



PEROSH 2025 – 6th Research Conference Manchester

9-11 September 2025

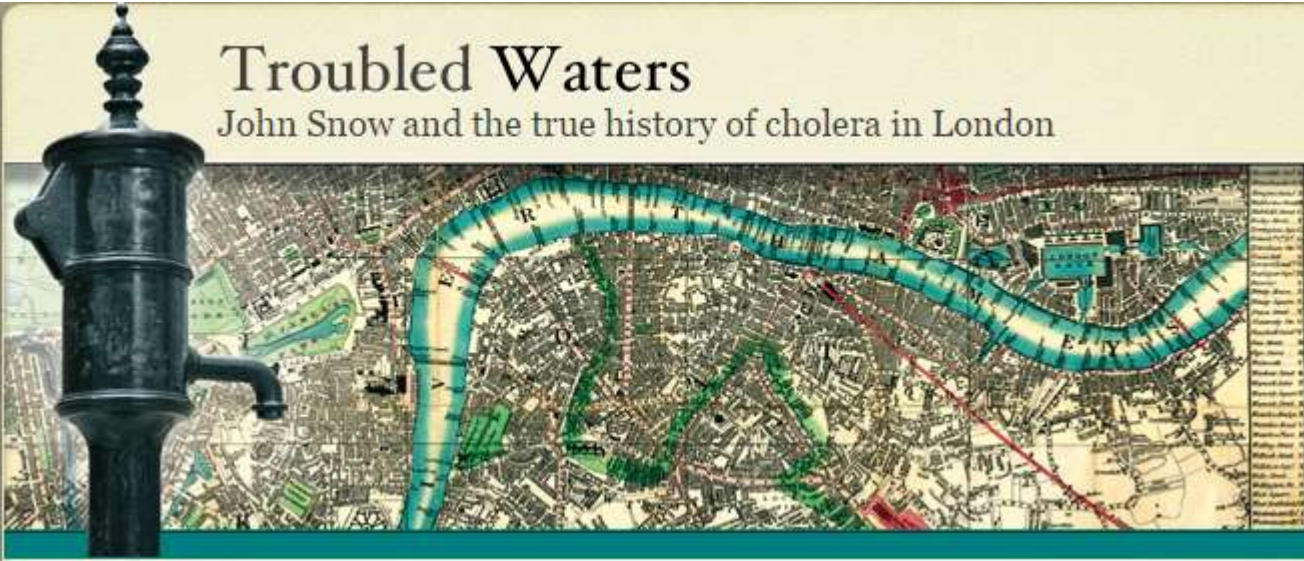
Addressing emerging challenges in the surveillance of occupational cancer: the Italian model of integrated monitoring systems

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Troubled Waters

John Snow and the true history of cholera in London



Epidemiological surveillance as a tool for etiologic research and risk prevention?



John Snow and the history of cholera in London is just a good answer ...

London, 1848

Epidemiology of occupational cancers extent.

Occupational cancers burden



British Journal of Cancer (2012) 107, S3–S7
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www.bjcancer.com



Introduction

Occupational cancer burden in Great Britain

Lesley Rushton^{*,1}, Sally J Hutchings¹, Lea Fortunato¹, Charlotte Young², Gareth S Evans², Terry Brown³, Ruth Bevan³, Rebecca Slack⁵, Phillip Holmes³, Sanjeev Bagga³, John W Cherrie⁴ and Martie Van Tongeren⁴

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«Overall, 8,010 (5.3%) total cancer deaths in Britain and 13,598 (4.0%) cancer registration were attributable to occupation».

Estimated attributable fraction (%) by anatomical site.

	Men	Women
Bladder	7.1	1.9
Breast	4.6	
Lung	21.1	5.3
Mesothelioma	97.0	82.5
Nasopharynx	10.8	2.4
Sinonasal	43.3	19.8
...		
Total		
Based on deaths	8.2	2.3
Based on incidence	5.7	2.1

Epidemiology of occupational cancers extent. Attributable fraction and burden

Public Health 223 (2023) 145–155



Contents lists available at ScienceDirect

Public Health

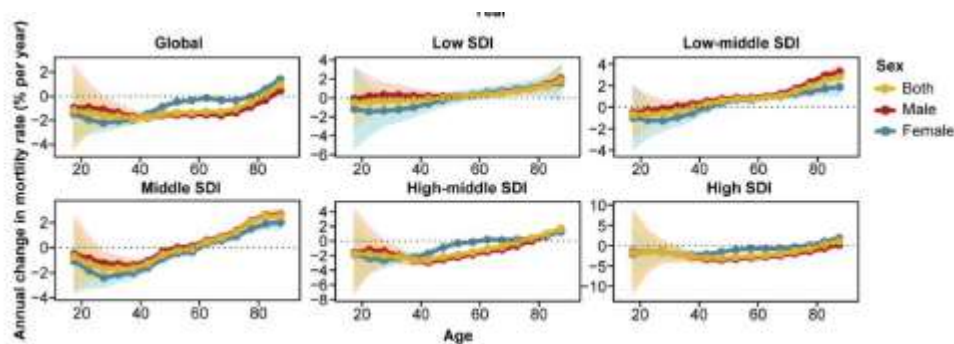
journal homepage: www.elsevier.com/locate/puhe



Original Research

Global burden of neoplasms attributable to specific occupational carcinogens over 30 years: a population-based study

C. Qu^{a, b, c, †}, R. He^{a, b, c, †}, W. Hou^{a, b, c, †}, W. Ye^{a, b}, H. Cao^d, H. Zhang^{a, e}, N. Zhang^f, Q. Cheng^{a, b, *}, Q. Zhang^{g, **, †}, P. Luo^{h, ***, †}



The absolute number of neoplasms burden attributable to occupational carcinogens has continued to rise over 30 years.

