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PRESENTAZIONE

L'idea di una rassegna degli articoli scientifici pubblicati dai ricercatori su riviste internazionali, peer-reviewed e indicizzate, nasce dalla necessità di dare visibilità a questo tipo di trasferimento dei risultati delle attività di ricerca anche al di fuori della comunità scientifica. Infatti, questa produzione, benché contribuisca significativamente al prestigio dell'Istituto, è difficilmente fruibile al di fuori di un ristretto gruppo di specialisti, in quanto gli argomenti sono molto tecnici, viene pubblicata in lingua inglese, e non sempre le riviste sono accessibili gratuitamente. Gli articoli vengono menzionati, solo con la citazione, nei consuntivi annuali dei piani di attività, che hanno però una ben diversa finalità e diffusione.

La raccolta degli articoli pubblicati nel secondo trimestre 2024 consta di 22 articoli, nei quali almeno uno degli autori è un ricercatore Inail. La multidisciplinarietà che caratterizza le tematiche affrontate, il cui filo conduttore è sempre la salute e sicurezza del lavoro, rispecchia la natura dei dipartimenti scientifici.

L'indice degli articoli è presentato in ordine alfabetico e contiene i collegamenti ipertestuali alle schede riassuntive, che riportano il titolo, i nomi degli autori, l'abstract in inglese, un breve sunto in italiano che ne rende il contenuto fruibile ad un'ampia platea di lettori e il link al full text (nel caso di riviste open access) per consentire la lettura dell'articolo originale a chi sia interessato.

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A CONCEPTUAL FRAMEWORK TO DEFINING LEADING INDICATORS TO MEASURE SAFETY MANAGEMENT SYSTEM PERFORMANCE

Pera F, Murino T, Madonna M, Di Nardo M, Bizzarro R.

SUMMARY

The measurement of health and safety management performance in organizations is a key step, as well as in any management process, as it provides information to identify the critical areas that require actions to achieve continuous improvement. Within the safety management system (SMS), the performance measurement is therefore associated with the check step in the plan-do-check-act (PDCA) cycle. However, it is also in the planning phase that we need to think about what we will have to measure in order to be able to make decisions in key areas. Unfortunately, based on existing literature and standardization, there is no unique checklist for measuring the performance of safety management systems. Although theorists and researchers have not yet found standard indicators for measuring the SMS performance, they seem to agree in classifying performance indicators into lagging and leading indicators. While lagging indicators measure the frequency of injuries, illnesses and fatalities that occurred in the past, leading indicators provide information about safety and health activities by enabling organizations to implement preventive measures.

In this paper, the authors have proposed a conceptual framework for defining key indicators to measure safety performance. The objective is to design a structured path to identify indicators, among those existing in the literature and those widely used by experts, for each element of the SMS. The steps for using these indicators are also traced.

BREVE SINTESI

Teorici e ricercatori non hanno ancora trovato o definito indicatori standard per misurare la performance di un sistema di gestione della sicurezza, ma sembrano concordare nel classificare gli indicatori di performance in indicatori ritardati e indicatori anticipatori.

In questo articolo, gli autori hanno proposto un quadro concettuale per definire gli indicatori chiave per misurare le prestazioni di sicurezza.

CITAZIONE BIBLIOGRAFICA

Pera F, Murino T, Madonna M, Di Nardo M, Bizzarro R. A Conceptual Framework to Defining Leading Indicators to Measure Safety Management System Performance. CET. 2023;99:439-444.

DOI: <https://doi.org/10.3303/CET2399074>

A LIQUID CHROMATOGRAPHY-MASS SPECTROMETRY METHOD FOR THE ENANTIOSELECTIVE MULTIRESIDUE DETERMINATION OF NINE CHIRAL AGROCHEMICALS IN URINE USING AN ENRICHMENT PROCEDURE BASED ON GRAPHITIZED CARBON BLACK

Lucci E, Antonelli L, Gherardi M, Fanali C, Fanali S, Scipioni A, Lupattelli P, Gentili A, Chankvetadze B.

SUMMARY

Many agrochemicals are chiral molecules, and most of them are marketed as racemates or diastereomeric mixtures. Stereoisomers that are not the active enantiomer have little or no pesticidal activity and can exert serious toxic effects towards non-target organisms. Thus, investigating the possible exposure to different isomers of chiral pesticides is an urgent need. The present work was aimed at developing a new enantioselective high-performance liquid chromatography-mass spectrometry method for the simultaneous determination of nine chiral pesticides in urine. Two solid-phase extraction (SPE) procedures, based on different carbon-based sorbents (graphitized carbon black (GCB) and buckypaper (BP)), were developed and compared. By using GCB, all analytes were recovered with yields ranging from 60 to 97%, while BP allowed recoveries greater than 54% for all pesticides except those with acid characteristics. Baseline separation was achieved for the enantiomers of all target agrochemicals on a Lux Cellulose-2 column within 24 min under reversed-phase mode. The developed method was then validated according to the FDA guidelines for bioanalytical methods. Besides recovery, the other evaluated parameters were precision (7–15%), limits of detection (0.26–2.21 µg/L), lower limits of quantitation (0.43–3.68 µg/L), linear dynamic range, and sensitivity. Finally, the validated method was applied to verify the occurrence of the pesticide enantiomers in urine samples from occupationally exposed workers. Graphical Abstract: (Figure presented.) © The Author(s), under exclusive licence to Springer-Verlag GmbH, DE part of Springer Nature 2023.

BREVE SINTESI

Nell'ambito dell'attività di ricerca sull'esposizione a pesticidi in agricoltura in ottica "one health", un aspetto importante che si considera è quello di valutare la presenza di agrofarmaci con sostanze attive che sono molecole chirali, commercializzati come racemati o miscele di diastereoisomeri. Gli stereoisomeri che non sono l'enantiomero attivo, sebbene abbiano scarsa o nulla attività pesticida, possono però esercitare gravi effetti tossici verso organismi non bersaglio, esseri umani inclusi. In particolar modo è importante monitorare l'eventuale presenza di residui di pesticidi nelle urine del personale maggiormente esposto a questi prodotti chimici, come gli agricoltori. A tal fine, nel contesto della chimica analitica verde, è stato sviluppato un nuovo metodo estrattivo e di analisi enantioselettiva HPLC-MS/MS per la determinazione di 9 pesticidi chirali in campioni di urina umana.

CITAZIONE BIBLIOGRAFICA

Lucci E, Antonelli L, Gherardi M, Fanali C, Fanali S, Scipioni A, Lupattelli P, Gentili A, Chankvetadze B. A liquid chromatography-mass spectrometry method for the enantioselective multiresidue determination of nine chiral agrochemicals in urine using an enrichment procedure based on graphitized carbon black. *Anal Bioanal Chem.* 2024;416(5):1127-1137.

