Dal monitoraggio ambientale alle politiche: quale evoluzione?

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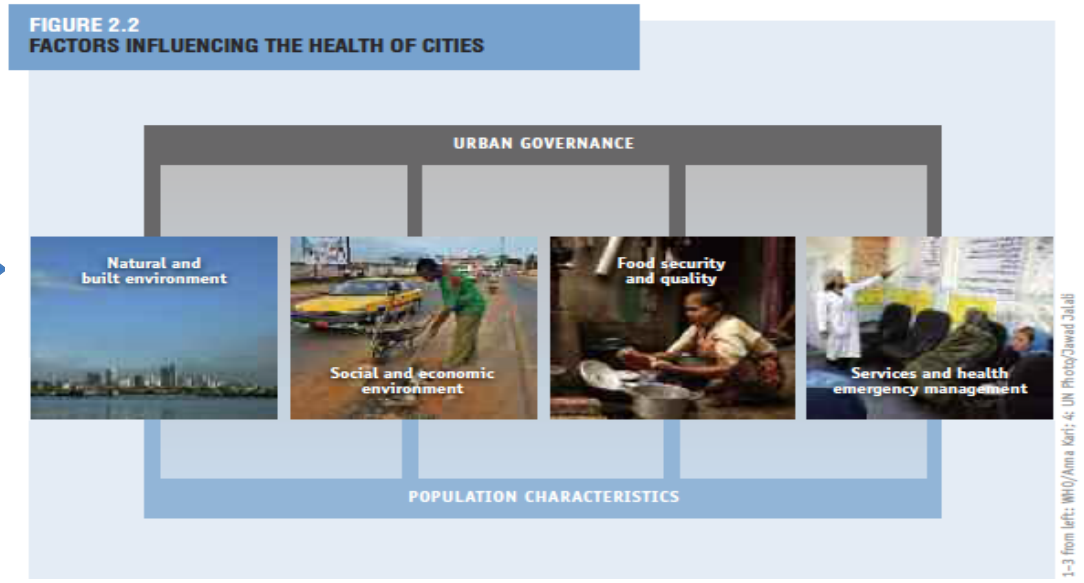
I rapporti esistenti fra le **condizioni ambientali** e la **salute umana** costituiscono oggi **uno dei più rilevanti problemi di Sanità Pubblica**, a causa dei seguenti motivi:

L'**ambiente** si trova, ormai, in uno **stato di avanzato degrado** (incremento demografico, sviluppo socio-economico, aumento dei bisogni e dei consumi, sviluppo industriale).

I diversi **fattori ambientali** sono presenti, spesso con ruolo preminente, nel complesso **modello eziologico** di gran parte della **patologia oggi prevalente** (malattie croniche, inguaribili e fortemente invalidanti).

BY WHO



INQUINAMENTO URBANO

INQUINAMENTO INDUSTRIALE

INQUINAMENTO AGRICOLO

Ad oggi

L'uomo si trova oggi a dover affrontare due sfide strategiche per il futuro:

sostenibilità dei sistemi produttivi

salvaguardia delle risorse naturali

SERIE GENERALE

GAZZETTA UFFICIALE

DELLA REPUBBLICA ITALIANA

IN ITALIA

Negli anni dal 1966 (615/66) al1982 (915/82) prima evoluzione Normativa Ambientale.

Negli anni dal 1988 (203/88) al 1997 (22/97) qualità Ambientale.

Dal 1999 (152/99) ad oggi standard di qualità e indicatori di eco-sostenibilità.

Direttiva 96/61/CEE o **direttiva IPPC** per la prevenzione e riduzione integrate dell'inquinamento.

Best Reference Document "General Principles of Monitoring"

Direttiva 2001/42/CE sulla Valutazione Ambientale Strategica (VAS) ha introdotto il Monitoraggio Ambientale (**MA**) rispettivamente come parte integrante del processo di Autorizzazione Integrata Ambientale (AIA).

Il monitoraggio assicura "*il controllo sugli impatti ambientali significativi sull'ambiente* *provocati dalle opere approvate, nonché la corrispondenza alle prescrizioni espresse sulla compatibilità ambientale dell'opera, anche al fine di individuare tempestivamente gli impatti negativi imprevisti e di consentire all'autorità competente di essere in grado di adottare le opportune misure correttive*" (art. 28, comma 1 del D.Lgs. 152/2006).

MINISTERO DELL'AMBIENTE
E DELLA TUTELA DEL TERRITORIO E DEL MARE
Direzione Generale per le Valutazioni Ambientali

Ministero dei beni e delle attività culturali e del turismo
Direzione Generale per il Paesaggio, le Belle Arti, l'Architettura e l'Arte Contemporanee

Linee Guida per la predisposizione del Progetto di Monitoraggio Ambientale (PMA) delle opere soggette a Valutazione di Impatto Ambientale

(D.Lgs. 152/2006 e s.m.i.; D.Lgs. 163/2006 e s.m.i.)

Indirizzi metodologici generali

18.12.2013

ISPRA
Istituto Superiore per la Protezione e la Ricerca Ambientale

Con l'entrata in vigore della Parte Seconda del D.Lgs.152/2006 il monitoraggio ambientale è entrato a far parte integrante del processo di VIA assumendo, ai sensi dell'art.28, la funzione di strumento capace di fornire la reale "misura" dell'evoluzione dello stato dell'ambiente nelle diverse fasi di attuazione di un progetto e soprattutto di fornire i necessari "segnali" per attivare azioni correttive nel caso in cui le risposte ambientali non siano rispondenti alle previsioni effettuate nell'ambito della VIA.

La Direttiva 2011/92/UE sulla Valutazione d'Impatto Ambientale (VIA) non prevede adempimenti vincolanti per gli Stati membri relativi al monitoraggio degli effetti ambientali del progetto da attuare; il MA viene tuttavia considerata una "best practice" nell'ambito della fase successiva alla decisione.

Assenza di esplicite disposizioni in merito al MA nella direttiva VIA

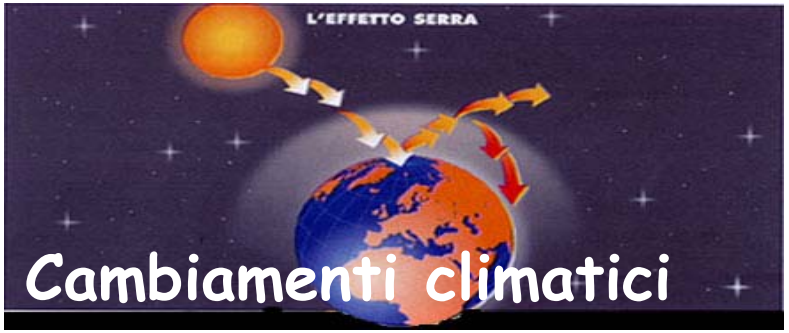
criticità identificata dalla stessa Commissione Europea.

Recente proposta di modifica della direttiva VIA adottata dalla CE il **26/10/2012** , introduce importanti novità in materia di MA finalizzate a migliorare l'efficacia del processo di VIA:

- **obbligatorietà del monitoraggio ambientale** per i progetti che determinano **effetti negativi significativi sull'ambiente,**
- **specificità e proporzionalità del monitoraggio ambientale** (ad esempio il tipo di parametri da monitorare e la durata) **in relazione alla natura, ubicazione e dimensioni del progetto e alla significatività degli impatti ambientali,**
- **definizione dei requisiti specifici del monitoraggio** (parametri, frequenza, metodologie, ecc.) **da parte dell'autorità competente nell'ambito della decisione** (in funzione degli impatti ambientali attesi, del livello di incertezza delle previsioni contenute nello SIA, della sensibilità del contesto ambientale).

Inquinamento outdoor

EFFETTI INDIRETTI DELL'INQUINAMENTO ATMOSFERICO E IDRICO



Biota e Alimenti

Inquinamento indoor

ARPAL

Agenzia Regionale per la Protezione dell'Ambiente Ligure

Linee guida per lo studio dei valori di fondo naturale di alcuni metalli e semimetalli nei suoli della Liguria

Luglio 2014

Il termine "Valore di fondo naturale" è desunto dalla norma ISO 19258/2005 (Soil Quality – Guidance on the determination of background values),

Direzione Scientifica
Via Bombrini, 8 - 16149 Genova
Tel. +39 010 3467 223 - fax. +39 010 6437 204
segreteria.ds@arpal.gov.it - www.arpal.gov.it
C.F. e P.IVA 01305930107

CSQ IQNet H&S CERTIFIED OHSAS 18001

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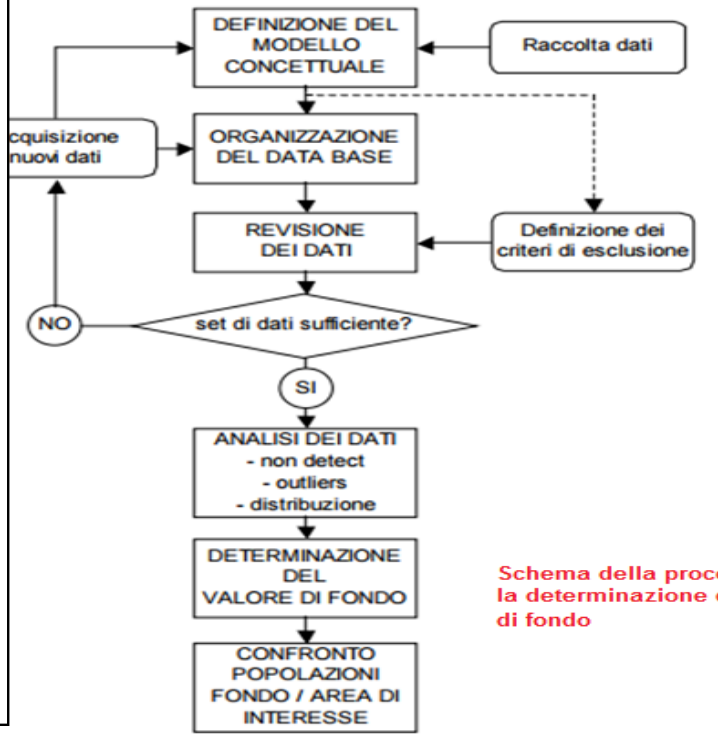

Schema della procedura per la determinazione dei valori di fondo

…l Direttore Generale
…rof. Giorgio Assennato

…., Dott. Dagnano A., Dott. …argiotta S., Dott. Musolino

More specifically, our aims are:

- **lowering costs and reducing the burden for those providing and using the information,** e.g. by minimising reporting to where the needs are while ensuring the ease of access and use of the monitoring information;

- **better monitoring on the ground** as having the information we really need in a reliable, timely and comparable manner should lead to better implementation, compliance and accountability;

- **making the maximum use of the information that already exists.** Valuable information is collected in other policy areas and we can use it better, especially for analysis across policy areas;

- **increasing transparency and accountability** through open data, making information publicly available (in a user-friendly and easy-to-digest way) within the legal framework for protection and use of information;

- **comparing Member States' approaches** and performances demonstrating a comparable ambition and level playing field and allowing best practice to be shared;

- facilitating Better Regulation in the EU environmental policy cycle by **having a stronger evidence base** on the drivers and pressures on the environment, the state of the environment and our responses.

Il valore dell'accreditamento nel MA

- L'UNICO GARANTE DELLA QUALITÀ DEI DATI ANALITICI
- I LABORATORI SONO OGGETTO DI UN CONTROLLO ANNUALE INTENSIVO E APPROFONDITO
- OGNI METODO DI MISURAZIONE È ACCURATAMENTE VERIFICATO
- L'ACCURATEZZA DELLE PRESTAZIONI STRUMENTALI È VERIFICATA
- LA CAPACITÀ DELL'OPERATORE VIENE TESTATA

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO

LIAA
ENVIRONMENTAL AND FOOD HYGIENE LABORATORIES
Department of Medical sciences, Surgicals and Advanced Technologies, Hygiene and Public Health "G.F. Ingrassia" - University of Catania.

