

Tire-Derived Product Business Assistance--Artificial Turf Study Literature Review Summary

The following is a summary of the report prepared by the California [Office of Environmental Health Hazard Assessment \(OEHHA\)](#) entitled "Chemicals and Particulates in the Air Above the New Generation of Artificial Turf Playing Fields, and Artificial Turf as a Risk Factor for Infection by Methicillin-Resistant Staphylococcus Aureus (MRSA). Literature Review and Data Gap Analysis." [See full report here](#) (MS Word, 88 KB). The following summary was prepared by California Integrated Waste Management Board (CIWMB) staff.

Report Summary

OEHHA searched the available literature related to the safety of new generation artificial turf fields (those which contain crumb rubber infill used as artificial "soil") in two main categories.

1. Whether these fields emit levels of chemicals or particulates into the air that cause illness when inhaled.
2. Whether these fields infect athletes with the dangerous bacterium called methicillin-resistant Staphylococcus aureus (MRSA).

OEHHA found that prior to 2009, a study by Dye et al. (2006), which studied indoor fields, contained the most complete and reliable data set. In 2009, two studies were completed in New York which provided additional data from outdoor fields.

Based on the data from the New York Studies OEHHA found that, "Both reports concluded that these fields did not constitute as serious public health concern, since cancer or non-cancer health effects were unlikely to result from these low-level exposures". It was also noted that, of the 65-85 chemicals detected above the fields in New York (depending on the study), "many of these occurred at similar concentrations in the air sampled upwind of the fields." This suggests that the source of these chemicals was not from the turf fields.

Lifetime cancer risks of one cancer in a population of one million are considered a negligible risk level. Many common human activities result in cancer risks that are higher than one in one million; for example, OEHHA states on their website that the cancer risk of breathing California air (in 2000) due to diesel particles was 540 in one million.

Using the data collected from the Dye et al. study, OEHHA created a test scenario to determine the exposure and health risks of an athlete playing on an artificial turf field from age 5 until age 55 for nearly 100 chemicals. The results of this test showed an exposure to five chemicals with a lifetime cancer risk above one in one million. The highest risk was nine in one million, and as OEHHA explains "these estimated risks are low compared to many common human activities" and "they are higher than the negligible risk level of one cancer in a population of one million people." OEHHA also determined that "using indoor data (such as the data in the Dye et al. study) to calculate health risks from outdoor play overestimates the outdoor risks."

Methicillin-resistant Staphylococcus aureus (MRSA) is a bacterial infection that is highly resistant to some antibiotics. "It is not known if the new generation of artificial turf causes more MRSA infections than natural turf. However, one study of high school football players demonstrated more 'surface/epidermal injuries' for games played on the new generation of artificial turf compared to natural turf." OEHHA goes on to state that "It seems unlikely that the new generation of artificial turf is itself a source of MRSA, since MRSA has not been detected in any artificial turf field."

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[Back to Artificial Turf Study](#)
