



## Public Health Advisory Committee

### Agenda for the Sub-Committees

October 25, 2016, 6:00 – 8:00 pm

Minneapolis City Hall, Room 132

#### AGENDA

Agenda Item	Presenter	Time	Sub-Committee Action
<b>Supper is served!</b>	La Loma Tamales	5:45 – 6:00	
<b>Introductions and Welcome to members of CEAC and guests</b>	Laurel Nightingale, co-chair	6:05 – 6:12	
<b>Panel discussion on recycled tire mulch – crumb rubber</b>	William Toscano, PhD, Professor-Environmental Health Sciences, UMN-SPH;  Matt Simcik, PhD, Associate Professor-Environmental Health Sciences, UMN-SPH;  Michael Peterson, MEM, Sr. Toxicologist-Gradient	6:15 – 7:00	Each speaker has 12 minutes to present – all Q&A will follow presentations
<b>Committee discussion following</b>		7:00 – 7:35	Discussion time for CEAC-PHAC committee members
<b>PHAC Logistics, Department Updates, next steps, if any</b>	Margaret	7:45 – 7:50	
<b>Info Sharing, if any</b>		7:50 – 8:00	

**Last PHAC meeting of 2016 (5<sup>th</sup> Tuesday)\*: November 29, 2016, City Hall, Room 132**

\*There is NO meeting in December; November 29 is the last meeting of the year. The PHAC voted to combine November and December meetings and meet only once in those two months. The date of the meeting was changed to reflect that interest, and due to the proximity of regular meeting dates to national holidays.

For more information on this committee, visit: [Public Health Advisory Committee - City of Minneapolis](#)

If any problems or issues arise on the night of the meeting, please call the cell phone of Gretchen Musicant, Health Commissioner: 612-919-3855.

**Public Health Advisory Committee (PHAC)  
Minutes**



**October 25, 2016**

**Members Present:** Laurel Nightingale, Karen Soderberg, Sarah Jane Keaveny, Kathy Tuzinski, Silvia Perez, Cindy Hillyer, Jane Auger, Craig Hedbert, Yolanda Lee, Joseph Descenclos, Joseph Colianni

**Members Excused:** Happy Reynolds-Cook, Margaret Reinhardt, Autumn Chmielewski

**Members Unexcused:** Conrad Zbikowski, Jahana Berry, Birdie Cunningham

**MHD Staff Present:** Margaret Schuster, Hattie Wiysel

**Speakers:** Matt Simcik, Michael Peterson, William Toscano

**Guests:** Ryan Jurek, Dianna Kennedy, Russ Henry, Emmanuel Ortiz, Ward Einess, , Steve Bigelow, Mark Maust, Ryan Wendorf, Eric McCabe, Lee Setter, and from CEAC - Anna Abruzzese and Jenna Grove

Laurel Nightingale called the meeting to order at 6:07 p.m. at City Hall.

Item	Discussion	Outcome
<b>Introduction</b>	Members and guests introduced themselves. Today's meeting is a combined meeting with CEAC members to address the June 20, 2016 charge from City Council to make recommendations on the use of recycled tires and report back to council by February 2017.	
<b>Panel discussion on recycled tire mulch – crumb rubber Reports from Sub committees:</b>	<p>William Toscano, PhD, Professor-Environmental Health Sciences, UMN-SPH</p> <ul style="list-style-type: none"> <li>• Temp of material can rise to 130-170 degrees in summer</li> <li>• Small particles in lungs, no data on harm</li> <li>• No good study at this time</li> <li>• Kids under 5 should stay away as preventative measure</li> <li>• Potential for harm exists</li> <li>• You can visible see material when you shake clothing</li> </ul> <p>Matt Simcik, PhD, Associate Professor-Environmental Health Sciences, UMN-SPH; Comments included:</p> <ul style="list-style-type: none"> <li>• Asked to recommend fill to athletic fields. Looked at three samples: Tire crumb, chem green stuff, frozen cryogenic crumb.</li> <li>• They all get too hot to touch in summer</li> <li>• Use root zone to hold down flying particles</li> <li>• Crumb rubber least toxic, would have to eat half your body weight to change PH.</li> <li>• Concussions and head injuries pose greater risk on hard dirt.</li> <li>• Lots of unknowns about the longevity of the material.</li> </ul> <p>Michael Peterson, MEM, Sr. Toxicologist-Gradient Presentation to members: <a href="http://wcms/wcm1/groups/public/@health/documents/webcontent/wcmsp-188688.pdf">http://wcms/wcm1/groups/public/@health/documents/webcontent/wcmsp-188688.pdf</a> Verdant Health Commission, Snohomish County helped with initial risk assessment. <a href="http://verdanthealth.org/wp-content/uploads/0515_Gradient_Turf_Report.pdf">http://verdanthealth.org/wp-content/uploads/0515_Gradient_Turf_Report.pdf</a> Used samples from all over country and all types of crumb rubber.</p>	Committee will review draft recommendations at the November meeting.

