



California Environmental Protection Agency
Office of Environmental Health Hazard Assessment

Synthetic Turf Study

Synthetic Turf Scientific Advisory Panel Meeting

May 25, 2018

**MEETING REFERENCE MATERIALS:
APPENDICES**

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Appendix A. Field Sampling Protocol for Phase 3 Study

Field Sampling Protocols

Following this final Field Sampling Protocol, OEHHA and LBNL performed the Phase 3 Study to collect crumb rubber and environmental samples at 35 selected synthetic turf fields in California for chemical characterization study of the synthetic turf project.

A-1. Environmental Survey

A-1.1. Pre-Visit Online Survey

Before the field visit, the OEHHA field lead conducted a pre-visit environmental survey (Attachment A) using field information available online. The internet search included these activities:

- A review of the field surroundings within a 1-mile radius using google maps (e.g., satellite maps)
- Documentation of the presence and location of nearby freeways, industrial facilities, and other potential sources of chemical emissions that may impact the field samples
- Documentation of local precipitation history for the week prior to the field visit
- A check of the weather forecast for the day before and day of sampling, and considering the prior week's precipitation history, determined if the sampling schedule needed to be adjusted.

A-1.2. Onsite Survey

On the day of field sampling, OEHHA staff conducted an onsite survey (Attachment B) before and during field sample collection to gather information on weather at the time of sampling (e.g., temperature, field surface temperature, and precipitation), surrounding environment of the field (e.g., confirm locations of nearby freeway and industrial facilities identified in the Pre-Visit Online Survey), and visible conditions on the field (e.g., standing water from sprinklers, previous rain, or overnight condensation). The staff also noted the level of automobile traffic, and any other relevant information that may affect potential chemical emissions or exposure.



The OEHHA field lead visually inspected the field and documented (photographed, if possible) the dampness of the crumb rubber and turf blades at the time of collection. Crumb rubber samples were not collected when either the turf blades or crumb rubber on the fields were perceptibly moist or wet. Shaded areas on the field were also noted on the environmental survey especially in areas near or at the proposed sampling locations. If there was an unforeseen field condition, the OEHHA field lead immediately called the OEHHA project lead and discussed if field sampling activity needed to be adjusted or rescheduled.

A-1.3. Post-Visit Survey

After the field visit, the OEHHA field lead conducted a post-visit survey (Attachment C) using the internet to document the local temperature, relative humidity, wind speed, and wind direction at the time of sample collection.

A-2. Sampling Map (Field Diagram)

Before the field sampling day, the OEHHA and LBNL field leads worked together to develop a field-specific sampling diagram (Attachment D) illustrating field shape and orientation (compass showing North direction) and sampling details (including preliminary sampling locations, types and number of samples collected at each location). Attachment D shows example onsite sampling diagrams for each type of field (i.e. soccer, football) to be sampled. The diagram was used during the field sampling to guide the sample collection. The OEHHA field lead documented any deviations from the plan on the sampling map and in the field sampling diary (Attachment E).

A-3. Crumb Rubber Collection

At a location outside the field, the OEHHA and LBNL field leads set up a staging area to set up all the sampling supplies and a trash bag, and then briefed the OEHHA/LBNL field staff (sampling team) on the sampling activity of the day and assigned members of the sampling team with specific sampling tasks. The leads distributed all sampling tools and the sampling map. The OEHHA field staff collected crumb rubber samples at the pre-selected locations detailed on the sampling map. At each sampling location, the OEHHA field staff used commercially available pre-cleaned metal or plastic sampling scoops provided by LBNL to collect crumb rubber from the field surface. The protocol for crumb rubber collection was as follows:



- a) Identified and marked each on-field sample location using area indicator (a measured rope) to identify approximately a 1 square meter surface area (the sample collection area) to collect the sample from.
- b) Put on a pair of fresh nitrile gloves.
- c) Identified the 120 ml wide-mouth amber glass and 120 cc Polyethylene (PE) bottle with the affixed label corresponding to the first sampling location.
- d) Carried supplies from the staging area to the sample location and placed them on the ground within the marked area.
- e) Pressed the side of the sampling scoop (metal scoop to be used with glass bottle, plastic scoop to be used with PE bottle) down onto the turf at an approximately 45° angle and moved back and forth on the turf surface to collect crumb rubber within the sample collection area.
- f) Scooped the crumb rubber into the sampling bottle.
- g) Repeated the sample collection as needed at the same location or moved to a different location within the designated sample collection area until both the glass and plastic bottles were full.
- h) When bottles were full, insured that lids were tightly sealed, gathered supplies and returned to the staging area.
- i) Recorded the date, time, and initials of sample collectors on sampling bottle label and into Chain-of-Custody (Attachment F).
- j) Placed sample in ice chest chilled with blue ice.
- k) Before going to next sample location, changed to a new pair of nitrile gloves, got a set of clean scoops and clean sampling bottles.
- l) Repeated steps c-k until all samples were collected.
- m) When done with all sample locations, returned all field tools to the staging area. Ensured that nothing was left on the field.

A-4. Environmental Sample Collection

During the Phase 2 and 3 Studies, at each field tested, environmental samples were collected at an on-field location with and without activity to evaluate exposures and an off-field location for background comparison.

A-4.1. Pre-Sampling Preparation

Field information, along with availability and location of power on a field were collected during a field visit with the owner. Prior to arrival at the field, satellite images and weather apps were reviewed to determine the field orientation and weather forecast on the day of testing (e.g., wind direction and speed). This information was used to identify the pre-arrival on- and off-field sample locations and orientation relative to the field.



The sampling packages were setup on four carts (three on-field and one off-field locations) and one stratification tower (on-field, various elevations) as detailed in Table 1 prior to transport to the field. The on-field sampling locations were selected to maximize cross field airflow upstream of the experimental area. The monitoring area was defined as the area bordered by and in front of a regulation soccer goal (7.3 m wide by approximately 10 m deep) with individual sample locations to each side and behind (downwind) the goal. The off-field sample location was typically selected to include different ground cover material (e.g., soil, natural grass turf, or concrete) and to provide a location that was not directly influenced by airflow across the field.

A-4.2. Setup and Sampling Activity

Upon arrival at the field, and after any required check-in procedures completed, the field lead for environmental sample collection reviewed the initial selection of monitoring locations and made final adjustments to account for access to power, current field and meteorological conditions. The rationale for the final selection of sampling location and instrument orientation was documented in the field log.

Before entering the field, the OEHHA and LBNL field leads briefed the sampling team on the sampling activity of the day and assigned staff with specific setup and sampling tasks. If the field had a movable and regular size soccer goal, the goal would be used for the study and placed at the sample location with the goal opening facing into the predominant wind. The three on-field monitoring carts/packages were installed to the left and right of the goal frame and behind the net. In addition, the stratification tower (tripod with samplers at various elevations) was installed near the center behind the net.

The sample carts and tower orientation on-field and measuring devices on each cart or tower were the same at each field as noted in Table 1. The devices were launched and logged continuously to a dedicated computer on each cart. Integrated samples including VOCs, SVOCs and PM collected on filters were run on a combination of pre-programmed pumps that were calibrated before and after each use and manual on/off pumps with continuous flow control.



The fields were tested during static (no activity) and active (similar to soccer game or practice) conditions. Following the LBNL Institutional Review Board approved protocol, human subjects were recruited to create the active conditions. They performed vigorous soccer drills in the monitoring area to agitate field surface and simulate the active field conditions. The pace of soccer activity was dictated by a soccer ball kicking machine that launched a ball into the goal area on a 10-second cycle. Typically, the ball kicking machine was setup approximately 25 meters from the face of the goal net and adjusted to bounce the balls in front of the net where the human subjects would interact with the ball (catch, dribble, kick etc.) before kicking the ball back for reloading the machine.

The basic environmental field sampling sequence were: 1) a one to two hours of instrument setup and device launching period; 2) an hour of sampling under static field conditions; 3) three hours of active condition sampling; and 4) a final hour of static condition sampling. After the five-hour sampling, instrument was taken down in reverse order of the setup and data from real-time devices were backed up prior to leaving the field. An example of the detailed playbook showing the order of activities during a field testing event is shown in Attachment G.



Table 1: Instrument package

Target Metric	Instrument method or device	Sample type	Cart S = left and right of the goal B = back of net O = off field
Wind speed and direction	3-D anemometer logged to onboard laptop	Continuous	S, B & O
Surface temperature	IR (infrared) surface temperature probe logged to onboard laptop	Continuous	S, B & O
Ambient temperature and relative humidity	HOBO U10 or equivalent shielded and logged internally	Continuous	S, B & O
Temperature profile	Thermocouples below surface and stratified ambient above surface logged to HOBO UX120 four channel logger	Continuous	B
Volatile organic compounds (VOCs)	Hourly samples collected on thermal desorption sorbent tubes	Integrated	S & O
Stratified VOCs	One-hour sample collected at 4 levels above field on thermal desorption sorbent tubes	Integrated	B
Aldehydes (ALD)	EPA method TO11 or equivalent using DNPH cartridge	Integrated	S
Polycyclic aromatic hydrocarbons (PAHs) & semi-volatile organic chemicals (SVOCs)	EPA method TO13 or equivalent using PM2.5 cyclone onto glass fiber filter followed by polyurethane foam + XAD2 sample train	Integrated	S & O
Particulate matter 2.5 (PM2.5)	Particle mass collected using Personal Environmental Monitor (PEM) with 2.5 size cut on Teflon filters collocated with SVOC sample heads	Integrated	S & O
Particulate matter 2.5 (PM2.5)	DustTrak II 8530 particle mass analyzer fit with PM2.5 impactor logged internally	Continuous	S, B & O
Particulate matter 10 (PM10)	DustTrak II 8530 particle mass analyzer fit with PM10 impactor logged internally	Continuous	S, B & O (subset of fields)
PM 2.5	MetOne BT 645 continuous laser optical sensor with PM2.5 cyclone logged to onboard computer	Continuous	B (subset of fields)
PM 2.5	MetOne ES 642 forward scatter laser nephelometer with PM2.5 cyclone logged to onboard computer	Continuous	O (subset of fields)
Size Resolved Particle Number Conc.	MetOne 637 five size fractions at three elevations above field logged to onboard computer	Continuous	S & B
Size resolved particle number conc.	TSI 3321 aerodynamic particle sizer resolved from ~ 300 nm (0.3 microns) to 20 microns placed near surface and logged internally	Continuous	B
Ozone	2B Technologies model 202 logged continuously to onboard computer	Continuous	B, O



The field protocol for environmental sample collection was as follows:

- a) Confirm location on field for sampling area.
- b) If available on the field, move goal net frame into place with the opening of the net facing into the predominant wind. If no net is available, build soccer net and place with the opening of the net facing into the predominant wind.
- c) Starting from back of net, uncoil main power cable with three-way plug at the net end stretching away from the sampling area
- d) If no power is available at the field, place generator at end of power cable, and install fume exhaust system with ducting running away from the sampling area. Set up any caution flags/cones and end of anchor duct in place. Start the generator.

One-hour inactive phase of testing:

- e) Move three carts into position with all carts placed side-by-side at back of net and plug in power supply for carts. Move fourth cart to "off field" location.
- f) Install and orient the 3-D anemometers and align the IR (infrared) probe pointing to the general area near the sampling area
- g) Place pre-programmed SVOC (semi-volatile organic compound) pump on ground behind cart and connect vacuum line to SVOC sample head
- h) Place pre-programmed VOC/ALD (volatile organic compound/aldehyde) sample pumps on the carts
- i) Place soccer ball kicking machine to the front of the net 18 – 20 yards from the front of the goal and install battery pack
- j) Load VOC and ALD tubes/cartridges in preprogrammed sampling boxes and launch all devices
- k) Prior to start of SVOC sample collection, assemble sample train with sorbent cartridges and filters (this is only for the three hours active sampling period at the Pilot#1)
- l) After sampling period begins, record all sample flows (VOC, ALD and SVOC) at least once per hour

Three-hour active phase of testing:

- m) To start the active phase of testing, move two carts from back of net to sides of net.
- n) Start and continue to run ball kicking machine with voluntary participants conducting soccer drills in net taking 20 minute turns for each person with two people receiving and running machine assisted/supervised by LBNL and/or OEHHA staff.
- o) Collect samples at the pre-determined locations for 3 hours



One-hour inactive phase of testing:

- p) Collect samples for another hour with no field activity.

At the end of the sampling period, all digital data were saved on the device or laptop associated with the specific sampling cart and the data was backed up on an external hard drive specific to the project. All integrated samples were removed from the sampling boxes, labeled and returned to shipping/handling containers for transport back to lab.

A-5. Sample Handling and Shipping

Environmental samples and crumb samples were packaged and transported/shipped in separate containers. The sample handling, transportation and/or shipping followed the chain-of-custody (COC) and QA/QC protocol specified in the sampling plan (Sections A-7 and A-10). A COC form is provided in Attachment F. Details specific to the crumb samples and environmental samples are provided below.

1.7.1 Crumb Samples

Once a bottle is filled, the date and time of collection, and initials of the sample collector were clearly entered onto the label of each sampling bottle. The OEHHA field lead accounted for all the sampling bottles after the completion of field sampling. Each sampling bottle was placed into an individual Ziploc bag, sealed, wrapped, and placed into an insulated container (Styrofoam box or cooler) containing blue ice (4 °C). Each box of samples contained the COC for the specific samples within the box. The boxes were shipped via FedEx overnight or delivered on the same day to the laboratory.

1.7.2 Environmental Samples

Environmental samples included both digital information logged on instruments or devices and physical samples collected on sampling media to be processed within a laboratory setting.

All digital data files were assigned a unique descriptive name, saved on the instrument/device/computer associated with the sample and backed up on an external project specific hard drive as part of the shutdown procedure each day (or at each location if more than one location is tested on a given day).

A-6. Deviations from the Sampling Protocol

The OEHHA field lead immediately contacted (by phone or text) and sought approval from the OEHHA project lead for deviations from the sampling protocol that were deemed to be necessary due to variances in field conditions. The OEHHA field lead documented all the deviations in the COC records (Section A-10) and the field sampling diary (Section A-11).



Health and Safety

At least a day before the field visit, the OEHHA lead identified and printed out the contact information and full address of the nearest local emergency facility or hospital.

Before entering the field, the LBNL and OEHHA field leads held a tailgate meeting to go over the safety protocol. OEHHA field lead presented the emergency facility information and discussed potential physical (e.g., trips and falls, slip hazards, heat exhaustion and heat stress, dehydration, proper lifting techniques, use of personal protective equipment including eye protection, potential exposure hazards from chemicals applied to or that are on the turf, hygiene techniques and first aid) and biological hazards (e.g. bug bites). The LBNL field lead described detailed procedure on proper handling of mechanical, electrical, and electronic equipment. OEHHA and LBNL staff were to immediately report to the LBNL or OEHHA lead the following health and safety concerns:

- Changes in field/weather conditions that may impact the health safety of the team or individuals
- Signs of heat stress noticed on individuals
- Safety concerns observed on the field or individuals

The OEHHA and LBNL field leads were to assess the conditions, report immediately to the OEHHA and LBNL project leads, contact OEHHA's industrial hygienist, and seek further assistance from the appropriate authorities (e.g., contact the local hospital), if warranted.



QUALITY ASSURANCE/QUALITY CONTROL

A-7. (QA/QC) PROCEDURES

The QA/QC procedures were employed at the field and in the laboratory. The QA/QC samples collected in the field sampling events included field blanks and trip blanks. Field QA/QC procedures were implemented at the fields and consist of the following measures:

- A Chain-of-Custody (COC) form accompanied all samples collected from a particular field during transportation. They were used to ensure the integrity of the samples collected.
- A field sample log was kept by OEHHA to record type and total number of samples collected from a particular field. It also included sampling details, crumb rubber field locations, field ID, sampling date and times (begin and end), and sample identification numbers. Pages were numbered, dated, and signed by the OEHHA and LBNL field staff performing sampling and data logging.
- A field sampling diary was maintained to document all deviations from the sampling protocol and justifications for the changes. Communications between the OEHHA and LBNL field staff and the OEHHA and LBNL project leads for approval of protocol modifications onsite were also summarized.
- One field QA/QC sample and one trip blank of each sampling bottle type was collected at each synthetic turf field (i.e., a total of four blanks per field) and submitted for analysis along with the crumb rubber field samples.

