers claim that their artificial turf is now PFAS-free, but this has not been supported by research.

Children and athletes are most vulnerable as they play on these surfaces, breathe in, absorb through

the skin, and even ingest turf dust, microplastics, and corresponding toxic chemicals. This is especially worrisome with indoor synthetic turf, as high levels of toxins are found to outgas within half an hour of air sampling (p 47-49).

One scientific review of synthetic turf research found that in 14 studies that tested for lead, including a virgin rubber sample – all contained lead, with the levels varying between playing fields. According to the U.S. Centers for Disease Control and Prevention, there is no safe blood lead level.

Outdoor artificial turf has its own problems. It can get moldy over time and experience a buildup of animal/bird feces and related harms, thus requiring ongoing disinfection. This type of turf can also reach dangerous temperatures of over 160o F in the summer sun, while natural grass rarely exceeds 100o F. Kids have complained of skin burns and extreme heat penetrating their athletic shoes.

Plastic: Key Turf Ingredient and Global Contaminant

What is put on the field does not stay on the field. Synthetic turf breaks down into smaller pieces, including microplastics (less than 5 mm). They are carried long distances by the wind, leach into water systems, storm drains, and contaminate the soil. Barcelona, Spain found that artificial grass fibers "accounted for 15% of plastic pieces larger than 5 m within 1 kilometer from the shore."

Additionally, synthetic turf only lasts about eight to ten years. According to the Synthetic Turf Council, the average athletic field uses 400,000 pounds of infill and 40,000 pounds of artificial turf carpet. There is no known way to recycle artificial turf so this product is piling up, buried or burned, contaminating the environment.

Growing Opposition to Synthetic Turf is Very Real

Due to both environmental and health concerns, towns in several states (including Boston, MA) have banned new synthetic turf fields. Others like Scotch Plains and Westfield, NJ held a local vote and rejected proposals to install synthetic turf.

The NFL Players Association asked to only play on natural grass, stating that artificial turf causes "unnecessary injuries", especially non-contact injuries of the legs (e.g., meniscus tears) and abrasion burns ("turf burns"). The FIFA World Cup Soccer association and US national soccer teams always require grass playing fields.

Real grass playing fields are safer for humans, wildlife and the environment. Few, if any, chemicals are needed if field maintenance crews utilize Integrated Pest Management (IPM) techniques or organic lawn care, which is even better.

Natural grass has the added benefit of mitigating climate change. It has a cooling effect, oxygenates the air, captures carbon, and absorbs water more readily, which helps to reduce flooding and stormwater runoff.

If you can't avoid artificial turf, here are some tips for playing safer and reducing your exposure to turf-related toxic chemicals.

- Avoid playing on synthetic turf on very hot days
- Always wear shoes on synthetic turf
- Wash hands before eating, drinking, or adjusting mouth guards
- Avoid using it for passive activities such as sitting, lounging, and picnicking
- Ensure good ventilation of indoor fields by opening doors and windows and using fans
- Monitor young children to prevent accidental ingestion
- Clean any cuts and abrasions with soap and water
- Brush hair thoroughly after play
- Shake out sports equipment and clothes outside or over the garbage
- At home, take off shoes before entering to avoid tracking in crumb rubber
- Shower immediately after playing on artificial turf

- Vacuum any infill that comes into your home

NOTE: All of the above concerns and tips also apply to playgrounds with rubber or recycled tire mulch. Best practice would be to utilize wood chips in place of rubber mulch.

Additional Resources

Icahn School of Medicine at Mt Sinai researchers have extensively studied and written about artificial turf, with a focus on the impact on children's health.

The Partnership for Healthy Playing Surfaces, an excellent resource for information on synthetic turf.

Environment and Human Health, Inc. has written a careful analysis comparing synthetic turf industry claims versus what studies actually show regarding the chemicals in synthetic turf.

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The Second Latin American Exposome Symposium will be held in Santiago, Chile, September 25-27, 2025, focusing on the theme ***"Integrating Environmental Exposures into Aging, Alzheimer's Disease, and ADRD Research."*** This event will bring together leading scientists in Alzheimer's Disease and Related Dementias (ADRD), Environmental Health, and Exposomics to examine how environmental exposures impact ADRD. Special emphasis will be placed on regional cohorts such as PELOTAS, 10/66, and other studies from across Latin America.

We are pleased to announce that we have awarded **13 travel grants** for trainees and junior faculty presenting posters at the symposium, including from Brazil, Colombia, Mexico, and the United States. We thank everyone for their submissions.

