



Bulletin de veille du réseau d'écotoxicologie terrestre et aquatique N°56

Colette Bertrand, Christian Mougin, Annette Bérard, Soizic Morin, Olivier Crouzet, Sonia Grimbuhler, Pascale Karmasyn-Veyrines

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Bulletin de veille du réseau d'écotoxicologie terrestre et aquatique



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Edito

Voici notre 56^{ème} bulletin de veille, qui nous espérons toujours informatif !

Nous vous proposons dans ce bulletin une tribune concernant le projet européen « PARC » : Partnership for the Assessment of Risks from Chemicals. La tribune est téléchargeable sous forme de fiche thématique sur notre site ECOTOX : <https://www6.inrae.fr/ecotox/Productions/Fiches-thematiques/Fiche-thematique-N-38-avril-2022>

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Ce bulletin marque le changement de l'outil de veille de la DipSO et il vous est proposé dans un format mixte, avec deux parties disposant chacune d'un sommaire. Nous vous présentons nos excuses pour les quelques défauts de forme de ce bulletin.

N'oubliez pas de nous transmettre les informations que vous souhaitez diffuser, notamment vos publications que nous pourrions avoir oubliées.

L'équipe vous souhaite une bonne lecture de ce bulletin !

Contact : veille-ecotox@inrae.fr

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Tribune libre

Le projet européen « PARC » : Partnership for the Assessment of Risks from Chemicals

Cette fiche vise à présenter le futur partenariat européen « PARC » (*Partnership for the Assessment of Risks from Chemicals* – Partenariat pour l'évaluation des risques liés aux substances chimiques).

PARC est un partenariat européen public-public sous Horizon Europe (programme-cadre de l'Union européenne pour la recherche et l'innovation pour la période 2021-2027. D'une durée de 7 ans, le partenariat a démarré le 1^{er} mai 2022 pour s'achever au printemps 2029. Le budget prévisionnel de PARC est de 400 millions d'euros dont la moitié sera financée par la Commission Européenne et le reste par les Etats Membres partenaires. L'Anses sera le coordinateur du partenariat dans sa globalité.

Quels sont les principaux objectifs de PARC ?

L'objectif principal de PARC est de renforcer les capacités européennes en évaluation du risque chimique pour protéger la santé humaine et l'environnement.

Dans ce cadre, trois axes stratégiques ont été définis :

- La collaboration des évaluateurs de risque au niveau national et européen, avec les réseaux scientifiques de chercheurs dans un environnement transdisciplinaire, pour fixer en commun les priorités en terme de recherche et d'innovation en évaluation du risque chimique.
- La mise en place, par les évaluateurs de risques et les réseaux scientifiques, d'un programme de recherche et d'innovation coordonné pour répondre aux priorités identifiées pour l'évaluation du risque chimique que les agences sanitaires nationales et au niveau de l'UE doivent mener.
- L'accès des évaluateurs de risques européens, de leurs réseaux scientifiques et des parties prenantes aux capacités de recherche et innovation (R&I) nécessaires pour mettre en œuvre une évaluation du risque chimique innovante.

Pour certaines de ses activités, PARC constituera une suite ou un complément de plusieurs projets européens en cours ou récemment terminés, notamment le programme conjoint européen pour la biosurveillance humaine dans l'UE « HBM4EU¹ ».

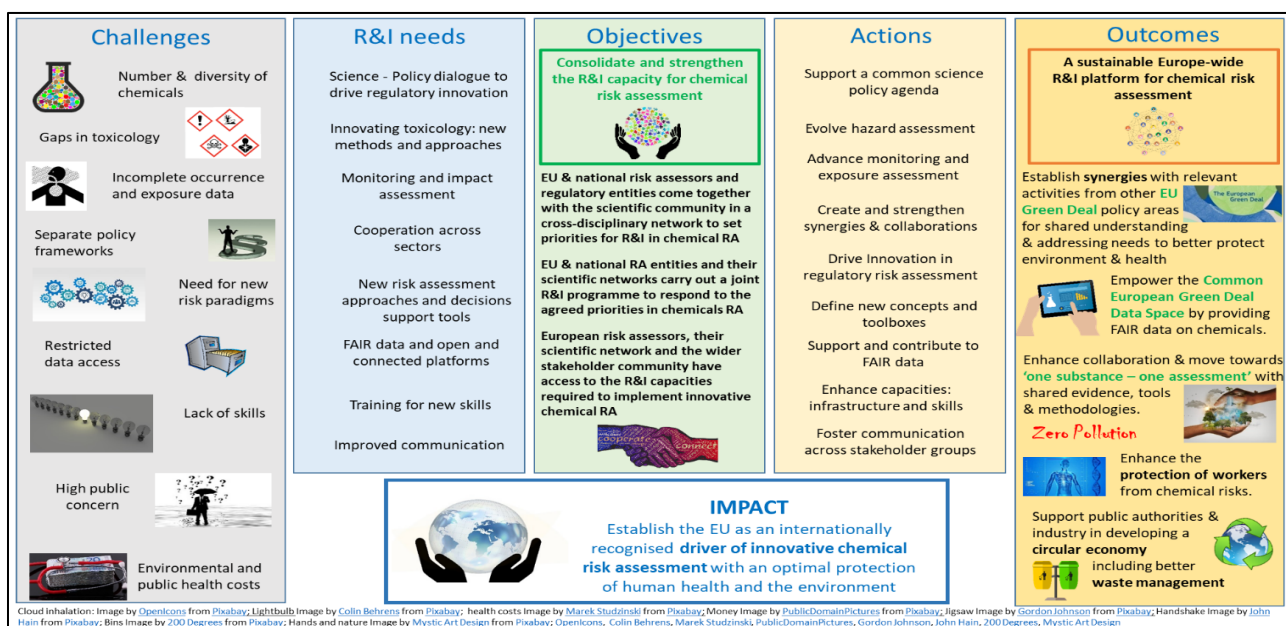
PARC devrait également répondre au souhait exprimé depuis plusieurs années par l'Anses et ses partenaires français et européens que soit créé et mis en place un programme public européen d'études toxicologiques en appui à l'évaluation des risques. Les activités et études entreprises dans le cadre de PARC répondront à des besoins précis, identifiés par les évaluateurs et gestionnaires des risques liés aux substances chimiques et ne pouvant être prises en charge par ailleurs.

¹ HBM4EU European Human Biomonitoring Initiative (<https://www.hbm4eu.eu/>)

Il est attendu de PARC des bénéfices à trois niveaux :

- **Scientifiques** : notamment en créant de nouvelles connaissances, en renforçant le réseau d'experts et de laboratoires en Europe sur le sujet, et en développant la dissémination ouverte des connaissances en matière d'évaluation des risques.
- **Réglementaires et sociétaux** : en contribuant à une meilleure protection de notre environnement et de notre santé, notamment en appuyant les priorités politiques au niveau européen, telles que la mise en place du Pacte vert pour l'Europe (*European Green Deal*)² ou la nouvelle stratégie sur les substances chimiques qui vise le développement d'une chimie saine et durable (*Chemicals Strategy for Sustainability Towards a Toxic-Free Environment*)³.
- **Economiques** : notamment en contribuant à la croissance fondée sur l'innovation, par la mise en œuvre d'approches scientifiques et d'une communication ciblée avec les parties prenantes dont les industriels, en ayant un effet de levier sur les investissements R&I, en développant de nouvelles compétences par la formation et en contribuant à l'amélioration des conditions de travail.

La figure suivante présente la logique d'intervention de PARC.



Comment PARC sera organisé ?

