Cancer Ocupacional

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Definiciòn

- Que es el Càncer?
  - Es una enfermedad en las que células anormales se dividen sin control y pueden invadir otros tejidos.

Instituto Nacional del Cáncer: www.**cancer**.gov/espanol/**cancer**/que-es

Definiciòn

- Que es un Carcinogeno?
  - Es una sustancia o agente que puede producir o aumentar el riesgo de desarrollar cancer.

Instituto Nacional del Cáncer: www.**cancer**.gov/espanol/**cancer**/que-es

Definiciòn

- Tipos de Carcinogenos
  - Virus
  - Hormonas
  - Quimicos
  - Minerales
  - Alcohol
  - Radiacion

Instituto Nacional del Cáncer: www.**cancer**.gov/espanol/**cancer**/que-es

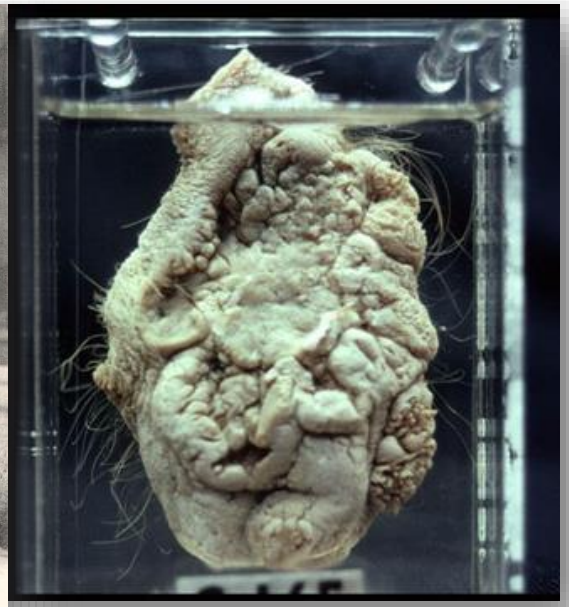
Definiciòn

- Que es el Cancer Ocupacional?
  - Es el Cancer causado de manera parcial o total por exposicion a un Carcinogeno en el sitio de trabajo

Canadian Centre for Occupational Health And Safety
www.ccohs.ca/oshanswers/diseases/occupational_cancer.html

Antecedentes Històricos

Sir Percival Pott,1775



Medscape General Surgery - Historical Perspectives in Surgery: The Case of the Clever Clinician With an Eponymous Injury. Albert Lowenfels, MD, Patrick Maisonneuve. July 08, 2009 http://www.medscape.com/viewarticle/705111_2

Antecedentes Històricos

"El destino de estas personas parece singularmente duro; en sus primeros años, son tratados con gran brutalidad y casi mueren de hambre y del frío; son empujados hasta chimeneas estrechas y a veces calientes; ... y cuando llegan a la pubertad se convierten peculiarmente susceptibles a una enfermedad tan destructora , dolorosa y fatal." **Sir Percival Pott**

Medscape General Surgery - Historical Perspectives in Surgery: The Case of the Clever Clinician With an Eponymous Injury. Albert Lowenfels, MD, Patrick Maisonneuve. July 08, 2009 http://www.medscape.com/viewarticle/705111_2

Antecedentes Històricos

Volkman,1875

- Ca de Escroto
- Trabajadores de Alquitràn de Hulla y parafina

Medscape General Surgery - Historical Perspectives in Surgery: The Case of the Clever Clinician With an Eponymous Injury. Albert Lowenfels, MD, Patrick Maisonneuve. July 08, 2009 http://www.medscape.com/viewarticle/705111_2

Antecedentes Històricos

- Ca de Pulmòn, Siglo XIX
- Habitantes de Joachimsthal, Checoslovakia y Schneeberg, Alemania
- Minas de metal

Medscape General Surgery - Historical Perspectives in Surgery: The Case of the Clever Clinician With an Eponymous Injury. Albert Lowenfels, MD, Patrick Maisonneuve. July 08, 2009 http://www.medscape.com/viewarticle/705111_2

Antecedentes Històricos

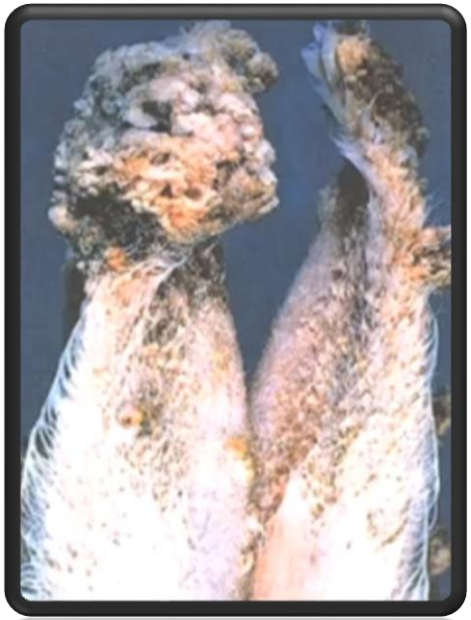
Ludwig Rehn, Siglo XIX

- Ca de Escroto
- Trabajadores de Alquitràn de Hulla y parafina

Medscape General Surgery - Historical Perspectives in Surgery: The Case of the Clever Clinician With an Eponymous Injury. Albert Lowenfels, MD, Patrick Maisonneuve. July 08, 2009 http://www.medscape.com/viewarticle/705111_2