**Public Health Advisory Committee (PHAC)  
Minutes**



Item	Discussion	Outcome
	<p>Crumb rubber should not contain metal and is regulated only in the United States.</p> <p>Comments about the age of tire used as older tires were made using vulcanization process which uses lead. Lead is no longer used in the manufacture of tires.</p> <p>Discussion included:</p> <ul style="list-style-type: none"> <li>• A reference to another study in which 90 chemicals were found but did not study all. FDA found it met the threshold for toxicity. Twelve of the chemicals had no toxicity data; there is software to look at structure of chemicals to determine risk.</li> <li>• Off cast of VOCs were not mentioned and there were air samples that studied VOCs. CA is doing a longer, more extensive bio monitor study.</li> <li>• Long-term effects are unknown.</li> <li>• What are the risks of not adding mulch?</li> <li>• Tire dust and exhaust from nearby roads hazardous.</li> <li>• Schools are oversaturated with pollutants and kids are ingesting.</li> <li>• Combines effects of all pollution has not been studied.</li> <li>• Is there OSHA guidelines and protection for people who are manufacturing this product? Protective gear when installing, but respirators are not worn during manufacturing.</li> <li>• Is the appeal that it costs less than alternatives?</li> <li>• Wood mulch was difficult to maintain depth needed to prevent injury.</li> <li>• What communities are install this? Is it another health disparity?</li> <li>• Neighborhoods with most disparities seem to be using crumb rubber on playgrounds the most.</li> <li>• Concussions are an issue if nothing is used.</li> </ul>	

Meeting adjourned at 8:00 p.m.  
Minutes submitted by Hattie Wiysel and Margaret Schuster

# The State of the Science: Recycled Rubber Safety

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Michael Peterson, MEM, DABT

Public Health Advisory Committee (PHAC) –  
Citizen's Environmental Advisory Committee (CEAC) Meeting  
Minneapolis, MN

October 25, 2016

## Context/Example: Recycled Rubber vs. Natural Soil

Chemical	Recycled Rubber (mg/kg)	Natural Soil (mg/kg)
Arsenic	0.3-4.0	0.1-97
Lead	0.02-389	10-700
Carcinogenic PAHs	1.31-3.13	0.93-4.60

Data are only a subset of chemicals found in crumb rubber/soil.

Crumb rubber data (and c-PAH data) are from literature review; data from chemical composition studies, and do not consider bioaccessibility.

Natural soil data are from MADEP, 2002 (90<sup>th</sup> percentiles) and USGS, 1984 (ranges).

# Current Scientific Literature

- Artificial turf reports from 17 different organizations
  - US EPA, Connecticut DPH, Massachusetts DPH, CalOEHHA, CPSC, New Jersey DEP, New York City, New York State
  - Some discussion related to data gaps or limitations
- 24+ peer-reviewed studies
- Overall: studies that evaluate chemical risk (not simply presence!) do not identify concerns

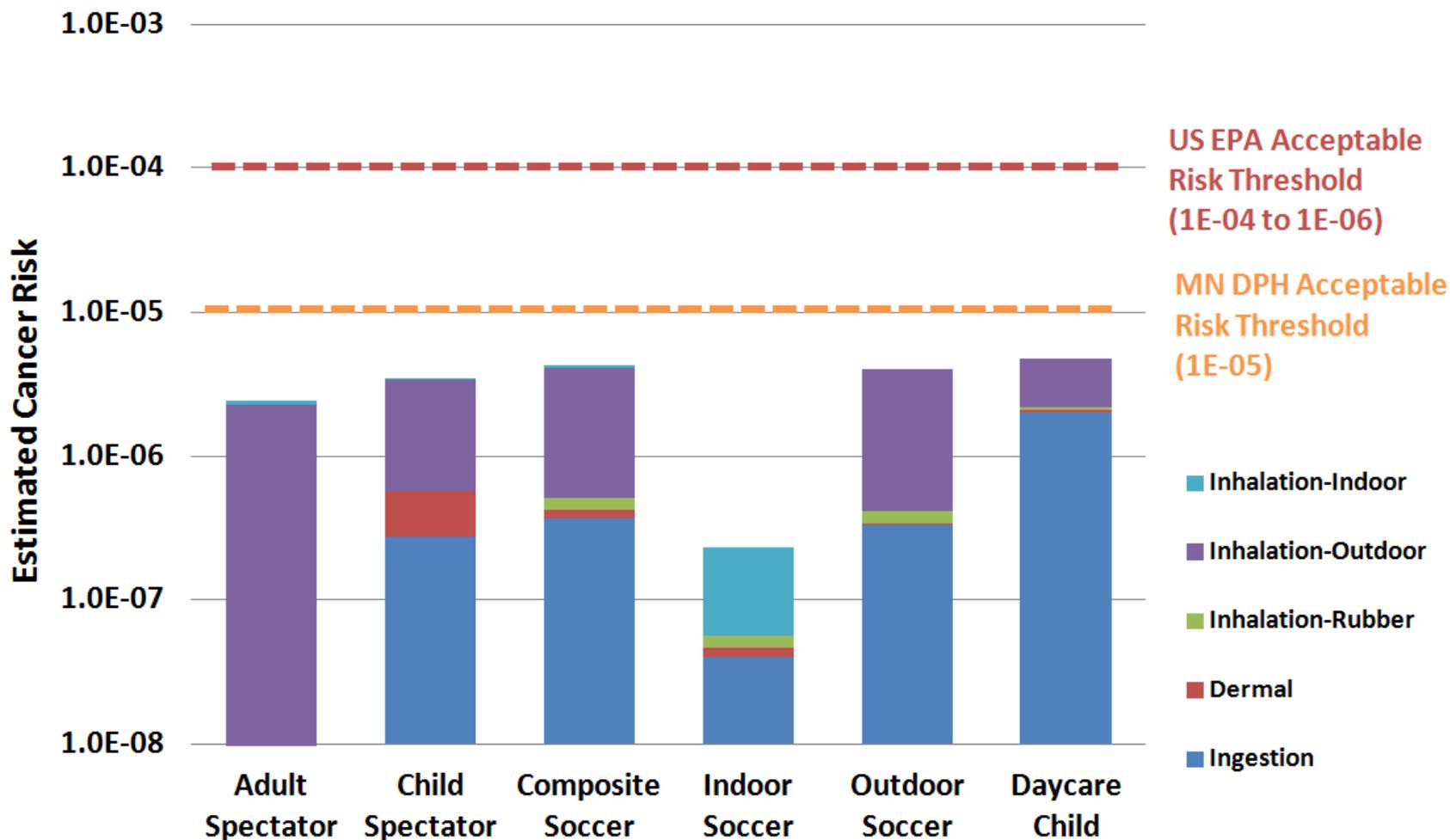
# Limitations

- Yes, there are limitations (as with ALL scientific inquiries)
- However, studies have:
  - Evaluated ingestion, dermal contact, inhalation
  - Evaluated ~90 chemicals
  - Evaluated the impact of hot surfaces
  - Taken samples of air above crumb rubber
  - Evaluated the bioavailability of chemicals in crumb rubber
  - Evaluated the mutagenic potential of crumb rubber