Le programme de travail de PARC est structuré autour de 9 « Work-packages (WPs) » :

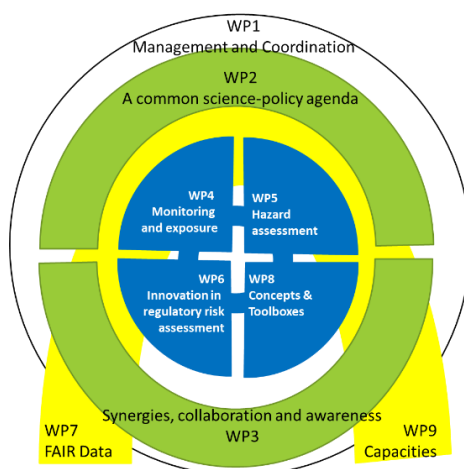
- **WP1** : Coordination administrative et scientifique – leader : **Anses** (France)

² https://ec.europa.eu/info/publications/communication-european-green-deal_en

³ https://ec.europa.eu/environment/strategy/chemicals-strategy_en

- **WP2** : Agenda commun science/réglementation – co-leaders : *European Environment Agency (EEA, Europe)* et *Environment Agency Austria (EAA, Autriche)*
- **WP3** : Communication, collaborations et sensibilisation – co-leaders : *General Chemical State Laboratory (GCSL, Grèce)* et *National Health Institute Doutor Ricardo Jorge (INSA, Portugal)*
- **WP4** : Surveillance et exposition – co-leaders : *Santé publique France (SpF, France)* et *German Environment Agency (UBA, Allemagne)*
- **WP5** : Evaluation du danger – co-leaders : **Anses** (France) et *German Federal Institute for Risk Assessment (BfR, Allemagne)*
- **WP6** : Innovation en évaluation réglementaire du risque – co-leaders : *National Institute for Public Health and the Environment (RIVM, Pays-bas)* et *Swedish Chemicals Agency (Kemi, Suède)*
- **WP7** : FAIR data⁴ - co-leaders : *Flemish Institute for Technological Research (VITO, Belgique)* et *University of Birmingham (UOB, Royaume-Uni)*
- **WP8** : Concepts et boîtes à outils – co-leaders : *Aristotle University of Thessaloniki (AUTH, Grèce)* et *Department of Public Health of the University of Naples Federico I (UNINA, Italie)*
- **WP9** : Formation et infrastructure – co-leaders : *Institute of Health Carlos III (ISCIII, Espagne)* et *RECETOX - Masaryk University Faculty of Science (RECETOX, République Tchèque)*

La figure suivante montre comme les différents WP sont positionnés et interagiront.



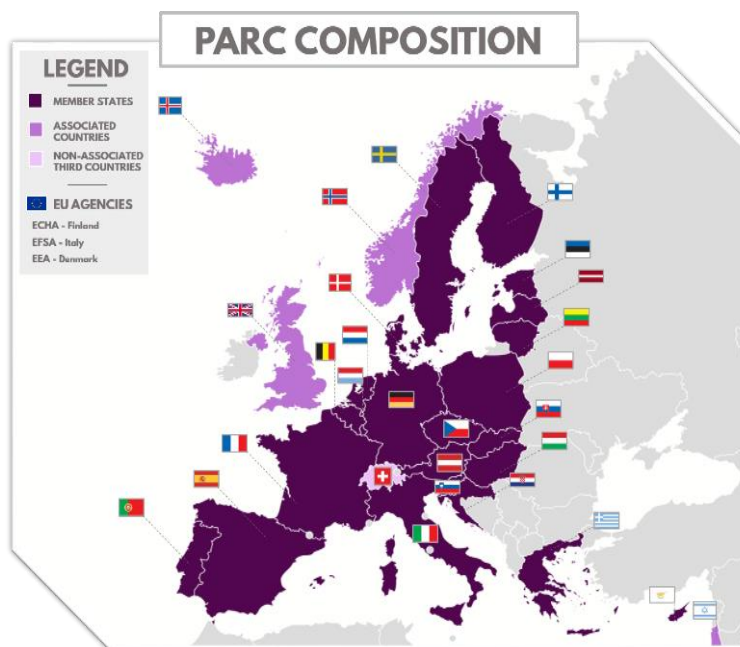
Les WP 4, 5, 6 et 8 sont destinés à produire des connaissances scientifiques nouvelles dans le cadre de projets de recherche et innovation qui seront proposés par les partenaires de PARC pour figurer dans le programme de travail. Ces projets répondront aux priorités établies dans le cadre de l'élaboration de l'agenda commun et généreront des connaissances scientifiques (acquisition de données d'exposition ou de danger sur les substances chimiques prioritaires, développement de nouveaux outils utilisables en évaluation des risques dans un cadre réglementaire...) répondant à ces priorités. Les autres WPs auront plus un rôle transversal et structurant d'appui au programme (communication,

⁴ « Facile à trouver, Accessible, Interopérable et Réutilisable » (en anglais : Findable, Accessible, Interoperable, Reusable, d'où l'acronyme « FAIR »).

identification de synergies avec d'autres programmes européens et internationaux, gestion et partage des données et des modèles, structuration des capacités de laboratoire, par la mise en place de réseaux et de formations, ...).

Quels sont les partenaires de PARC ?

A ce jour, il est prévu que le partenariat associe près de 200 partenaires issus de 28 pays et de 3 agences de l'UE (l'Agence européenne pour l'environnement - EEA, l'Agence européenne des produits chimiques - ECHA et l'Autorité européenne de sécurité des aliments - EFSA).



Quels sont les acteurs français impliqués dans PARC à ce stade ?

Outre l'Anses et Santé publique France qui seront pour la France les 2 organismes signataires du contrat de subvention (*Grant Signatory* - GS), d'autres organismes français seront partenaires en tant qu'entités affiliées (AEs). Les institutions de recherche identifiées à ce stade sont listées dans la figure suivante :



Les divers acteurs français ayant un intérêt dans PARC, les ministères membres du « *Governing Board* », les partenaires (qu'ils soient GS ou AE), et autres parties prenantes au niveau national seront regroupés dans un « Hub National français » qui sera animé par Santé publique France et dont l'objectif est d'informer les acteurs français des avancées de PARC mais aussi d'instruire PARC avec les besoins et l'expertise française.

Au cours des 7 ans de la vie de PARC, d'autres partenaires pourront rejoindre le partenariat et participer aux activités.

Dans le cadre du Pacte vert pour l'Europe et de la stratégie européenne pour une chimie durable, la mise en œuvre de PARC constituera une occasion unique pour les acteurs de l'évaluation des risques de collaborer dans un contexte réglementaire européen en dehors des agendas sectoriels, souvent très contraints. Le partenariat devrait permettre de dégager des pistes de mutualisation tant au niveau français qu'europpéen et d'optimiser les ressources dédiées à ces activités d'évaluation des risques chimiques.

Contact : parc@anses.fr



Pour en savoir plus

https://ec.europa.eu/info/sites/default/files/research_and_innovation/funding/documents/ec_rtd_he-partnerships-chemical-risk-assessment.pdf

Partenariat européen



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ERA / PUBLICATIONS SCIENTIFIQUES / COMMUNAUTÉS MICROBIENNES AQUATIQUES

The impact of silver nanoparticles on microbial communities and antibiotic resistance determinants in the environment

Authors: Yonathan K, Mann R, Mahbub KR, Gunawan C

Source: ENVIRONMENTAL POLLUTION 293, 2021, DOI 10.1016/j.envpol.2021.118506

Abstract: Nanosilver (NAg) is currently one of the major alternative antimicrobials to control microorganisms. With its broad-spectrum efficacy and lucrative commercial values, NAg has been used in medical devices and increasingly, in consumer products and appliances. This widespread use has inevitably led to the release and accumulation of the nanoparticle in water and sediment, in soil and even, wastewater treatment plants (WWTPs). This Article describes the physical and chemical transformations of NAg as well as the impact of the nanoparticle on microbial communities in different environmental settings...

Metagenomic ecotoxicity assessment of trace difenoconazole on freshwater microbial community

Authors: Zhang MW, Zhou ZG, Zhang JF and more...

Source: CHEMOSPHERE 294, 2022, DOI 10.1016/j.chemosphere.2022.133742

Abstract: Difenoconazole, a typical triazole fungicide, inhibits the activity of cytochrome P450

enzyme in fungi, and is extensively used in protecting fruits, vegetables, and cereal crops. However, reports elucidating the effects of difenoconazole on aquatic microbial communities are limited. Our study showed that difenoconazole promoted microalgae growth at concentrations ranging from 0.1 to 5 µg/L, which was similar with its environmental residual concentrations...

