

Introduction

A carcinogen is any substance, radionuclide, or radiation that is an agent directly involved in causing cancer. This may be due to the ability to damage the genome or to the disruption of cellular metabolic processes. Several radioactive substances are considered carcinogens, but their carcinogenic activity is attributed to the radiation, for example gamma rays and alpha particles, which they emit. Common examples of non-radioactive carcinogens are inhaled asbestos, certain dioxins and tobacco smoke. Although the public generally associates carcinogenicity (ability to cause cancer) with synthetic chemicals, it is equally likely to arise in both natural and synthetic substances. Carcinogens are not necessarily immediately toxic - their effect can be insidious (Wikipedia).

[Picture Credit: Carcinogen]



In this Fact Sheet carcinogens for which there are sufficient and limited evidence of cancer causing ability are included (IARC Classifications by Cancer Sites, Volumes 1 to 108).

Cancer

Cancer is any disease in which normal cells are damaged and do not undergo programmed cell death as fast as they divide via mitosis. Carcinogens may increase the risk of cancer by altering cellular metabolism or damaging DNA directly in cells, which interferes with biological processes and further induces uncontrolled, malignant (cancerous) division. This ultimately leads to the formation of tumours. Usually, severe DNA damage leads to apoptosis (cell death), but if the programmed cell death pathway is damaged, then the cell cannot prevent itself from becoming a cancer cell.

Researched and Authored by Prof Michael C Herbst

[D Litt et Phil (Health Studies); D N Ed; M Art et Scien; B A Cur; Dip Occupational Health; Dip Genetic Counselling; Dip Audiometry and Noise Measurement; Diagnostic Radiographer; Medical Ethicist]

Approved by Ms Elize Joubert, Chief Executive Officer [BA Social Work (cum laude); MA Social Work]

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Control of Carcinogenic Substances in South Africa

In South Africa all hazardous substances, inclusive of carcinogens, are controlled under:

- Hazardous Substances Act, 1973 (Act No 15 of 1973) as amended
- The South African National Standard.

The SA National Standard defines a carcinogen as:

Any chemical substance or a mixture of chemical substances which induce cancer or increase its incidence when inhaled, ingested or absorbed through the skin (SANS).

Incidence of Cancer in South Africa

According to the outdated National Cancer Registry (2017), known for under reporting, the following number of cancer cases was histologically diagnosed in South Africa during 2017:

Group - Males 2017	Actual No of Cases	Estimated Lifetime Risk
All males	39 975	1:6
Asian males	980	1:7
Black males	13 166	1:9
Coloured males	4 734	1:5
White males	21 095	1:3

Group - Females 2017	Actual No of Cases	Estimated Lifetime Risk
All females	41 670	1:8
Asian females	1 300	1:7
Black females	18 814	1:10
Coloured females	4 575	1:7
White females	16 981	1:4

The frequency of histologically diagnosed cases of cancer in South Africa for 2017 was as follows (National Cancer Registry, 2017):

Group - Males 2017	0 – 19 Years	20 – 29 Years	30 – 39 Years	40 – 49 Years	50 – 59 Years	60 – 69 Years	70 – 79 Years	80+ Years
All males	526	672	1 968	3 919	7 240	11 705	9 320	3 615
Asian males	8	33	47	88	185	336	226	57
Black males	395	399	1 164	1 877	3 107	3 692	1 925	598
Coloured males	45	60	183	448	1 103	1 444	1 062	389
White males	78	180	574	1 506	3 855	6 224	6 107	2 571

Group - Females 2017	0 – 19 Years	20 – 29 Years	30 – 39 Years	40 – 49 Years	50 – 59 Years	60 – 69 Years	70 – 79 Years	80+ Years
All females	474	1 092	4 218	7 167	8 636	9 176	7 210	3 697
Asian females	16	33	103	230	308	320	218	72
Black females	353	768	2 975	4 225	4 149	3 382	2 061	901
Coloured females	34	89	319	740	1 053	1 165	802	373
White females	70	202	821	1 972	3 126	4 309	4 129	2 351

N.B. In the event that the totals in any of the above tables do not tally, this may be the result of uncertainties as to the age, race or sex of the individual. The totals for 'all males' and 'all females', however, always reflect the correct totals.

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Cancer as a Leading Cause of Death

The World Health Organization declared cancer the leading cause of death globally in 2010 with 7.6 million deaths. According to the *IARC Globocan Report*, an estimated 12.7 million new cancer cases occurred in 2008. Lung, female breast, colorectal and stomach cancers accounted for 40% of all diagnoses worldwide.

In 2008 in South Africa, 207 males per 100 000 deaths and 124 female deaths per 100 000 were attributable to cancer. The lifetime risk (2010) for women to develop cancer is one in nine (9) and for males is one in eight (8).

The National Cancer Registry (NCR) documented cancer of unknown primary (CUP), for both men and women, as a priority cancer. Researchers at the Medical Research Council (MRC) published an article in *The Lancet* in 2009 stating that South Africa has a quadruple burden of disease, namely HIV and Tuberculosis, Maternal and Child Mortality, Non-Communicable Diseases (NCD's) and Violence, Injuries and Trauma.

There are unfortunately no credible and recent statistics of cancer deaths available for South Africa, however, Statistics SA lists cancer as the 6th cause of death in South Africa.

Most Prevalent Cancers Among Certain Groups in South Africa (Non-Melanoma Skin Cancers Excluded)				
Childhood**	Adolescent Boys***	Adolescent Girls***	Adult Females***	Adult Males***
Leukaemia	Bone	Leukaemia	Breast Cancer	Prostate
Lymphoma	Leukaemia	Bone	Cancer of the Cervix	Colorectal Cancer
Central Nervous System Tumours	Non-Hodgkin Lymphoma	Connective Tissue	Primary Site Unknown*	Lung Cancer
Nephroblastoma	Hodgkin Lymphoma	Hodgkin Lymphoma	Colorectal Cancer	Primary Site Unknown*
Sarcoma	Brain and Central Nervous System	Kaposi Sarcoma	Cancer of the Uterus	Kaposi Sarcoma
Rhabdomyosarcoma	Testis	Brain and Central Nervous System	Kaposi Sarcoma	Cancer of the Oesophagus
Neuroblastoma	Connective Tissue	Ovary	Cancer of the Lung	Cancer of the Bladder
Bone Cancer	Malignant Melanoma	Thyroid Cancer	Non-Hodgkin's Lymphoma	Non-Hodgkin's Lymphoma
Other malignancies	Kaposi sarcoma	Primary Site Unknown*	Malignant Melanoma	Stomach Cancer
Germ cell Cancer	Liver and Bile Duct Cancer	Breast Cancer	Cancer of the Oesophagus	Malignant Melanoma