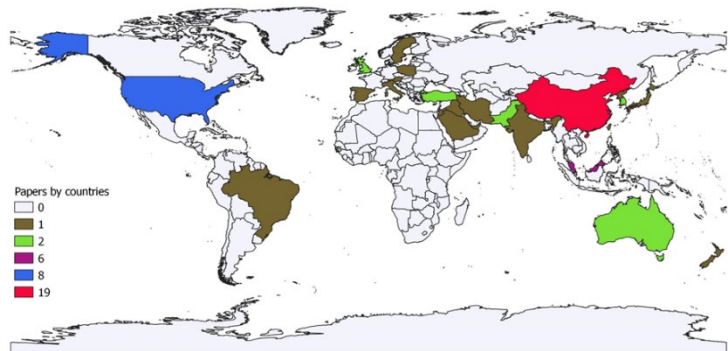
DOI: <https://doi.org/10.1007/s00216-023-05098-4>

A REVIEW OF DATA MINING STRATEGIES BY DATA TYPE, WITH A FOCUS ON CONSTRUCTION PROCESSES AND HEALTH AND SAFETY MANAGEMENT

Pireddu A, Bedini A, Lombardi M, Ciribini ALC, Berardi D.

SUMMARY

The review is conducted under the research programs of the National Institute for Occupational Accident Insurance (Inail). The research question focuses on identifying which data mining (DM) methods, among supervised, unsupervised, and others, are most appropriate for certain investigation objectives, types, and sources of data, as



defined by the authors. Scopus and ProQuest were the main sources from which we extracted studies in the field of construction, published between 2014 and 2023. We applied the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA), the hierarchical clustering, the principal component analysis (PCA) and meta-analysis. We obtained 63 articles, 206 observations, 89 methodologies, 4 survey purposes, 3 data sources, 7 data types, and 3 resource types. Cluster analysis and PCA provided two dimensions and labels: "supervised methods, institutional dataset, and predictive and classificatory purposes" and the second, Dim2 "not-supervised methods; project, simulation, literature, text data; monitoring, decision-making processes; machinery and environment". We obtained information on the most suitable DM methods for use in the construction industry. The meta-analysis provided an overall estimate of the better effectiveness of supervised methods.

BREVE SINTESI

La *review* identifica i metodi di data mining (DM) più appropriati per obiettivo di indagine, tipo e fonte di dati. Scopus e ProQuest sono state le fonti da cui abbiamo tratto gli studi nel campo delle costruzioni tra il 2014 e 2023. Il metodo Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) ha fornito 63 articoli, 206 osservazioni, 89 metodi, 4 scopi di indagine, 3 tipi di risorse, 3 e 7 tra fonti e tipi di dati. Mediante il clustering gerarchico, l'analisi delle componenti principali (PCA) e la meta-analisi abbiamo ricondotto le informazioni fornite dagli articoli a due componenti: Dim1 "metodi supervisionati, dataset istituzionali, scopi predittivi e classificatori" e Dim2 "metodi non supervisionati; progetti, simulazioni, letteratura, dati testuali; monitoraggio, processi decisionali; macchinari e ambiente". Abbiamo individuato i metodi supervisionati, non supervisionati e altri. La meta-analisi ha evidenziato una migliore efficacia dei metodi supervisionati.

CITAZIONE BIBLIOGRAFICA

Pireddu A, Bedini A, Lombardi M, Ciribini ALC, Berardi D. A Review of Data Mining Strategies by Data Type, with a Focus on Construction Processes and Health and Safety Management. *Int. J. Environ. Res. Public Health*. 2024;21:831.

DOI: <https://doi.org/10.3390/ijerph21070831>

ALTERATIONS IN STEP WIDTH AND REACTION TIMES IN WALKING SUBJECTS EXPOSED TO MEDIOLATERAL FOOT-TRANSMITTED VIBRATION

Marrone F, Marelli S, Bertozzi F, Goggi A, Marchetti E, Galli M, Tarabini M.

SUMMARY

This study explores how low-frequency foot-transmitted vibration (FTV) affects both gait parameters and cognitive performance. Twenty healthy male participants experienced harmonic mediolateral FTV (1.25 Hz, 1 m/s²) while either standing or walking on a treadmill. We assessed participants' reaction times to visual stimuli using a psychomotor vigilance task (PVT) test under five conditions, including (i) baseline (standing still without vibration), (ii) vibration (standing still with vibration), (iii) walking (walking without vibration), (iv) walking with vibration, and (v) post-test (standing still without vibration after the tests). Additionally, the step width (SW) was measured with a camera system in conditions (iii) and (iv), i.e., when participants were walking with and without vibration and during PVT execution. The results showed that the average vigilance decreased, and the step width increased while walking and/or with vibration exposure. These findings suggest a potential connection between decreased vigilance, increased step width, and the need for enhanced stability, focusing on balance maintenance and a wider base of support. Implications for future standard revisions are presented and discussed.

BREVE SINTESI

Questo lavoro vuole rilevare gli effetti sulle caratteristiche del passo e sulle capacità cognitive dell'esposizione a vibrazioni laterali al corpo intero.

I risultati mostrano una riduzione media dell'attenzione ed una crescita e della lunghezza del passo. Questo suggerisce una potenziale correlazione tra queste due osservabili, dovuta probabilmente alla necessità di aumentare l'attenzione per non cadere e ad allargare il passo per migliorare l'appoggio.

CITAZIONE BIBLIOGRAFICA

Marrone F, Marelli S, Bertozzi F, Goggi A, Marchetti E, Galli M, Tarabini M. Alterations in Step Width and Reaction Times in Walking Subjects Exposed to Mediolateral Foot-Transmitted Vibration. *Vibration*. 2024;7:374–387.

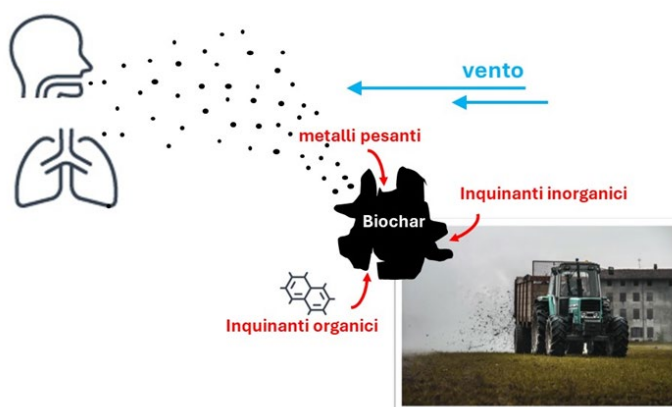
DOI: <https://doi.org/10.3390/vibration7020019>

BIOCHAR DUST EMISSION: IS IT A HEALTH CONCERN? PRELIMINARY RESULTS FOR TOXICITY ASSESSMENT

Pinelli S, Rossi S, Malcevschi A, Miragoli M, Corradi M, Selis L, Tagliaferri S, Rossi F, Cavallo D, Ursini CL, Poli D, Mozzoni P.

SUMMARY

Biochar is currently garnering interest as an alternative to commercial fertilizer and as a tool to counteract global warming. However, its use is increasingly drawing attention, particularly concerning the fine dust that can be developed during its manufacture, transport and use. This work aimed to assess the toxicity of fine particulate Biochar (<PM10) via in-vitro and in-vivo experiments as a first step for the evaluation of toxicity values. As in-vitro experiments, cell lines showed inhibition of proliferation following the reduction of expression genes involved in cell cycle control, increase in the production of ROS and IL-8, and decrease in intracellular ATP. In-vivo rat exposure induced hyperemia, edema, and inflammatory phenomena with infiltrations of neutrophil granulocytes and macrophages at the alveolar and bronchiolar levels. Both in-vitro and in-vivo studies highlighted how exposure to Biochar particulates leads to an inflammatory condition and oxidative stress.



