

BEHAVIORS, INFECTIONS, AND MEDICAL TREATMENTS, RELATED IARC KNOWN CARCINOGENIC AGENTS (GROUP 1), AND ASSOCIATED CANCER SITES WITH SUFFICIENT AND LIMITED EVIDENCE IN HUMANS, IARC MONOGRAPHS VOLUMES 1 – 100, VOLUME 106, VOLUME 120, AND OTHER PUBLISHED EVIDENCE

BEHAVIORS, INFECTIONS, AND MEDICAL TREATMENTS

RELATED CARCINOGENIC AGENTS AND ASSOCIATED CANCER SITES

Alcohol beverages, consumption

Acetaldehyde associated with alcohol beverages consumption – head (1) (Vol 100E) (2012)
 Alcohol beverages - Colorectum, esophagus, female breast, larynx, liver, oral cavity, pharynx (1) (Vol. 100E) (2012)
 Limited Evidence – Alcoholic beverages
 Pancreas (1) (Vol. 100E) (2012)

Chewing betel quid, primarily esophagus done in India and southeast Asia

Areca nut - Betel quid with added tobacco – oral cavity, pharynx, (1) (Vol. 100E) (2012)
 Areca nut - Betel quid without added tobacco – esophagus oral cavity, (1) (Vol. 100E) (2012)
 Limited Evidence – Areca nut - Betel quid with added tobacco - Liver (Vol. 100E) (2012)
 Limited Evidence - Areca nut - Betel quid without added tobacco – Liver (1) (Vol.100E) (2012)

Chinese herbs, consumption

Aristolochic Acid, plants containing (1) (Vol. 100A) (2012)- Renal pelvis, ureter (Vol. 100A) urothelial – mucosal layer within urinary bladder (Vol.100A - in body of monograph, causal association between herb and nephropathy/urothelial cancer, but not listed in evaluation table section)

DES, diethylstilbestrol

DES, diethylstilbestrol - vagina and cervix

(exposure in utero)

(exposure in utero) (Vol. 100A) (2012)

Limited evidence – testis (exposure in utero),
(Vol. 100A) (2012)

Drinking alcoholic beverages

Alcohol consumption - Oral cavity, pharynx,
larynx, esophagus, liver, colorectum, female
breast (Vol.100E))(2012)

Limited Evidence – Alcohol
consumption - Pancreas (Vol.
100E) (2012)

Eating infected raw or undercooked
freshwater fish from southeast
Asia , China, and Korea

Clonorchis sinensis, infection with parasite – Chinese
liver fluke (infection acquired by eating raw or
under cooked freshwater fish, primarily southern
China, seen in Korea, Hong Kong, Macao and
Viet Nam) - Cholangiocarcinoma (Cancer of the
bile ducts which drain bile from the liver into the
small intestine) (Vol. 100B) (2012)

Opisthorchis viverrini parasite – Southeast Asia
liver fluke, infection from eating of raw or
undercooked infected fish) - Cholangiocarcinoma
(Cancer of bile ducts from liver to small intestine)
(Vol. 100B) (2012)

Eating salted fish, Chinese style

Salted fish, Chinese style - Nasopharynx (Vol. 100E)
(2012)

Limited Evidence – Stomach (Vol.
100E) (2012)

Freshwater fish – eating raw or under
cooked freshwater fish which
contain the infective stage of flukes

Clonorchis sinensis (parasite), seen primarily in
Korea, southern China, Hong Kong, Macao
and Viet Nam (Vol. 100B) (2012) –
Cholangiocarcinoma (Cancer of the bile ducts
which drain bile from the liver into the small
intestine) (Vol. 100B) (2012)

Opisthorchis viverrini (parasite), seen primarily
in Thailand and Laos (Vol. 100B) (2012)-

Cholangiocarcinoma (Cancer of bile ducts from liver to small intestine) (Vol. 100B) (2012)

Helicobacter pylori (infection of)

Helicobacter pylori (infection of) -
Non-cardia gastric carcinoma, low-grade B-cell mucosa-associated lymphoid tissue (MALT) gastric lymphoma (Vol. 61, Vol. 100B) (2012)

Medical treatments,
exposures during medical care

Azathioprine – Non-Hodgkin lymphoma, skin (Vol. 100A) (2012)
Busulfan – acute myeloid leukemia (Vol.100A) (2012)
Chlorambucil – acute myeloid leukemia (Vol. 100A) (2012)
Chlornaphazine – Bladder, urinary (Vol. 100A) (2012)
Cyclophosphamide - Acute myeloid leukaemia, bladder (Vol. 100A) (2012)
Cyclosporine - Non-Hodgkin lymphoma, skin, multiple other sites (Vol. 100A) (2012)
DES, diethylstilbestrol -Breast (exposure during pregnancy), vagina and cervix (exposure in utero) (Vol. 100A) (2012)
 Limited evidence – DES - testis (exposure in utero), endometrium (Vol. 100A) (2012)
Estrogen-only menopausal therapy – Endometrium, ovary (Vol. 100A) (2012)
 Limited Evidence – Estrogen-only menopausal therapy – breast (Vol. 100A) (2012)
Estrogen-progestogen menopausal therapy - Endometrium (risk decreases with number of days/month of progestogen use), breast (Vol. 100A) (2012)

Estrogen-progestogen, combined oral
contraceptives (OCC) – Breast, cervix,
liver (Vol. 100A) (2012)
 Limited Evidence – Estrogen-
 progestogen, combined oral
 contraceptives (OCC) -
 Endometrium, ovary
 (Vol. 100A) (2012)

Etoposide in combination with cisplatin
and bleomycin - Acute myeloid
leukaemia, (+MDS) (Vol. 100A) (2012)

