

## Q&A with a Toxicologist

### **Michael Peterson**

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#### **What is your scientific background?**

- *I'm a board certified toxicologist with nearly twenty years of experience in human health risk assessment and applied toxicology. This includes the development of chemical toxicity profiles, evaluation of the toxicity of novel chemical and commercial products, and assessing microbial and chemical contamination risks associated with various food safety best practices. I earned my Masters of Environmental Management degree at Duke University.*

#### **Have you studied this issue in the past? What did you find?**

- *Yes, I worked with a local health district in Washington state. A group of local parents expressed concern over the safety of artificial turf being installed nearby, which we addressed by conducting a critical review of the peer-reviewed and regulatory literature.*
- *Our study did not find reason for concern related to the exposure of chemicals on these fields. Although some individual studies identified trace levels of chemicals in synthetic turf, the mere presence of a chemical within a product does not mean there is an inherent risk associated with it.*

#### **What are people getting wrong about the science here?**

- *Many of the stories are neglecting to provide information on a very important risk assessment consideration: exposure. Even if a product contains a possibly harmful chemical, if there is no exposure, then there is no risk. Many common everyday products contain chemicals that could be harmful at high exposures (e.g., your iPhone, your computer monitor, even your carpet), but since exposures are low they are considered safe.*
- *In addition, any information on possible chemicals in synthetic turf should be compared with exposures from natural turf. All products, even grass fields, contain chemicals that are potentially toxic, so a proper understanding of exposure is essential.*

#### **How would you explain the list of goalkeepers with cancer that Coach Griffin has compiled?**

- *Obviously, cancer is a very serious illness, and parents have a right to be concerned. However, in regards to this list, the first thing to note is that it has not been subjected to any kind of scientific study, and there has been no epidemiology evaluation of its contents. In fact, the list is not even publicly available.*

- *Reports from some regulators who have seen the list, however, indicate the list includes a fair amount of leukemia and lymphoma cases, each among the most common forms of cancer among young people. Thus, at first glance, the contents of this list are not necessarily unusual. Regardless, until a scientific analysis of the list has determined that the cancer occurrences are abnormal, it should not be considered evidence that synthetic turf is unsafe.*

**What about the people who say that this constitutes a “cluster” of cancer cases?**

- *A cluster analysis is a specific type of epidemiology study, and has not been performed on Coach Griffin's list. In general, when proposed "clusters" are subjected to scientific analysis, they rarely turn out to be true clusters.*

**How would you explain the lack of any comparative “clusters” being identified among football players, who also play on turf? Given the nature of the game, wouldn't they be even more likely to be exposed to crumb rubber?**

- *Given the nature of the game, it would be logical for football players to also have cancer 'clusters' if they existed among soccer players. To my knowledge, no cluster has been found in football players. This is consistent with the finding that exposures to chemicals in synthetic turf are low, and below levels that would raise health concerns.*

**What about the studies that people are mentioning that show turf is not safe?**

- *In the scientific community there is a process called peer-review, which means independent scientists look at the study and ensure that it has been conducted appropriately and the results have been interpreted correctly. As far as I know, in the scientific peer reviewed literature, there are no studies that show synthetic turf is unsafe.*

**What about the Yale study people have read about?**

- *As a toxicologist with nearly two decades of experience in human health risk assessment, I do not believe that the EHHI study, or Yale study, as it is called, provides any scientific evidence that synthetic turf infill poses a risk to children or adults using these surfaces.*
- *The EHHI study looked at tire crumb rubber and tried to determine what chemicals could be extracted by using a chemical commonly found in paint strippers. That is not a realistic way to evaluate exposure based on real-world scenarios.*
- *In addition, the study was never peer-reviewed and there is not a published manuscript of this study. Given that, it is hard to evaluate how relevant the EHHI study is for evaluating health risks.*

**Have current studies looked at ingestion? What about this idea of rubber pellets getting into cuts or abrasions?**

- *A number of current studies, including regulatory risk assessments and peer-reviewed studies, have looked at the potential for ingestion of tire crumb rubber particles.*
- *One peer-reviewed study conducted an extraction analysis using a variety of simulated biological fluids to see what happens when we ingest, or inhale, or generally come in contact with these particles, and whether we absorb any chemicals. This particular study found negligible extraction for the chemicals and the scientists concluded that these chemicals did not present a health risk.*
- *Based on the extraction studies, pellets getting into cuts or abrasions would also be unlikely to present any health risk.*

**One current criticism of the existing body of science is that there are ‘gaps in the research’. Can you address that?**

- *I believe this criticism comes from a limited reading of the existing literature. When evaluated individually, some studies may have limitations or data-gaps (this is true of any individual scientific study in general), and from a scientific perspective, additional research can always be conducted to provide additional evidence. However, existing studies have evaluated many different aspects of safety; they have looked a multitude of chemicals, at all the major exposure pathways (ingestion, inhalation, and skin contact), and have used a variety of methods. When the totality of the evidence is considered, when all of the synthetic turf studies are looked at together, the data gives does not give us reason to believe there are health concerns associated with these products.*

**What about the crumb rubber used in some playgrounds?**

- *From what I understand, the crumb rubber used in playgrounds is exactly the same type of crumb rubber found in synthetic turf fields, and given that, the same conclusion would apply – that there is not a concern for health effects from those products.*

**What do you think has been missing from the recent media reports on the issue? What should parents do?**

- *Parents are worried, and that is certainly understandable. Current media reports have mostly focused on two unpublished data points (Coach Griffin's list and the Yale study) at the expense of the dozens of peer-reviewed and regulatory reports that have found that chemical exposures from synthetic turf present a very low risk. Instead of focusing on these speculative reports, it would be best if the media devoted more time to the actual science.*
- *Parents should assess the facts, which in this case are clear: based on the best available science, exposure to chemicals in recycled rubber are below levels that would present a concern for health effects.*

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**Michael Peterson serves as Scientific Advisor to the Recycled Rubber Safety Council. For more information, visit: [www.recycledrubbercouncil.org](http://www.recycledrubbercouncil.org)**