- ✓ 3.9% (333,867 mortalities) due to occupational cancers have been estimated
- ✓ The burden was higher in countries with a higher sociodemographic index.
- ✓ The proportion of urban population was significantly positively associated with the disease burden,
- ✓ GDP per capita was negatively correlated with the disease burden

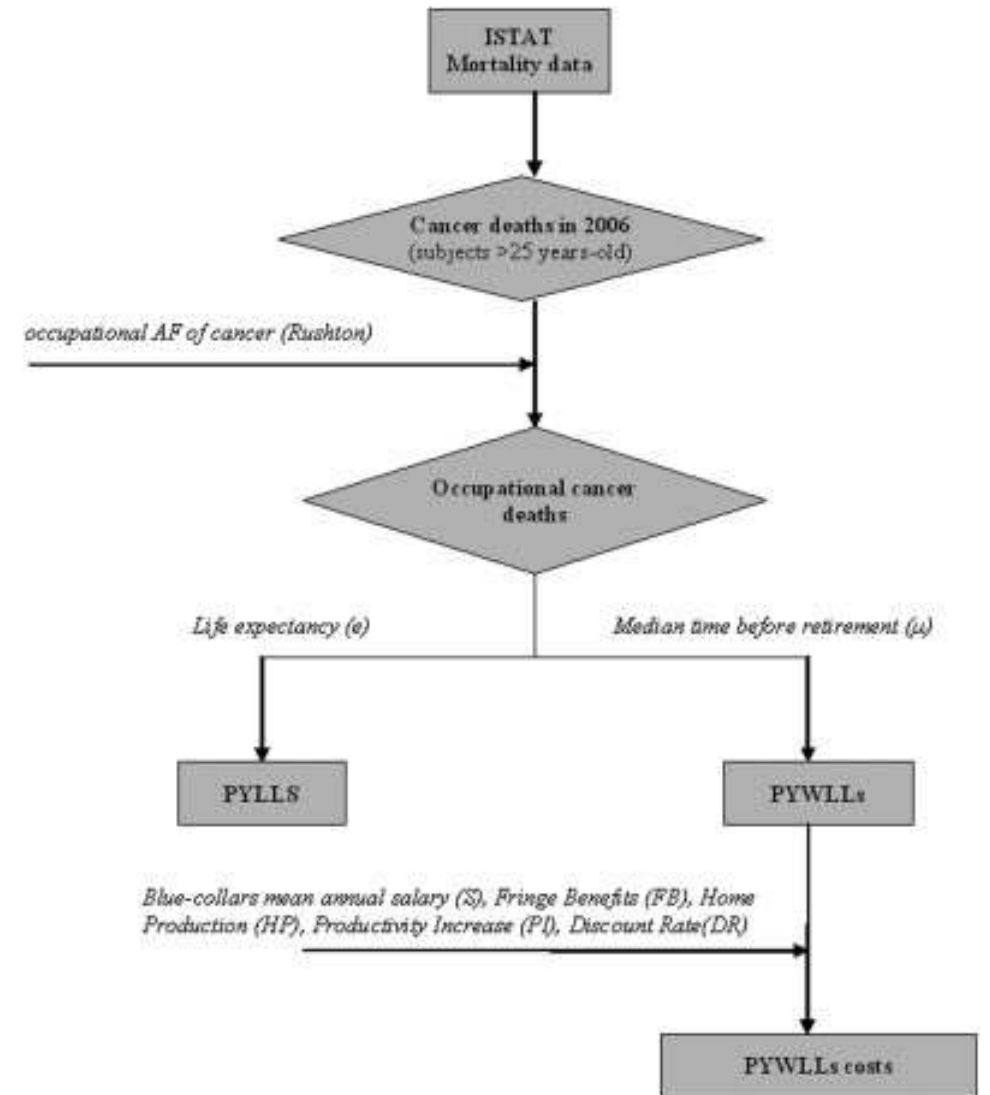
Epidemiology of occupational cancers. Occupational cancers burden in Italy

The Burden of Mortality With Costs in Productivity Loss From Occupational Cancer in Italy

Alessandra Binazzi, PhD,* Alberto Scarselli, MSc, and Alessandro Marinaccio, MSc

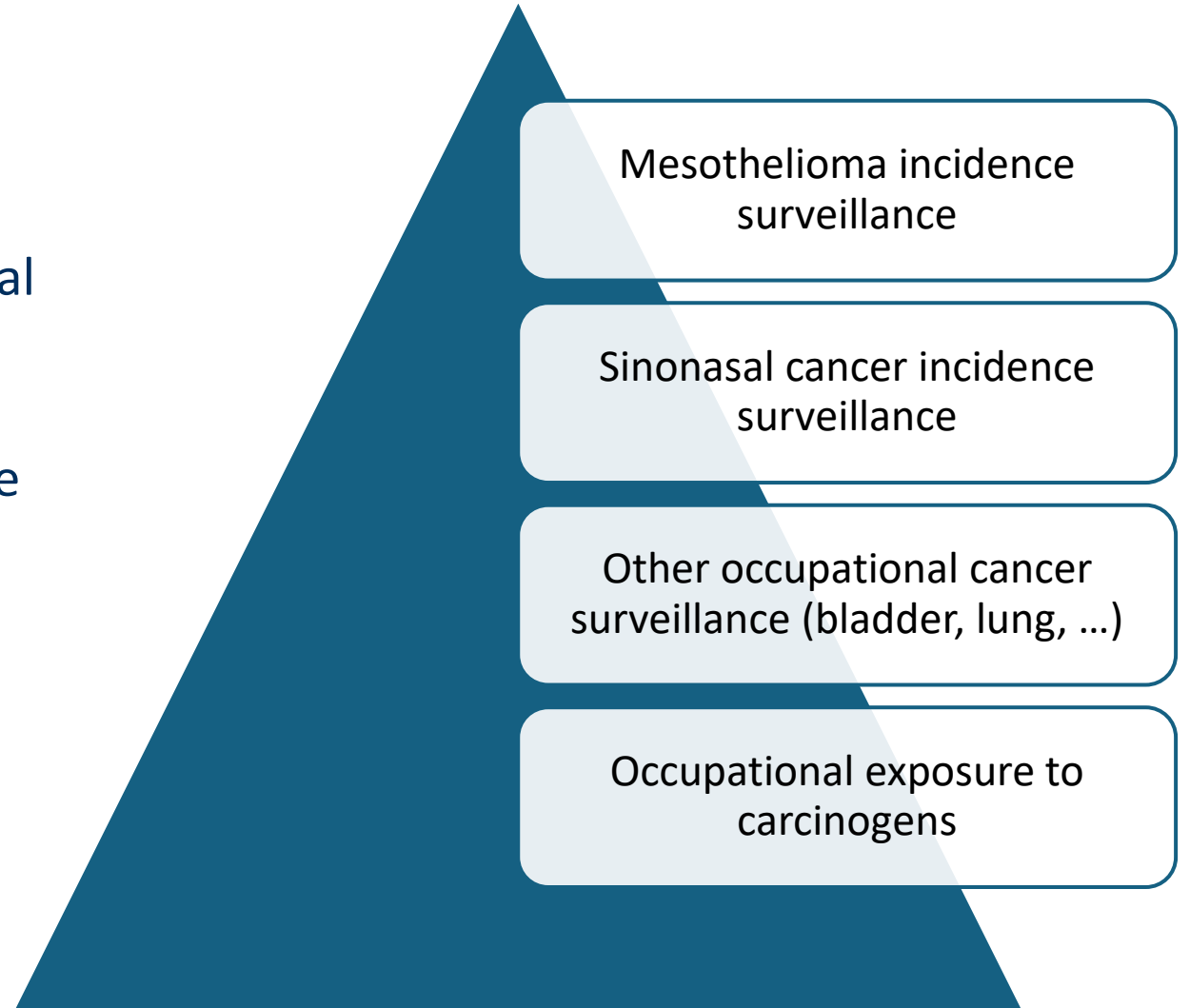
“ Around 8,000-8,500 deaths/year from occupational cancer are estimated to occur in Italy, leading to around 360,000,000 euros in indirect economic costs.”

