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CHEMICAL EFFECTS

~tAnalysis of the ecotoxicity of waste generated in a laundry in the textile center of the Agreste region of Pernambuco using zebrafish (Danio rerio) as a bioindicator

2025-08-02

Although economically important, the textile industry produces effluents with dyes, detergents, and heavy metals that require treatment to prevent environmental impacts. This study aimed to evaluate the effluents and sludge generated by laundry in the Agreste region of Pernambuco, using the zebrafish as a model. In addition to ecotoxicological tests, physicochemical characterization was performed to assess the effluent treatment plant's efficiency and identify present compounds. In the ecotoxicological tests, zebrafish embryos were exposed to different concentrations of raw effluent, treated effluent, and sludge elutriate to evaluate the effects on epiboly (8 hpf), teratogenic (24-144 hpf), and behavioral (144 hpf). The physicochemical analysis showed that, despite the reduction in some parameters after treatment, the effluents still contained high levels of chemical oxygen demand(COD) (348.83 mg/L), chlorides (2705.83 mg/L), and metals such as K (60.57 mg/L), Al (9.43 mg/L), Mn (2.10 mg/L), Zn (1.64 mg/L) and Sr (1.52 mg/L), posing a potential environmental pollution. The ecotoxicological results revealed that effluents with dilutions above 25% caused delayed epiboly and high mortality at 8 hpf, with elutriate being the most toxic. Up to 144 hpf, elutriate caused higher mortality and teratogenic effects in all dilutions. Behavioral tests showed changes in all groups of effluent dilutions, indicating neurotoxicity. K, Al, Mn concentrations found in our work were linked to teratogenic and neurotoxic effects. Metal interactions with physicochemical parameters contribute to the complexity of toxicity, making it impossible to attribute effects to a single agent.

Authors: Paula Raíza Alves Cavalcante, Jadson Freitas da Silva, Renatta Priscila Ferreira Silva, Matheus Victor Viana de Melo, Maria Letícia Santos Carnaúba da Silva, Maria Eduarda Borges de Almeida, Samara da Silva Gomes, Yuri Mateus Lima de Albuquerque, Rodrigo Cândido Passos da Silva, Pabyton Gonçalves Cadena, Rosângela Gomes Tavares

Full Source: Environmental science and pollution research international 2025 Aug 2. doi: 10.1007/s11356-025-36812-7.

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Healthcare professionals' knowledge of organic foods and their health impact: a survey-based analysis

2025-08-02

Background: Organic foods are often considered healthier and more sustainable, yet healthcare professionals' understanding and perceptions remain unclear. This study aimed to evaluate their knowledge and perceptions related to organic foods and associated barriers.
Methods: A cross-sectional survey was conducted among employees at a large hospital in São Paulo, Brazil, between June and July 2024. Using a non-probabilistic convenience sample, an online questionnaire collected sociodemographic data, lifestyle characteristics, and information on participants' knowledge and perception of organic foods. Descriptive statistics, Chi-Square tests, and logistic regression were applied to identify factors associated with the lack of knowledge.
Results: A total of 199 questionnaires were completed. Nearly half of the respondents (49.2 %) were not fully aware of what defines organic food. Women represented 80.2 % of the sample. Smoking was significantly associated with a lack of knowledge regarding organic foods. Approximately 30 % were uncertain about cardiovascular risks related to non-organic foods, and cost was identified as a major barrier to consumption. Although most recognized environmental benefits and a potential role in reducing global warming, understanding how organic consumption intersects with human health has remained limited. Adjusted analyses revealed that higher education (without postgraduate training), smoking, and comorbidities were associated with knowledge gaps.
Conclusion: These findings highlight substantial knowledge gaps among healthcare professionals regarding organic foods.

Authors: Angela Cristine Bersch-Ferreira, Stela Verzinhasse Peres, Patrick Araujo Terezan, Gisele Medeiros Bastos, Rozana Mesquita Ciconelli, Fúlvio Alexandre Scorza

Full Source: Clinics (Sao Paulo, Brazil) 2025 Aug 2:80:100720. doi: 10.1016/j.clinsp.2025.100720.