Keynote Speakers

Rick Woychik, PhD, National Institute of Environmental Health Sciences, USA

Martha M. Téllez Rojo, MSc, DSc, National Institute of Public Health, Mexico

Christian González-Billault, PhD University of Chile, Chile

Additional Speakers include

- Manish Arora, BDS, MPH, PhD, Icahn School of Medicine at Mount Sinai, USA
- Dinesh Barupal, PhD, Icahn School of Medicine at Mount Sinai, USA
- David A. Bennett, MD, Rush Alzheimer's Disease Center, Rush University, USA
- Rafael Buralli, MPH, PhD, University of São Paulo, Brazil
- Sandra Cortés, PhD, Pontifical Catholic University, Chile
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Institute for Exposomic Research

The Children's Environmental Health Center Recommendations

The Children's Environmental Health Center of the Icahn School of Medicine at Mount Sinai strongly discourages the installation of artificial turf playing surfaces and fields due to the uncertainties surrounding the safety of these products and the potential for dangerous heat and chemical exposures. In addition, recent studies demonstrating the presence of PFAS and microplastics in these products raise significant concerns for both human health and environmental contamination.

As pediatricians, epidemiologists, and laboratory scientists, recipients of numerous research grants from the National Institute of Health, and host to one of 10 nationally funded Pediatric Environmental Health Specialty Units, we receive frequent inquiries from communities regarding the wide-scale use of artificial turf surfaces on school grounds and in park properties. This led us to conduct a review of the risks and benefits of artificial playing surfaces, during which we found **significant gaps in the evidence supporting the safety of artificial turf products**. Our findings are summarized below and in our online resources accessible at **https://mountsinaiexposomics.org/learning-hub/turf-sports/** and **https://www.healthyplayingsurfaces.org/** and via webinar on the Environmental Health Impacts of Synthetic Turf and Safer Alternatives.[1]

Children are uniquely vulnerable to harmful exposures from artificial turf surfaces

because of their unique physiology and behaviors, rapidly developing organ systems, and immature detoxification mechanisms.[2] Children may be exposed to artificial turf chemicals through ingestion, inhalation, skin absorption, and open wounds or broken skin. Children and young athletes breathe faster than adults, putting them at greater risk for inhalation of chemicals that off-gas from turf fields. Small children put their hands and other objects in their mouths, increasing the risk of exposure via ingestion. In addition, youth have a higher surface area to body mass ratio, produce more body heat per unit mass, and sweat less than adults, all factors that increase susceptibility to heat injuries that have been observed on artificial turf fields. Vulnerability to turf chemicals persists through the teen years as the reproductive and nervous systems continue to develop beyond the first two decades of life. Lastly, children have more future years of life over which chronic diseases linked to the chemicals in turf develop.

Studies to assess the safety of artificial turf are ongoing and inconclusive. Adequate safety assessment requires biomonitoring to determine chemical exposures under realistic play conditions. Importantly, no studies have addressed children's exposure to chemicals from artificial turf surfaces via oral and dermal routes, the two most likely ways that turf chemicals enter the body during play.

The preponderance of existing data on artificial turf pertains to recycled tire infill, or "crumb rubber", which contains known carcinogens and neurotoxins. Concerns about the safety of recycled rubber playing surfaces have been raised by the federal government, based on a lack of comprehensive studies. In 2016, the United States Environmental Protection Agency (USEPA) announced the launch of an investigation into the safety of crumb rubber in partnership with the Centers for Disease Control and Prevention and the Consumer Product Safety Commission, stating **"existing studies do not comprehensively evaluate the concerns about health risks from exposure to tire crumb".**[3] These studies confirmed the presence of chemicals linked to cancer, nervous system toxicity, and impaired reproductive development such as polycyclic aromatic hydrocarbons, benzene, lead, and phthalates.[4] The EPA study also included a pilot-scale exposure assessment in a small number of athletes playing on turf, but this research was limited by several factors including the small number of participants and fields assessed, lack of examination of chemicals present in the grass blade and other turf components

and infill types, limiting testing to only a small subset of chemicals present in tire crumb, and lack of examination of heat and injury risks. The authors emphasize that the reported findings **do not constitute a risk assessment** and cannot be interpreted as evidence of safety.