Effects of manufactured nanomaterials on algae: Implications and applications

Authors: Huang YX, Gao MY, Wang WJ et al.

Source: FRONTIERS OF ENVIRONMENTAL SCIENCE & ENGINEERING 16:122, 2022, DOI 10.1007/s11783-022-1554-3

Abstract: The wide application of manufactured nanomaterials (MNMs) has resulted in the inevitable release of MNMs into the aquatic environment along their life cycle. As the primary producer in aquatic ecosystems, algae play a critical role in maintaining the balance of ecosystems' energy flow, material circulation and information transmission. Thus, thoroughly understanding the biological effects of MNMs on algae as well as the underlying mechanisms is of vital importance. We conducted a comprehensive review on both positive and negative effects of MNMs on algae and thoroughly discussed the underlying mechanisms...

Trophic transfer of copper decreases the condition index in *Crassostrea gigas* spat in concomitance with a change in the microalgal fatty acid profile and enhanced oyster energy demand

Authors: Akcha F, Coquille N, Sussarellu R et al.

Source: SCIENCE OF THE TOTAL ENVIRONMENT 824:153841, 2022, DOI 10.1016/j.scitotenv.2022.153841

Abstract: Due to new usages and sources, copper (Cu) concentrations are increasing in the Arcachon Basin, an important shellfish production area in France. In the present paper, the trophic transfer of Cu was studied between a microalga, *Tetraselmis suecica*, and *Crassostrea gigas* (Pacific oyster) spat. An experimental approach was developed to assess Cu exposure, transfer and toxicity on both phytoplankton and spat...

Monoculture and co-culture tests of the toxicity of four typical herbicides on growth, photosynthesis and oxidative stress responses of the marine diatoms *Pseudo-nitzschia mannii* and *Chaetoceros decipiens*

Authors: Sahraoui I, Ben Garali SM, Chakroun Z et al.

Source: ECOTOXICOLOGY Early Access, 2022, DOI 10.1007/s10646-022-02535-5E

Abstract: The toxicity of four herbicides in mixture (alachlor, diuron, des-isopropyl-atrazine and simazine) on the growth and the photosynthesis parameters of two marine diatoms *Pseudo-nitzschia mannii* and *Chaetoceros decipiens* have been investigated for 9 days in monoculture and co-culture tests. The catalase (CAT) and guaiacol peroxidase (GPX) were also monitored to assess the oxidative stress response...

Occurrence of antibiotics in waters, removal by microalgae-based systems, and their toxicological effects: A review

Authors: Yu C, Pang H, Wang JH et al.

Source: SCIENCE OF THE TOTAL ENVIRONMENT 813:151891, 2022, DOI 10.1016/j.scitotenv.2021.151891

Abstract: Global antibiotics consumption has been on the rise, leading to increased antibiotics

release into the environment, which threatens public health by selecting for antibiotic resistant bacteria and resistance genes, and may endanger the entire ecosystem by impairing primary production. [...] This study, therefore, aims to build a link connecting the occurrence of antibiotics in the aquatic environment, the removal of antibiotics by microalgae-based processes, and the toxicity of antibiotics to microalgae...

Evaluation of the acute toxic response induced by triazophos to the non-target green algae *Chlorella pyrenoidosa*

Authors: Su Q, Zheng J, Xi JJ et al.

Source: PESTICIDE BIOCHEMISTRY AND PHYSIOLOGY 182:105036, 2022, DOI 10.1016/j.pestbp.2022.105036

Abstract: Residues of triazophos in aquatic ecosystems due to extensive use for controlling pests in agriculture has become worldwide concern, while the toxic response of triazophos on the non-target green algae in aquatic environment is not well studied. Therefore, the acute (96 h) toxic effects of 1 and 10 mg/L triazophos on green algae *Chlorella pyrenoidosa* were evaluated in present study...

Bacteria versus fungi for predicting anthropogenic pollution in subtropical coastal sediments: Assembly process and environmental response

Authors: Zhao ZL, Li HJ, Sun Y et al.

Source: ECOLOGICAL INDICATORS 134:108484, 2022, DOI 10.1016/j.ecolind.2021.108484

Abstract: Understanding the dynamics of ecological response to multiple stresses is a precondition for management and restoration of largely disturbed coastal ecosystems. Among diverse taxa in coastal regions, benthic organisms are widely recognized as promising targets for

assessing ecological causes and consequences of anthropogenic activity-derived stressors, such as environmental pollution. However, spatial and local environmental factors play important but different roles in shaping community structure of different benthic taxa, mainly owing to their distinct body size, mobility, and metabolic capacity. Here, we applied metabarcoding, coupled with physicochemical analyses, to determine the benthic microbial community composition in a typical subtropical coast area, Beibu Gulf in Southern China...

Effects of ofloxacin on the structure and function of freshwater microbial communities

Authors: Deng Y, Debognies A, Zhang Q et al.

Source: AQUATIC TOXICOLOGY 244:106084, 2022, DOI 10.1016/j.aquatox.2022.106084

Abstract: Ofloxacin (OFL) is a broad-spectrum fluoroquinolone antibiotic frequently used in clinic for treating bacterial infections. The discharged OFL would inevitably enter into aquatic ecosystems, affecting the growth of non-target microorganisms, which may result in micro-ecosystem imbalance. To the best of our knowledge, researches in this area are rather sparse. The present study evaluated the response of photosynthetic microorganisms (cyanobacteria, eukaryotic algae) and aquatic microbial community to OFL in a microcosm...

The water temperature changes the effect of pH on copper toxicity to the green microalgae *Raphidocelis subcapitata*

Authors: Pascual G, Sano D, Sakamaki T et al.

Source: CHEMOSPHERE 291:133110, 2022, DOI 10.1016/j.chemosphere.2021.133110

Abstract: Rising temperature enhances the algal growth, which in turn increases the water pH. Ecotoxicity studies have suggested that copper becomes more , toxic to microalgae species by increasing the temperature (within 20-30 degrees

C) and pH. In this study, the joined effect of pH and temperature on copper toxicity to the microalgae *Raphidocelis subcapitata* was investigated using acclimated cells. Algal growth and toxicity tests were conducted [...] at pH 6, 7, and 8 units from 15 to 30 degrees C, spaced by 3 degrees C...

Unveil the role of dissolved and sedimentary metal(loid)s on bacterial communities and metal resistance genes (MRGs) in an urban river of the Qinghai-Tibet Plateau

Authors: Xu XM, Chen H, Hu JY et al.

Source: WATER RESEARCH 211:118050, 2022, DOI 10.1016/j.watres.2022.118050

Abstract: Though metal resistance genes (MRGs) are of global concern in aquatic ecosystems, the underlying factors responsible for MRGs dissemination, espe, cially in urban rivers on the vulnerable Qinghai-Tibet Plateau, are rarely known. Here, we collected 64 samples including water and sediments during the wet and dry seasons and effluents from six wastewater treatment plants during the dry season and measured 50 metal(loid)s, 60 bacterial phyla, and 259 MRGs...

Pristine and sulfidized ZnO nanoparticles alter microbial community structure and nitrogen cycling in freshwater lakes

Authors: Bao SP, Xiang DF, Xue L et al.

Source: ENVIRONMENTAL POLLUTION 294:118661, 2022, DOI 10.1016/j.envpol.2021.118661

Abstract: Zinc oxide nanoparticles (ZnO NPs) and its sulfidized form (ZnS NPs) are increasingly entering into freshwater systems through multiple pathways. However, their impacts on the composition and function of sedimentary microbial communities are still largely unknown. Here, two kinds of lake-derived microcosms were constructed and incubated with ZnO NPs, or ZnS

NPs to investigate the short-term (7 days) and long-term (50 days) impacts on sedimentary microbial communities and nitrogen cycling...

Alone and combined toxicity of ZnO nanoparticles and graphene quantum dots on microalgae *Gymnodinium*

Authors: Zhu XL, Tan LJ, Zhao T et al.