# New Study: A Comprehensive Multi-pathway Human Health Risk Assessment

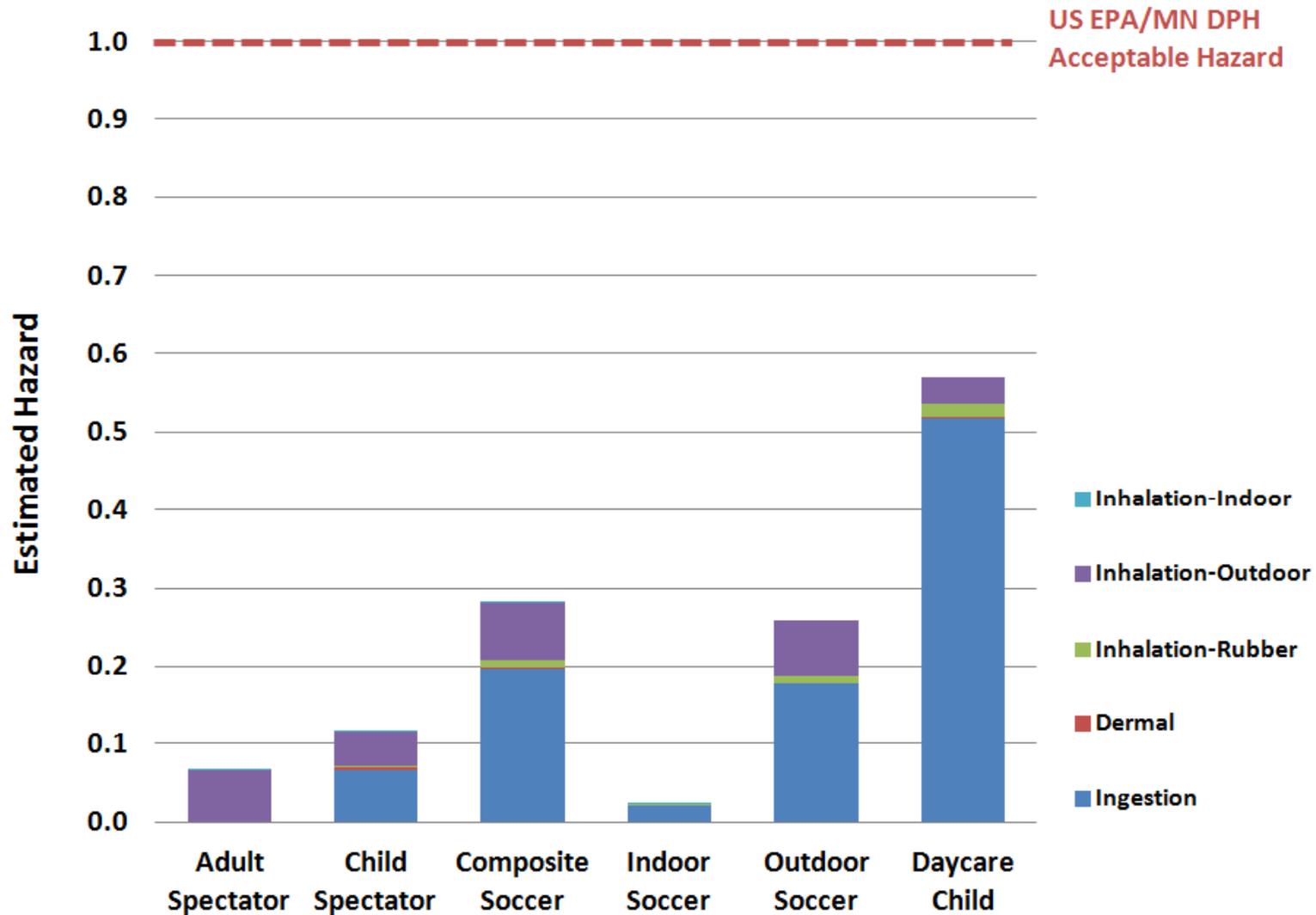
- Collected all available data in the literature
- Evaluated dermal, inhalation, and ingestion exposure
- Evaluated multiple exposure scenarios
  - Indoor and outdoor soccer players
  - Year round (indoor and outdoor) soccer player
  - Spectators (adult and child)
  - Daycare child
- Close to 200 recycled rubber samples
- Over 100 air samples
- Over 100 different chemicals evaluated

# New Study Results: Cancer Risks



Note log scale on y-axis; exposure route-specific bars are not proportionate  
 MN acceptable risk level: MAR 4717.8000 to MAR 4717.8600  
 US EPA acceptable risk level: US EPA, 1990, 1991; Rodricks and Rieth, 1998