Questions remain about the safety of alternatives to crumb rubber. Extremely few studies have examined the composition and safety of alternative infills including those purported to be "natural". A 2016 USEPA report found research supporting the safety of alternative infills such as EPDM, TPE, and plant-based infills "lacking or limited".[5] Recent studies including one conducted by Mount Sinai and the Toxic Use Reduction Institute (TURI) found the **presence of known carcinogens and neurotoxins including polycyclic aromatic hydrocarbons (PAHs), lead, zinc, and black carbon in almost all alternative infill materials examined**.[6,7]

Undisclosed chemicals of concern are present in plastic grass blades and turf pads and matting. Recent analyses identified per- and poly-fluoroalkyl substances (PFAS, aka "Teflon chemicals"), a class of more than 15,000 chemicals linked to numerous health problems including cancer, nervous system toxicity, immune dysfunction, thyroid, and cardiovascular disease in the plastic grass blades and backing used on artificial turf fields and in adjacent bodies of water.[8-12] PFAS are considered "forever chemicals" because they persist in the body and the environment and are widespread drinking water contaminants. These findings raise concerns about PFAS groundwater and environmental contamination from turf field run off and emphasize the need for further examination of exposures that may occur from turf components other than infill.

Actions by the USEPA highlight increasing recognition that there is no safe level of PFAS exposure. On April 10, 2024 USEPA finalized legally enforceable National Primary Drinking Water Regulations for six PFAS, dramatically lowering the recommended levels of PFOA and PFOS and citing **scientific evidence of health impacts at drinking water levels close to zero**.[13] These guidelines also include advisories for newer PFAS chemicals PFNA, GenX, PFBS, and PFHxS.

In addition to drinking water regulations, steps have been taken to designate PFAS

hazardous substances and restrict their use in certain products both at the federal and state level.[14-17] **To allow the installation of PFAS-containing surfaces would be extremely short-sighted as further restrictions and regulations on these chemicals are likely to come.**

Risk of heat injury is elevated on artificial turf. On hot summer days, temperatures of over 160 degrees Fahrenheit have been recorded on recycled rubber play surfaces.[18] All artificial turf surfaces examined have been shown to have higher surface temperature and air temperature at head height compared with natural grass, regardless of infill type.[19] Vigorous play in these conditions conveys a very real risk of burns, dehydration, heat stress, or heat stroke. Children are less able to regulate their body temperature than adults, making them particularly susceptible to conditions of extreme heat.[20,21]

High temperatures and risk of heat illness lead to a loss of field usage even on hot days, which have become increasingly common due to climate change. Like asphalt, artificial turf fields contribute to the "heat island effect", in which communities close to the fields become hotter than surrounding areas.[22,23] Artificial turf contributes to the climate crisis throughout its lifecycle, requiring fossil fuels during production and emitting greenhouse gases during use and disposal.[24]

Chemical hazards escape from artificial turf surfaces to the environment. A number of the chemical components of artificial turf surfaces are soluble in water. When rain and snow fall on synthetic fields, these materials can leach from the surface to contaminate ground water and soil.[25] Recent studies find PFAS in wetlands adjacent to artificial turf suggesting that these chemicals may migrate from field components to contaminate the environment.[10] Artificial turf is also a major contributor to microplastics in the environment, with recent studies finding an estimated 2 tons of infill microplastics released into the environment per year and 20,000 grass fibers released into waterways per day.[26,27] Microplastic contamination is found in drinking water and wildlife throughout the globe and in human blood, lungs, and placenta, and brain.[28-31] For these reasons, the European Union includes crumb rubber artificial turf in their ban on microplastic-producing products.[32]

Turf materials are transported home. Over time, play surfaces break down into smaller pieces and fine particles that may be picked up on children's shoes, clothing, and skin. Infill and grass blades accumulate in shoes and stick to bodies of players, bringing these materials into cars and homes. Thus, exposure can continue for many hours beyond the time that a child spends in the play area.

Daily outdoor play and physical activity are essential components of a healthy childhood. Safe play areas are an essential component of any school environment. While it is important to maximize safe play time, we caution against the use of materials which carry risks of chemical and heat exposure and have not been comprehensively tested for safety.

For the reasons outlined above, the Children's Environmental Health Center recommends natural grass fields and playing surfaces as the safest option for areas where children play. For case studies that include data on cost, labor, and play time on organically managed natural grass athletic fields see https://www.uml.edu/research/lowell-center/athletic-playing-fields/.

Corresponding Faculty

Sarah F. Evans, PhD, MPH, Assistant Professor, Department of Environmental Medicine, Icahn School of Medicine at Mount Sinai. Dr. Evans regularly speaks to community groups and policymakers about the health hazards of artificial turf and the alternative solutions. To invite Dr. Evans for a presentation, please contact us.

Homero Harari, ScD, MSc, Assistant Professor, Department of Environmental Medicine, Icahn School of Medicine at Mount Sinai. Dr. Harari is an exposure scientist who studies the health effects of hazardous materials, including artificial turf.

