

E-cigarettes Impact on the Environment (Last Update 3/3/25)

- Every year the tobacco industry costs the world more than 8 million human lives, 600 million trees, 200 000 hectares of land, 22 billion tons of water and 84 million tons of CO₂. (WHO)
- The WHO report "[Tobacco: Poisoning our planet](#)" highlights that the industry's carbon footprint from production, processing and transporting tobacco is equivalent to one-fifth of the CO₂ produced by the commercial airline industry each year, further contributing to global warming.
- Tobacco products are the most littered item on the planet, containing over 7000 toxic chemicals, which leech into our environment when discarded (refers to cigarette butts). (WHO)
- E-cigarettes estimated to be \$48.9 billion industry by 2025
- E-cigarettes are becoming part of ballooning hazardous e-waste stream
 - 53.2 metric tons of e-waste worldwide in 2019, rising rapidly
- E-cigarettes are consumed and discarded much more quickly than other electronics
- Despite hazards to environment, tobacco companies are promoting e-cigarettes as "healthy", a marketing strategy known as *greenwashing*
- Research is underway to try to better understand the following
 - The "life cycle" of e-cigarettes
 - The 3 types of waste from e-cigarettes
 - Biohazard
 - Plastic
 - Electronic
 - Production
 - halogenated non-recyclable waste from nicotine extraction
 - large amount of water used in extraction
 - greenhouse gas emissions from production
 - Use
 - air pollution from the vapors: aldehydes, carbon monoxide, fine particles, VOCs (toluene, benzene), heavy metals, nicotine
 - passive (second-hand smoke) inhalation
 - Disposal
 - Environmental burden of spent capsules and pods
 - Not biodegradable
 - No legal way to recycle in the USA
 - the plastic pods have contained nicotine and nicotine is designated as an acute hazardous waste by the EPA
 - Battery waste and circuit board waste
 - Unlike cellphones that can be collected and disposed of properly, e-cigarettes degrade and progressively leach compounds into the environment
 - Mercury, lead
 - E-liquid container waste-high concentration of nicotine and aldehydes
 - Potential bioaccumulation in animals and humans

1. Ngambo G, Hanna EG, Gannon J, Marcus H, Lomazzi M, Azari R. A scoping review on e-cigarette environmental impacts. *Tob Prev Cessat*. 2023 Oct 2;9:30. doi: 10.18332/tpc/172079. PMID: 37789930; PMCID: PMC10542855.
2. Pourchez, Jérémie et al. From smoking to vaping: a new environmental threat? *The Lancet Respiratory Medicine*, Volume 10, Issue 7, e63 - e64

3. World Health Organization. **WHO raises alarm on tobacco industry environmental impact. May 31, 2022** <https://www.who.int/news/item/31-05-2022-who-raises-alarm-on-tobacco-industry-environmental-impact>