A-8. Field Blanks Preparation

A field blank is a quality control measure used to identify potential contamination that may have occurred during crumb rubber sampling at the field and during the sample shipment to the analytical laboratory. A field blank is prepared by opening and closing a sample container at the field. OEHHA prepared two field blanks (one for plastic bottle and for glass bottle) for each field. The field blanks were preserved, packaged, and sealed in the same manner described for crumb rubber samples. For identification, a unique sample number was assigned to each blank.



A-9. Trip Blanks Preparation

A trip blank is a quality control measure used to evaluate any potential contamination (e.g., migration of volatile organic chemicals) as a result of shipping and handling of samples. A trip blank was prepared by taking a sealed, clean sampling container and carrying it to the field. The blank container was not opened and accompanied the sampling containers during the sampling and in the shipment to the laboratory. OEHHA prepared a glass bottle and a plastic bottle trip blank for each field. The trip blanks were handled under the same protocol for the crumb rubber samples, as described in this sampling plan. The trip blanks were preserved, packaged, and sealed in the same manner described for crumb rubber samples. For identification, a unique sample number was assigned to each blank.

A-10. Chain-of-Custody Records

Chain-of-Custody (COC) records were used to document sample collection and accompanied all sample shipments to the laboratory. The COC record identified the contents of each shipment and maintained the custodial integrity of the samples. COC forms were completed and signed by sample collectors and sample handlers and sent with the samples for each shipment. If multiple coolers were sent to a single laboratory on a single day, COC forms will be completed and sent with the samples for each cooler. Generally, a sample is considered to be in a person's custody, if it is either in the person's physical possession, in the person's view, locked up, or kept in a secured area that is restricted to authorized personnel. Until receipt by the laboratory, the custody of the samples was the responsibility of OEHHA staff.

A-11. Field Sampling Diary

The field sampling diary included the location of sample collection, the name of the lead and the names of field staff who participated in the sample collection at each field. All deviations from the sampling protocol described in Sections A-3 and A-4 were noted including the reason for deviation and its justification. The OEHHA field lead immediately contacted (by phone or text), discussed options with, and sought approval from the OEHHA project lead for the need to deviate from the sample protocol before acting. The discussion and approval was summarized in the field sampling diary.



Attachment A. Pre-Visit Environmental Survey

FIELD ENVIRONMENTAL SURVEY – PRE-VISIT

Field ID: _____

Sampling Date: _____

No. Samples Taken: _____

Sampling Time: Start: _____ End: _____

Weather Forecast for day of field sampling:

Precipitation: _____

Temperature (High): _____

Nearest Weather Station

(Weather Underground)*: _____

Nearby and surrounding areas (within 1 miles):

Freeway/Highway: _____

Industrial facilities: _____

Athletic fields: _____

Airport: _____

Other potential sources of chemical emissions:

Traffic intensity: Light Moderate Heavy



Precipitation History (previous week):

Date	Precipitation

Pictures:

Picture #	Description

Other comments:

Name and Signature of Surveyor: _____

Date: _____



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Google Maps image of synthetic turf field (1-mile radius)



Attachment B. Onsite Environmental Survey

FIELD ENVIRONMENTAL SURVEY – ONSITE

Field ID: _____

Sampling Date: _____

No. Samples Taken: _____

Sampling Time: Start: _____ End: _____

Meteorological Data Collected on the Field:

Precipitation: _____

	At Start	At End
Field Surface Temperature:		

Nearby and surrounding areas (within 1 miles):

Freeway/Highway: _____

Industrial facilities: _____

Athletic fields: _____

Airport: _____

Other potential sources of chemical emissions:

Traffic intensity: Light Moderate Heavy



Precipitation History (previous week):

Date	Precipitation

Pictures:

Picture #	Description

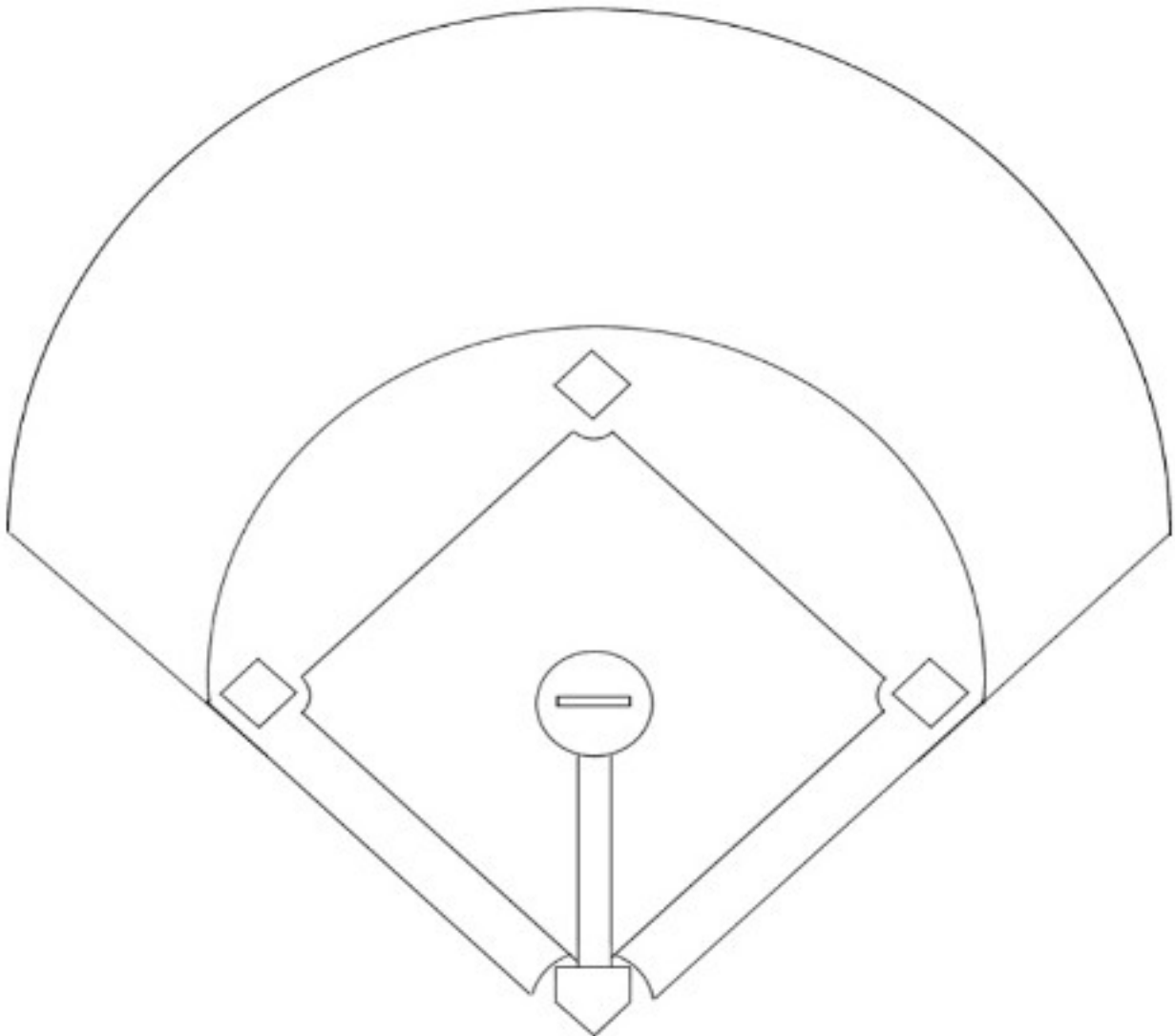
Other comments:

Name and Signature of Surveyor: _____

Date: _____

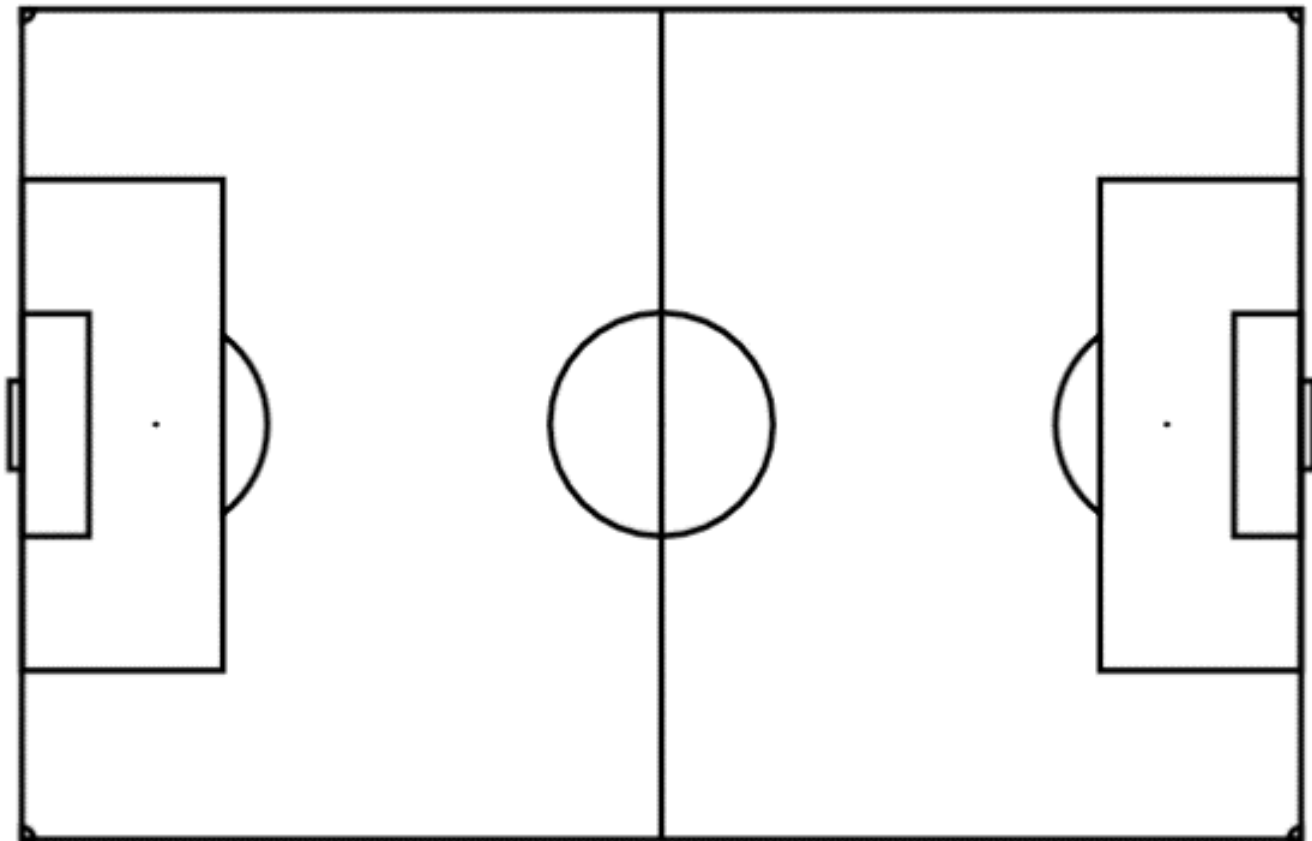


Field Diagram (Sketch field characteristics including trees, shaded areas, indicate synthetic turf, sand, gravel, grass, asphalt, concrete, etc.):



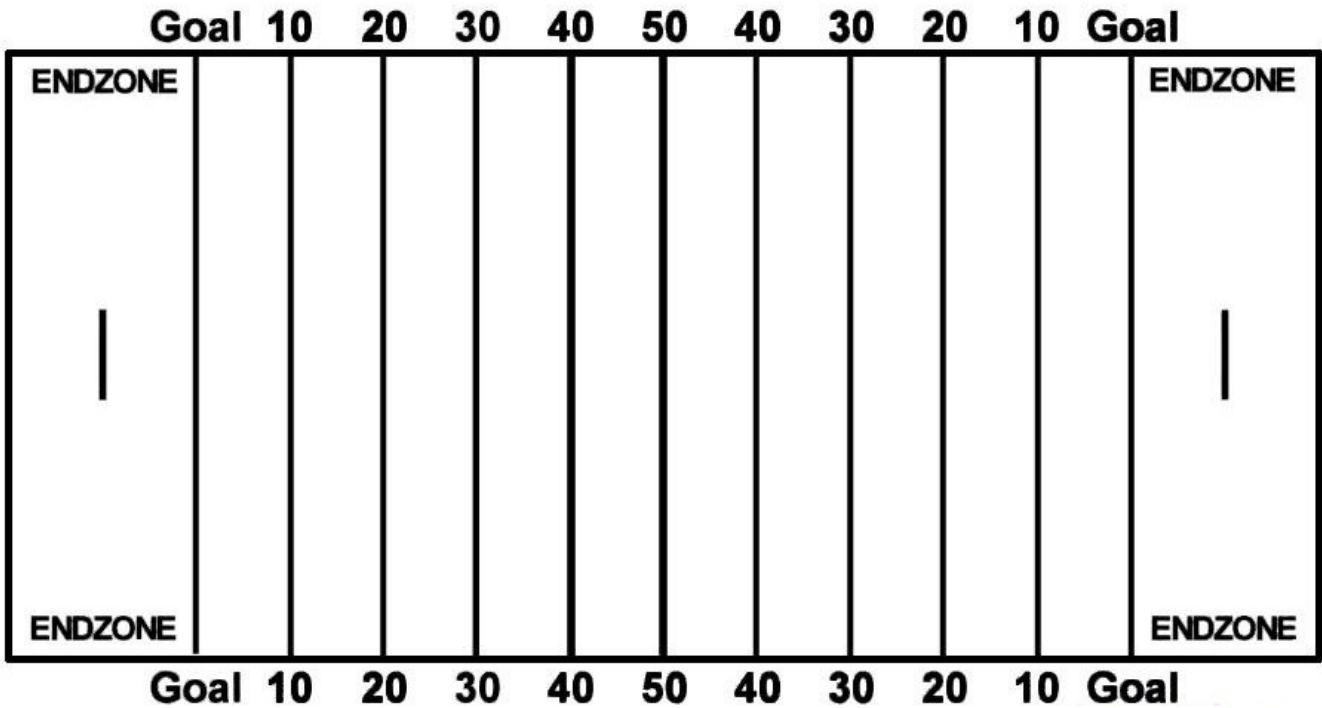


Field Diagram (Sketch field characteristics including trees, shaded areas, indicate synthetic turf, sand, gravel, grass, asphalt, concrete, etc.):





Field Diagram (Sketch field characteristics including trees, shaded areas, indicate synthetic turf, sand, gravel, grass, asphalt, concrete, etc.):





Attachment C. Post-Visit Environmental Survey

FIELD ENVIRONMENTAL SURVEY – POST-VISIT

Field ID: _____

Sampling Date: _____

No. Samples Taken: _____

Sampling Time: Start: _____ End: _____

Weather Record for the day of field sampling:

Precipitation: _____

Temperature High: _____

Nearest Weather Station

(Weather Underground): _____

	At Start	At End
Air Temperature:		
Relative Humidity:		
Wind Speed and Direction:		

Nearby and surrounding areas (within 1 miles):

Freeway/Highway: _____

Industrial facilities: _____

Athletic fields: _____

Airport: _____

Other potential sources of chemical emissions:

Traffic intensity: Light Moderate Heavy



Precipitation History (previous week):

Date	Precipitation

Pictures:

Picture #	Description

Other comments:

Name and Signature of Surveyor: _____

Date: _____

Attachment D. On-site sampling map (Field Diagrams)