Public willingness to pay for chemicals regulation policies in South Korea: Insights from socio-economic factors

2025-08-02

This study investigates the socio-economic determinants influencing public willingness to pay (WTP) for reducing health risks from phthalate exposure in South Korea. The study focuses on dibutyl phthalate (DBP),

benzyl butyl phthalate (BBP), and di-(2-ethylhexyl) phthalate (DEHP) that are currently under regulatory consideration. Using the contingent valuation method, a national survey of 1,000 respondents employed both single-bounded (SBDC) and double-bounded dichotomous choice (DBDC) formats. The estimated mean WTP was 3,400 KRW (2.80 USD) using the SBDC model, closely aligning with theoretical expectations and the open-ended responses, while the DBDC spike model yielded a higher estimate of 6,071 KRW (5.10 USD). Regression analyses identified household income, education level, media exposure, and household size as significant determinants of WTP, indicating that these socio-economic and informational factors positively influence public willingness to financially support chemical risk reduction. Contrary to initial hypotheses, direct chemical exposure and previous harm experiences did not significantly affect WTP. Furthermore, individual income was not a significant factor, indicating that household-level financial decisions more strongly influence public WTP for chemical risk reduction. The results highlight the crucial role of socio-economic status and informational exposure in shaping public support for chemical regulation policies. This study provides foundational empirical data for effective policy design in South Korea, underscoring the importance of targeted informational campaigns and economic considerations to improve public risk perception and policy acceptance. These insights can inform international comparative analyses and help countries develop regulatory frameworks by assessing the economic values associated with chemical risk management.

Authors: Junghwan Lee, Changwoo Chung, Jonghyun Park, Minki Choi, So-Yeon Park, Jungkwan Seo, Taeyoung Jin, Jinsoo Kim

Full Source: Journal of environmental management 2025 Aug 2:392:126746. doi: 10.1016/j.jenvman.2025.126746.

ENVIRONMENTAL RESEARCH

Mapping the evidence of the effects of environmental factors on the prevalence of antibiotic resistance in the non-built environment

2025-07-27

Background: Antibiotic resistance increasingly threatens the interconnected health of humans, animals, and the environment. While misuse of antibiotics is a known driver, environmental factors also play a critical role. A balanced One Health approach-including the environmental sector-is necessary to understand the emergence and spread of resistance.

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Methods: We systematically searched English-language literature (1990-2021) in MEDLINE, Embase, and Web of Science, plus grey literature. Titles, abstracts, and keywords were screened, followed by full-text reviews using a structured codebook and dual-reviewer assessments.
Results: Of 13,667 records screened, 738 met the inclusion criteria. Most studies focused on freshwater and terrestrial environments, particularly associated with wastewater or manure sources. Evidence of research has predominantly focused on Escherichia coli and Pseudomonas spp., with a concentration on ARGs conferring resistance to sulphonamides (sul1-3), tetracyclines (tet), and beta-lactams. Additionally, the People's Republic of China has produced a third of the studies-twice that of the next country, the United States-and research was largely domestic, with closely linked author networks.
Conclusion: Significant evidence gaps persist in understanding antibiotic resistance in non-built environments, particularly in marine, atmospheric, and non-agricultural settings. Stressors such as climate change and microplastics remain notably under-explored. There is also an urgent need for more research in low-income regions, which face higher risks of antibiotic resistance, to support the development of targeted, evidence-based interventions.

Authors: Iñaki Deza-Cruz, Alexandre de Menezes, Brian Gardner, Ílknur Aktan, Sarhad Alnajjar, Martha Betson, Adriana Cabal Rosel, Manuela Caniça, Mark A Chambers, Georgina Tarrant, Francesca Contadini, Olukayode Daramola, Rani de la Rivière, Bernadette Egan, Abel Ekiri, Catherine Finnegan, Laura C Gonzalez Villeta, Richard Green, Belinda Hall, Marwa M Hassan, Martin Hawes, Sara Healy, Lisa Holbrook, Damla Kaya, Prashant Kumar, Roberto M La Ragione, Daniel Maupin, Jai W Mehat, Davide Messina, Kelly Moon, Elizabeth Mumford, Gordon Nichols, Daniel V Olivença, Joaquin M Prada, Claire Price, Christopher Proudman, Retha Queenan, Miguel Ramos, Jaime Riccomini Closa, Jennifer M Ritchie, Lorenzo A Santorelli, Nick Selemetas, Matt Spick, Yashwanth Subbannayya, Shelini Surendran, Pedro Teixeira, Mukunthan Tharmakulasingam, Damian Valle, Arnoud H M van Vliet, Marco Videira, Hazel Wallace-Williams, Klara M Wanelik, Markus Woegerbauer, Sydney Wright, Giovanni Lo Iacono

Full Source: Environment international 2025 Jul 27:202:109634. doi: 10.1016/j.envint.2025.109634.