BREVE SINTESI

Il Biochar è un carbone a grana fine utilizzato in agricoltura. Può essere contaminato da agenti chimici pericolosi con un conseguente rischio di esposizione occupazionale. Non sono ancora stati identificati valori limite di esposizione occupazionale per cui vengono applicati i limiti previsti per le polveri aerodisperse. Lo scopo del lavoro è quello di valutare la tossicità del particolato di Biochar attraverso studi *in vitro* e *in vivo* come primo step nell'identificazione di valori limite di esposizione.

CITAZIONE BIBLIOGRAFICA

Pinelli S, Rossi S, Malcevschi A, Miragoli M, Corradi M, Selis L, Tagliaferri S, Rossi F, Cavallo D, Ursini CL, Poli D, Mozzoni P. Biochar dust emission: Is it a health concern? Preliminary results for toxicity assessment. *Environmental Toxicology and Pharmacology*. 2024;109:104477.

DOI: <https://doi.org/10.1016/j.etap.2024.104477>

CHOLANGIOMI CARCINOMA AND OCCUPATIONAL EXPOSURE TO ASBESTOS: INSIGHTS FROM THE ITALIAN POOLED COHORT STUDY

Curti S, Gallo M, Ferrante D, Bella F, Boschetti L, Casotto V, Ceppi M, Cervino D, Fazzo L, Fedeli U, Giorgi Rossi P, Giovannetti L, Girardi P, Lando C, Migliore E, Miligi L, Oddone E, Perlangeli V, Perneti R, Piro S, Storchi C, Tumino R, Zona A, Zorzi M, Brandi G, Ferretti S, Magnani C, Marinaccio A, Mattioli S.

SUMMARY

Background: Recent studies supported the association between occupational exposure to asbestos and risk of cholangiocarcinoma (CC). Aim of the present study is to investigate this association using an update of mortality data from the Italian pooled asbestos cohort study and to test record linkage to Cancer Registries to distinguish between hepatocellular carcinoma (HCC) and intrahepatic/extrahepatic forms of CC.

Methods: The update of a large cohort study pooling 52 Italian industrial cohorts of workers formerly exposed to asbestos was carried out. Causes of death were coded according to ICD. Linkage was carried out for those subjects who died for liver or bile duct cancer with data on histological subtype provided by Cancer Registries.

Results: 47 cohorts took part in the study (57,227 subjects). We identified 639 causes of death for liver and bile duct cancer in the 44 cohorts covered by Cancer Registry. Of these 639, 240 cases were linked to Cancer Registry, namely 14 CC, 83 HCC, 117 cases with unspecified histology, 25 other carcinomas, and one case of cirrhosis (likely precancerous condition). Of the 14 CC, 12 occurred in 2010-2019, two in 2000-2009, and none before 2000.

Conclusion: Further studies are needed to explore the association between occupational exposure to asbestos and CC. Record linkage was hampered due to incomplete coverage of the study areas and periods by Cancer Registries. The identification of CC among unspecific histology cases is fundamental to establish more effective and targeted liver cancer screening strategies.

BREVE SINTESI

L'associazione fra insorgenza di colangiocarcinoma ed esposizione ad amianto è attualmente dibattuta nella letteratura scientifica internazionale. Il lavoro riferisce dell'analisi dell'incidenza di colangiocarcinoma fra i soggetti delle coorti dei lavoratori esposti ad amianto in Italia (47 coorti per un totale di oltre 55.000 lavoratori). I risultati confermano la necessità di approfondire il tema, anche attraverso la migliore definizione diagnostica dei casi, anche al fine dei riflessi di ordine medico-legale e di tutela assicurativa.

CITAZIONE BIBLIOGRAFICA

Curti S, Gallo M, Ferrante D, Bella F, Boschetti L, Casotto V, Ceppi M, Cervino D, Fazzo L, Fedeli U, Giorgi Rossi P, Giovannetti L, Girardi P, Lando C, Migliore E, Miligi L, Oddone E, Perlangeli V, Perneti R, Piro S, Storchi C, Tumino R, Zona A, Zorzi M, Brandi G, Ferretti S, Magnani C, Marinaccio A, Mattioli S. Cholangiocarcinoma and Occupational Exposure to Asbestos: Insights From the Italian Pooled Cohort Study. *Med Lav.* 2024;115(2):e2024016.

DOI: <https://doi.org/10.23749/mdl.v115i2.14649>

ENABLING EFFECTIVE IMPLEMENTATION OF OCCUPATIONAL SAFETY AND HEALTH INTERVENTIONS

Vitrano G, Urso D, Micheli GJL, Guglielmi A, De Merich D, Pellicci M.

SUMMARY

The design, implementation, and evaluation are three important stages of occupational safety and health (OSH) interventions. Contemporary approaches recognize the interdependence of these stages, considering them integral to the success of any intervention. This work presents a comprehensive procedure for implementing interventions, not only to ensure short-term effectiveness but also their long-term sustainability through continuous monitoring. The focus is on a national OSH project introducing a nearmiss management system (NMS) in Italy.

Initial meetings were convened among project partners, complemented by interviews with diverse stakeholders. Tailored questionnaires were designed for diverse stakeholder groups e initial promoters, company managers and employers, and employees, and three case studies were started in Italian regions to assess the structured implementation, involving intervention promoters and collaborating companies.

The primary outcome is the development of practical tools, which are considered valuable for establishing an effective human-centered implementation strategy, meticulously designed to facilitate ongoing monitoring of processes and continual enhancement of instruments intended for NMS integration within companies.

This work lays the foundation for successful NMS implementation in Italy and, although the outlined procedure had specific objectives, it also provides valuable insights applicable in enhancing the effectiveness and sustainability of interventions across diverse contexts.

BREVE SINTESI

La progettazione, l'attuazione e la valutazione sono tre fasi fondamentali per interventi efficaci in tema di SSL. Il lavoro presenta strumenti, sviluppati nella cornice del progetto di ricerca Condivido dedicato alla gestione aziendale dei near miss, di supporto alla definizione di elementi di controllo non solo per garantire l'efficacia a breve termine degli interventi di prevenzione ma anche la loro sostenibilità a lungo termine attraverso il monitoraggio continuo.

CITAZIONE BIBLIOGRAFICA

Vitrano G, Urso D, Micheli GJL, Guglielmi A, De Merich D, Pellicci M. Enabling Effective Implementation of Occupational Safety and Health Interventions. *Safety and Health at Work*. 2024;15(2):213-9.

DOI: <https://doi.org/10.1016/j.shaw.2024.04.003>

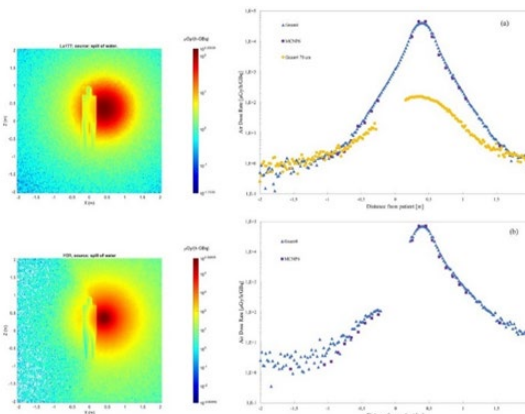
EVALUATION OF RESRAD-BUILD AND MICROSHIELD CODES FOR THE SIMULATION OF SMALL ACCIDENT SCENARIOS IN NUCLEAR MEDICINE THERAPY PATIENTS' ROOMS

Stendardo G, Andenna A, Fattibene P, Ferrari P, Nuccetelli C, Venoso G, Zicari C.