Mesothelioma and other asbestos-related neoplasms are predominant. Lung cancer represents more than half of occupational cancers and asbestos is the most important occupational exposure.

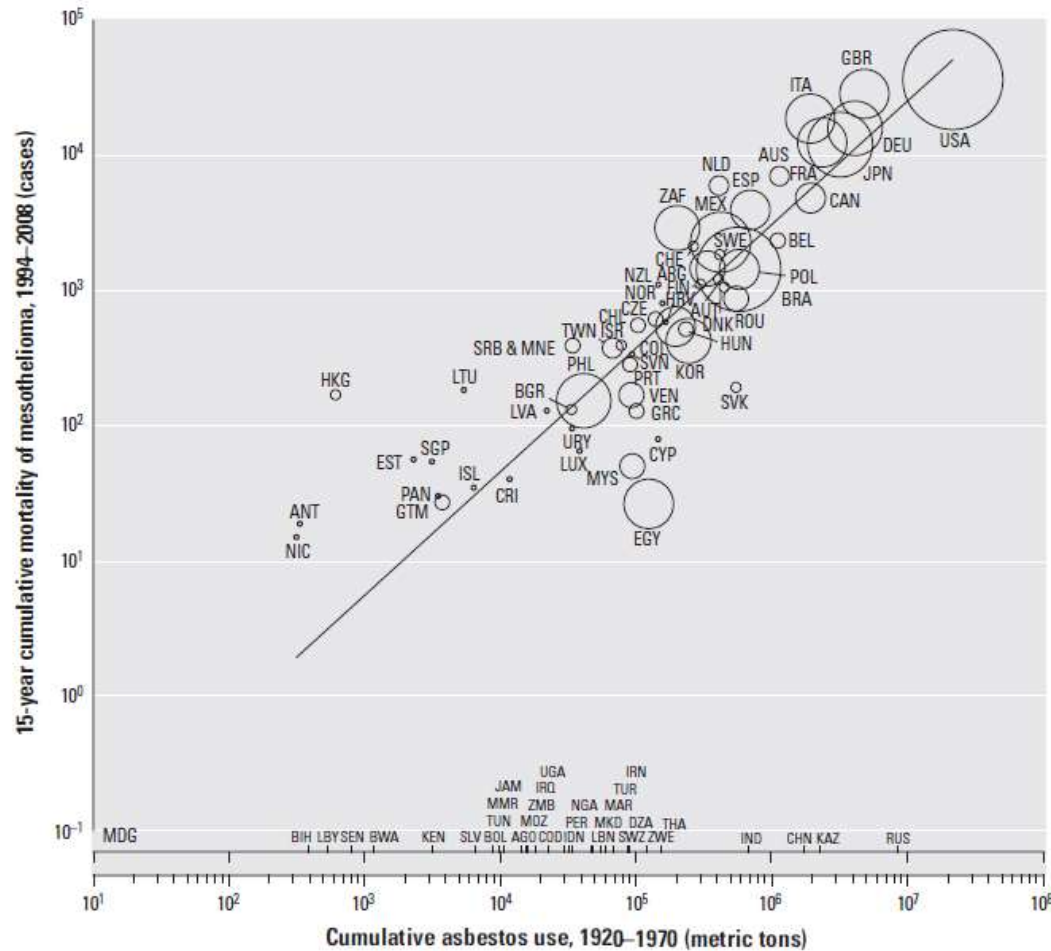


Italian surveillance system of occupational cancer cases and occupational exposure to carcinogens

- ✓ Integrated system with a fundamental role of regional health office and national coordination;
- ✓ Active search of case and individual anamnestic analyses for mesothelioma e sinonasal cancers;
- ✓ Epidemiological surveillance for identifying cluster usign administrative archives for low fraction cases;
- ✓ Occupational exposure surveillance.



ReNaM context. Asbestos consumption and asbestos related diseases epidemiology



Why asbestos consumption extent and trend analysis is so important.

This graph by Park and colleagues shows:

- ✓ the linear correlation between asbestos consumption and MM mortality (i);
- ✓ the role of surveillance systems;
- ✓ the specific Italian context.

ReNaM context. Mesothelioma expected trend in Italy



Article

Effect of Asbestos Consumption on Malignant Pleural Mesothelioma in Italy: Forecasts of Mortality up to 2040

Enrico Oddone ^{1,2,*}, Jordy Bollon ³, Consuelo Rubina Nava ⁴, Dario Consonni ³, Alessandro Marinaccio ⁴, Corrado Magnani ³, Antonio Gasparini ^{7,8} and Francesco Barone-Adesi ³

This is the most recent analysis on mesothelioma expected trend in Italy. We are now on the peak in mesothelioma epidemic.

There is a prediction for a drop in the next years (starting from 2020-2025).

