

Qualche riflessione sui tumori dovuti al lavoro

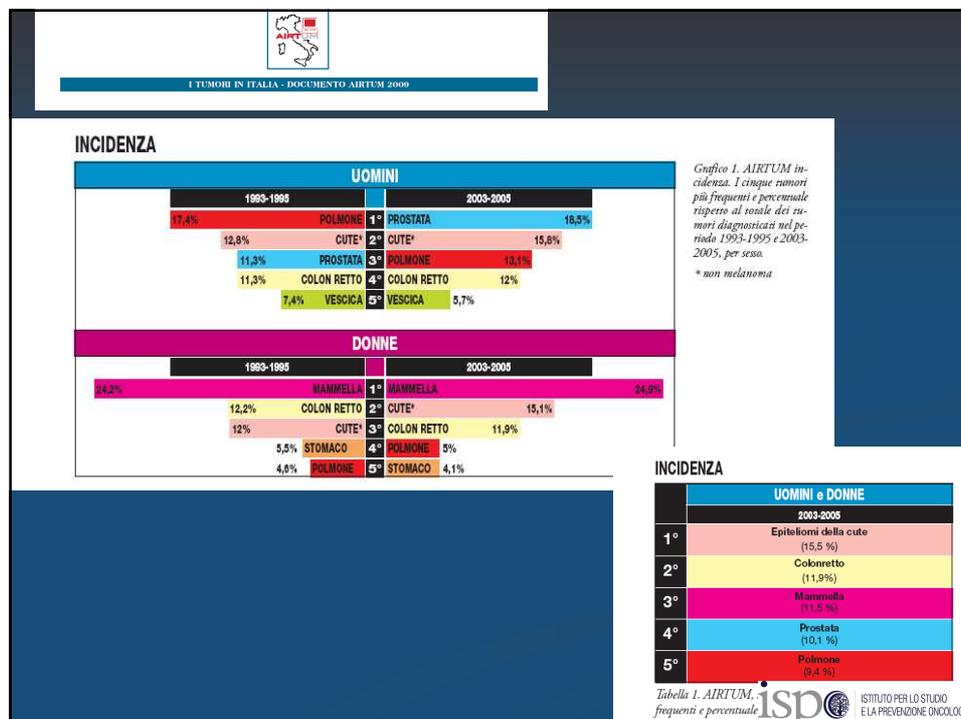
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Prospettive per il miglioramento della tutela della salute
dei lavoratori

Pisa 29 Maggio 2009



Stime sulla quota di tumori attribuibili ai vari fattori di rischio

**Doll e Peto 1981 stima per i fattori occupazionali 4%
range 2-8%**

Rispetto a percentuali molto più elevate per altri fattori di rischio (tabacco , dieta)

Quando si considerano sottogruppi di popolazione le stime cambiano (gruppi di esposti)

Bisogna ricordarsi che le esposizioni ambientali ed occupazionali non sono volontarie

Nonostante sia funzionale presentare separatamente le stime per i differenti fattori di rischio, forse bisognerebbe riflettere considerando che in realtà deve essere tenuta in considerazione anche il complesso delle cause e le interazioni

Smoking and occupation from the European Community Respiratory Health Survey

S A McCurdy, J Sunyer, J-P Zock, J M Antó, M Kogevinas, European Community Respiratory Health Survey Study Group

Occup Environ Med 2003;60:643-648

Table 1 Smoking prevalence by current occupational group and sex in the European Community Respiratory Health Survey, 1992-93

Occupational group	Smoking prevalence, % (95% CI)	Median cpd
Professional, administrative, cleaners	2.3 to 35.0	13
Hairdressers	4.8 to 56.6	15
Nurses	5.9 to 57.5	15
Farmers, farm workers	5.7 to 35.2	10
Agricultural workers	1.1 to 51.2	20
Wood workers	5.8 to 39.1	15
Bakers	9.0 to 96.3	10
Other food processors	9.4 to 57.6	20
Laboratory technicians, cast plastics and rubber workers	1.1 to 47.5	12.5
Chemical processors	9.4 to 38.2	10
Welders, solderers	9.0 to 96.3	15
Metal making and treating	7 to 71.0	9
Other metal workers	2.6 to 98.7	10
Electrical processors	5.7 to 84.3	7
Spray painters, other paints painting	6.4 to 54.8	14.5
Leather workers	3.4 to 43.1	12.5
Textile and clothing	6.5 to 54.9	10
Paper workers	3.9 to 68.4	10
Printing workers	9.6 to 51.0	15
Glass and ceramics workers	9.2 to 74.9	12.5
Remainder non-metal/mineral	2.6 to 51.1	8
Construction, mining	3.7 to 78.8	20
Industrial drivers	7.2 to 50.0	15
Remainder transport and other	3.7 to 78.8	12.5
Occupation not stated, incl. husband and student	1.3 to 72.2	20
Unclassified	11.7 to 58.5	20
cpd, cigarettes per day and	0.7 to 38.7	12
	9.7 to 53.2	10

Main messages

- Smoking prevalence varied approximately twofold among occupations. Prevalence was highest for men among metal, construction, and mining workers and for women among cleaners and hairdressers.
- Smoking prevalence was lowest for men among persons with no stated occupation (including students) and for women among agricultural workers.
- Smoking prevalence increased directly with occupational exposure to mineral dust and gas or fumes.

Policy implications

- Anti-tobacco programmes should be focused on groups with high smoking prevalence and employee base. For men, these groups include metal, construction, and mining workers. For women, these groups include cleaners and hairdressers.
- Smoking prevalence studies should be conducted periodically to focus anti-tobacco efforts and monitor their effectiveness.

In questi ultimi anni sono stati resi disponibili approfondimenti sulla dimensione del rischio occupazionale per alcuni paesi

The burden of cancer at work: estimation as the first step to prevention

L Rushton, S Hutchings and T Brown

Occup. Environ. Med. 2008;65:789-800; originally published online 13 Dec 2007;
doi:10.1093/oxfordjournals.occup-environ-med.aak007

Main messages

- ▶ Overall, 4.9% (8% men, 1.5% women) of all cancer deaths in Great Britain in 2004 were attributable to work-related carcinogens (based on the assessment of six cancers and International Agency for Research on Cancer Group 1 and 2A carcinogens with strong or suggestive human evidence).
- ▶ Asbestos contributed over half the occupational attributable deaths, followed by silica, diesel engine exhaust, radon, work as a painter, mineral oils in metal workers and in the printing industry, environmental tobacco smoke (non-smokers), work as a welder and dioxins.
- ▶ Occupational exposure to solar radiation, mineral oils and coal tars/pitches contributed large numbers of skin cancer registrations.
- ▶ Industries/occupations with large numbers of cancer deaths and registrations include construction, metal working, mining, land transport, roofing and road repair/construction, printing, farming, some service industry sectors in particular personal and household services and wholesale and retail trades, restaurants and hotels and manufacture of machinery, transport equipment, non-ferrous metals and metal products, and chemicals. 2007

Policy implications

- ▶ Estimates for all but leukaemia are greater than those currently used in UK health and safety strategy planning and contrast with small numbers from occupational accidents.
- ▶ Carcinogenic agents, occupations and industrial areas are highlighted for prioritisation of risk reduction strategies.
- ▶ Past high exposures will continue to give substantial numbers in the near future and, although levels of many exposures have reduced, recent measurements of others show continuing high levels which must be addressed.

The burden of cancer at work: estimation as the first step to prevention

L Rushton, S Hutchings and T Brown

Occup. Environ. Med. 2008;65:789-800; originally published online 13 Dec 2007;

Table 1 Estimated attributable fractions, deaths and registrations by cancer site in 2004 (2003 for registrations)

Cancer site	Attributable fraction (%)			Attributable numbers			
	Male	Female	Total	Male	Female	Male	Female
(a) Established carcinogens only (IARC Group 1, strong human evidence)							
Bladder	1.3	0.6	1.0	40	10	89	17
Leukaemia	0.3	0.5	0.2	4	5	5	6
Lung	16.5	4.5	11.6	3137	599	3509	680
Mesothelioma	85-90‡	20-30‡	74-80	1450	75	1450†	75†
NMSC	11.8	3.0	8.4	38	6	3992	855
Sinonasal	34.1	10.8	23.4	24	6	74	18
Total							
Based on deaths	6.0	1.0	3.6	4693	701		
Based on registrations	5.4	1.0	3.2			9120	1652
(b) Established + uncertain carcinogens (IARC Group 1 and 2A, strong + suggestive human evidence)							
Bladder	11.6	2.0	8.3	362	32	816	57
Leukaemia	2.7	0.8	1.7	58	11	93	15
Lung	21.6	5.5	15.0	4106	728	4594	826
Mesothelioma	98*	90*	97*	1650	270	1650†	270†
NMSC	11.8	3.0	8.4	38	6	3992	855
Sinonasal	64.3	18.4	43.3	45	11	140	31
Total							
Based on deaths	8.0	1.5	4.9	6259	1058		
Based on registrations	6.7	1.2	4.0			11 294	2054
Total cancers in GB				78 237	71 666	167 506	164 586

*Includes cases described as due to paraoccupational or environmental exposure to asbestos.

