

The Impact of Tobacco on the Environment



CIGARETTES AS LITTER

- In 2005, 360 billion cigarettes were consumed in the United States (U.S.).¹ Cigarette butts, the plastic filter and remnants of smoked cigarettes, are discarded in natural environments, streets, sidewalks, and other public areas. Some of these butts may then be carried as runoff to drains, making their way to rivers and ultimately to the oceans, Great Lakes, and beaches.²
 - Cigarette filters are made from cellulose acetate, a plastic which is technically biodegradable.³ In practice, cellulose acetate is resistant to biodegradation and can persist in the environment for 18 months or more, even under ideal conditions for biodegradability.⁴

On Land

- Multiple litter studies have shown that when counting litter on a per-item basis, cigarette butts are the number one littered item on U.S. roadways and waterways.⁵
 - After reviewing numerous litter cleanup project reports, the Keep America Beautiful Campaign, partially funded by Phillip Morris,⁶ reported in 2007 that cigarette butts comprise 25 to 50% of all collected litter items from roadways and streets.⁵

In Waterways and Coastal Waters

- Data from the Ocean Conservancy show that in 2009, over three million (3,216,991) cigarettes or cigarette filters were removed internationally from beaches and inland waterways as part of the annual International Coastal Cleanup (ICC), including 1,362,741 collected from the U.S. This represents 28% and 35% of total debris items collected worldwide and in the U.S., respectively, making it by far the most prevalent item found.⁷
 - In addition to cigarettes and cigarette filters, 18,555 cigarette lighters, 74,399 cigar tips, and 36,397 tobacco packages or wrappers were removed from U.S. waterways during the ICC in 2009.⁷
 - Smoking-related debris accounted for 38% of all U.S. debris items collected from beaches, rivers and streams during the 2009 ICC.⁷

CIGARETTES AS TOXIC WASTE

- Cigarette butts are poisonous when ingested by children and other living organisms, as evidenced by poison control center data, veterinary literature, and national reports.⁸⁻¹⁰
 - Ten milligrams of nicotine is the lethal dose in children. One to two mg is toxic.^{11,12} Cigarettes contain from 9 to 30 mgs of nicotine, and butts contain 0.1 to 1.5mgs.¹³ Therefore, ingestion of just one cigarette butt could be toxic to children, and ingestion of an entire cigarette could potentially be lethal.
 - In 2008, the American Association of Poison Control Centers received 7,310 reports of potentially toxic exposures to tobacco products among children younger than six years of age in the U.S.¹⁴ Most cases of nicotine poisoning among these children resulted from their ingestion of cigarettes or chewing tobacco.
 - Between 2002 and 2007, over 2,000 non-fatal, unintentional cigarette-related injuries to children aged four years and under occurred per year in the U.S.; 29% of these involved poisonings.⁸
 - A small Rhode Island study on the risk factors for ingestion of cigarettes and cigarette butts in children up to six years old found that 98% of toxic exposures occur within the home. Reported symptoms of ingestion included vomiting, nausea, pale or flushed appearance, lethargy, and

gagging. The majority of children had ingested less than a whole cigarette or cigarette butt. All recovered fully within 12 hours.¹⁰

- One to five cigarettes, or 20 to 100 mg of nicotine, is the minimum lethal dose reported in dogs and cats. Ingestion of tobacco products is more common in young animals (e.g., puppies), but the overall likelihood of toxicosis is rare in household pets.⁹
- Few studies of the toxicity of cigarette butts to aquatic ecosystems have been undertaken. Preliminary studies show, however, that the substances that seep out of cigarette butts are acutely toxic to freshwater micro-organisms, and the main causes of toxicity are organic compounds (nicotine and ethylphenol) in the cigarette butts.^{13,15,16}
 - Cigarette butts allowed to soak in both fresh and salt water kill half the exposed fish in a standardized hazard assessment at a concentration of about one butt per liter.¹³
 - Another study which identified and quantified components leached from cigarette butts found that they are a point source for heavy metal contamination in the environment for at least a month.¹⁷

ATTITUDES ABOUT LITTERING

- Tobacco industry research reveals that smokers litter butts for many reasons, such as the unavailability of ashtrays, the ubiquitous and seemingly acceptable behavior of flicking butts on the ground, and false notions that cigarette filters are biodegradable or inconsequential as litter because of their small size.¹⁸
- In an Australian study from 2000, in which people were observed littering and later interviewed, litterers cited the following reasons for their behavior: laziness (24%), no ashtray (23%), no trash receptacle nearby (21%), and habit (6%). Cigarettes butts were the most littered item (58% of all items) in this study.¹⁹

OTHER ENVIRONMENTAL IMPACTS

Environmental consequences of tobacco use include:

- Deforestation as a result of tobacco production: wood is used in the farm-based process of curing the crop (drying the leaves).²⁰
- Fires caused by cigarette smoking.²¹
- Solid, liquid, and airborne wastes produced during the manufacturing process.
 - Some of these materials are designated by the Environmental Protection Agency as Toxic Release Inventory (TRI) chemicals, meaning these waste products are considered hazardous.²²
 - In 2008, over a million pounds of toxic chemicals were released by tobacco product manufacturing facilities. The top five chemicals released were ammonia, nicotine, hydrochloric acid, methanol, and nitrate compounds.²³
 - There has been a global shift in tobacco production into low-cost producer countries of the developing world, which are typically characterized by fragile natural environments and lax regulatory influence over the manufacturing process, which involves many chemicals on the TRI.²⁰

SOLUTIONS

- Growing concern over the impact of tobacco product waste on the environment has prompted states and municipalities to undertake a variety of policy actions.²
 - Cigarette butt waste cleanup is very costly. An economic study based on a litter audit in San Francisco, which found the annual cleanup cost to be more than \$7 million annually, led their City Council in 2009 to impose a 20 cent per pack “litter fee” on cigarettes sold in the city.²⁴
 - Under California state law, a person giving information leading to the arrest and conviction of a person for littering cigarette butts is entitled to a reward for providing the information (50% of collected fine).²⁵ A ‘hot line’ has also been established to facilitate reporting of violations directly by the public to the California Highway Patrol ((877)-211-BUTT).²⁶
 - As of January 5, 2010, 92 municipalities across the country prohibit smoking on their beaches, along with the entire state of Maine.²⁷
- Members of organizations advocating against cigarette butt pollution, such as the Cigarette Butt Pollution Project (www.cigwaste.org)²⁸ in the U.S. and Australia’s Butt Littering Trust,²⁹ endorse diverse approaches

in order to prevent, mitigate, and reduce cigarette butt waste in the environment, including:

- Enforcing current litter laws and implementing fines for discarding butts into the environment.^{2,25,26,29}
- Further research on the toxicity of cigarette butt waste in natural settings.
- Education and awareness programs promoting behavior change.²⁹

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