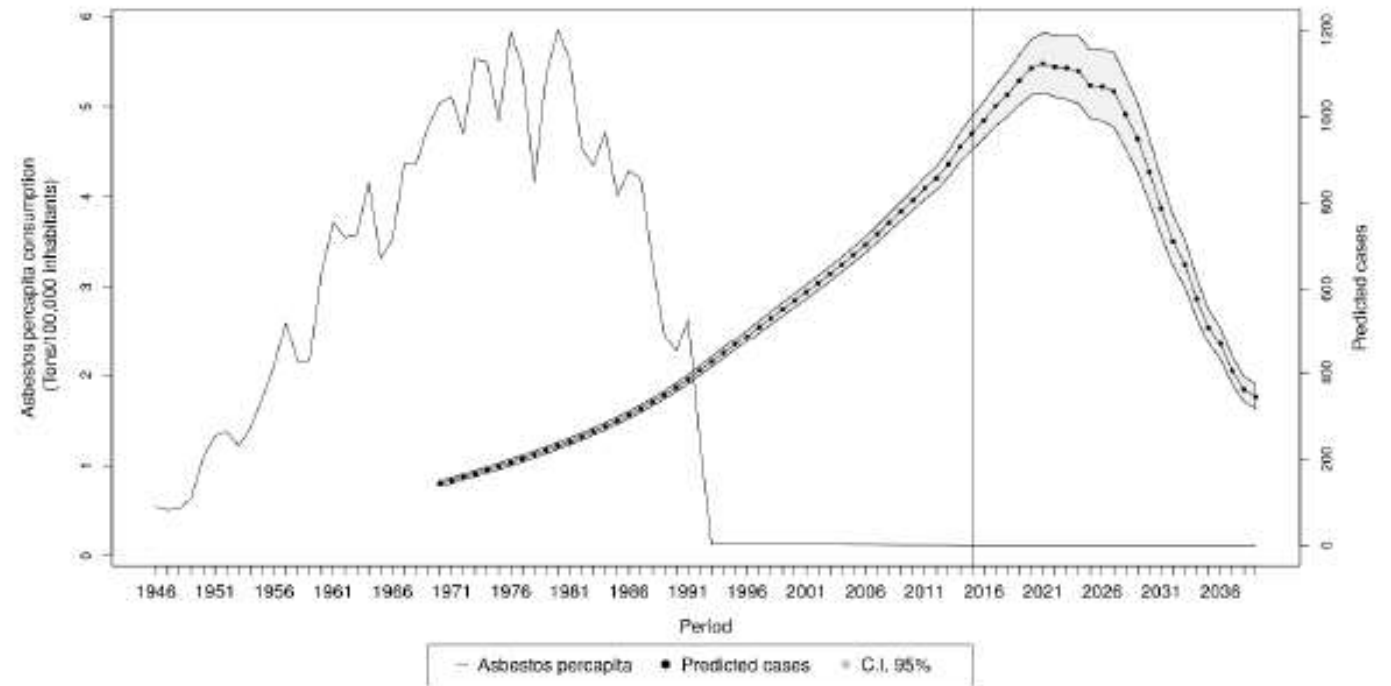


Figure 2. Fitted and predicted (after 2014) MPM cases with related 95% CI. To the left, asbestos per capita consumption in the period 1946–1992 in Italy.

Italian national mesothelioma registry (ReNaM). Structure, aims, procedures.

ReNaM territorial development has gradually increased.

As of today, a Regional Operative Center (COR) has been established in all twenty Italian regions, with different operative effectiveness.

In three regions registration activities are still incomplete, in two regions there was a suspension for three years and now the COR is active again.

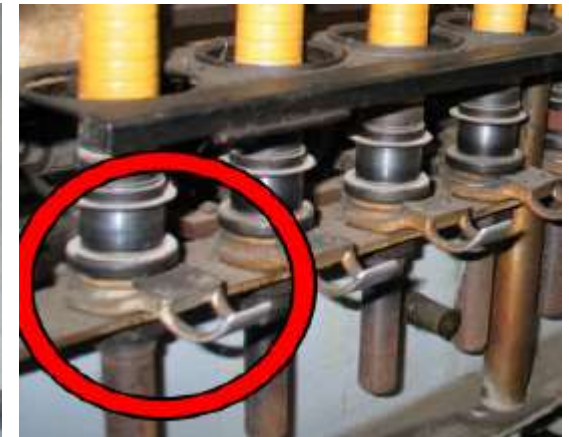


VIII national ReNaM Report (at www.inail.it)

Italian national mesothelioma registry (ReNaM). Untraditional sectors of exposure. Public health and insurance system connections

The epidemiological surveillance findings could improve public insurance (and welfare) system effectiveness, disseminating and discussing the modalities of asbestos exposure.
... Particularly if these modalities are unexpected and unusual ...

Textile (non-asbestos) workers
for asbestos presence in brake systems



Italian national mesothelioma registry (ReNaM). Asbestos exposure in women

VIII ReNaM Report

Men (sectors of exposure)

	N	%
Construction	4.231	18,4
Metallurgy	2.463	10,7
Metalmechanics	2.158	9,4
Shipbuilding	1.405	6,1

Women (sectors of exposure)

	N	%
Textile (not asbestos)	877	31,1

Received: 2 January 2021 | Revised: 25 April 2021 | Accepted: 28 April 2021
DOI: 10.1002/ajim.23257

COMMENTARY

AMERICAN JOURNAL
OF
INDUSTRIAL MEDICINE WILEY

Malignant mesothelioma: Ongoing controversies about its etiology in females

Xaver Baur¹ | Arthur L. Frank² | Colin L. Soskolne³ | L. Christine Oliver⁴ |
Corrado Magnani⁵

“Some authors suggest that most of the cases diagnosed in females are “idiopathic”. The absence of detailed exposure histories should be rectified in future studies involving women. As a matter of social justice, the ongoing failure to recognize asbestos as the cause of a majority of cases of M in females does them, and their kin, a profound disservice.”

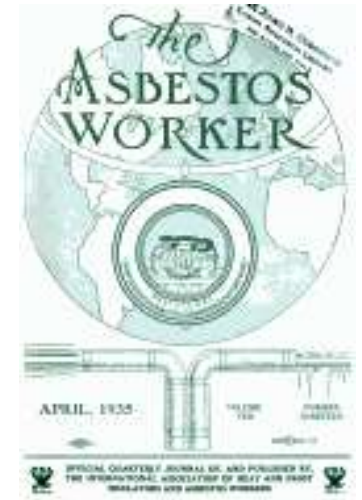
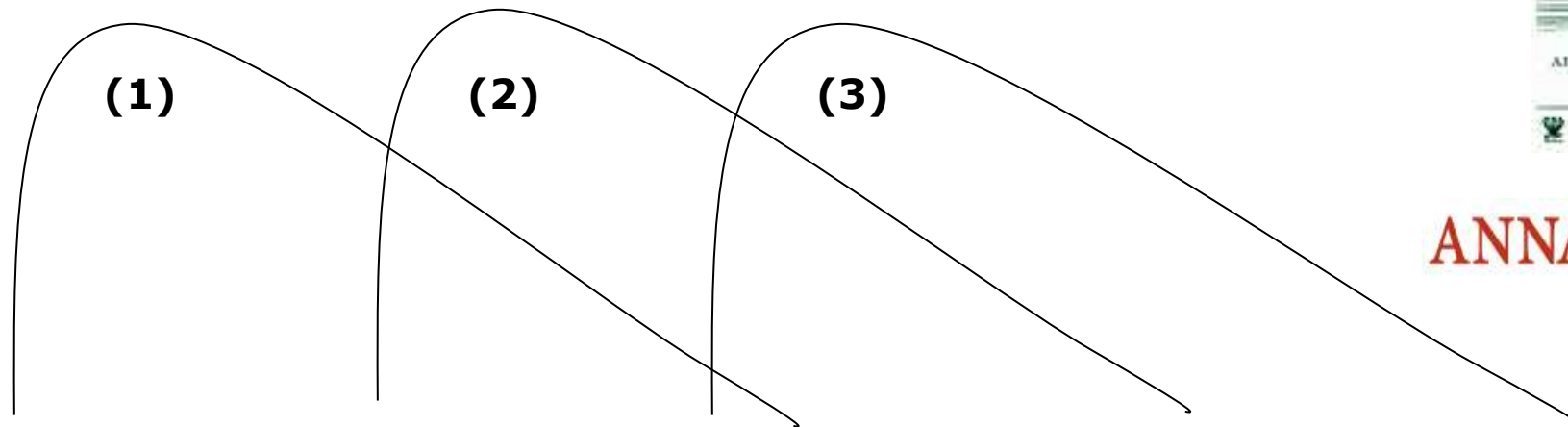
Italian national mesothelioma registry (ReNaM). What about «third wave»?