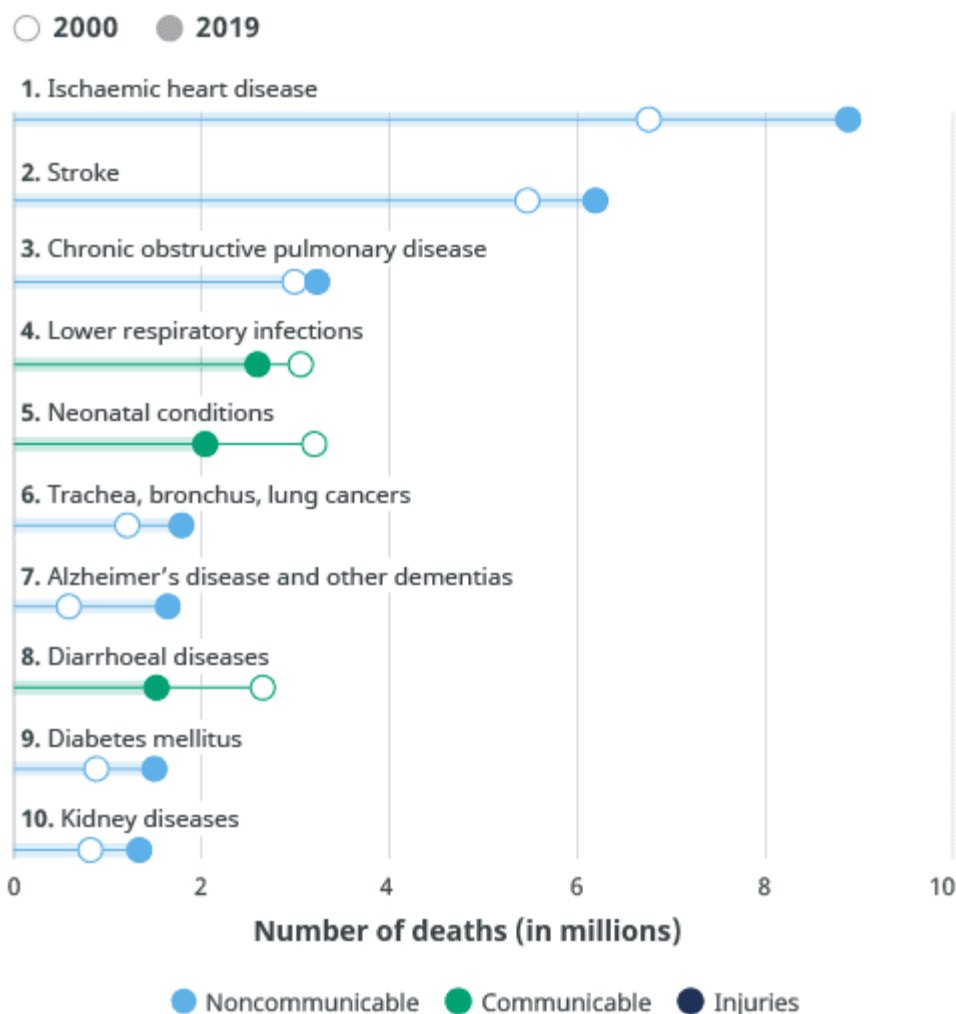
(*) Primary Site Unknown means that the original site of the primary cancer could not be determined

(**) South African Paediatric Tumour Registry (2012)

(***) South African National Cancer Registry (2012)

At a global level, 7 of the 10 leading causes of deaths in 2019 were noncommunicable diseases. These seven causes accounted for 44% of all deaths or 80% of the top 10. However, all noncommunicable diseases together accounted for 74% of deaths globally in 2019.

Leading causes of death globally



Source: WHO Global Health Estimates.

Deaths from noncommunicable diseases are on the rise. Trachea, bronchus and lung cancers deaths have risen from 1.2 million to 1.8 million and are now ranked 6th among leading causes of death.

Medical Disclaimer

This Fact Sheet is intended to provide general information only and, as such, should not be considered as a substitute for advice, medically or otherwise, covering any specific situation. Users should seek appropriate advice before taking or refraining from taking any action in reliance on any information contained in this Fact Sheet. So far as permissible by law, the Cancer Association of South Africa (CANSA) does not accept any liability to any person (or his/her dependants/estate/heirs) relating to the use of any information contained in this Fact Sheet.

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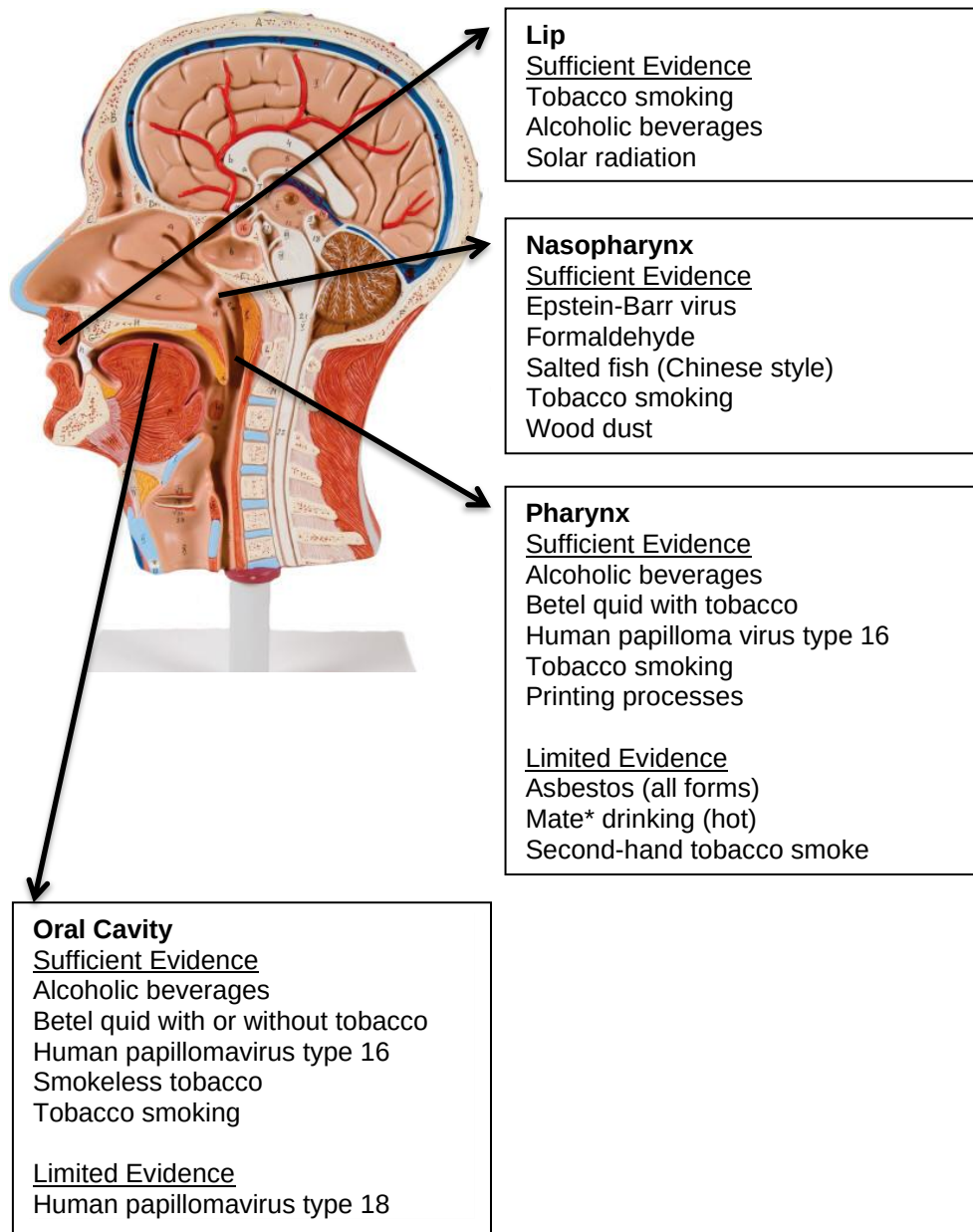
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Carcinogens: Lip, Oral Cavity and Pharynx and Nasopharynx

[Picture Credit: Head and Neck]



*Mate: is prepared from steeping dried leaves of yerba mate (*Ilex paraguariensis*, known in Portuguese as *erva-mate*) in hot water. Mate is served with a metal straw from a shared hollow calabash gourd.