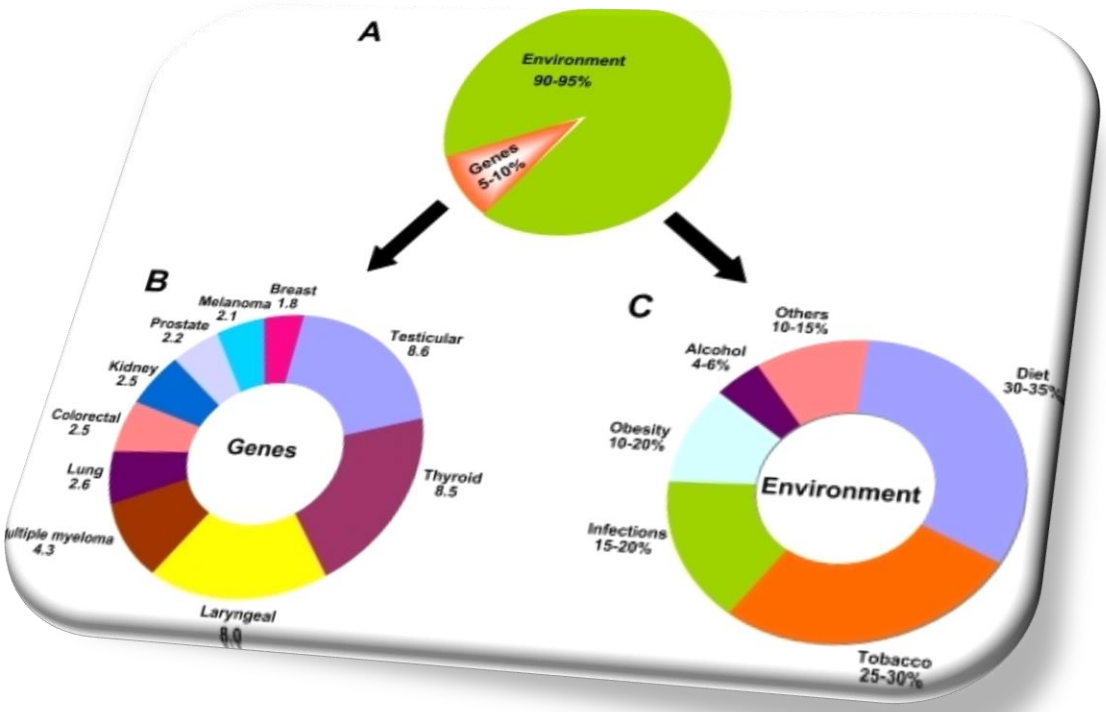
Antecedentes Històricos

Yamagiwa e Ichikawa



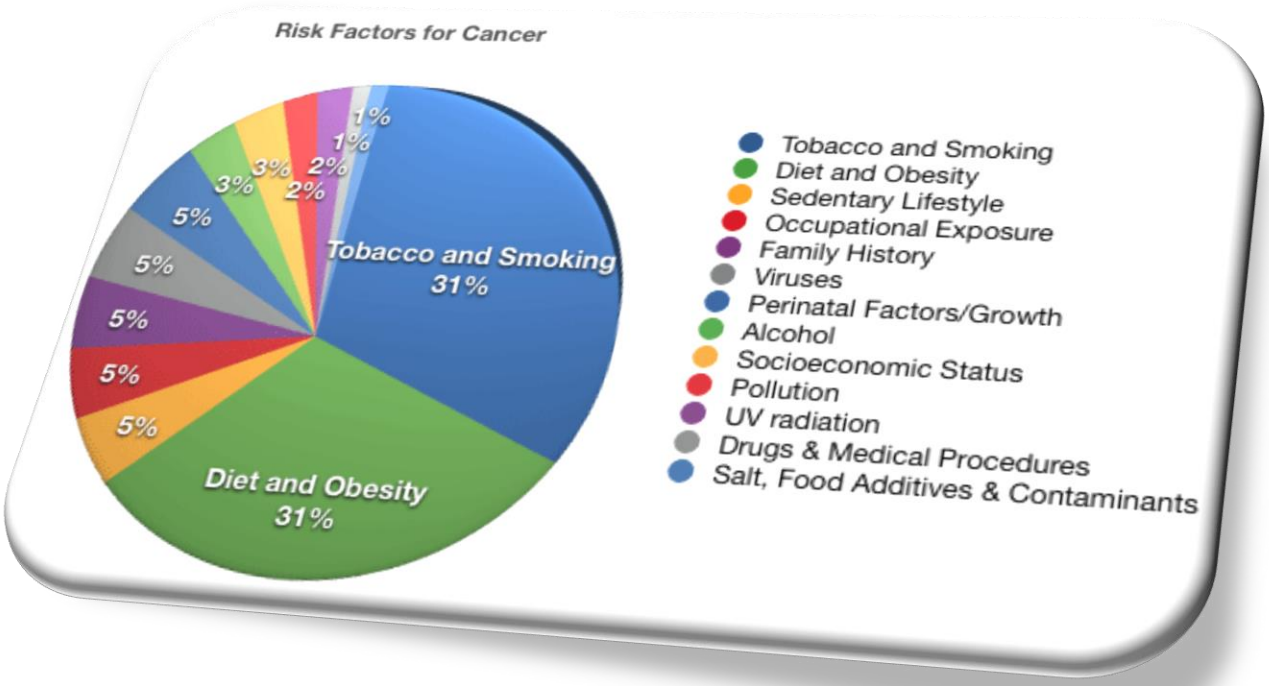
Medscape General Surgery - Historical Perspectives in Surgery: The Case of the Clever Clinician With an Eponymous Injury. Albert Lowenfels, MD, Patrick Maisonneuve. July 08, 2009 http://www.medscape.com/viewarticle/705111_2

Estadìsticas



Instituto Nacional del Cáncer: www.**cancer**.gov/espanol/**cancer**/que-es

Estadìsticas



Instituto Nacional del Cáncer: www.**cancer**.gov/espanol/**cancer**/que-es

Estadìsticas

Type of Cancer	Related to Occupational Exposure Estimated % (USA)
Lung	6.3-13%
Bladder	3-19%
Mesothelioma	85-90% (men); 23-90% (women*)
Leukemia	0.8-2.8%
Laryngeal	1-20% (men)
Skin Cancer (non-melanoma)	1.5-6% (men)
Sinonasal and nasopharyngeal	31-43% (men)
Kidney	0-2.3%
Liver	0.4-1.1 (vinyl chloride only; men)