Workers and people exposed for
“asbestos in place”

Workers in activities with
asbestos as raw material

Quarriers and miners



ANNALS of THE NEW YORK
ACADEMY OF SCIENCES

Italian national mesothelioma registry (ReNaM). What about «third wave»?



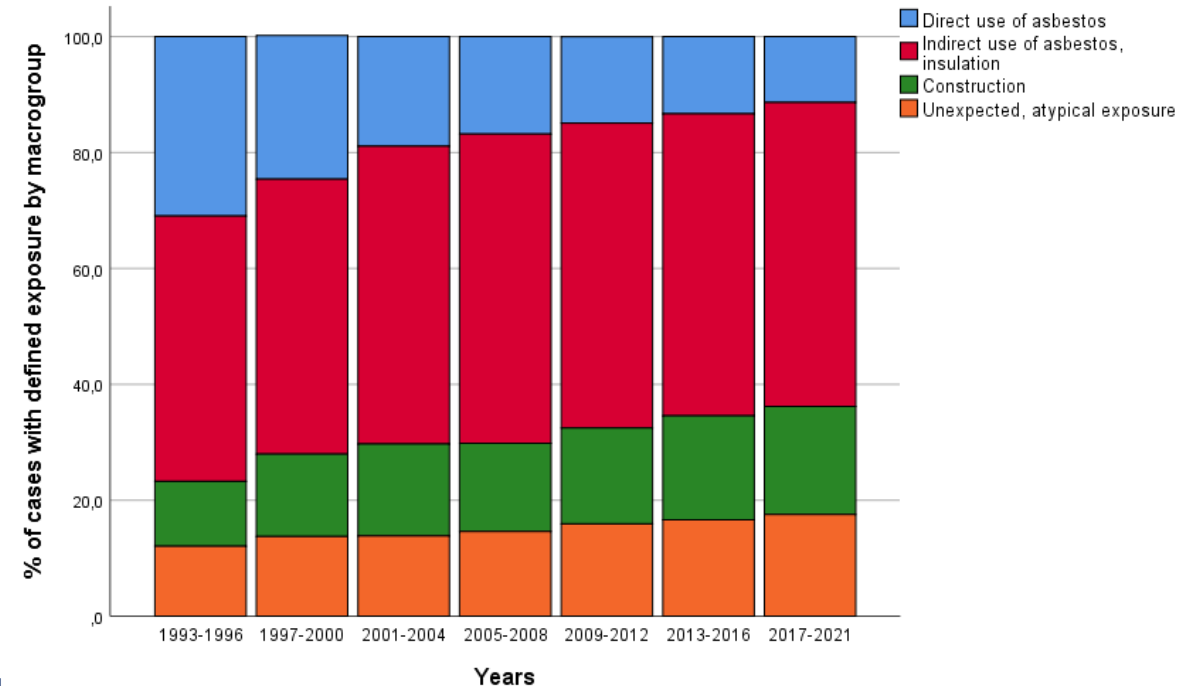
Mesothelioma in Australia: cresting the third wave

Bruce Armstrong^a and Tim Driscoll^{a,b}

^aSchool of Public Health, University of Sydney, NSW, Australia
^bCorresponding author: tim.driscoll@sydney.edu.au

What can we say about third wave of mesothelioma incidence in Italy?

ReNaM analyses are confirming a significant change in exposure patterns in the most recent years (construction sector, unexpected contexts, ...)



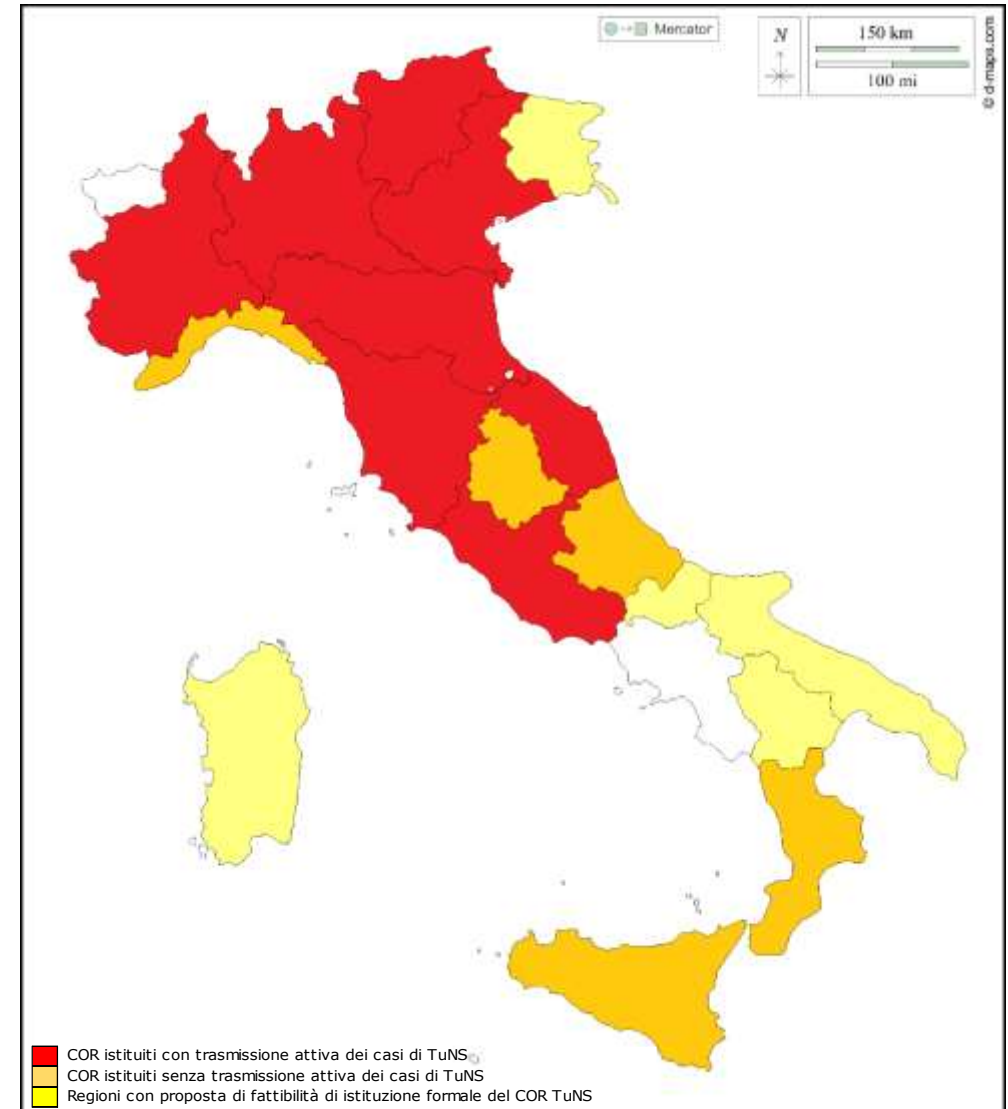
Italian national sinonasal cancer registry (ReNaTuNS). Structure, aims, procedures