SUMMARY

Computational methods in nuclear medicine therapy can be very useful for estimating the external dose in non-routine situations when conventional dosimeters may be inadequate or unavailable. Monte Carlo techniques provide the most accurate approach when it comes to model complex scenarios, but they are time and machine resource consuming. In this work we explore the alternative of using two fast and interactive deterministic codes, RESRAD-BUILD and MicroShield, primarily designed for radiation protection purposes, to calculate the dose in small, simple accidental

scenarios, and benchmarked them with two Monte Carlo simulation tools, MCNP6 and Geant4. The absorbed dose rate in air computed by RESRAD-BUILD and compared to MicroShield showed a mean ratio of 1.01 ± 0.04 for Lu-177 and 0.99 ± 0.04 in the case of a point source and within 25% for an area source. When compared to MCNP6 and Geant4, the results revealed an overall agreement among the codes, showing a deviation below 30% in most cases, with a few exceptions that are discussed. We also propose a preliminary approach for easy modeling of patient's organs to calculate the external dose from routine therapies with deterministic methods. The suitability and limitation of these models are presented and discussed for some common applications.



BREVE SINTESI

Il lavoro affronta lo studio e l'analisi di valutazioni di dose agli operatori nelle sezioni di terapia in Medicina Nucleare nel caso di irradiazioni anomale (incidente e/o quasi incidente) mediante dosimetria computazionale. Sono stati utilizzati due software commerciali deterministici (Resrad-Build e MicroShield) i cui risultati sono stati confrontati con due differenti codici Monte Carlo (MCNP6 e Geant4) come riferimento e le cui simulazioni specifiche sono state realizzate dal nostro gruppo di lavoro. Il rateo di dose assorbita in aria calcolata con Resrad-Build e confrontata con il software MicroShield ha mostrato un rapporto medio di 1.01 ± 0.04 per il radiofarmaco Lu-177 e 0.99 ± 0.04 nel caso di sorgente puntiforme; entro il 25% per una sorgente superficiale. Il confronto con i due codici Monte Carlo ha mostrato accordi entro il 30% massimo eccetto che per alcune situazioni che sono state affrontate e discusse nel lavoro stesso. Infine, sono state proposti dei possibili approcci per una modellizzazione degli organi dei pazienti al fine di una valutazione puntuale di dose in aria da terapie standard mediante i due metodi deterministici.

CITAZIONE BIBLIOGRAFICA

Stendardo G, Andenna C, Fattibene P, Ferrari P, Nuccetelli C, Venoso G, Zicari C. Evaluation of RESRAD-BUILD and MicroShield codes for the simulation of small accident scenarios in nuclear medicine therapy patients' rooms. Eur. Phys. J. Plus 2024;139(347).

DOI: <https://doi.org/10.1140/epjp/s13360-024-05096-0>

EXPOSURE AND EARLY EFFECT BIOMARKERS FOR RISK ASSESSMENT OF OCCUPATIONAL EXPOSURE TO FORMALDEHYDE: A SYSTEMATIC REVIEW

Protano C, Antonucci A, De Giorgi A, Zanni S, Mazzeo E, Cammalleri V, Fabiani L, Mastrantonio R, Muselli M, Mastrangeli G, Ursini CL, Cavallo D, Poli D, Di Gennaro G, De Palma G, Vitali M.

SUMMARY

The aim of the present review was to identify all the biomarkers used for assessing the internal dose and the related early effects determined by the occupational exposure to formaldehyde. For this purpose, a systematic review was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The protocol was registered in PROSPERO (ID: CRD42023416960). An electronic search of Pubmed, Scopus, and Web of Science was performed to collect all the papers concerning the focus of the review and published from the inception of each database until 18 September 2023. Articles were considered eligible if they reported data from observational studies, semi-experimental, and experimental studies on adult workers who were occupationally exposed to formaldehyde, regardless of gender or age. The quality assessment was performed using the adapted Newcastle–Ottawa Quality Assessment Scale. From 1524 articles, 52 were included. Few studies assessed the exposure to formaldehyde in occupational settings through biomarkers, especially by measuring formic acid in urine. The most common approach for evaluating the effects derived from occupational exposure to formaldehyde was the use of the cytogenetic biomarker micronucleus assay in peripheral blood lymphocytes and/or epithelial buccal cells.

BREVE SINTESI

Lo scopo di questa revisione della letteratura scientifica è stato quello di esaminare tutti i biomarcatori di esposizione e di effetto precoce utilizzati negli studi pubblicati fino a settembre 2023 per la valutazione del rischio da esposizione lavorativa a formaldeide. Partendo da 1.524 articoli, ne sono stati inclusi 52. È risultato che l'approccio più utilizzato è stato quello di valutare gli effetti genotossici mediante il test del micronucleo fatto su sangue e su cellule di sfaldamento della mucosa orale.

CITAZIONE BIBLIOGRAFICA

Protano C, Antonucci A, De Giorgi A, Zanni S, Mazzeo E, Cammalleri V, Fabiani L, Mastrantonio R, Muselli M, Mastrangeli G, Ursini CL, Cavallo D, Poli D, Di Gennaro G, De Palma G, Vitali M. Exposure and early effect biomarkers for risk assessment of occupational exposure to formaldehyde: a systematic review. *Sustainability*. 2024;16(9):3631.

DOI: <https://doi.org/10.3390/su16093631>

GENDER DIFFERENCES IN SINONASAL CANCER INCIDENCE: DATA FROM THE ITALIAN REGISTRY

Binazzi A, Di Marzio D, Mensi C, Consonni D, Miligi L, Piro S, Zajacovà J, Sorasio D, Galli P, Camagni A, Calisti R, Massacesi S, Cozzi I, Balestri A, Murano S, Fedeli U, Comiati V, Eccher S, Lattanzio S, Marinaccio A, ReNaTuNS Working Group.

SUMMARY

Background: Although rare, sinonasal cancers (SNCs) have a high occupational attributable fraction. **Methods:** We applied gender-based approaches to descriptive analyses, incidence, and patterns of exposures using the Italian National Sinonasal Cancer Registry (ReNaTuNS: Registro Nazionale Tumori Naso-Sinusali). **Results:** The study included 2851 SNC patients. SNC was diagnosed more often in men (73%) than in women (27%). The most frequent morphology in men was intestinal-type adenocarcinoma (33%), whereas in women, it was squamous cell carcinoma (49%). Nasal cavities were predominant in both genders (50%), ethmoidal sinus in men (24%), and maxillary in women (24%). Incidence rates were 0.76 (per 100,000 person-years) in men and 0.24 in women and increased by age, more evidently in men, peaking over 75 years in both. Occupational exposures to wood and leather dusts were the most frequent (41% for men, 33% for women). Few exposures were extra-occupational or domestic. Unlikely exposure was relevant in women (57%). **Conclusions:** The surveillance of SNC cases through a registry that allows for the identification of and compensation for this occupational disease is important in Italy, where numerous workers are exposed to carcinogens for SNC, without even being aware. Considering the rarity of the disease, particularly among women, the ReNaTuNS can provide a method to analyze gender differences.

