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Introduction

The life cycle of a cigarette takes a heavy toll on the environment from growing the tobacco plant to the disposal of butts and packaging. Although the ecological impacts of tobacco are overshadowed by its devastating effects on human health, they are nevertheless considerable and a cause for concern.

-  Tobacco cultivation is responsible for biodiversity losses, land pollution through the use of pesticides, as well as soil degradation, deforestation and water pollution.¹
-  Tobacco plants consume nutrients at a higher rate than most crops.¹
-  Cigarette-manufacturing machines use up to four miles of paper an hour to roll and package cigarettes.²
-  Cigarette butts are washed into rivers, lakes and the ocean where they are eaten by birds, animals and fish.³
-  While the global share of agricultural land used for tobacco growing is less than 1%, its impact on global deforestation is 2–4%, making a visible footprint for climate change.¹

The Framework Convention on Tobacco Control recognises the need for “due regard to the protection of the environment and the health of persons in relation to the environment in respect of tobacco cultivation.”⁴

Tobacco growing and pesticides

Tobacco plants are sensitive and prone to many diseases. Consequently, tobacco farmers are forced to use large amounts of fertiliser, herbicide and pesticides. Among the pesticides commonly used are imidacloprid, chlorpyrifos, 1,3—dichloropropene, aldicarb, dithane DF and methyl bromide:

Tobacco growing and pesticides (cont')

-  Aldicarb is extremely toxic. Less than one one-thousandth of an ounce is a lethal dose for a human and the agricultural formulation of aldicarb contains dichloromethane which is a known carcinogen.⁵ Aldicarb, which is also toxic to birds, fish, bees and earthworms,⁶ has been found in the groundwater of 27 states in the US.⁵ In the United States it was licensed for use on tobacco plants as recently as 2007.⁷
-  Imidacloprid is a relatively new pesticide which is chemically related to nicotine and works by blocking the central nervous system of insects. It is also highly toxic to birds, fish and bees. According to the US Environmental Protection Agency, imidacloprid has the potential to

leach into groundwater.⁸

-  Chlorpyrifos affects the nervous system and has been associated with human birth defects as well as genetic damage to human blood and lymph cells.⁶ In the United States, chlorpyrifos was re-registered for use by the Environmental Protection Agency in 2006 and is expected pass a Registration Review being conducted in 2009.⁹
-  1,3--Dichloropropene (also known as 1,3—D or Telone) is a highly toxic soil fumigant which causes respiratory problems, skin and eye irritation and kidney damage. It is widely used amongst tobacco growers in the United States.¹⁰
-  Methyl bromide, an ozone-depleting chemical, was commonly used to fumigate the soil prior to planting tobacco seedlings until the end of the 1990s. In 1997, over 5.5 million pounds of methyl bromide were applied to tobacco fields worldwide.¹¹ Under the “Montreal Protocol on Substances that Deplete the Ozone Layer” use of this chemical will be phased out by 2015.^{12 13}

In developing countries, where the majority of tobacco is grown, environmental laws are often non-existent, and farmers lack protective equipment or training in the handling of hazardous pesticides.¹⁴ Not only are tobacco growers at risk from exposure during the application and storing of the pesticides but the chemicals leach into soil, find their way into streams and rivers and contaminate drinking supplies and food chains.³⁰ These substances may also be indirectly causing the genetic selection of pesticide-resistant mosquitoes or flies, making the control of diseases such as malaria much more difficult.¹⁵

In western countries laws exist to protect farm workers from exposure to pesticides. However the use of these chemicals still poses a threat to human health and ecosystems. Pesticides used in tobacco production have been found in surface and groundwater in the United States^{16 17} and are believed to be responsible for wildlife deaths.⁵

The WHO has expressed concern about neuropsychiatric effects among tobacco workers of exposure to organo-phosphate pesticides, with studies indicating increased rates of depression and suicides in Brazil among tobacco farmers.^{18 19} A recent study of children working on tobacco farms in Mexico found that the children were exposed to toxic levels of pesticides and had high rates of depression and anaemia.²⁰

Despite actively encouraging tobacco growers to use chemical pesticides in the early 1990s,²¹ tobacco companies now claim to be taking steps to reduce the amount of pesticides used. According to BAT, changes in farming practice have resulted in “only 1.3kg of pesticide being applied per hectare of tobacco plants in Brazil”.²²