Il valore dell'accreditamento nei Laboratori Pubblici

arpa agenzia regionale prevenzione e ambiente dell'emilia romagna

Gruppo di Lavoro
Siti Contaminati (Validazione dati analitici da parte degli Enti di Controllo)
Coordinatore
Arpa Sicilia

L'anal
con i
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Figure 1 As

ASPETTI DI RILIEVO PER UN SISTEMA DI CONTROLLO AMBIENTALE

- ✓ QUALITÀ DEL DATO ANALITICO
- ✓ VALORE DEL CAMPIONAMENTO
- ✓ PROGETTAZIONE DELL'INDAGINE / MONITORAGGIO
- ✓ CONFRONTO / TRACCIABILITÀ / CONTROLLO
- ✓ COMPETENZA E RESPONSABILITÀ
- ✓ IMPARZIALITÀ

→ Revisione criteri di accettabilità confronto dati analitici (sett 2013); → Individuazione azioni a seguire nel caso in cui il procedimento di caratterizzazione evidenziasse il mancato rispetto dei criteri di accettabilità (sett 2013); → elaborazione documento aggregato in bozza (ott 2013).
Nota di precisazione: da valutare eventuale raccordo con GdL analogo da attivare presso CTP Area B in merito alle procedure per la messa in sicurezza, bonifica e ripristino ambientale dei siti contaminati

/ 2009

ACQUE DOLCI E MARINE

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DOI 10.100
EDITO

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Abstract
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Keyword
Mutagens

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Faculty of M
Catania Uni
Via S. Sofia
e-mail: oliv

Valuta:
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M. Fiore[1]
J.A. Maie

Keyword: Bo
Parole chiav

Abstract
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Introduzio

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Copat C[1], Fiore M
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Chiara Copa
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Dates: Received
18 December, 20

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of Catania, Via Sa
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www.peertechz.

Keywords: Boro
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Introduction

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Thursday 15 october
h. 14.00-15.30
Brown Room 2

Abstract
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(*Epidemiol Prev 20*
Key words: water, mor

Riassunto
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la caratterizzazione

(*Epidemiol Prev 20*
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INTRODUCTION
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Epidemiol Prev 20

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CODEN: IJPT
Research Art

Available Online through
www.ijptonline.com

ASSESSMENT OF CONCENTRATION OF RADON 222 AND EFFECTIVE DOSE; BANDAR ABBAS CITY (IRAN) CITIZENS EXPOSED THROUGH DRINKING TAP WATER

Yadolah Fakhri[1], Gea Oliveri Conti[2], Margherita Ferrante[2], Abotaleb Bay[3], Moayed Avazpour[4], Bigar Moradi[5],Yahya Zandsalimi[6], Leila Rasouli Amirhajeloo[7], Ghazaleh Langarizadeh[8], Hassan Keramati[9,1
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Abstract

Radon 222 is a natural radioactive element with 3.825 days half-life. ^{222}Rnis colorless and odorless with solubility in water. The presence of ^{222}Rnin drinking water can lead to lung or stomach cancers through chr exposure per inhalation or ingestion. Different age groups have different sensitivity to the health effects of ^{222}Ra In this cross-sectional study, the concentration of ^{222}Rnin the 8 regions of Bandar Abbas city in 48 samples o water was measured by portable Radon meter RTM1688-2 model on June 2015. The effective dose by tap water also calculated in different age groups through UNSCEAR equation. The range and mean concentration of ^{222} 0.87-0.384 Bq/l and 0.232±0.7 Bq/l, respectively. The mean of the effective dose of exposure for the age groups 0.0024±0.0007, 0.0018±0.0005, 0.0007±0.0002 and 0.001±0.0003 m Sv/y, respectively for adult males, a females, children and infants. The magnitude's order of measured doses of studied age groups was: adult males>a females>infants>children. The effective doses, ingested by all groups, are less than the standard limits particularl

Aquacultu
Research & Dev

Research Article

Detection of *Ostr*
Microscopy Coup

Oliveri Conti G, Ledda C, Zuccarello
Department "GF Ingrassia" – Hygiene

Abstract

Algal bloom
of phytoplankton
increased impac
Mediterranean si
of genus Ostreop
during 2008, 200
using scanning
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showed an abun
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related to the fish

To protect th
action through a

Keywords: *Ostreopsis ovata*, Mediterranean Sea, Risk

Introduction

Phytoplanktonic organisms quality of water. Algal blooms marine environments. With the blooms (HABs), several approach its occurrence [1-3]. The dinofl represented phylum and both they are present in densities that health and economic impact on t for HABs remain debated and i occurrence in some locations ap others they appear to be a result of monitoring plans in the world programs, deployment of new det for toxins and toxicities, ...) resul these HABs [6]. During the last genus Ostreopsis have expande subtropical to temperate waters,

The presence of HABs in th problem but also economic beca and mussels producing die-offs this geographic area, in fact, the

The HABs had already been 1990 but their presence has int especially along the Italian coast and of difficult detection and ma Ostreopsis ovata blooms mainly associated with human irritation losses in the tourism industry shellfish and mussels.

In Italy only in 2008 was the monitoring and surveillance

Igiene

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Margherita
Maria Fiore, Rob

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Review

HARM

Margherita Fe

A harmful algal bloo
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toxins can result in f
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Introduction

Algae are unicellular
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Filter-feeding shellfis
vectors to humans e
sequestered toxin to
algal toxins results
neurotoxic shellfish

Address of the auth
[1] G.F. Ingrassia Depar
[2] Department of Inter

Bull Environ Contam Toxicol (2016) 96:630–637
DOI 10.1007/s00128-016-1776-9

CrossMark

Mercury Enrichment in Sediments of the Coastal Area of Northern Latium, Italy

Sergio Scanu[1] · Daniele Piazzolla[1] · Francesco Manfredi Frattarelli[1] · Emanuele Mancini[1] · Francesco Tiralongo[1] · Maria Violetta Brundo[2] · Daniele Tibullo[2] · Roberta Pecoraro[2] · Chiara Copat[3] · Margherita Ferrante[3] · Marco Marcelli[1]

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© Springer Science+Business Media New York 2016

Abstract The purpose of this study was to evaluate the extent of the Hg geochemical anomaly arising in the Amiata and Tolfa complex to the coastal area of northern Latium and to examine the possible influence on this area by the Mignone River, and by the small coastal basins, which are characterized by both previous mining activities and decades of past industrial impact. The results confirm the extension of the anomaly of concentrations of Hg in the coastal area of northern Latium, with the northern sector influenced by the contributions of the Fiora and Mignone Rivers and the southern sector influenced by the contributions of minor basins. The results show high values of the Adverse Effect Index throughout the considered area and highlight the need for further investigation in order to assess the impact of human activities on the present and past values of Hg in marine sediments.

Keywords Mercury · Sediments · Tyrrhenian sea · Geochemical anomaly · Anthropic impact

Today, mercury is re-emerging as a pollutant of concern for both environmental and human health. Current global atmospheric deposition of mercury (Hg) has been estimated to be three times higher than preindustrial levels, reaching values of potential toxicity for many living organisms (Goodsite et al. 2004; Mirlean et al. 2005; Di Leonardo et al. 2006; Selin et al. 2008).

Trace elements, such as Hg, in marine sediments have a particular affinity for finer particle grain sizes, binding to the surface of fine particles by different processes (Ligero et al. 2001) and following fine particles' sedimentary fate. Sediment can receive Hg from both natural and anthropogenic sources such as river basin runoff, atmospheric deposition, discharge of sewage, and industrial emissions.

Rapid industrialization, urbanization, and the increase of human activity in coastal areas has resulted in an increased quantity of pollutants, such as Hg, that accumulate in air, water, soil, and sediment, as described in several works (Nriagu and Pacyna 1988; Varol 2011; Chaudhari et al. 2012; Bastami et al. 2014). Therefore, the study of Hg distribution in coastal sediments is a realistic way to understand the Hg cycle in a marine environment and to explore the history of the possible anthropogenic Hg emissions at the land–ocean interface zone.

In the Mediterranean area, there are some studies of Hg related to the atmospheric compartment (Pyle and Mather 2003), as well as several studies about the Hg distribution in aquatic environments and in dissolved gaseous Hg concentrations (Ferrara et al. 2003; Horvat et al. 2003; Maffucci et al. 2005). But, there is a lack of information

✉ Sergio Scanu
sergioscanu@unitus.it

ARIA

Forecasting of Human health outcomes by air pollution exposure

Air Quality (Air Q) models

Approccio numerico, matematico e combinatorio per la simulazione dei processi fisici e chimici a cui sono soggetti gli inquinanti atmosferici e della dispersione e reazione di questi in in atmosfera.

Non reactive models
Reactive models

Modelli di dispersione

Simple screening models e Sophisticated or refined models

Modelli fotochimici

- UAM-IV, CIT, e CALGRID per l'approccio urbano,
- RADM, EURAD, NOAA, ecc .., per l'approccio regionale e,
- SAQM, MAQSIP, EURAD, UAM-V, URM e MODELLI-3 / CMAQ per approccio multi-livello

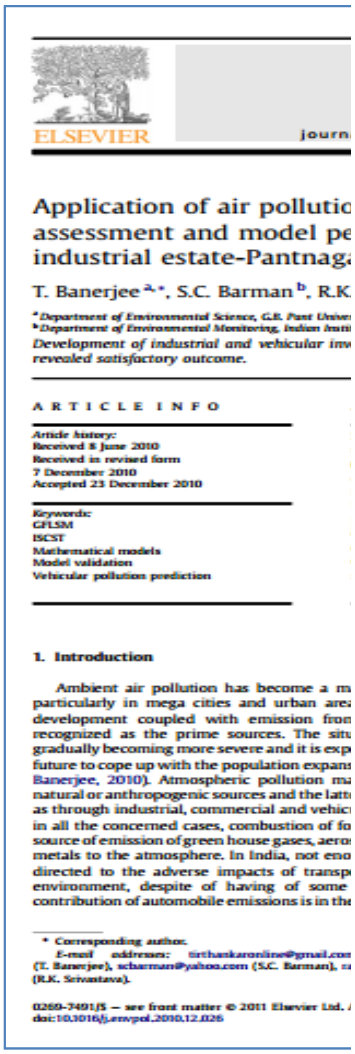
Modelli a recettore

Il Receptor-based modeling è indicato anche come "source apportionment".

Lo scopo è :

- trovare una relazione matematica tra gli effetti delle emissioni di una sorgente con le concentrazioni a livello del suolo degli inquinanti immessi,
- stabilire se le concentrazioni sono, o non sono livelli permissibili o, se sono eccedenti rispetto ai limiti giuridici.

Alcuni esempi: Land Use Regression (LUR) , Industrial Source Complex (ISC3) model, TSCREEN model.1



Application of air pollutio
assessment and model pe
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T. Banerjee [a,*], S.C. Barman [b], R.K.

[a] Department of Environmental Science, G.B. Pant Univ
[b] Department of Environmental Monitoring, Indian Insti

Development of industrial and vehicular inv
revealed satisfactory outcome.

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GFLSM
ISCST
Mathematical models
Model validation
Vehicular pollution prediction

1. Introduction

Ambient air pollution has become a m
particularly in mega cities and urban are
development coupled with emission fro
recognized as the prime sources. The situ
gradually becoming more severe and it is exp
future to cope up with the population expans
Banerjee, 2010). Atmospheric pollution ma
natural or anthropogenic sources and the latt
as through industrial, commercial and vehic
in all the concerned cases, combustion of fo
source of emission of green house gases, aero
metals to the atmosphere. In India, not eno
directed to the adverse impacts of transp
environment, despite of having of some
contribution of automobile emissions is in the

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(R.K. Srivastava).