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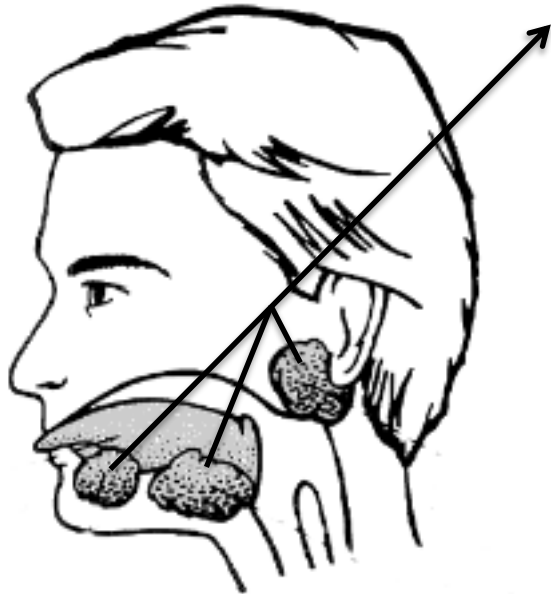
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Carcinogens: Salivary Glands and Tonsils

[Picture Credit: Salivary Glands]



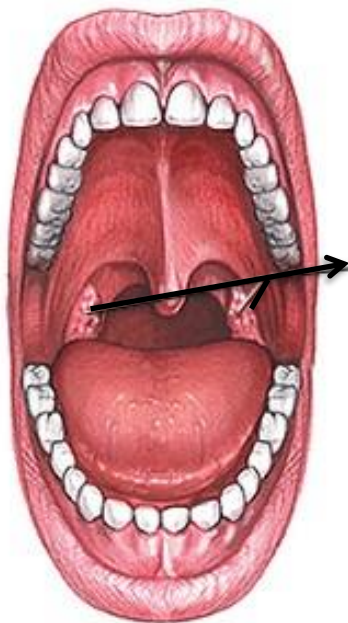
Salivary Glands

Sufficient Evidence

X-radiation
Gamma-radiation

Limited Evidence

Radioactive iodine (including Iodine-131)