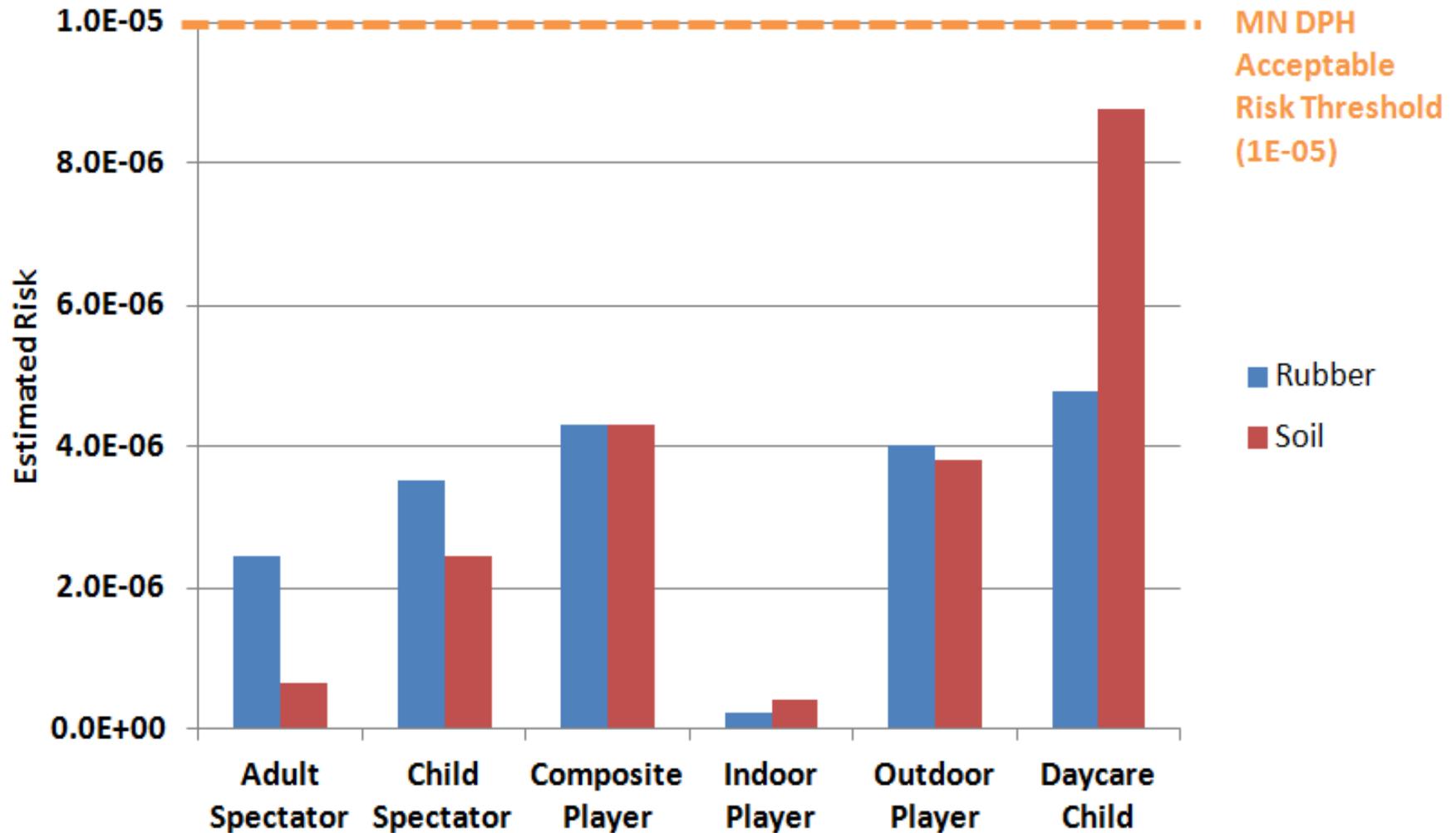
# New Study Results: Non-Cancer Hazards



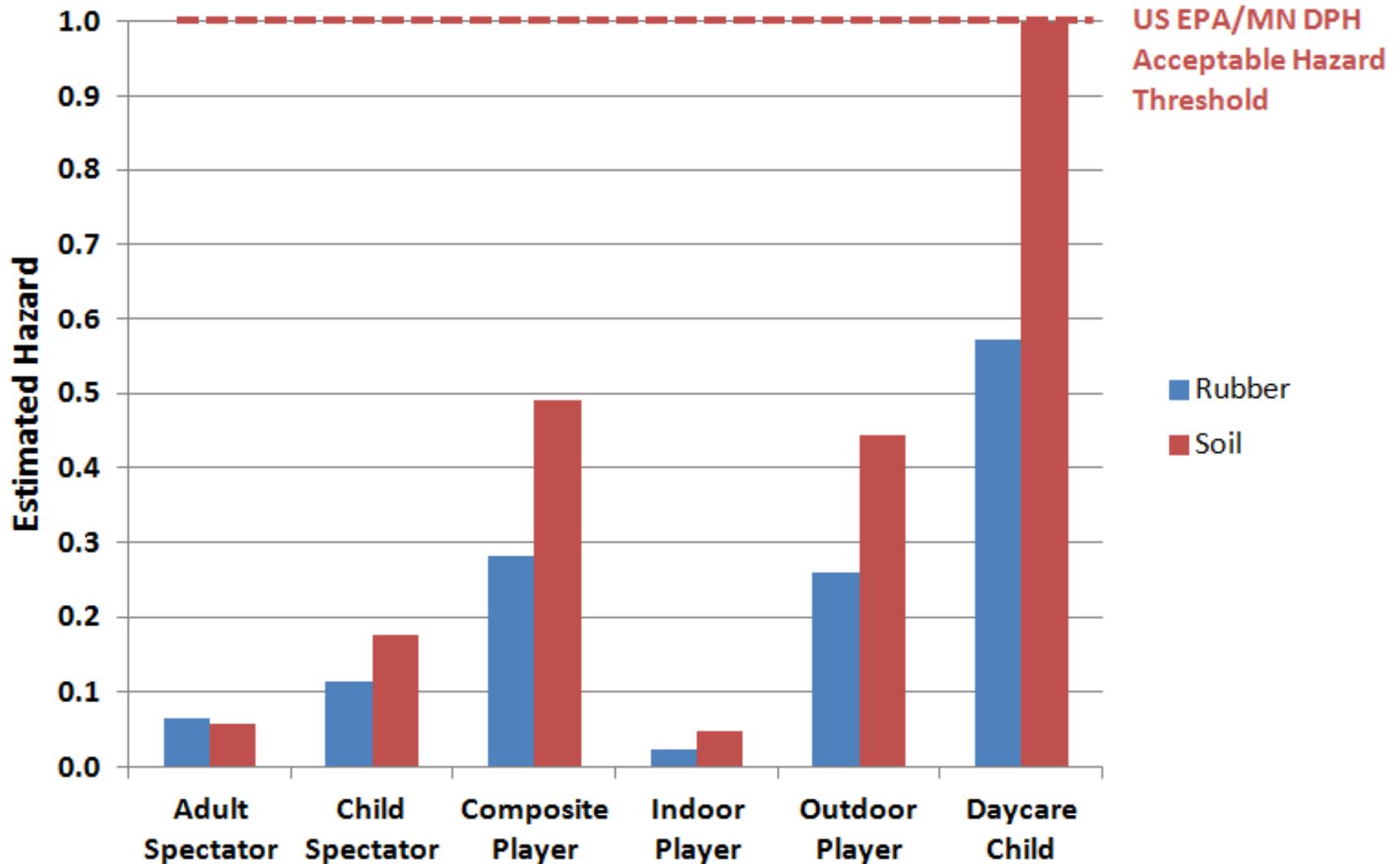
## New Study Conclusions

- All exposure scenarios within US EPA and MN DPH acceptable risk limits
- Even though:
  - Maximum or 95% UCL concentrations
  - 100% bioavailability
  - All spectators and players assumed to play 100% of games/practices on synthetic turf
  - No comparison to background levels to eliminate chemicals
  - All chemicals assumed to impact same organ/system

# New Study Results: Rubber vs. Soil Risks



# New Study Results: Rubber vs. Soil Hazards



# Context: Coach Griffin's Cancer List

- Actual list is not public!
  - 209 athletes: 137 soccer players; 97 goalies; 45 Washington residents (137 both recreationally and year-round)
- What about background cancer?
  - 3,000,000 US youth soccer players • 100,000 in WA
  - Expected background cancer: 100,000/yr
- In other words, over 15 years we would expect there to be:
  - 21,735 US soccer cancer cases (8,820 leukemia, 12,915 lymphoma)

OVERSIMPLIFICATION

# Context: Coach Griffin's Cancer List

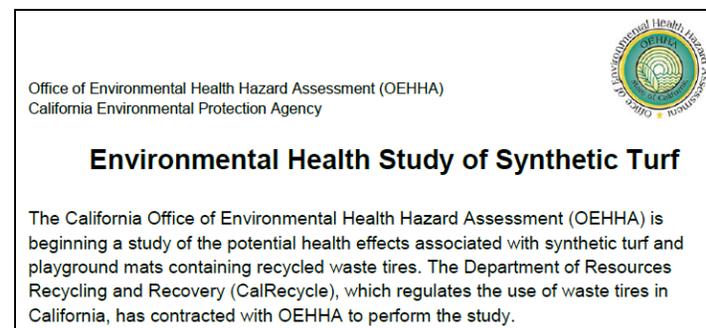
- Actual list is not public!
  - 209 athletes; 160 soccer players; 97 goalies; 45 Washington residents who played both recreationally and year-round
- What about background rates?
  - 3,000,000 US youth soccer players; 100,000 in WA
  - Expected background cancer rate: 48.7 per 100,000/yr
- In other words, over 15 years we would expect there to be:
  - 21,735 US soccer cancer cases (8,820 leukemia/lymphoma)

# What About Contrary Studies?

- Do Not Consider Risk; Only Measure Concentrations
  - Yale Study; Llompart et al., 2013
