Brake Pad Dust Particulates on the Fertility and Vitality Rates of Drosophila melanogaster

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In just one hour, more than 600,000 g are released into the Puget Sound area of Washington State; this is caused by a multitude of vehicles braking tens of thousands of times an hour, releasing minute amounts of brake dust into the environment. Brake pad dust has been shown to cause multiple health issues such as developmental toxicity, organ damage, neurotoxicity, and various forms of cancer. Drosophila melanogaster (fruit flies) were exposed to a calculated amount of brake pad particulates which should impede vitality and development. In initial trials, flies were exposed to 0.0195 grams of brake dust. The flies were expected to be monitored for multiple generations, however after 48 hours there was 100% mortality with no new larva. The brake pad dust amount was then decreased by one hundred percent, to 0.000195 grams of brake dust. The flies were monitored again with an average of 16 flies deceased per day. After one week, there was 100% mortality with no new larva. No mortality was found in the controlled group and new larva was produced. The flies from the experimental groups were collected and sorted into ten separate vials and washed with a soap solution on a shaker table for one hour. The flies were then sectioned and mixed with 10 ml of distilled water with the contents tested using ICP-OES. The results of the ICP-OES are pending, however the fertility and mortality rates of the experimental groups revealed a negative impact of brake dust on the environment.

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