Synthetic Turf Study Webinar

Office of Environmental Health Hazard Assessment (OEHHA)

California Environmental Protection Agency (CALEPA)

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Welcome

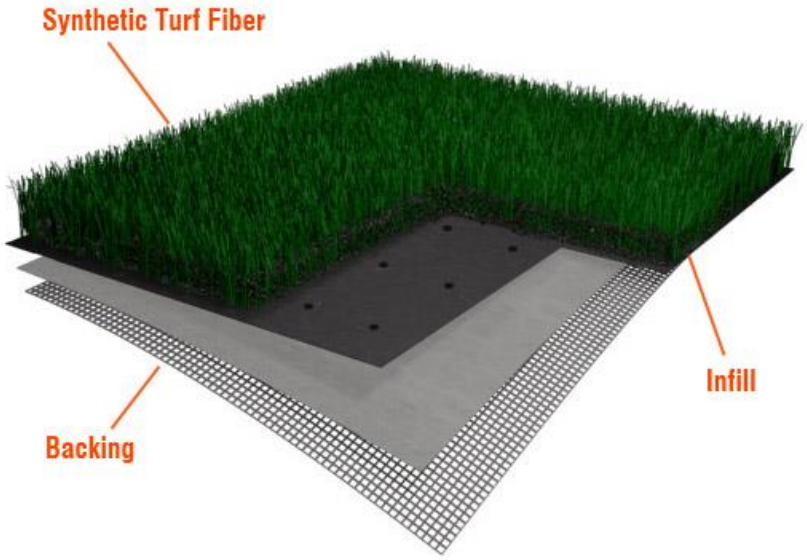
Lauren Zeise, Ph.D.
Acting Director

- Webinar goal
  - Solicit public input on various aspects of OEHHA's study on synthetic turf

Synthetic Turf

Synthetic or artificial turf is used in athletic fields.

It is composed of two parts:



Synthetic grass blades:

- soften the play surface
- look like natural grass

Backing materials

Crumb rubber infill:

- is made from chopped-up waste tires
- supports synthetic grass blades
- cushions falls

Synthetic Turf

Tire rubber (or crumb rubber): a complex material made of natural rubber and synthetic materials.

Types and levels of chemicals released from crumb rubber depend on the source of material, weather, age of field, and other factors.

Study Purpose and Scope

What: OEHHA is conducting a study on potential health effects from the use of synthetic turf fields and playground mats made from recycled tires

Why: To further our understanding of:

- chemicals that can be released from synthetic turf and playmats
- human exposures to these chemicals
- potential adverse health effects of these chemicals

When: 2015-2018

Outline of Presentation

Topics for today's webinar:

- Exposure Scenarios
- Sampling and Analysis
- Health Effects of Concern
- Plans for Possible Future Personal Monitoring and Biomonitoring Studies

The webinar will pause for questions and comments after each topic.

Overview of Synthetic Turf Study

Melanie Marty, Ph.D.

Acting Deputy Director for Scientific Affairs

OEHHA

Who is exposed?

