

Hormozgan University of Medical Sciences

4th National and 1st International Congress on

Tobacco and Health

**Tobacco & its
environmental impacts**

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22-24 February 2023
Bandar Abbas

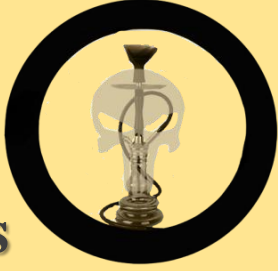
It is possible to imagine such images after hearing the environmental effects of smoking



for every 15 packs of cigarettes, one tree had TO DIE



How TOBACCO affects the ENVIRONMENT ?



- **Growing and curing**



- **Manufacturing**



- **Distributing products**



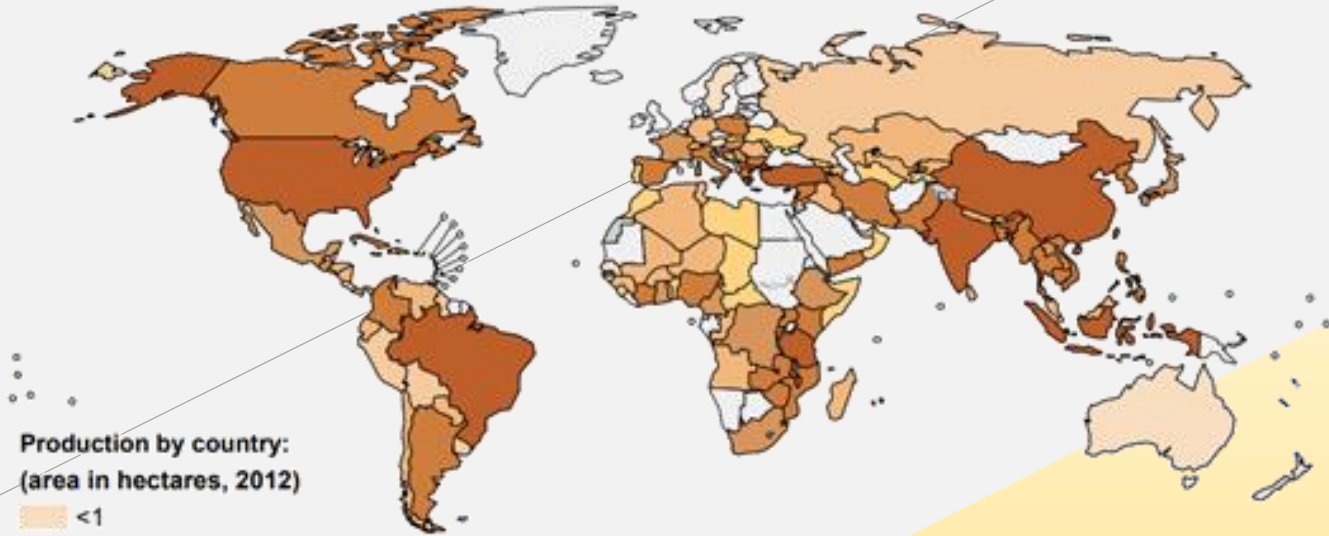
- **Consumption**



- **Post-consumer waste**



Tobacco growing and curing



Production by country:
(area in hectares, 2012)



impact on land and agriculture

- Tobacco is a very sensitive plant that requires a lot of tending.
- grows as a monoculture, It completely depletes the soil of nutrients.
- Tobacco requires six times more potassium than most other cultures
- After some cultivation of the plant; tobacco can no longer grow there – neither can most other plants.

2 Manufacturing and distributing tobacco products



- **environmental costs**
- **Resource use: Energy use, Water consumption**
- **Carbon dioxide (CO₂) pollution**
- **Transport**
- **Use of plastics as packaging material**

Types of environmental costs



- **chemicals used :in the preparation and treatment of the tobacco leaf**
- **metals involved in the manufacture and shipping of cigarette-making machines**
 - **energy used for manufacturing and distributing**
 - **wood pulp and waste from cigarette paper and packaging ...**
- **thousands of chemical additives; flavourings and pH modifiers such as ammonia**
- **energy for extraction, extrusion and processing of cellulose acetate filters; energy used in the manufacture and fuelling of trucks, ships and planes to transport tobacco products from production plants to retailers**

Resource use: Energy use, Water consumption



- **Growing:** land, water, pesticides
- shredding and assembling the tobacco: energy and metals to manufacture the machines
- processing and coating the tobacco, which uses thousands of chemicals and dry ice
- fuel energy used to freeze and artificially expand the surface area of the tobacco
- rolling paper, which uses bleaching agents and generates effluent (from paper production mills, etc.) and which represents additional deforestation;
- producing filters, which uses acetate tow;
- producing packaging; uses paper, plastic wrap and aluminum foil+ computer equipment.