ReNaTuNs territorial development has gradually increased.

As of today, a Regional Operative Center (COR) has been established in eight Italian regions, with different operative effectiveness.

In ten regions registration activities are still incomplete and on going.

Dataset 1989-2022: 2.851 incident cases (2.073 men, 778 women); Median age: 68 years old; Gender ratio: 2,7; Incidence rates (per 100.000): 0,77 (men); 0,23 (women); Occupational exposure: 71% (men); 39% (women)

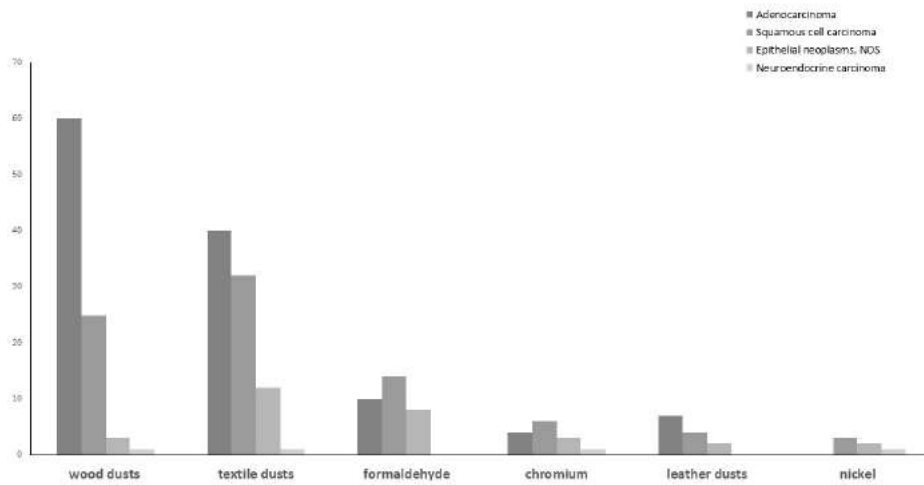


Italian national sinonasal cancer registry (ReNaTuNS). Analysis of the modalities of exposure.

Article

Exposures to IARC Carcinogenic Agents in Work Settings Not Traditionally Associated with Sinonasal Cancer Risk: The Experience of the Italian National Sinonasal Cancer Registry

Alessandra Binazzi ^{1,*}, Carolina Mensi ², Lucia Miligi ³, Davide Di Marzio ¹, Jana Zajacova ⁴, Paolo Galli ⁵, Angela Camagni ⁵, Roberto Calisti ⁶, Anna Balestri ⁷, Stefano Murano ⁸, Sara Piro ³, Angelo d'Errico ⁹, Matteo Bonzini ^{2,10}, Stefania Massacesi ⁶, Denise Sorasio ⁴, Alessandro Marinaccio ¹ and on behalf of ReNaTuNS Working Group [†]



The epidemiological surveillance of sinonasal cancers is complicated by the interplay of the carcinogens involved. Not only wood and leather dust ...

Italian national sinonasal cancer registry (ReNaTuNS). Analysis of the modalities of exposure.

The epidemiological surveillance of sinonasal cancer (including the anamnestic interview) allowed to identify an occupational exposure to sawdust in an intensive turkey farm.

A cluster of three cases in a single farm.

Med Lav. 2007 Jan-Feb;98(1):18-24.

[Cancer of the nasal cavity and paranasal sinuses in poultry breeders. An unsuspected occupation at risk].

[Article in Italian]

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Abstract

BACKGROUND: Wood dust exposure is strongly associated with the induction of cancer of the nasal cavity and paranasal sinuses (NSC), mainly among furniture production workers. Only limited information is available on wood dust exposure in other industrial sectors, including agriculture. NSC's are defined as "high occupational aetiology fraction" neoplasms, and are therefore indicated as sentinel tumours in occupational medicine.

OBJECTIVES: The report concerns two cases of NSC that occurred in two poultry breeders and the investigations performed in order to define their occupational exposure.

METHODS AND RESULTS: Epidemiological surveillance of NSC within the framework of routine activity of the Cancer Registry of the Province of Brescia (one million inhabitants) identified the two cases. Initially the first NSC case was considered as "probably exposed to formaldehyde" during shed tile disinfecting operations. After discovery of a similar case and further investigation in the sector formaldehyde exposure was found to be at a very low level. However, the observation that hard and soft wood dust was present, followed by dust monitoring, revealed a high level of exposure. The 23 personal and area air samples, performed in a turkey breeding shed, gave concentrations of between 1.3 and 2.3 mg/mc during low dust exposure jobs and concentrations of between 4 and 43.2 mg/mc during litter replacement (100% exceeded the ACGH TLV limit of 1 mg/cm and 25% were even above the legal limits (5 mg/mc according to Italian D.Lgs. 66/2000)). Since breeders are not aware of this type of risk and the use of personal protection is not scrupulous, the local health and safety unit has started an information campaign for the entire work category as regards the necessity of controlling this cancer risk. The two cases of NSC described here were reported to the National Labour Insurance Institute (INAIL) for compensation.

CONCLUSION: NSC epidemiological surveillance performed through a population registry proved to be of great use in the identification of cases among employees in similar sectors, and thus the identification of previously unknown wood dust exposures with consequent implementation of preventive measures.



Italian national sinonasal cancer registry (ReNaTuNS). Analysis of the modalities of exposure.