BREVE SINTESI

Sono state analizzate le differenze di genere nei casi di tumore naso-sinusale del Registro nazionale tumori naso-sinusali (ReNaTuNS). Le differenze di incidenza tra uomini e donne sono trascurabili nelle classi di età più giovani, ma aumentano in quelle più avanzate. Le esposizioni professionali ad agenti cancerogeni sono le più frequenti in entrambi i sessi. Le differenze di genere meritano un'indagine più approfondita, a partire da una revisione dei processi diagnostici e della raccolta della storia lavorativa.

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INSTRUMENTAL EVALUATION OF THE EFFECTS OF VERTEBRAL CONSOLIDATION SURGERY ON TRUNK MUSCLE ACTIVATIONS AND CO-ACTIVATIONS IN PATIENTS WITH MULTIPLE MYELOMA: PRELIMINARY RESULTS

Montante B, Zampa B, Balestreri L, Ciancia R, Chini G, Ranavolo A, Rupolo M, Sawacha Z, Urbani M, Varrecchia T, Michieli M.

SUMMARY

Multiple myeloma (MM) patients complain of pain and stiffness limiting motility. To determine if patients can benefit from vertebroplasty, we assessed muscle activation and co-activation before and after surgery. Five patients with MM and five healthy controls performed sitting-to-standing and lifting tasks. Patients performed the task before and one month after surgery. Surface electromyography was recorded bilaterally over the erector spinae longissimus and rectus abdominis superior muscles to evaluate the trunk muscle activation. Statistical analyses were performed to compare MM patients before and after the surgery, MM and healthy controls and to investigate any correlations between the muscle's parameters and the severity of pain in patients. The results reveal increased activations and co-activations after vertebroplasty as well as in comparison with healthy controls suggesting how MM patients try to control the trunk before and after vertebroplasty surgery. The findings confirm the beneficial effects of vertebral consolidation on the pain experienced by the patient, despite an overall increase in trunk muscle activation and co-activation.

BREVE SINTESI

I pazienti affetti da mieloma multiplo (MM) lamentano dolore e rigidità che limitano la motilità. Per determinare se i pazienti possono beneficiare della vertebroplastica, abbiamo valutato l'attivazione e la co-attivazione muscolare prima e dopo l'intervento. Cinque pazienti con MM e cinque controlli sani hanno eseguito compiti da seduti a in piedi e di sollevamento prima e un mese dopo dall'intervento. L'elettromiografia di superficie è stata registrata bilateralmente sui muscoli erector spinae e rectus abdominis per valutare l'attivazione e la co-attivazione dei muscoli del tronco. Sono state eseguite analisi statistiche per confrontare i pazienti affetti da MM prima e dopo l'intervento, MM e controlli sani e per indagare eventuali correlazioni tra i parametri muscolari e la gravità del dolore nei pazienti. I risultati rivelano un aumento delle attivazioni e co-attivazioni dopo la vertebroplastica e rispetto ai controlli sani. I risultati confermano gli effetti benefici del consolidamento vertebrale sul dolore provato dal paziente. Pertanto, è importante fornire ai pazienti un trattamento riabilitativo subito dopo l'intervento per facilitare il SNC a stabilizzare correttamente la colonna vertebrale senza sovraccaricarla con eccessive co-attivazioni.

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JOB RETENTION BY PEOPLE WITH DISABILITIES: A QUALITATIVE STUDY OF THE PERSPECTIVES OF PEOPLE WITH MULTIPLE SCLEROSIS

Ponzio M, Pignattelli E, Verri A, Grange E, Persechino B, Vitturi BK, Bandiera P, Manacorda T, Inglese M, Durando P, Battaglia MA.

SUMMARY

Background: Multiple sclerosis (MS), because of its early age at onset, greatly impacts the working lives of those affected by it in ways linked to different factors, both professional and personal. It has been observed that only a small percentage (20-40%) of workers with MS retain their jobs after the diagnosis. When identifying factors determining job retention or loss in this setting, it is essential to consider the direct perspectives of people with MS (PwMS).

Methods: A qualitative study, based on the conduction of two focus groups, was conducted to explore the personal experiences of PwMS who work.

Results: The results show that there are numerous factors, both positive and negative, that can influence these people's ability to retain their jobs. The climate established in the workplace and the relationship between workers with MS and their colleagues were fundamentally important aspects, as was knowledge of the disease at the level of public opinion.

Conclusions: Managing work is a complex undertaking for people with a disabling condition like MS. There needs to be greater awareness of the employment rights of PwMS. Improving these knowledge-based aspects could undoubtedly improve the quality of the working lives of PwMS.

BREVE SINTESI

La sclerosi multipla (SM), a causa della sua precoce insorgenza, ha un forte impatto sulla vita lavorativa delle persone, dovuto sia ad aspetti professionali che personali. Solo una piccola percentuale (20-40%) dei lavoratori con SM mantiene il lavoro dopo la diagnosi. In tale contesto, il punto di vista diretto delle persone con SM (PwMS) è sostanziale quando si vogliono individuare i fattori che determinano il mantenimento o la perdita del lavoro.

È stato condotto uno studio qualitativo basato su due focus group, per esplorare le esperienze personali delle persone affette da SM che lavorano. I risultati mostrano la presenza di numerosi fattori, sia positivi che negativi, che possono influire sul mantenimento del posto di lavoro. Il clima lavorativo e il rapporto tra lavoratori con SM e colleghi sono risultati aspetti importanti, così come la conoscenza della malattia a livello di opinione pubblica.

Per le persone con una condizione invalidante come la SM è molto complesso gestire il lavoro. È necessaria una maggiore consapevolezza dei diritti lavorativi delle PwMS. Potenziare aspetti basati sulla conoscenza porterebbe ad un miglioramento della qualità della vita lavorativa delle PwMS.

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LOWER LIMB MUSCLE CO-ACTIVATION MAPS IN SINGLE AND TEAM-LIFTING AT DIFFERENT RISK LEVELS

Chini G, Varrecchia T, Serrao M, Ranavolo A.

SUMMARY

The central nervous system uses muscle co-activation for body coordination, effector movement control, and joint stabilization. However, co-activation increases compression and shear stresses on the joints. Lifting activity is one of the leading causes of work-related musculoskeletal problems worldwide, and it has been shown that when the risk level rises, liftings enhance trunk muscle co-activation at L5/S1 level. This study aims to investigate the co-activation of lower limb muscles during liftings at various risk levels and lifting types (one-person and vs. two-person team lifting), to understand how the central nervous system governs lower limb rigidity during these tasks. The surface electromyographic signal of thirteen healthy volunteers (7 males and 6 females, age range: 29-48 years) was obtained over trunk and right lower limb muscles while lifting in the sagittal plane. Then co-activation has been computed according to different approaches: global, full leg, flexor, extensor, and rostro-caudal. The statistical analysis revealed a significant increase with the risk level and decrease in the two-person on the mean and/or maximum of the co-activation in almost all the approaches. Overall, our findings imply that the central nervous system streamlines the motor regulation of lifting by increasing or reducing whole-limb rigidity within a distinct global, extensor, and rostro-caudal co-activation scheme, depending on the risk level/lifting type.