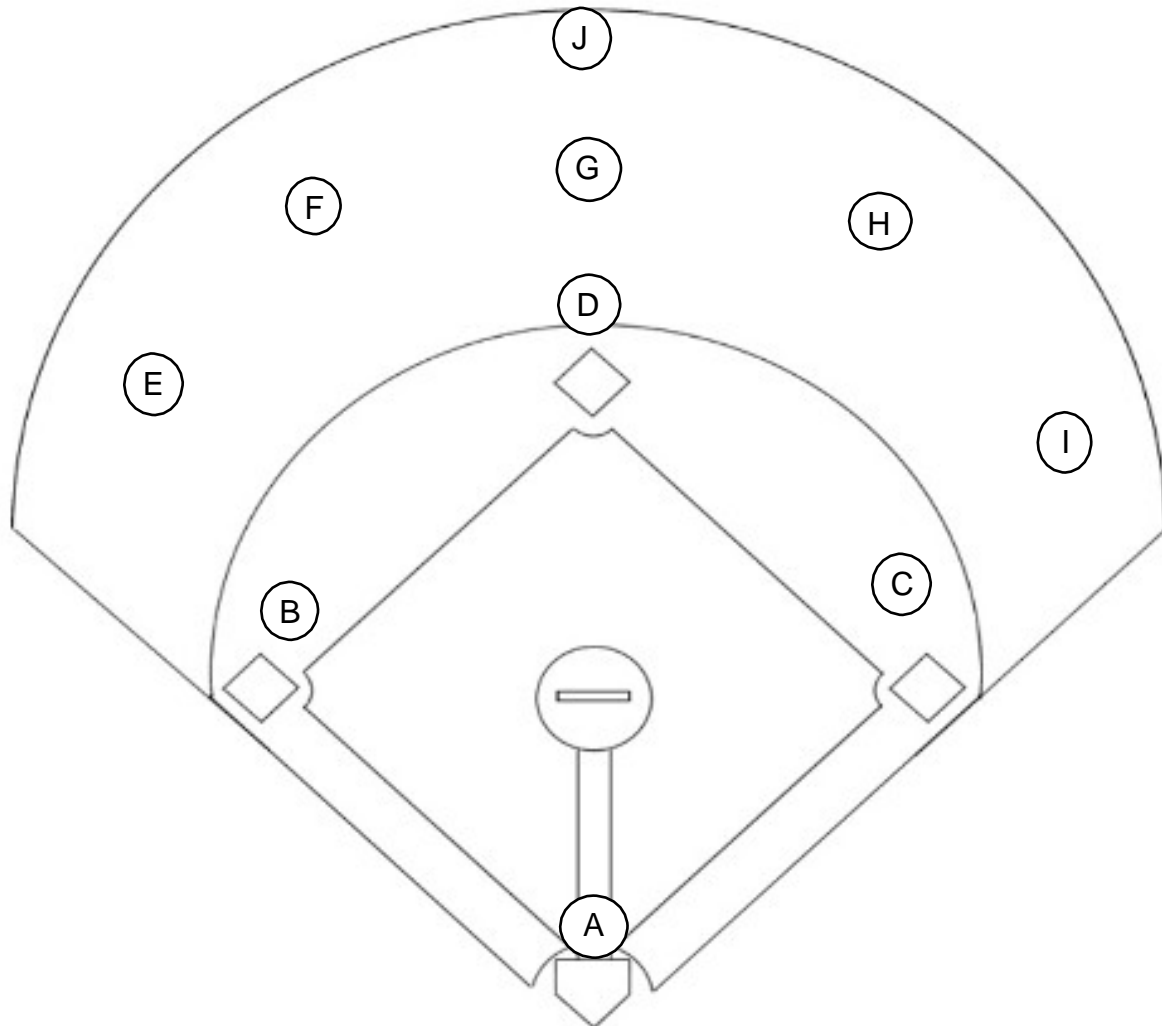


Figure D.1. An example of onsite sampling map to indicate the ten pre-selected sampling locations on a baseball field identified by the circles on the map.

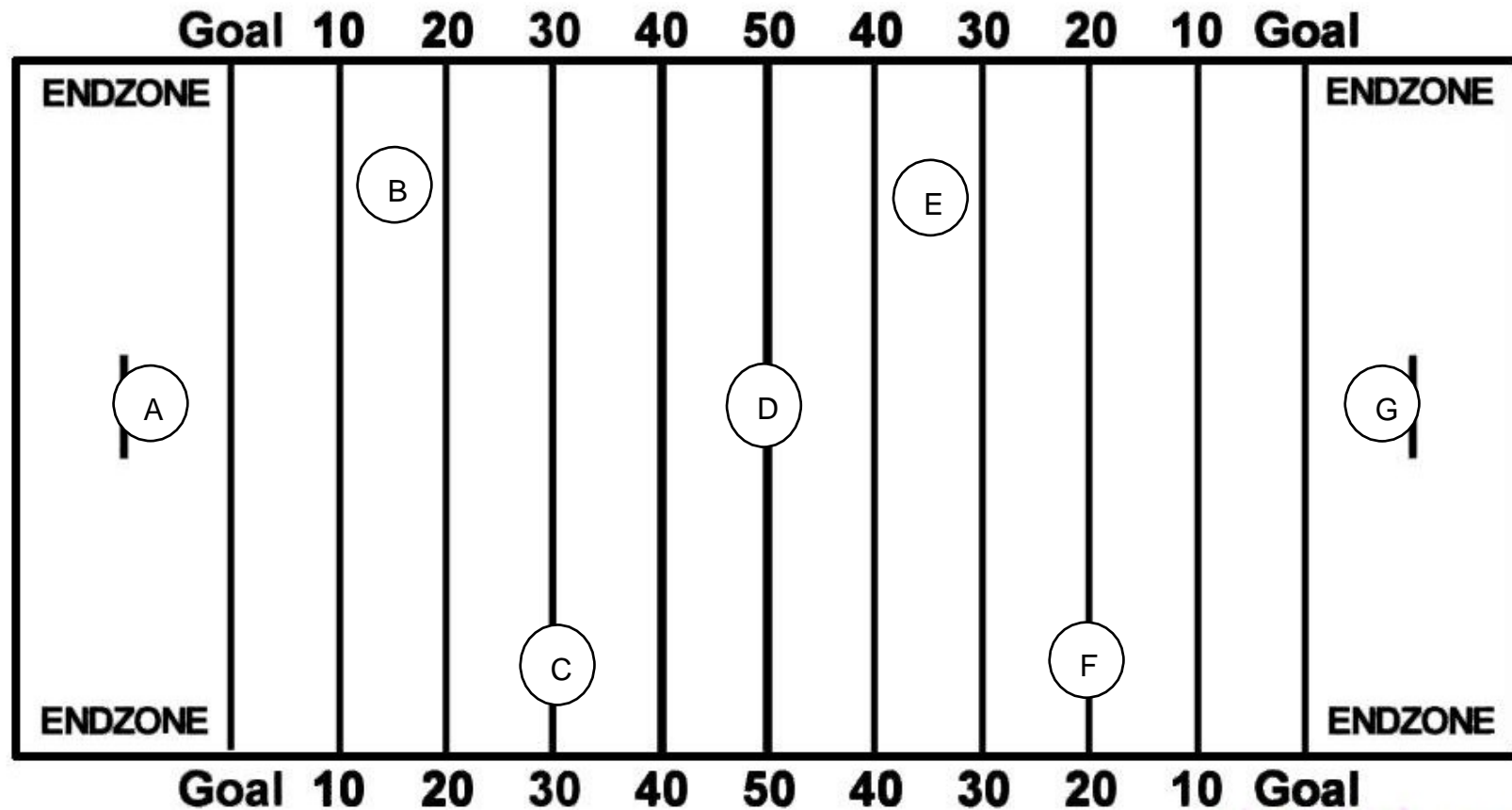


Figure D.2. An example of on-site sampling map to indicate the seven pre-selected sampling locations on a football field at identified by the circles on the map.

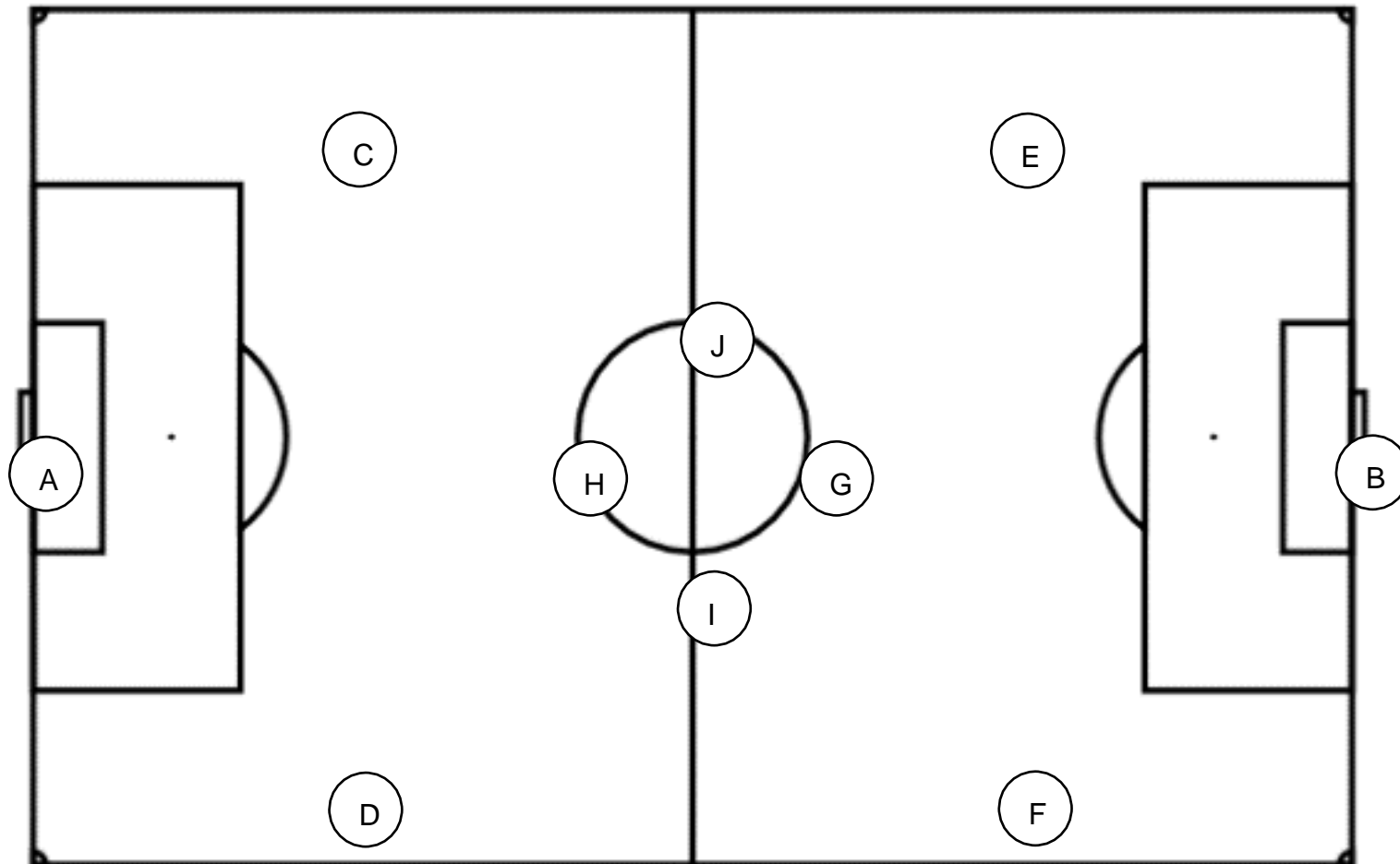


Figure D.3. An example of on-site sampling map to indicate the ten pre-selected sampling locations on a soccer field identified by the circles on the map.



Attachment E. Field Sampling Diary Template

Sampling Date: _____

Log Completed By: _____

Field ID: _____

Field Name: _____

Field Location: _____

Field Contact: _____

Collection Time: _____

Samples Collected (indicate # of samples, the amount, type, and sample IDs):

Sample Collector's Initials: _____

Observations:

Comments:



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Attachment F. Chain of Custody Form

Field ID:

Recorder Signature:.....

Date:

Sample ID	Collection Date	Collection Time	Collector Initials	Date Relinquished	Relinquished to	Receiver by and Initials*

Table F.1. Chain-of-Custody Record

*Please write your name and initial to maintain COC record



Attachment G. Example of Field Sampling Playbook

Field Sampling Playbook

Before Scheduled Test Day

- Confirm player recruits availability and provide detailed instructions on when, where and what to expect
- Confirm sufficient water (with ice) and sun screen for player recruits
- Charge all sample pumps and ball kicking machine battery
- Complete any special requirements for field access if necessary
- Identify access point for getting equipment on field and travel time to field (Plan to arrive at field 2 hours before scheduled start time)
- Program start times into SVOC and VOC sample boxes and data loggers used for temperature and humidity (can be done on-site during setup)
- Load all supplies and equipment in box van (or check loaded van for previous trip) except sample media
- Receive (if traveling) or pickup (if leaving from lab) clean/loaded/labeled SVOC cartridges, conditioned VOC tube and fresh ALD cartridges in cooler with fresh blue ice and field specific tracking sheets
- Load and label pre-weighed PEM filters and cleaned glass fiber filters in filter housings with field specific tracking sheets

1. Playbook for Day of Testing

-2 hours (prior to schedule start time) – Arrive at field

- lead walks field to confirm
 - initial field orientation
 - on- and off-field access points
 - availability of power
 - availability of movable soccer goal
 - on- and off-field sprinklers (if present, confirm that sprinklers disabled)
 - possible sources of shade on field

-1.5 hours (prior to schedule start time) – Setup and prepare for sampling

- Unload box van and setup staging area with table and chairs as needed
- Install main power cord from on/near field location extending onto field (end of cord dictates location for on-field test)
 - If power not available then place generator with exhaust hood “downwind” of monitoring location and extend cord onto field



- Move on-site goal to monitoring location on field (repair or replace damaged net if necessary) or setup portable goal with net and adjust orientation with front of net facing into expected wind
- Move sampling carts into location
 - cart 2 back center of net
 - carts 1 and 3 to left and right of net (from back)
 - cart 4 at off field location
- Connect extension cords to main power line (or source for off-field location) and place power supply/battery backup near each monitoring location
- Set orientation of 3-D anemometers on all carts to magnetic north
- Place SVOC boxes and PEM pumps near carts 1, 3 and 4
- Launch all devices that aren't already preprogrammed to start and confirm onboard data logging
- Load VOC tubes in VOC boxes at staging table and set internal clock and install pre-programmed sd-cards in VOC boxes then move VOC boxes into position on Carts 1, 3 and 4
- Set internal clock on SVOC boxes and load pre-programmed sd-cards
- Setup ball kicking machine (25 m from front of goal) with solar charger and canopy
- Setup VOC/temperature "stratification tower" to one side of cart 2 and install air temperature sensors at marked heights on tower with T/RH sensor at top of tower and temperature probes inserted into crumb surface
- Adjust all surface temperature sensors (Carts 1, 3 4 and tower) to point at sunny location throughout the day
- Check pre-sampling flow on all portable pumps (used for Aldehydes on carts 1 and 3 and for VOCs on stratification tower) and program portable pumps to launch and run at appropriate times

0 hours (Start) – 1 hour (elapsed time)

- Confirm all devices running and data logging
- Collect first VOC sample (1 hour integrated samples) on Carts 1, 3 and 4
- Check and record flows on all VOC samplers at least once per hour
- Install SVOC cartridges, Filters and PM2.5 cyclone on Carts 1, 3 and 4
- Install PEMs with 10 LPM pumps on Carts 1, 3 and 4
- Install ALD samplers on Carts 1 and 3
- Recruited players arrive, get orientation and sign consent forms



1 hour – 2 hour (elapsed time)

- Start and run ball kicking machine with participants taking turns conducting soccer drills in goal area to maintain continuous activity in the monitoring area during active period
- Monitor players and continue to load and run ball kicking machine
- Start and run SVOC samples on Carts 1, 3 and 4 (3 hour samples)
- Start and run PEM filters on Carts 1,3 and 4 (3 hours samples)
- Check flows on PEM and SVOC pumps at least once per hour during sampling
- Start ALD samples on Carts 1 and 3 (3 hour samples)
- Start 2nd VOC samples collected on Carts 1, 3 and 4

2 hour – 3 hour (elapsed time)

- Continue ball kicking activity
- Load tubes on VOC tower with pre-programmed sampling pumps
- Start 3rd VOC samples collected on Carts 1, 3 and 4
- Record field layout and monitoring area orientation using range finder from known points and compass

3 hour – 4 hour (elapsed time)

- Continue ball kicking activity
- Continue to check sampler pump flows and device data logging
- Start VOC stratification tower samples
- Start 4th VOC samples collected on Carts 1, 3 and 4
- At end of period, stop kicking machine and dismiss recruited players

4 hour – 5 hour (elapsed time)

- Start 5th VOC samples collected on Carts 1, 3 and 4
- Harvest ALD cartridges and pumps
- Harvest VOC tubes and pumps from stratification tower
- Check and record post sampling flows on ALD and VOC pumps
- Collect SVOC cartridges, GFFs and PEMs and return to cooler
- Move net away from monitoring area and breakdown net
- Breakdown ball kicking machine, canopy and cleanup area where players gathered and move equipment back to staging area near truck

5 hour – 6 hour End of test period

- All stop at elapsed time = 5 hours
- Confirm all data downloaded to on-board laptops at each Cart
- Backup all data to external hard drive
- Harvest VOC tubes and return samples to cooler



- Move all equipment and cords back to staging area near truck
- Load truck
- Collect all signs and barriers
- Lead walks field to confirm cleaned up and good to go
- Checkout from field as needed and depart field

2. After Completion of Testing

- Complete chain of custody forms
- Package sample media (VOCs, ALDs, SVOCs) with fresh blue ice and ship media overnight to lab
- Unload GF filters and PEM filters from holders and package filter samples (store on-site and ship to lab as needed)
- Return pumps and equipment to chargers
- Make any necessary repairs and replenish supplies



Appendix B. Telephone Script for Contacting Field Owners

OEHHA: Hello. My name is_____. I am calling from a State agency, the Office of Environmental Health Hazard Assessment, also known as OEHHA. We are part of the California Environmental Protection Agency. We are conducting a California state-funded, environmental health study on synthetic turf fields.