Statement updated May 2025

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Related Links

Read about artificial turf health risks

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Icahn School of Medicine at Mount Sinai

Institute for Exposomic Research

Artificial turf products are installed on athletic fields and playgrounds in communities all across the country but uncertainties remain about their safety, particularly for children. Read this entry to learn what the current scientific evidence shows about the potential health and safety risks of play on artificial turf surfaces.

If your school, community, or business is considering installing an artificial turf field, it is important to be an educated consumer. Many turf products are available, and some are even advertised as "green" or "eco-friendly", but it can be difficult to assess their safety for use by children because adequate risk assessment studies that assess all potential routes of exposure during realistic play conditions have not been conducted. This guide will help you dig deeper than the label on the packaging to learn what chemicals these products contain, how children may be exposed to these chemicals, and understand the potential health risks.

What Is Artificial Turf?

Close-up: rubber infill that provides cushioning and serve as a base for the blades.

Synthetic or artificial turf is a multi-layer product used as a surface on athletic playing fields, playgrounds, golf courses, and residential lawns. It typically consists of:

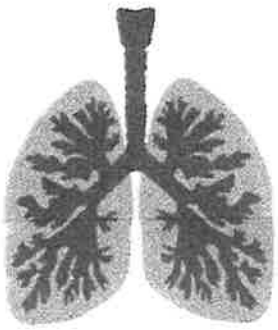
- A top layer of plastic fibers (usually nylon, polypropylene, or polyethylene) designed to mimic natural grass blades.
- Infill to provide cushioning and serve as a base for the blades.
- A backing layer to which the blades are sewn.
- A drainage layer.
- Additional padding layers in some applications.

What Health Risks Are Associated With Play on Artificial Turf?

Chemical exposures:

Chemicals known to be carcinogenic such as heavy metals, volatile organic compounds (e.g. benzene), polycyclic aromatic hydrocarbons, and 1,3-butadiene have been detected in turf infill made from recycled tires. Further study is needed to characterize the complete chemical composition of infill made from materials other than tires.

Exposure can happen through:



Inhalation of chemicals and particles

Dermal contact and absorption through the skin or open wounds

Ingestion of turf infill particles

Exposure may be affected by weather conditions, temperature, and type of activity (i.e. physical impact on the turf itself and ventilation rate of the individual).

Non-chemical exposures:

- **Heat:** Artificial surface temperatures can get up to 60 degrees higher than natural grass and have been measured as high as 200 degrees Fahrenheit on a summer day. The air at head height also measures much hotter than the air about natural grass surfaces. This increases the risk of skin burns and heat illness.
- **Injuries**: Athletes playing on turf fields have been shown to have more abrasions or

"turf burns," which can harbor infection and may increase exposure to turf chemicals. Studies also show that athletes are at higher risk of knee and ankle injuries and concussions.

Athletes playing on turf fields have been shown to have more abrasions or "turf burns," which can harbor infection.

What Chemicals Should I Be Concerned About?

Artificial turf fields are made up of several different components, each of which may expose players to chemicals of concern. The most well-studied of these is "crumb rubber" infill made from recycled automobile tires.

Table 1 shows a partial list of chemicals of concern known to be present in artificial turf made from recycled rubber. Studies conducted by the USEPA confirm the presence of these and over 350 chemicals in crumb rubber infill, only half of which have toxicity data

available. Studies conducted by Mount Sinai also detect these chemicals of concern in alternative infills made from plastic, virgin rubber, shoes, and even plant-based materials.

Chemical	Potential Health Effect
Benzene	Known human carcinogen
Arsenic	Known human carcinogen
Styrene	Reasonably anticipated to be a human carcinogen
Polycyclic aromatic hydrocarbons (PAHs)	Reasonably anticipated to be a human carcinogen
Lead	Neurotoxicant
Zinc	Neurotoxicant
Cadmium	Known human carcinogen
Chromium	Known human carcinogen; Respiratory irritant
VOCs and SVOCs (e.g. benzathiazole, hexane, toluene, formaldehyde)	Respiratory irritants or asthma triggers; Neurotoxicants; Some are known human carcinogens
Phthalates	Reproductive toxicant
Crystalline Silica	Known human carcinogen; Respiratory irritant
Latex	Allergen

Particulate matter	Respiratory irritant or asthma trigger
Per- and polyfluoroalkylated substances (PFAS)	Carcinogenic; Thyroid disease; Immune dysfunction; Increased cholesterol

Table 1. A partial list of chemicals of concern identified in crumb rubber and other infill types and their associated health risks.