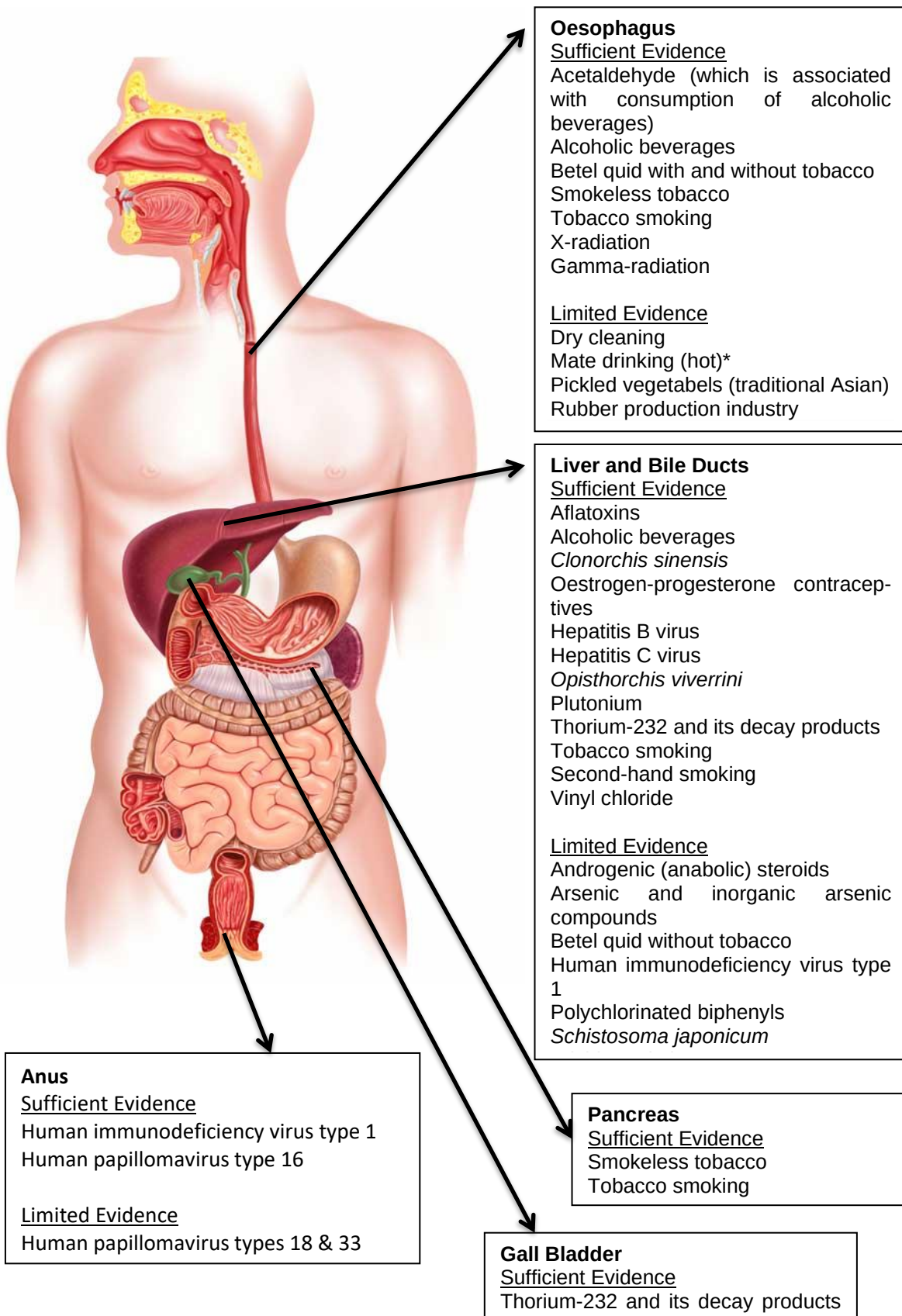


Tonsils

Sufficient Evidence

Human papillomavirus type 16 & 18

Carcinogens: Digestive Organs



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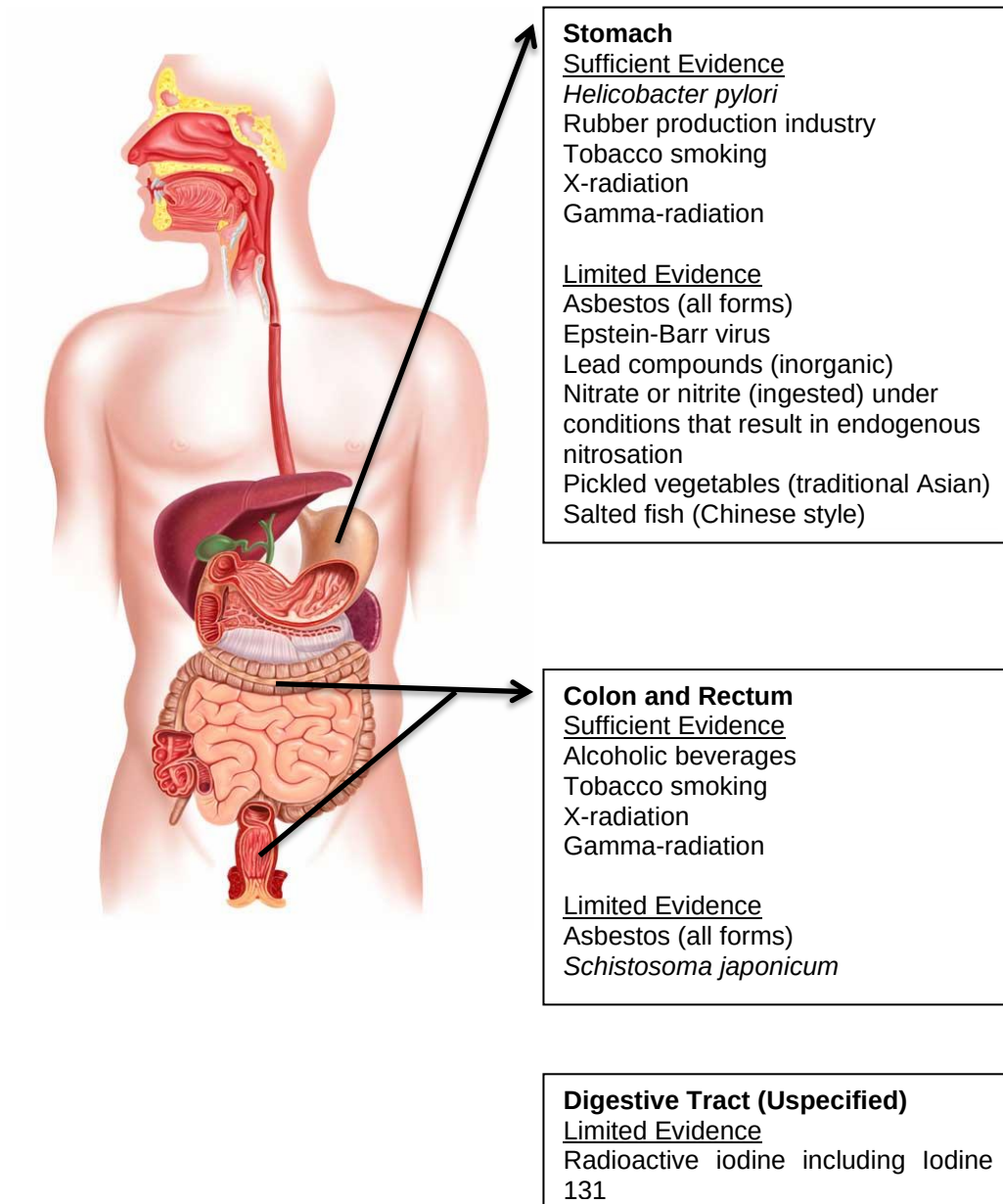
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Carcinogens: Digestive Organs (continued)

[Picture Credit: Digestive Organs]

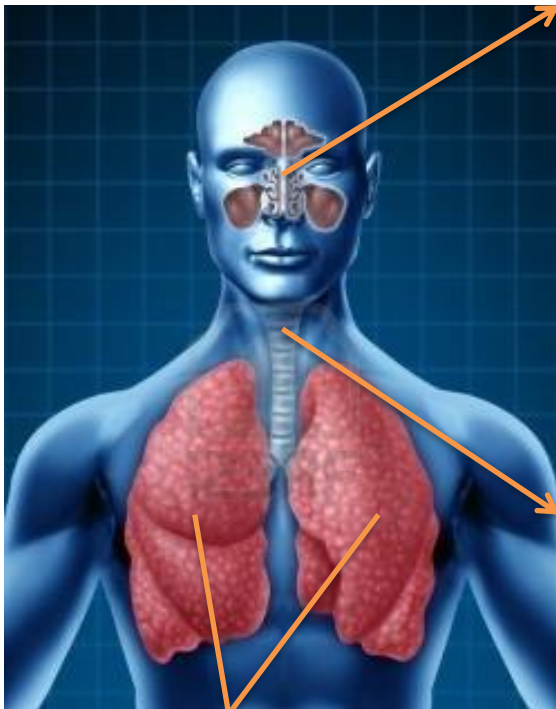


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Carcinogens: Respiratory Organs



Nasal Cavity and Paranasal sinuses

Sufficient Evidence

Isopropyl alcohol production
Leather dust
Nickel compounds
Radium-226 and its decay products
Radium-228 and its decay products
Tobacco smoking
Wood dust

Limited Evidence

Carpentry and joinery
Chromium (VI) compounds
Formaldehyde
Textile manufacturing

Larynx

Sufficient Evidence

Acid mists (strong inorganic)
Alcohol beverages
Asbestos (all forms)
Tobacco smoking

Limited Evidence

Human papillomavirus type 16 & 18
Mate* drinking (hot)
Rubber production industry
Sulphur mustard
Tobacco smoke (second-hand)

Lungs

Sufficient Evidence

Aluminium production
Arsenic and inorganic arsenic compounds
Asbestos (all forms)
Beryllium and beryllium compounds
Bis(chloromethyl)ether
Cadmium and cadmium compounds
Chromium(VI) compounds
Coal emissions (indoor combustion)
Coal gasification
Coal-tar pitch
Coke production
Diesel engine exhaust
Hematite mining (underground)
Nickel compounds\Painting
Plutonium
Radon-222 and its decay products
Rubber production industry
Silica dust (crystalline)
Soot
Tobacco smoking (incl 2nd hand smoke)
X-radiation and Gamma-radiation

Limited Evidence

Acid mists (strong inorganic)
Art glass and glass (manufacture of)
Biomass fuel (primarily wood)
Bitumens and their emissions
Carbon electrode manufacture
Alpha-Chlorinated toluenes
Benzoyl chloride
Cobalt metal with tungsten carbide
Creosotes
Frying (emissions from high temperatures)
Insecticides (non-arsenical)
Printing processes
2,3,7,8-Tetrachlorodibenzopara-dioxin
Welding fumes

Pleura

See 'mesothelium'

[Picture Credit: Upper Respiratory Organs]

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Carcinogens: Bone

[Picture Credit: Bone]



Bone

Sufficient Evidence

Plutonium

Radium-224 and its decay products

Radium-226 and its decay products

Radium-228 and its decay products

X-radiation

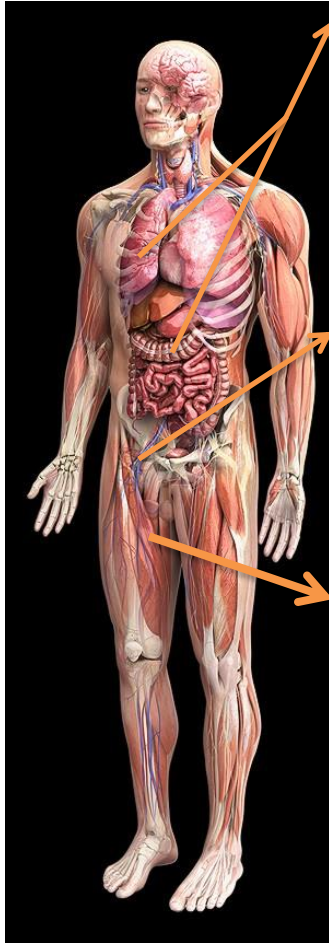
Gamma-radiation

Limited Evidence

Radioactive Iodine including Iodine-131

Carcinogens: Mesothelium, Endothelium and Soft Tissue

[Picture Credit: Soft Tissue]



Mesothelium

- **Pleura (covering of lungs)**
- **Peritoneum (the lining of the abdominal cavity)**

Sufficient Evidence

Asbestos (all forms)
Erionite
Paint fumes

Endothelium (Kaposi sarcoma)

[Tissue which forms a single layer of cells lining various organs and cavities of the body, especially the blood vessels, heart, and lymphatic vessels. It is formed from the embryonic mesoderm.]

