

Seminars in Tobacco Science

Terms used for exposure to smoke

The Smoking Behaviour Sub Group of the Cooperation Centre for Scientific Research Relative to Tobacco (CORESTA) was set up in 1996 with the aims of reviewing information relevant to smoking behaviour, publishing the reviews, identifying gaps in information and suggesting suitable studies. So far three reviews have been published by members of the sub group (1–3) and other reviews are in progress. One aspect of the subject that has become apparent to the sub group is that terms are used inconsistently in various papers on smoking behaviour. We therefore propose that the following terms and their definitions are used in the future. While these are of prime relevance to scientists involved in smoking behaviour work, the term “machine yield” will have more general application in analytical studies.

One corollary of this is that we recommend that the term smoke “delivery” is no longer used. This term has been used inconsistently over many years for the yield of smoke constituents. Sometimes “delivery” has been used to describe human smoking yield, sometimes machine yield, sometimes it is not clear which. It is proposed that the term “yield” is used in future, as specified below.

Cigarette machine yield is the amount of a given mainstream smoke constituent exiting the cigarette under machine smoking conditions at a specified smoking regime such as International Organisation for Standardisation (ISO), Federal Trade Commission (FTC), Canadian intense, Massachusetts etc.

The units are mass of the constituent per cigarette.

Human smoker yield is the amount of mainstream smoke constituent exiting the cigarette into the mouth when a given human smokes the cigarette.

The units are mass of the constituent per cigarette.

Human smoker yield can be measured by duplication of the human smoking profile or estimated by cigarette filter analysis techniques.

Mouth spill is the amount of smoke that is spilt from the mouth and not inhaled by the smoker. It is difficult/impossible to measure.

The units are mass of smoke per puff or per cigarette.

Intake is the amount of the smoke constituent that is inhaled by the smoker into the lungs. It is difficult/impossible to measure.

The units are mass of smoke constituent per puff or per cigarette.

Uptake (or *retention*) is the difference between the amount of smoke constituent inhaled (intake) and the amount exhaled over the subsequent one, two or three exhalations.

Uptake is not necessarily the amount absorbed into the body compartments, although for many smoke constituents, e.g. nicotine, uptake is practically identical with the amount absorbed (dose). Exceptions can be particle-bound smoke constituents, which are deposited in the respiratory tract for long time periods and not absorbed.

The units are mass of smoke constituent per puff or per cigarette.

Dose is the amount of smoke constituent absorbed by the smoker's body, a specified body compartment or a specified body organ. Biomarkers are indicators of dose. Dose can be derived from biomarker measurements either empirically or theoretically.

The units are mass of smoke constituent (at the defined site) over a unit of time.

Exposure of a smoker's body, body compartment or organ is the maximum potential dose of the smoke constituent. Not all the exposed material is absorbed or otherwise available for potential biological activity. Dose has a complex, often non-linear relationship to exposure.

The units of exposure can be concentration \times time for a specified constituent in the external medium, e.g. the atmosphere for a passively exposed non-smoker or the culture medium for a cell suspension.

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