BREVE SINTESI

Questo studio analizza la co-attivazione dei muscoli degli arti inferiori durante sollevamenti a vari livelli di rischio eseguiti da una persona/due. Il segnale elettromiografico di superficie è stato ottenuto sui muscoli del tronco e dell'arto inferiore destro di tredici soggetti sani. I risultati mostrano che il sistema nervoso centrale ottimizza la regolazione motoria aumentando o riducendo la rigidità dell'arto inferiore con un distinto schema di co-attivazione globale, estensoria e rostro-caudale a seconda del livello di rischio/tipo di sollevamento.

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NUMERICAL DISPERSION MODELING OF DROPLETS EXPIRED BY HUMANS WHILE SPEAKING

Grandoni L, Pini A, Pelliccioni A, Salizzoni P, Mees L, Leuzzi G, Monti P.

SUMMARY

As known from recent COVID-19 pandemics, droplets emitted by humans during various respiratory activities can contain pathogens and be responsible for infectious disease transmission. The study of droplet dispersion is fundamental to estimate and possibly control the associated risk. Numerical simulations are useful as they make it possible to afford the complexity of this phenomenon. However, they require precise droplet and air properties as input data in order to provide reliable results. A lack of knowledge still exists due to the difficulties in measuring droplet sizes over a wide range and in capturing sizes and velocities simultaneously. In this work, numerical simulations were conducted using experimental data collected by the authors, taking advantage of innovative information about particle velocity relative to their size. Two measurement campaigns involving 20 volunteers were carried out. The size and the three velocity components of the ejected droplets were simultaneously measured for droplets down to 2 μm using an extended version of the Interferometric Laser Imaging Droplet Sizing technique. The effect of droplet initial velocity on droplet dispersion is assessed, along with the effect of other parameters, namely, ambient temperature and air ejection velocity. Both inert and evaporating droplets are considered in the simulations.

BREVE SINTESI

Sono state condotte simulazioni numeriche per analizzare la dispersione di goccioline emesse da esseri umani durante il parlato in ambiente indoor. I risultati possono essere così riassunti: (i) la velocità iniziale delle gocce ha debole effetto sul processo di dispersione; (ii) la velocità di emissione del getto d'aria è di grande importanza in quanto regola il tempo di permanenza delle gocce al suo interno; (iii) al crescere della velocità iniziale cresce la distanza percorsa dal getto a valle della bocca; (iv) il galleggiamento gioca un ruolo fondamentale: per la trasmissione a breve raggio, un maggiore galleggiamento ha un effetto positivo, in quanto il getto rimuove le gocce dalla zona di respirazione, trasportandole verso il soffitto; l'effetto di galleggiamento sulla trasmissione a lungo raggio dipende dalla configurazione geometrica e le condizioni di ventilazione nell'ambiente, in particolare dall'interazione tra questi e il getto; (iv) con debole galleggiamento decresce il numero di gocce accumulate nel dominio in quanto il getto d'aria che le trasporta tende ad uscire più rapidamente dall'ambiente.

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OCCUPATIONAL CARCINOGENS IN ITALY: AN OVERVIEW ON EXPOSURE TO CADMIUM AND ITS COMPOUNDS

Scarselli A, Corfiati M, Di Marzio D, Marinaccio A.

SUMMARY

Given the recognized carcinogenicity of cadmium, several regulatory interventions have been carried out over the years to protect exposed workers. The aim of the study is to investigate the prevalence and extent of exposure to cadmium among Italian workers. Data was collected from a nation-wide occupational exposure registry (SIREP, 1996-2022). Gender-specific statistical analysis was carried out for some exposure-related variables (cadmium compound, activity sector, occupational group, firm size). Potentially exposed workers were estimated for some industrial sectors. Concurrent exposures were investigated using cluster analysis. Overall 4,264 measurements were analyzed. Four industrial sectors were found to be most involved by cadmium exposure: base metal manufacturing, fabricated metal products, machinery and equipment, and other transport equipment (55% of measurements). Jewellery/precious-metal workers, and glass/ceramic plant operators were found to be most at exposure risk. A total of 26,470 workers potentially exposed was estimated (69% men). Concurrent exposures to other occupational carcinogens were detected quite frequently (52% of workers). Several situations of exposure and co-exposure to cadmium deserve attention and awareness in order to minimize the risks associated with workers' health. Recognition of potentially hazardous exposure conditions is an important step in prevention strategies to better protect workers against cancer-causing agents.

BREVE SINTESI

Il cadmio e i suoi composti sono classificati come agenti cancerogeni per l'uomo dall'Ue. Per questa classe di agenti, quindi, vige l'obbligo di comunicazione all'Inail del numero lavoratori esposti e delle modalità di esposizione. L'analisi dei dati registrati ha evidenziato la presenza di più di 4.264 misurazioni dei livelli di esposizione a questa classe di agenti, stimando in circa 26.470 i potenziali lavoratori esposti nei vari settori industriali. Più del 50% dei lavoratori è risultato co-esposto anche ad altri agenti cancerogeni occupazionali, quali ad esempio composti di nichel e di cromo esavalente.

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OCCUPATIONAL PHYSICIANS' MANAGEMENT OF WORKERS WITH MULTIPLE SCLEROSIS IN ITALY: RESULTS FROM A SURVEY

Rondinone BM, Buresti G, Iavicoli S, Durando P, Battaglia MA, Dini G, Montecucco A, Rahmani A, Debarbieri N, Bandiera P, Ponzio M, Manacorda T, Pignattelli E, Inglese M, Persechino B.

SUMMARY

Background: This study, conducted on a sample of Italian occupational physicians (OPs), aimed to gather data regarding professional activity and their needs in managing workers with multiple sclerosis (MS). **Methods:** A convenience sample of OPs recruited by e-mail invitation to the list of Italian Society of Occupational Medicine members was considered. A total of 220 OPs participated between July and October 2022. An ad hoc questionnaire was developed based on previous survey experiences. It investigated, among others, the characteristics of OP respondents, the evaluation of fitness for work issues, and the OP training and updating needs on MS and work.

Results: Ninety-one percent of OPs had to assess the fitness for work of workers with MS during their activity. Sixty-four percent experienced particular difficulties in issuing a fitness for work judgment. Regarding the level of knowledge on MS, 54% judged it sufficient. The "Assessment of fitness for work for the specific task" and the "Role of the OPs in identifying reasonable accommodations" were the most interesting training topics regarding MS management in work contexts chosen by the respondents.

Conclusions: The interest in the work inclusion and job retention of people with disability, particularly the aspects linked to the Identification and implementation of reasonable accommodations, will require integration with the occupational safety and health protection system and will undoubtedly impact the OP's activities.

BREVE SINTESI

Lo studio, condotto su un campione di 220 medici competenti (MC) operanti in Italia, è finalizzato ad approfondire aspetti sull'attività professionale e sulle esigenze nella gestione dei lavoratori con sclerosi multipla (SM). Il questionario è stato somministrato in luglio-ottobre 2022 ai MC reclutati tra gli iscritti alla SIML. Il 91% dei MC ha dichiarato di aver dovuto valutare l'idoneità al lavoro dei lavoratori con SM e il 64% ha avuto difficoltà nel rilasciare un giudizio di idoneità al lavoro. La "Valutazione dell'idoneità al lavoro per il compito specifico" e il "Ruolo dei MC nell'identificazione di accomodamenti ragionevoli" sono gli argomenti formativi ritenuti più interessanti.