Green tobacco sickness

In addition to the health risks posed by using pesticides, tobacco growers are susceptible to an occupational illness known as “green tobacco sickness” (GTS). The illness is caused by the absorption of nicotine through the skin from contact with wet tobacco leaves. Symptoms of GTS include nausea, weakness, dizziness and abdominal cramps, and fluctuations in blood pressure and heart rates. A review of 31 studies of health risks associated with tobacco farming found that seasonal prevalence of GTS ranged from 8% to 89%. Incidence was reported to be 1.9 cases per 100 person days.²³ Other studies have found that around a

quarter of tobacco pickers have suffered from GTS at least once.^{24 25 26}

A study by children's rights organisation, Plan, found that children who work as tobacco pickers are particularly prone to GTS and may absorb up to 54mg of nicotine a day, causing severe health problems.²⁷

Phillip Morris USA is now distributing information about green tobacco sickness to tobacco growers.²⁸

Tobacco and deforestation

In the developing world, trees are often cut down to make room for tobacco crops and more trees are cut down for use during the curing process. After harvesting, tobacco must be cured (dried), to preserve it for storage, transport and processing. "Sun" or "air" curing involves leaving the tobacco to dry naturally but can take several months. Many farmers "flue cure" their tobacco, which means it is "hung in specialized curing barns where heated air removes water from the leaves".²⁹ This process takes a week and farmers generally burn wood to heat the air. Trees are also felled for the construction of curing barns.

 Around 600 million trees are cut down every year to produce tobacco products.³⁰

 In Brazil, the 200,000 tobacco-growing families use an average of 3 kilograms of wood to cure 1 kilogram of tobacco.³¹ According to the WHO, the negative consequences of tobacco farming are "clearly visible in the form of forest devastation, erosion and abnormally low water levels."³²

 Between 1990 and 1995, tobacco growing accounted for 26% of deforestation in Malawi.³³

 In semi-arid areas, where tobacco thrives, the additional loss of trees can make land even more vulnerable to desertification and unfit for agriculture. For example, in the tobacco growing Aura district of north west Uganda, sheet erosion is now very evident and much of the topsoil has been washed away.³⁴

 In the Urambo tobacco-growing region of Tanzania land clearing for tobacco planting is responsible for 3.5% of annual deforestation while farmers use an average of 23m³ of stacked wood per season for curing. This adds another 3% of deforestation.³⁵

 Tobacco growing in the Tabora Region of Tanzania has decimated the Miombo Forests.³⁶

Faced with dwindling sources of wood fuel, the tobacco industry has attempted to address the problem by encouraging tobacco farmers to plant trees.³⁷ However, the plantations set up by British American Tobacco in Kenya, for example, consist largely of non-native, fast-growing eucalyptus and cypresses which adversely affect biodiversity and can lower the water table.

Impact on food production

When farmers grow tobacco, there is less land available for food crops. Even though tobacco growing is rotational, with different crops being planted in alternate years, tobacco soil is prone to wind and water erosion which means that soil which has been used to grow tobacco is sometimes unsuitable for food crops.³⁸ In addition to this, tobacco plants use more nutrients than many other crops, which leads to further degradation of the soil.³⁹ It has been estimated that 10 to 20 million people could be fed by food crops grown instead of tobacco.¹⁵

The tobacco industry argues that tobacco farming brings economic benefits to developing countries. However, the World Health Organisation disputes this, saying that the “overwhelming majority of the profits go to the large companies, while many tobacco farmers find themselves poor and in debt.”⁴⁰ For further information about tobacco and the developing world see: [ASH Factsheet: Tobacco and the Developing World](#)

Pollution Cigarette and cigar manufacturing results in large quantities of waste in the form of tobacco slurries, solvents, oils, paper, wood, plastics, packaging materials and airborne pollution.⁴¹

Cigarette manufacturing produces liquid, solid, and airborne waste, all of which are cause for environmental concern, but it is the chemical waste which is the greatest threat to the environment.⁴¹ In the United States it was reported in 1992 that tobacco manufacturing produced more than 27 million kilograms of hazardous chemical waste. 2.2 million kilograms of this waste was released into the environment. At that time the tobacco industry was rated 18th in the list of industrial chemical waste producers.⁴²

Cigarette smoke is a known environmental pollutant and classified as a Class A carcinogen by the US Environmental Protection Agency. It also contains small amounts of radioactive material. Lead-210 and polonium-210 are absorbed from the soil by the leaves of the tobacco plant and remain during the curing and manufacturing process. Some phosphate fertilizers favoured by the tobacco industry also contain radioactive materials which contribute to increased radioactive levels in the soil.⁴³ Radiation is not only released into the atmosphere when a cigarette is smoked but leached into soil and waterways from cigarette stubs discarded by smokers.