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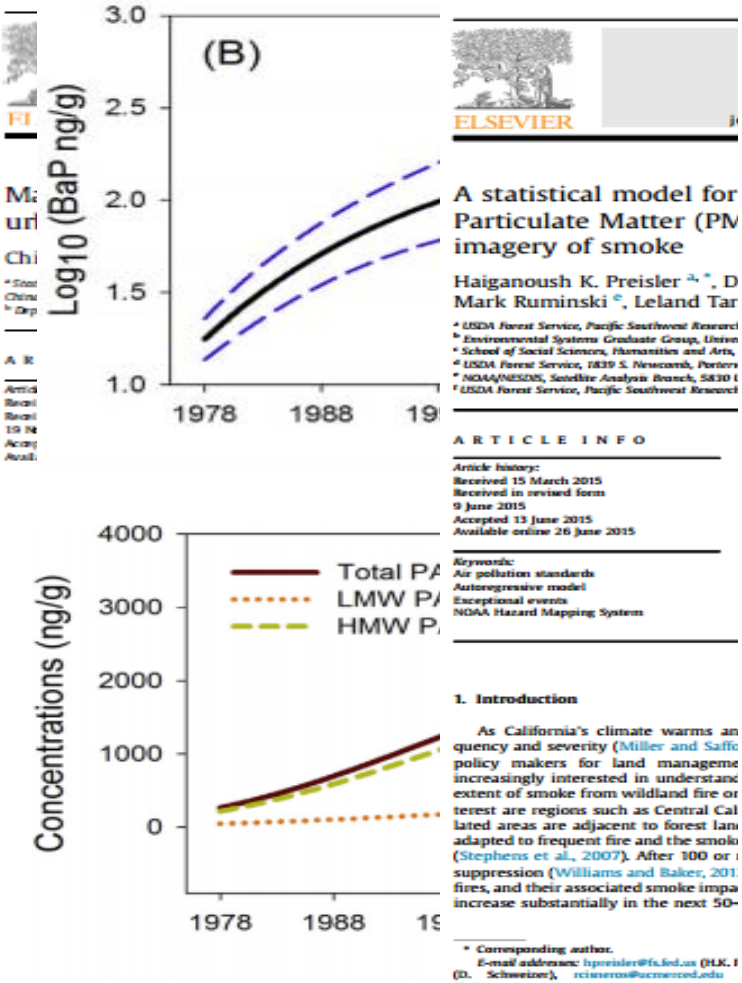

Fig. 6. Predictions of PAHs accu

A statistical model for
Particulate Matter (PM
imagery of smoke

Haiganoush K. Preisler [a,*], D
Mark Ruminski [c], Leland Tar

[a] USDA Forest Service, Pacific Southwest Researc
[b] Environmental Systems Graduate Group, Univ
[c] School of Social Sciences, Humanities and Arts,
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[e] NOAA/NESDIS, Satellite Analysis Branch, 5830
[f] USDA Forest Service, Pacific Southwest Researc

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Air pollution standards
Autoregressive model
Exceptional events
NOAA Hazard Mapping System

1. Introduction

As California's climate warms an
quency and severity (Miller and Saffo
policy makers for land manageme
increasingly interested in understand
extent of smoke from wildland fire o
terest are regions such as Central Cal
lated areas are adjacent to forest lan
adapted to frequent fire and the smok
(Stephens et al., 2007). After 100 or
suppression (Williams and Baker, 201
fires, and their associated smoke impa
increase substantially in the next 50-

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ENVIRONMENTAL HEALTH

RESEARCH Open Access

Prediction and analysis of near-road concentrations using a reduced-form emission/ dispersion model

Stuart A Batterman*, Kai Zhang, Robert Kononowech

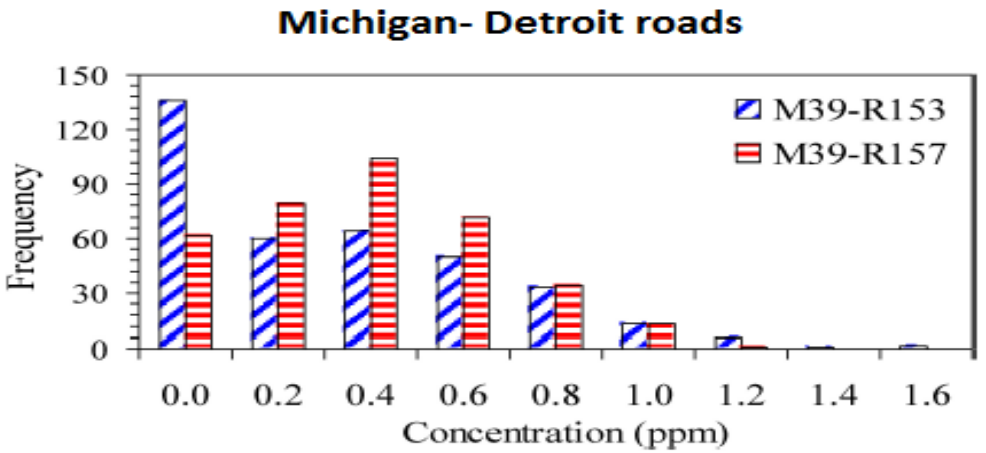

Figure 9 Histogram of 24-hr CO concentration predictions for 2006 at receptors west (M39-153) and east (M39-157) of the M39 freeway.

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AirQ software 2.2.3

(AIR Quality health impact assessment tool) versione 2.2.3 prodotto e distribuito dal "*WHO European Centre for Environment and Health*".

Strumento valido e affidabile per valutare i potenziali effetti sulla salute dell'inquinamento atmosferico e per consentire la valutazione di scenari caratterizzati da varie sostanze inquinanti.

Il software permette la stima dell'impatto dell'esposizione a breve termine a sei inquinanti atmosferici classici (O_3, CO, NO_x, SO_x, PM_{10} e $PM_{2,5}$), sulla salute dei residenti che vivono in un certo periodo e sulla zona.

La valutazione è basata sulla percentuale attribuibile (AP), definita come: la frazione degli esiti sulla salute in una determinata popolazione attribuibile all'esposizione ad un determinato inquinante atmosferica. L'AP è calcolato dalla formula generale:

$$AP = \Sigma \{(RR(c)-1) \times P(c)\} / \Sigma (RR(c) \times P(c))$$

ELSEVIER jour

Evaluation of Chronic Obs attributed to atmospheric (2011–2012 year)

Mohammad Ghanbari Ghozikali [a], Gea Oliveri Conti [c,*], Riccardo Pol

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[b] Department of Environmental Health Engineering, Scho Research (TER), Tehran University of Medical Sciences, Te
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Nitrogen dioxide
Sulfur dioxide
COPD
Air Pollution
Hospitalization

1. Introduction

Exposure to air pollution can cause both chronic (long-term) health effects (Pascal et 2015; Wang et al., 2015). The acute effects man health were amply proven in the 20th air pollution in Europe (Meuse Valley and United States (Donora, Pa) caused deaths an of thousands of people. These episodes ha high concentrations of air pollutants cause a and morbidity (Hassanvand et al., 2015).

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Environmental Research

Manuscript Number:

Title: Mortality and morbi in Mashhad Metropolis, Ira

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Section/Category: Environ

Keywords: Air Q Model, A

Corresponding Author: Pro

Corresponding Author's In

First Author: Mohammad M

Order of Authors: Mohamma Allahabadi, Assistant pro Ahmadi, PhD student; Gea Associated professor; Ham

Abstract: on human health evaluated. To evaluate the model software 3.3.2, deve and Health, was used. The above has been used for t cardiovascular and respira cardiovascular and respira disease and acute myocard effects on Mashhad inhabi risk rate of pollutant co PM2.5, SO2, NO2 and O3 wa respectively and, the att attributed to these pollu 0.99%, 2.21%, 2.08%, and for the non-accident) oc study have a good compati of air pollution on human decision-makings as a use

Elsevier Editorial System(tm) for Environment International

Manuscript Draft

Manuscript Number: ENVINT-D-16-00826

Title: Acute Myocardial Infarction and Chronic Obstructive Pulmonary Disease Attributed to Atmospheric SO2 in Khorramabad, Iran. An AirQ model approach.

Article Type: Research paper

Keywords: Myocardial Infarction, COPD, SO2, Khorramabad, Relative Risk, AirQ software.

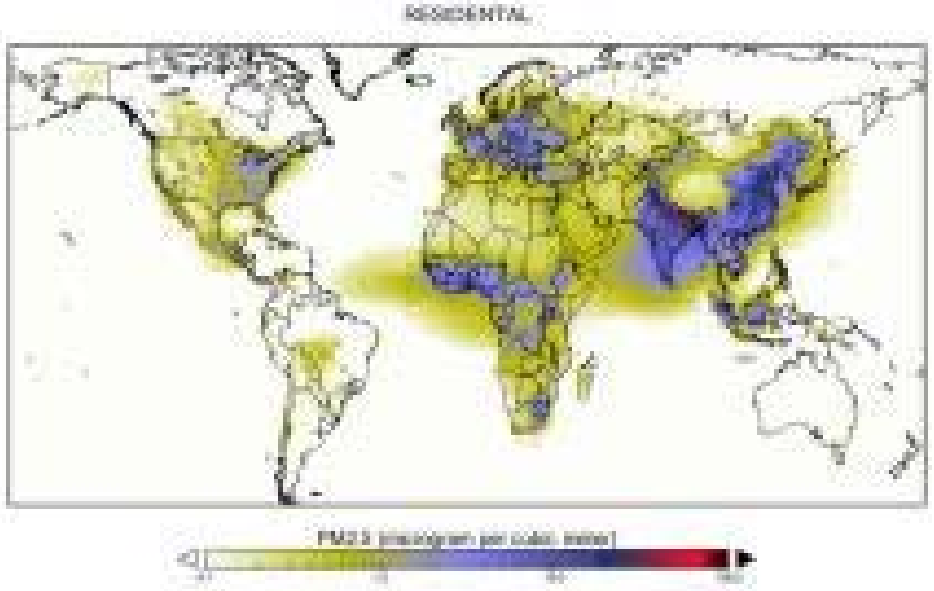
Corresponding Author: Prof. Margherita Ferrante, Professor

Corresponding Author's Institution: University of Catania

First Author: Yusef Omidi Khaniabadi , Dr.

Order of Authors: Yusef Omidi Khaniabadi , Dr.; Gholamreza Goudarzi , Associate Professor; Seyed Mohammad Daryanoosh , Dr.; Asghar Sepahvand, Dr.; Hassan Basiri , Dr.; Margherita Ferrante, Professor; Gea Oliveri Conti , PhD

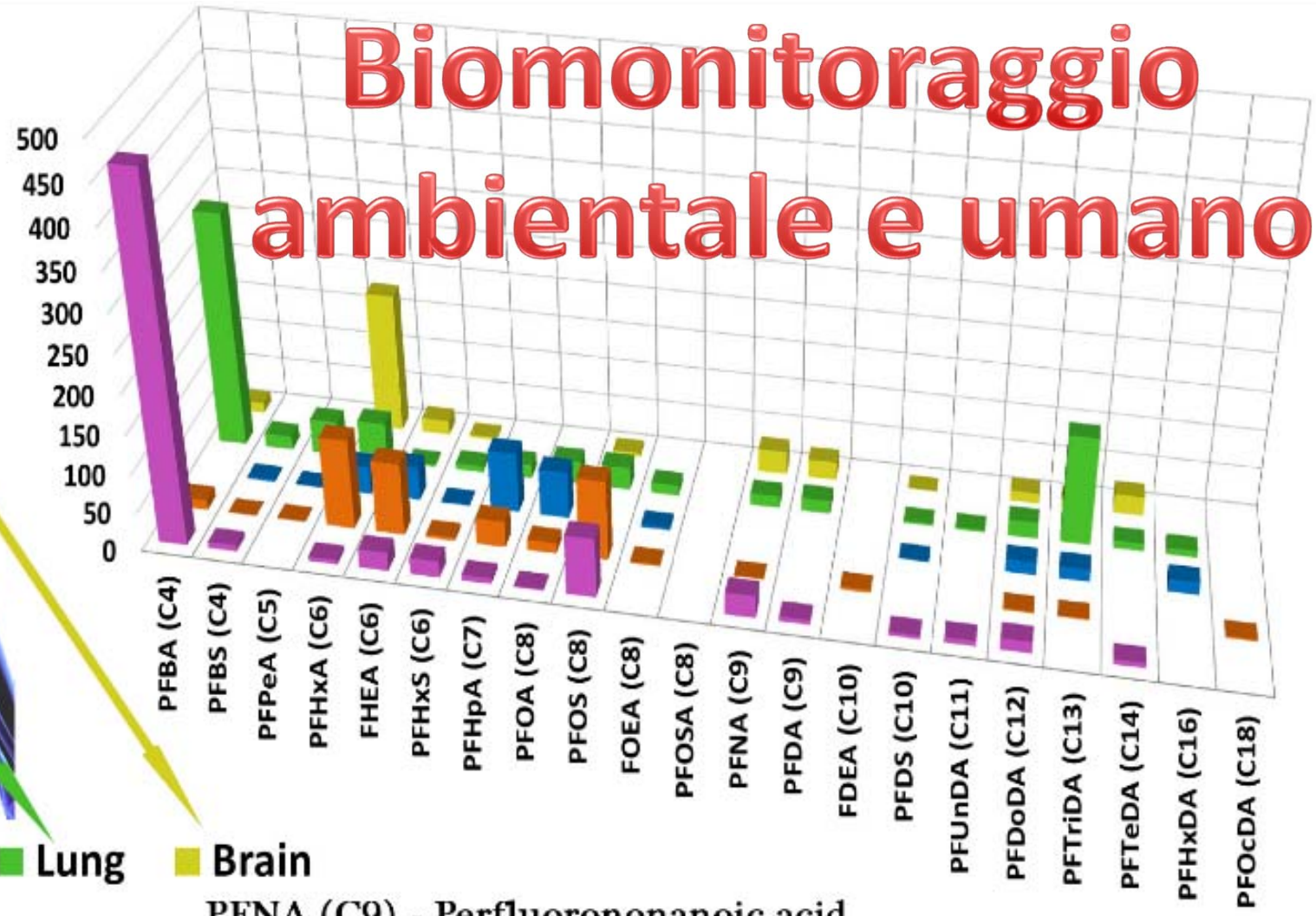
Abstract: Acute myocardial infarction (MI) and chronic obstructive pulmonary disease (COPD) are important diseases worldwide characterized by chronically poor airflow. Inhalation is the major route of exposure to sulfur dioxide (SO2), most exposures are due to air pollution negatively affecting the human health. The main objective of this study was to assess the health effects of exposure to SO2 using the approach proposed by the World Health Organization (WHO) in Khorramabad, Iran during 2014-2015. Daily average concentrations of SO2 were used to assess human exposure and health endpoint in terms of attributable proportion of the health outcome annual number of excess cases of acute MI and hospital admissions due to COPD (HACOPD). The annual mean concentration of SO2 was equal to 51.33 µg/m3. Based on the relative risk (RR) and baseline incidence (BI) of the WHO, 2.7% (95% CI: 1.1-4.2%) of acute MI and 2% (95% CI: 0-4.6%) of HACOPD were attributed to SO2 concentrations over 10 µg/m3, respectively. Since the geographic, demographic, and climatic characteristics are different and not sufficiently evaluated, further investigations are recommended for quantification of other health impacts of SO2. The lower RR value can be achieved if some control strategies for reducing sulfur emission will be implemented.