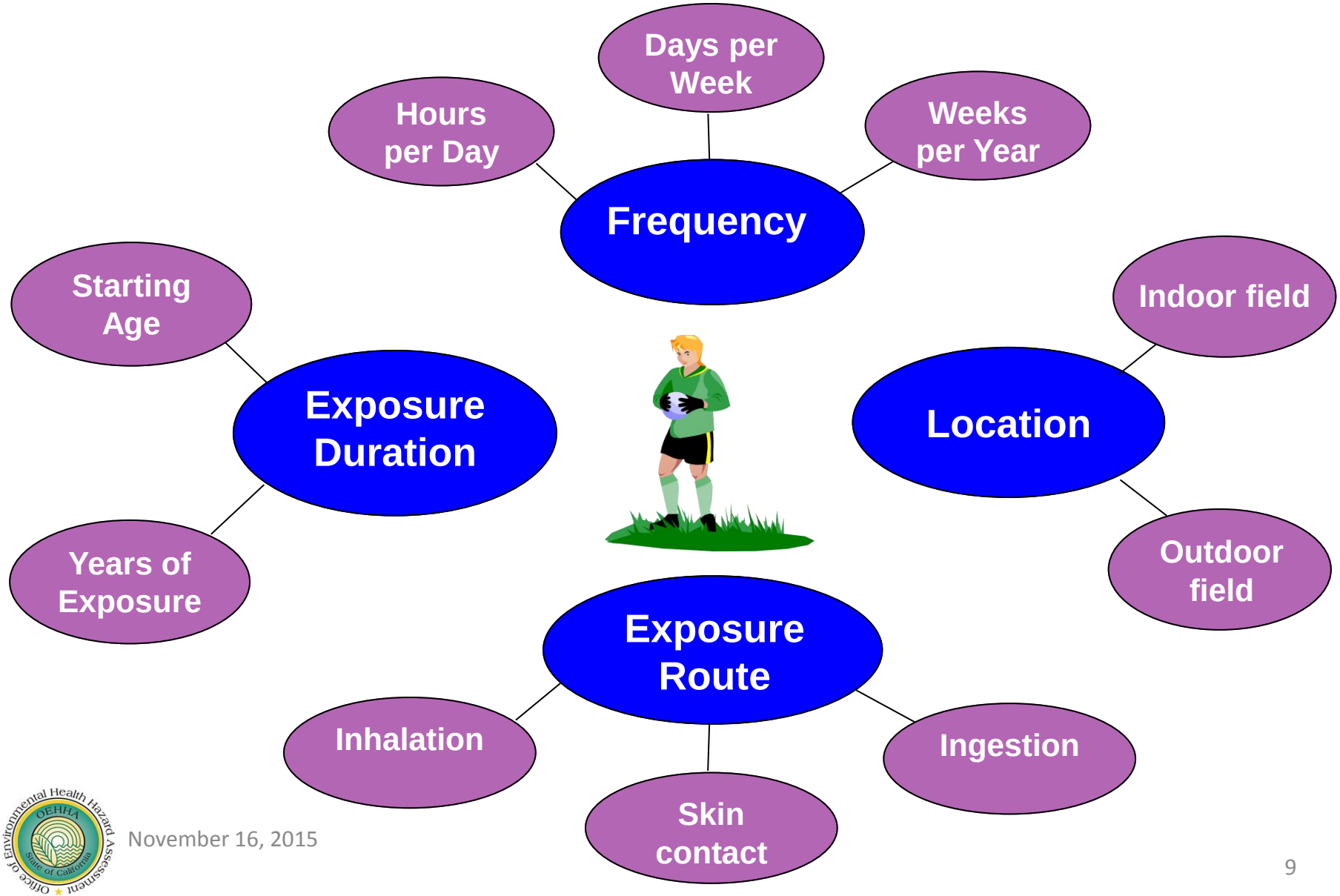
Young children

Youth sport participants

Coaches, referees

Parents, bystanders

Factors Influencing Exposure



Sampling and Analysis

- **Which fields to sample?**
- **What to sample?**
- **Which chemicals to look for?**
- **How to measure the chemicals?**

Which fields should be sampled?

Samples: from indoor and outdoor synthetic turf fields and playground mats in several regions of CA



Considerations in field/mat selection

- Age of field or mat
- Climate region (regional climate influence, weathering of material and activity patterns)

What kind of samples would we take?

Types of samples

- New crumb rubber, artificial grass blades, playground mats
- In-field crumb rubber and artificial grass blades
- Air sample (chemical vapors and particulates)
  - 3 feet above ground (normal breathing zone for children)
  - on ground surface
- Surface wipe sample (fields, mats, gloves and balls after a game)

Which chemicals should be studied?