May I speak to the field owner or manager, or someone who is in charge of the synthetic turf field, or get their contact information?

If getting contact information:

OEHHA: Field owner name: _____

Phone #/Email: _____

OEHHA: Ok. Thank you for your time. Have a nice day. (End call.) (Call field owner.)

If not getting contact information

OEHHA: Ok. Can you have the field owner contact me at XXX-XXX-XXX? My name is XXXXXXXXXX XXXXXX. Please feel free to contact me if you have any questions. Thank you for your time. Have a nice day. (End call.)

If transferred to field owner: (Begin script over. Skip asking to speak to field owner/manager.)

If field owner is speaking: (Continue script.)

We have a few questions regarding the field at (location). Does your facility or organization have a synthetic turf field that has crumb rubber infill? *If NO:*

OEHHA: Ok. Thank you for your time. Have a nice day. (End call.)

If YES: (Continue script.)

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Q1. OEHHA: Is your field indoors or outdoors?

Field Owner: My field is: ___Indoors ___Outdoors

Q2. OEHHA: When was the field installed?

If field owner knows:

Field Owner: My field was installed_____.

If field owner is unsure:

OEHHA: Do you know anyone who may be able to provide us with this information?

OEHHA: We are calling you because our study involves identifying the chemicals present in crumb rubber infill used in synthetic turf fields. The study stems from a bill that aims to address concerns regarding exposures to synthetic turf fields. We have already worked with many fields like yours, including public, private and city fields throughout the state. We are looking to recruit more fields for our study. Participation in the study will remain confidential and anonymous in our report. Would you be interested in participating? It would not take much of your time, would not affect the usage of your field, and would be of no cost to you. I could send you more information via email and follow-up with you tomorrow or the following day. What is the best email to send information to?

If NO:

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OEHHA: Ok. May I ask the reason why you do not want to participate or any concerns you may have about the study?

Field Owner: _____

OEHHA: Thank you for your time. Have a nice day. (End call.)

If YES:

OEHHA: Great. Thank you. (Continue script.) Could I ask one more question? It should only take one more minute of your time.

Q3. OEHHA: What types of sports and activities typically occur on your field?

Field Owner: _____

OEHHA: Thanks so much for agreeing to work with us. I will follow-up with you via phone on XX/XX (date).

At Phone Follow-Up:

OEHHA: Hello. My name is _____. I am calling from a State agency, the Office of Environmental Health Hazard Assessment, also known as OEHHA. We are part of the California Environmental Protection Agency. We spoke before regarding including your field in our statewide synthetic turf study. Are there any questions or concerns you have about the sampling that we may address?

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Field Owner: _____

Thank you for your time. We would like to schedule a brief 30-minute in-person follow-up meeting with you, so our project staff can provide more details of our study and answer any questions that you may have. May we meet on MONTH XX at XX:XX or MONTH XX at XX:XX? Do any of these times work for you?

If NO:

OEHHA: Ok. Can you suggest a date and time that will work for you?

If NO or if need to check his/her schedule:

OEHHA: Ok. Would a phone meeting on MONTH XX at XX:XX be more convenient for you?

If NO:

OEHHA: OK. I will contact you at a later date to schedule a meeting. Thank you for your time. Please feel free to contact us at XXX-XXX-XXX if you have any questions about the meeting or study. We appreciate your time. Have a nice day. (End call.)

If YES:

OEHHA: Great. What would be the best number for us to reach you at?

Field Owner:_____.

OEHHA: Ok. Thank you for your time. We will talk to you on MONTH XX at XX:XX at_____. Please feel

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free to contact us at XXX-XXX-XXX if you have any questions about the meeting or project. Have a nice day. (End call.)

If YES:

Field Owner: MONTH XX at XX:XX will work better for me.

OEHHA: Ok. I have scheduled a meeting for MONTH XX at XX:XX.
(Proceed to Q6.)

If YES to original question 4:

OEHHA: Ok. I have scheduled a meeting for MONTH XX at XX:XX. (Proceed to Q6.)

Q4. OEHHA: Where would be the best place for us to meet? Should we meet at your office?

Field Owner: The best place would be _____.

OEHHA: Ok. We will meet at _____ on MONTH XX at XX:XX.
(Proceed to Q7.)

Q5. OEHHA: Who should we contact when we get there?

Name: _____

Phone #: _____

Q6. OEHHA: Is this a good contact number for us to reach you in the future?

If NO:

OEHHA: What would be the best number for us to reach you at?

Field Owner: _____.

OEHHA: Ok. Thank you for your time. We will see you on MONTH XX at XX:XX at _____. Please feel free to contact us at XXX-

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XXX-XXX if you have any questions about the meeting or project. Have a nice day. (End call.)

If YES:

OEHHA: Ok. Thank you for your time. We will see you on MONTH XX at XX:XX at _____. Please feel free to contact us at XXX-XXX-XXX if you have any questions about the meeting or project. Have a nice day. (End call.)

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Meeting Schedules

	Tuesday, September 27	Wednesday, September 28	Thursday, September 29
8:30-10:15 am			
10:15-12 pm			
12-1 pm	LUNCH	LUNCH	LUNCH
1-2:45 pm			
2:45-4 pm			

	Tuesday, October 4	Wednesday, October 5	Thursday, October 6
8:30-10:15 am			
10:15-12 pm			
12-1 pm	LUNCH	LUNCH	LUNCH
1-2:45 pm			
2:45-4 pm			

September 14, 2016

Field Characterization Study of Synthetic Turf Fields:
Field Selection and Sample Collection
Synthetic Turf Scientific Advisory Panel Meeting
May 25, 2018

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Appendix C

SYNTHETIC TURF STUDY Q&A

and

CONSENT TO PARTICIPATE

**Office of Environmental Health Hazard Assessment
California Environmental Protection Agency**

Overview

The Office of Environmental Health Hazard Assessment (OEHHA) invites you to participate in a California synthetic turf field study of the potential health effects associated with the chemicals released from synthetic turf and playground mats containing crumb rubber made from recycled waste tires.

Your participation in this study is completely voluntary. Please read this form and ask any questions that you may have before agreeing to participate in this study.

Purpose of study

The purpose of this study is to identify and measure chemicals that may be released from crumb rubber and artificial grass blades in indoor and outdoor fields and playground mats throughout California. We will evaluate the potential for inhalation, swallowing, and skin contact exposures to these chemicals.

The information generated in the study will enable us to identify the chemicals that individuals may be exposed to when playing on synthetic turf fields or playground mats, estimate the level of exposures associated with various activities, and assess whether these chemical exposures pose potential health risks. This information may be used for making future decisions regarding the use of crumb rubber in synthetic turf fields and playground mats.

Why are you being asked to participate?

You have been asked to participate in this study because we have identified your facility as having at least one synthetic turf field with crumb rubber infill.

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How do we plan to discuss the study with you?

We would like to schedule a 30-minute meeting with you to gather information. During the meeting, we will provide you with additional background on the study. We will ask you to complete a questionnaire that contains questions about the types of synthetic fields at your facility, the ways the fields are used, and the standard operating procedures for the fields. After the meeting, you can decide whether to participate. If you agree to participate and provide us with permission to sample your field, we will work with you to set up an appointment to collect samples from your field at a time that is convenient for you.

What types of samples will be taken?

We will collect crumb rubber infill samples from 7-10 locations on your field. About a cup of crumb rubber infill will be collected at each location. On selected fields, air and field surface wipe samples may also be collected.

How long will the sampling take?

We estimate it will take about 2 hours to collect crumb rubber infill samples at your field. The total time is about 6 hours to collect crumb rubber infill, air, and wipe samples.

What will the samples be tested for?

We plan to test for the following types of chemicals in the crumb rubber infill and wipe samples:

- Volatile organic compounds
- Semi-volatile organic compounds
- Polycyclic aromatic hydrocarbons
- Metals

We will also test for the following types of chemicals in the air samples:

- Volatile organic compounds
- Semi-volatile organic compounds

We also plan to measure the particle size of the collected crumb rubber infill and any particles in the air samples.

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Are there any risks to you or the field users because samples are collected?

There are no risks to you or the field users from the field sample collection. Depending on your preference, we can sample the field when it is not in active use and will not disrupt the field schedule. The sampling will not cause any damage to your field.

Are there any benefits to you to have your field be part of the study?

Upon request, we will send each field owner the data pertaining to the samples collected from their field. Information about your field may be helpful for you and parents who have questions about the field. Field owners who do not want their results can simply decline to request them in the consent form.

Who will see the information about my field?

Your name, address, this consent form and your questionnaire answers will be maintained in a confidential manner. We will use a unique identification number instead of your name in our reports. We will keep paper records in locked files and electronic records stored on password protected computers at the OEHHA offices. Only OEHHA project staff will be allowed access to the paper and electronic records. While we plan to make the general data we collect available to the public, we will not include your name or other identifying information in our final report or any other public release regarding this study. Such information is considered confidential and will not be released except where required by law (such as pursuant to a subpoena or court order).

What is the cost to you?

No fees will be collected. The only cost to you will be your time and willingness to participate.

Do you have a choice about participating?

Yes, your participation in this study is completely voluntary. You may refuse to answer any questions and you may choose to withdraw from the study at any time, even after you have signed the participation agreement form.

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Updated December 8, 2016



Who should you contact if you have questions at any time?

If you have any questions about the study or no longer wish to participate, please contact:

Patty Wong, OEHHA Project Manager
Patty.Wong@oehha.ca.gov
916-323-2627

What should you do after reading this information?

If you are unsure of what is being asked of you, please contact us. After your questions are answered and you choose to participate in this study, please sign the Consent to Participate Form on the next page.

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Updated December 8, 2016



Office Use Only Field ID: _____

Consent to Participate - Synthetic Turf Study

**Office of Environmental Health Hazard Assessment
California Environmental Protection Agency**

I have read the above information about the OEHHA Synthetic Turf Study and been given the opportunity to ask questions.

By signing below, I agree to allow OEHHA to collect crumb rubber, air, and wipe samples, if my synthetic turf field is selected for study. I have the authority to give consent for the sampling described in this agreement.

Participant's Name (Print)

Participant's Signature

Date

Organization/Facility Name

Participant's Position/Title

By signing below, I am requesting a copy of the chemical data results associated with the samples collected from my field.

Participant's Name (Print)

Participant's Signature

Date

Mailing Address for Results

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Updated December 8, 2016

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Appendix D. Questionnaire for Field Owners

Office Use Only

Field ID: _____

Name of Interviewee: _____

Interview Date: _____

(owner or person in charge)

Field Information:

Field Name: _____

Field address: _____

Field/facility owner name: _____

Field/facility owner phone #: _____

Field/facility owner email: _____

Q1. How long have you been the owner of the field? _____

Q2. What type of organization owns the field?

Public Name: _____

Private Name: _____

School Name: _____

County Name: _____

State Name: _____

Federal Name: _____

Other Name: _____

Q3. Is the field outdoors or indoors?

Outdoors (go to Q5.)

Indoors

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Office Use Only

Field ID: _____

Q4. What is the ventilation/air exchange rate for this field?

If unsure, how is the room ventilated?

HVAC system on 24/7 Other: _____

Or, contact information for someone who can provide this information:

Name: _____ Phone number: _____

Q5. When was the field installed? _____

Q6. Which company manufactured the turf? _____

If known, specific product name: _____

If unsure, do you have the installation contact information? Can we contact them, if needed? Yes No

Name: _____ Phone number: _____

Q7. Which company installed the field? _____

Q8. Who is the manufacturer of the crumb rubber infill? _____

If known, crumb rubber type: Ambient Cryogenic

Q9. Has the field had any post installation modifications?

Yes

No (go to Q10.)

Don't know (go to Q10.)

Q10. What post-installation modifications have been done to the field?

Modification: _____ Date: _____

Modification: _____ Date: _____

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Office Use Only

Field ID: _____

Field Use:

Q11. Is the field for public or private use? Check both, if applicable.

- Public
- Private

Q12. What types of sports and activities occur on the field? Check all applicable choices.

- Soccer
 - Football
 - Field Hockey
 - Lacrosse
 - Baseball
 - Softball
 - Rugby
 - Cheerleading
 - Physical Education
 - Other: _____
- _____

Q13. Is the field used year round or seasonally?

- All-year round
- Seasonally

Q14. If it is used seasonally, what seasons? Please rank the intensity of field use for each season using a scale of 1-5, with 5 being the highest level of intensity.

- | | | | | | |
|---------------------------------|---|---|---|---|---|
| <input type="checkbox"/> Fall | 1 | 2 | 3 | 4 | 5 |
| <input type="checkbox"/> Winter | 1 | 2 | 3 | 4 | 5 |
| <input type="checkbox"/> Spring | 1 | 2 | 3 | 4 | 5 |
| <input type="checkbox"/> Summer | 1 | 2 | 3 | 4 | 5 |

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Office Use Only

Field ID: _____

Q15. How often is the field used? _____ hours per week

Q16. What are the age groups who use the field? Please rank the frequency of use for each age group using a scale of 1-5, with 5 being the most frequent use.

- | | | | | | |
|--|---|---|---|---|---|
| <input type="checkbox"/> Preschool | 1 | 2 | 3 | 4 | 5 |
| <input type="checkbox"/> Elementary School | 1 | 2 | 3 | 4 | 5 |
| <input type="checkbox"/> Middle School | 1 | 2 | 3 | 4 | 5 |
| <input type="checkbox"/> High School | 1 | 2 | 3 | 4 | 5 |
| <input type="checkbox"/> College | 1 | 2 | 3 | 4 | 5 |
| <input type="checkbox"/> Adults | 1 | 2 | 3 | 4 | 5 |

Q17. Does the field host other events?

- Yes Events: _____
- No (go to Q21.)

Q18. How many events per year? _____

Q19. When was the last event? _____

Q20. What modifications are done to the field to prepare for these events?

Q21. What are the special maintenance practices after these events, if any?

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Office Use Only

Field ID: _____

Field Maintenance:

If you are unsure of the maintenance practices, please provide contact information for someone who can provide this information:

Name: _____

Phone number: _____

Email: _____

Q22. What company maintain the field? _____

Q23. How often does brushing (levels infill and helps fibers stand up) occur?