Source: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH Early Access, 2022, DOI 10.1007/s11356-022-19267-y

Abstract: Investigation of ZnO nanoparticles (nano-ZnO) and graphene quantum dots (GQDs) toxicology on dinoflagellate *Gymnodinium* helps to understand the effects of different surface characteristic nanoparticles on marine algae. The growth and biological responses of the algae exposed to 1, 10, 20 mg L⁻¹ nano-ZnO and GQDs in f/2 media were explored...

Community-level and function response of photoautotrophic periphyton exposed to oxytetracycline hydrochloride

Authors: Wang ZF, Yin SC, Chou QC et al.

Source: ENVIRONMENTAL POLLUTION 294:118593, 2022, DOI 10.1016/j.envpol.2021.118593

Abstract: Periphyton is considered important for removal of organic pollutants from water bodies, but knowledge of the impacts of antibiotics on the community structure and ecological function of waterbodies remains limited. In this study, the effects of oxytetracycline hydrochloride on the communities of photoautotrophic epilithon and epipelton and its effect on nitrogen and phosphorus concentrations in the water column were studied in a 12-day mesocosm experiment...

The impact of silver nanoparticles on microbial communities and antibiotic resistance determinants in the environment

Authors: Yonathan K, Mann R, Mahbub KR, Gunawan C

Source: ENVIRONMENTAL POLLUTION 293:118506, 2022, DOI 10.1016/j.envpol.2021.118506

Abstract: Nanosilver is currently one of the major alternative antimicrobials to control microorganisms. With its broad-spectrum efficacy and lucrative commercial values, NAg has been used in medical devices and increasingly, in consumer products and appliances. This widespread use has inevitably led to the release and accumulation of the nanoparticle in water and sediment, in soil and even, wastewater treatment plants. This Article describes [...] the impact of the nanoparticle on microbial communities in different environmental settings; how the nanoparticle shifts not only the diversity and abundance of microbes, including those that are important in nitrogen cycles and decomposition of organic matters, but also their associated genes and in turn, the key metabolic processes...

Metagenomic ecotoxicity assessment of trace difenoconazole on freshwater microbial community

Authors: Zhang MW, Zhou ZG, Zhang JF et al.

Source: CHEMOSPHERE 294:133742, 2022, DOI 10.1016/j.chemosphere.2022.133742

Abstract: Difenoconazole, a typical triazole fungicide, inhibits the activity of cytochrome P450 enzyme in fungi, and is extensively used in protecting fruits, vegetables, and cereal crops. However, reports elucidating the effects of difenoconazole on aquatic microbial communities are limited...

Effects of algae and fungicides on the fate of a sulfonylurea herbicide in a water-sediment system

Authors: Wijntjes C, Weber Y, Hoeger S and more...

Source: CHEMOSPHERE, 290, 2021, DOI 10.1016/j.chemosphere.2021.133234

Abstract: The impact of pesticide mixtures on various soil parameters has been extensively studied, whereas research on effects in the aquatic environment is scarce. Furthermore, investigations on the consequences of chemical mixtures on the biodegradation kinetics of parent compounds remain deficient. Our research intended to evaluate potential effects by combined application of an agriculturally employed tank mixture to aquatic sediment systems under controlled laboratory conditions...

How do freshwater microalgae and cyanobacteria respond to antibiotics?

Authors: Le V, Tran QG, Ko SR et al.

Source: CRITICAL REVIEWS IN BIOTECHNOLOGY Early Access, 2022, DOI 10.1080/07388551.2022.2026870

Abstract: Antibiotic pollution is an emerging environmental challenge. Residual antibiotics from various sources, including municipal and industrial wastewater, sewage discharges, and agricultural runoff, are continuously released into freshwater environments, turning them into reservoirs that contribute to the development and spread of antibiotic resistance. Thus, it is essential to understand the impacts of antibiotic residues on aquatic organisms, especially microalgae and cyanobacteria, due to their crucial roles as primary producers in the ecosystem. This review summarizes the effects of antibiotics on major biological processes in freshwater microalgae and cyanobacteria, including photosynthesis, oxidative stress, and the metabolism of macromolecules...

Benthic diatoms and macroinvertebrates status with relevant to sediment quality of islands shores in the Nile River, Egypt

Authors: Abdel-Satar AM, Belal DM, Salem SG et al.

Source: RENDICONTI LINCEI-SCIENZE FISICHE E NATURALI Early Access, 2022, DOI 10.1007/s12210-022-01051-2

Abstract: Sediments are utilized as a marker for events that endure long enough to manifest their environmental impacts and determine the contamination levels. The purpose of the present study was to highlight the current sediment quality of four Nile islands shores by utilizing a variety of physical, chemical, and biological aspects and indices. In addition, the status of benthic diatoms and macroinvertebrates, as well as their responses to sediment variables were investigated...

Ecotoxicological effects of sulfacetamide on a green microalga, *Desmodesmus quadricauda*: Cell viability, antioxidant system, and biotransformation

Authors: Qi X, Ru SG, Xiong JQ

Source: ENVIRONMENTAL TECHNOLOGY & INNOVATION 26:102278, 2022, DOI 10.1016/j.eti.2022.102278

Abstract: Sulfonamides (SAs) has been frequently found in environment with numerous adverse effects on ecological system and human. In this study, we investigated the toxicity of sulfacetamide (SFM) on a benthic microalgal species, as well as its metabolic mechanisms [...] including total chlorophyll, carotenoid, malonaldehyde, and activities of antioxidant enzymes (superoxide dismutase and peroxidase)...

ERA / PUBLICATIONS SCIENTIFIQUES / ECOTOX SPATIALE / ECOTOX DU PAYSAGE

Both landscape and local factors influence plant and hexapod communities of industrial water-abstraction sites

Authors: Thierry C, Pisanu B & Machon N

Source: Ecology and Evolution 12(2):e8365, 2022,
<https://doi.org/10.1002/ece3.8365>

Abstract: At the landscape level, intensification of agriculture, fragmentation, and destruction of natural habitats are major causes of biodiversity loss that can be mitigated at small spatial scales. However, the complex relationships between human activities, landscapes, and biodiversity are poorly known. Yet, this knowledge could help private stakeholders managing seminatural areas to play a positive role in biodiversity conservation. We investigated how water-abstraction sites could sustain species diversity in vascular-plant communities and two taxonomic groups of insect communities in a fragmented agricultural landscape. Landscape-scale variables (connectivity indices and surrounding levels of herbicide use), as well as site-specific variables (soil type for vascular plants, floral availability for *Rhopalocera*, and low herbaceous cover for *Orthoptera*), were correlated to structural and functional metrics of species community diversity for these taxonomic groups.

Effects of agricultural landscape structure, insecticide residues, and pollen diversity on the life-history traits of the red mason bee *Osmia bicornis*

Authors: Bednarska AJ, Mikołajczyk Ł, Ziótkowska E, Kocjan K et al.

Source: Science of The Total Environment 809:151142, 2022,
<https://doi.org/10.1016/j.scitotenv.2021.151142>

Abstract: Agricultural landscapes have changed substantially in recent decades, shifting from the dominance of small fields (S) with diverse cropping systems toward large-scale monoculture (L), where landscape heterogeneity disappears. In this study, artificial nests of the red mason bee, *Osmia bicornis*, were placed in S and L landscape types on the perimeter of oilseed rape fields representing different oilseed rape coverages. The local landscape structure around each nest was characterised. Pollen diversity and insecticide risk levels in the pollen provisions collected by the bees were analysed, and their dependence on the landscape structure was tested. Thereafter, the effects of pollen diversity, insecticide risk, and landscape structure on the life-history traits of bees and their sensitivity to topically applied Dursban 480 EC were determined.

Are spray drift losses to agricultural roads more important for surface water contamination than direct drift to surface waters?

Authors: Schönenberger UT, Simon J & Stamm C

Source: Science of the Total Environment, 809, 151102, 2022,
<https://doi.org/10.1016/j.scitotenv.2021.151102>

Abstract: Spray drift is considered a major pesticide transport pathway to surface waters. Current research and legislation usually only considers direct spray drift. However, also spray drift on roads and subsequent wash-off to surface waters was identified as a possible transport pathway. Hydraulic shortcuts (storm drainage inlets, channel drains, ditches) have been shown to connect roads to surface waters, thus increasing the risk of drift wash-off to surface waters. However, the importance of this pathway has never been assessed on larger scales.