Chemical analysis: identifies and quantifies chemicals

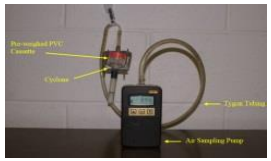
Organics:

- Volatile organic compounds (VOCs)
  - easily released into the air
- Semi-volatile organic compounds (sVOCs)
  - released into the air to some degree
- Polycyclic aromatic hydrocarbons (PAHs)
  - most not volatile; complex chemicals found in tars and petroleum

Metals: Zinc, Lead, Chromium

How would we measure the chemicals?

Air samples



Air Particulates

Filters

Crumb rubber

Artificial grass blades

Surface wipe

Artificial lung fluid extraction

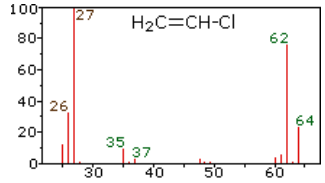
Artificial saliva extraction

Artificial stomach fluid extraction

Artificial intestinal fluid extraction

Artificial sweat extraction

Analytical instruments

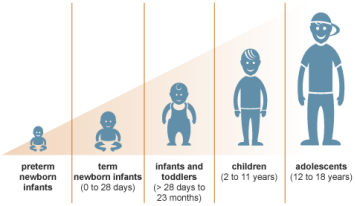


Chemical identification/quantification

Potential Health Effects

Cancer

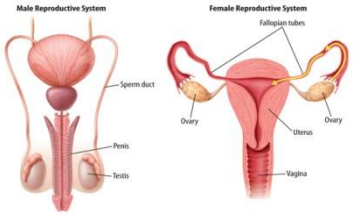
Developmental Effects



Neurotoxicity

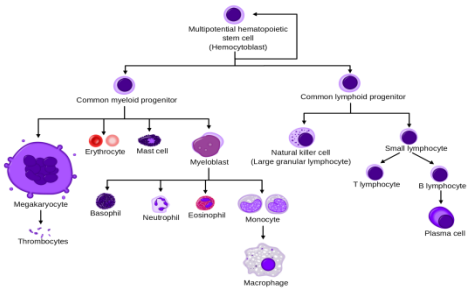
Organ Toxicity

Reproductive Effects

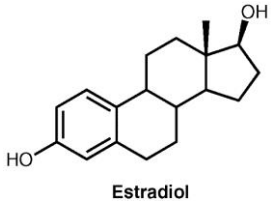


Respiratory Effects

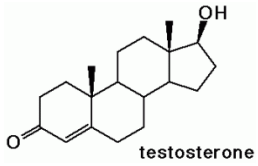
Immune System Effects



Endocrine Disruption



Estradiol



testosterone

What health effects are of concern?

Adverse health effects can be caused by short-term or long-term exposure to chemicals.

Different chemicals or chemical classes may cause:

- different types of adverse health effects
- more than one type of adverse health effect

An individual's response to chemicals may be affected by:

- age
- sex
- genetic background
- disease status
- other factors

Plans for Possible Future Personal Monitoring and Biomonitoring Studies

Results from this new study may provide data on:

- the chemicals that could be monitored
- the biomarkers of effects that could be monitored

Planning to monitor people

- *When should sport participants be monitored?*
- *During play?*
- *During practice?*
- *Which participants?*
- *Which sports?*

Biomonitoring

- Measures the amount of chemicals in a person's body
- May tell us:
  - if people have been exposed to certain chemicals
  - if their exposure level and/or pattern changes over time
  - if exposure is different between different groups
    - men and women
    - children and adults
    - sport participants and bystanders

Personal monitoring

- measures the amount of chemicals a person is exposed to while on or near synthetic turf
- samples can be collected in many ways:
  - Personal air monitors
  - Special clothing and gloves worn during sports/games
  - Other collection devices

Types of samples

- Next steps
- Join OEHHA Synthetic Turf Listserv at: http://oehha.ca.gov/risk/SyntheticTurfStudies.html
- Thank you for participating today!

Questions and Comments can be sent to the following email address:

SyntheticTurf@oehha.ca.gov