

Table 1: Evidence for carcinogenicity in humans and for genotoxicity as the main mechanism of the Group-1 agents assessed

	Tumour sites or types with sufficient evidence in humans	Tumour sites or types with limited evidence in humans	Evidence of genotoxicity as the main mechanism
Aromatic amines			
4-Aminobiphenyl	Urinary bladder	..	Strong
Benzidine	Urinary bladder	..	Strong
Dyes metabolised to benzidine	..	..	Strong*
4,4'-Methylenebis(2-chloroaniline)	..	..	Strong*
2-Naphthylamine	Urinary bladder	..	Strong
Ortho-toluidine	Urinary bladder	..	Moderate
Auramine production	Urinary bladder	..	Weak/lack of data [‡]
Magenta production	Urinary bladder	..	Weak/lack of data [‡]
PAH-related exposures			
Benzo[a]pyrene	..	..	Strong*
Soot (chimney sweeping)	Skin, lung	Urinary bladder	Moderate
Coal gasification	Lung	..	Strong
Coal-tar distillation	Skin	..	Strong
Coke production	Lung	..	Strong
Coal-tar pitches (paving, roofing)	Lung	Urinary bladder	Strong
Aluminium production	Lung, urinary bladder	..	Weak/moderate ^{‡ ‡}
Other chemicals			

Aflatoxins	Hepatocellular carcinoma	..	Strong
Benzene	ANLL	ALL ^{**} , CLL ^{**} , MM ^{**} , NHL ^{**}	Strong
Bis(chloromethyl)ether/chloromethyl methylether	Lung	..	Moderate/strong
1,3-Butadiene	Haematolymphatic organs	..	Strong
Dioxin (2,3,7,8-TCDD)	All cancers combined ^{**}	Lung, STS, NHL	See text [§]
2,3,4,7,8-Pentachlorodibenzofuran	..	..	See text [§]
3,3',4,4',5-Pentachlorobiphenyl (PCB-126)	..	..	See text [§]
Ethylene oxide	..	Lymphoid tumours (NHL, MM, CLL), breast	Strong [*]
Formaldehyde	Nasopharynx Leukaemia ^{***}	Sinonasal cancer	Strong Moderate
Sulfur mustard	Lung	Larynx	Strong
Vinyl chloride	Hepatic angiosarcoma, hepatocellular carcinoma	..	Strong
Other complex exposures			
Iron and steel founding	Lung	..	Weak/moderate
Isopropyl alcohol manufacture using strong acids	Nasal cavity	..	Weak/lack of data
Mineral oils	Skin	..	Weak/lack of data
Occupational exposure as a painter	Lung, urinary bladder, pleural mesothelioma	Childhood leukaemia	Strong [‡]
Rubber-	Leukaemia,	Prostate, larynx,	Strong [‡]

manufacturing industry	lymphoma ^{**} , urinary bladder, lung ^{**} , stomach ^{**}	oesophagus	
Shale oils	Skin	..	Weak/lack of data
Strong inorganic acid mists	Larynx	Lung	Weak/lack of data

ANLL=acute non-lymphocytic leukaemia. ALL=acute lymphocytic leukaemia. CLL=chronic lymphocytic leukaemia. MM=multiple myeloma. NHL=non-Hodgkin lymphoma. STS=soft-tissue sarcoma.

* Agents classified in Group 1 on the basis of mechanistic information.

† Weak evidence in workers, but strong evidence for some chemicals in this industry.

‡ Due to the diversity and complexity of these exposures, other mechanisms may also be relevant.

§ Strong evidence for an aryl hydrocarbon receptor (AhR)-mediated mechanism.

¶ Particularly myeloid leukaemia.

After maternal exposure (before or during pregnancy, or both).

** New epidemiological findings.