In recent years, per- and polyfluoroalkyl substances (PFAS) have been identified in turf field components, most notably in some grass blades and infill types. PFAS are a class of over 15,000 chemicals used widely in consumer products for their grease, water, and stain-resistant properties. Because of this widespread use and their persistence in the environment, PFAS chemicals are now major drinking water contaminants and detected in the bodies of nearly all Americans. Some analyses find PFAS in bodies of water adjacent to artificial turf fields suggesting that it can leach out and enter the environment. More research is needed to determine whether PFAS or other chemicals in turf get into the bodies of individuals during play and whether there are any associated health effects.

Be An Educated Artificial Turf Consumer

- Beware of greenwashing: the use of terms like "organic", "green", and "eco" do not guarantee safety. In fact, those terms are not regulated for turf products, so their meaning in this context can be misleading.
- Choose companies that are transparent and disclose all materials. Note that manufacturers' Safety Data Sheets (SDS) do NOT disclose all chemicals used in the product or their potential impacts on health. To obtain complete disclosure, ask manufacturers to list all components in writing.
- Ask for third-party testing that demonstrates that all turf components are PFAS-free.
- **Contact us** to discuss testing options and results.
- Consider the possibility of maintaining an organic grass field with an underground drainage system.

Tips for Safer Play on Artificial Turf Surfaces

- Avoid use on very hot days

- Avoid use for passive activities (i.e. sitting, lounging, picnicking)
- Ensure good ventilation of indoor fields by opening doors and windows and utilizing fans
- Monitor young children to prevent accidental ingestion
- Always wear shoes on artificial turf
- Wash hands before eating, drinking, or adjusting mouth guard
- Clean cuts and abrasions immediately
- Brush hair thoroughly after play
- Remove and clean shoes and gear outside before getting in car
- At home, take off shoes and shake out your children's equipment and clothes outside or over the garbage
- Shower immediately after playing on artificial turf
- Vacuum any infill that comes into your home
- Post a safety warning outside the field that includes tips for safer play

surfaces require less maintenance and are 'all-season.' "But the artificial stuff does wear down and requires considerable upkeep," says Evans. And because of the heat issue, some summer days may make it impossible to play, says Evans, who speaks in webinars and writes letters addressing specific communities that contact her.

Evans works closely with Homero Harari, ScD, Assistant Professor of Environmental Medicine and Public Health at the Icahn School of Medicine at Mount Sinai, who received funding from the National Institute of Environmental Health Sciences (NIEHS) in May 2023 to study artificial play surface safety.

Homero Harari, ScD

"In the literature, there are hundreds of papers on what the chemicals are," Harari says. "But there's no data showing how these chemicals might or might not be entering our bodies."

In partnership with five community organizations across the Northeast, Harari has begun the first year of a five-year study to take air, blood and urine measurements of adults and children who play soccer on artificial turf fields. He has already measured the surface temperature of hundreds of artificial fields using satellite-based algorithms.

The community partners are:

- Non-Toxic Portsmouth and Non-Toxic Dover from New Hampshire
- Lowell Center for Sustainable Production from Massachusetts
- Clean Water Action from Connecticut
- Grassroot Environmental Education from New York
- Women for a Healthy Environment from Pennsylvania

"During the summer, with rising temperatures, we've found fields with temperatures over 150 degrees," says Harari. "That's enough to burn the skin of a player." Even lighter colored infill gets hotter than natural grass, according to Evans.

Evans receives calls about artificial play surfaces through Mount Sinai Health System's Pediatric Environmental Health Specialty Unit (PEHSU), one of 10 regional federally funded clinical and educational centers.

"We were known already as having expertise in counseling families and communities about environmental exposures," says Evans. "Then several years ago, a couple of issues with artificial turf triggered concerns. Lead was found in some turf fields, and a high profile NBC report suggested a link between playing on artificial turf and increased risk of cancer in female soccer players."

Evans also counsels communities who have already installed artificial play surfaces to learn what to do to reduce potential exposure – wash hands, don't play on hot days. She says she is careful to not fear-monger or make parents feel guilty.

Anna Grossman, a member of the Montclair, N.J. grassroots organization Sustainable Montclair, credits Evans and the three-page letter she wrote to the Montclair school board with empowering locals to raise their voices against an artificial turf project.

"It's incredibly helpful for environmental promoters to have Mount Sinai to guide them with data to form an unbiased opinion," says Grossman. "It brings the argument back to the science, which is exactly where it should be when it comes to pediatric health."

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