

Glossary

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Term	Definition
<i>Ad valorem</i>	Tax charged as a percentage of the value of a product.
<i>Adducts</i>	Carcinogenic metabolites bound covalently to DNA.
<i>Air-curing (of tobacco)</i>	Involves placing tobacco stalks on wooden staves that are hung in a well-ventilated barn. Used to make loose leaf and twist chewing tobaccos and is often mixed with fire-cured tobacco to make moist snuff.
<i>Aldehydes</i>	Organic compounds that contain a formyl group (R-CHO). Found in some smokeless tobacco products as a result of fire-curing. The International Agency for Research on Cancer classifies the aldehyde formaldehyde as carcinogenic in humans (Group 1), and by acetaldehyde as a possible carcinogen (Group 2B).
<i>Alkaline modifiers</i>	Chemicals added to tobacco that include agents such as sodium bicarbonate, ammonium bicarbonate, various metallic carbonates (e.g., calcium, magnesium, sodium, ammonium), and slaked lime (calcium hydroxide). Addition of alkaline agents to tobacco boosts pH and increases the percentage of nicotine present as free nicotine.
<i>Alkaloids</i>	Naturally occurring nitrogen compounds that are produced by a large variety of organisms, including bacteria, fungi, plants, and animals. Tobacco alkaloids are key chemical precursors in the formation of tobacco-specific nitrosamines.
<i>Anabasine</i>	Alkaloid generally found in <i>Nicotiana glauca</i> at higher levels than in other tobacco species (<i>N. tabacum</i> or <i>N. rustica</i>). Present in trace amounts in tobacco smoke and can be used as an indicator of a person's exposure to tobacco smoke. Thought to contribute to the toxicity of <i>N. glauca</i> .
<i>Anatabine</i>	Alkaloid found in <i>Nicotiana tabacum</i> and other tobacco species. Present in tobacco products and tobacco smoke and absorbed in the human body after tobacco use.
<i>Areca nut</i>	Seed of the areca palm (<i>Areca catechu</i>), which grows in much of the tropical Pacific, Asia, and parts of east Africa. Commonly referred to as betel nut, as it is often chewed wrapped in betel leaves. Areca nut is classified as a Group 1 carcinogen to humans by the International Agency for Research on Cancer.
<i>Arecoline</i>	Areca nut alkaloid that is the primary active ingredient responsible for central nervous system effects.
<i>Atherogenesis</i>	Formation of atheromatous lesions in the arterial walls.
<i>Attributable risk</i>	Proportion of a disease that can be attributed to a causal risk factor.
<i>Betel quid</i>	A custom-made preparation that includes areca nut combined with other ingredients, such as tobacco, catechu, alkaline agents, and spices, all wrapped in a piper betel leaf. Also known as paan.
<i>Catechu</i>	An extract of <i>Acacia</i> used variously as a food additive, astringent, tannin, and dye. Commonly found in smokeless tobacco products from South-East Asia.
<i>Cessation (of tobacco)</i>	Process of quitting tobacco use.
<i>Chemical additives</i>	Chemicals—such as sweeteners, flavor chemicals, whiteners, alkaline agents, moisteners, binders, and preservatives—added to products to improve taste, enhance appearance, or alter other product characteristics, such as pH, texture, or shelf life.