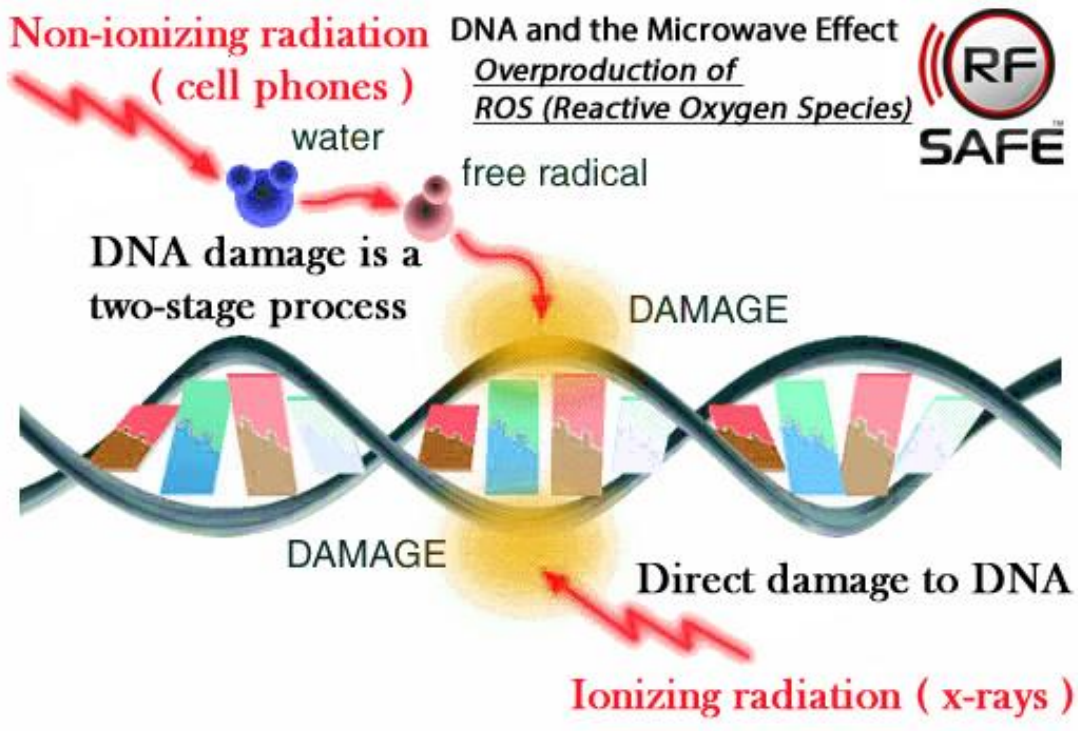
Canadian Centre for Occupational Health And Safety
www.ccohs.ca/oshanswers/diseases/occupational_cancer.html

IARC Monographs on the evaluation of carcinogenic Risks to Humans
http://monographs.iarc.fr/ENG/Classification/

Table 1.4 Occupational exposures, occupations, industries, and occupational circumstances classified as definite carcinogenic exposures (Group 1) by the *IARC Monographs*, Volumes 1–106

Agent, occupation, or industry	Target organ	Main industry or use
Chemical agents		
Acid mists, strong inorganic	Larynx	Chemical
4-Aminobiphenyl	Bladder	Rubber
Arsenic and inorganic arsenic compounds	Lung, skin, bladder	Glass, metals, pesticides
Asbestos (all forms)	Larynx, lung, mesothelium, ovary	Insulation, construction, renovation
Benzene	Leukemia	Starter and intermediate in chemical production, solvent
Benzidine	Bladder	Pigments
Benzo[*a*]pyrene	Lung, skin (suspected)	Coal liquefaction and gasification, coke production, coke ovens, coal tar distillation, roofing, paving, aluminum production
Beryllium and beryllium compounds	Lung	Aerospace, metals
Bis(chloromethyl)ether, chloromethyl methyl ether	Lung	Chemical
1,3-Butadiene	Leukemia and/or lymphoma	Plastics, rubber
Cadmium and cadmium compounds	Lung	Pigments, battery
Chromium (VI) compounds	Lung	Metal plating, pigments
Coal tar pitch	Lung, skin	Construction, electrodes
Engine exhaust, diesel	Lung	Transport, mining
Ethylene oxide	–	Chemical, sterilizing agent
Formaldehyde	Nasopharynx, leukemia	Plastic, textile
Ionizing radiation (including radon-222 progeny)	Thyroid leukemia, salivary gland, lung, bone, esophagus, stomach, colon, rectum, skin, breast, kidney, bladder, brain	Radiology, nuclear industry, underground mining
Leather dust	Nasal cavity	Shoe manufacture and repair
4,4′-Methylenebis(2-chloroaniline) (MOCA)	–	Rubber
Mineral oils, untreated or mildly treated	Skin	Lubricant
2-Naphthylamine	Bladder	Pigment
Nickel compounds	Nasal cavity, lung	Metal alloy
Shale oils	Skin	Lubricant, fuel
Silica dust, crystalline, in the form of quartz or cristobalite	Lung	Construction, mining
Solar radiation	Skin	Outdoor work
Soot	Lung, skin	Chimney sweeps, masons, firefighters
2,3,7,8-Tetrachlorodibenzo-*para*-dioxin (TCDD)	–	Chemical
Tobacco smoke, secondhand	Lung	Bars, restaurants, offices
ortho-Toluidine	Bladder	Pigments
Trichloroethylene	Kidney	Solvent, dry cleaning
Vinyl chloride	Liver	Plastics
Wood dust	Nasal cavity	Furniture
Occupation or industry without specification of the responsible agent		
Aluminum production	Lung, bladder	–
Auramine production	Bladder	–
Coal gasification	Lung	–
Coal tar distillation	Skin	–
Coke production	Lung	–
Hematite mining (underground)	Lung	–
Iron and steel founding	Lung	–
Isopropyl alcohol manufacture using strong acids	Nasal cavity	–
Magenta production	Bladder	–
Painter	Bladder, lung, mesothelium	–
Rubber manufacture	Stomach, lung, bladder, leukemia	–

Mecanismos de Carcinogénesis: Radiación Ionizante



Canadian Centre for Occupational Health And Safety
www.ccohs.ca/oshanswers/diseases/occupational_cancer.html