L'interesse nell'inclusione lavorativa e il mantenimento del posto di lavoro delle persone con disabilità, in particolare gli aspetti legati all'individuazione e all'attuazione di ragionevoli accomodamenti, avranno un impatto sul sistema di tutela della SSL e quindi sulle attività del MC.

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OPTIMIZING RARE DISEASE GAIT CLASSIFICATION THROUGH DATA BALANCING AND GENERATIVE AI: INSIGHTS FROM HEREDITARY CEREBELLAR ATAXIA

Trabassi D, Castiglia SF, Bini F, Marinozzi F, Ajoudani A, Lorenzini M, Chini G, Varrecchia T, Ranavolo A, De Icco R, Casali C, Serra M.

SUMMARY

The interpretability of gait analysis studies in people with rare diseases, such as those with primary hereditary cerebellar ataxia (pwCA), is frequently limited by the small sample sizes and unbalanced datasets. The purpose of this study was to assess the effectiveness of data balancing and generative artificial intelligence algorithms in generating synthetic data reflecting the actual gait abnormalities of pwCA. Gait data of 30 pwCA (age: 51.6 ± 12.2 years) and 100 healthy subjects (age: 57.1 ± 10.4) were collected at the lumbar level with an inertial measurement unit. Subsampling, oversampling, synthetic minority oversampling, generative adversarial networks, and conditional tabular generative adversarial networks (ctGAN) were applied to generate datasets to be input to a random forest classifier. ctGAN significantly improved the classification performance compared with the original dataset and traditional data augmentation methods. ctGAN are effective methods for balancing tabular datasets from populations with rare diseases, owing to their ability to improve diagnostic models with consistent explainability.

BREVE SINTESI

L'interpretabilità degli studi sull'analisi del cammino in persone con malattie rare, come quelle affette da atassia cerebellare ereditaria primaria (pwCA), è spesso limitata dalle piccole dimensioni del campione e dai set di dati non bilanciati. Lo scopo di questo studio è stato quello di valutare l'efficacia del bilanciamento dei dati e degli algoritmi di intelligenza artificiale generativa nella generazione di dati sintetici che riflettono le reali anomalie dell'andatura della pwCA. I dati di andatura di 30 pwCA (età: $51,6 \pm 12,2$) e di 100 soggetti sani (età: $57,1 \pm 10,4$) sono stati raccolti con un'unità di misura inerziale posizionata a livello lombare. Sono stati applicati sottocampionamenti, sovracampionamenti, sovracampionamenti di minoranze sintetiche, reti generative avversarie e reti "conditional tabular generative adversarial" (ctGAN) per generare insiemi di dati da inserire in un classificatore random forest. Le ctGAN hanno migliorato significativamente le prestazioni di classificazione rispetto al dataset originale e ai metodi tradizionali di incremento dei dati mostrandosi metodi efficaci per bilanciare dataset tabulari di popolazioni con malattie rare, grazie alla loro capacità di migliorare i modelli diagnostici.

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PERSONAL PROTECTIVE EQUIPMENT FOR PREVENTING ASBESTOS EXPOSURE IN WORKERS

Belackova L, Verbeek JH, Hoving JL, van der Molen HF, Gagliardi D, Curti S, Hulshof CTJ, Scheepers PTJ.

SUMMARY

Background: Asbestos exposure can lead to asbestos-related diseases. The European Union (EU) has adopted regulations for workplaces where asbestos is present. The EU occupational exposure limit (OEL) for asbestos is 0.1 fibres per cubic centimetre of air (f/cm³) as an eight-hour average. Different types of personal protective equipment (PPE) are available to provide protection and minimise exposure; however, their effectiveness is unclear.

Objectives: To assess the effects of personal protective equipment (PPE), including donning and doffing procedures and individual hygienic behaviour, compared to no availability and use of such equipment or alternative equipment, on asbestos exposure in workers in asbestos demolition and repair work.

Search methods: We searched MEDLINE, Embase, CENTRAL, and Scopus (September 2022), and we checked the reference lists of included studies.

Selection criteria: We included studies that measured asbestos concentration outside and inside PPE (considering outside concentration a surrogate for no PPE), exposure to asbestos after doffing PPE, donning and doffing errors, nonadherence to regulations, and adverse effects of PPE.

Main results: We identified six studies that measured asbestos concentrations outside and inside respiratory protective equipment (RPE) and one crossover study that compared the effect of two different coveralls on body temperature. No studies evaluated the remaining predefined outcomes. Most studies were at overall moderate risk of bias due to insufficient reporting. The cross-over study was at high risk of bias.

Authors' conclusions: Where the outside asbestos concentration is below 0.1 f/cm³, SARS and PAPRs likely reduce exposure to below the proposed OEL of 0.01 f/cm³. For outside concentrations up to 10 f/cm³, all respirators may reduce exposure below the current OEL, but only SAR also below the proposed OEL.

Randomised studies are needed to directly compare PAPRs and SARs at higher asbestos concentrations and to assess adverse effects. Future studies should assess the effects of doffing procedures.

BREVE SINTESI

Revisione sistematica della letteratura per valutare gli effetti dei dispositivi di protezione individuale, comprese le procedure di indossamento e svestizione e il comportamento igienico individuale, rispetto alla mancata disponibilità e utilizzo di tali dispositivi o apparecchiature alternative, sull'esposizione all'amianto nei lavoratori addetti ai lavori di demolizione e riparazione che comportano esposizione ad amianto.

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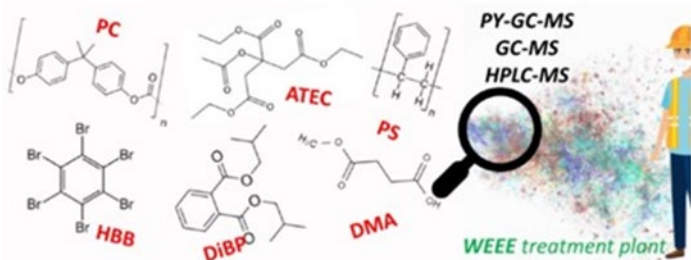
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PLASTIC BREATH: QUANTIFICATION OF MICROPLASTICS AND POLYMER ADDITIVES IN AIRBORNE PARTICLES

Pomata D, La Nasa J, Biale G, Barlucchi L, Ceccarini A, Di Filippo P, Riccardi C, Buiarelli F, Modugno F, Simonetti G.

SUMMARY

The widespread extensive use of synthetic polymers has led to a substantial environmental crisis caused by plastic pollution, with microplastics detected in various environments and posing risks to both human health and ecosystems. The possibility of plastic fragments to be dispersed in the air as particles and inhaled by humans may cause damage to the respiratory and other body systems. Therefore, there is a particular need to study microplastics as air pollutants. In this study, we tested a combination of analytical pyrolysis, gas chromatography–mass spectrometry, and gas and liquid chromatography–mass spectrometry to identify and quantify both microplastics and their additives in airborne particulate matter and settled dust within a workplace environment: a WEEE treatment plant. Using this combined approach, we were able to accurately quantify ten synthetic polymers and eight classes of polymer additives. The identified additives include phthalates, adipates, citrates, sebacates, trimellitates, benzoates, organophosphates, and newly developed brominated flame retardants.



