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Article Name: Unhealthy Air

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The impact of ozone pollution on lung tissue is greater than many athletes realise.

The one hour average is the level athletes should be concerned with. This is the actual level of ozone you are exposed to during a ride. At levels above 100 ppb ozone significantly damages the bronchioles by lipid peroxidation, and damages red blood cells by the formation of hydrogen peroxide in the blood.

At the time of writing, the level of ozone ranges from 119-137 ppb in the Washington, D.C. metro area. During training and competition, respiration rate increases at least threefold. Total ventilatory increase is even greater due to deeper breathing. The ozone is taken more deeply into the lungs than is typical for the non-athlete. Clinical studies have demonstrated that even a recreational athlete exercising in polluted areas experiences a threefold greater exposure to pollutants than a sedentary person per time unit of exposure.

The athletic performance damage done by excessive ozone exposure lasts for several days to two weeks. The epithelial tissue of the lungs is damaged somewhat akin to a sunburn and goes through a process of inflammation and sloughing off of dead cells. The damage to the immune system done by nitric oxide exposure also lasts for days. Chronic ozone exposure is linked to the development of asthma and chronic bronchitis in otherwise healthy non-smoking adults.

The recommendation is that athletes avoid exposing themselves to prolonged training or competition at ozone levels above 79 ppb one hour avg. Levels above 120 ppb mean no outdoor athletic exertion, period. The question is not if your lungs will be damaged, even if only temporarily; rather, how much will they be damaged and is the damage becoming chronic.

If you use weather.com to plan your rides to avoid rain, it is even more imperative to do the same planning in regard to ozone exposure. Usually ozone is low in the morning, generally in a tolerable range up until between 11:00 AM and 1:00 PM and tends to stay above tolerable until 7:00 PM or later.

The alveoli of the lungs are like brain cells: once damaged or destroyed, they are not replaced in this lifetime. You may only use 10 percent of your available brain cells, but you use 100 percent of your available alveoli.



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