- _____ per day Last Maintenance: _____
- _____ per _____ week
- _____ per _____ month
- _____ per _____ year
- Other: _____

Q24. How often does aerating (gets air into the infill to prevent compaction) occur?

- _____ per day Last Maintenance: _____
- _____ per _____ week
- _____ per _____ month
- _____ per _____ year
- Other: _____

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Office Use Only

Field ID: _____

Q26. How often does raking (loosens infill and helps fibers stand up) occur?

- _____ per day Last Maintenance: _____
- _____ per _____ week
- _____ per _____ month
- _____ per _____ year
- Other: _____

Q27. How often does sweeping (removes debris) occur?

- _____ per day Last Maintenance: _____
- _____ per _____ week
- _____ per _____ month
- _____ per _____ year
- Other: _____

Q28. How often is the crumb rubber infill replenished?

- _____ per day Last Maintenance: _____
- _____ per _____ week
- _____ per _____ month
- _____ per _____ year
- Other: _____

Q29. Where does crumb rubber infill used for replenishment come from?

- Stock from installation
- Manufacturer: _____
- Other: _____
- Don't know

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Office Use Only

Field ID: _____

Q30. Has all of the crumb rubber on the field ever been replaced?

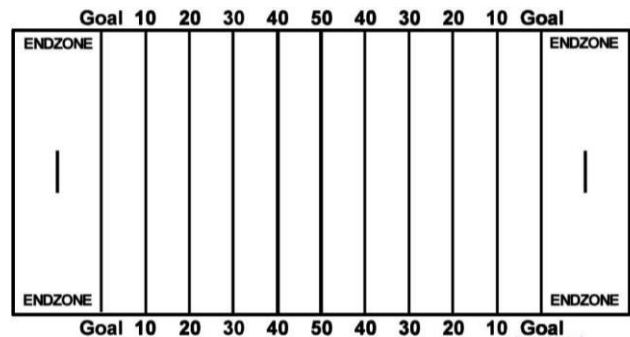
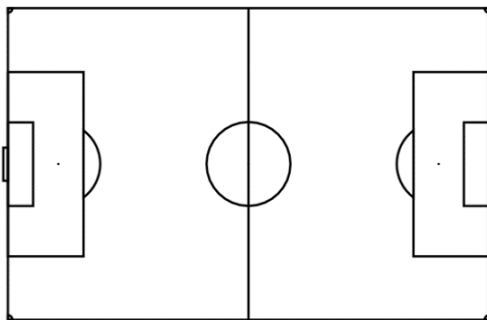
- Yes Last replacement Date: _____
- No
- Don't know

Q31. For total infill replacement, where does the crumb rubber come from?

- Stock from installation
- Manufacturer: _____
- Other: _____
- Don't know

Q32. Has any part of the field backing been replaced/patched? Draw the approximate location on a field diagram.

- Yes Replacement Date and Location(s) on the field: _____
- No
- Don't know



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Office Use Only

Field ID: _____

Q34. For the partial field replacement, where does synthetic turf come from?

- Stock from installation
- Manufacturer: _____
- Other: _____
- Don't know

Q35. Does the field have a sprinkler system?

- Yes
- No (go to Q33.)

Q36. How often is the field watered?

- _____ per day
- _____ per week and dates of watering _____
- _____ per month and dates of watering _____
- _____ per year and dates of watering _____
- Other: _____

Q37. How is weed control done on the field? _____

Q38. How often does weed control activity occur?

- _____ per day Date of Last Weed Control: _____
- _____ per week
- _____ per month
- _____ per year
- Other: _____

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Office Use Only

Field ID: _____

Q39. Have any chemical substances ever been applied on the field for weed, bugs, germs, or static preventions/controls?

- Yes
- No (go to Q36.)
- Don't know (go to Q36.)

Q40. What are these chemical substances and the dates of their last use?

Name: _____ Last use: _____

Name: _____ Last use: _____

Field Data:

Q41. Would you like a copy of the chemical analysis data for your field when it becomes available?

- Yes
- No

Name, email, address, fax number, etc. for data delivery:

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Office Use Only

Field ID: _____

Availability for Sampling:

OR

Sampling Date: _____

Sampling Time: _____

Signature of Owner: _____
(or Person in charge)

Date: _____

Name of Interviewer: _____

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Appendices
for
Section 3.2.1
Pathways of Exposures

Appendix A. Synthetic Turf Exposure Assessment Study

Appendix B. Sample Consent To Participate

Appendix C. Synthetic Turf Video Palette for Micro-Level Activity

Appendix D. Institutional Review Board Approval Letter from the California Committee for the Protection of Human Subjects

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Appendix A. Synthetic Turf Exposure Assessment Study Online Survey

Thank you for participating in this important study. Today you will answer some questions regarding your/your child's activities while playing soccer on synthetic turf fields. Synthetic turf fields do not have natural grass and soil, but often have black rubber pebbles called crumb rubber for cushioning. In this study, we want to learn more about how soccer players come in contact with the black "crumb rubber" used in some synthetic turfs so that we can better understand potential exposure to chemicals released from crumb rubber while playing soccer on synthetic turf fields.

If you are the parent of a soccer player and play soccer yourself, we invite you to complete this survey for your child and yourself. Please complete the survey for one soccer player at a time.

If you do not want to answer any of the questions, you may select "prefer not to answer" and go to the next question.

A. GENERAL DEMOGRAPHIC AND SOCCER PLAYER INFORMATION

1. Are you a soccer player or a parent of a child soccer player?

	Soccer player 18 or older ..(89)..... 1
	Parent of child soccer player.....2
2. What is your child's year of birth?

	_ _ _ _
	YEAR
3. What is your child's month of birth?

	_ _
	MONTH
4. Is your child male or female?

Male	1
Female.....	2
Prefer not to identify	3
5. What ethnic group best describes your child?

Asian or Pacific Islander	1
Black/African American	2
Caucasian.....	3
Hispanic/Latino	4
Native American	5
Mixed	6
Prefer not to identify	7
Other.....	8
Specify _____	
6. How tall is your child?

	_ _ FEET
	_ _ INCHES
7. How much does your child weigh?

	_ _ POUNDS
--	------------

8. What is your child's current grade in school?

- Pre-Kindergarten 1
- Kindergarten 2
- 1st 3
- 2nd 4
- 3rd 5
- 4th 6
- 5th 7
- 6th 8
- 7th 9
- 8th 10
- 9th 11
- 10th 12
- 11th 13
- 12th 14
- Other 15
- Specify _____

9. What is your child's residential zip code?

10. Does your child primarily play recreational or competitive soccer?

- Recreational 1
- Competitive 2
- Both 3
- Don't know 9
- Prefer not to answer 8

11. What position does your child usually play? (**Check all that apply**)

- Goalie
- Forward
- Midfielder
- Defender
- Don't Know 9
- Prefer not to answer 8

B. CONTACT TYPES AND SCENARIOS DURING SOCCER PRACTICE

*The following questions pertain specifically to your child's activities and behaviors during soccer **PRACTICE** days on synthetic turf fields.*

12. Approximately what percent of your child's soccer **PRACTICES** take place on synthetic turf fields?
- | | | |
|----------------------------|-----------|---|
| 0% | (27)..... | 1 |
| >0-25% | | 2 |
| >25-50% | | 3 |
| >50-75% | | 4 |
| >75% | | 5 |
| Don't Know | | 9 |
| Prefer not to answer | | 8 |
13. Approximately how long before a **PRACTICE** does your child eat or have a snack/meal?
- | | | |
|----------------------------|--|---|
| < 1 Hour..... | | 1 |
| > 1-3 Hours..... | | 2 |
| > 3 Hours..... | | 3 |
| Don't know..... | | 9 |
| Prefer not to answer | | 8 |
14. Approximately how many hours in the **past week** has your child **PRACTICED** soccer on a synthetic turf field?
- ___ HOURS
[CODE 99 IF DK/DR]
15. **Over the past year**, approximately how many days per week has your child typically spent **PRACTICING** soccer on synthetic turf fields in each season?
- | | | |
|-----------|--------------------|--|
| a. Spring | ___ DAYS PER WEEK | |
| | [CODE 99 IF DK/DR] | |
| b. Summer | ___ DAYS PER WEEK | |
| | [CODE 99 IF DK/DR] | |
| c. Fall | ___ DAYS PER WEEK | |
| | [CODE 99 IF DK/DR] | |
| d. Winter | ___ DAYS PER WEEK | |
| | [CODE 99 IF DK/DR] | |
16. **Over the past year**, approximately how many hours per day has your child typically spent **PRACTICING** soccer on synthetic turf fields in each season?
- | | | |
|-----------|--------------------|--|
| a. Spring | ___ HOURS PER DAY | |
| | [CODE 99 IF DK/DR] | |
| b. Summer | ___ HOURS PER DAY | |
| | [CODE 99 IF DK/DR] | |
| c. Fall | ___ HOURS PER DAY | |
| | [CODE 99 IF DK/DR] | |
| d. Winter | ___ HOURS PER DAY | |
| | [CODE 99 IF DK/DR] | |

17. **Over the past year**, what is the longest period of time that your child has spent **PRACTICING** soccer on a synthetic turf field in a single day?
- | | |
|----------------------------|---|
| <1 Hour..... | 1 |
| > 1-2 Hours..... | 2 |
| > 2-4 Hours..... | 3 |
| > 4-5 Hours..... | 4 |
| > 5 Hours..... | 5 |
| Don't Know | 9 |
| Prefer not to answer | 8 |

*Please indicate how often your child does the following activities on a soccer **PRACTICE** day on synthetic turf fields.*

18. On a soccer **PRACTICE** day on synthetic turf fields, how often does your child do the following activities?
- a. Dive
- | | |
|----------------------------|---|
| Never | 0 |
| ~1-3 times..... | 1 |
| ~4-10 times..... | 2 |
| >10 times..... | 3 |
| Don't Know | 9 |
| Prefer not to answer | 8 |
- b. Slide/tackle
- | | |
|----------------------------|---|
| Never | 0 |
| ~1-3 times..... | 1 |
| ~4-10 times..... | 2 |
| >10 times..... | 3 |
| Don't Know | 9 |
| Prefer not to answer | 8 |
- c. Slip/fall on ground
- | | |
|----------------------------|---|
| Never | 0 |
| ~1-3 times..... | 1 |
| ~4-10 times..... | 2 |
| >10 times..... | 3 |
| Don't Know | 9 |
| Prefer not to answer | 8 |

C. DERMAL AND INGESTION EXPOSURES DURING SOCCER PRACTICE

19. On a soccer PRACTICE day on synthetic turf fields, how often does your child eat or have a snack while at practice?	Never (21)..... 0
	1 time..... 1
	2 times 2
	>2 times 3
	Don't Know 9
	Prefer not to answer 8
20. While your child is PRACTICING soccer on a synthetic turf field, how often does your child wash or wipe their hands before eating?	Never 0
	Rarely 1
	Sometimes..... 2
	Often 3
	Always 4
	Don't Know 9
	Prefer not to answer 8
21. On a soccer PRACTICE day on synthetic turf fields, how many ounces water/sports drink does your child typically drink? A normal water bottle is approximately 16 ounces.	8 oz..... 1
	16 oz..... 2
	24 oz..... 3
	32 oz..... 4
	48 oz..... 5
	64 oz..... 6
	> 64 oz..... 7
	Don't Know 9
	Prefer not to answer 8
22. On a soccer PRACTICE day, approximately how much time does your child usually spend doing sit-ups, putting on equipment, stretching, etc., where more than their feet are in contact with the synthetic turf?	0 minutes 0
	>0-15 minutes..... 1
	>15-30 minutes 2
	>30-60 minutes 3
	>60 minutes 4
	Don't Know 9
	Prefer not to answer 8

23. On a soccer PRACTICE day, approximately how many minutes does your child usually spend walking barefoot on the synthetic turf?	0 minutes 0
	>0-10 minutes..... 1
	>10-30 minutes..... 2
	>30 minutes 3
	Don't know 9
	Prefer not to answer 8
24. While your child is PRACTICING soccer on a synthetic turf field, what percent of the time do they usually use a mouth guard?	0% 0
	0-25% 1
	>25-50% 2
	>50-75% 3
	>75% 4
	Don't Know 9
	Prefer not to answer 8
25. While your child is PRACTICING soccer on a synthetic turf field, how often do they usually:	
a. Get crumb rubber in their mouth?	Never 0
	Rarely 1
	Sometimes..... 2
	Often..... 3
	Always 4
	Don't Know 9
	Prefer not to answer 8
b. Get crumb rubber in their eyes?	Never 0
	Rarely 1
	Sometimes..... 2
	Often..... 3
	Always 4
	Don't Know 9
	Prefer not to answer 8

- c. Play with crumb rubber (i.e. making a pile, throwing it, playing with it in their hands, etc.)?
 - Never 0
 - Rarely 1
 - Sometimes..... 2
 - Often..... 3
 - Always 4
 - Don't Know 9
 - Prefer not to answer 8

- d. Get cuts or abrasions from contact with the turf?
 - Never (26)..... 0
 - Rarely 1
 - Sometimes..... 2
 - Often..... 3
 - Always 4
 - Don't Know 9
 - Prefer not to answer 8

- e. During **PRACTICE**, where on their body usually has the most cuts or abrasions?
 - Elbow..... 1
 - Knee 2
 - Thigh..... 3
 - Stomach 4
 - Other _____
 - Don't Know 9
 - Prefer not to answer 8

D. INHALATION EXPOSURES DURING PRACTICE

26. While at soccer **PRACTICE** on synthetic turf fields, what percent of the time is your child typically resting, lightly active, moderately active, and highly active? **Your responses should all add up to 100%.** Please enter "DK" if you don't know. You may leave this question blank if you prefer not to answer.

Resting (i.e. sitting or standing)	Lightly active (i.e. walking)	Moderately active (i.e. jogging)	Highly active (i.e. running hard)
_ _ _	_ _ _	_ _ _	_ _ _
			100%

E. CONTACT TYPES AND SCENARIOS DURING SOCCER GAMES

*The following questions pertain specifically to your child's activities and behaviors during soccer **GAME** days, including warm-up and cool-down, on synthetic turf fields.*

- | | |
|---|--|
| <p>27. Approximately what percent of your child's soccer GAMES take place on synthetic turf fields?</p> | <p>0% (42) 0
 >0-25% 1
 >25-50% 2
 >50-75% 3
 >75% 4
 Don't Know 9
 Prefer not to answer 8</p> |
| <p>28. Approximately how long before a GAME does your child usually eat or have a meal/snack?</p> | <p>< 1 Hour 1
 > 1-3 Hours 2
 > 3 Hours 3
 Don't Know 9
 Prefer not to answer 8</p> |
| <p>29. Approximately how many minutes does your child play during a typical soccer GAME?</p> | <p>___ __ MINUTES
 [CODE 99 IF DK/DR]</p> |
| <p>30. Approximately how many hours in the past week has your child played soccer GAMES on a synthetic turf field?</p> | <p>___ __ HOURS
 [CODE 99 IF DK/DR]</p> |
| <p>31. Over the past year, approximately how many <u>days per week</u> has your child typically spent playing soccer GAMES on synthetic turf fields in each season?</p> | |
| <p>a. Spring</p> | <p>___ __ DAYS PER WEEK
 [CODE 99 IF DK/DR]</p> |
| <p>b. Summer</p> | <p>___ __ DAYS PER WEEK
 [CODE 99 IF DK/DR]</p> |
| <p>c. Fall</p> | <p>___ __ DAYS PER WEEK
 [CODE 99 IF DK/DR]</p> |
| <p>d. Winter</p> | <p>___ __ DAYS PER WEEK
 [CODE 99 IF DK/DR]</p> |

32. **Over the past year**, approximately how many hours per day has your child typically spent playing soccer **GAMES** on synthetic turf fields in each season?