Degradation behavior and environmental impacts of a hemp-containing "eco-friendly" compostable plastic in natural environments

2025-08-02

A field experiment was carried out to assess the degradation behavior and environmental impacts of hemp fiber-containing polymeric material labeled as "compostable plastic". The main question was: What happens if products made from this material are released into nature? To find the answer, small pieces of this composite material were exposed to sandy clay soil and river water for 2, 4, 8, 13, 18, 23, 28, and 33 weeks. After taking out, the samples were thoroughly analyzed using light and electron microscopy, thermogravimetry, differential thermal analysis, X-ray diffractometry, and Fourier-transform infrared spectroscopy. It was found that the material is fairly stable in both tested natural environments. It remained compact even after 33 weeks, almost without weight loss. Only about 10-15 % of its bioorganic content was decomposed during the long-term degradation. If products made from this material are left in the natural environment, they will cause long-term pollution, including the formation of microplastics. This "compostable" plastic also can not be composted because one of its components is degradation-resistant polypropylene. Thus, despite the manufacturer's declarations, the material is not a good choice for eco-friendly production. The results show that it is not always appropriate to dispose of materials labeled as "compostable plastics" or similar by putting them into a compost bin or just leaving them in nature. Our findings also highlight the need for an objective assessment of the environmental impacts of so-called "eco-friendly", "green", or "sustainable" products rather than their reckless promotion and consumption.

Authors: Jan Loskot, Klára Katonová, Daniel Jezbera, Rudolf Andrýs, Roman Svoboda, Anju Tanaka, Alena Myslivcová Fučíková

Full Source: Waste management (New York, N.Y.) 2025 Aug 2:206:115045. doi: 10.1016/j.wasman.2025.115045.

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PHARMACEUTICAL/TOXICOLOGY

Role of Antidrug Antibodies in Oncolytic Viral Therapy: A Dynamic Modelling Approach in Cancer Patients Treated with V937 Alone or in Combination

2025-08-01

Background and objective: Oncolytic viruses (OVs) are a growing immuno-oncology therapeutic class that rely on their capability to activate the dormant endogenous anti-tumor immune response in order to control or eradicate tumor cells. Given their intrinsic mechanisms of action and their biological nature, development of antidrug antibodies (ADA) represents an important aspect to consider during clinical evaluation. ADAs can potentially affect viral kinetics and/or dynamics, ultimately resulting in reductions or even loss of drug efficacy. Here, we present a semi-mechanistic pharmacokinetic/pharmacodynamic model characterizing the interplay between V937 and neutralizing ADA in cancer patients receiving the V937 oncolytic virus.

Methods: The quantitative framework has been developed integrating viral load and ADA titers from 208 cancer patients who received V937 following intratumoral or intravascular administration, in monotherapy or in combination with pembrolizumab.

Results: The model successfully captured both V937 time course and the dynamics of ADAs under the different settings, showing no meaningful impact of ADAs on viral kinetics. Moreover, tumor response was neither affected by the preexistence or development of ADAs, which can be explained by the primary role of the immune system in the response.

Conclusions: This quantitative and (semi-) mechanistic framework can be expanded to other oncolytic viruses and used to explore under which scenarios a relevant impact could be observed, thus supporting the development of novel oncolytic viral therapies.

Authors: Zinnia P Parra-Guillen, Iñaki F Trocóniz, Tomoko Freshwater

Full Source: Clinical pharmacokinetics 2025 Aug 1. doi: 10.1007/s40262-025-01546-9.

Elevated urinary phthalate levels in endometrial cancer patients: Evidence from a comparative study

2025-08-01

Phthalates are common plasticizers with endocrine-disrupting properties. Although laboratory studies suggest links to estrogen-dependent cancers, their association with endometrial cancer (EC) in humans remains unclear.

This study investigated urinary phthalate metabolite levels in relation to EC and explored potential lifestyle and dietary contributors to phthalate exposure. A total of 232 women, including 116 EC patients and 116 healthy controls, were enrolled. Urine samples were analyzed by UPLC-MS/MS to measure eight phthalate metabolites, adjusted for creatinine. Lifestyle and dietary information were collected via questionnaires. Logistic regression assessed associations between phthalate levels and EC, while Spearman's correlation examined inter-metabolite relationships. All eight metabolites were detected in over 90 % of participants, with significantly higher concentrations in the EC group. Among them, mono-benzyl phthalate (MBzP) was the only metabolite independently associated with EC (OR 3.712, 95 % CI 1.464-9.414, p = 0.006). Using a cutoff value of 0.145 µg/g Cr, EC remained the only independent predictor of elevated MBzP levels (OR 5.696, 95 % CI 2.572-12.615, p < 0.001). No significant associations were found between MBzP levels and lifestyle or dietary habits. Correlations among phthalate metabolites were generally consistent across groups, though MBzP showed weaker correlations, indicating potentially distinct exposure pathways. This study is the first to demonstrate an independent link between urinary MBzP levels and EC in humans. The lack of lifestyle or dietary influence highlights the complexity of exposure sources, emphasizing the need for further research to understand underlying mechanisms and environmental factors contributing to phthalate exposure.

Authors: Hao Lin, Wen-Chin Lee, Yin-Yi Chen, Fu-Jen Cheng, Wan-Ting Huang, Kai-Fan Tsai, Shau-Hsuan Li, Chia-Te Kung, Yu-Che Ou
Full Source: Ecotoxicology and environmental safety 2025 Aug 1:303:118772. doi: 10.1016/j.ecoenv.2025.118772.

