

Harmful and Potentially Harmful Constituents in Tobacco Products and Tobacco Smoke: Established List

March 2012

FDA has established a list of harmful and potentially harmful constituents (HPHCs) in tobacco products and tobacco smoke (the established HPHC list) as required by the Federal Food, Drug, and Cosmetic Act (the FD&C Act).

The established list of 93 HPHCs is included in the notice and in the table below.

Table 1.--Established List of the Chemicals and Chemical Compounds Identified by FDA as Harmful and Potentially Harmful Constituents in Tobacco Products and Tobacco Smoke

Constituent	Carcinogen (CA), Respiratory Toxicant (RT), Cardiovascular Toxicant (CT), Reproductive or Developmental Toxicant (RDT), Addictive (AD)
Acetaldehyde	CA, RT, AD
Acetone	CA
Acrolein	RT
Acrylamide	RT, CT
Acrylonitrile	CA
Aflatoxin B1	CA, RT
4-Aminobiphenyl	CA
1-Aminonaphthalene	CA
2-Aminonaphthalene	CA
Ammonia	RT
Anabasine	AD
o-Anisidine	CA
Arsenic	CA, CT, RDT
A- α -C (2-Amino-9H-pyrido[2,3-b]indole)	CA
Benz[a]anthracene	CA, CT
Benz[j]aceanthrylene	CA
Benzene	CA, CT, RDT
Benzo[b]fluoranthene	CA, CT
Benzo[k]fluoranthene	CA, CT
Benzo[b]furan	CA
Benzo[a]pyrene	CA
Benzo[c]phenanthrene	CA
Beryllium	CA
1,3-Butadiene	CA, RT, RDT
Cadmium	CA, RT, RDT
Caffeic acid	CA
Carbon monoxide	RDT
Catechol	CA
Chlorinated dioxins/furans	CA, RDT
Chromium	CA, RT, RDT
Chrysene	CA, CT

Cobalt	CA, CT
Coumarin	Banned in food
Cresols (o-, m-, and p-cresol)	CA, RT
Crotonaldehyde	CA
Cyclopenta[<u>c,d</u>]pyrene	CA
Dibenz[<u>a,h</u>]anthracene	CA
Dibenzo[<u>a,e</u>]pyrene	CA
Dibenzo[<u>a,h</u>]pyrene	CA
Dibenzo[<u>a,i</u>]pyrene	CA
Dibenzo[<u>a,l</u>]pyrene	CA
2,6-Dimethylaniline	CA
Ethyl carbamate (urethane)	CA, RDT
Ethylbenzene	CA
Ethylene oxide	CA, RT, RDT
Formaldehyde	CA, RT
Furan	CA
Glu-P-1 (2-Amino-6-methyldipyrido[1,2- <u>a</u> :3',2'- <u>d</u>]imidazole)	CA
Glu-P-2 (2-Aminodipyrido[1,2- <u>a</u> :3',2'- <u>d</u>]imidazole)	CA
Hydrazine	CA, RT
Hydrogen cyanide	RT, CT
Indeno[1,2,3- <u>cd</u>]pyrene	CA
IQ (2-Amino-3-methylimidazo[4,5- <u>f</u>]quinoline)	CA
Isoprene	CA
Lead	CA, CT, RDT
MeA- α -C (2-Amino-3-methyl)-9H-pyrido[2,3- <u>b</u>]indole)	CA
Mercury	CA, RDT
Methyl ethyl ketone	RT
5-Methylchrysene	CA
4-(Methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK)	CA
Naphthalene	CA, RT
Nickel	CA, RT
Nicotine	RDT, AD
Nitrobenzene	CA, RT, RDT
Nitromethane	CA
2-Nitropropane	CA
<u>N</u> -Nitrosodiethanolamine (NDELA)	CA
<u>N</u> -Nitrosodiethylamine	CA
<u>N</u> -Nitrosodimethylamine (NDMA)	CA
<u>N</u> -Nitrosomethylethylamine	CA
<u>N</u> -Nitrosomorpholine (NMOR)	CA
<u>N</u> -Nitrosonornicotine (NNN)	CA
<u>N</u> -Nitrosopiperidine (NPIP)	CA
<u>N</u> -Nitrosopyrrolidine (NPYR)	CA

N-Nitrososarcosine (NSAR)	CA
Nornicotine	AD
Phenol	RT, CT
PhIP (2-Amino-1-methyl-6-phenylimidazo[4,5-b]pyridine)	CA
Polonium-210	CA
Propionaldehyde	RT, CT
Propylene oxide	CA, RT
Quinoline	CA
Selenium	RT
Styrene	CA
o-Toluidine	CA
Toluene	RT, RDT
Trp-P-1 (3-Amino-1,4-dimethyl-5H-pyrido[4,3-b]indole)	CA
Trp-P-2 (1-Methyl-3-amino-5H-pyrido[4,3-b]indole)	CA
Uranium-235	CA, RT
Uranium-238	CA, RT
Vinyl acetate	CA, RT
Vinyl chloride	CA

Contact FDA

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Tobacco

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