Mecanismos de Carcinogénesis: Carcinògenos Quìmicos

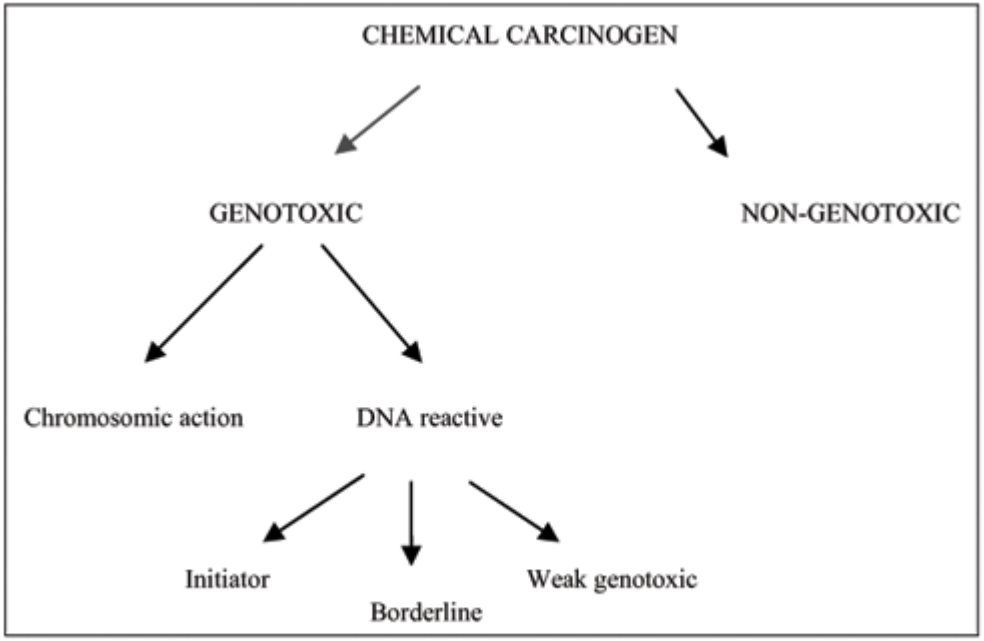
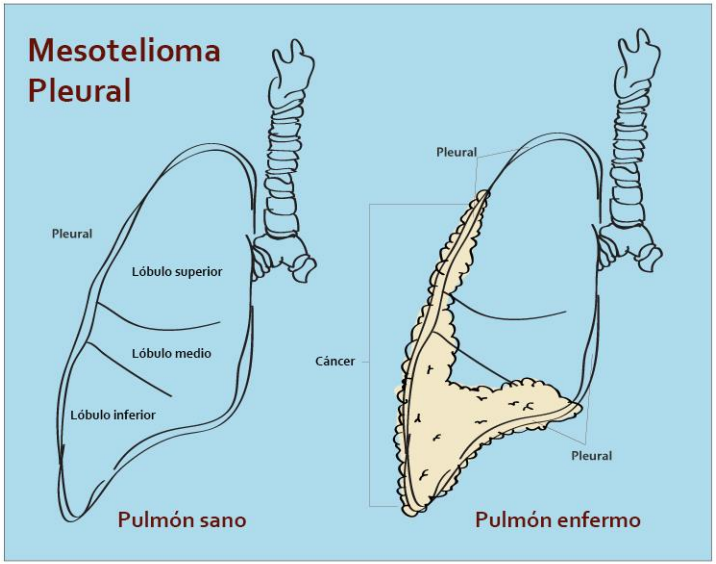


Fig. 4 – New proposal to classify chemical carcinogens.

Canadian Centre for Occupational Health And Safety
www.ccohs.ca/oshanswers/diseases/occupational_cancer.html

Mesotelioma Maligno

- Neoplasia maligna originada de la pleura y el peritoneo derivado de las cèlulas mesoteliales.
- Periodo de latencia: Hasta 30 años



American Cancer Society Información en español » Infórmese sobre el cáncer » ¿Qué es lo que causa el cáncer? » Otros agentes cancerígenos » Asbestos
http://www.cancer.org/espanol/cancer/queesloquecausaelcancer/otrosagentescancerigenos/asbesto

Mesotelioma Maligno

- Originado de la Pleura y el peritoneo derivado de las cèlulas mesoteliales.
- Relacionado con exposiciòn a Asbesto (1)
- 2 Tipos:
  - Asbesto Amfìbol
  - Asbesto Crisotilo

American Cancer Society Información en español » Infórmese sobre el cáncer » ¿Qué es lo que causa el cáncer? » Otros agentes cancerígenos » Asbestos
http://www.cancer.org/espanol/cancer/queesloquecausaelcancer/otrosagentescancerigenos/asbesto

Mesotelioma Maligno

- Evidencia de relaciòn con Asbesto desde 1900-1905

- Formadas por Silicio y Oxigeno

American Cancer Society Información en español » Infórmese sobre el cáncer » ¿Qué es lo que causa el cáncer? » Otros agentes cancerígenos » Asbestos
http://www.cancer.org/espanol/cancer/queesloquecausaelcancer/otrosagentescancerigenos/asbesto

Mesotelioma Maligno

- Utilizado para:
  - Aislar las estructuras de fábricas
  - Escuelas, casas y barcos, al
  - Partes de los frenos
  - embrague de automóviles,
  - tejas para techos,
  - losas para el piso, cemento
  - textiles

American Cancer Society Información en español » Infórmese sobre el cáncer » ¿Qué es lo que causa el cáncer? » Otros agentes cancerígenos » Asbestos
http://www.cancer.org/espanol/cancer/queesloquecausaelcancer/otrosagentescancerigenos/asbesto

Mesotelioma Maligno

- Frecuente en personas que trabajan en
  - Minas
  - Insulaciòn
  - Cementeras
  - Textiles

American Cancer Society Información en español » Infórmese sobre el cáncer » ¿Qué es lo que causa el cáncer? » Otros agentes cancerígenos » Asbestos
http://www.cancer.org/espanol/cancer/queesloquecausaelcancer/otrosagentescancerigenos/asbesto

Mesotelioma Maligno

- Sintomas:
  - Cuadro poco especìfico
  - Tos seca persistente
  - Fiebre Nocturna
  - Diaforesis
  - Pèrdida de peso
  - Disnea

American Cancer Society Información en español » Infórmese sobre el cáncer » ¿Qué es lo que causa el cáncer? » Otros agentes cancerígenos » Asbestos
http://www.cancer.org/espanol/cancer/queesloquecausaelcancer/otrosagentescancerigenos/asbesto

Mesotelioma Maligno

- Presentaciòn Clìnica:
  - Disnea
  - Derrame Pleural (Unilateral)
  - Malestar Toràcico
  - Dolor Toràcico
  - Derrame Pericàrdico y Taponamiento