- a. Spring
- b. Summer
- c. Fall
- d. Winter

____ HOURS PER DAY
[CODE 99 IF DK/DR]
____ HOURS PER DAY
[CODE 99 IF DK/DR]
____ HOURS PER DAY
[CODE 99 IF DK/DR]
____ HOURS PER DAY
[CODE 99 IF DK/DR]

33. **Over the past year**, what is the longest period of time that has your child has spent playing soccer **GAMES** on a synthetic turf field in a single day?

- <1 Hour 1
- > 1-2 Hours 2
- > 2-4 Hours 3
- > 4-5 Hours 4
- > 5 Hours 5
- Don't know 9
- Prefer not to answer 8

*Please indicate how often your child does the following activities on a soccer **GAME** day on synthetic turf fields.*

34. On a soccer **GAME** day on synthetic turf fields, how often does your child do the following activities?

- a. Dive
- b. Slide/tackle

- Never 0
- ~1-3 times 1
- ~4-10 times 2
- >10 times 3
- Don't Know 9
- Prefer not to answer 8
- Never 0
- ~1-3 times 1
- ~4-10 times 2
- >10 times 3
- Don't Know 9
- Prefer not to answer 8

c. Slip/fall on ground

- Never 0
- ~1-3 times..... 1
- ~4-10 times..... 2
- >10 times..... 3
- Don't Know 9
- Prefer not to answer 8

F. DERMAL AND INGESTION EXPOSURES DURING SOCCER GAMES

35. On a soccer **GAME** day on synthetic turf fields, how often does your child eat or have a snack while at the game?
- Never (37)..... 0
 - 1 time..... 1
 - 2 times 2
 - > 2 times 3
 - Don't Know 9
 - Prefer not to answer 8
36. While your child is playing a soccer **GAME** on a synthetic turf field, how often do they usually wash or wipe hands before eating?
- Never 0
 - Rarely 1
 - Sometimes..... 2
 - Often..... 3
 - Always 4
 - Don't Know 9
 - Prefer not to answer 8
37. On a soccer **GAME** day on synthetic turf fields, how many ounces water/sports drink does your child typically drink? A normal water bottle is approximately 16 ounces [SEE CARD].
- 8 oz..... 1
 - 16 oz..... 2
 - 24 oz..... 3
 - 32 oz..... 4
 - 48 oz..... 5
 - 64 oz..... 6
 - > 64 oz..... 7
 - Don't Know 9
 - Prefer not to answer 8

38. On a soccer GAME day, approximately how much time does your child spend doing sit-ups, putting on equipment, stretching, etc., where more than their feet are in contact with the synthetic turf?	0 minutes 0 >0-15 minutes..... 1 >15-30 minutes..... 2 >30-60 minutes..... 3 >60 minutes..... 4 Don't Know 9 Prefer not to answer 8
39. On a soccer GAME day, approximately how many minutes does your child spend walking barefoot on the synthetic turf?	0 minutes 0 >0-10 minutes..... 1 >10-30 minutes..... 2 >30 minutes..... 3 Don't Know 9 Prefer not to answer 8
40. While your child is playing a soccer GAME on a synthetic turf field, what percent of the time do they usually use a mouth guard?	0% 0 >0-25% 1 >25-50% 2 >50-75% 3 >75% 4 Don't Know 9 Prefer not to answer 8
41. While your child is playing a soccer GAME on a synthetic turf field, how often do they usually: a. Get crumb rubber in their mouth?	Never 0 Rarely 1 Sometimes..... 2 Often..... 3 Always 4 Don't Know 9 Prefer not to answer 8

b. Get crumb rubber in their eyes?	Never	0
	Rarely	1
	Sometimes.....	2
	Often	3
	Always	4
	Don't Know	9
	Prefer not to answer	8
c. Play with crumb rubber (i.e. making a pile, throwing it, playing with it in their hands, etc.)?	Never	0
	Rarely	1
	Sometimes.....	2
	Often	3
	Always	4
	Don't Know	9
	Prefer not to answer	8
d. Get cuts or abrasions from contact with the turf?	Never	(42)..... 0
	Rarely	1
	Sometimes.....	2
	Often	3
	Always	4
	Don't Know	9
	Prefer not to answer	8
e. During GAMES , where on their body usually has the most cuts or abrasions?	Elbow	1
	Knee	2
	Thigh.....	3
	Stomach	4
	Other _____	
	Don't Know	9
	Prefer not to answer	8

G. INHALATION EXPOSURES DURING GAMES

42. While playing soccer **GAMES** on synthetic turf fields, what percent of the time is your child typically resting, lightly active, moderately active, and highly active? **Your responses should all add up to 100%.** Please enter "DK" if you don't know. You may leave this question blank if you prefer not to answer.

Resting (i.e. sitting or standing)	Lightly active (i.e. walking)	Moderately active (i.e. jogging)	Highly active (i.e. running hard)
_ _ _	_ _ _	_ _ _	_ _ _
			100%

H. ADDITIONAL DERMAL AND NON-DIETARY EXPOSURES

*General Soccer Activities - the following questions pertain to your child's activities and behaviors while **PRATICING SOCCER OR PLAYING SOCCER GAMES.***

43. Please indicate whether or not your child wears each of the following clothing items while playing soccer on synthetic turf fields in each of the four seasons: **(Select all that apply):**

a. Shorts (without leggings or long layers)

- Spring
- Summer
- Fall
- Winter
- Never
- Don't Know 9
- Prefer not to answer 8

b. Short-sleeve shirt (without a long sleeve shirt or long layers)

- Spring
- Summer
- Fall
- Winter
- Never
- Don't Know 9
- Prefer not to answer 8

c. Long pants or leggings

Spring
 Summer
 Fall
 Winter
 Never
 Don't Know 9
 Prefer not to answer 8

d. Long-sleeve shirt

Spring
 Summer
 Fall
 Winter
 Never
 Don't Know 9
 Prefer not to answer 8

e. Gloves

Spring
 Summer
 Fall
 Winter
 Never
 Don't Know 9
 Prefer not to answer 8

f. Long socks

Spring
 Summer
 Fall
 Winter
 Never
 Don't Know 9
 Prefer not to answer 8

44. Has <u>your child</u> ever complained about a unpleasant odor while playing soccer on synthetic turf field?	No 0 Yes 1 Don't Know 9 Prefer not to answer 8
45. Has <u>your child</u> ever experienced eye or nose irritation while playing soccer on a synthetic turf field?	No 0 Yes 1 Don't Know 9 Prefer not to answer 8
46. Has <u>your child</u> ever experienced nausea while playing soccer on a synthetic turf field?	No 0 Yes 1 Don't Know 9 Prefer not to answer 8
47. Has <u>your child</u> ever experienced headaches while playing soccer on a synthetic turf field?	No 0 Yes 1 Don't Know 9 Prefer not to answer 8
48. Has <u>your child</u> ever felt overheated while playing soccer on a synthetic turf field?	No 0 Yes 1 Don't Know 9 Prefer not to answer 8
49. Have <u>you</u> ever noticed an unpleasant odor while you are on synthetic turf field?	No (51) 0 Yes 1 Don't Know 9 Prefer not to answer 8
50. Can you describe the odor?	_____ _____ _____ _____
51. Have <u>you</u> ever experienced eye or nose irritation while you are on a synthetic turf field?	No 0 Yes 1 Don't Know 9 Prefer not to answer 8

- | | |
|--|---|
| 52. Have <u>you</u> ever experienced nausea while you are on a synthetic turf field? | No 0
Yes 1
Don't Know 9
Prefer not to answer 8 |
| 53. Have <u>you</u> ever experienced headaches while you are on a synthetic turf field? | No 0
Yes 1
Don't Know 9
Prefer not to answer 8 |
| 54. Have <u>you</u> ever felt overheated while you are on a synthetic turf field? | No 0
Yes 1
Don't Know 9
Prefer not to answer 8 |

I. CRUMB RUBBER TAKE-HOME

*These questions pertain to your child's activities **AFTER** a soccer practice or game on a synthetic turf field.*

- | | |
|---|---|
| 55. After your child plays soccer on a synthetic turf field, how often do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust: | |
| a. In your car? | Never 0
Rarely 1
Sometimes..... 2
Often 3
Always 4
Don't Know 9
Prefer not to answer 8 |
| b. In your home? | Never (57) 0
Rarely 1
Sometimes..... 2
Often 3
Always 4
Don't Know 9
Prefer not to answer 8 |

56. **After** your child plays soccer on a synthetic turf field, what percent of the time do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust:

a. In your garage/mudroom/entrance to your house?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
b. In your laundry room?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
c. In their bedroom?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
d. In your/their bathroom?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8

57. **After** your child plays soccer on a synthetic turf field, what percent of the time do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust:

a. In their water bottle?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
b. On their clothes?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
c. In their shoes?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
d. In their socks?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8

e. In their underwear?	0% 0
	>0-25% 1
	>25-50% 2
	>50-75% 3
	>75% 4
	Don't Know 9
	Prefer not to answer 8
58. Each time after your child plays soccer on a synthetic turf field, approximately how much crumb rubber (including granules or crumb rubber dirt and debris) do you find in your home?	None 0
	Some, but < 1 Tablespoon 1
	1 Tablespoon – ¼ Cup 2
	> ¼ Cup – ½ Cup 3
	> ½ cup 4
	Don't Know 9
	Prefer not to answer 8
59. After your child plays soccer on a synthetic turf field, what percent of the time do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust on their body?	0% (61) 0
	>0-25% 1
	>25-50% 2
	>50-75% 3
	>75% 4
	Don't Know 9
	Prefer not to answer 8
60. After your child plays soccer on a synthetic turf field, what percent of the time do you find/notice crumb rubber particles or crumb rubber dirt and debris, such as black dust on the following parts of their body:	
a. Mouth	0% 0
	>0-25% 1
	>25-50% 2
	>50-75% 3
	>75% 4
	Don't Know 9
	Prefer not to answer 8

b. Hair	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
c. Face	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
d. Neck	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
e. Chest	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8

f. Back	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
g. Thighs	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
h. Lower legs	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
i. Feet	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8

j. Upper arms

0%	0
>0-25%	1
>25-50%	2
>50-75%	3
>75%	4
Don't Know	9
Prefer not to answer	8

k. Lower arms

0%	0
>0-25%	1
>25-50%	2
>50-75%	3
>75%	4
Don't Know	9
Prefer not to answer	8

l. Hands

0%	0
>0-25%	1
>25-50%	2
>50-75%	3
>75%	4
Don't Know	9
Prefer not to answer	8

J. HYGIENE PRACTICES

61. After playing soccer on a synthetic turf field, how often does your child wipe, clean, or remove shoes, socks, shin guards, etc. before entering the **vehicle**?

0%	0
>0-25%	1
>25-50%	2
>50-75%	3
>75%	4
Don't Know	9
Prefer not to answer	8

62. After playing soccer on a synthetic turf field, how often does your child wipe, clean, or remove shoes, socks, shin guards, etc. before entering the **home**?
- 0% 0
 >0-25% 1
 >25-50% 2
 >50-75% 3
 >75% 4
 Don't Know 9
 Prefer not to answer 8
63. After playing soccer on a synthetic turf field, how often do you/your child wash their gloves?
- My child does not wear gloves 1
 Weekly 2
 Monthly 3
 > Once per month – once every six months..... 4
 < Once every six months..... 5
 Don't Know 9
 Prefer not to answer 8
64. How long after playing soccer on a synthetic turf field does your child typically wear their soccer clothes before changing them? _____ HOURS _____ MINUTES
 [CODE 99 IF DK]
65. What is the longest amount of time after playing soccer on a synthetic turf field that your child may wear their soccer clothes before changing them? _____ HOURS _____ MINUTES
 [CODE 99 IF DK]
66. How long after playing soccer on a synthetic turf field does your child typically bathe or shower? _____ HOURS _____ MINUTES
 [CODE 99 IF DK]
67. What is the longest amount of time after playing soccer on a synthetic turf field that your child may wait to bathe or shower? _____ HOURS _____ MINUTES
 [CODE 99 IF DK]

K. GENERAL HYGIENE

68. In general, how many times per day does your child wash their hands? _____
 [CODE 99 IF DK]
69. In general, how many times per week does your child bathe/shower? _____
 [CODE 99 IF DK]

L. PLAYER HISTORY BEFORE THIS SEASON

70. How many years has your child played soccer? _____ YEARS
 [CODE 99 IF DK/DR]
71. Does your child play soccer year-round?
 No 0
 Yes 1

72. Did your child play recreational soccer in the two years prior to the current season?
- No 0
Yes 1
Don't Know/Don't remember 9
Prefer not to answer 8
73. Did your child play competitive soccer in the two years prior to the current season?
- No 0
Yes 1
Don't know/Don't remember 9
Prefer not to answer 8
74. Did your child play soccer between the ages of **4 and 8**?
- No (78) 0
Yes 1
Don't know/Don't remember 9
Prefer not to answer 8
75. What position did your child play between the ages of **4 and 8**? (Check all that apply)
- Goalie
Forward
Midfielder
Defender
Didn't have a position 1
Don't know/Don't remember 9
Prefer not to answer 8
76. On average, how many weeks per year did your child play soccer on synthetic turf fields between the ages of **4 and 8**? _____ WEEKS PER YEAR
[CODE 99 IF DK/DR]
77. On average, how many hours per week did your child play soccer on synthetic turf fields between the ages of **4 and 8**? _____ HOURS PER WEEK
[CODE 99 IF DK/DR]
78. Did your child play soccer between the ages of **9 and 12**?
- No (82) 0
Yes 1
Not Applicable (86) 2
Don't know/Don't remember 9
Prefer not to answer 8

79. What position did your child play between the ages of **9 and 12?** (Check all that apply)
- Goalie
- Forward
- Midfielder
- Defender
- Don't know/Don't remember 9
- Prefer not to answer 8
80. On average, how many weeks per year did your child play soccer on synthetic turf fields between the ages of **9 and 12?**
- _____ WEEKS PER YEAR
[CODE 99 IF DK/DR]
81. On average, how many hours per week did your child play soccer on synthetic turf fields between the ages of **9 and 12?**
- _____ HOURS PER WEEK
[CODE 99 IF DK/DR]
82. Did your child play soccer between the ages of **13 and 17?**
- No (86) 0
- Yes 1
- Not Applicable (86) 2
- Don't know/Don't remember 9
- Prefer not to answer 8
83. What position did your child play between the ages of **13 and 17?** (Check all that apply)
- Goalie
- Forward
- Midfielder
- Defender
- Don't know/Don't remember 9
- Prefer not to answer 8
84. On average, how many weeks per year did your child play soccer on synthetic turf fields between the ages of **13 and 17?**
- _____ WEEKS PER YEAR
[CODE 99 IF DK/DR]
85. On average, how many hours per week did your child play soccer on synthetic turf fields between the ages of **13 and 17?**
- _____ HOURS PER WEEK
[CODE 99 IF DK/DR]
86. Has your child attended a soccer camp where they played on synthetic turf fields **in the last year?**
- No [END OF SURVEY] . 0
- Yes 1
- Don't Know 9
- Prefer not to answer 8
87. Approximately how many days per year did your child spend playing soccer on synthetic turf fields for soccer camps **in the last year?**
- _____ DAYS PER YEAR
88. Approximately how many hours per day did your child spend playing soccer on synthetic turf fields for soccer camps **in the last year?**
- _____ HOURS PER DAY

This concludes the survey. Thank you for your time!

If you would like to complete the survey again for yourself or another child, click here.