Term	Definition
<i>Chemosensory effects</i>	Response of senses to chemical stimuli.
<i>Chewing tobacco</i>	A type of smokeless tobacco that presents as long strands of loose leaves, plugs, or twists of tobacco. The pieces are chewed or placed between the cheek and gum or teeth.
<i>Conference of Parties</i>	The governing body of the Framework Convention on Tobacco Control, World Health Organization, comprising all parties to the convention or countries that have signed the treaty.
<i>Cotinine</i>	A metabolite of nicotine used as an exposure biomarker of nicotine intake.
<i>Cottage industry</i>	A small-scale industry producing custom-made products at home, in market stalls, or in shops for commercial sale.
<i>Cottage-made products</i>	Products that are homemade or are produced by a small-scale industry. These products may lack packaging that displays brand name, graphics, and product description.
<i>Cross-price elasticity</i>	The sensitivity of consumers to price or tax changes of a related good. For example, an 0.8 cross-price elasticity between cigarettes and smokeless tobacco (ST) means that a 10% increase in the price of cigarettes will yield an 8% increase in the consumption of ST.
<i>Current users</i>	People who used any smokeless tobacco product either daily or occasionally in the 30 days preceding a survey.
<i>Custom-made smokeless tobacco products</i>	Smokeless tobacco products that are handmade by the user, a relative, or a vendor according to user preferences. These products are made of cured tobacco or a premade tobacco product (e.g., zarda) combined with one or more ingredients, such as ashes, alkaline agents, areca nut, spices, catechu, or other plant materials. These products lack commercial packaging and may be placed in commonly available materials such as newspaper, cellophane, paper bags, etc., after they are made.
<i>Daily users</i>	People who use smokeless tobacco products on a daily basis.
<i>Dissolvables</i>	Smokeless tobacco that is completely dissolved during use, with no residual loose tobacco or sachet to discard. Tobacco-coated toothpicks are considered dissolvables because the tobacco portion fully dissolves from the toothpick, which is discarded (See Appendix B.)
<i>Dose–response relationship</i>	Increased risk of a disease with increasing levels of exposure.
<i>Dual use</i>	Use of two or more tobacco products by one person.
<i>Erythroplakia</i>	Red-colored oral mucosal lesions that have a high risk of developing cancer.
<i>Ever users</i>	People who have tried smokeless tobacco at least once in their lifetimes.
<i>Excise tax</i>	Similar to sales taxes, internal taxes that can change the price of smokeless tobacco (ST) products relative to other consumer goods and can make ST products less affordable for the consumer.
<i>Fermentation</i>	A sugar-metabolizing process, facilitated by microorganisms, generally thought to enhance product taste. Used to produce products such as moist and dry snuff as well as toombak. During fermentation, microbes proliferate, and nitrite is produced if nitrite-producing organisms are present. Accumulated nitrite then reacts with tobacco alkaloids to produce tobacco-specific nitrosamines.

Term	Definition
<i>Fire-curing method</i>	Involves hanging tobacco in a large enclosed area where it is exposed to smoke from hardwood fires that continuously burn or smolder. Used in the production of plug chewing tobacco, moist and dry snuff, and tobacco used to make iqmik. Causes chemical changes in the tobacco leaf, and contaminates the tobacco with smoke-related chemicals such as polycyclic aromatic hydrocarbons, phenols, and volatile aldehydes.
<i>Flue-curing method</i>	Involves hanging tobacco in an enclosed structure connected to an external heat source without exposing it directly to smoke. Used in making chewing tobacco.
<i>Free nicotine</i>	Fraction of the total nicotine that is unprotonated (neutrally charged). This uncharged form of nicotine more readily passes through oral membranes and into the bloodstream. Free nicotine is calculated using total nicotine and pH values for the tobacco product. See also <i>Total nicotine</i> .
<i>Graduation strategy</i>	Theory that the availability of products spanning a wide pH range can make it easier for smokeless tobacco users to move on to products delivering increasingly higher nicotine levels.
<i>Gul</i>	See the Gul factsheet (Appendix B).
<i>Gutka</i>	See the Gutka factsheet (Appendix B).
<i>Harm reduction</i>	Decreased risks of illness or injury.
<i>High-income countries</i>	Countries with a gross national income per capita, as calculated using the World Bank Atlas method, of US\$12,616 or more.
<i>Humectants</i>	Chemicals, including glycerol, glycerin, and propylene glycol, added to smokeless tobacco products to preserve product moisture content.
<i>Inferior good</i>	A good that is consumed in decreasing quantities as a consumer's income increases.
<i>Khaini</i>	See the Khaini factsheet (Appendix B).
<i>Khat</i>	A plant (<i>Catha edulis</i>) that contains cathinone, an alkaloid with amphetamine-like stimulant properties that are purported to cause euphoria, excitement, and a loss of appetite.
<i>Kiwam</i>	See the Kiwam factsheet (Appendix B).
<i>Leukoplakia</i>	White or grayish-white oral mucosal lesions that have the potential to develop cancers.
<i>Low birthweight</i>	Infants with a birthweight at the lower extreme of the normal birthweight distribution.
<i>Low-income countries</i>	Sometimes referred to as developing economies, with US\$1,035 or less gross national income per capita.
<i>Manufactured products</i>	Products made in factories or large production facilities for commercial sale.
<i>Middle-income countries</i>	Sometimes referred to as developing economies—lower middle income = US\$1,036–\$4,085 gross national income (GNI) per capita; upper middle income = US\$4,086–\$12,615 GNI per capita.
<i>Mitogenesis</i>	Cell proliferation.

