

JAMES LOVELOCK & GAIA

Gaia was the Greek goddess of earth and mother of all life. James Lovelock, who was the creator of the Gaia Hypothesis, an inventor of sophisticated pollution detection instruments, and a renowned atmospheric/climate scientist, recently passed away at 103 yrs old. He was the first scientist to detect CFCs in the atmosphere and confirm their ozone-depleting properties, and he was warning the scientific community about fossil fuels and global warming long before most scientists got on board. But he is most renowned for development of his Gaia Hypothesis, the concept that all life on earth interacts, much like a single organism, to alter physical/chemical environmental conditions so that life is optimized. At the time, natural science was entering the early stages of ecosystem understanding and the Gaia Hypothesis was too theoretical for general acceptance. But now, his hypothesis is the basis of a new "Earth-System" scientific movement that acknowledges the existence of self-regulation by earth's life forms. Lovelock's more recent predictions were of dire consequences to humanity due to uncontrolled climate change.

Sources: The Guardian: 7/27/22; Nature Magazine: 8/8/22

TIRE DUST

As tires wear, they release a wide variety of particles including rubber, filler materials, and softener chemicals. Once produced, tire dust is transported long distances by wind and water to all environmental compartments. Average tire wear is estimated to be about 4 kg (8.8 pounds) of dust over a tire's life span, leading to a total global pollution load of 6 million tons/year. This huge amount of tire dust is thought to be the second largest source of very small (micro and nano) man-made particles to the oceans, following plastic waste. The portion of tire dust that is extremely small (nano- particles) is easily inhaled and small enough to cross lung membranes and enter the bloodstream. Some of the hundreds of chemicals used in tire manufacturing are toxic or carcinogenic, and tire dust has become a significant component of air pollution, especially in cities. An example of tire dust toxicity was recently discovered in Puget Sound where coho salmon were dying during spawning runs. Researchers spent years trying to determine the cause, which turned out to be a chemical in tire dust (6PPD) which is added to tires to prevent oxidation.

Sources: The Guardian: 6/3/22; 7/25/22