Sweep netting samples, but not sticky trap samples, indicate beneficial arthropod abundance is negatively associated with landscape wide insecticide use

Authors: Bakker L, van der Werf W & Bianchi FJ

Source: Journal of Applied Ecology 59(4):942-952, 2022, <https://doi.org/10.1111/1365-2664.14106>

Abstract: Insecticide use and landscape context are major drivers for the abundance of beneficial arthropods, such as predators, parasitoids and pollinators. However, the relative importance of local and landscape-wide insecticide use is not well understood, and it is unclear to what extent impacts of insecticides on beneficial arthropod populations are moderated by landscape composition. We collected and analysed data on beneficial arthropod abundance and local and landscape-wide insecticide use across 38 Dutch landscapes. We used regression to study the associations between beneficial arthropod abundance (response), insecticide use and landscape factors.

ERA / PUBLICATIONS SCIENTIFIQUES / MICROBIOLOGIE ET CONTAMINANTS

Enantioselective degradation of prothioconazole in soil and the impacts on the enzymes and microbial community

Authors: Zhai WJ, Zhang LL, Liu H, Zhang CT and more...

Source: SCIENCE OF THE TOTAL ENVIRONMENT 824, 2022, DOI 10.1016/j.scitotenv.2022.153658

Abstract: In this work, the stereoselective degradation of prothioconazole in five soils was investigated and the metabolite prothioconazole-desthio was determined. The effects of

prothioconazole on soil enzymes activities and microbial community were also studied...

Applicability Evaluation of Soil Algae Pipe Assay in Silver Nanoparticle-Contaminated Soils

Authors: Kwak JI, Nam SH, An YJ

Source: APPLIED SCIENCES-BASEL 12:4, 2022, DOI 10.3390/app12041890

Abstract: Due to pervasive and resilient soil contaminants, heterogeneously contaminated soil poses unpredictable potential threats to ecosystems. In this study, the extension of a previously developed soil algae pipe assay for evaluating heterogeneously contaminated soil under an open system is described. The assay can be used in soil that is heterogeneously contaminated with silver nanoparticles in combination with the examination of morphological changes (e.g., in vivo chlorophyll a, cell granularity, cell size, and mucilaginous sheath) and lipid contents...

Distinct response patterns of bacterial communities in Ag- and ZnO-rGO nanocomposite-amended silt loam soils

Authors: Li T, Li YH, Zhang XK and more...

Source: SCIENCE OF THE TOTAL ENVIRONMENT 810, 2022, DOI 10.1016/j.scitotenv.2021.151270

Abstract: The widespread application of metal-based nanoparticle (MNPs)/reduced graphene oxide (rGO) composites inevitably leads to their release into soils. However, we lack a detailed understanding of the bacterial community response to MNPs-rGO exposure in farmland soils...

Rare-earth metal oxide nanoparticles decouple the linkage between soil bacterial community structure and function by selectively influencing potential keystone taxa

Authors: Fang JN , Bai XT, Qi L and more...

Source: ENVIRONMENTAL POLLUTION 298, 2022, DOI 10.1016/j.envpol.2022.118863

Abstract: Excessive production and application of rare-earth metal oxide nanoparticles warrants assessment of their environmental risks. Little is known about the impact of these nanoparticles on soil bacterial communities. We quantified the effects of nano-Gd₂O₃ and nano-La₂O₃, at the different concentrations and exposure regimes, on soil bacterial community structure and function as well as the structure-function relationship...

Effect of different washing solutions on soil enzyme activity and microbial community in agricultural soil severely contaminated with cadmium

Authors: Zhang Y, Wu CF, Deng SP and more...

Source: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH 2022, DOI 10.1007/s11356-022-19734-6

Abstract: Soil enzyme activities and microbial communities have a good response to the remediation effect of heavy metal-contaminated soils. To evaluate the effect of three commonly used washing agents, ferric chloride (FC), ethylenediaminetetraacetic acid (EDTA) and ethylenediamine-tetra-methylenephosphonic acid (EDTMP) on soil enzyme activities and microbial community in cadmium (Cd)-contaminated agricultural soil were collected from farmland near a non-ferrous metal smelter...

Effects of cadmium contamination on bacterial and fungal communities in *Panax ginseng*-growing soil

Authors: Sun H, Shao C, Jin Q and more...

Source: BMC MICROBIOLOGY 22:1, 2022, DOI 10.1186/s12866-022-02488-z

Abstract: Background Cadmium (Cd) contamination in soil poses a serious safety risk for the development of medicine and food with ginseng as the raw material. Microorganisms are key players in the functioning and service of soil ecosystems, but the effects of Cd-contaminated ginseng growth on these microorganisms is still poorly understood...

Bacterial community succession and influencing factors for *Imperata cylindrica* litter decomposition in a copper tailings area of China

Authors: Jia T, Liang XX, Guo TY and more...

Source: SCIENCE OF THE TOTAL ENVIRONMENT 815, 2022, DOI 10.1016/j.scitotenv.2021.152908

Abstract: Litter decomposition is a critical component of the ecological nutritional transformation process. In a copper mining area, the litter from *Imperata cylindrica* is the major indicator for restoring heavy metal-polluted copper mining lands. Large amounts of litter are generated at the end of the plant growing season during the process of vegetation restoration in copper mining areas, and the microbial dynamics play an important role in soil nutrient turnover during the decomposition of litter. Investigating the characteristics and interactions of bacterial communities during litter decomposition will clarify the driving mechanisms of organic matter and nutrient cycling in copper mining areas that harbor contaminated soils...

Microbial community structures and their driving factors in a typical gathering area of antimony mining and smelting in South China

Authors: Wang WN, Xiao SS, Amanze C and more...

Source: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH 2022, DOI 10.1007/s11356-022-19394-6

Abstract: his study investigated soil microbial community in a typical gathering area of antimony mining and smelting in South China. The physical and chemical properties of different soils (mining waste dumps, flotation tailings, and smelting slag) and depths (0-20 cm, 40-60 cm, and 80-100 cm) were compared. The results showed that antimony (Sb) and arsenic (As) were the main pollutants, and their concentrations were 5524.7 mg/kg and 3433.7 mg/kg, respectively...

Impacts of a porous hollow silica nanoparticle-encapsulated pesticide applied to soils on plant growth and soil microbial community

Authors: Bueno V, Wang PY, Harrisson O and more...

Source: ENVIRONMENTAL SCIENCE-NANO 2022, DOI 10.1039/d1en00975c

Abstract: Porous silica nanocarriers have the potential to improve agricultural crop productivity. However, the impacts of nanoencapsulated pesticides on soil health and plant growth, and how they compare with conventional pesticides have not been systematically elucidated. In this study, we investigated how applying azoxystrobin encapsulated in porous hollow SiO₂ nanocarriers to agricultural soil impacted the soil microbial community and plant development, using Solanum lycopersicum grown in the laboratory in soil microcosms...

Microalgae-Based Fluorimetric Bioassays for Studying Interferences on Photosynthesis Induced by Environmentally Relevant Concentrations of the Herbicide Diuron

Authors: Grasso G, Cocco G, Zane D and more...

Source: BIOSENSORS-BASEL 12:2, 2022, DOI 10.3390/bios12020067

Abstract: The widespread agricultural use of the phenylurea herbicide Diuron (DCMU) requires the investigation of ecotoxicological risk in freshwater and soil ecosystems in light of potential effects on non-target primary producers and a heavier effect on higher trophic levels. We used microalgae-based fluorimetric bioassays for studying the interferences on the photosynthesis of a freshwater and soil model green microalga (*Chlamydomonas reinhardtii*) induced by environmentally relevant concentrations of the herbicide DCMU...

Impact of hexachlorocyclohexane addition on the composition and potential functions of the bacterial community in red and purple paddy soil

Authors: Wang J, Tang KD, Hu XJ and more...