†Taken as equal to attributable deaths for this short-survival cancer.

‡Mid-points of ranges used when estimating attributable numbers and combining results for mesothelioma with the other cancers.

GB, Great Britain; IARC, International Agency for Research on Cancer; NMSC, non-melanoma skin cancer.

Rushton 2007

Exposure to carcinogens in Great Britain

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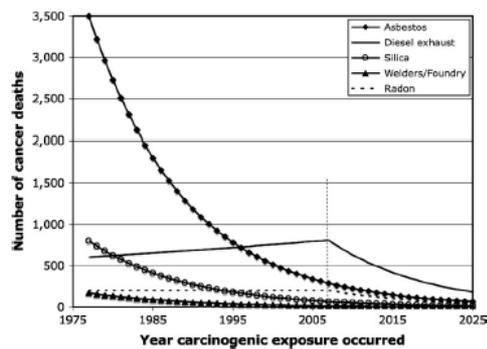


Fig. 5. Hypothetical changes in cancer mortality for five occupational carcinogens based on projected changes in exposure over time.

Cherrie 2007

Exposure to occupational carcinogens and lung cancer risk.
Evolution of epidemiological estimates of attributable fraction

Sara De Matteis, Dario Consonni, Pier Alberto Bertazzi
University of Milan, Milan and Fondazione IRCCS Ospedale Maggiore Policlinico, Mangiagalli e Regina Elena, Milan, Italy

Table 1. Occupations and industries known to present an excess risk of lung cancer (List A)

Industry	Occupation/Process/Chemicals
Agriculture	Vineyard workers using arsenical insecticides (before 1970)
Mining and quarrying	Arsenic, uranium, iron-ore, granite, and asbestos mining; talc mining/milling
Granite production	Cutting, polishing, etc., of granites stones
Ceramic and refractory brick	Ceramic and pottery workers
Asbestos production	Insulating material production
Metals (iron and steel basic industries)	Iron and steel founding
Metals (non-ferrous basic industries)	Copper, zinc, cadmium, aluminium, nickel, chromates, beryllium
Shipbuilding, motor vehicle, railroad equipment manufacturing	Shipyards and dockyard, motor vehicle, railroad manufacture workers
Gas	Coke plant workers and gas production workers
Construction	Insulators and pipe coverers, roofers, asphalt workers
Other	Painters (construction, automotive industry, and other users)

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Table 2. Population attributable fractions for lung cancer for exposure to occupations/industries classified in List A: Italian studies

Author/Year	Area	Period	Sex	PEC%	OR	PAF%
Ronco/1988	Settimo Torinese	1976-80	M	20.7	2.3	11.9
	Rivoli	1976-80	M	16.0	1.4	4.9
Bovenzi/1993	Trieste	1979-81; 1985-86	M	28.8	2.3	16.0
Simonato/2000	Venice/Mestre	1992-94	M	19.2	1.3	4.4*
	Venice/Centro	1992-94	M	24.7	1.0	0.0*
Richiardi/2004	Eastern Veneto	1990-91	M	12.7	2.5	7.8*
	Turin	1991-92	M	23.7	1.9	11.1*
Fano/2004	Civitavecchia	1987-95	M/F	11.1	1.3	2.6*
Consonni/2006	Lombardy	2002-05	M	10.0	1.4	2.8

PEC = Proportion of Exposed Cases

OR = Odds Ratio adjusted for tobacco smoking

PAF = Population Attributable Fraction

* Calculated by us

Exposure to occupational carcinogens and lung cancer risk.
Evolution of epidemiological estimates of attributable fraction

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Table 3. Population attributable fractions for lung cancer for exposure to occupations/industries in List A: International studies.

Country	Author/Year	Area	Period	Sex	PEC%	OR	PAF%
USA	Blot/1978	Georgia	1970s	M	20.7	1.6	8.8
USA	Blot/1980	Virginia	1970s	M	28.3	1.7	16.0
USA	Blot/1982	Florida	1970-75	M	21.8	1.4	15.4
USA	Blot/1983	Pennsylvania	1980s	M	23.9	1.9	11.3
Sweden	Damber/1985	Sweden					
China	Levin/1988	Shanghai					
USA	Vineis/1988	Pennsylvania					
		Virginia					
		Florida					
		New York					
		Louisiana					
Germany	Jockel/1998	Germany					
Europe	Pohlabein/2000§	Italy, Sweden, Spain					
Europe	Zeka/2006§	Czech Republic, Hungary, Romania, Slovakia					

Una significativa proporzione di tumori del polmone è attribuibile a cancerogeni occupazionali.
La proporzione di Esposti varia in maniera elevata in differenti popolazioni
Tale proporzione dipende parzialmente dal periodo Temporale e molto invece dall'area geografica (paesi industrializzati)
Mancanza di dati sulle donne insufficienti per calcolare stime stabili

PEC = Proportion of Exposed Cases
OR = Odds Ratio adjusted for tobacco smoking
PAF = Population Attributable Fraction
* Calculated by us
§ Only non-smokers

Exposure to occupational carcinogens and lung cancer risk.
Evolution of epidemiological estimates of attributable fraction

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Table 4. Population attributable fractions for lung cancer for exposure estimated through Expert Assessments/JEM: Italian studies

Author/Year	Area	Period	Sex	PEC%	OR	PAF%
Berrino/1980	Saronno	1976-77	M	39.5	3.0	26.4
Riboli/1983	Piochetto	1976-79	M	41.7	1.7	16.6
Pastorino/1984	Saronno	1976-79	M	34.3	2.7	21.6*
Ciccone/1988	Settimo Torinese	1976-80	M	50.0	4.1	37.9

PEC = Proportion of Exposed Cases
OR = Odds Ratio adjusted for tobacco smoking
PAF = Population Attributable Fraction
* Calculated by us

Evaluation of a National Register on Occupational Exposure to Carcinogens: Effectiveness in the Prevention of Occupational Cancer, and Cancer Risks among the Exposed Workers

TIMO KAUPPINEN¹*, ANJA SAALO¹, EERO PUUKALA²,

Table 1. Annual average number of exposed workers notified to the ASA Register by period

Carcinogen	1979-1984	1985-1989	1990-1994	1995-1999	2000-2004
ETS ^a	—	—	—	—	11 774
Chromium (VI) com					
Nickel					
Asbestos					
Benzene					
Polycyclic aromatic					
Chloroform ^a					
Acrylamide ^a					
Arsenic					
Cadmium					
Other carcinogens					
All exposures					
All exposed workers					

^aChloroform, acrylamide

**Il registro ASA operante in Finlandia dal 1979 cambiamenti o riduzioni nell' uso di cancerogeni sono stati riportati per il 73%
Decremento dell' esposizioni dei lavoratori con possibile decremento del numero dei tumori causati da esposizioni lavorative**

Table 3. Observed numbers of cases (n) and SIRs with 95% CIs by primary site in 1980-2003 among workers notified in 1979-1988 to the ASA Register