- Italian Study (Marsili et al., 2014)
  - Used 3 methods to evaluate risk—2 of the 3 found risks were below regulatory limits
  - Other method:
    - "It must be underlined that this preliminary hazard assessment overestimates the PAH contribution of the field because the input from the wide variety of anthropogenic and crustal sources were not considered and then, this theoretical approach must be considered as an extreme worst case screening."
- No contrary study considers bioavailability!

# Ongoing Research

- US EPA/CPSC/ATSDR
  - Limited study this year; primarily identifying data gaps and research needs
  - Presumably might expand after this year
- California OEHHA
  - Four year study
  - Very comprehensive



# Questions?

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Michael Peterson, MEM, DABT

Public Health Advisory Committee (PHAC) –  
Citizen's Environmental Advisory Committee (CEAC) Meeting  
Minneapolis, MN

October 25, 2016

## Information Sheet: Recycled Rubber Cancer Cases

**The Concern:** Amy Griffin, associate head coach for the University of Washington women's soccer team, "has been informally tracking American soccer players with cancer since 2009" (1). She has identified 220 cases to date, 166 of them soccer players. The two most frequent cancer diagnoses are lymphoma and leukemia. The diagnoses date back to 1994, with the ages 5-24 specifically mentioned (2). The concern is that exposure to chemicals in recycled rubber has caused the identified cancer cases.

The number of cancer cases assembled by Ms. Griffin can appear alarming, especially to those who would expect there to be zero or very few cases of children and young adult soccer players with cancer.