**Learn more about the Synthetic Turf Exposure Study on OEHHA's website.
Connect with us on the study's Facebook page.**

A. GENERAL DEMOGRAPHIC AND SOCCER PLAYER INFORMATION

89. What is your year of birth? _____
YEAR
[IF BIRTH YEAR AFTER 1999 – END SURVEY]
90. What is your month of birth? _____
MONTH
[IF BIRTH IN 11/1999 or 12/1999 – END SURVEY]
91. Are you male or female?
Male 1
Female..... 2
Prefer not to identify 3
92. What ethnic group best describes you?
Asian or Pacific Islander 1
Black/African American 2
Caucasian..... 3
Hispanic/Latino 4
Native American 5
Mixed 6
Prefer not to identify 7
Other..... 8
Specify _____
93. How tall are you? _____ FEET
_____ INCHES
94. How much do you weigh? _____ POUNDS
95. What is your current grade in school?
11th11
12th12
Other13
N/A.....14
Specify _____
96. What is your residential zip code? _____
97. Do you primarily play recreational or competitive soccer?
Recreational 1
Competitive..... 2
Both 3
Don't know 9

98. What position do you usually play? **(Check all that apply)**

- Prefer not to answer 8
- Goalie
- Forward
- Midfielder
- Defender
- Don't know 9
- Prefer not to answer 8

B. CONTACT TYPES AND SCENARIOS DURING SOCCER PRACTICE

*The following questions pertain specifically to activities and behaviors during soccer **PRACTICE** days on synthetic turf fields.*

99. Approximately what percent of your soccer **PRACTICES** take place on synthetic turf fields?

- 0% (114)..... 1
- >0-25% 2
- >25-50% 3
- >50-75% 4
- >75% 5
- Don't know 9
- Prefer not to answer 8

100. Approximately how long before a **PRACTICE** do you eat or have a snack/meal?

- < 1 Hour 1
- >1-3 Hours 2
- > 3 Hours 3
- Don't know 9
- Prefer not to answer 8

101. Approximately how many hours in the **past week** have you **PRACTICED** soccer on a synthetic turf field?

___ HOURS
[CODE 99 IF DK/DR]

102. **Over the past year**, approximately how many days per week have you typically spent **PRACTICING** soccer on synthetic turf fields in each season?

- a. Spring
- b. Summer
- c. Fall
- d. Winter

___ DAYS PER WEEK
[CODE 99 IF DK/DR]
___ DAYS PER WEEK
[CODE 99 IF DK/DR]
___ DAYS PER WEEK
[CODE 99 IF DK/DR]
___ DAYS PER WEEK
[CODE 99 IF DK/DR]

103. **Over the past year**, approximately how many hours per day have you typically spent **PRACTICING** soccer on synthetic turf fields in each season?

- a. Spring
- b. Summer
- c. Fall
- d. Winter

___ HOURS PER DAY
[CODE 99 IF DK/DR]
___ HOURS PER DAY
[CODE 99 IF DK/DR]
___ HOURS PER DAY
[CODE 99 IF DK/DR]
___ HOURS PER DAY
[CODE 99 IF DK/DR]

104. **Over the past year**, what is the longest period of time that you have spent **PRACTICING** soccer on a synthetic turf field in a single day?

- <1 Hour 1
- >1-2 Hours 2
- >2-4 Hours 3
- >4-5 Hours 4
- > 5 Hours 5
- Don't know 9
- Prefer not to answer 8

*Please indicate how often you do the following activities on a soccer **PRACTICE** day on synthetic turf fields.*

105. On a soccer **PRACTICE** day on synthetic turf fields, how often do you do the following activities?

- a. Dive
- b. Slide/tackle

- Never 0
- ~1-3 times 1
- ~4-10 times 2
- >10 times 3
- Don't know 9
- Prefer not to answer 8
- Never 0
- ~1-3 times 1
- ~4-10 times 2
- >10 times 3
- Don't know 9
- Prefer not to answer 8

c. Slip/fall on ground

Never	0
~1-3 times.....	1
~4-10 times.....	2
>10 times.....	3
Don't know.....	9
Prefer not to answer	8

C. DERMAL AND INGESTION EXPOSURES DURING SOCCER PRACTICE

106. On a soccer PRACTICE day on synthetic turf fields, how often do you eat or have a snack while at practice?	Never (108).....	0
	1 time.....	1
	2 times	2
	> 2 times	3
	Don't know.....	9
	Prefer not to answer	8
107. On a soccer PRACTICE day on synthetic turf fields, how often do you wash or wipe your hands before eating?	Never	0
	Rarely	1
	Sometimes.....	2
	Often.....	3
	Always	4
	Don't know.....	9
	Prefer not to answer	8
108. On a soccer PRACTICE day on synthetic turf fields, how many ounces water/sports drink do you typically drink? A normal water bottle is approximately 16 ounces.	8 oz.....	1
	16 oz.....	2
	24 oz.....	3
	32 oz.....	4
	48 oz.....	5
	64 oz.....	6
	> 64 oz.....	7
	Don't know.....	9
	Prefer not to answer	8

109. On a soccer PRACTICE day, approximately how much time do you spend doing sit-ups, putting on equipment, stretching, etc., where more than your feet are in contact with the synthetic turf?	0 minutes 0 >0-15 minutes..... 1 >15-30 minutes..... 2 >30-60 minutes..... 3 >60 minutes..... 4 Don't know..... 9 Prefer not to answer 8
110. On a soccer PRACTICE day, approximately how many minutes do you usually spend walking barefoot on the synthetic turf?	0 minutes 0 >0-10 minutes..... 1 >10-30 minutes..... 2 >30 minutes..... 3 Don't know..... 9 Prefer not to answer 8
111. While you are PRACTICING soccer on a synthetic turf field, what percent of the time do you usually use a mouth guard?	0% 0 >0-25% 1 >25-50% 2 >50-75% 3 >75% 4 Don't Know 9 Prefer not to answer 8
112. While you are PRACTICING soccer on a synthetic turf field, how often do you usually: a. Get crumb rubber in your mouth?	Never 0 Rarely 1 Sometimes..... 2 Often 3 Always 4 Don't know..... 9 Prefer not to answer 8

b. Get crumb rubber in your eyes?	Never	0
	Rarely	1
	Sometimes.....	2
	Often.....	3
	Always	4
	Don't know.....	9
c. Play with crumb rubber (i.e. making a pile, throwing it, playing with it in your hands, etc.)?	Prefer not to answer	8
	Never	0
	Rarely	1
	Sometimes.....	2
	Often.....	3
	Always	4
d. Get cuts or abrasions from contact with the turf?	Don't know.....	9
	Prefer not to answer	8
	Never	(113)..... 0
	Rarely	1
	Sometimes.....	2
	Often.....	3
e. During PRACTICE , where on your body usually has the most cuts or abrasions?	Always	4
	Don't know.....	9
	Prefer not to answer	8
	Elbow.....	1
	Knee	2
	Thigh.....	3
	Stomach	4
	Other.....	
	Don't know.....	9
	Prefer not to answer	8

D. INHALATION EXPOSURES DURING PRACTICE

113. While at soccer **PRACTICE** on synthetic turf fields, what percent of the time are you typically resting, lightly active, moderately active, and highly active? **Your responses should all add up to 100%**. Please enter "DK" if you don't know. You may leave this question blank if you prefer not to answer.

Resting (i.e. sitting or standing)	Lightly active (i.e. walking)	Moderately active (i.e. jogging)	Highly active (i.e. running hard)
_ _ _	_ _ _	_ _ _	_ _ _
			100%

E. CONTACT TYPES AND SCENARIOS DURING SOCCER GAMES

*The following questions pertain specifically to your activities and behaviors during soccer **GAME** days, including warm-up and cool-down, on synthetic turf fields.*

114. Approximately what percent of your soccer **GAMES** take place on synthetic turf fields?
- 0% (130)..... 1
 - >0-25% 2
 - >25-50% 3
 - >50-75% 4
 - >75% 5
 - Don't Know 9
 - Prefer not to answer 8
115. Approximately how long before a **GAME** do you usually eat or have a snack/meal?
- < 1 Hour 1
 - > 1-3 Hours..... 2
 - > 3 Hours..... 3
 - Don't know..... 9
 - Prefer not to answer 8
116. Approximately how many minutes do you play during a typical soccer **GAME**?
- _ _ MINUTES
[CODE 99 IF DK/DR]
117. Approximately how many hours in the **past week** have you played soccer **GAMES** on a synthetic turf field?
- _ _ HOURS
[CODE 99 IF DK/DR]

118. **Over the past year**, approximately how many days per week have you typically spent playing soccer **GAMES** on synthetic turf fields in each season?

- a. Spring
- b. Summer
- c. Fall
- d. Winter

___ DAYS PER WEEK
[CODE 99 IF DK/DR]
___ DAYS PER WEEK
[CODE 99 IF DK/DR]
___ DAYS PER WEEK
[CODE 99 IF DK/DR]
___ DAYS PER WEEK
[CODE 99 IF DK/DR]

119. **Over the past year**, approximately how many hours per day have you typically spent playing soccer **GAMES** on synthetic turf fields in each season?

- a. Spring
- b. Summer
- c. Fall
- d. Winter

___ HOURS PER DAY
[CODE 99 IF DK/DR]
___ HOURS PER DAY
[CODE 99 IF DK/DR]
___ HOURS PER DAY
[CODE 99 IF DK/DR]
___ HOURS PER DAY
[CODE 99 IF DK/DR]

120. **Over the past year**, what is the longest period of time that you have spent playing soccer **GAMES** on a synthetic turf field in a single day?

<1 Hour 1
> 1-2 Hours 2
> 2-4 Hours 3
> 4-5 Hours 4
> 5 Hours 5
Don't know 9
Prefer not to answer 8

*Please indicate how often you do the following activities on a soccer **GAME** day on synthetic turf fields.*

121. On a soccer **GAME** day on synthetic turf fields, how often do you do the following activities?

- a. Dive

Never 0
~1-3 times 1
~4-10 times 2
>10 times 3
Don't know 9
Prefer not to answer 8

b. Slide/tackle

Never 0
Rarely (~1-3 times)..... 1
Sometimes (~4-10 times) 2
Often (>10 times)..... 3
Don't know 9
Prefer not to answer 8

c. Slip/fall on ground

Never 0
~1-3 times..... 1
~4-10 times..... 2
>10 times..... 3
Don't know 9
Prefer not to answer 8

F. DERMAL AND INGESTION EXPOSURES DURING SOCCER GAMES

122. On a soccer **GAME** day on synthetic turf fields, how often do you eat or have a snack while at the game?

Never (124)..... 0
1 time 1
2 times 2
> 2 times 3
Don't know 9
Prefer not to answer 8

123. While playing a soccer **GAME** on a synthetic turf field, how often do you usually wash or wipe hands before eating?

Never 0
Rarely 1
Sometimes..... 2
Often..... 3
Always 4
Don't know 9
Prefer not to answer 8

124. On a soccer GAME day on synthetic turf fields, how many ounces water/sports drink do you typically drink? A normal water bottle is approximately 16 ounces [SEE CARD].	8 oz..... 1 16 oz..... 2 24 oz..... 3 32 oz..... 4 48 oz..... 5 64 oz..... 6 > 64 oz..... 7 Don't know..... 9 Prefer not to answer 8
125. On a soccer GAME day, approximately how much time do you spend doing sit-ups, putting on equipment, stretching, etc., where more than your feet are in contact with the synthetic turf?	0 minutes 0 >0-15 minutes..... 1 >15-30 minutes..... 2 >30-60 minutes..... 3 >60 minutes..... 4 Don't know..... 9 Prefer not to answer 8
126. On a soccer GAME day, approximately how many minutes do you usually spend walking barefoot on the synthetic turf?	0 minutes 0 >0-10 minutes..... 1 >10-30 minutes..... 2 >30 minutes 3 Don't know..... 9 Prefer not to answer 8
127. While playing a soccer GAME on a synthetic turf field, what percent of the time do you usually use a mouth guard?	0% 0 >0-25% 1 >25-50% 2 >50-75% 3 >75% 4 Don't Know 9 Prefer not to answer 8

128. While playing a soccer **GAME** on a synthetic turf field, how often do you usually:

a. Get crumb rubber in your mouth?

Never 0
Rarely 1
Sometimes..... 2
Often 3
Always 4
Don't know..... 9
Prefer not to answer 8

b. Get crumb rubber in your eyes?

Never 0
Rarely 1
Sometimes..... 2
Often 3
Always 4
Don't know..... 9
Prefer not to answer 8

c. Play with crumb rubber (i.e. making a pile, throwing it, playing with it in your hands, etc.)?

Never 0
Rarely 1
Sometimes..... 2
Often 3
Always 4
Don't know..... 9
Prefer not to answer 8

d. Get cuts or abrasions from contact with the turf?

Never (129)..... 0
Rarely 1
Sometimes..... 2
Often 3
Always 4
Don't know..... 9
Prefer not to answer 8

e. During **GAMES**, where on your body usually has the most cuts or abrasions?

Elbow 1
Knee 2
Thigh..... 3
Stomach 4

Other _____
 Don't know 9
 Prefer not to answer 8

G. INHALATION EXPOSURES DURING GAMES

129. On a soccer **GAME** day on synthetic turf fields, what percent of the time are you typically resting, lightly active, moderately active, and highly active? **Your responses should all add up to 100%**. Please enter "DK" if you don't know. You may leave this question blank if you prefer not to answer.

Resting (i.e. sitting or standing)	Lightly active (i.e. walking)	Moderately active (i.e. jogging)	Highly active (i.e. running hard)
— —	— —	— —	— —
			100%

H. ADDITIONAL DERMAL AND NON-DIETARY EXPOSURES

*General Soccer Activities - the following questions pertain to your child's activities and behaviors while **PRACTICING SOCCER OR PLAYING SOCCER GAMES.***

130. Please indicate whether or not you wear each of the following clothing items while playing soccer on synthetic turf fields in each of the four seasons: **(Select all that apply):**

a. Shorts (without leggings or long layers)

Spring
 Summer
 Fall.....
 Winter
 Never
 Don't know 9
 Prefer not to answer 8

b. Short-sleeve shirt (without a long sleeve shirt or long layers)	Spring	
	Summer	
	Fall	
	Winter	
	Never	
	Don't know	9
	Prefer not to answer	8
c. Long pants or leggings	Spring	
	Summer	
	Fall	
	Winter	
	Never	
	Don't know	9
	Prefer not to answer	8
d. Long-sleeve shirt	Spring	
	Summer	
	Fall	
	Winter	
	Never	
	Don't know	9
	Prefer not to answer	8
e. Gloves	Spring	
	Summer	
	Fall	
	Winter	
	Never	
	Don't know	9
	Prefer not to answer	8

f. Long socks

Spring
 Summer
 Fall
 Winter
 Never
 Don't know 9
 Prefer not to answer 8

131. Have you ever noticed an unpleasant **odor** while you are on synthetic turf field?

No (133) 0
 Yes 1
 Don't know 9
 Prefer not to answer 8

132. Can you describe the odor?

133. Have you ever experienced **eye or nose irritation** while you are on a synthetic turf field?

No 0
 Yes 1
 Don't know 9
 Prefer not to answer 8

134. Have you ever experienced **nausea** while you are on a synthetic turf field?

No 0
 Yes 1
 Don't know 9
 Prefer not to answer 8

135. Have you ever experienced **headaches** while you are on a synthetic turf field?

No 0
 Yes 1
 Don't know 9
 Prefer not to answer 8

136. Have you ever felt **overheated** while you are on a synthetic turf field?

No 0
 Yes 1
 Don't know 9
 Prefer not to answer 8

I. CRUMB RUBBER TAKE-HOME

*These questions pertain to your activities and behaviors **AFTER** a soccer practice or game on a synthetic turf field.*

137. **After** you play soccer on a synthetic turf field, how often do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust:

a. In your car?

- Never 0
- Rarely 1
- Sometimes..... 2
- Often..... 3
- Always 4
- Don't know..... 9
- Prefer not to answer 8

b. In your home?

- Never (139)..... 0
- Rarely 1
- Sometimes..... 2
- Often..... 3
- Always 4
- Don't know..... 9
- Prefer not to answer 8

138. **After** you play soccer on a synthetic turf field, what percent of the time do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust:

a. In your garage/mudroom/entrance to your house?

- 0% 0
- >0-25% 1
- >25-50% 2
- >50-75% 3
- >75% 4
- Don't know..... 9
- Prefer not to answer 8

b. In your laundry room?

0% 0
 >0-25% 1
 >25-50% 2
 >50-75% 3
 >75% 4
 Don't know 9
 Prefer not to answer 8

c. In your bedroom?

0% 0
 >0-25% 1
 >25-50% 2
 >50-75% 3
 >75% 4
 Don't know 9
 Prefer not to answer 8

d. In your bathroom?

