

Poisonous Substances in Cigarette Tobacco

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Cigarettes contain thousands of poisonous substances. Therefore, it is imperative that attempts be made to end unnecessary exposures to cigarette smoke, and prevent unnecessary exposure to cigarette smoke to prevent suffering.

The situation is even more dangerous in the case of Environmental Tobacco Smoke (ETS) which contributes significantly to 'passive smoking'. (see, Megazine, April 13, 1995). This is because the amount of chemicals/poisons found in ETS can range from twice to 50 times as much, compared with normal (mainstream) cigarette smoke.

Some of these are as follows:

Nicotine:It has twice the amount of ETS relative to "mainstream" smoke.

2 times Tar:It has two to five times the amount of ETS relative to "mainstream" smoke.

Carbon monoxide:It has five times the amount of ETS relative to "mainstream" smoke.

Hydrogen cyanide:It has four to six times more ETS relative to "mainstream" smoke.

Toluene:It has six to eight times more ETS relative to "mainstream" smoke.

Nitrosamine (carcinogen): It has 50 times the amount of ETS relative to "mainstream" smoke.

As such, knowing the true hazards associated with all of the substances in cigarettes is pertinent so that we are motivated to make a concerted effort to create a tobacco-free society. As discussed previously, one of them is nicotine (see Healthtrack, May 30).

Other major potential hazards are:

Tar - It contains polynuclear aromatic hydrocarbons (PAH) which can contain up to 200 different toxic compounds. Tar can cause mutation of genetic material within the cells, resulting in the formation of cancer. The tar from cigarettes is no different from that used to build roads. In New Zealand, NZASH, the country's Action on Smoking and Health, reported that tar from cigarettes sold in one year there could pave 5.5km of highway.

Carbon monoxide - This gas released in cigarette smoke can reduce the availability of oxygen in the blood. Carbon monoxide in cigarette smoke can be 400 times more than the level considered safe. It has been shown to have experimental teratogenic and reproductive effects. The gas is also found in fumes released from automobiles.

Hydrogen cyanide - This is another gas that is produced in cigarette smoke capable of inhibiting cells from utilizing oxygen in the body. Hydrogen cyanide released from a cigarette can be 160 times more than the level considered safe. Like carbon monoxide, the body will eventually be deprived of oxygen one way or another, leading to death. In fact, hydrogen cyanide has been used as the poison in gas chambers when carrying out the death penalty.

Ammonia - It has been classified by some as a human poison by inhalation. In higher concentrations, it can result in tightness of the chest, pulmonary edema, cyanosis, and a rapid, weak pulse. Ammonia fumes in cigarette smoke can cause irritation of the eyes and upper respiratory tract, with cough, vomiting, conjunctival infection and inflammation of the mucous membrane.

Benzopyrene, dimethylnitrosamine, dibenzacridinine, polonium, toluidine, urethane, pyrene and vinyl chloride have also been identified. They are either cancer-causing or promoting agents.

Vinyl chloride, found in cigarette filters has also been shown to have adverse effects on human reproductive system. In fact as for January this year, the United States Environmental Protection Agency officially classified cigarette smoke as a Class A carcinogen, grouping it with asbestos, benzene, and arsenic.

Other poisonous substances found in cigarettes are as follows:

Acetaldehyde:A highly reactive chemical, it is irritating and depressive to all cells. It is also suspected as a carcinogen.

Acetone:It is a derivative of acetaldehyde normally used as a paint stripper and cleaning agent. It has been shown to have adverse effects on experimental reproductive systems.

Butane:A hydrocarbon that has a number of effects on the brain and the nervous system, it also acts as an asphyxiant and can cause drowsiness.

Eugenol:This is a type of volatile oil derived from clove; and thus it is more prevalent in kretek cigarettes. The substance has a local anesthetic activity and has been reported to worsen the occurrence of asthma. It can also predispose the user to infections of the respiratory tract.

Formaldehyde:It can react chemically with most substances in cells and depress all cellular functions. It is a confirmed carcinogen with teratogenic effects, in high concentrations, it can lead to cell death.

Methanol:Inhalation of this substance can result in a number of effects ranging from fatigue to blurring of vision and blindness. Visual impairment is the first sign of chronic poisoning.

Napthalene:It can destroy blood cells and kill liver cells (necrosis). It is normally used to make mothballs.

Phenols: These substances can denature and precipitate protein in cells, poisoning them directly. They have been used as antiseptics, germicides, disinfectants, antioxidants and caustics.

Apart from the selected examples above, there are thousands other dangerous substances that ought to concern us. We should, therefore, support actions against tobacco use and trade. After all, to quote Philip Freneau (1752-1832), in his poem *Tobacco*: "Tobacco is surely designed to poison and destroy mankind."

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