Cigarette filters are made from cellulose acetate, a type of plastic that can take up to 12 years to decompose. The estimated 4.5 trillion cigarette ends discarded across the world each year are believed to kill millions of birds, fish and other animals^{44 45 46} and are sometimes eaten by young children.⁴⁷ Cigarette butts are the most littered item in the world with an estimated 4.5 trillion cigarettes being littered each year across the globe according to The Ocean Conservancy, a group that monitors marine pollution. Their 2009 report, *A Rising Tide of Ocean Debris*, found that cigarette materials constituted 28% (3,216,691 items) of the total amount of debris collected in their 2008 international coastal cleanup. This was more than twice the amount of any of the other 43 debris items listed in the report.^{44 48}

Studies from numerous countries confirm that cigarette waste is the most prevalent form of street litter.^{49 50 51} In the UK cigarettes are also the principal source of street litter, accounting for 70% - 90% of all litter in urban areas. According to the Department for the Environment, Food and Rural Affairs, cigarette litter can be found on 79% of UK streets.⁵² An estimated 200 million cigarette butts are dropped every day, amounting to 122 tonnes of rubbish.⁵³

Cigarettes and fire risk Cigarettes and matches are a common cause of fire. Between 1995 and 2005 there were on average 4,300 house fires a year started by smokers' materials. In 2005, smokers' materials caused the deaths of 110 people in homes, accounting for one third of all deaths in domestic fires in the UK.⁵⁴ It has been estimated that the average cost of a domestic house fire in the UK is £24,9000.⁵⁵

A survey carried out by the European Commission of 14 members states and Norway carried found that 11,000 fires causing € 13 million of material damage, 1,600 injuries and 520 deaths occur each year.⁵⁶

In the United States fires caused by smoking materials are the number one cause of fire-related deaths, killing 780 people and injuring 1,600 others in 2006. Eighty-nine percent of the deaths and 82 percent of the injuries were in home fires.⁵⁷ Property losses from these fires total hundreds of millions of dollars each year.⁵⁷

There is even a documented case in the UK of a lit cigarette being used by a bird making a nest which led to a shop being destroyed by fire.⁵⁸

Tobacco and climate change

All stages of cigarette production and consumption contribute to global warming, from the growing and curing of tobacco (and associated deforestation) to manufacturing and promotion and to the smoking and disposal of tobacco products. Global warming is now widely believed to be the single biggest environmental threat facing the planet.⁵⁹ Global warming is caused by increased levels of carbon dioxide and other polluting gases in the atmosphere. These gases are released by the burning of fossil fuels and cutting down of forests and are believed to contribute to the so-called “greenhouse effect”. Some scientists believe that global warming has led to irreversible climate change.

Cigarette production is contributing to climate change because:



The cutting and burning of wood or other fuels for curing tobacco adds to the greenhouse effect.



Tobacco farmers often burn trees when clearing land. This burning releases large quantities of carbon dioxide into the atmosphere.⁶⁰



Deforestation has meant there are fewer trees available to absorb the excess carbon dioxide.



Smoke from cigarettes contains carbon dioxide and methane. Smoking releases about 2.6 billion kilograms of carbon dioxide in the air worldwide every year. It also releases about 5.2 billion kilograms of methane every year.⁶⁰

Industry response

Internal tobacco industry documents released through litigation in the United States have revealed that the tobacco industry was involved in initiatives that cast doubt on the evidence supporting climate change and may have hindered progress towards tackling the problem.⁶¹ However, all the major companies now have plans in place to reduce carbon dioxide emissions and they acknowledge the potential harm that climate change could have on their businesses and the environment.^{62 63 64} BAT has calculated the intensity of total emissions per unit of production volume (per million cigarette equivalent measure). In 2006 the company’s emissions per million cigarettes equivalent produced was 0.79 T Co2e. BAT claims to have reduced its CO2 emissions per unit produced by 43% over the past 5 years.⁶² In 2006 BAT produced 689 billion cigarettes.⁶⁵ Thus the equivalent output in carbon dioxide was approximately half a million tonnes.

Further information

[British American Tobacco’s Policy on Environmental Management](#)
[Phillip Morris USA website: “Reducing our environmental impact”](#)
[Tobacco in Asia: Green Policy](#)

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