Energy use



The energy used to make tobacco products

Examples of total reported yearly energy use for some of the largest tobacco companies

Company	Gigawatt hours/year	Kilowatts per million cigarettes
Imperial Tobacco (2015)	1004	2051
Altria (2014) (129)	1380	Unknown
British American Tobacco (2011)	2504	2864
Japan Tobacco Incorporated (2014)	2804	1832 (2012)
Philip Morris International (2015)	2539	Unknown

Water consumption



Tobacco manufacturing is extremely water-intensive

Significant amounts of water are used for treatment, making inks and dyes for packaging, and tobacco pulp processing.

- **Water consumption Used during manufacturing:
3000-5500 cubic metric/million Cigarettes**

3 Consumption

Tobacco smoke

Tobacco smoke composition

**CO2 equivalent Emission:
0.55-0.75 metric
tones/million Cigarettes**

Tobacco smoke constituents (IARC Cancer Risk Classification) ¹	Mass in sidestream smoke (per cigarette) ²	SS/MM ratio ³	5-year contribution single smoker			
			SS only		SS + M S	
			Estimates (1000 kg)		Estimates (1000 kg)	
			LB ⁴	UB ⁴	LB ⁴	UB ⁴
Total 'tar'	10.5–34.3mg		65 625	215 000	137 740	451 264
Ammonia	4.0–6.6 mg	147	25 000	41 250	25 170	41 531
Nicotine	1.9–5.3 mg	2.31	11 875 000	33 125 000	17 016	47 465
Pyridine	195.7–320.7 mg	16.1	1223	2004	1299	2129
NNK (1)	50.7–95.7 mg	0.4	0.317	0.598	1.109	2.093
NNN (1)	69.8–115.2 mg	0.4	0.436	0.720	1.451	2.394
Styrene (2B)	23.2–46.1 mg	2.6	145	288	201	399
Toluene (3)	134.9–238.6 mg	1.3	843	1491	201	399
Benzene (1)	70.7–134.3 mg	1.1	442	839	855	1624
Isoprene (2B)	743.2–1162.8 mg	1.1	4645	7267	8986	14 060
1, 3 – Butadiene (1)	81.3–134.7 mg	1.3	508	842	899	1489
Acetaldehyde (2B)	1683.7–2586.8 mg	1.3	10 523	16 168	18 556	28 509
Acrolein (3)	342.1–522.7 mg	2.5	2138	3267	2983	4558
Formaldehyde (1)	540.4–967.5 mg	14.8	3378	6017	3606	6455
Carbon dioxide	79.5-759 mg	9.7	2 800 000	4 743 750	3 088 660	5 232 796
Methane	1.3 mg	4.0	19 375	19 375	24 280	24 280
Nitrous oxides	0.051 mg	3.6	319	319	406	406



3.2 Third-hand smoke pollution



Third-hand smoke is the long-lasting residue resulting from second-hand smoke that accumulates in dust, in objects and on surfaces in indoor environments where tobacco has been smoked, and which can end up in landfills and waste.

To understand the composition of third-hand smoke and its contribution to the pollution of indoor and outdoor environments, it is important to understand how third-hand smoke evolves from second-hand smoke

4 Post-consumer waste

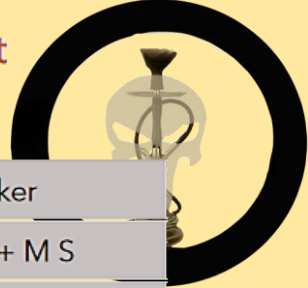


- Reducing harm caused by tobacco product waste
- Product waste
- Waste disposal (landfill)
- Recycled waste disposal
- Hazardous waste
- Environmental manufacturing goals



Tobacco smoke composition

Estimated annual contribution to the global environment from tobacco smoke by all cigarette users, 2012



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smoking and environmental damage



- Soil and land pollution through agriculture and cigarette butts
- Cigarette butts and water pollution
- Air pollution through smoking
- Effect on aquatic fish
- Health effects on pets
- Effects on livestock
- Garbage environment
- Cleaning costs
- forest fire

- **Fact 1:** 4.5 trillion cigarette butts are disposed of/Yr
- **Fact 2:** 600 million trees are chopped down /Yr
- **Fact 3:** One car produces 4 million times less than a tobacco factory
- **Fact 4:** Tobacco manufacturers use 4 miles of paper / hr.

Solutions

- Revision of the production process in order to reduce water consumption
- Mandating the use of renewable energy in various tobacco supply processes
- Carrying out extensive studies and measures in order to increase the productivity of agricultural land-producing tobacco
- Establish strict environmental obligations for tobacco manufacturers
- increase in the proportion of recycled/reused facility waste
- Reduction in CO₂ emissions
- Robust regulations and independent oversight





Thank you for your attention

