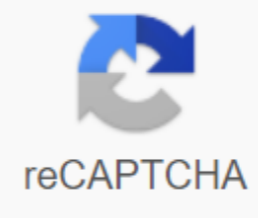




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Five times a week for the past 5 years, I have been unwittingly but systematically poisoning myself. Every lunchtime I run through a wooded area in a green park in my hometown of Portland, Oregon. But there's a catch for my moderate, seemingly innocuous routine: To get to the park, I must first jooce nearly a mile along the busy Fremont Avenue highway. Until recently, the screeching of city buses and the smells of diesel trucks always felt like a small price to pay for the pleasures waiting on the trail. Here's what I didn't know: With every deep draught of oxygen, along with fresh air, I swallow down alarming amounts of pollution: ozone, carbon monoxide, microscopic particulate matter, sulfur dioxide, nitrogen dioxide, lead, and witch-boiling other pollutants. By spending part of my workout at noon on an overloaded street, I reduce my lung function by squeezing my airways, squeezing chest pain, increasing my chances of developing asthma, unleashing free radicals for catalysis carcinogens in the blood, and activating cellular processes that can lead to a heart attack. When I see people running or cycling on a busy street in the middle of the day, I want to tackle them and yell at them to stop, said Rachel Langford, coordinator of the Clean Air Project for the American Lung Association in Oregon. At some intersections, we have to place 'No Exercise Allowed' signs. Inhaling ozone can be hard to imagine that vigorous outdoor exercise - usually trumpeted as an all-purpose antidote to disease and brake to mortality - can actually help polluted air hurt you. But the explanation is simple: when you're working, cycling, playing tennis, or shooting hoops, you breathe in more of it. Much more. A sedentary person inhales about 15,000 litres of air a day, or 6 to 10 litres per minute. During heavy aerobic exercise, however, you draw in 60 to 150 liters per minute, providing oxygen for 600 to 900 square feet of surface area in your lungs. That means the simulator breathes 10 to 15 times more pollution than a sedentary person, and it sucks it deeper into the lungs, said Rob McConnell, M.D., a researcher in the Department of Preventive Medicine at the University of Southern California Medical School. In fact, just by walking out the door, you could be exposed to five times the ozone you would inhale if you stayed inside. So if you are outdoors and exercising . . . Well, do the math. The numbers are getting more harrowing because you breathe primarily through your mouth during exercise. At the same time that I'm pulling huge clouds of bad air deep into my lungs during my midday run, I'm also bypassing my body's amazingly efficient system Air: nasal passages. The mucus traps particles, and then the tiny, swinging, hairy structures called the cilia push the old old up and out of the body.) Triple whammy breathing fast, deep, and through my mouth makes my daily run - and perhaps your regular workout - ozone/particle/carbon monoxide. After all, our bodies protect themselves from air pollution by breathing less. The air passages tighten and the breath becomes toil. Our exercising bodies are trapped in an intractable dilemma: By working furiously to process more air to feed oxygen to hungry muscles, they simultaneously seek to protect us from this air. Our pulmonary and cardiovascular systems strain like air conditioners in prolonged heat and eventually, inevitably, break down. Early symptoms often include wheezing, cough, prickly throat, headache, chest pain, and watery eyes. Other, long-term effects are much more severe. Gasping for polluted air in Scotland, for example, researchers studied 30 healthy men cycling on exercise bikes when exposed to diluted diesel exhaust. After 1 hour of exposure to fumes, cyclists developed narrowed blood vessels and showed a decrease in tPA, an enzyme that breaks down blood clots in the heart. In another study, 17 competitive cyclists were exposed to different levels of ozone during exercise; their endurance decreased by about 30 per cent and their lung function by 22 per cent. Studies in Finland show an even clearer link between dirty air and heart attack risk. Every two weeks, over a six-month period, the researchers observed 45 volunteers as they exercised in simulated conditions of dirty air. The results linked the pollution of small particles (effluvia emitted from the chimneys) and contamination of ultra-thin particles (invisible emissions from vehicles) with a three-fold increase in the risk of ischemia, a potentially fatal lack of oxygen reaching the heart muscle. Perhaps most troubling is how airborne toxins can harm us without causing symptoms. In southern California, for example, researchers surveyed 107 fatal accident victims between the ages of 14 and 25. Before their deaths, no one had reported breathing problems. However, an autopsy found that 86 deaths - 80 percent - had chronic lung disease. Message to cardio devotees: Light breathing can give a false sense of security. Healthy, active people tend to underestimate the harmful effects of polluted air because they don't wheeze and don't experience chest pains, said Henry Gong Jr., M.D., an air pollution researcher at the University of Southern California School of Medicine. Feeling