Sufficient Evidence

Human immunodeficiency virus type 1
Human herpes virus 8

Soft Tissue

[In anatomy, the term **soft tissue** refers to tissues that connect, support, or surround other structures and organs of the body, not being bone. Soft tissue which includes tendons, ligaments, fascia, skin, fibrous tissues, fat and synovial membranes which are connective tissue), and muscles, nerves and blood vessels (which are not connective tissue).]

Limited Evidence

Polychlorophenols or their sodium salts (combined exposure)
Radio-iodines
Iodine-131
2,3,7,8-Tetrachlorodibenzopara-dioxin

Carcinogens: Skin

[Picture Credit: Skin]



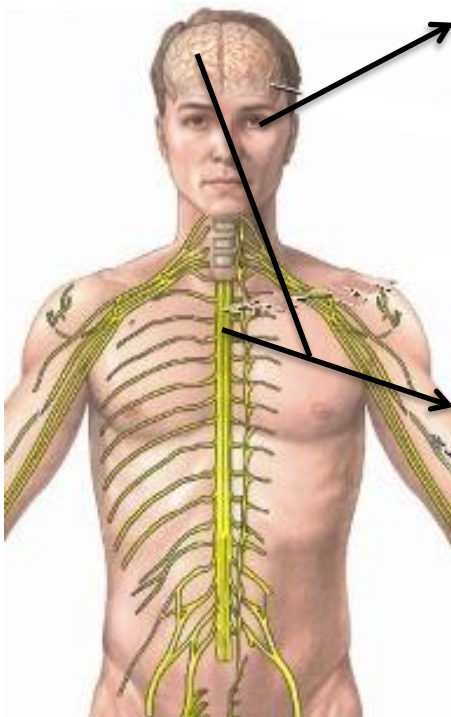
Skin (Non-melanoma)
Sufficient Evidence
Arsenic and inorganic arsenic compounds
Azathioprine
Coal-tar pitch
Cyclosporine
Methoxsalen plus ultraviolet A
Mineral oils (untreated or mildly treated)
Shale oils
Solar radiation
Soot
X-radiation
Gamma-radiation

Limited Evidence
Creosotes (coal tar derivative)
Human immunodeficiency virus type 1
Human papillomavirus types 5 & 8 (in persons with *epidermodysplasia verruciformis*)
Hydrochlorothiazide
Nitrogen mustard
Petroleum refining
Ultraviolet-emitting tanning devices
Merkel cell polyomavirus (MCV)

Skin (Melanoma)
Sufficient Evidence
Solar radiation
Ultraviolet-emitting tanning devices
Polychlorinated biphenyls (coolant fluid)

Carcinogens: Eye, Brain and Central Nervous System

[Picture Credit: CNS]



Eye

Sufficient Evidence

Human immunodeficiency virus type 1
Ultraviolet-emitting tanning devices
Welding

Limited Evidence

Solar radiation

Brain and Central Nervous System

Sufficient Evidence

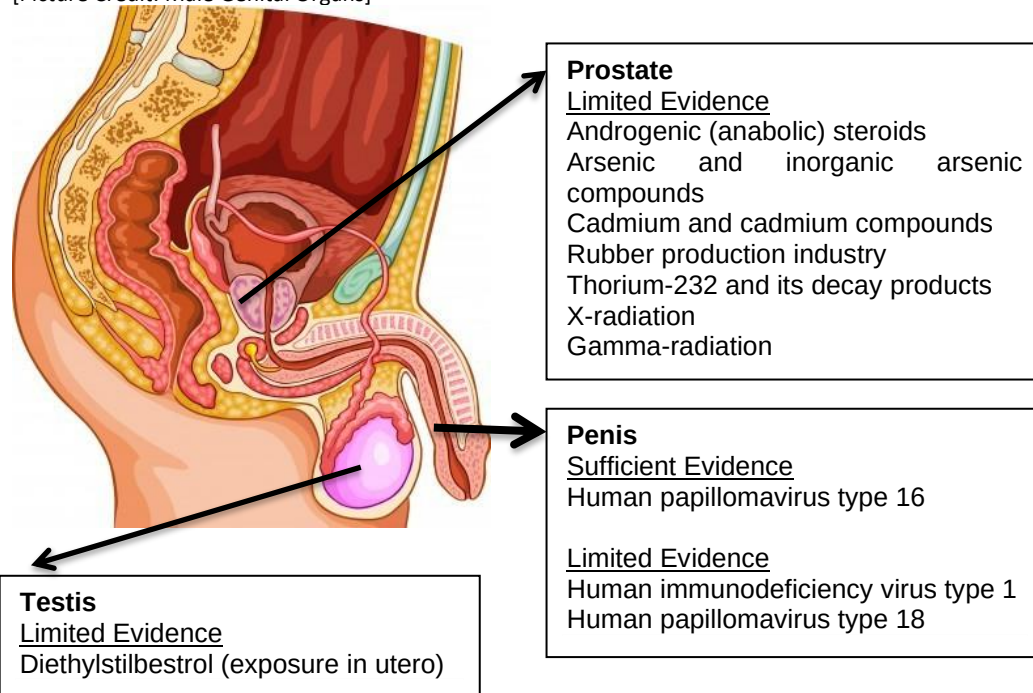
X-radiation
Gamma Radiation

Limited Evidence

Radiofrequency electromagnetic fields
Wireless phones

Carcinogens: Male Genital Organs

[Picture Credit: Male Genital Organs]



Carcinogens: Female Breast and Genital Organs

[Picture Credit: Female Torso]



Female Breast

Sufficient Evidence

Alcoholic beverages
Diethylstilbestrol
Estrogen-progesterone contraceptives
Estrogen-progesterone menopausal therapy
X-radiation
Gamma-radiation

Limited Evidence

Digoxin
Oestrogen menopausal therapy
Ethylene oxide
Shift work that involves circadian disruption
Tobacco smoking

[Picture Credit: Female Genitalia]



Endometrium

Sufficient Evidence

Oestrogen menopausal therapy
Oestrogen-progestogen menopausal therapy
Tamoxifen

Limited Evidence

Diethylstilbestrol

Uterine Cervix

Sufficient Evidence

Diethylstilbestrol (exposure in utero)
Oestrogen-progestogen contraceptives
Human immunodeficiency virus type 1
Human papillomavirus types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58 & 59
Tobacco smoking

Limited Evidence

Human papillomavirus types 26, 53, 66, 67, 68, 70, 73 & 82

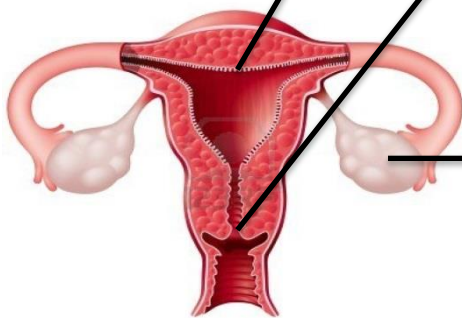
Ovary

Sufficient Evidence

Asbestos (all forms)
Oestrogen menopausal therapy
Tobacco smoking

Limited Evidence

Talc-based body powder (perineal use)
X-radiation and Gamma-radiation

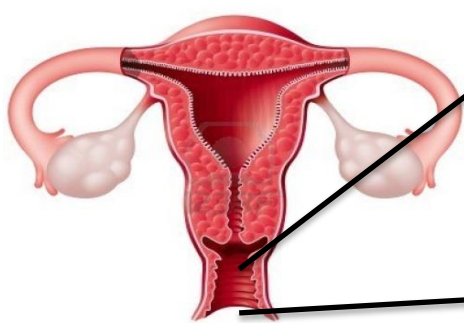


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Vulva

Sufficient Evidence

Human papillomavirus type 16

Limited Evidence

Human immunodeficiency virus type 1

Human papillomavirus type 18 & 33

Vagina

Sufficient Evidence

Diethylstilbestrol (exposure in utero)