Cancer site	n	SIR	CI
All sites	1902	0.98	0.93-1.02
Mouth, pharynx	43	0.77	0.56-1.04
Lip	10	0.70	0.34-1.29
Mouth, other	8	0.72	0.31-1.41
Pharynx	5	0.39	0.13-0.91
Oesophagus	15	0.68	0.38-1.12
Stomach	81	0.99	0.79-1.23
Small intestine	3	0.35	0.07-1.03
Colon	98	1.02	0.83-1.23
Rectum, rectosigmoid, anus	72	0.98	0.77-1.23
Liver	18	0.81	0.48-1.28
Gallbladder and bile ducts	8	0.56	0.24-1.11
Pancreas	59	0.96	0.73-1.23
Other organs of the digestive tract	2	0.32	0.04-1.13
Nasal cavity and accessory sinuses	5	1.22	0.40-2.85
Larynx, epiglottis	22	1.05	0.66-1.59
Lung, trachea	221	0.87	0.76-0.99
Mesothelioma	17	1.81	1.06-2.90
Breast	190	1.03	0.89-1.18
Cervix uteri	8	0.93	0.40-1.82
Corpus uteri	27	0.94	0.62-1.36
Ovary	24	1.02	0.65-1.51
Other female reproductive organs	5	1.49	0.48-3.48

Kauppinen 2007

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Table 3. Observed numbers of cases (n) and SIRs with 95% CIs by primary site in 1980–2003 among workers notified in 1979–1988 to the ASA Register

Cancer site	n	SIR	CI
Prostate	303	1.04	0.93–1.16
Testis	9	0.49	0.23–0.93
Kidney	99	1.18	0.96–1.43
Bladder, ureter, urethra	86	1.12	0.89–1.37
Skin melanoma	76	0.94	0.74–1.17
Skin, non-melanoma	38	0.95	0.67–1.30
Basal cell carcinoma of the skin	377	1.00	0.90–1.10
Eye	7	1.02	0.4–2.09
Brain and nerves	82	0.87	0.69–1.07
Thyroid gland	37	1.10	0.77–1.51
Bone	8	1.52	0.66–2.99
Soft tissue	13	0.77	0.41–1.32
Non-Hodgkin lymphoma	100	1.12	0.91–1.34
Hodgkin's disease	20	1.06	0.65–1.63
Multiple myeloma	22	1.00	0.62–1.50
Leukaemia	46	1.04	0.76–1.38
Other or not specified	37	1.04	0.73–1.42

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Evaluation of a National Register on Occupational Exposure to Carcinogens: Effectiveness in the Prevention of Occupational Cancer, and Cancer Risks among the Exposed Workers

TIMO KAUPPINEN¹*, ANJA SAALO¹, EERO PUKKALA²



Occupational Exposures to Carcinogens in Italy:

An Update of CAREX Database

DARIO MIRABELLI, MD, TIMO KAUPPINEN, PHD

TABLE 1 Most Prevalent Exposures: Comparison between Former CAREX and Current Estimates*

Carcinogen	Current	Former CAREX
Tobacco smoke (environmental)	806,550	770,468
Solar radiation	702,100	562,000
Diesel engine exhaust	521,162	552,495
Wood dust	279,747	309,464
Silica, crystalline	254,657	269,688
Lead and lead compounds, inorganic	227,820	215,325
Benzene	184,025	176,543
Chromium VI compounds	156,225	134,056
Glasswool	138,191	148,425
Polycyclic aromatic hydrocarbons (excl. environmental tobacco smoke)	121,716	127,315
Formaldehyde	113,384	74,508
Tetrachloroethylene	106,290	102,500
Nickel compounds	97,178	78,575
Asbestos	76,100	352,691
Strong-inorganic-acid mists containing sulfuric acid (occup. exp. to)	54,363	48,713
Methylene chloride	51,740	38,581
Cadmium and cadmium compounds	44,623	32,346
Styrene	36,861	30,532
Trichloroethylene	34,481	41,919
Arsenic and arsenic compounds	32,436	28,322

*Numbers of exposures across all 55 CAREX Industries.

2005

Nella sezione III del Dlgs 81/2008 l'articolo 244 tratta la registrazione dei tumori richiamando l'ISPESL. I Centri operativi Regionali (COR) realizza sistemi di monitoraggio dei rischi occupazionali da agenti cancerogeni e dei danni che ne conseguono. I COR trasmettono le informazioni all'ISPESL in cui è costituito il registro dei casi di neoplasia di sospetta origine professionale. Oltre al registro nazionale dei mesoteliomi (ReNaM) viene fatto riferimento per la prima volta al Registro nazionale dei tumori nasali e sinusali (ReNaTuNS) come registri di patologia ad alta frazione eziologica e vengono citati nel comma 3.c invece i tumori a bassa frazione eziologica facendo riferimento a sistemi quali OCCAM anche se non esplicitamente citato.

Art. 244. *Registrazione dei tumori*

1. L'ISPESL, tramite una rete completa di Centri operativi regionali (COR) e nei limiti delle ordinarie risorse di bilancio, realizza sistemi di monitoraggio dei rischi occupazionali da esposizione ad agenti chimici cancerogeni e dei danni alla salute che ne conseguono, anche in applicazione di direttive e regolamenti comunitari. A tale scopo raccoglie, registra, elabora ed analizza i dati, anche a carattere nominativo, derivanti dai flussi informativi di cui all'articolo 8 e dai sistemi di registrazione delle esposizioni occupazionali e delle patologie comunque attivi sul territorio nazionale, nonché i dati di carattere occupazionale rilevati, nell'ambito delle rispettive attività istituzionali, dall'Istituto nazionale della previdenza sociale, dall'Istituto nazionale di statistica, dall'Istituto nazionale contro gli infortuni sul lavoro, e da altre amministrazioni pubbliche. I sistemi di monitoraggio di cui al presente comma altresì integrano i flussi informativi di cui all'articolo 8.
2. I medici e le strutture sanitarie pubbliche e private, nonché gli istituti previdenziali ed assicurativi pubblici o privati, che identificano casi di neoplasie da loro ritenute attribuibili ad esposizioni lavorative ad agenti cancerogeni, ne danno segnalazione all'ISPESL, tramite i Centri operativi regionali (COR) di cui al comma 1, trasmettendo le informazioni di cui al decreto del Presidente del Consiglio dei Ministri 10 dicembre 2002, n. 308, che regola le modalità di tenuta del registro, di raccolta e trasmissione delle informazioni.

Art. 244. *Registrazione dei tumori*

3. Presso l'ISPESL è costituito il registro nazionale dei casi di neoplasia di sospetta origine professionale, con sezioni rispettivamente dedicate:
 - a) ai casi di mesotelioma, sotto la denominazione di Registro nazionale dei mesoteliomi (ReNaM);
 - b) ai casi di neoplasie delle cavità nasali e dei seni paranasali, sotto la denominazione di Registro nazionale dei tumori nasali e sinusali (ReNaTuNS);
 - c) ai casi di neoplasie a più bassa frazione eziologica riguardo alle quali, tuttavia, sulla base dei sistemi di elaborazione ed analisi dei dati di cui al comma 1, siano stati identificati cluster di casi possibilmente rilevanti ovvero eccessi di incidenza ovvero di mortalità di possibile significatività epidemiologica in rapporto a rischi occupazionali.
4. L'ISPESL rende disponibili al Ministero della salute, al Ministero del lavoro e della previdenza sociale, all'INAIL ed alle regioni e province autonome i risultati del monitoraggio con periodicità annuale.
5. I contenuti, le modalità di tenuta, raccolta e trasmissione delle informazioni e di realizzazione complessiva dei sistemi di monitoraggio di cui ai commi 1 e 3 sono determinati dal Ministero della salute, d'intesa con le regioni e province autonome.