Recently, The epidemiological surveillance of sinonasal cancer (including the anamnestic interview) allowed to identify an occupational exposure to aldehyde and formaldehyde in a bakery shop.

Article

Formaldehyde and Acetaldehyde Exposure in “Non-Traditional” Occupational Sectors: Bakeries and Pastry Producers

Lucia Miligi ¹, Sara Piro ^{1,*}, Chiara Airoidi ¹, Renato Di Rico ², Raffaella Ricci ², Rudy Ivan Paredes Alpaca ², Fabrizio De Pasquale ², Angela Veraldi ¹, Alessandra Ranucci ¹, Stefania Massari ³, Alessandro Marinaccio ³, Giorgia Stoppa ¹, Anna Cenni ⁴, Cinzia Trane ⁴, Antonio Peruzzi ⁴ and Maria Cristina Aprea ⁴

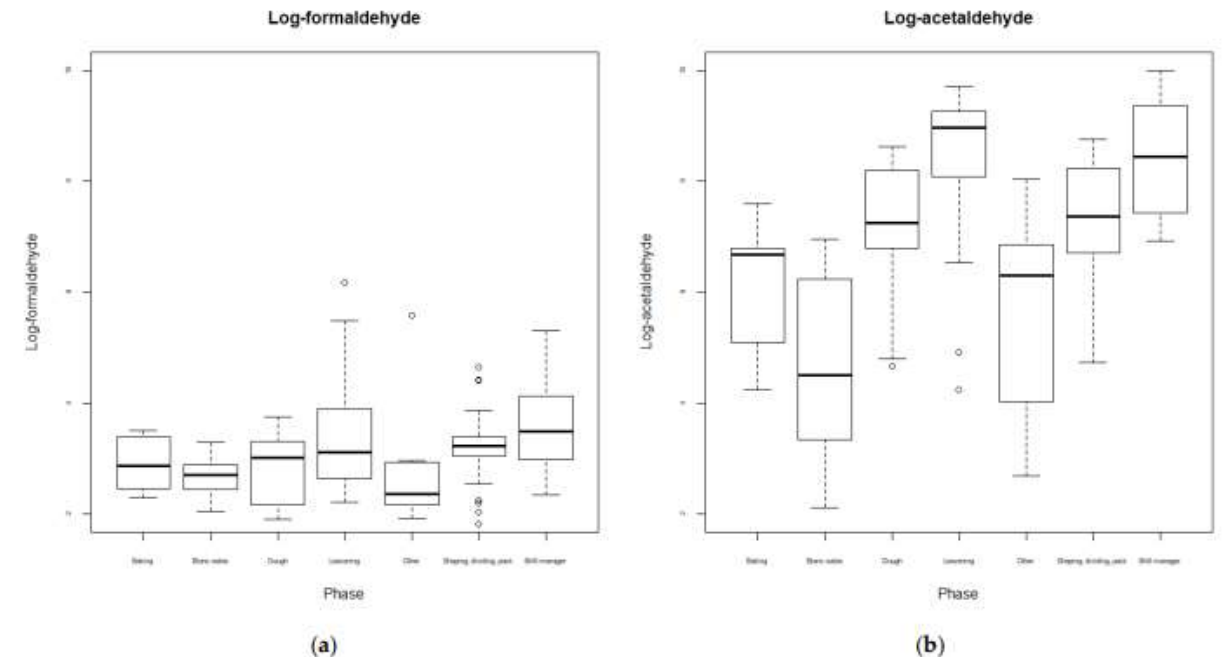
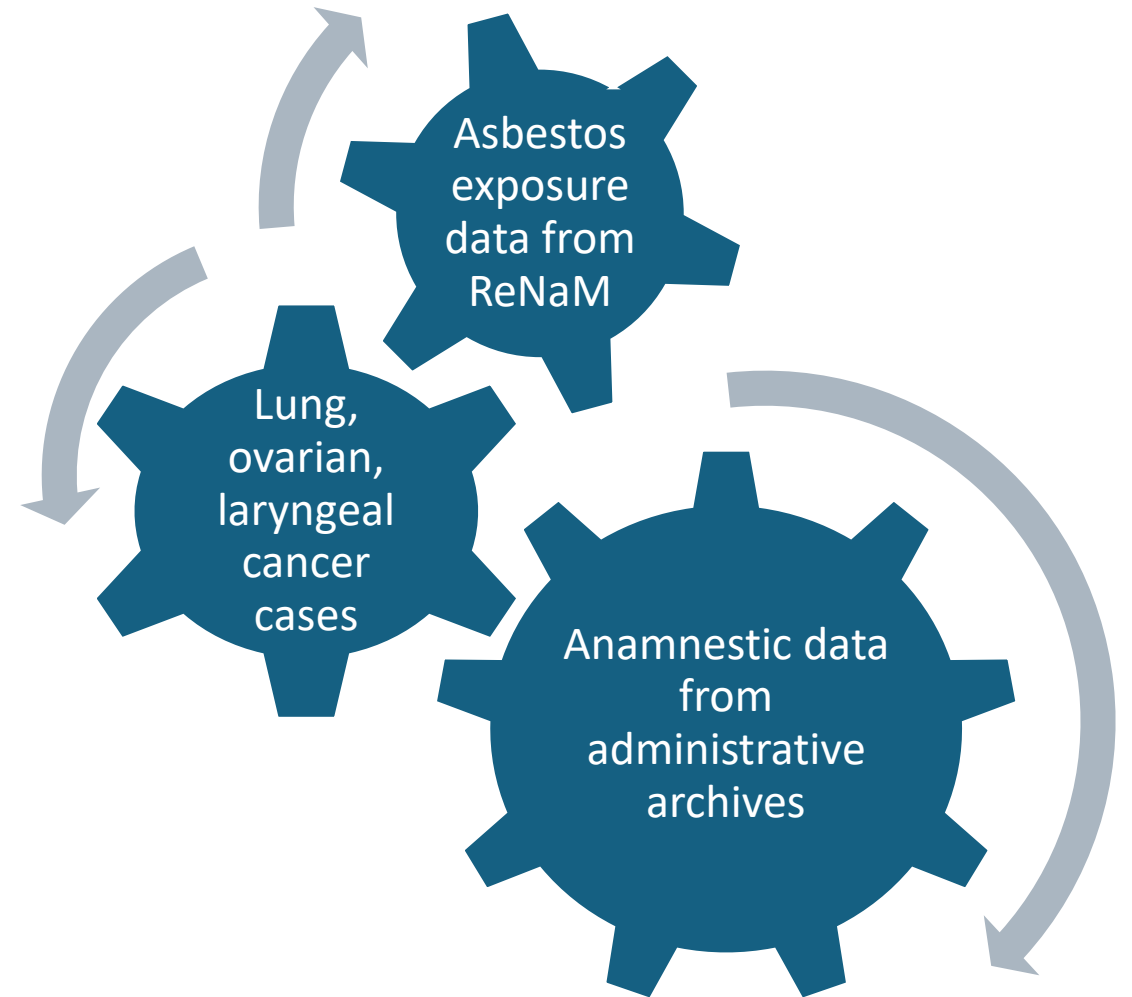


Figure 2. The boxplots show the level of log-formaldehyde by the phase of the production cycle (a) and log-acetaldehyde by the phase of the production cycle (b).