Human papillomavirus type 16

Limited Evidence

Human immunodeficiency virus type 1

Carcinogens: Endocrine Glands - Thyroid

[Picture Credit: Thyroid]



Thyroid

Sufficient Evidence

Radio-iodines

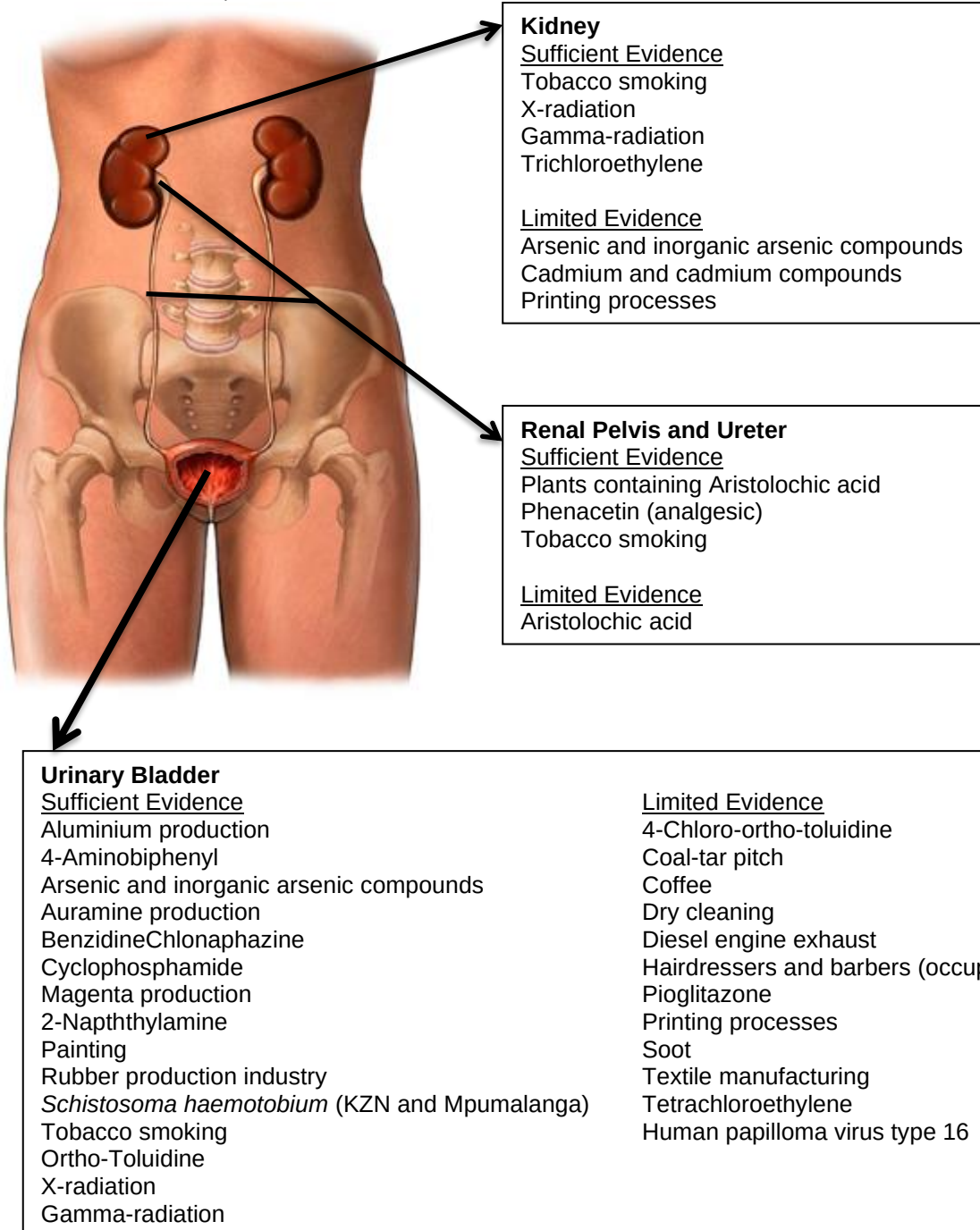
Iodine-131

X-radiation

Gamma-radiation

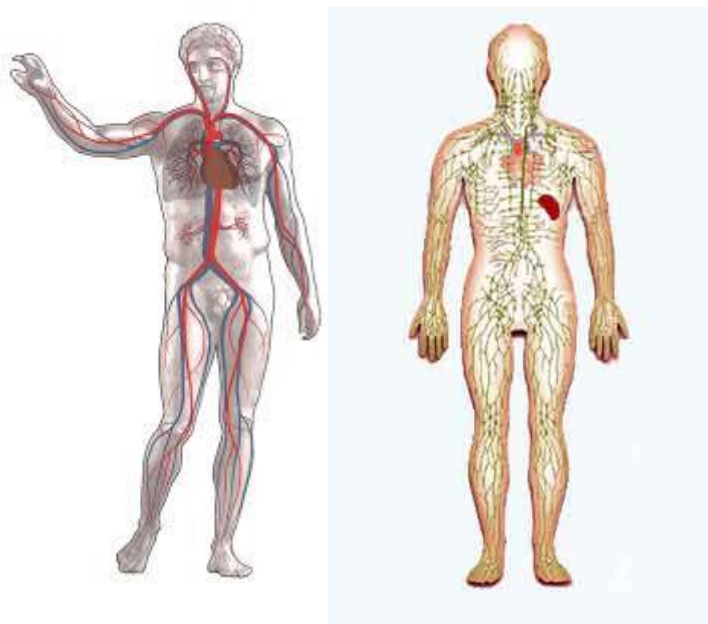
Carcinogens: Urinary Tract

[Picture Credit: Urinary Tract]



Carcinogens: Lymphoid, Haematopoietic and Related Tissue

[Picture Credit: Haematopoietic System]



Blood Circulatory System

Lymphatic System

Leukaemia and/or Lymphoma

Sufficient Evidence

Azathioprine
Benzene
Busulfan
1,3-Butadiene
Chlorambucil
Cyclophosphamide
Cyclosporine
Epstein-Barr virus
Etoposide with cisplatin and bleomycin
Fission products
Strontium-90
Formaldehyde
Helicobacter pylori
Hepatitis C virus
Human immunodeficiency virus type 1
Human T-cell lymphotropic virus type 1
Human herpes virus 8
Melphalan
Phosphorus-32
Rubber production industry
Cemustine (methyl-CCNU)
Thiotepa
Thorium-232 and its decay products
Tobacco smoking
Treosulfan
X-radiation
Gamma-radiation

Limited Evidence

Bischloroethyl nitrosourea (BCNU)
Chloramphenicol
Etoposide
Hepatitis B virus
Magnetic fields (extremely low frequency)
childhood leukaemia
Mitoxantrone
Nitrogen mustard
Painting (childhood leukaemia from
maternal exposure)
Petroleum refining
Polychlorophenols or their sodium salts
Radioactive Iodine including Iodine-131
Radon-222 and its decay products
Styrene
Teniposide
Trichloroethylene
2,3,7,8-Tetrachlorodibenzo-para-dioxine
Tobacco smoking (childhood leukaemia in
smokers' children)
Malaria (caused by infection with *Plasmodium
falciparum* in holo-endemic areas)