0% 0
 >0-25% 1
 >25-50% 2
 >50-75% 3
 >75% 4
 Don't know 9
 Prefer not to answer 8

139. **After** you play soccer on a synthetic turf field, how often do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust:

a. In your water bottle?

0% 0
 >0-25% 1
 >25-50% 2
 >50-75% 3
 >75% 4
 Don't know 9
 Prefer not to answer 8

b. On your clothes?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't know	9
	Prefer not to answer	8
c. In your shoes?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't know	9
	Prefer not to answer	8
d. In your socks?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't know	9
	Prefer not to answer	8
e. In your underwear?	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8

140. Each time after you play soccer on a synthetic turf field, approximately how much crumb rubber (including granules or crumb rubber dirt and debris) do you find in your home?	None 0 Some, but < 1 Tablespoon 1 1 Tablespoon – ¼ Cup 2 > ¼ Cup – ½ Cup 3 > ½ cup 4 Don't Know 9 Prefer not to answer 8
141. After you play soccer on a synthetic turf field, what percent of the time do you notice crumb rubber granules, or crumb rubber dirt and debris, such as black dust on your body?	0% (143) 0 >0-25% 1 >25-50% 2 >50-75% 3 >75% 4 Don't Know 9 Prefer not to answer 8
142. After you play soccer on a synthetic turf field, how often do you find/notice crumb rubber particles or crumb rubber dirt and debris, such as black dust on the following parts of your body:	
a. Mouth	0% 0 >0-25% 1 >25-50% 2 >50-75% 3 >75% 4 Don't Know 9 Prefer not to answer 8
b. Hair	0% 0 >0-25% 1 >25-50% 2 >50-75% 3 >75% 4 Don't Know 9 Prefer not to answer 8

c. Face	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
d. Neck	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
e. Chest	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
f. Back	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8

g. Thighs	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
h. Lower legs	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
i. Feet	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8
j. Upper arms	0%	0
	>0-25%	1
	>25-50%	2
	>50-75%	3
	>75%	4
	Don't Know	9
	Prefer not to answer	8

k. Lower arms

0%	0
>0-25%	1
>25-50%	2
>50-75%	3
>75%	4
Don't Know	9
Prefer not to answer	8

l. Hands

0%	0
>0-25%	1
>25-50%	2
>50-75%	3
>75%	4
Don't Know	9
Prefer not to answer	8

J. HYGIENE PRACTICES

143. After playing soccer on a synthetic turf field, how often do you wipe, clean, or remove shoes, socks, shin guards, etc. before entering the **vehicle**?

0%	0
>0-25%	1
>25-50%	2
>50-75%	3
>75%	4
Don't Know	9
Prefer not to answer	8

144. After playing soccer on a synthetic turf field, how often do you wipe, clean, or remove shoes, socks, shin guards, etc. before entering the **home**?

0%	0
>0-25%	1
>25-50%	2
>50-75%	3
>75%	4
Don't Know	9
Prefer not to answer	8

145. After playing soccer on a synthetic turf field, how often do you wash your gloves?
- I do not wear gloves 1
 Weekly 2
 Monthly 3
 > Once per month – every six months 4
 < Once every six months 5
 Don't Know 9
 Prefer not to answer 8
146. How long after playing soccer on a synthetic turf field do you typically wear your soccer clothes before changing them? ___ __ HOURS ___ __ MINUTES
 [CODE 99 IF DK]
147. What is the longest amount of time after playing soccer on a synthetic turf field that you may wear your soccer clothes before changing them? ___ __ HOURS ___ __ MINUTES
 [CODE 99 IF DK]
148. How long after playing soccer on a synthetic turf field do you typically bathe or shower? ___ __ HOURS ___ __ MINUTES
 [CODE 99 IF DK]
149. What is the longest amount of time after playing soccer on a synthetic turf field that you may wait to bathe or shower? ___ __ HOURS ___ __ MINUTES
 [CODE 99 IF DK]

K. GENERAL HYGIENE

150. In general, how many times per day do you wash your hands? ___ __
 [CODE 99 IF DK]
151. In general, how many times per week do you typically bathe/shower? ___ __
 [CODE 99 IF DK]

L. PLAYER HISTORY BEFORE THIS SEASON

152. How many years have you played soccer? ___ __ YEARS
153. Do you play soccer year-round?
- No 0
 Yes 1
 Don't Know 9
 Prefer not to answer 8
154. Did you play recreational soccer in the two years prior to the current season?
- No 0
 Yes 1
 Don't Know 9
 Prefer not to answer 8

155. Did you play competitive soccer in the two years prior to the current season?
- No 0
Yes 1
Don't Know/Don't Remember 9
Prefer not to answer 8
156. **Do you currently** play competitive and/or recreational soccer in **college**? (i.e. for a college/university team, intramural team, etc.)
- No 0
Yes (158) 1
Don't Know/Don't Remember 9
Prefer not to answer 8
157. **Did you ever** play competitive and/or recreational soccer in **college** (i.e. for a college/university team, intramural team, etc.)
- No (165) 0
Yes 1
Don't Know 9
Prefer not to answer 8
158. **During college**, how many years have you played/did you play soccer?
- 1 Year 1
2 Years 2
3 Years 3
4 Years 4
Don't Know/Don't Remember 9
Prefer not to answer 8
159. **During college**, how many weeks per year do you/did you spend playing soccer on synthetic turf fields in each season? _____ WEEKS PER YEAR [CODE 99 IF DK/DR]
160. **During college**, how many hours per week do you/did you spend playing soccer on synthetic turf fields in each season? _____ HOURS PER WEEK [CODE 99 IF DK/DR]
161. **During college**, what position do you/did you usually play?
- Goalie 1
Forward 2
Midfielder 3
Defender 4
Don't Know/Don't Remember 9
Prefer not to answer 8
162. **During college**, do you/did you typically attend a soccer pre-season conditioning camp where you play on synthetic turf fields?
- No (165) 0
Yes 1
Don't Know/Don't Remember 9
Prefer not to answer 8

163. Approximately how many days per year do you/did you spend playing soccer on synthetic turf fields for soccer conditioning camp during college? ___ __ DAYS PER YEAR
164. Approximately how many hours per day do you/did you spend playing soccer on synthetic turf fields for soccer conditioning camp during college? ___ __ HOURS PER DAY
165. Did you ever play competitive and/or recreational soccer while you were in **high school**?
- | | | |
|---------------------------------|------------|---|
| No | (173)..... | 0 |
| Yes | | 1 |
| Don't Know/Don't Remember | | 9 |
| Prefer not to answer | | 8 |
166. In **high school**, how many years did you play soccer?
- | | | |
|---------------------------------|--|---|
| 1 Year | | 1 |
| 2 Years | | 2 |
| 3 Years | | 3 |
| 4 Years | | 4 |
| Don't Know/Don't Remember | | 9 |
| Prefer not to answer | | 8 |
167. In **high school**, how many weeks per year did you usually spend playing soccer on synthetic turf fields in each season? ___ __ WEEKS PER YEAR
[CODE 99 IF DK/DR]
168. In **high school**, how many hours per week did you usually spend playing soccer on synthetic turf fields in each season? ___ __ HOURS PER WEEK
[CODE 99 IF DK/DR]
169. In **high school**, what position did you usually play?
- | | | |
|---------------------------------|--|---|
| Goalie | | 1 |
| Forward | | 2 |
| Midfielder | | 3 |
| Defender | | 4 |
| Don't Know/Don't Remember | | 9 |
| Prefer not to answer | | 8 |
170. In **high school**, did you typically attend a soccer camp where you played on synthetic turf fields?
- | | | |
|---------------------------------|------------|---|
| No | (173)..... | 0 |
| Yes | | 1 |
| Don't Know/Don't Remember | | 9 |
| Prefer not to answer | | 8 |
171. Approximately how many days per year did you spend playing soccer on synthetic turf fields for soccer camp while in high school? ___ __ DAYS PER YEAR
172. Approximately how many hours per day did you spend playing soccer on synthetic turf fields for soccer camp during high school? ___ __ HOURS PER DAY

173. Did you ever play competitive and/or recreational soccer before high school (i.e. youth/club teams)?
- No [END OF SURVEY]. 0
 Yes 1
 Don't Know/Don't Remember 9
 Prefer not to answer 8
174. During youth/club soccer (before high school), how many years did you play soccer?
- 1 Year 1
 2 Years 2
 3 Years 3
 4 Years 4
 5 Years 5
 6 Years 6
 7 Years or more 7
 Don't Know/Don't Remember 9
 Prefer not to answer 8
175. During youth/club soccer (before high school), how many weeks per year did you usually spend playing soccer on synthetic turf fields? _____ WEEKS PER YEAR [CODE 99 IF DK/DR]
176. During youth/club soccer (before high school), how many hours per week did you usually spend playing soccer on synthetic turf fields? _____ HOURS PER WEEK [CODE 99 IF DK/DR]
177. During youth/club soccer (before high school), what position did you usually play?
- Goalie 1
 Forward 2
 Midfielder 3
 Defender 4
 Multiple 5
 Don't Know 9
 Prefer not to answer 8

This concludes the survey. Thank you for your time!

If you would like to complete the survey again for yourself or another child, click here.

**Learn more about the Synthetic Turf Exposure Study on OEHHA's website.
 Connect with us on the study's Facebook page.**

Card 1. Water bottles

8 oz



16 oz



24 oz



32 oz



64 oz



Card 2. Crumb rubber amounts



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Appendix B. Sample Consent To Participate

UNIVERSITY OF CALIFORNIA, BERKELEY

BERKELEY • DAVIS • IRVINE • LOS ANGELES • RIVERSIDE • SAN DIEGO • SAN FRANCISCO



SANTA BARBARA • SANTA CRUZ

ASSENT TO PARTICIPATE IN A RESEARCH STUDY

Synthetic Turf Exposure Study Child Assent Form (Ages 7-13) - Videotaping

Hello, my name is [INSERT NAME], and I am a [INSERT POSITION] at the University of California Berkeley. I am doing a research study with Professor Asa Bradman. I'd like to tell you about this study and ask if you will take part in it.

What is a research study?

A research study is when people like me collect information about a certain thing to find out more about it. Before you decide if you want to help in this study, it is important for you to understand why we're doing the research and what's involved.

You can discuss the information on this form with your parents or anyone else. If you have questions about this research, you can ask me, too.

What are we studying?

We are doing this study to learn about how people play soccer on fields containing crumb rubber. Crumb rubber is the black stuff that makes the fields soft to play on. It is made from recycled tires. This study will help us find out how soccer players have contact with the crumb rubber on the fields.

Your parent/guardian has said that it is ok for you to be in this study, but it is up to you if you want to take part. If you sign this paper, it means you have read this, or it has been read to you, and that you want to be in the study. If you don't want to be in this study, don't sign this paper. You can ask us questions about this study and you can change your mind at any time.

What will happen if you are in this study?

We will videotape you during a scheduled soccer game or a practice so that we can find out how often you come into contact with the field. We will save these videotapes to be reviewed in the future.

Who will know about your personal information?

Besides your parent/guardian, only approved researchers will know about the information your parent/guardian tells us.

Will good things happen from being in this study?

Being in this study won't really change anything for you. But we hope the results of this research will help us understand how soccer players come into contact with crumb rubber in soccer fields.

Are there things you might not like about being in the study?

You may feel distracted about people videotaping you while you are playing soccer. If this happens, you can tell us to stop.

Do you have to be in the study?

No, you don't! Taking part in research is something you do only if you want to. Nothing bad will happen if you don't want to be in this study. And remember, you can always change your mind later if you don't want to be in the study anymore. Whether or not you decide to participate will have no impact to your standing with your team or organization.

Do you have any questions?

You can contact us if you have any questions about the study, or if you decide you don't want to be in the study anymore. You can talk to me, or your parent/guardian, or someone else at any time during the study. If you have any questions now, please ask us. If you have questions later, your parent/guardian has information about who to call.



ASSENT OF CHILD

Your parent/guardian has given permission for you to participate in this study. If you decide to be in the study, please sign the form below. We'll give you a copy of this form to keep for future reference.

If you would like to be in this research study, please sign your name on the line below.

Child's Name

Date

Child's Signature *

Date

Signature of Investigator/Person Obtaining Assent

Date

**If verbal assent only is being obtained:*

Investigator or Person Conducting Assent Discussion: Initial here if child cannot sign, to document that child received this information and gave assent verbally: _____

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Appendix C. Synthetic Turf Video Palette for Micro-Level Activity

Sideline	on					
Soccer_field	off					
Other_outdoor	Artificial_turf	Wood_structure	People	Clothes_towel	Other_food	Head_face
Vehicle	Black_crumb	Plast_structure	Wood_tool	Footwear	Sticky_food	Body_skin
Before_game/practice	Grass	Metal_structure	Plast_tool_appl	Shin_guards	Tap_water	Other_hand_s
Player_warming_up	Dirt	Fabric_structure	Metal_tool_appl	Gloves	Puddle_water	Mouth
During_game/practice	Plastic_rubber_mat	Porous_plast_struct	Paper_wrapper	Mth_guard_pacifier	Other_beverages	Hair
Snack_time/break	Asphalt	Fabric_toy	Vegetation	Bag_backpack	Water_bottle	Not_in_view
After_game/practice	Conc_rock_floor	Wood_toy	Animal	Soccer_ball	Food_cont	Nothing

Figure 1. Object Palette for Micro-Level Activity. This palette is used to translate micro-level activity data for objects that players come in contact with during their time on and around the field.

Sideline	Stretching	Running	Highly
Soccer_field	Push_ups	Walking	Moderately
Other_outdoor	Sit_ups	Resting_standing	Lightly
Vehicle	Jumping	Rest_sit_chair	Resting
Before_game/practice	Heading	Rest_sit_on_ground	
Player_warming_up	Diving	Fall_ground	
During_game/practice	Tackling_sliding	Not_in_view	
Snack_time/break			
After_game/practice			

Figure 2. Activity and Intensity Palette for Micro-Level Activity. This palette is used to translate micro-level activity data for players on and around the field.

COMMITTEE FOR THE PROTECTION OF HUMAN SUBJECTS

400 R Street, Room 369
Sacramento, California 95811
(916) 326-3660 FAX (916) 322-2512



12/04/2017

Asa Bradman, MS, PhD

Project Title: Assessing human time-activity exposure patterns occurring on synthetic turf fields

Project Number: 2017-049

Dear Dr Bradman:

The Committee for the Protection of Human Subjects (CPHS) has reviewed and approved the above new project. Included with the approval are the following item(s) beginning with project type:

Common rule/Human subjects
Minimal Risk
Non-English translation required
Consent form
Assent form

This approval is issued under the California Health and Human Services Agency's Federalwide Assurance #00000681.

Pursuant to 45 CFR 46.109(e), CPHS cannot approve a project for more than one year at a time. Therefore, a project must be renewed yearly. To continue your research or data analysis, submit a Continuing Review request by your project's deadline date, 09/05/2018. If your project is not approved again (renewed), it will expire on 10/05/2018. Once a project is expired, all research, including data analysis, must cease (unless discontinuance will have an adverse impact on research subjects).

You will receive courtesy email reminders from CPHS to renew your project. It is the Principal Investigator's responsibility to submit their Continuing Review request on time and to notify CPHS of any changes in contact information.

If a project has been completed or is no longer active, it must be submitted to CPHS for completion approval or withdrawal approval. Instructions for these processes can be found in our Instructions for Researchers located on the CPHS Homepage.

Any unanticipated problems, adverse events, protocol deviations, and breaches in data security must be reported to CPHS via a Report Form within 48 hours of the event. File a report by logging into IRBManager and clicking on the protocol's "Protocol ID" number. Choose 'start xform' and choose the 'Report Form: Unanticipated Problems or Adverse Events' from the list. Once you have completed that form, sign and submit.

If you have any questions, you may call our office at (916) 326-3660 or email us at cphs-mail@oshpd.ca.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Lucila O. Martinez', with a stylized flourish at the end.

Lucila O. Martinez, Administrator
(916) 326-3661
lucila.martinez@oshpd.ca.gov