**Interpreting the Cases:** Coach Griffin acknowledges that her ascertainment of cases was not scientific, but rather is anecdotal (1). In order to understand whether there may be a causal relationship between exposure to recycled rubber and cancer, it would be necessary to calculate whether the number of cases is more than expected. Information on background cancer rates, taking into account normal occurrences, is readily available to help answer that question (3,4). Without further detail on the cases, however, we do not know the specific size and characteristics of the population the cases are drawn from. Information such as the geographical boundaries of the cases is critical to understanding the expected number of cases.

**Context:** Leukemias and lymphomas are among the most common childhood cancers (5). To provide some context, we can calculate the expected number of cancer cases among the approximately 3,000,000 registered US Youth Soccer players aged 5-19 over the past 15 years (6). Based on age-specific cancer rates in the US (3), we would expect to see 21,735 total cancer cases, including 8,820 lymphomas and leukemias. These numbers would be even greater for the age range 5-24.

In light of the 21,735 cancer cases expected in US youth soccer players, the finding of 220 cases by Coach Griffin should not necessarily be considered unusual.

It has been suggested that Coach Griffin's cases, which include more lymphomas than leukemias, is inconsistent with background rates showing greater rates of leukemias than lymphomas (1). As shown in the table below, however, this presumption is dependent on the age range selected. The age range of Coach Griffin's cases (5-24) is consistent with there being more lymphomas than leukemias (2).

Data	Age Range	Lymphomas <sup>a</sup>	Leukemias <sup>a</sup>	
US (3)	5-19	9.0	10.6	← More leukemias
	5-24	15.9	13.2	← More lymphomas
Washington State (4)	5-19	8.7	10	← More leukemias
	5-24	16.2	12.4	← More lymphomas

(a) Numbers of incident cases expected per 100,000 individuals of the specified age range.

**Summary:** It is important to use caution instead of rushing to conclusions regarding the anecdotal evidence gathered by Coach Griffin. A scientific approach to assembling and evaluating available data is instrumental in answering the key questions associated with this concern. To date, there is no evidence to support that recreating on recycled rubber increases the risk of cancer.

## Citations

(1) Huffington Post, April 14, 2016. "Worries mount over potential link between artificial turf and cancer."

[http://www.huffingtonpost.com/entry/cancer-artificial-turf-crumb-rubber\\_us\\_570960a3e4b0142232493441](http://www.huffingtonpost.com/entry/cancer-artificial-turf-crumb-rubber_us_570960a3e4b0142232493441)

(2) Herald Net, February 5, 2016. "State studies crumb-rubber in athletic fields, cancer cases."

<http://www.heraldnet.com/article/20160205/NEWS01/160209578>

(3) National Cancer Institute SEER Cancer Statistics Review

### **Total Cancers**

[http://seer.cancer.gov/archive/csr/1975\\_2012/browse\\_csr.php?sectionSEL=2&pageSEL=sect\\_02\\_table.07.html](http://seer.cancer.gov/archive/csr/1975_2012/browse_csr.php?sectionSEL=2&pageSEL=sect_02_table.07.html)

### **Non-Hodgkin Lymphoma**

[http://seer.cancer.gov/archive/csr/1975\\_2012/browse\\_csr.php?sectionSEL=19&pageSEL=sect\\_19\\_table.07.html](http://seer.cancer.gov/archive/csr/1975_2012/browse_csr.php?sectionSEL=19&pageSEL=sect_19_table.07.html)

### **Hodgkin Lymphoma**

[http://seer.cancer.gov/archive/csr/1975\\_2012/browse\\_csr.php?sectionSEL=9&pageSEL=sect\\_09\\_table.07.html](http://seer.cancer.gov/archive/csr/1975_2012/browse_csr.php?sectionSEL=9&pageSEL=sect_09_table.07.html)

### **Leukemia**

[http://seer.cancer.gov/archive/csr/1975\\_2012/browse\\_csr.php?sectionSEL=13&pageSEL=sect\\_13\\_table.11.htm](http://seer.cancer.gov/archive/csr/1975_2012/browse_csr.php?sectionSEL=13&pageSEL=sect_13_table.11.htm)

The cumulative cancer annual cancer incidence for leukemias and lymphomas for the age range 5-19 (all sexes, all races) is 19.6/100,000.

(4) Washington State Department of Health. "Washington State Cancer Registry."

<https://fortress.wa.gov/doh/wscr/WSCR/Query.mvc/Query>

(5) American Cancer Society. "What are the most common types of childhood cancers?"

<http://www.cancer.org/cancer/cancerinchildren/detailedguide/cancer-in-children-types-of-childhood-cancers>

(6) US Youth Soccer

[http://www.usyouthsoccer.org/media\\_kit/keystatistics/](http://www.usyouthsoccer.org/media_kit/keystatistics/)

19.6/100,000 (annual incidence rate) × 3,000,000 US Youth Soccer registrants per year × 15 years = 8,820 cases expected

## Memorandum \*DRAFT

To: City Council Health Environment Community Engagement Committee

From: PHAC/CEAC

Date: October 25, 2016

Subject: Recycled Waste Tire Recommendations

This memo is in response to City Council Health Environment and Community Engagement June 20, 2016 direction:

- Requesting that the Public Health Advisory Committee (PHAC) and the Community Environmental Advisory Commission (CEAC) study and make recommendations regarding the use of waste tires as ground cover in Minneapolis and report back to the Health, Environment and Community Engagement Committee in February of 2017.
- Directing staff from the Health Department and City Coordinator's Office of Sustainability to work with the Public Health Advisory Committee and the Community Environmental Advisory Commission to support their efforts to study and make recommendations regarding the use of waste tires as ground cover in Minneapolis

### Recycled Tires and Alternatives:

There are basically two types of recycled tires material used around children's play areas: Crumb rubber "artificial turf" used in sport fields and shredded/recycled tire mulch typically used in playgrounds. Alternatives to crumb rubber include grass fields and for recycled tire mulch include wood mulch (not CCA treated), engineered wood fiber, sand, pea gravel, etc.

