



May 19, 2018

Dear Lafayette City Council:

I am writing this letter to provide important information about the proposed sport field and play area for children at the Deer Hill project. I write, *pro bono*, as someone with a lifetime of experience in studies of environmental health, specifically on the [public health impacts](#) of fossil fuels. I was a Lead Author of chapters of the Intergovernmental Panel on Climate Change—the group awarded the Nobel Peace Prize with Al Gore in 2007, and have continued to advise governments in China, Mexico, and the U.S. on ways to identify and reduce environmental health hazards. I am currently a Visiting Professor of Medicine at The Hebrew University Jerusalem, and a Visiting Professor at Szechuan University in Chengdu.

I consider it highly inadvisable for children's activities to be placed close to busy roadways and their unavoidable exposures to gaseous and particulate toxic air pollutants.

Children's immune systems are immature. Their skulls are thinner; their brains contain more fluid; their lungs take in more air per minute; their hearts beat faster. As a consequence, they can take in more pollution per minute than an adult and because they are developing so rapidly they absorb proportionally more pollution. Exposures that take place when they are young increase the chances of developing disease when they are older and increase their chances of premature death. Thus, the [Centers for Disease Control and Prevention](#) provides specific guidance regarding restricting children's outdoor play when levels of particulates and ozone are elevated, as is likely to occur in the proposed playfield. Proximity to high traffic areas has been demonstrated in human epidemiologic studies to be associated with a host of serious health problems, including asthma, chronic respiratory disease, and lung cancer in non-smokers.

Toxic exposures that take place to the young brain can have permanent effects on intelligence, behavior, and chronic illness. About 90% of particulate matter less than 2.5 microns (PM 2.5) consists of ultra fine particles that have not been well characterized for their relative proportion of toxic metals and black carbon. Breathing in ultra fine particles effectively takes things from the air perfuses them through the lung, so that they enter the bloodstream. Ultra fine particles are a risk both because of the physical aspect of the particle and because the surface of the particle attracts to it other toxic agents including heavy metal, black carbon, cadmium, vanadium, and other carbonaceous materials.

These risks are recognized by responsible agencies in California although the regulatory response for ultra fine particles is still evolving. Refer, e.g., to the South Coast Air Quality Management District, Ch. 9 Near Roadway Exposure and Ultrafine Particles at 9-18: "Short- and long-term exposure to particles produced from combustion processes have been associated with numerous adverse health effects in humans including various cardiovascular and respiratory diseases. It has been hypothesized that the ultrafine portion of atmospheric PM may be responsible for the majority of the observed health effects. Thus, recent research studies have specifically focused on UFPs and their ability to be absorbed deeply into the lungs, move across cell membranes, and translocate into the bloodstream and other parts of the body (citations to medical studies omitted)".

I have reviewed the April 2018 Deer Hill Park and Sports Field assessment prepared by Placeworks. The following issues with the methodology are apparent:

- Ultra fine particulate matter that contains toxic heavy metals that are especially hazardous to young developing brains and bodies was not considered;
- No onsite monitoring data was utilized, either as a basis for the report or as a check on the proposed result
- Available PM 2.5 data from comparable sites monitored by air districts in the Bay Area or southern California was likewise not consulted
- The reported conclusion of increased PM 2.5 of 0.44 micrograms/M3 is extremely low and does not appear reliable for a location with vehicle traffic reportedly of 12,000, 36,000, and 185,000 per day on the north, east, and south- this figure should have been verified and compared with on site or available offsite PM 2.5 monitoring data.
- The study does not include a focus on exposure of children to particulate matter and other vehicle generated contaminants during peak periods such as after-school weekdays use when commuter traffic on the nearby corridors is at a peak
- The averaging methods applied understate the risk considerably. Thus, an annual average for the site was calculated that appears to include weekends and intraday periods when traffic is low necessarily resulting in a lowered result
- Further, there is no analysis for asthma or diminished lung capacity. In particular, to the extent the report assumes that high intensity children's activities for 2 hours per day is safe in this environment, no medical or regulatory authority is cited; to the contrary, available international and U.S. medical studies contradict this conclusion.

In 2005, concerned about siting policies for schools, the California Air Research Board (CARB) issued advice to avoid siting schools and playgrounds near to roadways such as those that will exist in this project. CARB wrote the "Land Use Handbook" with recommendations for siting and building new developments to be protective of public health, including siting schools, day care centers, playgrounds, and housing 500 feet or more from freeways, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day. More recently they have updated that with a [Technical Advisory](#) (for references) that advises against siting playing fields in areas of high traffic:

"The primary public health concern regarding roadways near existing and future developments is the possibility that at-risk populations/communities—like children, pregnant women, the elderly,

and those with serious health problems affected by air pollution—will be exposed to traffic emissions. In California, there are several instances of schools and other sensitive locations such as daycare facilities located near major roadways, particularly in non-white and economically disadvantaged neighborhoods [6, 7]. Studies show that these populations can experience serious health impacts, including worsening of asthma and cardiovascular disease and adverse birth outcomes because of exposure to traffic-related air pollution.”

We devote millions of dollars to protecting children with airbags and seatbelts and bike helmets and ski helmets. It makes no sense to expose them to levels of air pollution that are demonstrated to increase the probability they will develop asthma and other diseases.

It is unfortunate that the discussion has been framed as one of debating or awaiting proof of harm to our children, before taking steps to prevent exposing them to conditions that have been established in extensive studies to place them at risk. The idea that you would put a field for children to play in an area where the adjacent residences are required to have filters for the air inside the house, and warnings to residents of exposure to particulate matter if the windows are opened, is one of the most unwise and imprudent instances of urban planning I have ever encountered.

A handwritten signature in black ink that reads "Devra Davis". The signature is written in a cursive, flowing style.

Devra Davis, PhD MPH
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