Tumori ad alta frazione eziologica

- Mesotelioma
- Tumori naso-sinusal

Occupational exposure to asbestos and mortality among asbestos removal workers: a Poisson regression analysis

G Frost^{1,4}, A-H Harding¹, A Darnton², D McElvenny^{2,3} and D Morgan¹

¹Health & Safety Laboratory, Harpur Hill, Buxton, Derbyshire SK17 9JN, UK; ²Health & Safety Executive, Redgrave Court, Bootle, Merseyside L20 7HS, UK

Table 2. Standardised mortality ratios (SMR) for all asbestos removal workers in the survey and for those included in the analysis (1971–2005)

Cause of death	All removal workers			Analysed workers		
	Deaths	(95% CI)	SMR	Deaths	(95% CI)	SMR
All causes	3165	(118.7–127.3)	122.9**	985	(104.4–118.4)	111.3**
All MN	1274	(163.7–182.9)	173.1**	384	(152.7–187.0)	169.2**
MN of lip, oral cavity and pharynx	19	(56.6–146.9)	94.0	6	(30.7–182.2)	83.7
MN of oesophagus	42	(63.5–119.2)	88.2	16	(59.6–169.2)	104.2
MN of stomach	49	(98.9–176.8)	133.7	18	(104.5–278.8)	176.4*
MN of colon	62	(98.1–163.9)	127.9	17	(69.4–190.9)	119.2
MN of rectum	43	(122.3–227.6)	169.0**	15	(115.9–341.5)	207.1*
MN of liver (primary)	20	(77.3–195.5)	126.6	9	(76.7–318.6)	167.8
MN of larynx	17	(123.6–339.8)	212.3**	8	(139.4–636.1)	322.9**
MN trachea, bronchus & lung	393	(181.2–221.4)	200.5**	115	(178.0–258.7)	215.6**
MN of peritoneum	38	(3233.2–6271.2)	4568.9**	12	(2257.0–7629.8)	4367.8**
MN of pleura	35	(800.5–1598.4)	1149.3**	10	(639.1–2451.1)	1332.8**
Mesothelioma ^a	69	(628.8–1022.8)	808.2**	23	(512.3–1212.7)	808.2**

Occupational exposure to asbestos and mortality among asbestos removal workers: a Poisson regression analysis

G Frost^{1,2}, A-H Harding¹, A Darnton², D McElvenny^{2,3} and D Morgan¹

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Table 2 Standardised mortality ratios (SMR) for all asbestos removal workers in the survey and for those included in the analysis (1971–2005)

Cause of death	All removal workers			Analysed workers		
	Deaths	(95% CI)	SMR	Deaths	(95% CI)	SMR
MN of kidney	29	(107.2–229.9)	160.1*	13	(121.9–391.6)	229.0*
MN of bladder	18	(55.8–146.8)	94.2	3	(127–1802)	61.6
MN of lymphatic and haematopoietic tissue	80	(82.4–129.3)	103.9	24	(55.2–128.2)	86.2
Circulatory disease	981	(107.0–121.4)	114.0**	258	(89.9–115.2)	102.0
Ischaemic heart disease	665	(104.9–122.3)	113.3**	171	(87.7–119.6)	118.3
Cerebrovascular disease	147	(105.6–146.9)	125.0*	41	(84.9–160.5)	88.8
Respiratory disease	222	(111.7–146.0)	128.0**	44	(64.5–119.2)	88.8
Asbestos ^b	22	(365.6–870.7)	575.34**	3	(794.3–11249.8)	3849.6**

CI = confidence interval. *Significant at $P < 0.05$; **significant at $P < 0.01$. ^aCI-D-10, post-2001. ^bAsbestos determined by underlying cause of death.

IL REGISTRO TOSCANO “RENATUNS”

L'attività del Registro di Tumori Naso-Sinusali della Toscana è stata avviata nell'ambito del Progetto di ricerca ISPEL n° B36/MDL/02 “Linee guida del Registro Nazionale Tumori Naso-Sinusali (ReNaTuNs)”, a partire dal 2005

OBIETTIVI

- **Stima dell'incidenza dei casi di tumore naso-sinusale**
- **Raccolta di informazioni sulla pregressa esposizione ad agenti correlati al rischio di tumore Naso Sinusale e valutazione della rilevanza delle esposizioni occupazionali**
- **Fornire informazioni relative all' esposizione per scopi di prevenzione e medico assicurativi**

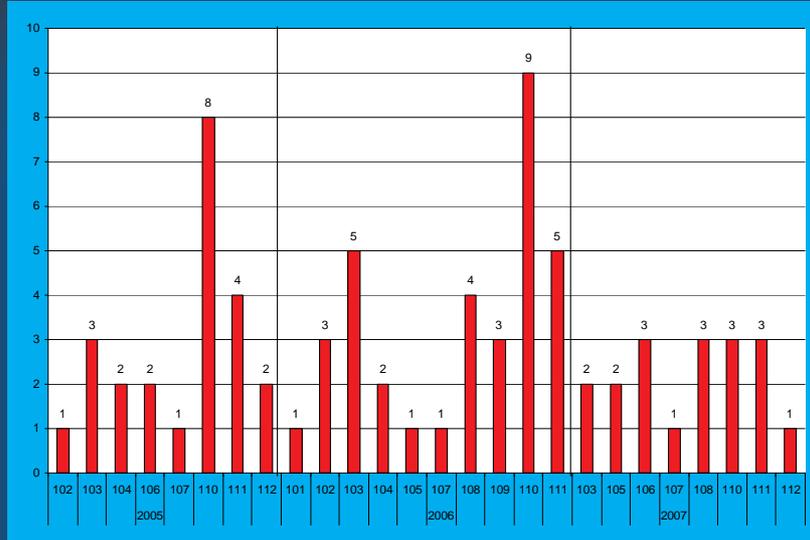
IL REGISTRO REGIONALE TOSCANO DEI TUMORI NASO-SINUSALI

- Tutti i casi di tumore maligno naso-sinusale (per la stima dell'incidenza) diagnosticati dal 2005
- L'intervista viene effettuata SOLO ai casi con diagnosi di tumore maligno epiteliale naso-sinusale.
- **Diagnosi certa:** referto istologico
Diagnosi probabile: diagnosi solo per immagini (TAC, RMN) (circa 10-15% dei casi)

Casistica RENATUNS toscano 2005-2007

- I casi totali segnalati tramite il flusso informativo del registro regionale sono stati 93
- Effettuati approfondimenti sulla storia lavorativa con questionario (dai PISLL territoriali di competenza o da personale del ISPO).

CASI INCIDENTI TUMORE NASO SINUSALE PER ANNO DI INCIDENZA E ASL



•L'associazione tra TuNS epiteliali, in particolare l'adenocarcinoma, ed esposizione a polveri di legno e di cuoio appare consolidata.

Rischio attribuibile (%) per il carcinoma naso-sinusale

Esposizione	Adenocarcinoma	C. cell. squamose	Uomini	Donne
Legno	68		22	18
Cuoio	6	1	3	3
Occupazioni a elevato rischio	--	20	6	8
Esp.occupaz.(tutte)	77	22	39	33
Fumo	23	23	15	1

[t Mannetje, 1999]

A Case-control Study on Occupational Risk Factors for Sino-nasal Cancer

Angelo d'Errico, Sherri Pasian, Alberto Baratti, Roberto Zanelli, Santo Alfonso, Luisella Gilardi, Fabio Beatrice, Antonella Bena and Giuseppe Costa

Occup. Environ. Med. published online 19 Jan 2009;

Table 3 – Odds Ratios for any SNEC and three histological types with ever exposure to occupational hazards, adjusted for age and sex

Hazard	All SNEC			Adenocarcinoma		Squamous Cell Carcinoma		Other Histotypes	
	cases n=113	controls n=336	Adjusted Odds Ratios (95% CI)	cases n=53	Adjusted Odds Ratios (95% CI)	cases n=37	Adjusted Odds Ratios (95% CI)	cases n=12	Adjusted Odds Ratios (95% CI)
	n	n	OR	n	OR	n	OR	n	OR
arsenic	6	7	2.2 (0.69, 6.69)	1	0.64 (0.08, 5.42)	3	3.2 [†] (1.20, 22.20)	2	3.2 (0.59, 17.26)
wood dust	50	22	11.4 [*] (6.29, 20.74)	41	58.6 [*] (23.74, 144.8)	2	0.85 (0.19, 3.83)	7	5.5 [*] (1.99, 15.24)
leather dust	9	2	14.4 [*] (3.03, 68.87)	7	26.6 [*] (5.09, 139.0)	1	5.0 (0.44, 56.83)	1	6.3 (0.54, 73.09)
nickel	3	0		0		0		3	9.2 [†] (1.40, 60.13)
chromium	3	3	2.8 (0.55, 14.06)	1		0		2	0.66 (0.21, 2.05)
PAHs	19	72	0.65 (0.37, 1.15)	6	0.38 [†] (0.15, 0.94)	9	1.2 (0.54, 2.81)	4	4.1 [†] (1.66, 10.13)
welding fumes	17	27	2.0 [†] (1.00, 3.82)	6	1.3 (0.52, 3.52)	9	4.1 [†] (1.66, 10.13)	2	1.0 (0.22, 4.66)
oil mists	10	39	0.66 (0.32, 1.40)	3	0.39 (0.11, 1.33)	5	1.2 (0.43, 3.39)	2	0.63 (0.14, 2.84)
formaldehyde	7	5	4.3 [†] (1.32, 14.10)	6	9.5 [*] (2.62, 34.20)	0		1	3.7 (0.38, 36.53)
flour dust	3	12	0.68 (0.19, 2.48)	1	0.46 (0.06, 3.68)	2	1.6 (0.34, 7.43)	0	
cocoa powder	1	1	4.2 (0.25, 70.53)	0		1	9.6 (0.56, 164.8)	0	
silica	7	34	0.50 (0.21, 1.19)	4	0.57 (0.19, 1.70)	2	0.51 (0.12, 2.28)	1	0.32 (0.04, 2.52)