TM5-FASST web-based Fast Scenario Screening Tool

The TM5-FASST tool was developed at JRC's Air and Climate Unit, and allows the user to evaluate how air pollutant emissions affect large-scale concentrations and their impact on human health (mortality, years of life lost) and crop yields. The tool is specifically designed to compare a scenario (policy case) with a counterfactual case (baseline).

Biomonitoraggio ambientale e umano



PFBA (C4) - Perfluorobutanoic acid
PFBS (C4) - Perfluorobutanesulphonate
PFPeA (C5)- Perfluoropentanoic acid
PFHxA (C6)- Perfluorohexanoic acid
FHEA (C6) - Perfluorohexyl ethanoic acid

PFNA (C9) - Perfluorononanoic acid
PFDA (C9) - Perfluorodecanoic acid
FDEA (C10) - Perfluorodecyl ethanoic acid
PFDS (C10)- Perflurodecanesulphonate
PFUnDA (C11) - Perfluoroundecanoic acid

IL BIOMONITORAGGIO

E’ una valutazione ambientale complessiva, condotta con l’utilizzo di bioindicatori, cioè di organismi capaci di avvertire con certezza le alterazioni ecologiche dell’ambiente in cui vivono, alterazioni causate da vari tipi di inquinamento o da fattori di stress ambientale. Un indicatore biologico infatti, è un organismo che reagisce in maniera osservabile, macroscopicamente o microscopicamente, alle modificazioni della sua nicchia ecologica.

UNIVERSITÀ DEGLI STUDI DI PALERMO

FACOLTÀ DI SCIENZE MM.FF.NN.

DIPARTIMENTO DI SCIENZE E TECNOLOGIE BIOLOGICHE, CHIMICHE E FARMACEUTICHE

DOTTORATO DI RICERCA IN BIOLOGIA ANIMALE XXIV CICLO
(S.S.D.: BIO/07)

Gestione sostenibile delle risorse marine: i Poriferi per la valutazione dello stato ambientale e per la depurazione delle acque. Studio di organismi marini ad alto potere filtrante per azioni di biomonitoraggio e di bioremediation.

DOTTORE
Dr.ssa *Marilisa Vassallo*

COOORDINATORE
Ch.mo Prof. *Marco Arculeo*

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Ch.mo Prof. *Antonio Mazzola*

CO TUTOR
Ch.ma Prof.ssa *Margherita Ferrante*

CICLO XXIV
Anno conseguimento titolo 2015

Frontier Article

Seasonal variati
encrasicolus (Li
exposure ☆

Chiara Copat[a, b], Maria Viol
Ledda[a], Roberto Fallico[a], S
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doi:10.1016/j.ecoenv.2012.

Abstract

In the last years, the de
assays has improved t
bioindicators of marine

The aim of this study w
bioaccumulation and c
(Linnaeus, 1758). Hea
polychlorinated bipher
Furthermore we evalua

Bull Environ Contam To
DOI 10.1007/s00128-01

Evaluation o
Hydrocarbo
and Risk-Ba

Gea Oliveri Conti ·
Maria Fiore · Robe
Margherita Ferrant

Received: 25 November
© Springer Science+Bus

Abstract Our stud
water contamination
Lampedusa island an
analyzed muscle tiss
detect metals and
(PAHs). Results show
of heavy metals: Pb
As 27.01, Cu 0.433,
U 0.055 and Zn 3.3
13.16 ppb. A possibl
based on consumptio
PAHs in fillets of thi

Keywords Heavy
limits · Health · Med

During the last deca
out to assess the sta
ecosystems using fish
traffic and other ind
PAHs and trace met
chemicals can enter
marine organisms inc

Gea Oliveri Conti and C

G. O. Conti · C. Copat ·
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Springer

First data on trace ele
from southern Italy: S

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THQ

1. Introduction

The bioaccumulation of metals in
tial and toxic, natural and anthropo
issue. Trophic transfer has increasin
portant pathway for metal accumul
(Wang and Fisher, 1999; Wang and
activity makes a significant contribut
of toxic metals. Furthermore heavy
cadmium (Cd), lead (Pb), mercury
leased in the environment are among
in the marine ecosystem. Both heav
ganisms and the potential risk of hu
organisms are consumed, make it ne
of these contaminants in the same
2014; Domingo et al., 2007; Tomase
Trivalent chromium (CrIII), copper
and selenium (Se) bioaccumulate in o
are considered essential for animals (

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Food and Chemical Toxicology
Volume 94, August 2016, Pages 57–63

Polycyclic aromatic hydrocarbons in *Haliotis tuberculata* (*Linnaeus*, 1758) (Mollusca, Gastropoda): Considerations on food safety and source investigation.

Francesca Conte[a], Chiara Copat[b], ·, Sabrina Longo[c], Gea Oliveri Conti[b], Alfina Grasso[b], Giovanni Arena[b], Angela Dimartino[b], Maria Violetta Brundo[d], Margherita Ferrante[b]
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Highlights

- Bioaccumulation of PAHs in *Haliotis tuberculata* revealed both pyrolytic and petrogenic origins.
- PAHs bioaccumulation rates in *H. tubercolata* are higher than literature findings on bivalve mollusks.
- EDI values were below the intake range reviewed by EFSA for each class of contaminant.
- CR_{BaP} was slightly higher than the acceptable risk level (ARL) of $1x10^{-5}$.
- Target hazard quotient (THQ) resulted below the level of risk.

Food Control 50 (2015) 937–941

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Determination of illegal antimicrobials in aquaculture feed and fish An ELISA study

Gea Oliveri Conti [a, *, 1], Chiara Copat [a, 1], Zhanhui Wang [b], Placido D'Agati [a, 1], Antonio Cristaldi [a, 1], Margherita Ferrante [a, 1]

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Chemical compounds studied in this article:
Crystal violet (PubChem CID: 11057)
Chloramphenicol (PubChem CID: 5959)
Gentamicin (PubChem CID: 3467)
Fluoroquinolone (PubChem CID: 52948370)
Enrofloxacin (PubChem CID: 71188)
Malachite green (PubChem CID: 11294)
Furaltadone (PubChem CID: 9553856)
Furazolidone (PubChem CID: 5323714)
AMOZ (PubChem CID: 3016406)
AOZ (PubChem CID: 65725)

ABSTRACT

Antimicrobials are added to the feed or drinking water of food-producing ani
bility to infection, accelerate weight gain, or reduce the amount of food requi
compounds have been banned for food safety reasons, for other agents
Administration (FDA) is implementing a plan with industry to phase out a nu

The concentrations of crystal violet (CRY), chloramphenicol (CAP), gentamicin
enrofloxacin (FQ), malachite green (MG), and the metabolites of furaltadone (
antibiotics (respectively AMOZ and AOZ) were determined in 30 samples bo
aquaculture farm in eastern Sicily (Italy) using commercial ELISA Kits. Levels
detection capability were found in all feed and tissue samples. Feed containe
GEN, CRY and CAP showed the highest mean concentrations, respectively 31.8,
mean concentrations of CAP, CRY, FQ, MG, AMOZ and AOZ in muscle were 0.57,
0.09 μg kg^{-1}, respectively (the assay was not certified to determine GEN in m
detected in feed are explained by the fact that 50% of farmed fish is used
compounding bio-accumulation. Our data show that aquaculture feed and fish
crobials. Consumption of farmed fish may therefore involve a risk for consumer
the growth of antibacterial resistance. Surveys of larger feed and fish samples
more reliable assessment of consumer risk.

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1. Introduction

Low fat and high n-3 polyunsaturated fatty acid (PUFA) content make seafood a valuable element in the human diet (McManus, Fielder, Newton, & White, 2011). Several studies have found that regular fish consumption helps prevent chronic conditions such as cardiovascular disease (Albert et al. 1998; Morris et al., 1995), type 2 diabetes (Patel et al. 2009; Wallin et al. 2012), some cancers (Fernandez, Chatenoud, La Vecchia, Negri, & Franceschi, 1999; Torfadottir et al. 2013; Wu et al. 2012), overweight, and obesity (Ramel, Martinez, Kiely, Bandarra, & Thorsd
Birgisdottir, Kiely, Martinez, & Bandarra,
essential for the physiological growth and
borns (Hunter & Roberts, 2000). These impo
the WHO to hold an expert consultation on t
fish consumption, in January 2010 (WHO, 2

Rising consumer demand for seafood h
opment of modern aquaculture. However, as
& Conti, 2009; Sciacca, Ferrante, & Conti,
involve health risks (Conti et al. 2012; Copat
2013; Ferrante, Conti, Fiore, Rapisarda, & Le

Drugs including antibiotics and antifung
aquaculture to prevent or treat fish bacter
often the consequence of stress conditio
hypoxia, high nitrite and ammonia concentr

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Antibiotics and Malachite Green Residues in Farmed Rainbow Trout (Oncorhynchus Mykiss) from the Iranian Markets: a Risk Assessment

Milad Adel, Maryam Dadar & Gea Oliveri Conti

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ITALIAN JOURNAL OF PUBLIC HEALTH

Detection of trichothecene producing *Fusarium* spp. by PCR: adaptation, validation and application to fast food

Antonella Agodi[1], Martina Barchitta[1], Margherita Ferrante[2], Salvatore Sciacca[2], Ludwig Niessen[3]

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Abstract

Background. Food contamination by trichothecene mycotoxins is considered to be an emerging public health problem. The aim of this study was to validate a rapid sonification protocol, previously set up for cereal *Fusarium* DNA extraction from fast food samples, produced by a centre for research and development in the food industry in Catania, Sicily, and to validate it for a diagnostic PCR assay targeted at *tri5*, the key gene of trichothecene biosynthesis.

Methods. DNA from reference *Fusarium* spp. strains and from fast food samples was prepared, setting up an extraction protocol adapted using some modifications based on a method recently described. Validation experiments were performed: serial dilution of DNA extracted from fungal cultures were added to food samples and then DNA was extracted. Specific primer pairs were used to detect *F. graminearum* and *F. culmorum* DNA in species-specific assays as well as trichothecene-producing *Fusarium* spp. in a group-specific system.

