

S. MACLEF.

	<u>SUFFICIENT EVIDENCE IN HUMANS</u>	MAINSTREAM SMOKE ug/cigt.	TLV/TWA ppm	mg/m ³	OPATIONAL EXPOSURE	POLLUTION	FOOD
4-aminobiphenyl*	<u>Sufficient evidence (sufficient evidence in humans)</u>	0.002-0.005	None	None			No longer produced on a commercial scale. Previously used in the detection of Sulfates.
benzene*	<u>Sufficient evidence in animals with new data from US National Toxicology Program (sufficient evidence in humans)</u>	12-48	10	30	Chem. Industry; Plastic Mfg.; Refinery Workers; Solvent.		
chromium VI*	<u>Sufficient evidence (sufficient evidence in humans)</u>	0.004-0.07			Bleachers, Electroplaters, Photoengraver		
Water Soluble Cr VI cpd				0.05			
Certain Water Insoluble Cr VI cpd				0.05			
2-naphthylamine	<u>Sufficient evidence in animals (sufficient evidence in humans)</u>	0.001-0.022	None	None	Pressmen/ Filtermen		Previously used in dyestuffs, rubber, and in Research.
vinyl chloride*	<u>Sufficient evidence (sufficient evidence in humans)</u>	0.001-0.016	5	10	Polymer Products	PVC water pipes	

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LIMITED EVIDENCE IN HUMANS

MAINSTREAM
SMOKE
ug/cigt.

TLV/TWA
ppm mg/m³

OCCUPATIONAL
EXPOSURE

POLLUTION

FOOD

acrylonitrile*

Sufficient evidence (limited evidence in humans)

3.2-15

2

4.5

Mfg. acrylic fibers;
Plastics;
Adhesives.

cadmium*

Sufficient evidence (limited evidence in humans)

0.009-0.07

Battery,
Textile
Welders

Water

Dust, Salts
Cadmium Oxide Production

0.05
0.05

nickel*

Sufficient evidence (limited evidence in humans)

0-0.6

Production plants
Welding; Electro-
plating; Storage
batteries.

Combustion of Coal,
Diesel oil,
Fuel oil.

Water; Cereal; Vegetat
Fish; Cocoa.

Metal
Insoluble Compounds as Ni
Soluble Inorganic Compounds as Ni

1.0
1.0
0.1

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	<u>SUFFICIENT EVIDENCE</u>	MAINSTREAM SMO ug/cigt.	TLV/TWA		OCCUPATIONAL EXPOSURE	POLLUTION	FOOD
			ppm	ug/m ³			
<i>ortho</i> -anisidine	<u>Sufficient evidence</u>	---	0.1	0.5	Mfg. of Azo dyes		
benz(a)anthracene	<u>Sufficient evidence</u>	0.04-0.07			Coal-tar Gas work plant Electrical plants.	Atmos. of cities Gas & Diesel engine exhaust Auto exhaust	(Fish) Smoked meat, Vegetable oil, Coffee, Whisky
benzo(b)fluoranthene	<u>Sufficient evidence</u>	0.03			Coal-tar		Oils & Fats, Smoked food.
dibenz(a,h)acridine	<u>Sufficient evidence</u>	0.0001			Refinery Incinerators; Coal-tar pitch.		
dibenz(a,j)acridine	<u>Sufficient evidence</u>	0.003-0.010			Refinery Incinera- tors; Coal-tar pitch; Coal combustion stack.	Motor exhaust; Urban atmosphere	

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	<u>SUFFICIENT EVIDENCE</u>	HAIR AND HEAD SMOKE ug/cigt	TLV/TWA ppm mg/m ³	OCCUPATIONAL EXPOSURE	POLLUTION	FOOD	IARC* REFERENCE
7H-dibenzo(c,g)carbazole	<u>Sufficient evidence</u>	0.0007					Vol. 3, pp. 260- Vol. 32, pp. 315-
dibenzo(a,h)anthracene ^o	<u>Sufficient evidence</u>	---		Coal-tar	Gas engine exhaust; Auto exhaust	Smoked ham, Charcoal- broiled steak, Vegetable oils	
dibenzo(a,e)pyrene	<u>Sufficient evidence</u>	---			Appears in exhaust (Petrol Engine)		
dibenzo(a,h)pyrene	<u>Sufficient evidence</u>	---			May be found in Air or Engine Exhaust; Coal- tar pitch.		
dibenzo(a,i)pyrene	<u>Sufficient evidence</u>	---					Vol. 3, pp. 224- Vol. 32, pp. 343-
dibenzo(a,j)pyrene	<u>Sufficient evidence</u>	0.002-0.003			Found traces in Auto exhaust, gas, coal-tar.		