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	n	n	OR	n	OR	n	OR	n	OR
flour dust	3	12	0.68 (0.19, 2.48)	1	0.46 (0.06, 3.68)	2	1.6 (0.34, 7.43)	0	
cocoa powder	1	1	4.2 (0.25, 70.53)	0		1	9.6 (0.56, 164.8)	0	
silica	7	34	0.50 (0.21, 1.19)	4	0.57 (0.19, 1.70)	2	0.51 (0.12, 2.28)	1	0.32 (0.04, 2.52)
coal dust	2	7	0.67 (0.14, 3.32)	1	0.64 (0.08, 5.42)	0		1	1.5 (0.17, 13.0)
textile dusts	12	31	1.4 (0.68, 2.97)	6	1.9 (0.70, 5.10)	2	0.52 (0.12, 2.34)	4	2.8 (0.84, 9.42)
acid mists	6	10	1.7 (0.61, 4.90)	2	1.3 (0.27, 6.27)	0		4	6.3 [†] (1.75, 22.49)
paint mists	15	15	3.2 [†] (1.47, 6.76)	11	5.3 [*] (2.23, 12.64)	2	1.2 (0.26, 5.46)	2	2.0 (0.43, 9.75)
organic solvents	44	42	4.3 [*] (2.62, 7.20)	29	8.2 [*] (4.32, 15.72)	5	1.1 (0.39, 2.91)	10	5.7 [*] (2.28, 14.21)

[†]p-value ≤ 0.001 ^{*}p-value ≤ 0.01 [†]p-value ≤ 0.05

Table 5 – Odds Ratios for SNEC by intensity of exposure to occupational hazards, adjusted for co-exposures

	Categorical intensity levels* (only low or ever medium-high)	
	Level	OR (95% CI)
All SNEC		
Wood dust	low	3.2 (1.26, 7.44)
	high	30.6 (11.93, 78.30)
Leather dust	low	17.6 (1.84, 168.5)
	high	11.9 (1.12, 127.1)
Solvent vapours	low	2.3 (1.15, 4.46)
	high	2.1 (0.65, 6.67)
Welding fumes	low	3.3 (1.47, 7.26)
	high	1.6 (0.34, 7.75)
Arsenic [†]	ever exposed	4.1 (1.21, 13.76)
Adenocarcinoma		
Wood dust	low	16.6 (5.10, 54.04)
	high	179.9 (55.37, 584.4)
Leather dust	low	52.4 (3.71, 740.2)
	high	68.3 (5.60, 844.7)
Solvent vapours	low	4.5 (1.54, 12.90)
	high	3.8 (0.67, 21.58)
Squamous Cell Carcinoma		
Welding fumes	low	3.5 (1.31, 9.60)
	high	4.3 (1.01, 18.10)
Arsenic [†]	ever exposed	4.3 (1.01, 18.10)
Other histotypes		
Wood dust	low	2.1 (0.42, 10.50)
	high	16.0 (3.93, 65.24)
Solvent vapours	low	4.8 (1.72, 13.39)
	high	2.9 (0.33, 24.73)
Acid mists	low	5.6 (1.25, 25.11)
	high	17.1 (1.42, 206.7)

*based on years of exposure weighted only by probability
[†]could not be categorized by intensity

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Occupational Exposure to Inhalable Wood Dust in the Member States of the European Union

TIMO KAUPPINEN¹*, RAYMOND VINCENT², TUULA LIUKKONEN³,
 MICHEL GRZYBOWICZ², ANTEL KAUPPINEN¹, JYRKKA WELING³

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T. Kauppinen *et al.*

Table 2. Numbers of workers exposed to inhalable wood dust, and distribution of exposed workers (%) by industry and level of exposure in 25 member states of EU (EU-25) in 2000-2003

Industry (NACE revision 1 code)	Employed (thousand)	Exposed (thousand)	Exposed (% of employed)	<0.5 mg m ⁻³	0.5-1 mg m ⁻³	1-2 mg m ⁻³	2-5 mg m ⁻³	>5 mg m ⁻³
Sawmilling (201)	259	196	76	63	40	38	35	20
%				32	20	19	18	10
Manufacture of wooden boards (202)	124	92	74	32	19	18	15	8
%				35	21	20	16	9
Manufacture of builders' carpentry (203)	472	333	71	70	66	77	78	42
%				21	20	23	23	13
Manufacture of wooden containers (204)	80	57	71	12	11	13	13	9
%				21	19	23	23	16
Manufacture of other wood products (205)	147	97	66	21	17	20	22	15
%				22	18	21	23	15
Manufacture of furniture (361)	1210	713	59	201	140	145	141	87
%				28	20	20	20	12



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Industry (NACE revision 1 code)	Employed (thousand)	Exposed (thousand)	Exposed (% of employed)	<0.5 mg m ⁻³	0.5–1 mg m ⁻³	1–2 mg m ⁻³	2–5 mg m ⁻³	>5 mg m ⁻³
Building of ships and boats (351)	294	31	11	1	3	6	11	10
%				4	11	21	34	30
Forestry (02)	445	148	33	137	8	2	<0.5	<0.1
%				93	5	1	0	0
Construction (45)	13 000	1190	9	92	173	285	388	254
%				6	15	24	33	21
All other employment	163 400	709	0.4	118	119	160	193	118
%				17	17	23	27	17
All industries	179 400	3600	2.0	747	597	763	897	563
%				21	17	21	25	16

Occupational exposure levels to wood dust in Italy, 1996–2006

A Scarselli, A Binazzi, P Ferrante and A Marinaccio

Occup. Environ. Med. 2008;65:567–574; originally published online 17 Dec 2007;

Table 1 Number of companies, workers, and measurements, arithmetic mean (AM) and geometric mean (GM) by economic activity branch, SIREP (1996–2006)

Economic activity branch*	No of companies	No of workers	No of measurements†	AM	GM
Agriculture, hunting and forestry (A)	4	24	24	1.83	1.76
Manufacture of textiles and textile products (DB)	2	17	17	2.29	2.26
Manufacture of leather and leather products (DC)	1	13	13	0.57	0.57
Manufacture of wood and wood products (DD)	557	5342	5539	1.39	0.93
Sawmilling and planning of wood; impregnation of wood (20.1)	168	1488	1517	1.36	0.92
Manufacture of veneer sheets; manufacture of plywood, laminboard, etc. (20.2)	29	425	426	1.05	0.79
Manufacture of builders' carpentry and joinery (20.3)	193	1754	1803	1.52	0.97
Manufacture of wooden containers (20.4)	12	85	85	1.89	1.21
Manufacture of other products of wood; manufacture of articles of cork, etc. (20.5)	122	1248	1294	1.47	1.08
Manufacture of pulp, paper and paper products; publishing and printing (DE)	1	31	31	0.73	0.64
Manufacture of chemicals, chemical products and man-made fibres (DG)	1	1	1	0.05	0.05
Manufacture of rubber and plastic products (DH)	3	10	10	0.46	0.36
Manufacture of other non-metallic mineral products (DI)	2	6	8	0.36	0.26
Manufacture of basic metals and fabricated metal products (DJ)	9	29	29	1.18	0.97
Manufacture of machinery and equipment not elsewhere classified (DK)	4	81	81	1.74	1.21

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Economic activity branch*	No of companies	No of workers	No of measurements†	AM	GM
Manufacture of electrical and optical equipment (DL)	1	3	3	2.90	2.90
Manufacture of transport equipment (DM)	40	478	496	1.84	1.37
Manufacturing not elsewhere classified, including furniture, recycling, etc. (DN)	526	4310	4401	1.46	0.97
Manufacture of furniture (36.1)	519	4256	4347	1.47	0.97
Electricity, gas and water supply (E)	1	14	14	1.53	1.52
Construction (F)	7	30	31	1.39	1.10
Wholesale and retail trade; repair of motor vehicles, motorcycles, etc (G)	13	100	100	1.32	0.99
Real estate, renting and business activities (K)	5	19	19	1.49	1.43
Public administration and defence; compulsory social security (L)	2	13	13	1.14	0.63
Other community, social and personal service activities (O)	2	7	7	2.40	2.38
All	1181	10 528	10 837	1.44	0.97

*NACE codes in parentheses; †Number of TWA-8 exposure measurements of wood dust (mg/m³). DD and DN sections are further disaggregated in the main sectors.