Results. All genomic DNA extracted from trichothecene-producing *Fusarium* spp. as well as from DNA-spiked fast food samples and from food still in it's original condition resulted in the correct amplification. The detection limit was 1 x 10^{-4} µg of DNA. All fungal and food samples tested gave highly consistent results in repeatability assays, thus demonstrating the within-lab and within/between-day precision of the method.

Conclusions. Information on the epidemiology of trichothecene producing *Fusarium* through the food chain and the identification of the most frequently contaminated components of fast food are essential in order to develop effective public health strategies for minimising consumer exposure to trichothecenes.

Key words: Fusarium, fast food, trichothecenes, PCR

Introduction

Fusarium species are important toxigenic fungi from temperate regions [1] and are found worldwide in cereals and other food types for human and animal consumption. Species such as *F graminearum*, *F culmorum*, *F poae*, and *F sporotrichioides* produce mycotoxins, such as trichothecenes deoxynivalenol (DON), nivalenol (NIV), diacetoxyscripenol (DAS) and T-2 toxin, as well as polyketide estrogen analogue zearalenone (ZEA), all of which are predominant in cereals worldwide.[2] Ingestion of infected grains or cereal products containing *Fusarium* mycotoxins may cause acute or chronic effects in humans and animals.[3] The first recognized trichothecene mycotoxicosis was an outbreak of alimentary toxic aleukia in the USSR in 1932, a hemorrhagic syndrome characterized by nausea, vomiting, diarrhea, dermatitis, and extensive internal bleeding; the mortality rate was 60%.[4] There are some reports that indicate that trichothecenes may have been used as an agent for chemical warfare in South-East Asia (Lao People's Democratic Republic and Cambodia).[5,6] Common manifestations of trichothecene toxicity are depression of the immune responses, nausea and sometimes vomiting. A recent large-scale European study on the occurrence of *Fusarium* toxins (trichothecenes, fumonisins and zearalenone) [7] demonstrated that 57% and 20% of samples, mostly tested from North European countries, were positive for DON and T-2, respectively. A high frequency of DON was found in maize (89%) and wheat (61%). Thus, food contamination by trichothecene mycotoxins is considered an emerging public health problem.

Many mycotoxins are stable under normal food processing conditions and can therefore be present not only in food and animal feed but also in processed products: surveillance of retail food

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JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY

Article

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Development of a Screening Fluorescence Polarization Immunoassay for the Simultaneous Detection of Fumonisins B_1 and B_2 in Maize

Chenglong Li,[†] Tiejun Mi,[†,‡] Gea Oliveri Conti,[§] Qing Yu,[†] Kai Wen,[†] Jianzhong Shen,[†,#] Margherita Ferrante,[§] and Zhanhui Wang*[,†,#]

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Supporting Information

ABSTRACT: This paper reports the development of a screening fluorescence polarization immunoassay (FPIA) for the simultaneous detection of fumonisins B_1 (FB_1) and B_2 (FB_2) in maize. Three FB_1 tracers including FB_1-fluorescein isothiocyanate isomer I (FB_1-FITC), FB_1-5-([4,6-dichlorotriazine-2-yl]amino)-fluorescein (FB_1-5-DTAF), and FB_1-Texas Red-X succinimidyl ester (FB_1-TRX) were synthesized and studied to select appropriate tracer−antibody pairs using seven previously produced monoclonal antibodies (mAbs). An FPIA employing the pair of FB_1-FITC and mAb 4B9 showing 98.9% cross-reactivity (CR) toward FB_2 was used to simultaneously detect FB_1 and FB_2. Maize flour samples were extracted with methanol/water (2:3, v/v). After optimization, the FPIA revealed a limit of detection (LOD) of 157.4 µg/kg for FB_1 and an LOD of 290.6 µg/kg for FB_2, respectively. Recoveries were measured for spiked samples of FB_1 or FB_2 separately, ranging from 84.7 to 93.6%, with a coefficient of variation (CV) of <9.9%. Total time needed for FPIA including sample pretreatment was <30 min. The FPIA was used to screen naturally contaminated maize samples. Results detected by FPIA showed good agreement with that of HPLC-MS/MS with a fit of R^2 = 0.99 for the simultaneous detection of FB_1 and FB_2. The established method offered a rapid, simple, sensitive, and high-throughput screening tool for the detection of fumonisins in maize.

KEYWORDS: *fumonisin B_1, fumonisin B_2, fluorescence polarization immunoassay, maize, detection*

INTRODUCTION

Fumonisins are a class of mycotoxins produced as secondary metabolites by fungi of the genus *Fusarium*, notably *Fusarium verticillioides* and *Fusarium proliferatum*.[1,2] Since the first description and characterization of fumonisins in 1988, at least 18 different fumonisin analogues classified into A, B, C, and P groups have been identified.[3−6] The B group, mainly fumonisins B_1 (FB_1) and B_2 (FB_2) with a ratio of 10:3, is believed to be the most prevalent and toxic in naturally contaminated cereals throughout the world.[7,8]

Fumonisins have received much attention due to their hepatotoxicity and carcinogenic effects on animals by interfering with sphingolipid metabolism. For example, fumonisins have been implicated as contributors to leukoencephalomalacia in equines and rabbits, pulmonary edema syndrome and hydrothorax in swine, and apoptosis in the liver of rats.[4,9] In humans, there is a correlation between the consumption of FB_1 highly contaminated home-grown maize and an incidence of esophageal and liver cancer in those regions of China.[10] On the basis of these available data, the International Agency for Research on Cancer has assessed the cancer risk of FB_1 and rated it as a group 2B human carcinogen.[11]

To protect public health from unacceptable contamination, guidance or regulations for fumonisins have been enforced in many countries. The U.S. Food and Drug Administration issued recommended maximum levels of 2−4 mg/kg for total FB_1, FB_2, and fumonisin B_3 (FB_3) in human foods.[12] The scientific committee for food of the European Commission has set action levels for the sum of FB_1 and FB_2, which ranged from 200 µg/kg in processed maize-based foods and baby foods to 4000 µg/kg in unprocessed maize.[13,14]

Several analytical methods for fumonisin detection have currently been developed, including high-performance liquid chromatography (HPLC) with fluorescence detection and liquid chromatography coupled to mass spectrometry (LC-MS) or tandem mass spectrometry (LC-MS/MS).[15−17] These instrumental methods, generally suffering from sophisticated instrumentation, tedious sample preparation, and the need for highly trained/skilled technicians, especially are expensive and time-consuming for routine screening of suspected contami-

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STIMA DELL'ESPOSIZIONE AL DI-2-ETILESILFTALATO NELLA POPOLAZIONE GENERALE DELLA SICILIA ORIENTALE

M. Fiore, G. Oliveri Conti, C. Ledda, P. D'Agati, JA. Maieli Diaz, R. Fazio, S. Di Mauro, R. Fallico, M. Ferrante

Dipartimento "GF Ingrassia" – Igiene e Sanità Pubblica

Università degli Studi di Catania

Introduzione. Il di-(2-etil-esil) ftalato (DEHP) è il costituente principale del polivinicloruro. Tuttavia, esso non è chimicamente stabile all'interno del PVC e, con il passare del tempo e l'uso prolungato, migra dai prodotti che lo contengono entrando così nella catena alimentare. Il potenziale del DEHP nel produrre effetti avversi sugli esseri umani è ancora oggi oggetto di considerevole dibattito nella comunità scientifica.

Obiettivo. stimare i livelli e i profili dei metaboliti del DEHP nelle urine di un campione della popolazione catanese; confrontarli con quelli riportati da altri paesi; stimare la dose di esposizione giornaliera al DEHP.

Metodi. Il disegno dello studio è di tipo *cross-sectional*. È stata proposta la partecipazione allo studio a tutti i genitori degli studenti di un Istituto Comprensivo della Città di Catania, poi estesa ai familiari conviventi e non. Ai partecipanti allo studio, insieme ad un contenitore per la raccolta delle urine delle 24h ed alle istruzioni per effettuare tale raccolta, è stato consegnato un questionario atto a rilevare: dati socio-demografici, peso, altezza, abitudini (fumo e alcol), professione, dieta, etc. La determinazione dei metaboliti urinari del DEHP è stata effettuata tramite LC-ESI-MS. I dati raccolti sono analizzati utilizzando il programma SPSS 20.0.

Tabella 1. Livelli dei metaboliti urinari del DEHP stratificati per genere.

Metaboliti	Femmine (n=39)					Maschi (n=28)				
ug/g di creatinina										
5OH-MEHP	0,15(0,29)	0,056-0,240	0,089	0,118	0,179	0,08(0,08)	0,059-0,110	0,056	0,093	0,126
5OXO-MEHP	0,37(1,25)	-0,019-0,765	0,128	0,222	0,672	0,15(0,67)	-0,055-0,365	0,053	0,135	0,493
5CX-MEPP	0,19(0,39)	0,069-0,311	0,099	0,135	0,179	0,14(0,27)	0,058-0,230	0,072	0,111	0,205
2CX-MMHP	0,50(2,10)	-0,163-1,153	0,162	0,325	1,227	0,22(0,80)	0,023-0,524	0,067	0,235	1,155

Tabella 2. Stima del *Daily Intake* relativo ai singoli metaboliti e alla media dei tre.

	5OH-MEHP	5OXO-MEHP	5CX-MEPP	Total daily intake
n.	67	67	67	67
P5th	0,0075	0,0178	0,0385	0,0590
P25th	0,0320	0,0501	0,0385	0,0871
P50th	0,0320	0,0725	0,0385	0,1050
P75th	0,0320	0,3050	0,0385	0,2280
P95th	0,1197	1,3019	0,3925	0,8582

Risultati. Hanno aderito allo studio 73 soggetti (58,2% femmine) di età compresa tra 15 e 66 anni (età media 42,1±11,8 anni). I risultati (Tabella 1) hanno confermato una diffusa esposizione della popolazione generale al DEHP senza variazioni significative per genere ed età.

Il *Total Daily Intake* (Tabella 2) stimato non supera la *Tolerable daily intake* stabilita dall' Autorità Europea per la Sicurezza Alimentare (50 ug/d/kg-pc) e nemmeno la dose di riferimento (RfD) della US EPA (20 ug/d/kg-pc), ma ciò non consente di poter affermare che la popolazione indagata, soprattutto i gruppi più sensibili, siano protetti dai potenziali rischi legati all' attività di interferenti endocrini attribuita alle molecole da noi indagate. Nel genere femminile è stata rilevata, con maggiore frequenza rispetto ai maschi, una più elevata esposizione a breve termine (valutata sommando il DI relativo al 5OH-MEHP e quello relativo al 5OXO-MEHP). Contrariamente a quanto descritto nella letteratura non sono stati rilevati livelli di metaboliti urinari più elevati nei soggetti che dichiarano di consumare "cibi in scatola" e "cibi confezionati in buste" e quelli che usano "riscaldare gli alimenti nel forno a microonde in contenitori e/o piatti di plastica". Il confronto dei livelli urinari dei metaboliti del DEHP con le aree di residenza ha evidenziato un' esposizione significativamente più elevata nell' area non urbana per i seguenti metaboliti: 5OXO-MEHP, 5CX-MEPP (p=0,014; p=0,019).

Conclusioni. I nostri risultati hanno confermato una diffusa esposizione non professionale al DEHP nella popolazione generale. Essendo l' esposizione al DEHP un problema emergente, è importante fornire dati relativi all' esposizione allo scopo di indagare possibili differenze fra gruppi di persone e di poter studiare il trend di esposizione negli anni futuri, specialmente nel caso che il loro uso fosse ulteriormente regolamentato dal legislatore.

Bibliografia.