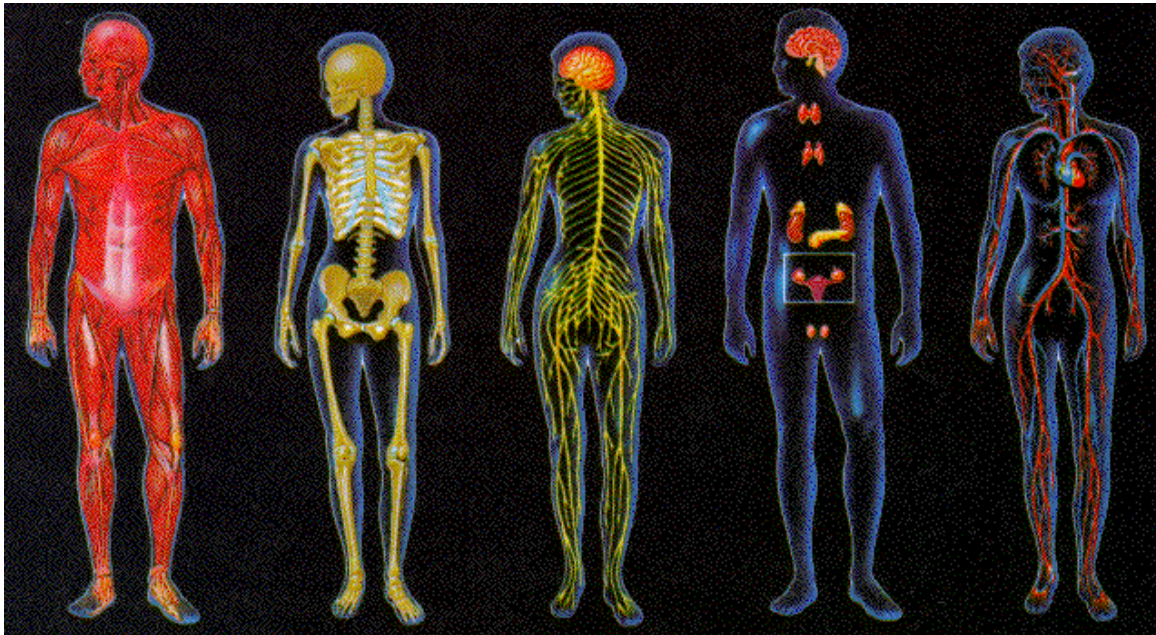
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Carcinogens: Multiple or Unspecified Sites



[Picture Credit: Human Body]

Multiple or Unspecified Sites

Sufficient Evidence

Cyclosporine
Fission products
Strontium-90
X-radiation (exposure in utero)
Gamma-radiation (exposure in utero)

Limited Evidence

Chlorophenoxy herbicides
Plutonium

All Cancer Sites

Sufficient Evidence

2,3,7,8-Tetrachlorodibenzo-para-dioxin

Sources and References Consulted or Utilised

Carcinogen

<http://rodutobaccotruth.blogspot.com/2010/09/is-never-recommend-carcinogen.html>

Circulatory System

https://www.google.co.za/search?q=human+anatomy+endocrine+system&source=lnms&tbn=isch&sa=X&ei=RBRIUsnfDYPatAbZtYDoAg&sqi=2&ved=0CAcQ_AUoAQ&biw=1366&bih=643&dpr=1#q=human+anatomy+lymphatic+system&tbn=isch&facrc=_&imgdii=_&imgsrc=pKUZ-XLahApkJM%3A%3BgZ9h7Siqfeu2kM%3Bhttp%253A%252F%252Fwww.dreddyclinic.com%252Fimages%252FLymphaticSystem.jpg%3Bhttp%253A%252F%252Fhigherhumanbiology.wikispaces.com%252FRachel%3B254%3B409
https://www.google.co.za/search?q=human+anatomy+endocrine+system&source=lnms&tbn=isch&sa=X&ei=RBRIUsnfDYPatAbZtYDoAg&sqi=2&ved=0CAcQ_AUoAQ&biw=1366&bih=643&dpr=1#q=human+anatomy+circulatory+system&tbn=isch&facrc=_&imgdii=_&imgsrc=iW48Y689orq5iM%3A%3ByaSSftkJY0rgmM%3Bhttp%253A%252F%252Fupload.wikimedia.org%252Fwikipedia%252Fcommons%252F7%252F74%252FGrafik_blutkreislauf.jpg%3Bhttp%253A%252F%252Fen.wikipedia.org%252Fwiki%252Fangiologi%3B700%3B1193

CNS

<http://www.google.co.za/imgres?biw=1366&bih=600&tbn=isch&tbnid=Qbi9HzTV7rQnxM:&imgrefurl=http://www.nlm.nih.gov/medlineplus/ency/imagepages/8679.htm&docid=rIVZF-3b55v8AM&imgurl=http://www.nlm.nih.gov/medlineplus/ency/images/ency/fullsize/8679.jpg&w=400&h=320&ei=j-ZjUrO9IlyHswaW9IDoAg&zoom=1&ved=1t:3588,r:48,s:0,i:228>

Digestive Organs

https://www.google.co.za/search?q=human+anatomy+digestive+system&source=lnms&tbn=isch&sa=X&ei=bdpjUtyMJYHTtQbf9YBQ&sqi=2&ved=0CAcQ_AUoAQ&biw=1366&bih=600&dpr=1#facrc=_&imgdii=_&imgsrc=h2FKrgQsicpBKM%3A%3BUc4SrqlIhE9vZM%3Bhttp%253A%252F%252Ffanatomy.com%252Fwp-content%252Fuploads%252F2013%252F08%252Fdigestive-system-anatomy.jpg%3Bhttp%253A%252F%252Ffanatomy.com%252Ffanatomy-systems%252Fmajor-human-body-systems-2%252F%3B550%3B961

Female Genitalia

https://www.google.co.za/search?q=human+anatomy+female+genitalia&source=lnms&tbn=isch&sa=X&ei=L_tkUtrQJceihgeVxIHgCg&ved=0CAcQ_AUoAQ&biw=1366&bih=600&dpr=1#facrc=_&imgdii=_&imgsrc=uR04ZlyfdMsoIM%3A%3BgrkaLp7ma29sHM%3Bhttp%253A%252F%252Fimg.webmd.com%252Fdtmcm%252Ffive%252Fwebmd%252Fconsumer_assets%252Fsite_images%252Fmedia%252Fmedical%252Fnci%252Fcdr0000609921.jpg%3Bhttp%253A%252F%252Fwww.webmd.com%252Fcancer%252Fcervical-cancer%252Ftc%252Fcervical-cancer-treatment-patient-information-nci-pdq-general-information-about-cervical-cancer%3B300%3B300
https://www.google.co.za/search?q=human+anatomy+female+genitalia&source=lnms&tbn=isch&sa=X&ei=L_tkUtrQJceihgeVxIHgCg&ved=0CAcQ_AUoAQ&biw=1366&bih=600&dpr=1#facrc=_&imgdii=_&imgsrc=Fn70Xjlecayr0M%3A%3BBXte-fOBWsnzyM%3Bhttp%253A%252F%252Fus.123rf.com%252F400wm%252F400%252F400%252Ffixer00%252Ffixer001012%252Ffixer00101200023%252F8476703-female-reproductive-system.jpg%3Bhttp%253A%252F%252Fwww.123rf.com%252Fstock-photo%252Fovaries.html%3B1200%3B1200