Occupational exposure levels to wood dust in Italy, 1996-2006

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Table 2 Arithmetic mean (AM), geometric mean (GM), geometric standard deviation (GSD) and 5th-95th percentile of exposure measurements of wood dust (mg/m³) by gender and job category, SIREP (1996-2006)

Job category* (ISCO-88 code)	No†	AM	GM	GSD	5th centile-95th centile
Men: all wood-related	9210	1.48	0.99	1.66	0.15-3.80
Wood-processing-plant operators (8141)	252	2.08	1.38	2.91	0.20-4.50
Industrial robot operators (8170)	118	1.93	1.27	2.45	0.09-3.60
Carpenters and joiners (7124)	148	1.72	1.20	1.90	0.25-3.80
Woodworking machine setters, and setter-operators (7423)	4585	1.62	1.12	1.74	0.20-4.00
Basketry weavers, brush makers and related workers (7424)	109	1.90	1.03	2.28	0.21-4.70
Wood and related products assemblers (8285)	621	1.38	0.84	1.70	0.12-3.90
Transport labourers and freight handlers (9330)	49	1.30	0.93	0.85	0.30-2.70
Wood-products machine operators (8240)	2525	1.26	0.84	1.33	0.10-3.49
Floor layers and tile setters (7132)	56	1.12	1.05	0.19	0.62-1.80
Painters and related workers (7141)	50	0.97	0.72	0.75	0.22-2.17
Stock clerks (4131)	127	0.87	0.56	0.93	0.18-2.44
Industrial-machinery mechanics and fitters (7233)	67	0.85	0.63	0.55	0.20-2.80
Machine-tool setters and setter-operators (7223)	88	0.70	0.56	0.25	0.18-1.40
Manufacturing labourers (9320)	84	0.68	0.42	0.62	0.10-3.20
Women: all wood-related	1627	1.25	0.87	1.26	0.19-3.70
Woodworking machine setters, and setter-operators (7423)	801	1.43	1.04	1.42	0.20-4.10
Wood-processing-plant operators (8141)	141	1.41	1.09	1.26	0.20-3.88
Wood and related products assemblers (8285)	102	1.04	0.57	1.53	0.10-3.90
Wood-products machine operators (8240)	322	1.03	0.73	0.75	0.10-2.70
Machine-tool setters and setter-operators (7223)	75	0.91	0.69	0.75	0.41-3.20
Manufacturing labourers (9320)	50	0.50	0.42	0.14	0.20-1.65
All wood-related	10 837	1.44	0.97	1.61	0.15-3.80

*The job categories with the highest and lowest arithmetic mean where at least 50 exposure measurements were available; †Number of TWA-8 exposure measurements.

TUMORI A BASSA FRAZIONE EZIOLOGICA

BENZENE E LEUCEMIA



Apparecchio per la determinazione del benzolo nell'aria (Vigliani e Giannini, 1937)



Quadro midollare di un soggetto portatore di grave emopatia benzenica (Maugeri e coll., 1968)

Ma per NHL ?

Solventi

ORs e 95% CI per NHL e livelli di esposizione a solventi (P>1)

Solvente	Intensità di esposizione	n°casi Exp.	OR*	IC 95%
Benzene	Molto bassa/Bassa	49	0.6	0.4-0.9
	Media/Alta	58	1.6	1.0-2.4
Stirene	Molto bassa/Bassa	9	0.7	0.3-1.6
	Media/Alta	14	1.3	0.6-2.9
Xilene	Molto bassa/Bassa	64	0.7	0.5-1.0
	Media/Alta	49	1.7	1.0-2.6
Toluene	Molto bassa/Bassa	63	0.7	0.5-1.0
	Media/Alta	54	1.8	1.1-2.8
Diclorometano	Molto bassa/Bassa	23	0.9	0.7-4.3
	Media/Alta	13	1.7	0.7-2.0

* ORs aggiustati per età, sesso, istruzione, e area geografica
Miligi et al, 2006



**E' STATO OSSERVATO UN ALTO GRADO DI CORRELAZIONE
TRA BENZENE , TOLUENE E XILENE**

**SOGGETTI ESPOSTI A LIVELLI MEDIO ALTI DEI 3 SOLVENTI
AROMATICI :**

OR per NHL 2,1 95% CI 1.1 -4.3 (26 casi esposti)



OR e 95% IC per livelli di intensità di esposizione a solventi per Leucemie, sottotipi di leucemia e Mieloma Multiple

ICD: IX	Exposure Intensity level	Leukaemia (ICD IX: 204-208)				Acute Myeloid Leukaemia (ICD IX: 205.0)				Chronic Lymphatic Leukaemia (ICD IX: 204.1)				Multiple Myeloma (ICD IX: 203)			
		No. of cases	No. of controls	OR*	95% CI	No. of cases	No. of controls	OR*	95% CI	No. of cases	No. of controls	OR*	95% CI	No. of cases	No. of controls	OR*	95% CI
<i>Individual chemicals</i>																	
Benzene	Very low/low	16	50	0,5	0,3-0,9	3	50	0,3	0,1-1,0	11	77	0,7	0,3-1,4	8	47	0,6	0,3-1,5
	Medium/high	25	32	1,3	0,7-2,3	6	32	0,9	0,4-2,3	12	35	1,8	0,9-3,9	14	29	1,9	0,9-3,9
Xylene	Very low/low	20	64	0,5	0,3-0,9	5	64	0,4	0,2-1,1	15	99	0,9	0,5-1,8	9	59	0,6	0,3-1,4
	Medium/high	10	27	0,7	0,3-1,5	2	27	0,4	0,1-1,8	9	34	1,9	0,8-4,5	6	23	1,2	0,4-3,2
Toluene	Very low/low	21	66	0,5	0,3-0,9	5	66	0,4	0,2-1,0	14	99	0,9	0,4-1,6	10	61	0,6	0,3-1,3
	Medium/high	13	28	0,9	0,4-1,7	2	28	0,4	0,1-1,7	10	35	2,1	0,9-4,7	5	24	0,9	0,3-2,7
Dichloromethane	Very low/low	7	21	0,7	0,3-1,7	3	21			2	28	0,4	0,1-2,0	4	20		
	Medium/high	2	8	0,5	0,1-2,3	0	8			2	8	1,6	0,3-8,6	0	8		
Tetrachloroethylene	Very low/low	6	17	0,6	0,2-1,6	2	17			3	29			3	15		
	Medium/high	7	12	1,0	0,4-2,7	2	12			1	15			2	12		
Trichloroethylene	Very low/low	17	34	1,0	0,5-1,8	6	34	1,0	0,4-2,5	8	47	1,2	0,5-2,7	9	28	1,5	0,7-3,5
	Medium/high	11	29	0,7	0,4-1,5	6	29	1,1	0,5-2,9	4	35	0,9	0,3-2,6	5	27	0,9	0,3-2,4
1,1,1-Trichloroethane	Very low/low	5	12	0,7	0,2-2,0	1	12			3	23			2	10		
	Medium/high	5	7	1,4	0,4-4,7	2	7			0	9			1	5		

* Adjusted by gender, age, education and area. ORs shown for at least five exposed cases

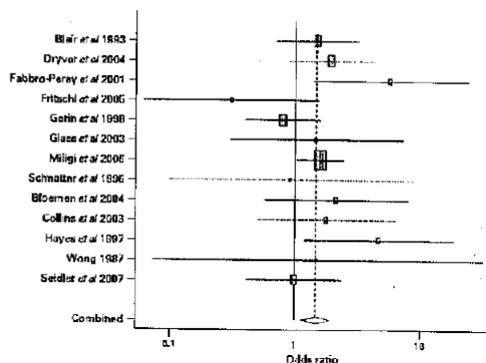
*Reference group: Subjects who never used any chemical (OR=1)

Meta-analysis of benzene exposure and non-Hodgkin lymphoma: biases could mask an important association

C Stainmaus,^{1,2} A H Smith,¹ R M Jones,¹ M T Smith¹

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Figure 1 Forest plot of high exposure studies in the meta-analysis of benzene and NHL.