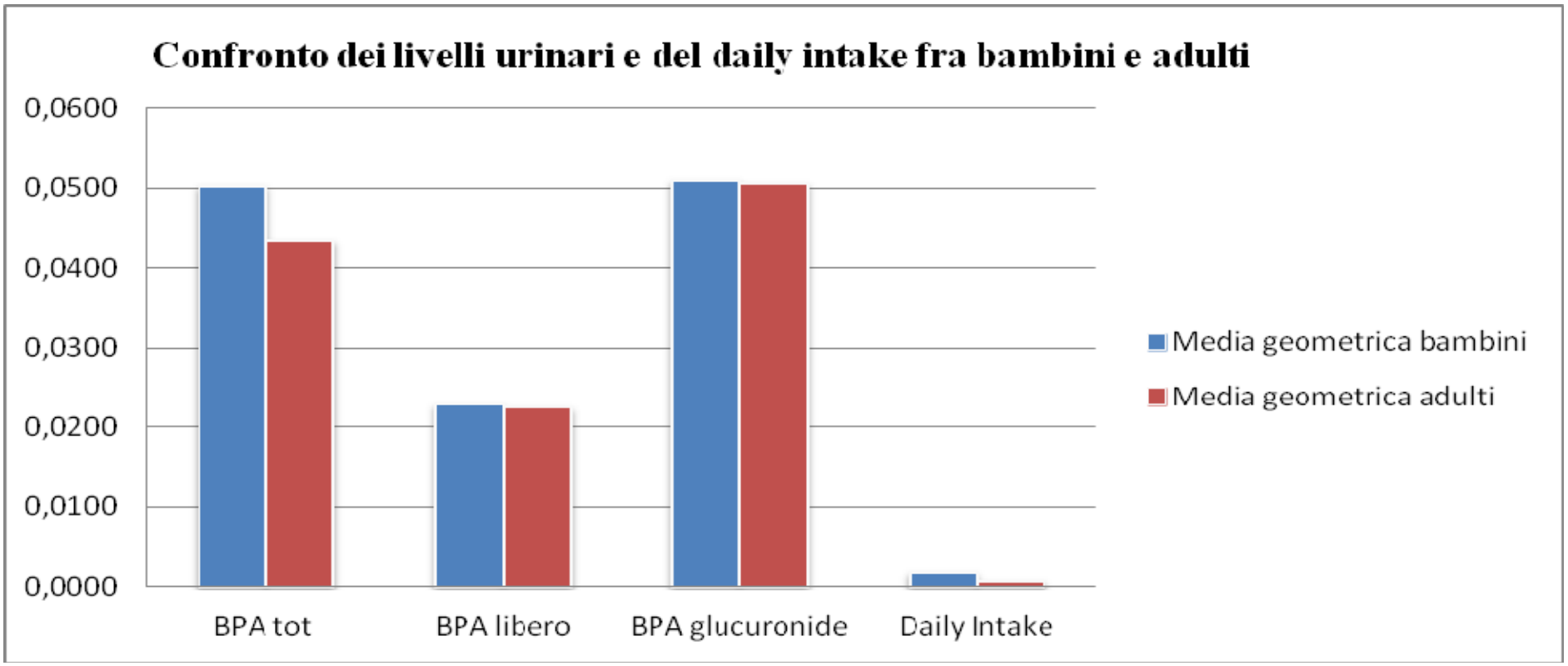
•Wittassek, M., Heger, W., Koch, H.M., Becker, K., Angerer, J., Kolossa-Gehring, M. Daily intake of di(2-ethylhexyl)phthalate (DEHP) by German children - A comparison of two estimation models based on urinary DEHP metabolite levels(2007) International Journal of Hygiene and Environmental Health, 210 (1), pp. 35-42.

• Koch, H.M., Preuss, R., Angerer, J., Foster, P., Sharpe, R., Toppari, J. Di(2-ethylhexyl)phthalate (DEHP): Human metabolism and internal exposure - An update and latest results (2006) International Journal of Andrology, 29 (1), pp. 155-165.

ESCREZIONE URINARIA DI BISFENOLO “A” IN BAMBINI, ADOLESCENTI E ADULTI: STIMA DELLA DOSE GIORNALIERA E DELLE POSSIBILI FONTI DI ESPOSIZIONE

Variabile (aulti)	Femmine (N=18) n(%)	Maschi (N=12) n(%)	Pop. Totale (N=30) n(%)
Età [a]	42,5±13,1	47,3±13,7	44,4±13,4
Altezza (cm) [a]	162,9±6,6	176,2±7,7	167,9±9,5
Peso (kg) [a]	68,2±13,1	81,9±12,7	73,7±14,4
IMC (kg/m^2) [a b]	25,7±4,5	23,6±2,7	25,9±3,8
Titolo di studio			
Licenza scuola media inferiore	2(11,1)	3(25)	5(16,7)
Licenza scuola media superiore	5(27,8)	4(33,3)	9(30,0)
Laurea	11(61,1)	5(41,7)	16(53,3)
Fumatori abituali	2(11,1)	2(16,7)	4(13,3)
Bevitori	6(33,0)	6(50,0)	12(40,0)
E’ allergico	9(50,0)	2(16,7)	11(36,7)
Effettua terapie	7(41,2)	4(36,4)	11(39,3)
Riscalda gli alimenti nel forno a microonde in contenitori e/o piatti di plastica	5(27,8)	5(41,7)	10(33,3)
Consuma cibi in scatola	9(50,0)	6(50,0)	15(50,0)
Consuma cibi confezionate in buste	10(55,6)	5(41,7)	15(50,0)

Variabile (bambini)	Femmine (N=12) n(%)	Maschi (N=10) n(%)	Pop. Totale (N=22) n(%)
Età [a]	5,8±1,7	8,1±2,6	6,7±2,3
Altezza (cm) [a]	112±8,3	129±16,1	119±15
Peso (kg) [a]	20,3±2,9	29,3±9,2	24,1±7,6
E’ allergico	1(8,3)	2(20,0)	3(13,6)



Dai risultati si evidenzia una maggiore esposizione dei bambini rispetto agli adulti, anche se non significativa.

	BPA tot	BPA libero	BPA glucuronide	Daily Intake
	µg/L (IC 95%)	µg/L (IC 95%)	µg/L (IC 95%)	µg/kg$_{pc}$/dì (IC 95%)
Media geometrica bambini	0,0575 (0,053-0,062)	0,0309 (0,015-0,047)	0,0578 (0,056-0,060)	0,0028 (-0,013-0,018)
Media geometrica bambine	0,0451 (0,034-0,056)	0,0179 (0,003-0,033)	0,0454 (0,035-0,056)	0,0014 (-0,008-0,011)

I bambini sono più esposti delle bambine

Gli adulti del genere femminile più dei maschi

	BPA tot	BPA libero	BPA glucuronide	Daily Intake
	µg/L (IC 95%)	µg/L (IC 95%)	µg/L (IC 95%)	µg/kg$_{pc}$/dì (IC 95%)
Media geometrica maschi	0,0390 (0,027-0,051)	0,0232 (0,008-0,039)	0,0437 (0,033-0,055)	0,0007 (0,0004-0,001)
Media geometrica femmine	0,0468 (0,040-0,055)	0,0221 (0,009-0,035)	0,0560 (0,052-0,060)	0,0009 (0,0006-0,001)

Prevalence and age at diagnosis of Autism Spectrum Disorder (ASDs) in south Italy, 2004–2014

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PROGETTO DI RICERCA: Indagine sulla distribuzione spazio-temporale dei Disturbo Autistico e sui potenziali fattori di rischio nella Sicilia Orientale.

Obiettivi

1. Descrivere **differenze geografiche e/o temporali** del Disturbo Autistico (F84.0) nella popolazione della Sicilia Orientale, al fine di fornire i primi elementi utili per un successivo approfondimento epidemiologico.
2. Indagare l'ipotesi che i bambini con Disturbo Autistico possano mostrare anomali livelli di **metalli tossici**, o essere carenti di **elementi essenziali**, attraverso l'analisi dei loro livelli nei capelli e l'eventuale correlazione con: gravità dell'autismo, disturbi gastrointestinali, anomala permeabilità della parete intestinale e alterazioni dismetaboliche complesse.
1. Valutare l'efficacia di **diete specifiche** o assunzione di **integratori**

Results

DAL 2004 AL 2014, I CASI REGISTRATI NELLA FASCIA DI ETA' 0-17 ANNI ERANO 1122 (79.8% MASCHI). LA PREVALENZA ASDs per 4.8/10,000 (95%CI=1.3-11.0) (M=7.5; 95%CI=3.1-15.1; F=2.0; 95%CI=0.3-0.8).

DAL 2004-2009 AL 2010-2014, LA PREVALENZA ASDs per 10,000 HA MPSTRATO UN SIGNIFICATIVO INCREMENTO (4.5; 95%CI=1.3-11,0; 5.2 95%CI=1.8-12). (IQR)DI ASDs ERA 4 (3-8) ANNI.

DAL 2004-2009 AL 2010-2014, L'ETA' MEDIANA ALLA DIAGNOSI (IQR) E' DIMINUITA DA 5 (3-9) A 4 (3-7).

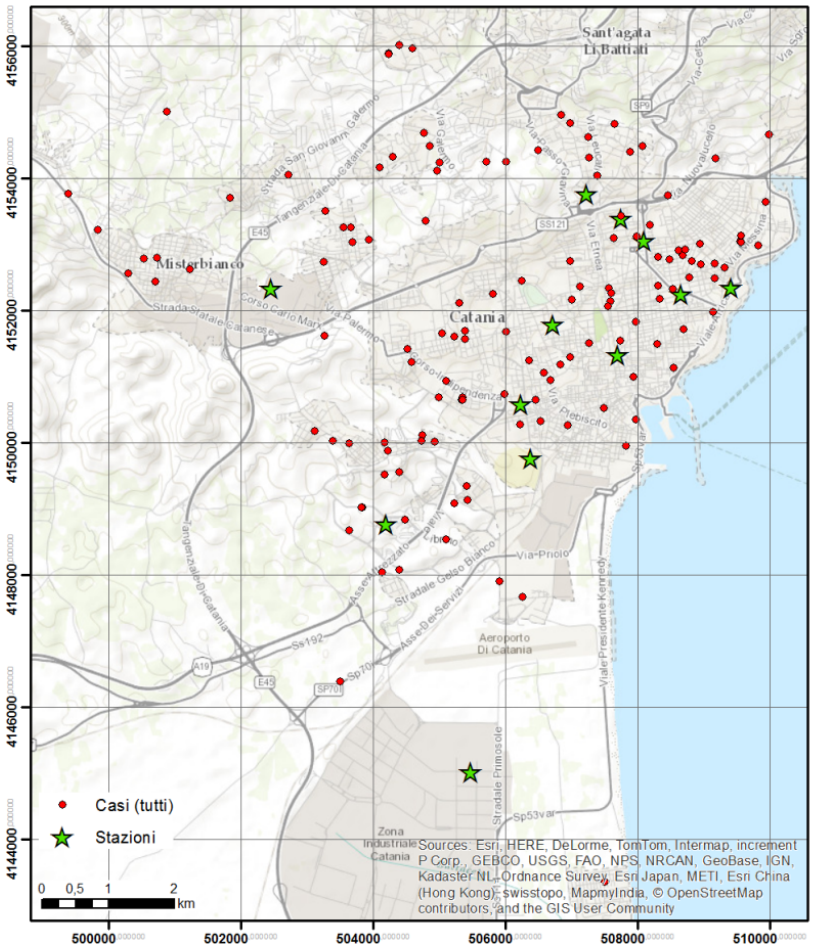
NELL'AREA RURALE E' STATA TROVATA UNA ETA' MEDIANA ALLA DIAGNOSI SIGNIFICATIVAMENTE PIU' ALTA RISPETTO ALL'AREA URBANA (7vs5 ANNI; p<0,001)

Conclusions

I nostri risultati riflettono la prevalenza ufficiale di ASDs registrati, tuttavia si prevede che potrebbe essere più elevata nel nostro paese. C'è un notevole divario tra l'età in cui è possibile una diagnosi accurata dei ASDs e l'età media alla quale sono attualmente diagnosticati. Individuazione e il trattamento precoce sono due dei fattori più importanti di ottimizzazione del risultato. Inoltre, la diagnosi è di solito una condizione necessaria per le famiglie per avere accesso al trattamento precoce perciò ridurre l'età della diagnosi è diventata una delle più grandi priorità del settore.

