

Sierra Club California fight against the Golden Gate Park synturf fields is detailed here:

Background on The Sierra Club et al. v. City and County of San Francisco et al.

<http://www.sierraclub.org/san-francisco-bay/beachchaletappealbackground>

- The California Environmental Quality Act (CEQA) was created to ensure that decision-makers are presented with all the information they need in order to minimize environmental harm from projects to the maximum extent feasible. It was also created to ensure that the public is given the opportunity in court to challenge documents that fail to provide full information and decisions that ignore facts in order to approve environmentally harmful projects.
- Examples of the toxic chemicals that may be released from this artificial turf include: acetone, aniline, arsenic, barium, benzene, benzothiazole, carbon black, cadmium, chloroethane, chromium, cobalt, copper, halogenated flame retardants, isoprene, latex, lead, manganese, mercury, methyl ethyl ketone, methyl isobutyl ketone, naphthalene, nickel, phenol, pigments, polycyclic aromatic hydrocarbons, styrene-butadiene, toluene, and trichloroethylene.
- Recently, the U.S. Environmental Protection Agency (EPA) retracted an earlier position that this artificial turf material was safe. The sole study on artificial turf that EPA conducted was back in 2009 when it took air and surface samples from three athletic fields and from one playground. The testing looked only at one chemical on brand new fields without levels of activity typical on a field or playground and ignored the role of heat in chemical release. The EPA now states that the study was "very limited" and provides no basis for assuming that its use at other sites will be safe. (PEER, Public Employees for Environmental Responsibility, <http://www.peer.org/news/news-releases/2013/12/23/epa-retracts-synthetic-turf-safety-assurances/>)

Quotations from the Sierra Club's brief relating to the dangers of artificial turf, including quotations from a number of key publications:

- The EIR relies on a study conducted by the California Environmental Protection Agency Office of Environmental Health Hazard Assessment (OEHHA) in 2009. That study concludes that artificial turf fields with SBR crumb rubber infill create a cancer risk of approximately 18.8 per million — 18 times above the CEQA significance threshold. The OEHHA Study concludes:
"Estimated inhalation exposures of soccer players to five of these (benzene, formaldehyde, naphthalene, nitromethane and styrene) gave theoretical increased lifetime cancer risks that exceeded the insignificant risk level of 10⁻⁶ (OEHHA, 2006)." (p.33)

California Office of Environmental Health Hazard Assessment (OEHHA) (2009):

Chemical Increased Cancer Risk

Benzene 2.8/million

Formaldehyde 1.6/million

Naphthalene 3.8/million

Nitromethane 8.7/million

Styrene 1.9/million

CUMULATIVE 18.8/million

- A peer-reviewed study published in 2011 concludes that soccer pitches with SBR infill create a significant cancer risk above 1 per million due to dioxin-like chemicals. (Menichini, et al., Sci Total Environ. 2011 Nov 1;409(23):4950-7. Epub 2011 Sep 9.) The article concludes:

“The artificial-turf granulates made from recycled rubber waste are of health concern due to the possible exposure of users to dangerous substances present in the rubber, and especially to PARs [petroleum hydrocarbons]. In this work, we determined the contents of PARs, metals, nondioxin-like PCBs (NDL- PCBs), PCDDs and PCDFs in granulates, and PAR concentrations in air during the use of the field... an excess lifetime cancer risk of 1×10^{-6} was calculated for an intense 30-year activity.”

- The EIR fails to analyze health risks from dioxin-like compounds at all.
- The City refused to consider the most recent peer-reviewed scientific journal article on SBR, published in the highly respected journal *Chemosphere*, entitled “Hazardous Organic Chemicals in Rubber Recycled Tire Playgrounds and Pavers” (Llompart, M., et. al.) that became available on August 22, 2012. The study investigated the presence of hazardous organic chemicals in surfaces containing recycled rubber tires. The study was initiated because of a concern that the application of used tires in recycled products such as rubber mulch used for sport fields and playground surfaces places children at risk. The study revealed that the used tires on sport fields and playground surfaces contain a large number of hazardous substances including polycyclic aromatic hydrocarbons (PAHs), phthalates, antioxidants, benzothiazole and derivatives, among other chemicals. Many of these hazardous substances were at high or extremely high levels. In addition, vapor studies revealed that many of the organic compounds are volatile even at room temperature. The study concludes that because of the “presence of a high number of harmful compounds, frequently at high or extremely high levels, in these recycled rubber materials...they should be carefully controlled, and their final use should be restricted or even prohibited in some cases.”

- Dr. Phillip Landrigan, MD, epidemiologist and Director of the Mount Sinai School of Medicine Children's Environmental Health Center in New York, submitted a letter to the City Planning Department on May 8, 2012, stating:

“The major chemical components of crumb rubber are styrene and butadiene, the principal ingredients of the synthetic rubber used for tires in the United States. Styrene is neurotoxic. Butadiene is a proven human carcinogen. It has been shown to cause leukemia and lymphoma. The crumb rubber pellets that go into synthetic turf fields also contain lead, cadmium and other metals. Some of these metals are included in tires during manufacture, and others picked up by tires as they roll down the nation's streets and highways. There is a potential for all of these toxins to be inhaled, absorbed through the skin and even swallowed by children who play on synthetic turf fields. Only a few studies have been done to evaluate this type of exposure risk, the most notable by EPA in 2009, NY State DEC in 2009, and CT DEP in 2012.”

- Matthew Hagemann, C.Hg., former director of US EPA's West Coast Superfund program, concludes that the Project will have significant cancer and non-cancer health risks. Mr. Hagemann states:

“Toxins from tire crumb can enter the body through inhalation of particulates, fibers, and volatile organic compounds (VOCs). VOCs can cause organ damage, irritation of eyes, throat, and airways, and nervous system impairments. Synthetic turf can be heated to high temperatures when exposed to sunlight which, in turn, can lead to further release of VOCs.”

The DEIR includes references to synthetic turf studies that have shown risks to human health from inhalation of VOCs to exceed a commonly accepted threshold of one additional cancer incidence in a population of a million people (“one in a million or 10^{-6} ”). Although this is disclosed in the DEIR, the DEIR fails to identify this as a significant impact and fails to mitigate the risk.

One study cited in the DEIR, a 2009 study prepared by the California Office of Environmental Health Hazard Assessment (OEHHA), concludes that soccer players with inhalation exposure to vapors from a theoretical scenario of playing for 51 years on synthetic turf would have increased “lifetime

cancer risks that exceeded the insignificant risk level of 10⁻⁶” from breathing benzene, formaldehyde, naphthalene, nitromethane and styrene, chemicals associated with VOC vapors from synthetic turf. The OEHHA finding of significant health risks was corroborated by a 2011 Italian study in which showed risk to be in excess of 10⁻⁶ from particle-bound polycyclic aromatic hydrocarbons. Another 2011 study found that benzothiazole, a chemical that causes respiratory irritation and dermal sensitization, volatilizes from crumb rubber resulting in inhalation exposure. The latter two studies are not mentioned in the DEIR.

The individual risks from benzene, formaldehyde, naphthalene, nitromethane and styrene each exceed the one in a million threshold. When summed, the cancer risk from chemicals identified in the OEHHA study equals 1.9 in 100,000 which exceeds a 10⁻⁵ level (or one in a hundred thousand) risk level (19 in a million).”

<http://kron4.com/2015/10/01/appeals-court-upholds-environmental-study-of-artificial-turf-at-golden-gate-park-soccer-fields/> (see attached for full text)