American Cancer Society Información en español » Infórmese sobre el cáncer » ¿Qué es lo que causa el cáncer? » Otros agentes cancerígenos » Asbestos
http://www.cancer.org/espanol/cancer/queesloquecausaelcancer/otrosagentescancerigenos/asbesto

Mesotelioma Maligno

- Diagnòstico:
  - Rx Tòrax
  - TAC Tòrax
  - IRM
  - PET CT
  - Biopsia

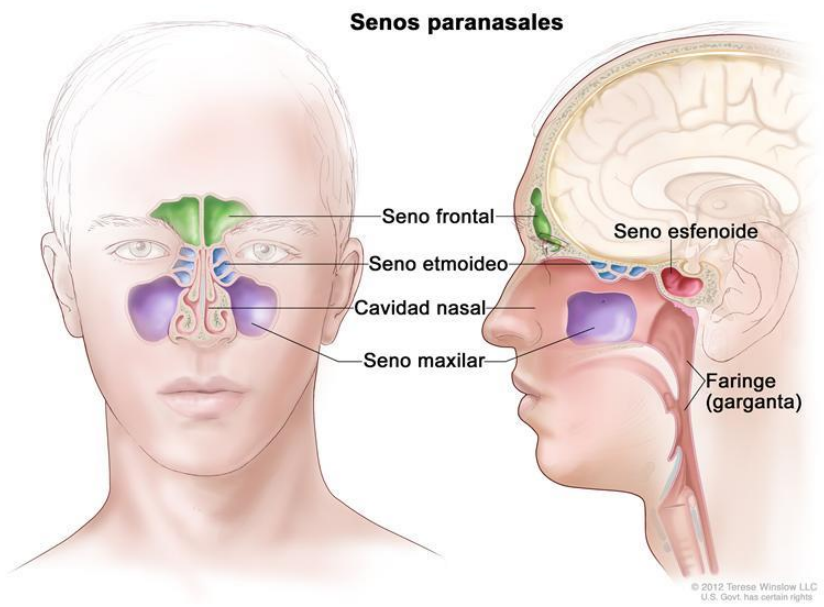
American Cancer Society Información en español » Infórmese sobre el cáncer » ¿Qué es lo que causa el cáncer? » Otros agentes cancerígenos » Asbestos
http://www.cancer.org/espanol/cancer/queesloquecausaelcancer/otrosagentescancerigenos/asbesto

Mesotelioma Maligno

- Metastasis:
  - Hígado
  - Hueso
  - Cerebro
  - Pulmón

American Cancer Society Información en español » Infórmese sobre el cáncer » ¿Qué es lo que causa el cáncer? » Otros agentes cancerígenos » Asbestos
http://www.cancer.org/espanol/cancer/queesloquecausaelcancer/otrosagentescancerigenos/asbesto

Cancer Nasal y de Senos Paranasales

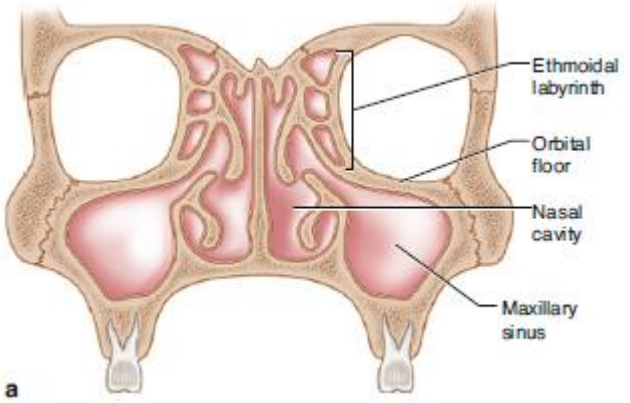


- Incidencia
  - 0.5-1.5/100,000 hombres
  - 0.1-0.6/100,000 mujeres

American Cancer Society Información en español » Infórmese sobre el cáncer » ¿Qué es lo que causa el cáncer? » Otros agentes cancerígenos » Asbestos
http://www.cancer.org/espanol/cancer/queesloquecausaelcancer/otrosagentescancerigenos/asbesto

Cancer Nasal y de Senos Paranasales

- Seno Maxilar (50-60%)
- Cavidad Nasal (19-35%)
- Seno Etmoidal (9-15%)
- Seno Esfenoidal (1%)



American Cancer Society Información en español » Infórmese sobre el cáncer » ¿Qué es lo que causa el cáncer? » Otros agentes cancerígenos » Asbestos
http://www.cancer.org/espanol/cancer/queesloquecausaelcancer/otrosagentescancerigenos/asbesto

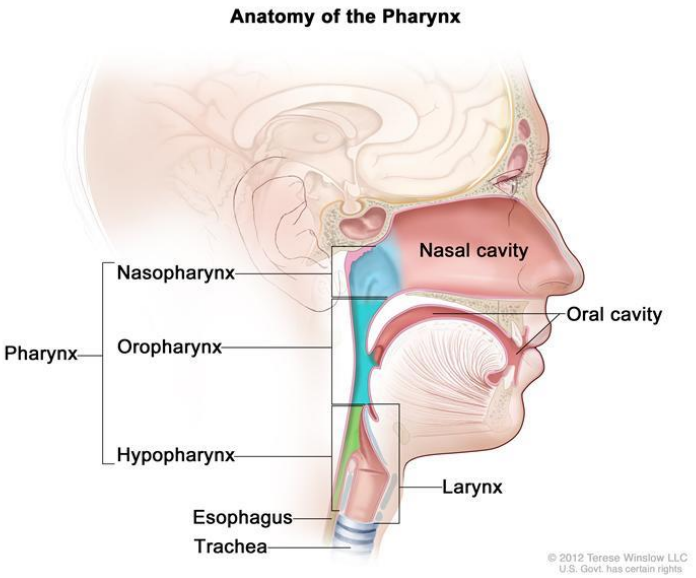
Cancer Nasal y de Senos Paranasales

Table 7.3 Exposure characteristics for agents causally related to sinonasal cancer (SNC). Only agents evaluated as carcinogenic to humans by IARC (Group 1) are included