invulnerable, they continue to play sports, putting themselves at greater risk. Big Six cause Spike I would like to know the type and amount of contaminants I have inhaled, and thus get a rough idea of what my lungs may look like after years of unintentional abuse. My research took me away from academic experts like Dr. McConnell McConnell in the American Lung Association, and finally in a state of DHS air monitoring station in my area in Portland. The station is overseen by Holly Stewart, a biologist and air quality specialist. An energetic woman in her mid-40s who used to fight wildfires, Stewart takes me around the station, which lies less than a mile from the street where I run. It shows me pumps and filters and computer monitors packed inside a 12-by-12-foot shed. She then leads me up the stairs to the flat roof, where there are more measuring devices. It's an abnormally sunny fall day in western Oregon, with a cool breeze washing over a playground adjacent to the station, and steady traffic noise rising from the I-5 Highway about half a mile west. Things look pretty good today, Stewart says, checking out nephelometer, a device that measures ozone levels. And with this wind picking up from the east, we should stay within the AQI Air quality index limits for the next few days. Today's favorable air pollution rates are typical of Portland, which made headlines in 2004 when results showed that the city's ozone levels had declined over the past decade despite sharp population growth, traffic and economic growth. But over the same period, there has also been an increase in Oregon's asthma incidence. The surge in asthma is particularly pronounced among young people who, with their high level of physical activity, mimic the characteristics of healthy adult athletes. The explanation may lie in two advanced areas of study: the study of pollutants other than the big six (ozone, carbon monoxide, nitrogen dioxide, sulphur dioxide, particulate matter and lead) and the analysis of the microclimate of air pollution, i.e. localized areas where air is much dirtier than in regions as a whole. Among the first particularly alarming are diesel particles - black waste, produced mainly from trucks, buses, locomotives and other large transport waste. No more smog Jogs Despite the darkening diesel cloud, peaks of asthma rates, and the spread of terrible research, all the experts assure me that, in general, I am doing myself more good than harm from my daily perspective. At all costs, keep running, says Dr. Gong, but for God's sake, stop running down this busy street. If you run just a block away, your risk will be much lower. Dr Gong also suggests exercise at the beginning of the day when diesel particles, ozone and other air pollutants are at their lowest level, or after dark, when traffic weakens. Ozone is formed when sunlight reacts with automotive and industrial emissions, so it accumulates to significant levels by about 11 a.m. and reaches a peak at 3 o'clock in the afternoon (after sunset, ozone can no longer form, so the concentration decreases.) At the same time, the time levels are much higher during the sunny months. Some experts, especially in notoriously smoky cities such as Los Angeles and Houston, recommend adapting training cycles to the season. Other common-sense mitigation tactics include standing in front of a traffic line at stop lights and busy intersections, and skipping outdoor workouts if AQI exceeds 70. (Go to airnow.gov and click on Local Forecasts and Conditions.) Consumption of fruits and vegetables high in vitamin C, such as peaches and red peppers, stimulates the production of glutathione, a liver enzyme that helps prevent free radical damage to the lungs. And just a few places down is the antioxidant alphabet of vitamin E, which can also help repel radicals. The most effective and logical response to air pollution, of course, is to drive less, consume less, and thereby reduce what you are, directly or indirectly, pumping into your city's atmosphere. No one is greener in this regard than cycling passengers - and no one, ironically, breathes more exhaust traffic. I know about superpoleers when I'm riding, said Scott Bricker, policy director at the Oregon Bike Transportation Alliance, an advocacy group. When I go for one, I go to this thin, shallow style of nose breathing. It makes me go through the worst of it. At least I would like to believe that does. Back at the Portland air quality station, the wind shifts and the freeway noise gets louder. Stewart discovers the top of the PM10 particle sample, a device that measures diesel particles, and extracts a filter clogged with black soot. She explains that this dirt has accumulated in just 48 hours. I remember all the miles I walked along Fremont Avenue. Actually, it doesn't look that bad, Stewart says. She points to my black jacket. Some cold days when people have their fireplaces going, or during temperature inversions in the summer, it appears darker than your jacket. It replaces the filter, its expression thoughtful. Also, when you talk about air pollution and exercise, it's often something that you can't see that gets you. This content is created and supported by a third party and is imported to this page to help users provide their email addresses. 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