Lavoro in agricoltura e tumori



Lavorare senza
protezione



Lavoratore agricolo –
mansioni di rientro

Risk of NHL ed esposizione a erbicidi fenossiacetici

Odds ratios (OR) aggiustati per sesso, età e centro.

	Casi	Controlli	OR	95% CI
Phenoxy herbicides				
Tutti	32	28	1.1	0.6-1.8
Probabilità di uso >bassa E mancanza di DPI	13	6	2.4	0.9-7.6
2,4-D				
Tutti	17	18	0.9	0.5-1.8
Probabilità di uso >bassa E mancanza di DPI	9	3	4.4	1.1-29.1
MCPA				
Tutti	18	19	0.9	0.4-1.8
Probabilità di uso >bassa E mancanza di DPI	7	3	3.4	0.8-23.2

Miligi et al. 2006



Numero di casi di NHL e controlli che applicano o mescolano 2,4 D per momento in cui cambiano i vestiti usati durante l'uso della sostanza

Quando i soggetti cambiano gli abiti da lavoro	casi	Controlli	OR	95% CI
Non hanno mai vissuto o lavorato in un'azienda agricola	54	184	1.0	
Immediatamente dopo l'uso Della sostanza	6	19	1.1	0.4-3.1
Alla fine del giorno di lavoro	31	73	1.5	0.8-2.6
I giorni seguenti e più tardi	6	4	4.7	1.1-21.5

Zham et al,1990



STUDIO OCCAM

Occupational Cancer Monitoring

Sistema informativo per lo studio e la
rilevazione dei tumori di sospetta origine
professionale

• **Paolo Crosignani**, - *Istituto Nazionale per lo Studio e la
Cura dei Tumori, Milano*

• **www.occam.it** e-
mail:occam@istitutotumori.mi.it

Metodo OCCAM: Studio caso-controllo di popolazione

Implementazione di una serie di studi caso-
controllo sui casì di neoplasia ottenuti dalle
fonti di dati disponibili a livello istituzionale
(Registri Tumori, SDO, Registri di Mortalità).
che confrontano le storie professionali
ottenute da INPS di chi è ammalato di tumore
con quelle di chi è senza malattia.

OCCAM

■ Registri Tumori:

- Base di popolazione
- Tutti i tumori
- Certezza diagnostica
- Non universali
- Ritardo nella disponibilità dei dati

→ generazione di ipotesi eziologiche

■ SDO

- Universali
- Disponibilità immediata
- Qualità della diagnosi

→ ricerca attiva dei “tumori perduti”

→ mappatura dei rischi per area

SDO 2003-2004

➤ *Casi incidenti di tumore*

➤ *Sedi:*

- Laringe
- Polmone
- Pleura
- Fegato
- Pancreas
- Vescica
- Leucemie

➤ *Periodo* : anni 2003 - 2004

➤ *Fonte* : archivi delle SDO della Lombardia

- Casi incidenti di neoplasia (*ICD IX*) nel sesso maschile e femminile
- Dalle schede di dimissione del 2003 e 2004 con diagnosi di tumore sono state sottratte le diagnosi già presenti nel periodo 1999 -2002 relative allo stesso soggetto e per lo stesso tipo di neoplasia, identificabile in ciascuna SDO tramite il codice fiscale.

**LA RICERCA ATTIVA DEI TUMORI DI ORIGINE PROFESSIONALE:
PRIMI RISULTATI**

P. Amendola¹, R. Audisio¹, S. Cavuto¹, A. Scabuni¹, A. Marinaccio²,
S. Saretto³, G. Chiappino⁴, M. Imbriani⁵, P. Crocignani¹

Tabella II. Ricerca attiva effettuata in Lombardia nel 2005 per i tumori diagnosticati nel biennio 2001-2002

OCCAM - RICERCA ATTIVA TUMORI PROFESSIONALI LOMBARDA (casi ottenuti da SDO periodo 2001-2002)	Casi di tumore ottenuti con OCCAM per ASL	Casi sottoposti a indagini e da servizi PSAL	% casi sottoposti a indagine su tot ottenuto da OCCAM	Diagnosi di tumore confermate	% diagnosi confermate da casi sottoposti a indagine	Casi confermati dai servizi come di origine professionale	% casi confermati dai servizi sul totale di quelli sottoposti a indagine
Bergamo	19	11	58	4	36	-	-
Brescia	32	26	81	19	73	11	42
Brescia - VCS	10	-	-	-	-	-	-
Como	31	15	48	13	87	7	47
Cremona	50	25	50	25	100	1	4
Lecco	24	19	79	17	89	4	21
Lodi	27	26	96	26	100	9	35
Mantova	20	10	50	6	60	2	20
Milano Città	16	1	6	1	100	1	100
Mi 1	28	26	93	21	81	15	58
Mi 2	35	23	66	30	86	6	26
Mi 3	54	50	93	45	90	33	66
Pavia	26	23	88	21	91	7	30
Sondrio	4	4	100	-	-	-	-
Varese	15	12	80	12	100	6	50
Totale	391	271	69	240	89	102	38

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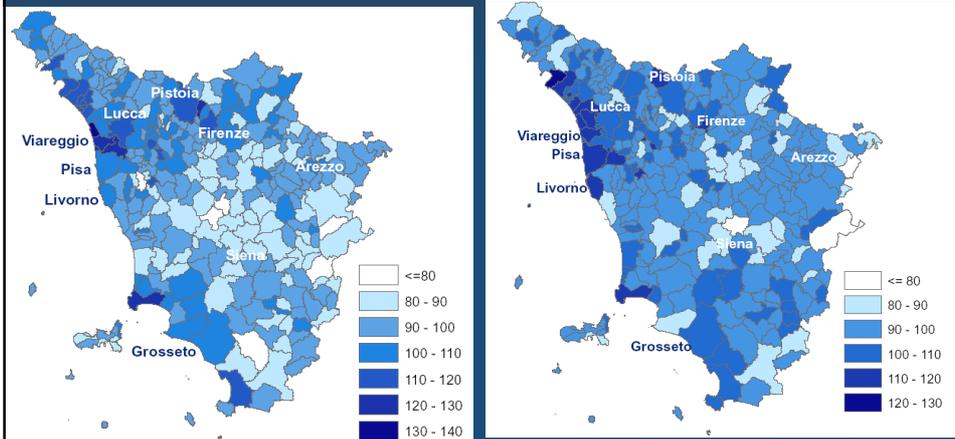
Tabella I. Associazioni rilevate nello studio caso controllo basato su sei registri Tumori Italiani: alcuni risultati per settori considerati nella lista del DM del 27 aprile 2004 in grado di provocare tumori di origine lavorativa con elevata probabilità

Settore	Sede Neoplasia/Sesso	Casi/Controlli Esposti (per settore)	OR (limiti di confidenza al 90%)
Cuio e calzature	Leucemia M	10/2019	1.48 (0.80-2.73)
	Leucemia F	6/1296	0.90 (0.42-1.93)
	Naso M	5/2019	4.68 (1.65-13.27)
	Naso F	1/1296	7.97 (0.76-83.89)
Siderurgia	Polmone M	369/1163	1.28 (1.13-1.45)
	Polmone F	1/73	21.08 (2.73-162.92)
Gomma	Vescica M	10/83	1.31 (0.73-2.34)
	Vescica F	5/34	1.49 (0.67-3.31)
	Leucemia M	3/83	2.18 (0.78-6.08)
	Leucemia F	3/34	8.65 (2.88-25.96)

MORTALITA' PER TUMORE DEL POLMONE - MASCHI

1987-1991

2002-2006



ispc ISTITUTO PER LO STUDIO
E LA PREVENZIONE ONCOLOGICA

■ Problemi emergenti

Incidenza dei tumori infantili nel periodo 1998-2002 e trend di incidenza nel periodo 1998-2002 in Italia

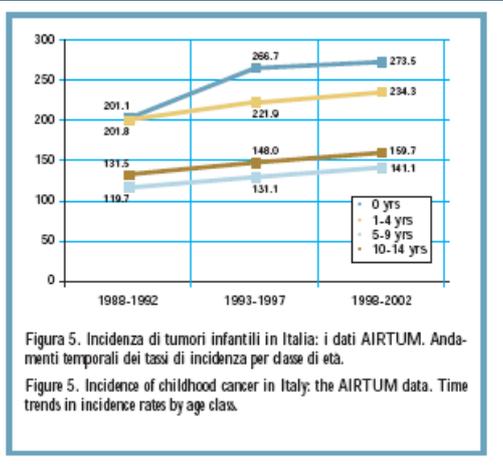


Figura 5. Incidenza di tumori infantili in Italia: i dati AIRTUM. Andamenti temporali dei tassi di incidenza per classe di età.
 Figure 5. Incidence of childhood cancer in Italy: the AIRTUM data. Time trends in incidence rates by age class.