	Histological type of SNC	Industries/job of relevance	Exposure-response patterns, threshold values	Exposure information sources
Wood dust[a]	Adenocarcinoma. Probably squamous cell carcinoma	High exposed wood industries, e.g., furniture industry, cabinet manufacturing, joinery shops	Exposure-response relationships observed in several studies	IARC [2]
			High exposure (>1–5 mg/m^3) for several years. No confirmed risk for exposures below 1 mg/m^3	IARC [85] Demers et al. [57] d'Errico et al. [38] IARC [4]
Chromium VI	Not specified	Chromium production, chromium pigment production, chromium platers	Exposure-response relationships not reported	IARC [62]
			Airborne chromium VI concentrations >1 mg/m^3 found in past studies, lower in recent years	d'Errico et al. [38] Luippold et al. [86] IARC [4]
Nickel compounds	Not specified	Nickel refining industry	No clear exposure-response relationships reported	IARC [62]
		Hydrometallurgy Electrolysis workers Calcining workers	Airborne nickel concentrations >1 mg/m^3 found in earlier studies, lower in recent years	IARC [4]
"Shoe and leather work" (leather dust)	Mainly adenocarcinoma. Possibly other types	Boot and shoe manufacture	Exposure-response relationships observed in five studies ("leather dust years" or exposure intensity)	IARC [87]
		Boot and shoe repair	Increased for both light and heavy exposure, and increased for 5 and 10 years of exposure	Merler et al. [30] d'Errico et al. [38] Straif et al. [14] IARC [4]
Tobacco smoking	Squamous cell carcinoma	–	Exposure-response relationships observed in several studies (duration, intensity)	IARC [88]
			No clear threshold values	't Mannetje et al. [20] IARC [81]

Cancer de Cavidad Oral y Faringe

- 2% de todos los nuevos Canceres
- Nuevos Casos: 11/100,000
- Edad de Dx: 62 años



SEER Stat Fact Sheets: Oral Cavity and Pharynx Cancer http://seer.cancer.gov/statfacts/html/oralcav.html

Cancer de Cavidad Oral y Faringe

Factores No Ocupacionales

- Alcohol
- Tabaco
- VPH

Factores Ocupacionales

- Formaldehido
- Polvo de Cuero
- Polvo de Madera
- Textiles
- Vapor de Soldadura
- Mecánicos

SEER Stat Fact Sheets: Oral Cavity and Pharynx Cancer http://seer.cancer.gov/statfacts/html/oralcav.html

Cancer Nasofaringe

Factores No Ocupacionales

- Comidas Saladas
- EBV
- Rinitis Cronica
- Consumo de Tabaco

Factores Ocupacionales

- Formaldehido
- Polvo de Madera
- Textiles (2B)

SEER Stat Fact Sheets: Oral Cavity and Pharynx Cancer http://seer.cancer.gov/statfacts/html/oralcav.html

Cancer Nasofaringe, Cavidad Oral y Faringe

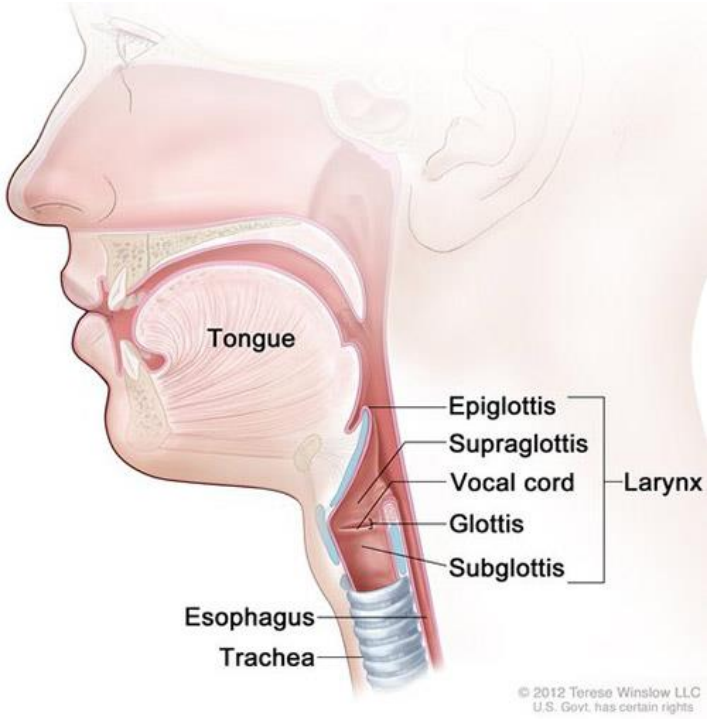
Table 4.5 Strength of evidence (low, possible, high) of association of exposure to some agents, occupations or industries, and oral cavity, pharynx, and nasopharynx cancers

Agent	Evidence	Occupation	Evidence	Industry	Evidence
Oral and pharynx cancers					
Asbestos	Possible	Butcher	Possible	Garment manufacture	Low
Diesel engine exhaust	Possible	Textile worker	Low	Leather industry	Possible
Dust		Vehicle repair mechanic	Possible	Man-made mineral fiber factory	Possible
Cotton	Low	Waiters and cooks	High	Meat industry	Possible
Leather	Possible	Welder and cutter	Possible	Textile industry	Low
Wood	Possible	Woodworker	Possible	Vehicle repair service	Possible
Formaldehyde	Low			Wood industry	Possible
Man-made mineral fibers	Possible				
Welding fumes	Possible				
Nasopharynx cancer					
Chlorophenols	High	Textile worker	Possible	Garment manufacture	High
Formaldehyde	High	Woodworker	High	Textile industry	Possible
Dust				Wood industry	High
Cotton	Possible				
Wood	High				
Industrial heat	Possible				

SEER Stat Fact Sheets: Oral Cavity and Pharynx Cancer http://seer.cancer.gov/statfacts/html/oralcav.html

Cancer de Laringe

- 90% Carcinoma de Células Escamosas
- Incidencia: 3.2/100,000
- 0.8% de Cánceres nuevos
- Relación H:M 4.8:1



SEER Stat Fact Sheets: Larynx Cancer
http://seer.cancer.gov/statfacts/html/laryn.html

Cancer de Laringe

Carcinogenos

- Asbesto (RR 1.5-2)
- Brumas de Acidos Inorgànicos

SEER Stat Fact Sheets: Larynx Cancer
http://seer.cancer.gov/statfacts/html/laryn.html