Source: ENVIRONMENTAL POLLUTION 297, 2022, DOI 10.1016/j.envpol.2022.118795

Abstract: Soil studies have reported the effect of Hexachlorocyclohexane (HCH) on soil microbial communities. However, how soil microbial communities and function shift after HCH addition into the red and purple soil remains unclear. Here, we analyzed the HCH residue fate, and the functional composition and structure of microbial communities to HCH in the two soils...

Mechanism underlying how a chitosan-based phosphorus adsorbent alleviates cadmium-induced oxidative stress in *Bidens pilosa* L. and its impact on soil microbial communities: A field study

Authors: Liang X, L, YY, Tang ST, Shi XW, Zhou NB and more...

Source: CHEMOSPHERE 295, 2022, DOI 10.1016/j.chemosphere.2022.133943

Abstract: In the present study, field experiments were conducted in Side village, Yangshuo, Guilin, Guangxi Province, China, using four C-BPA application levels (control (0 mg m⁻²), T1 (100 mg m⁻²), T2 (200 mg m⁻²) and T3 (400 mg m⁻²)) to clarify the mechanism by which a chitosan-based phosphorus adsorbent (C-BPA) applied as a passivator helps *Bidens pilosa* L. (*B. pilosa* L.) alleviate cadmium (Cd)-induced oxidative stress in Cd-contaminated soil...

Characterization of physicochemical parameters and bioavailable heavy metals and their interactions with microbial community in arsenic-contaminated soils and sediments

Authors: Lin GB, Wang K, He XM and more...

Source: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH 2022, DOI 10.1007/s11356-022-19395-5

Abstract: Mobility and toxicity of heavy metal contamination in the environment are highly dependent on its bioavailability. Most of previous studies focused on total heavy metal contents and their influence on microbial community in soils and sediments. Little were concerned about bioavailable fractions...

Different responses of bacteria and fungi to environmental variables and corresponding community assembly in Sb-contaminated soil

Authors: Wang WQ, Wang HM, Cheng XY and more...

Source: ENVIRONMENTAL POLLUTION 298, 2022, DOI 10.1016/j.envpol.2022.118812

Abstract: Bacterial communities in antimony (Sb) polluted soils have been well addressed, whereas the important players fungal communities are far less studied to date. Here, we report different responses of bacterial and fungal communities to Sb contamination and the ecological processes controlling their community assembly...

Assessment of residual chlorine in soil microbial community using metagenomics

Authors: Yu YT, Zhang Q, Zhang ZY and more...

Source: SOIL ECOLOGY LETTERS, 2022, DOI 10.1007/s42832-022-0130-x

Abstract: Chlorine-containing disinfectants have been widely used around the world for the prevention and control of the COVID-19 pandemic. However, at present, little is known about the impact of residual chlorine on the soil micro-ecological environment. Herein, we treated an experimental soil-plant-microbiome microcosm system by continuous irrigation with a low concentration of chlorine-containing water, and then analyzed the influence on the soil microbial community using metagenomics...

Response of bacterial communities in saline-alkali soil to different pesticide stresses

Authors: Che J, Zhu YL, Li YH and more...

Source: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH, 2022, DOI 10.1007/s11356-021-16316-w

Abstract: The objective is to understand the diversity of bacteria-degrading pesticide pollutants in Xinjiang saline-alkali soil environment and resolve the lack of suitable degrading bacteria resources for bioremediation of pesticide pollution in this environment. The soil of long-term continuous cropping cotton fields in Xinjiang was used to culture the degrading bacterial communities under long-term stress of five pesticides, such as beta-cypermethrin...

Copper content in soils and litter from fruit orchards in Central Chile and its relationship with soil microbial activity

Authors: Schoffer JT, Aponte H, Neaman A and more...

Source: PLANT SOIL AND ENVIRONMENT 2021, DOI 10.17221/281/2021-PSE

Abstract: This study assessed both the soil and litter copper (Cu) levels and their relationships with soil microbial activity, in fruit-tree production areas of central Chile where Cu-based pesticides are intensively sprayed...

Environmental implications of MoS₂ nanosheets on rice and associated soil microbial communities

Authors: Zhao LJ, Chen S, Tan XJ and more...

Source: CHEMOSPHERE 291:1, 2022, DOI 10.1016/j.chemosphere.2021.133004

Abstract: Molybdenum disulfide (MoS₂) is a transition metal dichalcogenides (TMDCs) material that is seeing rapidly increasing use. The wide range of applications will result in significant environmental release. Here, the impact of MoS₂ nano-sheets on rice and associated soil microbial communities was evaluated...

Gut bacterium induced pesticide resistance in insects with special emphasis to mosquito

Authors: Francis CFS, Aneesh EM

Source: INTERNATIONAL JOURNAL OF TROPICAL INSECT SCIENCE, 2022, DOI 10.1007/s42690-022-00761-2

Abstract: Review - Human beings are greatly threatened by the dangerous pathogens spread by mosquitoes, especially malarial parasite transmitted by Anopheles sp., dengue virus by Aedes sp., and filarial worm by Culex sp. Insecticide-based control strategies were playing a significant part in controlling the vectors and thereby reducing the chances of disease spreading...

Multiple heavy metal distribution and microbial community characteristics of vanadium-titanium magnetite tailing profiles under different management modes

Authors: Gan CD, Cui SF, Wu ZZ, Yang JY

Source: JOURNAL OF HAZARDOUS MATERIALS, 429, 2022, DOI 10.1016/j.jhazmat.2021.128032

Abstract: Vanadium-titanium (V-Ti) magnetite tailings have caused great concern due to their safety hazards and environmental risks. However, the microbial community structure and the key geochemical factors of V-Ti magnetite tailing profiles under different management modes remain unclear. Therefore, we investigated the heavy metal distribution and the microbial community structure of the soils and tailings at varied depths of V-Ti magnetite tailing profiles with and without soil coverage...

Dissolution Dynamics and Accumulation of Ag Nanoparticles in a Microcosm Consisting of a Soil-Lettuce-Rhizosphere Bacterial Community

Authors: Wu J, Zhai YJ, Liu G and more...

Source: ACS Sustainable Chemistry & Engineering 9, 48:16172-16181, 2021, DOI 10.1021/acssuschemeng.1c04987

Abstract: Assessment of chronic impact of metallic nanoparticles (NPs) in soil ecosystems is a necessity for ensuring safe and sustainable application. NPs affect plants and their associated microbial life, while the plants and their associated microbiota affect the NPs' fate. Here, we measured the available Ag pool (determined as diethylenetriaminepentaacetic acid-extractable Ag) in AgNP-amended sandy loam soil (1, 10, and 50 mg Ag per kg of soil) over a period of 63 d with and without lettuce...

ERA / PUBLICATIONS SCIENTIFIQUES / MICROBIOLOGIE ET CONTAMINANTS / Antibiotiques et antibiorésistances

The fate of erythromycin in soils and its effect on soil microbial community structure

Authors: Shen DH, Gu X, Zheng YY and more...

Source: SCIENCE OF THE TOTAL ENVIRONMENT 820, 2022, DOI 10.1016/j.scitotenv.2022.153373

Abstract: Erythromycin is one of the most commonly used macrolide antibiotics. However, little is known currently about the environmental behavior and fate of erythromycin in soils. Here

erythromycin was C-14-labeled to investigate its degradation, mineralization and bound residues (BRs) in three typical agricultural soils...

Effects of biofertilizer on soil microbial diversity and antibiotic resistance genes

Authors: Yang LY, Zhou SYD, Lin CS and more...

Source: SCIENCE OF THE TOTAL ENVIRONMENT 820, 2022, DOI 10.1016/j.scitotenv.2022.153170

Abstract: Spread of antibiotic resistance or the presence of antibiotic resistance genes (ARGs) in pathogens is a globally recognized threat to human health. Numerous studies have shown that application of organic fertilizers may increase the risk of ARGs, however, the risk of resistance genes associated with biofertilizers is largely unknown. To investigate whether biofertilizer application introduces ARGs to the soil, we used high-throughput quantitative polymerization chain reaction (HT-qPCR)...

Occurrence of Antibiotic-Resistant Genes and Bacteria in Household Greywater Treated in Constructed Wetlands

Authors: Henderson M, Ergas SJ, Ghebremichael K and more...

