

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 ^a	Leukemias ^a	
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

(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

Non-Hodgkin Lymphoma

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

Leukemia

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/

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