Càncer de Laringe

Exposiciòn a Asbesto e Indice de Muerte Estandarizado

Table 8.1 Results of cohort studies of laryngeal cancer in workers exposed to asbestos

Reference	Industry	Asbestos type	Country	Period of employment	Sex	No. workers	No. deaths	SMR	95 % CI
Peto et al. [63]	Textile product manufacture	P Ch	UK	1933–1974	M	3,211	4	1.55	*0.42–3.97*
Gardner et al. [31]	Cement workers	Ch	UK	1941–1983	MF	2,090	1	0.91	*0.02–5.06*
Hughes et al. [41]	Cement workers	P Ch	USA	1937–1970	M	5,492	3	0.56	*0.11–1.62*
Enterline et al. [24]	Mixed	Mix	USA	1941–1967	M	1,074	2	1.14	*0.14–4.13*
Armstrong et al. [3]	Crocidolite miners	Cr	Australia	1943–1966	PM	6,505	2	0.68	0.17–2.74
Tola et al. [84]	Shipyard workers	Mix	Finland	1945–1960	M	7,775	24[d]	1.20	0.77–1.79
Raffn et al. [69]	Cement workers	Mix	Denmark	1928–1984	M	7,996	14[d]	1.66	0.91–2.78
Finkelstein [26]	Automotive part manufacture	Ch	Canada	1950–1980	M	224[c]	8	8.54	*1.76–25.0*
Piolatto et al. [64]	Miners	Ch	Italy	1946–1987	M	1,058	8	2.67	*1.15–5.25*
Parnes [61]	Brake lining manufacture	Ch	USA	1937–1980	M	2,057	3	4.03	*0.80–11.4*
Selikoff and Seidman [73]	Insulation workers	Mix	USA	1967	M	17,800	18	1.70	*1.01–2.69*
Botta et al. [12]	Cement workers	Mix	Italy	1950–1980	M	2,608	5	0.70	0.23–1.64
Sluis-Cremer et al. [76]	Miners	Am, Cr	S Africa	1945–1981	M	7,317	5	1.86	0.60–4.34
Giaroli et al. [33]	Cement workers	P Ch	Italy	1952–1987	NA	3,341	2	0.82	0.15–2.59
Meurman et al. [56]	Miners	Antho	Finland	1953–1967	M	736	4[d]	1.75	0.48–4.47
Berry [7]	Friction material manufacture	P Ch	UK	1941–1979	M	9,104[c]	6	0.64	0.23–1.39
Liddell et al. [48]	Miners	Ch	Canada	1902–1971	M	8,923	36	1.11	*0.79–1.55*
Levin et al. [46]	Insulation material manufacture	Am	USA	1954–1972	M	753	1	2.21	0.06–12.3
Germani et al. [32]	Asbestosis patients	Mix	Italy	1979[a]	F	631	1	8.09	0.21–45.1

SEER Stat Fact Sheets: Larynx Cancer
http://seer.cancer.gov/statfacts/html/laryn.html

Càncer de Laringe

Exposiciòn a Asbesto e Indice de Muerte Estandarizado

Reference	Industry	Asbestos type	Country	Period of employment	Sex	No. workers	No. deaths	SMR	95 % CI
Karjalainen et al. [45]	Asbestosis patients	Mix	Finland	1964–1995[a]	MF	1,376	5[b]	*3.88*	*1.26–9.05*
Battista et al. [5]	Railroad carriage manufacture and repair	Mix	Italy	1945–1969	M	734	5	2.40	0.95–5.05
Berry et al. [8]	Textile, other products; insulators	Mix	UK	1933–1964	M	~3,000	3	2.05	*0.42–6.01*
Puntoni et al. [68]	Shipyard workers	NA	Italy	1960–1981	M	3,984	32	1.64	1.12–2.32
Szeszenia-Dabrowska et al. [82]	Asbestosis patients	Mix	Poland	1970–1997[a]	M	902	1	0.43	*0.01–2.40*
Smailyte et al. [77]	Cement workers	Ch	Lithuania	1956–1985	M	1,285	7[d]	1.4	0.7–2.9
Reid et al. [70]	Crocidolite miners millers	Cr	Australia	1943–1966	PM	5,685	19[d]	1.82	1.16–2.85
Finkelstein and Verma [27]	Plumbers, pipe–sprinkler fitters	Mix	Canada	1949–1980	M	14,408	*18*	1.38	*0.82–2.18*
Pira et al. [65]	Textile product manufacture	Mix	Italy	1946–1984	MF	1,966	7	2.38	0.95–4.90
Hein et al. [37]	Textile product manufacture	Ch	USA	1940–1965	MF	3,072	6	1.68	0.61–3.66
Loomis et al. [49]	Textile product manufacture	P Ch	USA	1950–1973	PM	5,770	6	1.15	0.42–2.51
Harding et al. [36]	Mixed	Mix	UK	1983–1987[b]	PM	98,117	49	1.48	1.09–1.95
Menegozzo et al. [55]	Cement workers	Mix	Italy	1950–1986	M	1,247	5	0.97	0.31–2.26

When multiple reports have been published for the same cohort, only the most recent one is summarized in the table
Results in italics were calculated based on raw data
Small groups of female workers were included in the studies by Berry et al. [8], Botta et al. [12], and Peto et al. [63]. No cases/deaths from laryngeal cancer were observed in these populations
P Ch predominantly chrysotile, *Ch* chrysotile, *Cr* crocidolite, *Am* amosite, *Mix* mixed exposure, *Tre* tremolite, *Act* actymolite, *Antho* anthophyllite, *M* males, *MF*, males and females, *PM* predominantly males, *NA* not available

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Cancer de Laringe

Exposiciòn a Bruma de Acidos Inorganicos e Indice de Muerte Estandarizado

Table 8.5 Results of cohort studies of laryngeal cancer in workers exposed to strong inorganic acid mists