There appeared to be consensus that "Poured-in-Place" venues such as Dowling School's new adaptive playground do not present a health hazard because the crumb rubber / shredded tire pieces are encased and it doesn't off-gas like recycled tire mulch.

**PHAC and CEAC Recommendations from 2008:** Both groups were asked to make recommendations in 2008 related to recycled tires, [please see attachments A and B.](#)

**Formation of Joint Recycled Tire Committee:** The following members volunteered to form a Joint Recycled Tire Committee and report/update their respective organizations:

- **CEAC:** Anna Abruzzese (CEAC chair), Andrew Murray (CEAC vice chair), Jenna Grove (Clean Water Action), Meleah Houseknecht, Jon Duesman / Adam Arvidson (Minneapolis Park and Recreation Board)
- **PHAC:** Karen Soderberg, PHAC co-chair & Ward 7 rep; Joey Colianni, member at large; Dr. Craig Hedberg, University of Minnesota – School of Public Health; and Lee Setter, Manager - Minneapolis Public Schools Environmental Health & Safety

### Related Meetings by Joint Recycled Tire Committee:

- August 23, 2016: Presentation by Play It Safe Minnesota, a non-profit organization that is seeking a ban on recycled tires in playgrounds and fields. This group made a presentation to HECE in June which resulted in City Council direction for the joint committee study and request to develop a set of recommendations.
- September 8, 2016: Presentations by Minneapolis Public Schools (MPS) and Minneapolis Park and Recreation Board (MPRB). Key points of each presentation are summarized below.
- October 25, 2016: Presentations by William Toscano, PhD, Professor-Environmental Health Sciences, UMN-SPH; Matt Simcik, PhD, Associate Professor-Environmental Health Sciences, UMN-SPH; and Michael Peterson, MEM, Sr. Toxicologist-Gradient. Professor Toscano is a toxicologist who studies endocrine disruption; Professor Simcik is an environmental chemist who has advised several school districts on this issue; and, Mr. Peterson is an industry representative recommended by Tom Freeman of Faegre Baker Daniels.

To create an open process of sharing information, representatives of Minneapolis Public Schools, Minneapolis Park and Recreation Board, Play It Safe Minnesota, Faegre Baker Daniels law firm, and other interested guests were informed of and invited to the joint committee meetings. All meeting information including agendas, presentations, and meeting notes / minutes were posted on the Public Health Advisory Committee webpage.

### Minneapolis Context:

- MPS currently has 47 playground areas (of 66 total) with rubber mulch, 8 have engineered wood mulch, 10 playground areas (tot lots) use sand, one pour-in-place at new Dowling Adaptive playground, and one synthetic turf field with crumb rubber at Washburn High School.
  - Previous complaints about wood mulch concerned mold, safety, freezing, and drainage.
  - Rubber tire mulch used because at the time, it was promoted by the EPA and Consumer Product Safety Commission for safety, durability, and the product does not degrade.
  - MPS is temporarily on hold with the conversion of the last 8 engineered wood mulch playgrounds to engineered rubber mulch. This temporary hold allows time for government studies on the use of engineered rubber mulch and conclusive links to health hazards. They do have any immediate plans to add more artificial turf fields at this time.
  - MPS is performing routine maintenance on existing engineered rubber mulch playgrounds.
  - See Attachment C for more detailed information. (handout from September 8, 2016 meeting)
- MPRB uses artificial turf with crumb rubber infill in 8 locations. No crumb rubber or synthetic turf is used on playgrounds, rather MPRB playgrounds use pour-in-place combined with sand or engineered wood fiber.
  - Artificial turf with crumb rubber infill withstands the wear-and-tear of lengthy seasonal use and heavy demand.
  - MPRB has started allocating rehabilitation funds in its capital plan in 2019-2020 for older artificial turf fields.
  - See Attachment D for more detailed information. (handout from September 8, 2016 meeting)
- Both MPS and MPRB rely on the US Consumer Product Safety Commission's "Public Playground Safety Handbook" for guidance which identifies shredded/recycled rubber mulch as an "Appropriate Surfacing" product, given that this product can meet the impact attenuation requirements of ASTM F1292, as long as minimum depths of the material are maintained. They point out that "this notation is solely focused on the impact attenuation to minimize serious head injuries, and not on other aspects that may pose other risks, such as chemical exposure or ingestion."
- It is unknown how many playground areas and artificial fields are in the City from other sources such as places of worship, private schools, day care centers, etc.

## **Federal and State Activities:**

- **Federal:** On February 12, 2016 the U.S. Environmental Protection Agency (EPA), the Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry (ATSDR), and the U.S. Consumer Product Safety Commission (CPSC) launched a multi-agency action plan to study key environmental human health questions. By late 2016, the agencies will release a draft status report that describes the findings and conclusions of the research through that point in time. The report will also outline any additional research needs and next steps. The full report will be released at a later date.
  
- **State of Minnesota:**
  - 1) The Minnesota Department of Health (MDH) put out fact sheet on crumb rubber in April 2016. Their fact sheet references two major studies that are currently underway: the EPA study referenced above and a study by the California Office of Health Hazard Assessment which will run through 2018.
    - MDH is tracking these studies and will consider their results in any future recommendations regarding the use of crumb rubber in synthetic turf fields.
  
  - 2) Hennepin County and Bloomington-Richfield-Edina public health departments are currently not studying the public health effects of crumb rubber – tire mulch.
    - In April 2016, the Edina school board approved conversion of four grass fields to artificial turf and a fifth synthetic field is being replaced with new crumb rubber.
    - On May 12, the Edina Energy and Environment Commission voted to condemn the use of crumb rubber in Edina.
  