Effectiveness of a Parent Empowerment Program for Parents of Children with Autism: A Randomized Controlled Trial

2025-09

Background: Parents of children with autism often face significant stress, low self-efficacy, and caregiver burden in meeting their children's complex needs. This study evaluated the effectiveness of a parent empowerment program combining parental training and motivational interviewing to support caregivers of children with autism in Türkiye.
Methods: A total of 69 parents (intervention = 34, control = 35) participated in this unblinded, two-group randomized controlled study, which was conducted between September 2020 and May 2022. A parent empowerment program, including four parental training sessions and

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two motivational interview sessions, was applied to the parents in the intervention group. The Parental Self-Efficacy Scale, Zarit Care Burden Scale, Perceived Stress Scale and Family Empowerment Scale were used to evaluate the effectiveness of the empowerment program. Standard practice was performed for the control group.
Results: Parents in the intervention group showed significantly greater improvements than those in the control group in self-efficacy (t = 5.340, p < 0.001), perceived stress (t = -4.636, p < 0.001) and family empowerment (t = 2.745, p = 0.008). No significant difference was observed between the groups in caregiver burden (p = 0.086).
Conclusion: This study reveals that using a parent empowerment program that includes motivational interviews along with training interventions is effective in empowering parents to manage their children's care, reducing stress, and supporting them to acquire effective parenting skills by increasing self-efficacy. Future research should explore designs that assess the independent and combined effects of motivational interviews and parent training programmes in randomised controlled trials. The study was registered at ClinicalTrials.gov (https://clinicaltrials.gov/) under the registration number NCT06629974 on October 8, 2024.

Authors: Damla Şahin Büyük, Dilek Özmen
Full Source: Child: care, health and development 2025 Sep;51(5):e70148. doi: 10.1111/cch.70148.

OCCUPATIONAL

Hand Eczema and Facial Skin Problems - Association with Occupational Exposures among Community Care Personnel in Sweden: A Cross-sectional Study

2025-08-03

Hand eczema and facial skin problems are common occupational-related skin diseases. However, the data regarding care workers in community care settings are limited. To assess the prevalence and factors associated with hand eczema and facial skin problems among community care personnel, an online questionnaire link was sent to 10,194 personnel in Sweden, with questions regarding hygiene routines, skin problems, and demographics of the participants. Respondents were categorized into groups regarding their skin symptoms. In all, 1,923 (18.9%) responded (89.8% females; 75.9% assistant nurses and care assistants). The 1-year prevalence of hand eczema and facial skin problems was 34.7% and 45.5%, respectively. Dose-dependent associations were found between

occupational exposure to soap and water and hand eczema, and duration of face mask use and facial problems. Also, a higher perceived level of stress, female sex, atopic dermatitis, and lower age group were associated with both hand eczema and facial skin problems. In conclusion, healthcare workers in community care have an increased risk of occupationally related skin symptoms, foremost hand eczema, but also facial symptoms related to the use of face masks. Thus, efforts to reduce the harmful effects from the risk factors should be the main concern.

Authors: Thanisorn Sukakul, Nils Hamnerius, Tina Lejding, Kajsa Davidson Källberg, Anna Josefson, Ebba Detlofssen, Cecilia Svedman

Full Source: Acta dermato-venereologica 2025 Aug 3:105:adv43771. doi: 10.2340/actadv.v105.43771.

Improving heat stress prevention through targeted education in hot and humid workplaces: a study in a foundry industry

2025-08-01

Background: Heat-related illnesses and deaths are predictable and preventable, while lack of education can increase the associated risks. The aim of this study was to improve heat stress prevention through targeted education in hot and humid workplaces.

Method: This intervention study with a pre-posttest design was conducted in 2023 on 50 workers in a foundry industry. Initially, by literature reviewing valid scientific databases, factors related to the perception and awareness, knowledge, and functionality (PAKF) of the workers were identified. Subsequently, the face validity of the questionnaire was determined based on the opinions of nine experts in the field of occupational heat stress. The content validity and reliability of the questionnaire were determined using the Content Validity Ratio (CVR), Content Validity Index (CVI), and Cronbach's alpha coefficient. A two-session (180 min each) educational intervention related to preventing occupational heat stress was implemented, and the results were compared using covariance analysis. Gathered data were analyzed using Excel v.2019 and SPSS v.26 software.

Result: The study results indicated that out of 53 items designed, ultimately 27 items were confirmed, with CVI, CVR, and Cronbach's alpha coefficient values of 0.94, 0.78, and 0.76, respectively. Conducting exploratory factor analysis led to the confirmation of 7 factors explaining 50% of the total variance, and all 27 questionnaire items showed acceptable intercorrelations. Furthermore, implementing a heat stress