Term	Definition
<i>Modern markets</i>	Characterized by the presence of multinational corporations and the predominance of standardized, commercially produced smokeless tobacco products.
<i>Moist snuff</i>	See the Moist Snuff factsheet (Appendix B).
<i>Moisture content</i>	The percentage of water in a tobacco product.
<i>Niche Tobacco Product Directory</i>	A website containing a wide variety of tobacco product information.
<i>Nitrate</i>	A nitrogen-containing ion (NO_3^-) commonly found in soil and fertilizers. These ions are absorbed and metabolized by tobacco plants as they grow. When plants are harvested, nitrate remains in plant tissues and can subsequently be converted to nitrite (NO_2^-) by certain microbes. The International Agency for Research on Cancer has classified nitrate as a Group 2A agent (probable human carcinogen), because it can contribute to the formation of nitroso compounds in the human body after ingestion.
<i>Nitrite</i>	A nitrogen-containing ion (NO_2^-) generated by microorganisms capable of converting nitrate to nitrite; this process begins once the tobacco leaf begins to dry during curing. Once nitrite is produced, it can react with tobacco alkaloids to generate tobacco-specific nitrosamines in a chemical process called nitrosation. The International Agency for Research on Cancer has classified nitrite as a Group 2A agent (probable human carcinogen) that can contribute to the formation of nitroso compounds in the human body after ingestion.
<i>Nitrosation</i>	Chemical reaction in which nitrite reacts with compounds such as tobacco alkaloids and other secondary/tertiary amines to form various nitrosamines.
<i>Nitroso compounds</i>	Organic compounds containing an N=O group. N-nitroso compounds are of concern in tobacco products because several of these compounds are known or potential carcinogens.
<i>Normal good</i>	A good that is consumed in larger quantities as a consumer's income increases.
<i>Normicotine</i>	An alkaloid found in the tobacco plant that is a precursor to the carcinogen N'-nitrosonornicotine, which is produced during the curing and processing of tobacco.
<i>Odds ratio</i>	A measure describing the strength of association or dependence between two data values.
<i>Oral mucosal lesions</i>	Abnormality of the oral mucosa that can progress to cancer.
<i>Oral submucous fibrosis</i>	Progressive disease in which the oral mucosa loses elasticity and develops fibrous bands that cause difficulty in opening the mouth. Can progress to cancer and is associated with chewing areca nut, which is most often consumed with tobacco.
<i>Organic compounds</i>	Members of a large class of gaseous, liquid, or solid chemical compounds whose molecules contain carbon.
<i>Pan masala</i>	A mixture of areca nut, spices, flavorings, and other ingredients.
<i>Periodontal disease</i>	A disease affecting one or more of the periodontal (gum) tissues in the mouth.
<i>pH</i>	Measure of the acidity or basicity of a product. It impacts the amount of free nicotine in smokeless tobacco products. Higher pH results in a greater percentage of nicotine being converted to free nicotine.