Female Torso

https://www.google.co.za/search?q=human+anatomy+female+torso&source=lnms&tbn=isch&sa=X&ei=PfhkUtlpCsyJhQfa_IGIBw&ved=0CAcQ_AUoAQ&biw=1366&bih=643&dpr=1#facrc=_&imgdii=_&imgsrc=dINLfvzIWz3oM%3A%3BxWOAwTtJSjHawM%3Bhttp%253A%252F%252Fimage.shutterstock.com%252Fdisplay_pic_with_logo%252F333286%252F333286%252C1306101480%252C1%252Fstock-photo-woman-standing-in-anatomical-position-77939170.jpg%3Bhttp%253A%252F%252Fwww.shutterstock.com%252Fpic-77939170%252Fstock-photo-woman-standing-in-anatomical-position.html%3B225%3B470

Head and Neck

https://www.google.co.za/search?q=human+anatomy+head+and+neck&source=lnms&tbn=isch&sa=X&ei=xppjUo33A8mO7QaVnIHwBQ&sqi=2&ved=0CAcQ_AUoAQ&biw=1366&bih=643&dpr=1#facrc=_&imgdii=_&imgsrc=xGWe14uP5U01cM%3A%3BxEXuqCga3Kp9UM%3Bhttp%253A%252F%252Fwww.anatomy-resources.com%252Fhuman-anatomy%252Fimages%252Fsh202-ca-side.jpg%3Bhttp%253A%252F%252Fwww.anatomy-resources.com%252Fhuman-anatomy%252Fsh202.htm%3B409%3B562

Researched and Authored by Prof Michael C Herbst

[D Litt et Phil (Health Studies); D N Ed; M Art et Scien; B A Cur; Dip Occupational Health; Dip Genetic Counselling; Dip Audiometry and Noise Measurement; Diagnostic Radiographer; Medical Ethicist]

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Human Body

https://www.google.co.za/search?q=human+body&source=lnms&tbm=isch&sa=X&ei=Z8SFUtarEOTE7Ab-g4GoBw&sqi=2&ved=0CAcQ_AUoAQ&biw=1366&bih=643#facrc=_&imgdii=_&imgrc=PPBygp6eh_pWFM%3A%3BrXuBXEI MofjO0M%3Bhttp%253A%252F%252Fchasepage.files.wordpress.com%252F2013%252F02%252Fhuman_body.gif%3Bhttp %253A%252F%252Fchasepage.net%252F2013%252F02%252F07%252Fhuman-body%252F%3B673%3B378

IARC Classifications by Cancer Site

<http://monographs.iarc.fr/ENG/Monographs/allmonos.php>

Male Genital Organs

https://www.google.co.za/search?q=human+anatomy+head&source=lnms&tbm=isch&sa=X&ei=x-VjUuvqJsSPtQbXh4CYBw&ved=0CAcQ_AUoAQ&biw=1366&bih=600&dpr=1#q=human+anatomy+male+genital+organs&tbm=isch&facrc=_&imgdii=_&imgrc=1bbyTyXkreRvM%3A%3BwLhy9w7vM1KO8M%3Bhttp%253A%252F%252Fflabtechindia.net%252Fproduct%252Fbiology%252Fbl-37.jpg%3Bhttp%253A%252F%252Fflabtechindia.net%252Fproduct%252Fsmall-size_1533.html%3B366%3B400

Salivary Glands

https://www.google.co.za/search?q=human+anatomy+head+and+neck&tbm=isch&tbo=u&source=univ&sa=X&ei=HqBjUs2nE4jWswaOwoDAAQ&sqi=2&ved=0CDMQsAQ&biw=1366&bih=643&dpr=1#q=human+anatomy+salivary+glands&tbm=isch&facrc=_&imgdii=_&imgrc=pvgRqdHAiPfvZM%3A%3Bw91c67lwFHE4dM%3Bhttp%253A%252F%252Fhumananat.50webs.com%252Fsalivary_glands.png%3Bhttp%253A%252F%252Fhumananat.50webs.com%252Fdigest.html%3B240%3B248

SANS

http://www2.unitar.org/cwm/publications/cbl/ghs/Documents_2ed/D_National_Documents_and_Legislation/476_SA_SA NS.pdf

Skin

https://www.google.co.za/search?q=boy+in+swimming+trunks&source=lnms&tbm=isch&sa=X&ei=seJjUsCkIlzDtAb6o4CAA w&ved=0CAcQ_AUoAQ&biw=1366&bih=600&dpr=1#facrc=_&imgdii=_&imgrc=H28Br6VGjiY0oM%3A%3BxASJzUc73_LUA M%3Bhttp%253A%252F%252Fcdn.adreno.com.au%252Fmedia%252Fcatalog%252Fproduct%252Fcache%252F6%252Fimage%252F9df78eab33525d08d6e5fb8d27136e95%252Fw%252Ff%252Ff-ft32b00371-emerald-park-back.jpg%3Bhttp%253A%252F%252Fwww.swimwearshack.com.au%252Ffunky-trunks-emerald-park-boys-swimming-trunks.html%3B800%3B800

Soft Tissue

https://www.google.co.za/search?q=human+anatomy&source=lnms&tbm=isch&sa=X&ei=YN1jUqnYDNHOSwbSsIdgDg&sqi=2&ved=0CAcQ_AUoAQ&biw=1366&bih=600&dpr=1#facrc=_&imgdii=_&imgrc=JY_ejXvtVzXYWM%3A%3BO2g7Is5hLu7hx M%3Bhttp%253A%252F%252Fwww.3dscience.com%252Fimg%252Fproducts%252F3D_Models%252FHuman_Anatomy%252FCollections%252FMale_Collection%252F3D-Male-Human-Anatomy.jpg%3Bhttp%253A%252F%252Fwww.3dscience.com%252FAnatomy_Collection_5.0.php%3B300%3B862

Tonsils

https://www.google.co.za/search?q=human+anatomy+head+and+neck&tbm=isch&tbo=u&source=univ&sa=X&ei=HqBjUs2nE4jWswaOwoDAAQ&sqi=2&ved=0CDMQsAQ&biw=1366&bih=643&dpr=1#q=human+anatomy+tonsils&tbm=isch&facrc=_&imgdii=_&imgrc=WlnzAMwOPYBbBM%3A%3Bi9ICWT-3kxsxfM%3Bhttp%253A%252F%252Fwww.nlm.nih.gov%252Fmedlineplus%252Fency%252Fimages%252Fency%252Ffullsize%252F12709.jpg%3Bhttp%253A%252F%252Fwww.nlm.nih.gov%252Fmedlineplus%252Fency%252Fpresentations%252F100122_1.htm%3B400%3B320

Upper Respiratory Organs

https://www.google.co.za/search?q=human+anatomy+respiratory+system&biw=1366&bih=643&source=lnms&tbm=isch&sa=X&ei=9M9jUuLRBsjPtAa884H4Dg&sqi=2&ved=0CAcQ_AUoAQ&facrc=_&imgdii=_&imgrc=ZuWGthfqqd-DZM%3A%3B18KJotxJJe-mxM%3Bhttp%253A%252F%252Fimages.wisegeek.com%252Frespiratory-system-cutaway.jpg%3Bhttp%253A%252F%252Fwww.wisegeek.com%252Fwhat-is-the-upper-respiratory-system.htm%3B622%3B800

Wikipedia

<http://en.wikipedia.org/wiki/Carcinogen>

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World Health Organization

<https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death>

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