Asbestos related lung, ovarian and larynx cancer epidemiology. Perspectives for a surveillance systems

- ✓ Incidence cases of lung, larynx and ovary cancer;
- ✓ Anamnestic information about occupational history of affected people;
- ✓ Linkage with asbestos exposure occasions and modalities by ReNaM



Occupational cancer surveillance. Low attributable occupational fraction cancer cases

RESEARCH

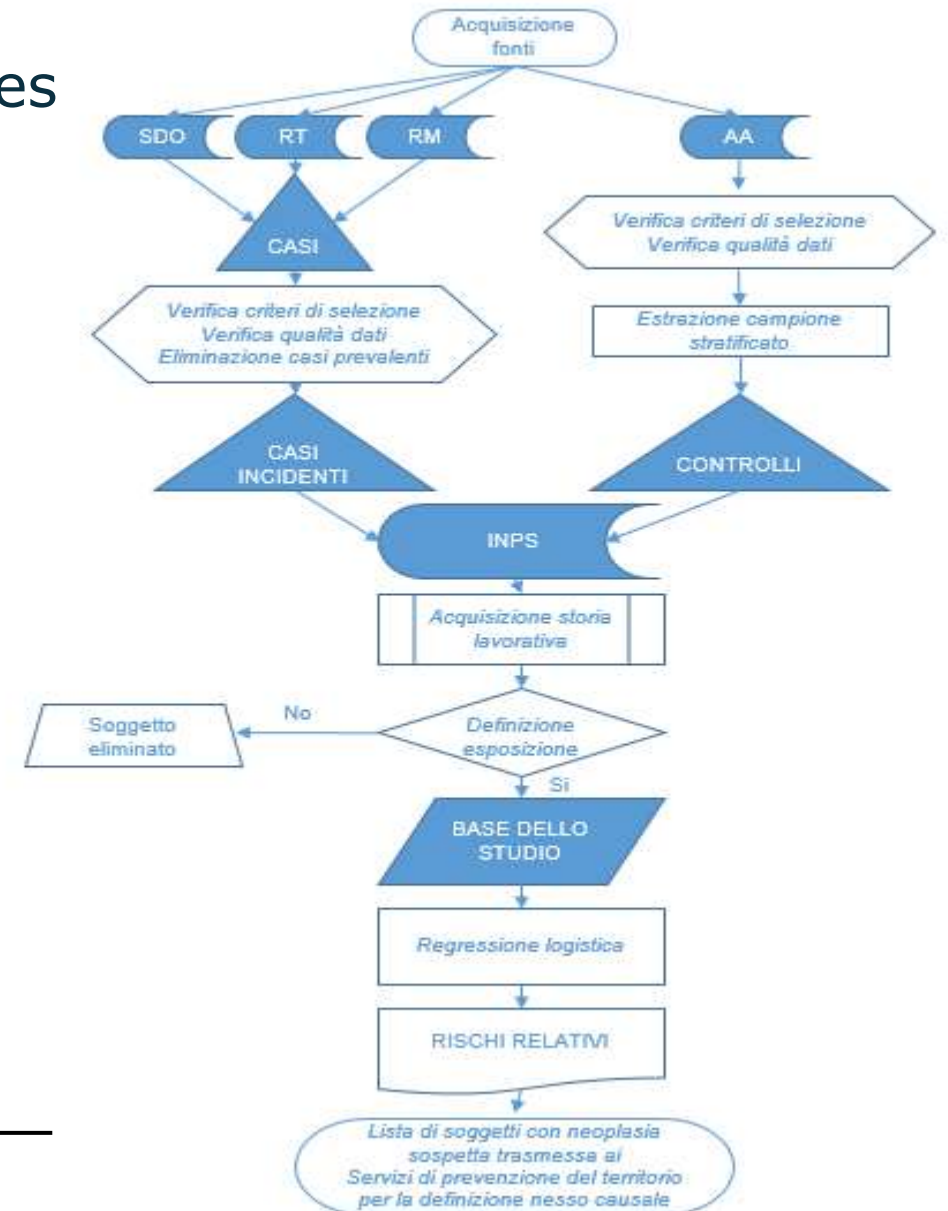
Open Access



Cancer mortality and sectors of employment: a cohort study in Italy

Stefania Massari^{1*}, Lisa Bauleo², Claudio Gariazzo¹, Paola Michelozzi³, Luca Dei Bardi^{3,4,7,8}, Nicolas Zengarini⁵, Sara Maio⁶, Massimo Stafoggia³, Marina Davoli³, Giovanni Viegi^{6,9}, Giulia Cesaroni³, Alessandro Marinaccio¹ and on behalf of the BIGEPI Collaborative Group

- ✓ Cancer cases from incidence or mortality archives.
- ✓ Occupational histories by administrative dataset.
- ✓ Individual anamnestic interview by territorial health offices.



Epidemiological surveillance system of occupational exposure to carcinogens (SIREP)

Actually, the SIREP archive dimension:

- 17.500 Firms;
- 200.000 Exposed workers;
- 500.000 Measures of exposures levels.

L'ESPOSIZIONE AD AGENTI CANCEROGENI
NEI LUOGHI DI LAVORO IN ITALIA



<https://www.inail.it/portale/it/inail-comunica/pubblicazioni/catalogo-generale/catalogo-generale-dettaglio.2023.03.esposizione-ad-agenti-cancerogeni-nei-luoghi-di-lavoro-in-italia.html>

RESEARCH ARTICLE

Open Access



Gender differences in occupational exposure to carcinogens among Italian workers

Alberto Scarselli[†], Marisa Corfiati, Davide Di Marzio, Alessandro Marinaccio and Sergio Iavicoli



Etiologic research, risk prevention and welfare system efficiency could have real benefits from occupational diseases epidemiological surveillance, because ...

“No data, no problem
No problem, no action“

Michael Marmot



Improving awareness of risk

Providing dataset for analytical studies

Supporting risk exposure prevention policies

Increasing insurance system effectiveness

Checking for effectiveness of remedation and risk control