Term	Definition
<i>Phenols</i>	A class of aromatic organic compound formed when wood or sawdust is burned during the fire-curing of tobacco.
<i>Polycyclic aromatic hydrocarbons</i>	Potent atmospheric pollutants that are produced as byproducts of fuel burning (fossil or biomass); ten polycyclic aromatic hydrocarbon compounds found thus far in smokeless tobacco have been designated by the International Agency for Research on Cancer as carcinogens or potential carcinogens.
<i>Porrõca</i>	Smokeless tobacco products used by indigenous Brazilians.
<i>Portioned pouches</i>	Packets of smokeless tobacco containing specific measured amounts—for example, snus.
<i>Prevalence</i>	Proportion of a population found to have a condition. Calculated by comparing the number of people found to have the condition with the total number of people studied or surveyed.
<i>Protonated nicotine</i>	A charged form of nicotine that is more slowly released from tobacco and tends to be more slowly absorbed into the bloodstream. This is the predominant form present in most unprocessed tobaccos.
<i>Pyridine-N-glucuronide metabolites</i>	Can be used as biomarkers to provide realistic and direct assessments of a person's exposure to certain tobacco-specific nitrosamines.
<i>Quit ratio</i>	Number of former smokeless tobacco users divided by the number of people who have ever used smokeless tobacco daily.
<i>Sada pata</i>	Plain tobacco flakes.
<i>Slaked lime</i>	Calcium hydroxide. Addition of alkaline agents to tobacco boosts pH and increases the percentage of nicotine present as free nicotine.
<i>Smokeless tobacco</i>	Includes a large variety of products containing tobacco mixed with chemical, plant, and/or other constituents. These products are not smoked, but are used orally or nasally. Oral tobacco can be chewed, sucked, applied to the teeth or gums (e.g., topical toothpaste or powder), dissolved in the mouth, or gargled. Nasal tobacco is finely ground so that it can be inhaled and absorbed through mucus membranes.
<i>Snuff</i>	See the Snuff factsheet (Appendix B).
<i>Snus</i>	See the Snus factsheet (Appendix B).
<i>Sun-curing method</i>	Process of drying tobacco leaves in the sun, which is often used in making toombak, gutka, maras, khaini, and nass/naswar, and for some tobaccos used in betel quid.
<i>Sweeteners</i>	Chemicals added to smokeless tobacco products to make them more palatable. Includes honey, molasses, saccharin, brown sugar, sugar, and xylitol.
<i>Tobacco-specific nitrosamines</i>	Carcinogens that are formed from nicotine and related compounds by nitrosation during processes such as curing and fermentation, in which tobacco products are made. These compounds are specifically found in tobacco products.
<i>Tonka bean</i>	A seed from <i>Dipteryx odorata</i> that contains a high level of coumarin, a liver toxicant. This seed is added to some smokeless tobacco products.
<i>Total nicotine</i>	The amount of nicotine in a product regardless of its ionic form (di-protonated, mono-protonated, and unprotonated).

Term	Definition
<i>Traditional smokeless tobacco markets</i>	Less concentrated markets that trade a large variety of products made under loosely defined standards (which would include cottage products and custom-made products).
<i>Traditional smokeless tobacco products</i>	Custom-made tobacco products produced by small-scale cottage industries. Can also refer to smokeless products that are well established in a particular region.
<i>Unprotonated nicotine</i>	This neutrally charged form of nicotine, commonly referred to as "free" nicotine, is usually more quickly released from tobacco during product use than protonated nicotine. Free nicotine is also absorbed more quickly into the body tissues for distribution throughout the body.
<i>Verrucous hyperplasia</i>	Histopathologically diagnosed abnormality of the oral mucosa.
<i>Zarda</i>	See the Zarda factsheet (Appendix B).