BREVE SINTESI

L'ampio uso di polimeri sintetici ha portato ad un inquinamento ambientale diffuso da microplastiche (MP), particelle polimeriche con dimensioni < 5mm. Mentre i comparti acquoso e terrestre sono stati ampiamente studiati, soltanto negli ultimi anni è cresciuta la consapevolezza che i frammenti di plastica possono essere dispersi nell'aria ed essere inalati dall'uomo causando effetti negativi sul sistema respiratorio e su altri organi. Quindi, una nuova ondata di ricerca si sta concentrando sulle MP aerodisperse e sulle specie chimiche ad esse associate. In questo studio, abbiamo testato una combinazione di tecniche analitiche (Pyr-GC/MS; GC/MS e HPLC/MS-MS) per identificare e quantificare sia le MP che i loro additivi nel particolato aerodisperso e nella polvere depositata collezionati all'interno di un impianto di trattamento RAEE.

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POTENTIAL EFFECTS OF ENVIRONMENTAL AND OCCUPATIONAL EXPOSURE TO MICROPLASTICS: AN OVERVIEW OF AIR CONTAMINATION

Boccia P, Mondellini S, Mauro S, Zanellato M, Parolini M, Sturchio E.

SUMMARY

Microplastics (MPs) are now ubiquitous environmental contaminants that lead to unavoidable human exposure; they have received increasing attention in recent years and have become an emerging area of research. The greatest concern is the negative impacts of MPs on marine, fresh-water, and terrestrial ecosystems, as well as human health, to the extent that the World Health Organization (WHO) calls for increased research and standardized methods to assess exposure to MPs. Many countries and international organizations are implementing or proposing legislation in this regard. This review aims to summarize the current state of legislation, indoor and outdoor contamination, and potential human health risk due to exposure to airborne MPs, considering that occupational exposure to MPs is also becoming a growing area of concern. Even though research regarding MPs has continuously increased in the last twenty years, the effects of MPs on human health have been scarcely investigated, and toxicity studies are still limited and not directly comparable, due to the lack of standardized studies in this field.

BREVE SINTESI

Questa review mira a riassumere lo stato attuale della legislazione, la contaminazione indoor e outdoor e il potenziale rischio per la salute umana dovuto all'esposizione a microplastiche presenti nell'aria, considerando che anche l'esposizione professionale a microplastiche sta diventando un'area di crescente preoccupazione. Infatti, anche se la ricerca sulle microplastiche è aumentata costantemente negli ultimi vent'anni, i loro effetti sulla salute umana sono stati scarsamente indagati e gli studi di tossicità sono ancora limitati e non direttamente confrontabili, a causa della mancanza di studi standardizzati in questo campo.

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SURVEY TO ASSESS THE FEASIBILITY OF ESTABLISHING AN INTERNATIONAL NETWORK FOR EVIDENCE SYNTHESIS IN OCCUPATIONAL SAFETY AND HEALTH

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SUMMARY

Background: Evidence synthesis in the field of occupational safety and health (OSH) has been continuously growing over the last two decades. With over 100 systematic reviews now published, the Cochrane Work Review group has played an important role in this development and the Cochrane Thematic Group 'Work & Health & Social Security' was established recently to combine evidence from both the OSH and insurance medicine fields. Worldwide, many organizations produce and synthesize evidence in OSH that can complement and support each other. We believe that a global network including Cochrane and others can collaborate on methods development and in the production, synthesis, use and dissemination of different types of evidence even more effectively.

Aims: To determine if establishing a global network for evidence synthesis in OSH is feasible.

Methods: We conducted a survey of international and national institutions between November 2022 and January 2023 using LimeSurvey. Participants included representatives of affiliated and sustaining members of the International Commission on Occupational Health, national institutes for OSH, academia and other international organizations.

Results: From 151 invitations, we received responses from 57 representatives of 54 organizations. Representatives reported that their organization will contribute financially on an annual basis ($n = 1$) or provide in-kind support ($n = 10$), and will probably be able to provide financial or in-kind support ($n = 25$).

Conclusions: The feasibility criterion was met and an international network is being established.

BREVE SINTESI

Studio di fattibilità per la costituzione di una rete multicentrica internazionale per le revisioni sistematiche di letteratura in ambito occupazionale.

Lo studio, basato su un sondaggio condotto fra rappresentanti di istituzioni accademiche e di ricerca in ambito occupazionale, associazioni professionali ed esperti individuali, ha dimostrato un elevato interesse per la costituzione di un network internazionale per la realizzazione di revisioni sistematiche della letteratura nel settore della salute e sicurezza sul lavoro, non soltanto con metodologia Cochrane (studi di intervento) ma anche con altre metodologie idonee per la conduzione di revisioni sistematiche di studi sulla esposizione a fattori di rischio e sui conseguenti effetti. Sebbene siano emerse visioni diverse sul modello gestionale, lo studio ha dimostrato la sussistenza dei requisiti minimi ed il network è in via di costituzione.

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THE FIRST TWO YEARS OF COVID-19 HOSPITALIZATION CHARACTERISTICS AND COSTS: RESULTS FROM THE NATIONAL DISCHARGE REGISTRY

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SUMMARY

Background: The COVID-19 pandemic has emerged as the primary global health challenge of the new millennium. Understanding its impact on health systems and learning from these experiences are crucial for improving system resilience against future health crises. This paper examines hospitalizations related to COVID-19 in Italy from 2020 to 2021, with a specific focus on the costs associated with these admissions. *Design and methods:* This is a retrospective, population-based study of Italian hospitalizations of patients diagnosed with COVID-19 during the 2020–2021 period, using data extracted from the National Hospital Discharge Registry. The outcome variables considered include hospital admissions, costs, and length of stay. *Results:* In Italy, hospitalizations for COVID-19 totaled 357,354 in 2020 and 399,043 in 2021, with the transfer rate being three times higher than that of other patients. Hospitalizations were predominantly concentrated in the northern regions, especially during the first year. Mortality rates increased with age, while hospitalization rates peaked in the youngest and oldest age groups. The financial impact of COVID-19 hospitalizations was approximately €3.1 billion in 2020 and €3.6 billion in 2021. The cost per admission was around €8000 for standard care and €24,000 for intensive therapy in both years. *Conclusion:* Conducting a cost-benefit analysis of implementing a protective pad around the entire health system, which leverages networks of family doctors and nurses connected in real-time, could be an important step in strengthening health system resilience.

BREVE SINTESI

Lo studio ha analizzato 756.397 ricoveri per COVID-19 in Italia nel biennio 2020-2021. Nel primo anno, il pronto soccorso sono stati il principale punto di contatto tra sistema sanitario e pazienti, causando un tasso di trasferimento ospedaliero triplicato ed una maggiore esposizione degli operatori sanitari al virus. Nel 2020, oltre il 60% delle richieste di riconoscimento dell'infezione come infortunio sul lavoro proveniva dal personale medico. Nel 2021, la riorganizzazione ha ridotto i trasferimenti dell'1,5% e le denunce degli operatori sanitari del 15%. I costi ospedalieri sono stati 3,1 miliardi nel 2020 e 3,6 miliardi nel 2021. Il costo medio di un ricovero standard superava 8.000 euro, arrivando a 24.000 euro se comprensivo di terapia intensiva. Una rete di medici di famiglia e infermieri per il triage iniziale potrebbe proteggere gli ospedali da ondate impreviste di ricoveri.

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