  - 3) In June 2016, the Duluth School Board voted to replace the rubber mulch on most district elementary school playgrounds with plan to have the mulch removed by the start of the 2017 school year.
  
  - 4) During the last legislative session, two bills were introduced but did not receive hearings: House File 3496 (HF3496) and Senate File 3108 (SF3108) required the posting of signs at fields and playgrounds containing crumb rubber; establishing a moratorium on construction of fields and playgrounds using crumb rubber by municipalities and requiring a report from the Minnesota Department of Health. HF3496 was referred to the Committee on Government Operations and Elections Policy; SF 3108 was referred to the Committee on Environment and Energy.

## **Recommendations:**

Date: October 29, 2008

To: Honorable Minneapolis City Council Member Scott Benson  
From: Public Health Advisory Committee (PHAC)  
RE: Recommendation on Use of Crumb Rubber Applications

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With the assistance of local environmental health and landscape architect professionals, PHAC members reviewed four applications of rubber products utilized within Minneapolis parks and playgrounds. It is important to note that these products do not have the same origin, same formulation (i.e. solid form, chipped, painted, etc.), nor exposure to hazards.

They include:

- Rubber chips
- Poured in place recycled crumb rubber
- Rubber molded tiles/rubber mats
- Crumb rubber/Field Turf product

Potential health and safety considerations to consider/explore specific to each product include:

- heat stress
- injury
- infection
- latex allergy
- chemical exposure (indoor vs. outdoor use)

After a series of discussions, PHAC members have developed three key recommendations regarding future use of these rubber products in Minneapolis:

- 1) PHAC recommends monitoring related research and studies as they become available.
- 2) PHAC recommends application of the **precautionary principle**<sup>1</sup> before utilizing additional rubber product in Minneapolis parks and playgrounds.
  - The precautionary principle is a tool for policy- and decision-making designed to ensure that people or entities bear political responsibility for taking action to prevent damage to health and ecosystems in the face of uncertain scientific information about health and ecosystem risks.
  - Application of the precautionary principle is especially appropriate for the protection of children's health because:
    - the science underlying the impacts of environmental stressors on children (from the stage of the fetus to the age of 18) is more complex, less researched and less understood than that of such impacts on adults;
    - the likelihood of serious harm to children from such impacts can be greater than for adults because of their different and changing stages of biological development, their behavior and their greater exposure in relation to body weight;
    - children are involuntarily exposed to a greater proportion of the risks caused by society's activities than adults, yet they have less power to avoid them;
    - the risks and the benefits of avoided risks have more time to impact on children and society than on adults;
- 3) PHAC recommends entities considering the use of rubber products in parks and playgrounds seek/investigate alternative products which may be safer for children (i.e. flexsand, corn husk, cork, etc.)

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<sup>1</sup> Dealing with uncertainty – how can the precautionary principle help protect the future of our children? World Health Organization Europe. Fourth Ministerial Conference on Environment and Health. Budapest, Hungary, June 2004.

Date: December 11, 2008

To: Honorable Minneapolis City Council Member Scott Benson

From: Citizen's Environmental Advisory Committee (CEAC)

RE: Recommendation on Use of Crumb Rubber Applications

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Based on the information provided in this memo, members of CEAC recommend:

- 1) The City Council support 2008 Kahn/Wagenius legislation studying the potential health risks of crumb rubber use as infill for turf and on playgrounds and urges such legislation include a comparative analysis of alternatives,
- 2) Before the City Council approves use of crumb rubber or other artificial turf applications, an applicant must demonstrate its environmental and health safety as compared to the alternatives,
- 3) The City Council consider developing an ordinance addressing appropriate applications citywide once the studies have been completed and the Public Health Advisory Committee has reviewed them, and
- 4) The City should evaluate existing applications of crumb rubber within the City, including children's exposure.

At your request, we reviewed concerns raised by state agencies, public health officials and environmental groups about potential adverse health and environmental effects that may result from the use of crumb rubber in synthetic turf, used on high school athletic fields, and as crumb rubber on playgrounds. We reviewed readily available literature and determined there is adequate support for concerns raised about health risks to children exposed to recycled tire crumb. However, much of the literature also concluded that there is insufficient data to establish if those concerns can be validated.

The concerns raised relate to use of a loose, crumbled product made from used tires and incorporated in synthetic turf as well as crumb rubber placed in playgrounds. Synthetic turf is made in layers of synthetic materials including green plastic blades that are attached to a backing and small particles called fill, often referred to as crumb rubber, that secure the blades. Children playing on tire crumb in play grounds under outdoor play structures as an alternative to sand or wood chips could potentially be exposed to toxic substances.

Health concerns are generally focused on crumb rubber because it is made from recycled tires containing chemicals that can cause cancer and other health problems if exposure occurs. There are three possible ways that children might be exposed: Accidentally ingesting small amounts of material from residue left on hands after playing on the fields,

breathing in dust and/or direct skin contact with the crumb rubber. Stormwater runoff is also a concern. As runoff from the now impervious surface is directed towards storm water systems, these chemicals could end up in surface water resources and cause adverse potential effects to aquatic wildlife.

Other issues of concern raised by the Sierra Club and others include additional health concerns: the need to water the synthetic turf because it gets so hot in the summer, enough to cause burns, water quality: potential environmental impacts of artificial turf located near rivers, lakes and aquifers from storm water systems or as ground water seepage and global warming: replacing living surfaces with non-living surfaces makes cities warmer than rural areas. Synthetic turf has been well documented to become significantly hotter than natural grass and even asphalt.

Thank you for taking the time to carefully consider the issues associated with the potential health and environmental effects related to the use of crumb rubber. Some available literature is informative about potential dangers and other literature suggested that the risk associated with the use of crumb rubber was very low; therefore, we believe the previously stated recommendations are appropriate.