Melphalan - Acute myeloid leukemia
(Vol. 100A) (2012)

MOPP, combination chemotherapy - Acute
myeloid leukemia, lung
(Vol.100A) (2012)

Phenacetin – Renal pelvis, ureter
(Vol. 100A) (2012)

Phenacetin, analgesic mixtures containing
- Renal pelvis, ureter (Vol.
100A) (2012)

Phosphorus-32, beta-particle emitter – Acute
leukemia (Vol. 100D) (2012)

Radium-224 and decay products – Bone
(Vol. 100D) (2012)

Semustine [1-(2-Chloroethyl)-3-
(4-methylcyclohexyl)-1-nitrosourea,
Methyl-CCNU - Acute myeloid leukaemia
(+MDS) (Vol.100A) (2012)

Thiotepa (anti-neoplastic agent) –
Leukaemia (Vol. 100A) (2012)

Thorium-232 and decay products –
Liver, extrahepatic bile ducts,
gallbladder, leukaemia (excluding
CLL) (Vol. 100D) (2012)

Tamoxifen (anti-neoplastic agent) –
Endometrium (Vol. 100A) (2012)

Treosulfan, anti-neoplastic agent - Acute
myeloid leukaemia (+MDS) (Vol. 100A)
(2012)

X-radiation or gamma radiation –
medical patients and in-utero
exposure (off-spring of pregnant
medical patients) - bone, brain,
CNS, colon, esophagus, female
breast, kidney (atomic- bomb

survivors, medical patients),
leukaemia (excluding CLL),
lung, salivary gland, skin (BCC),
stomach, thyroid, urinary
bladder, and multiple
sites (in-utero exposure)
(Vol. 100D) (2012)

Pesticide Usage

Arsenic and inorganic arsenic compounds-
Lung, skin, urinary bladder (Vol.
100C) (2012)

Limited Evidence – Arsenic –
Kidney, liver, prostate (Vol.
100C) (2012)

Dioxin (2,3,7,8-TCDD) - All cancers
combined (Vol. 100F)(2012)

Limited Evidence – Dioxin - Lung, Soft
Tissue Sarcoma (STS), Non-Hodgkin
lymphoma (NHL) (Vol. 100F) (2012)

Schistosoma haematobium(infection with)
(parasite – blood fluke found in Middle East,
India, Portugal, and Africa)

Schistosoma haematobium (infection with)
Bladder, urinary (Vol. 100B) (2012)

Sexual Activity

Epstein-Barr virus (EBV)(spreads through
saliva) Burkitt's lymphoma, extranodal
NK/T-cell lymphoma (nasal type),
Hodgkin lymphoma, immuno-
suppression – related non-Hodgkin
lymphoma (Vol. 100B) (2012)

Limited Evidence – Epstein–Barr
virus (EBV)(spreads through
saliva) - Gastric carcinoma,
lympho-epithelioma-
like carcinoma (Vol.
100B) (2012)

Human immunodeficiency virus, type 1,
infection with (HIV-1) - Cervix (Vol.
100B) (2012)

Human papillomavirus, type 16 (HPV-16) –
Cervix (Vol. 100B) (2012)
HPV-18 (Human papillomavirus, type 18) – Cervix
(Vol. 100B) (2012)
HPV-31, 33, 35, 39, 45, 51, 52, 56, 58, 59
(Human papillomavirus, types 31, 33, 35, 39,
45, 51, 52, 56, 58, 59) - Cervix (Vol.
100B) (2012)

Tanning with ultraviolet-emitting
tanning devices

Skin (melanoma, eye (melanoma,
particularly choroids and ciliary body)
(Vol. 100D) (2012)

Tobacco, smokeless usage

Tobacco smokeless – Oral cavity, esophagus,
pancreas (Vol. 100E) (2012)

Tobacco smoking

Cadmium and cadmium compounds – Lung
(Vol. 100C) (2012)
Limited Evidence – Cadmium and
cadmium Compounds - Prostate,
kidney (Vol. 100C) (2012)
Formaldehyde - Leukaemia, nasopharynx
(Vol. 100F) (2012)
Limited Evidence – Formaldehyde -
Sinonasal cancer (Vol. 100F)
(2012)
4-(N-Nitrosomethylamino)-1-(3-pyridyl)-1-
butanone (NNK) (nitrosamine found in
tobacco smoke) - no specific site
(Vol. 100E) (2012)
N'-Nitrosornicotine (NNN) (nitrosamine
found in tobacco smoke) – no specific site
(Vol. 100E) (2012)
Tobacco smoking - bone marrow (myeloid
leukaemia) (Vol. 83) (2004), colorectum,
esophagus (adenocarcinoma and
squamous-cell carcinoma), hypopharynx,
kidney (body and pelvis),
larynx, liver, lung, nasal cavity,
nasopharynx, oral cavity, oropharynx,

ovary (mucinous), pancreas, paranasal sinuses, stomach, ureter, urinary bladder, uterine cervix (Vol. 100C) (2012)

Limited evidence – Tobacco smoking
- Female breast (Vol. 100E) (2012)

Tobacco smoking – Parental smoking, including preconception and pregnancy

Hepatoblastoma, embryonic cancer in off-spring (Vol. 100E) (2012)

Limited evidence – Tobacco smoking – Parental smoking, including preconception and pregnancy - Childhood leukaemia (in particular acute lymphocytic leukaemia) (Vol.100E) (2012)

Tobacco smoking, second-hand smoke

Lung (Vol. 100E) (2012)

Limited evidence – Tobacco smoking, second-hand – Larynx, pharynx (Vol. 100E) (2012)