Source: WATER 14:5, 2022, DOI 10.3390/w14050758

Abstract: There is a growing body of knowledge on the persistence of antibiotic-resistant genes (ARGs) and antibiotic-resistant bacteria (ARB) in greywater and greywater treatment systems such as constructed wetlands (CWs). Our research quantified ARGs (*sul1*, *qnrS*, and *bla*(CTXM32)), class one integron (*int11*), and bacterial marker (16S) in four recirculating vertical flow CWs in a small community in the Negev desert, Israel, using quantitative polymerase chain reaction (qPCR)...

Fate of bacterial community, antibiotic resistance genes and gentamicin residues in soil after three-year amendment using gentamicin fermentation waste

Authors: Liu YW, Cheng DM, Xue JM and more...

Source: CHEMOSPHERE 291:1, 2022, DOI 10.1016/j.chemosphere.2021.132734

Abstract: Over a three-year field trial, the impacts of composted and raw gentamicin fermentation waste (GFW) application to land on residual soil gentamicin levels, physicochemical properties, bacterial community composition, and antibiotic resistance genes (ARGs) were assessed. In the saline-alkali soil tested, GFW application decreased electrical conductivity (EC) and pH. Importantly, there was no measurable long-term accumulation of gentamicin as a result of GFW addition...

Time-course evolution of bacterial community tolerance to tetracycline antibiotics in agricultural soils: A laboratory experiment

Authors: Santos-Miguel V, Rodriguez-Gonzalez L, Nunez-Delgado A and more...

Source: CHEMOSPHERE 291:1, 2022, DOI 10.1016/j.chemosphere.2021.132758

Abstract: The presence of antibiotics in soils may increase the selection pressure on soil bacterial communities and cause tolerance to these pollutants. The temporal evolution of bacterial community tolerance to different concentrations of tetracycline (TC), oxytetracycline (OTC) and chlortetracycline (CTC) was evaluated in two soils. The results showed an increase of soil bacterial community tolerance to TC, CTC and OTC only in samples polluted with the highest antibiotic concentrations tested (2000 mg kg⁻¹)...

Earthworms reduce the dissemination potential of antibiotic resistance genes by changing bacterial co-occurrence patterns in soil

Authors: Li H, Luo QP, Pu Q and more...

Source: JOURNAL OF HAZARDOUS MATERIALS, 426, 2022, DOI 10.1016/j.jhazmat.2021.128127

Abstract: Globally distributed earthworms affect compositions of soil compounds, microbial community structures, as well as antibiotic resistance genes (ARGs). Compared to their surroundings, earthworm gut is a simpler environment which could filter out microbes when soil passes through it. However, little is known about how earthworms affect the dissemination of ARGs in soil, and the understanding of the relationship between microbe-microbe interactions and ARGs is still lacking...

The residue of tetracycline antibiotics in soil and Brassica juncea var. gemmifera, and the diversity of soil bacterial community under different livestock manure treatments

Authors: Xu LS, Wang WZ, Deng JB., Xu WH

Source: ENVIRONMENTAL GEOCHEMISTRY AND HEALTH, 2022, DOI 10.1007/s10653-022-01213-z

Abstract: Tetracycline antibiotics (TCs) are a broad-spectrum antibiotic, widely used in livestock and poultry breeding. Residue of tetracycline antibiotics in animal manure may cause changes in vegetable TCs content and soil microbial community. On the basis of the investigation and analysis of TCs pollution in the soil of main vegetable bases and the livestock manure of major large-scale farms in Chongqing, China, field experiment was conducted to study the residues of tetracycline antibiotics in Brassica juncea var. gemmifera and soil...

Neglected resistance risks: Cooperative resistance of antibiotic resistant bacteria influenced by primary soil components

Authors: Hu XY, Fu YL, Shi HY and more...

Source: JOURNAL OF HAZARDOUS MATERIALS, e429, 2022, DOI 10.1016/j.jhazmat.2022.128229

Abstract: Various antibiotic resistant bacteria (ARB) can thrive in soil and resist such environmental pressures as antibiotics through cooperative resistance, thereby promoting ARB retention and antibiotic resistance genes transmission. However, there has been finite knowledge in regard to the mechanisms and potential ecological risks of cooperative resistance in soil microbiome...

Toxicity assessment and microbial response to soil antibiotic exposure: differences between individual and mixed antibiotics

Authors: Jiang B, Shen YX, Lu X and more...

Source: ENVIRONMENTAL SCIENCE-PROCESSES & IMPACTS, 2022, DOI 10.1039/d1em00405k

Abstract: Increasing amounts of antibiotics are introduced into soils, raising great concerns on their ecotoxicological impacts on the soil environment. This work investigated the individual and joint toxicity of three antibiotics, tetracycline (TC), sulfonamide (SD) and erythromycin (EM) via a whole-cell bioreporter assay. TC, SD and EM in aqueous solution demonstrated cytotoxicity, whilst soil exposure showed genotoxicity, indicating that soil particles possibly affected the bioavailability of antibiotics...

Co-Selection of Heavy Metal and Antibiotic Resistance in

Soil Bacteria from Agricultural Soils in New Zealand

Authors: Heydari A, Kim ND, Horswell J and more...

Source: SUSTAINABILITY 14:3, 2022, DOI 10.3390/su14031790

Abstract: Accumulation of trace elements (including heavy metals) in soil from usage of superphosphate fertilisers induces resistance of soil bacteria to trace elements of environmental concern (TEoEC) and may co-select for resistance to antibiotics (Ab). This study aimed to investigate selection of co-resistance of soil bacteria to Cd, Zn and Hg, and Ab in soils with varied management histories. Genetic diversity of these bacteria and horizontal transfer of Cd resistance genes (*cadA* and *czcA*) were also investigated...

Strong and widespread cycloheximide resistance in Stichococcus-like eukaryotic algal taxa

Authors: Syuhada NH, Merican F, Zaki S and more...

Source: Scientific Reports 12, 1, 2022, DOI 10.1038/s41598-022-05116-y

Abstract: This study was initiated following the serendipitous discovery of a unialgal culture of a Stichococcus-like green alga (Chlorophyta) newly isolated from soil collected on Signy Island (maritime Antarctica) in growth medium supplemented with 100 µg/mL cycloheximide (CHX, a widely used antibiotic active against most eukaryotes)..../...Both phylogenetic and CHX sensitivity analyses suggest that CHX resistance is potentially widespread within this group of algae...

Veterinary antibiotics can reduce crop yields by modifying soil bacterial community and earthworm population in agro-ecosystems

Authors: Zhao FK, Yang L, Li G and more...

Source: Science of the Total Environment 808, 2022, DOI 10.1016/j.scitotenv.2021.152056

Abstract: Veterinary antibiotics are intensively and widely used in animal farming to treat or prevent diseases, as well as improve growth rate and feed efficiency. Animal manure is an important reservoir of veterinary antibiotics due to their high excretion rates, and thus manure application has been a critical source of veterinary antibiotics in agro-ecosystems. However, how veterinary antibiotics affect agroecosystem functions is still unclearly understood. In this study, we evaluated the effects of veterinary antibiotics on soil bacteria and earthworms in agricultural land with long-term manure application...

ERA / PUBLICATIONS SCIENTIFIQUES / MICROBIOLOGIE ET CONTAMINANTS / Bioremédiation

Microbial community composition and glyphosate degraders of two soils under the influence of temperature, total organic carbon and pH

Authors: Muskus AM, Miltner A, Hamer U, Nowak KM

Source: ENVIRONMENTAL POLLUTION 297, 2022, DOI 10.1016/j.envpol.2022.118790

Abstract: Glyphosate can be degraded by soil microorganisms rapidly and is impacted by temperature and soil properties. Enhanced temperature and total organic carbon (TOC) as well as reduced pH increased the rate of (C₃N)-C-13-N-15-glyphosate conversion to CO₂ and biogenic non-extractable residues (bioNERS) in a Haplic Chernozem (Muskus et al., 2019) and in a Humic Cambisol (Muskus et al., 2020). To date; however, the combined effect of temperature and TOC or pH on microbial community composition and glyphosate degraders in these two soils has not been investigated...