Incidenza dei tumori infantili nel periodo 1998-2002 e trend di incidenza nel periodo 1998-2002 in Italia

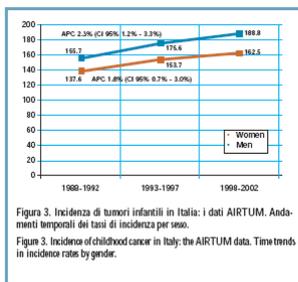


Figura 3. Incidenza di tumori infantili in Italia: i dati AIRTUM. Andamenti temporali dei tassi di incidenza per sesso.
 Figure 3. Incidence of childhood cancer in Italy: the AIRTUM data. Time trends in incidence rates by gender.

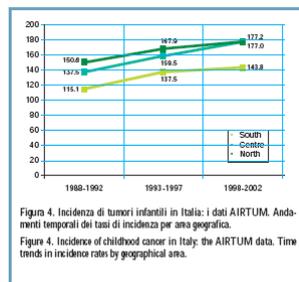


Figura 4. Incidenza di tumori infantili in Italia: i dati AIRTUM. Andamenti temporali dei tassi di incidenza per area geografica.
 Figure 4. Incidence of childhood cancer in Italy: the AIRTUM data. Time trends in incidence rates by geographical area.

Agricultural health study

Table 2. SIR^a for cancers diagnosed at 0–19 years of age among 17,357 children of Iowa participants in the Agricultural Health Study, 1975–1998.

	Observed no. of cancer cases	Expected no. of cancer cases	SIR	95% CI
Total ^b	50	36.87	1.36	1.03–1.79
Leukemia ^c	9	9.88	0.91	0.47–1.75
Lymphoma	9	4.13	2.18	1.13–4.19
Hodgkin's	5	1.96	2.56	1.06–6.14
Non-Hodgkin's	2	1.70	1.18	0.29–4.70
Burkitt's	2	0.37	2.67	0.37–19.0
Brain tumors ^d	11	6.87	1.60	0.89–2.89
Neuroblastoma	3	2.39	1.26	0.40–3.89
Retinoblastoma	2	1.22	1.63	0.41–6.53
Wilms tumor	3	1.92	1.56	0.50–4.84
Bone tumors	4	1.82	2.19	0.82–5.84
Soft-tissue tumors	3	2.57	1.17	0.38–3.62
Germ cell tumors	5	1.71	2.34	0.88–6.24

^aCancer rates for Iowa 1975–1998 were used as reference standard in calculation of standardized incidence ratios.

^bCancers sum to < 50 because one cancer belonged to type other than those listed. ^cIncludes eight acute lymphocytic leukemia cases. ^dIncludes six astrocytoma cases; other brain tumor subtypes totaled five cases.

OR 1.98 (1.05-1.79) among children whose father did not use chemically resistant gloves compared with children whose fathers use gloves. Increased ORs were found for exposure to aldrin, Dieldrin and ethyl dipropylthiocarbamate

Flower KB, Environ Health Perspect 2004



Recent Meetings

Recently Evaluated

Vol. 100

A Review of Human Carcinogens

A. Pharmaceuticals

[Participants](#) (14-21 October 2008)

[Summary of Evaluations](#)

Lancet Oncology: [article](#); [pdf](#)

B. Biological Agents

[Participants](#) (24 February-3 March 2009)

Lancet Oncology: [article](#); [pdf](#)

C. Metals, Arsenic, Dusts and Fibres

[Participants](#) (17-24 March 2009)

Lancet Oncology: [article](#); [pdf](#) Vol. 99



Some Industrial and Cosmetic Dyes, and Related Exposures

[Participants](#) (5-12 February 2008)

Lancet Oncology: [article](#); [pdf](#) Vol. 98

Shift-work, Painting and Fire-fighting

[Participants](#) (2-9 October 2007)

[Press Statement](#)

Lancet Oncology: [article](#); [pdf](#)

Vol. 97

1,3-Butadiene, Ethylene Oxide and Vinyl Halides (Vinyl Fluoride, Vinyl Chloride and Vinyl Bromide)

[Participants](#) (5-12 June 2007)

Lancet Oncology: [article](#); [pdf](#)

Carcinogenicity of shift-work, painting, and fire-fighting

Kurt Straif, Robert Baier, Yann Grosse, Béatrice Secretan, Fatima El Ghissassi, Véronique Bouvard, Andrea Altieri, Lamia Benbrahim-Talaa, Vincent Cogliano, on behalf of the WHO International Agency for Research on Cancer Monograph Working Group

In October 2007, 24 scientists from ten countries met at the International Agency for Research on Cancer (IARC), Lyon, France, to assess the carcinogenicity of shift-work, painting, and fire-fighting. These assessments will be published as volume 98 of the IARC Monographs.¹

About 15–20% of the working population in Europe and the USA is engaged in shift-work that involves nightwork, which is most prevalent (above 30%) in the health-care, industrial manufacturing, mining,

on tumour development. More than 20 studies investigated the effect of constant light, dim light at night, simulated chronic jet lag, or circadian timing of carcinogens, and most showed a major increase in tumour incidence. No clear effect was seen for light pulses at night or constant darkness. A similar number of studies investigated the effect of reduced nocturnal melatonin concentrations or removal of the pineal gland (where melatonin is produced) in tumour development and most showed

disruption is probably carcinogenic to humans* (Group 2A).^{1,2}

Painters are potentially exposed to many chemicals used as pigments, extenders, binders, solvents, and additives. Painters can also be exposed to other workplace hazards, such as asbestos or crystalline silica.

Cohort and linkage studies of painters have shown consistent and significant increases in lung cancer compared with the general population. No information on tobacco smoking was available in the



Upcoming meetings:
February 5–12, 2008:
Industrial and cosmetic dyes and
related exposures
<http://monographs.iarc.fr/>

Is the Decline of the Increasing Incidence of Non-Hodgkin Lymphoma in Sweden and Other Countries a Result of Cancer Preventive Measures?

Lennart Hardell^{1,2} and Mikael Eriksson³

¹Department of Oncology, University Hospital, and ²Department of Natural Sciences, Örebro University, Örebro, Sweden; ³Department of Oncology, University Hospital, Lund, Sweden

Sweden as one country. Our intention is not

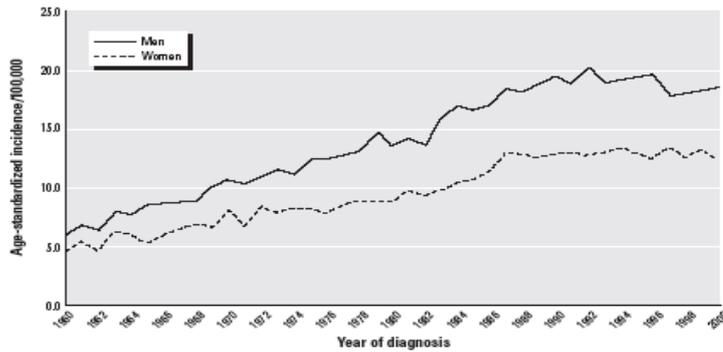


Figure 1. Age-standardized incidence per 100,000 of NHL (ICD-7 code 200) according to the Swedish Cancer Registry for all ages in 2000 (National Board of Health and Welfare 2002a).

GRAZIE
PER
L'ATTENZIONE

Valutazioni IARC

3/08

	02/ 02	08/02	12/02	1/09
Gruppo 1	87	87	88	108
Gruppo 2A	63	63	64	66
Gruppo 2B	234	232	236	248
Gruppo 3	493	496	496	515
Gruppo 4	1	1	1	1