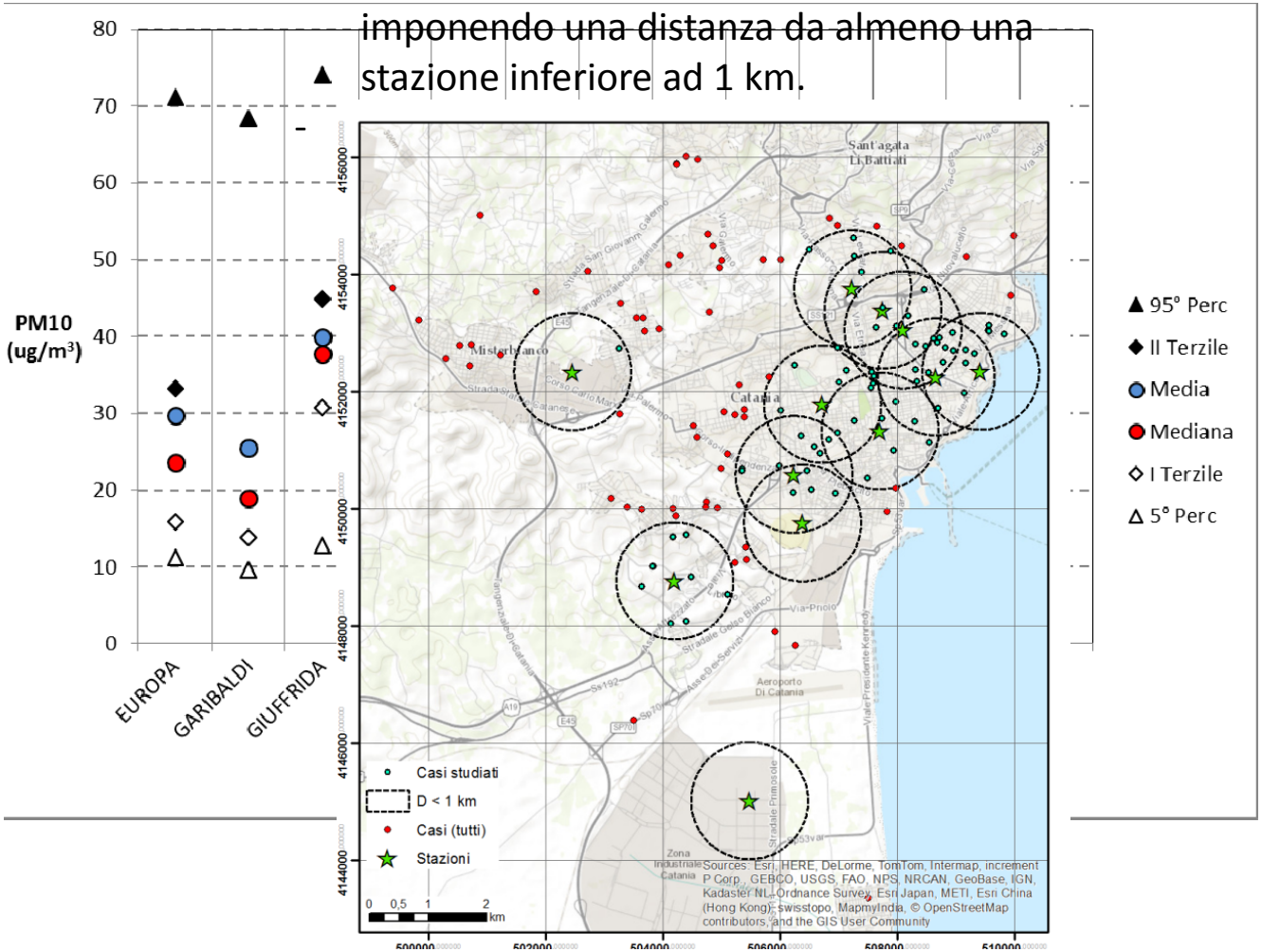
Casi e stazioni: Localizzazioni

- Sono state selezionate le 11 stazioni della Banca dati BRACE per le quali vi sono misure di PM10 nel periodo 2005-2012
- Riferimento cartografico: ED50-UTM33
- Casi: 135



Casi e stazioni: Analisi di Vicinanza

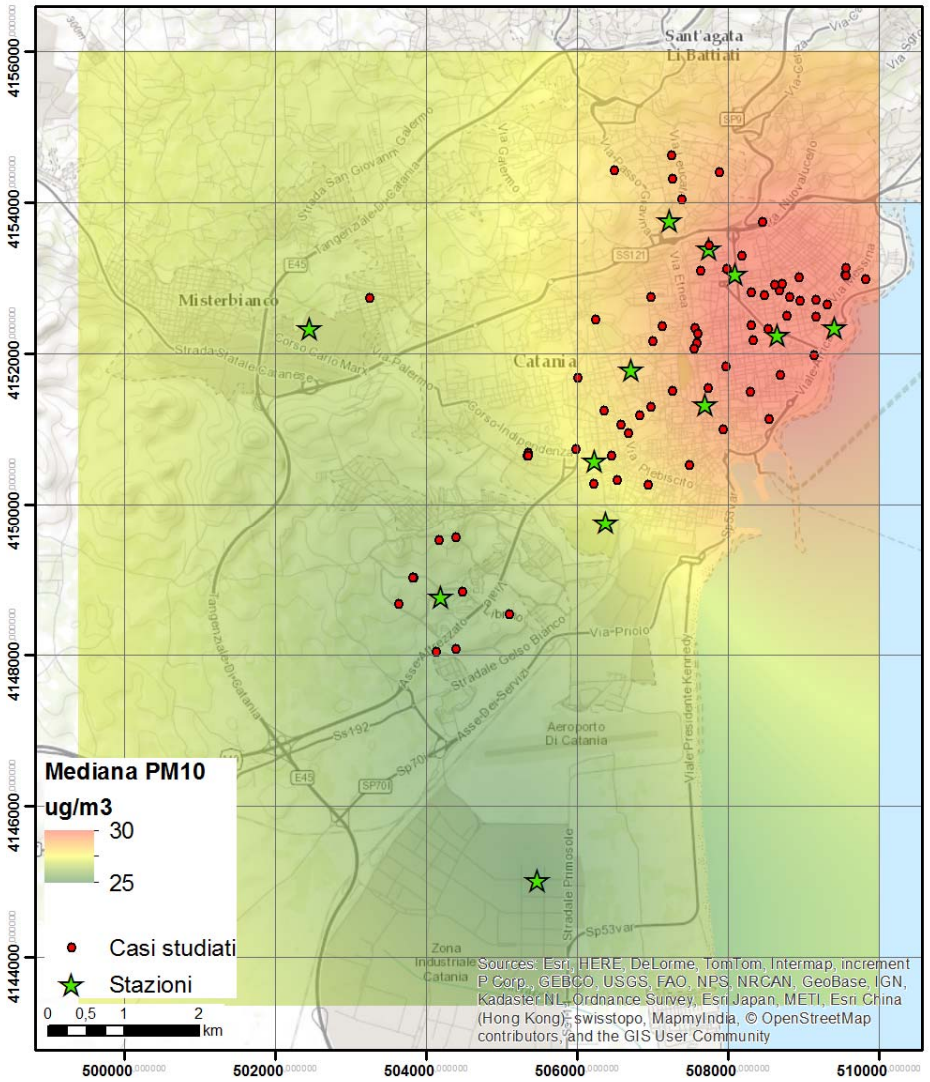
- Alcuni Casi sono stati ritenuti troppo distanti dai punti di misura
- Sono stati isolati i Casi da studiare imponendo una distanza da almeno una stazione inferiore ad 1 km.



Spazializzazione delle misure di PM10

-E’ stata ottenuta la distribuzione spazialmente continua (mappa) di PM10 tramite interpolatore Kriging
-Nell’esempio riportato è stata usata la Mediana dei valori di PM10 (l’analoga mappa ottenuta con la media non mostra grandi differenze)

Per confermare che l’addensamento dei casi nelle Zone a crescente inquinamento da PM 10 sia significativo stiamo ultimando uno studio caso controllo.



Inquinamento del suolo

SLA Epidemiologic study in the Emilia-Romagna and Sicily regions

- Based on all cases diagnosed from 1998 afterwards
- Cases and randomly selected controls residing in the provinces of Modena, Reggio-Emilia, Parma (northern Italy) and of Catania (southern Italy)
- 12,000.44 Km^2 total area – nearly 3,000,000 residents

Environmental risk factors investigated in the study:

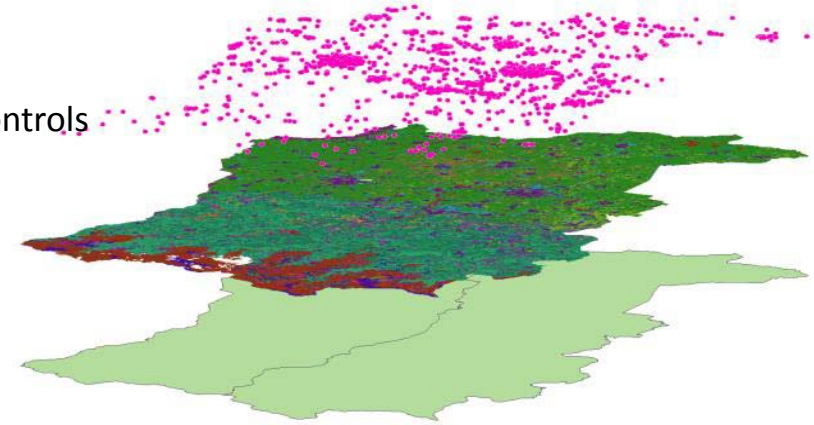
- pesticides use
- vicinity to water bodies for cyanobacterial contamination
- air pollution from traffic and industrial sources
- magnetic fields

Recovery of the residential history of cases and controls and placement in a GIS database through software ARC-GIS (ESRI, 2008)

The various layers composing GIS database:

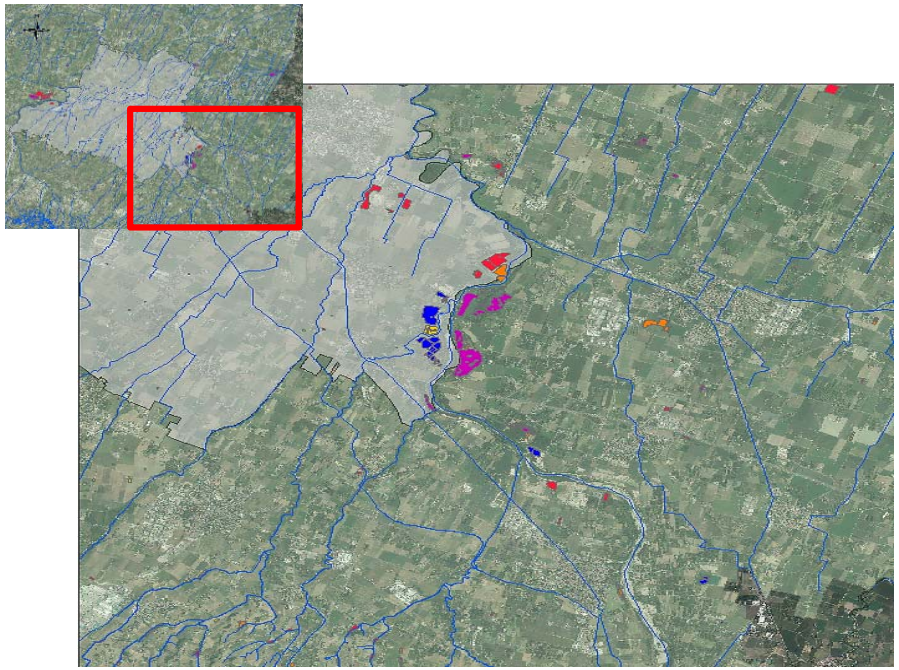
Layer a: positioning of cases and controls

Layer b: “land use” theme

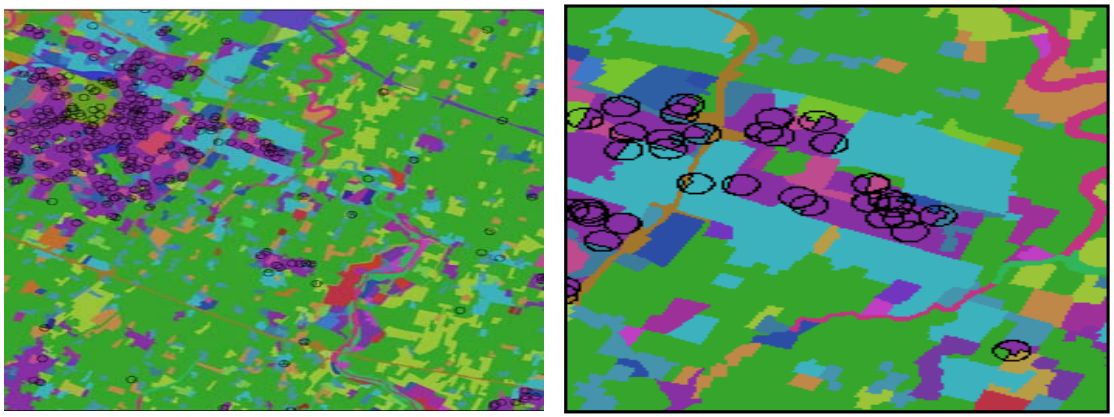


Valutazione della esposizione ambientale a pesticidi:

Uso del suolo da foto aeree



Studio GIS: creazione del buffer



Buffer con raggio di 100 metri costruiti attorno alle residenze dei soggetti in studio sovrapposti all'immagine contenente i dati relativi all'uso del suolo

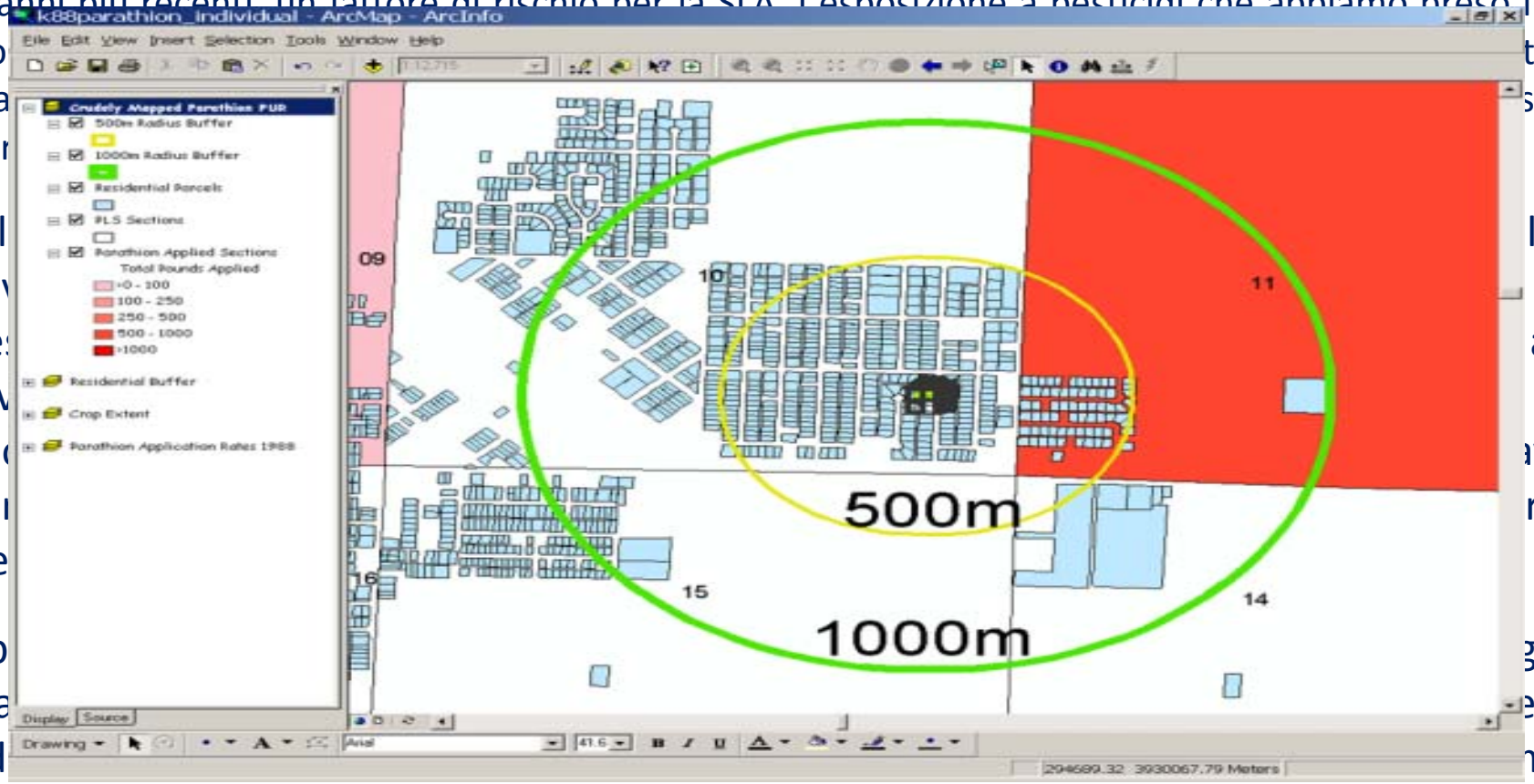
I PESTICIDI QUALI POSSIBILI FATTORI AMBIENTALI DI RISCHIO NELLA SCLEROSI LATERALE AMIOTROFICA: UNO STUDIO CASO-CONTROLLO DI POPOLAZIONE IN SICILIA

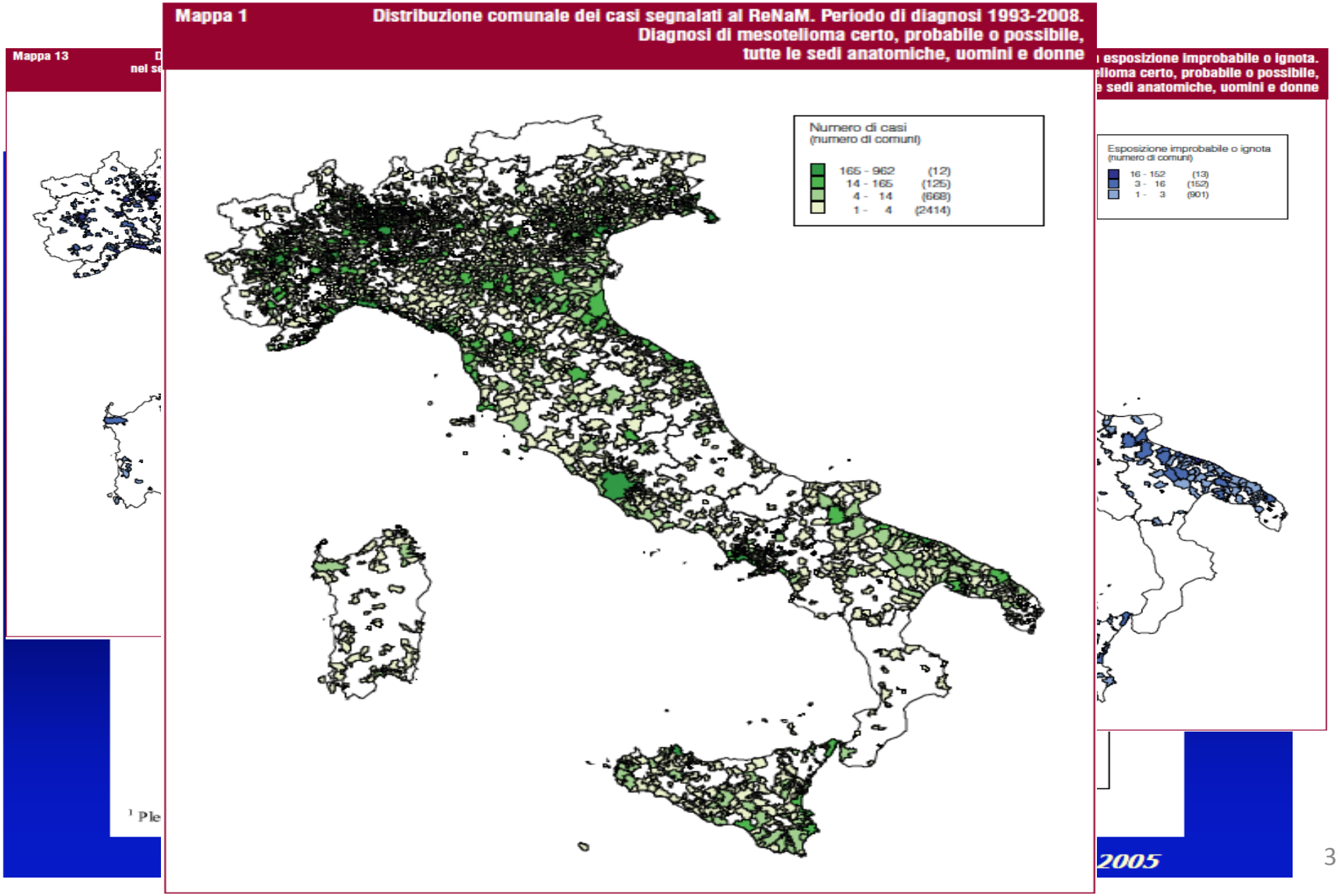
Studio caso-controllo di popolazione in due province emiliane (Modena, Reggio Emilia) e in una provincia siciliana (Catania), al fine di valutare se l'esposizione a questi tossici abbia rappresentato, nel corso degli anni più recenti, un fattore di rischio per la SLA. L'esposizione a pesticidi che abbiamo preso in esame nel no te presso coltiva sione per via aer

L'anal l rischio relati attività profe appare, tuttav tempo inferi avorativi di du risposta tra l'e

L'elab gnosi ha indica e hanno risied nanenza superiori ai 20 anni (RR=2,31; IC 95% 0,61-8,78).

Parathion applications with 500m or 1000m buffers from residential or occupational address



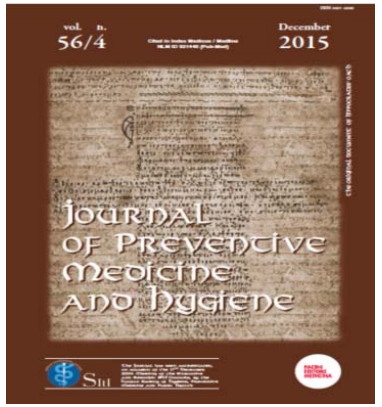

Mappa 1
Distribuzione comunale dei casi segnalati al ReNaM. Periodo di diagnosi 1993-2008.
Diagnosi di mesotelioma certo, probabile o possibile,
tutte le sedi anatomiche, uomini e donne
Numero di casi
(numero di comuni)
165 - 962 (12)
14 - 165 (125)
4 - 14 (668)
1 - 4 (2414)
Mappa 13
esposizione improbabile o ignota.
elioma certo, probabile o possibile,
e sedi anatomiche, uomini e donne
Esposizione improbabile o ignota
(numero di comuni)
16 - 152 (13)
3 - 16 (152)
1 - 3 (901)
2005

FERRANTE M., Sciacca S., Fallico R. "Amianto quali prospettive" Annali di Igiene, Medicina Preventiva e di Comunità, 2000, 12, 161-173 - E009367 - issn: 1120-9135.

M. FERRANTE, R.Fallico, M.V. Brundo, G. Caltavituro, G. Mirata, G. Oliveri Conti,M. Salemi, S. Sciacca. : " Tecniche per l'analisi quali-quantitativa per la bonifica dei siti contaminati da amianto." Journal of Preventive Medicine and Hygiene, 2004, 45, 379 - ISBN/ISSN: 1121-2233.

M. FERRANTE, R.Fallico, M.V. Brundo, G. Caltavituro, G. Mirata, P. Cutello, M. Salemi, S. Sciacca.: " Recupero e monitoraggio di un sito contaminato con amianto." Journal of Preventive Medicine and Hygiene, 2004, 45, 380 - ISBN/ISSN: 1121-2233.

Caltavituro G., Mirata G., Brundo M.V., Calabretta L., Di Mattia P., *FERRANTE M.*, Sciacca S. Indagine per l'individuazione di fibre di amianto in un'area industrializzata della provincia di Catania. Panorama della Sanità, Roma, ESSE Editrice. 2006; Supplemento 39:307- ISBN/ISSN: E192457.



Mirata G., Caltavituro G., Brundo M.V., Calabretta L., Di Mattia P., *FERRANTE M.*, Sciacca S. Amianto e Rotabili: un problema in fase di risoluzione. Panorama della Sanità, Roma, ESSE Editrice. 2006; Supplemento 39:307- ISBN/ISSN: E192457.

M Zuccarello, F Bella, G Oliveri Conti, V Brundo, J A Maieli Diaz, M Ferrante. Valutazione dell'esposizione dei lavoratori a fibre asbestiformi durante la perimetrazione dell'area di monte Calvario (Biancavilla). Panorama della Sanità. 2008; Supplemento 36:381. ISSN 1827-8140.

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PMCID: PMC4467220

Detection of pleural plaques in workers exposed to inhalation of natural fluoro-edenite fibres

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Sheep lymph-nodes as a biological indicator of environmental exposure to fluoro-edenite

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