Reference	Industry (exposure to SA)	Country	Period of employment[a]	Sex	No. workers	Exposure	No. deaths	SMR	95 % CI
Weil et al. [85]	Isopropyl alcohol manufacture (H)	USA	1928–1950	M	182	Any	1	NA	NA
Hueper [40]	Isopropyl alcohol manufacture (H)	USA	1927–1950	M	779	Any	2	NA	NA
Lynch et al. [50]	Chemical work, isopropyl alcohol jobs (H)	USA	1950–1976	PM	741	Any	7	3.2	*1.5–6.7*
Ahlborg et al. [1]	Stainless steel pickling house (H)	Sweden	1951–1979	M	181	Any	3[a]	50	16–155
Cooper et al. [17]	Battery manufacture (L)	USA	1947–1970	M	4,519	Any	6	1.28	0.47–2.8
						20+ years	4	1.41	*0.38–3.61*
Forastiere et al. [28]	Soap manufacture (I)	Italy	1964–1972	M	361	Any	5[a]	*6.94*	*2.26–16.2*
Block et al. [9]	Phosphate fertilizer manufacture (I)	USA	1950–1979	M	2,610[b]	Any	2	1.91	*0.23–6.90*
Steenland and Beaumont [80]	Steelworkers in pickling jobs (H)	USA	1940–1965	PM	1,165	Any	14	2.19	1.2–3.7
						SA daily	10	2.5	1.7–4.7
Teta et al. [83]	Isopropyl/ethyl alcohol manufacture (H)[c]	USA	1928–1968	M	538	Any	1	*1.43*	0–8.0
Teta et al. [83]	Isopropyl/ethyl alcohol manufacture (H)	USA	1941–1992	M	493	Any	1	*3.3*	0.1–19
Coggon et al. [15]	Battery manufacture and steel works with acid mist exp.(L)	UK	1950–1990	M	2,678	Any	1	0.48	0.01–2.7
Moulin et al. [57]	Stainless steel, metal alloy manufacture (I)	France	1968–1991	M	4,288	Any	17	1.47	0.9–2.4
Sorahan and Esmen [78]	Ni–Cd battery manufacture (L)	UK	1947–1975	M	926	Any	2	1.95	0.24–7.06
Pesatori et al. [62]	Sulfuric acid manufacture (H)	Italy	1962–1997	M	1,372	Any	4	1.30	0.35–3.33

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Cancer de Laringe y Ocupaciòn

Table 8.7 Standardized incidence ratio of laryngeal cancer in selected occupations. Results of NOCCA study [67]

Occupation	N cases	SIR	95 % CI
Technical workers	899	0.74	0.69–0.79
Laboratory workers	11	0.53	0.27–0.96
Physicians	47	0.59	0.43–0.78
Dentists	26	0.85	0.55–1.24
Assistant	21	1.04	0.65–1.60
Other health workers	52	0.84	0.63–1.10
Teachers	253	0.55	0.48–0.62
Religious workers	184	0.70	0.61–0.81
Artistic workers	92	1.11	0.89–1.36
Journalists	50	1.27	0.95–1.68
Administrators	847	0.97	0.91–1.04
Clerical workers	573	0.93	0.86–1.01
Sales agents	839	1.19	1.12–1.28
Shop workers	580	1.02	0.94–1.10
Farmers	1,052	0.46	0.44–0.49
Gardeners	291	0.58	0.51–0.65
Fishermen	241	1.20	1.05–1.36
Forestry workers	255	0.73	0.64–0.82
Miners and quarry workers	80	0.96	0.76–1.20
Seamen	378	1.85	1.67–2.04
Transport workers	313	0.98	0.88–1.10
Drivers	1,226	1.37	1.29–1.45
Postal workers	172	0.99	0.85–1.15
Textile workers	182	1.08	0.94–1.25
Shoe and leather workers	87	1.40	1.12–1.73
Smelting workers	374	1.29	1.17–1.43
Mechanics	1,356	1.12	1.06–1.18
Plumbers	149	1.04	0.89–1.22

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Cancer de Laringe y Ocupaciòn

Occupation	N cases	SIR	95 % CI
Welders	146	1.14	0.97–1.34
Electrical workers	477	1.13	1.03–1.23
Wood workers	819	0.82	0.77–0.88
Painters	303	1.22	1.09–1.36
Other construction workers	751	1.23	1.15–1.32
Bricklayers	167	1.05	0.90–1.23
Printers	173	1.21	1.04–1.41
Chemical process workers	247	1.16	1.02–1.31
Food workers	379	1.26	1.14–1.39
Beverage workers	59	2.65	2.02–3.42
Glass makers	284	1.22	1.08–1.37
Packers	536	1.32	1.21–1.43
Engine operators	435	1.20	1.09–1.32
Public safety workers	233	0.97	0.85–1.10
Cooks and stewards	96	2.27	1.84–2.77
Waiters	102	3.52	2.90–4.27
Building caretakers	255	1.28	1.13–1.45
Chimney sweeps	13	1.05	0.56–1.80
Hairdressers	66	1.55	1.20–1.97
Launderers	25	0.96	0.62–1.42
Military personnel	130	0.96	0.81–1.14
Other workers	*840*	*1.27*	*1.21–1.36*
Economically inactive	1,322	1.42	1.35–1.50

Results in italics were calculated based on raw data
N number of cases, *SIR* standardized incidence ratio, *CI* confidence interval

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Càncer de Vejiga Urinaria

- Incidencia 20/100,000
- Causas:
  - 1) Tabaco
  - **2) Ocupaciòn**
- Riesgo Ocupacional: 15-20%
- Aminas Aromaticas (B-naftilamina-riego 90x)
- PAH
- Humo del escape de Motores Diesel

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Càncer de Vejiga Urinaria

Table 26.2 Industries showing a statistically significant excess bladder cancer risk among European men

Industry (ISIC code)	Odds ratio	95 % confidence interval
Salt mining (2,903)	4.41	(1.43–13.6)
Manufacture of carpets and rugs (3,214)	4.07	(1.44–11.5)
Manufacture of paints, varnishes, and lacquers (3,521)	2.94	(1.48–5.84)
Manufacture of plastic products NEC (356)	1.79	(1.06–3.00)
Manufacture of industrial chemicals (351)	1.58	(1.07–2.33)
Education services (931)	1.47	(1.06–2.05)

Pooled analysis of 11 case-control studies [27]
[a]ORs are adjusted for age, smoking, and study center. The non-exposed group does not include subjects who had worked in any of the a priori defined high-risk occupations

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