* IARC Monographs on the Evaluation of the Carcinogenic Risk
of Chemicals to Humans

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	<u>SUFFICIENT EVIDENCE</u>	MAINSTREAM SMOKE ug/cig.	TLV/TWA ppm mg/m ³		OCCUPATIONAL EXPOSURE	POLLUTION	FOOD	IARC* REFERENCE
1,1-dimethylhydrazine*	<u>Sufficient evidence</u>	---	0.5	1	Jet & Rocket Fuels; Photography & Chem. Synthesis; Plant growth control.			
formaldehyde*	<u>Sufficient evidence</u>	20-88	1	1.5	Resin plants; Embalming fluids; Mfg. of Compounds	Atmosphere of large cities.		
indeno(1,2,3-cd)pyrene	<u>Sufficient evidence</u>	0.004-0.02			Coal-tar pitch; Petroleum Asphalt	Auto exhaust; Diesel engine exhaust; Road dust.	Sausages; Plant cooking fat; Plant oil.	
<i>N-Nitroso compounds</i> 4-(methylnitrosamino)-1-(3-pyridyl)- 1-butanone	<u>Sufficient evidence</u>	0.00-0.7						Vol. 37, pp. 209-
<i>N-nitrosodimethylamine*</i>	<u>Sufficient evidence</u>	0.001-0.2	None	None	Leather tann- ery; Rubber Factory Rocket Propellant Cancer Res. Lab.	Automobile	Beer, Whiskeys, Milk Powder, Cured meat.	
<i>N-nitrosodiethylamine*</i>	<u>Sufficient evidence</u>	0-0.01				Auto Interior	Wheat, Milk, Cured Meat.	
<i>N-Nitroso-N-methylethylamine</i>	<u>Sufficient evidence</u>	0.0001-0.01						Vol. 17, pp. 221-

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Risk of Chemicals to Humans

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<u>SUFFICIENT EVIDENCE</u>	<u>Sufficient evidence</u>	INTERNATIONAL SMOKF ug/cig.	ppm	mg/m ³	EXPOSURE	FOOD	REFERENCE
<i>N</i> -nitrosotornicotine	<u>Sufficient evidence</u>	0.13-0.25					Vol. 17, pp. 281- Vol. 37, pp. 241-
<i>N</i> -nitrosodiethanolamine	<u>Sufficient evidence</u>	0-0.09			Cutting fluids	Cosmetics	
<i>N</i> -nitrosopyrrolidine*	<u>Sufficient evidence</u>	0.002-0.042				Fried bacon, Cured meat.	
<i>N</i> -nitrosopiperidine	<u>Sufficient evidence</u>	0-0.009				Cured meat.	
<i>N</i> -nitrosodi- <i>n</i> -butylamine*	<u>Sufficient evidence</u>	0-0.003			Rubber Industry		
<i>N</i> -nitrosodi- <i>n</i> -propylamine*	<u>Sufficient evidence</u>	0-0.001					Vol. 17, pp. 177-
2-nitropropane	<u>Sufficient evidence</u>	0.73-1.21	10	35	Solvent Systems for coating: - Vinyl - Printing Inks - Adhesives Ship building; Metal & Plastic Products		

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<u>COCARCINOGENIC ACTIVITY</u>	MAINSTREAM SMOKE ug/cigt.	TLV/TWA ppm m ³	OCCUPATIONAL EXPOSURE	POLLUTION	FOOD
acetaldehyde	18-1400	100 180	Mfg. of other cpd. Plastics, Synthetic rubber, Flavours, Perfume.		
urethane	0.020-0.038		Solvent; Solubilizer		