Combined Bioremediation of Bensulfuron-Methyl Contaminated Soils With Arbuscular Mycorrhizal Fungus and *Hansschlegelia zihuaiae* S113

Authors: Qian YY, Zhao GQ, Zhou J and more...

Source: FRONTIERS IN MICROBIOLOGY 13, 2022, DOI 10.3389/fmicb.2022.843525

Abstract: Over the past decades, because of large-scale bensulfuron-methyl (BSM) application, environmental residues of BSM have massively increased, causing severe toxicity in rotation-sensitive crops. The removal of BSM from the environment has become essential. In this study, the combined bioremediation of the arbuscular mycorrhizal fungi (AMF) *Rhizophagus intraradices* and BSM-degrading strain *Hansschlegelia zihuaiae* S113 of BSM-polluted soil was investigated. BSM degradation by S113 in the maize rhizosphere could better promote AMF infection in the roots of maize...

Reduction in mercury bioavailability to Asian clams (*Corbicula fluminea*) and changes in bacterial communities in sediments with activated carbon amendment

Authors: Bailon MX, Park M, Solis KL and more...

Source: CHEMOSPHERE 291, 1, 2022, DOI 10.1016/j.chemosphere.2021.132700

Abstract: Activated carbon (AC) amendment is considered as one of the alternatives for managing and remediating mercury (Hg) contaminated sediments because of its high sorptive capacity and potential to immobilize the contaminant. For this study, the underlying mechanisms that control the reduction of Hg bioavailability in AC amended estuarine sediments were investigated in box microcosm set-ups with 28-day Asian clam bioassay experiments...

Soil bacterial community responses to cadmium and lead stabilization during ecological restoration of an abandoned mine

Authors: Zhao SW, Qin LY, Wang LF and more...

Source: SOIL USE AND MANAGEMENT 2022, DOI 10.1111/sum.12797

Abstract: Ecological restoration refers to the gradual recovery of damaged ecosystems by utilizing their self-recovery capacity and artificial measures. It is considered as an effective technique to alleviate heavy metal pollution in open-pit mining soils. However, little is known about the stability of heavy metals and soil bacterial responses in artificially restored soil-plant systems. In this study, different vegetation restoration strategies were established in the Dabaoshan mining area...

Microbial metabolic limitation of rhizosphere under heavy

metal stress: Evidence from soil ecoenzymatic stoichiometry

Authors: Duan CJ, Wang YH, Wang Q and more...

Source: ENVIRONMENTAL POLLUTION 300, 2022, DOI 10.1016/j.envpol.2022.118978

Abstract: Slow nutrient turnover and destructed soil function were the main factors causing low efficiency in phytoremediation of heavy metal (HM)-contaminated soil. Soil ecoenzymatic stoichiometry can reflect the ability of soil microorganisms to acquire energy and nutrients, and drive nutrient cycling and carbon (C) decomposition in HM contaminated soil. Therefore, for the first time, we used the enzymatic stoichiometry modeling to examine the microbial nutrient limitation in rhizospheric and bulk soil of different plants (*Medicago sativa*, *Halogeton arachnoideus* and *Agropyron cristatum*) near the Baiyin Copper Mine...

Cadmium Exposure Alters Rhizospheric Microbial Community and Transcriptional Expression of Vetiver Grass

Authors: Wu B, Li J, Peng DH and more...

Source: FRONTIERS IN PLANT SCIENCE 13, 2022, DOI 10.3389/fpls.2022.808844

Abstract: Vetiver grass (*Chrysopogon zizanioides* L.) has been used to remediate cadmium (Cd)-contaminated soil, while there have been few studies on the influence of Cd exposure on the rhizospheric microbial community and transcriptional expression of *C. zizanioides*...

Plant-Mycorrhizal Fungi Interactions in Phytoremediation of Geogenic Contaminated Soils

Authors: Ma Y, Ankit Tiwari J, Bauddh K

Source: FRONTIERS IN MICROBIOLOGY 13, 2022, DOI 10.3389/fmicb.2022.843415

Abstract: Review: Soil contamination by geogenic contaminants (GCs) represents an imperative environmental problem. Various soil remediation methods have been successfully employed to ameliorate the health risks associated with GCs. Phytoremediation is considered as an eco-friendly and economical approach to revegetate GC-contaminated soils...

Effects of Pb-, Cd-resistant bacterium *Pantoea* sp. on growth, heavy metal uptake and bacterial communities in oligotrophic growth substrates of *Lolium multiflorum* Lam

Authors: WeiXie L, Yang RL, Liu BY and more...

Source: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH 2022, DOI 10.1007/s11356-022-19180-4

Abstract: Phosphate-solubilizing bacteria (PSB) can accelerate phytoremediation, especially in those fertilized soils. However, PSB function in oligotrophic growth substrates remains poorly studied. In this study, we isolated lead (Pb)- and cadmium (Cd)-resistant PSB from contaminated sandy soil at an abandoned lubricant plant...

Organophosphorus insecticides mineralizing endophytic and rhizospheric soil bacterial consortium influence eggplant growth-promotion

Authors: Das SR, Haque MA, Akbor MA and more...

Source: ARCHIVES OF MICROBIOLOGY 204, 3, 2022, DOI 10.1007/s00203-022-02809-w

Abstract: This study was aimed to evaluate eggplant's growth-enhancing activity of chlorpyrifos and diazinon-degrading endophytic and rhizospheric soil bacteria isolated from cauliflower and tomato roots and the rhizospheric soil of rice roots, respectively...

Assessment of rhizosphere bacterial diversity and composition in a metal hyperaccumulator (*Boehmeria nivea*) and a nonaccumulator (*Artemisia annua*) in an antimony mine

Authors: Lin YX, Zhang YQ, Liang X and more...

Source: JOURNAL OF APPLIED MICROBIOLOGY, 2022, DOI 10.1111/jam.15486

Abstract: Heavy metal hyperaccumulators are widely used in mining restoration due to their ability to accumulate and transport heavy metals, compared to nonaccumulators. Rhizosphere bacteria in metal hyperaccumulators play a key role in the uptake of heavy metals from soil; however, assessments of the differences of rhizosphere bacteria between metal hyperaccumulators and nonaccumulator are scarce...

Stabilization of lead and cadmium in soil by sulfur-iron functionalized biochar: Performance, mechanisms and microbial community evolution

Authors: Qu JH, Yuan YH, Zhang XM and more...

Source: JOURNAL OF HAZARDOUS MATERIALS, 425, 2022, DOI 10.1016/j.jhazmat.2021.127876

Abstract: Sulfur-iron functionalized biochar (BC-Fe-S) was designed by simultaneously supporting Fe₂O₃ nanoparticles and grafting sulfur-containing functional groups onto biochar to stabilize Pb and Cd in soil...

Impacts of earthworm casts on atrazine catabolism and bacterial community structure in laterite soil

Authors: Luo SW, Ren L, Wu WJ and more...

Source: Journal of Hazardous Materials 425, 2022, DOI 10.1016/j.jhazmat.2021.127778

Abstract: Atrazine accumulation in agricultural soil is prone to cause serious environmental problems and pose risks to human health. Vermicomposting is an eco-friendly approach to accelerating atrazine biodegradation, but the roles of earthworm cast in the accelerated atrazine removal remains unclear...

The association between *Pinus halepensis* and the Ectomycorrhizal fungus *Scleroderma* enhanced the phytoremediation of a polymetal-contaminated soil

Authors: Ouatiki E, Midhat L, Tounsi A and more...

Source: International Journal of Environmental Science and technology 2022, DOI 10.1007/s13762-022-03993-4

Abstract: The present paper aims to study the phytoremediation of a polymetallic abandoned mine site in the northwest of Marrakesh, Morocco, by exploring the potential of the symbiotic relationship between *Pinus halepensis* and the ectomycorrhizal fungi belonging to the *Scleroderma* genus. This process was combined with the use of sand to neutralize the acidic mine tailings (pH < 3) and to stabilize the heavy metals...

Arbuscular mycorrhizal fungi reverse selenium stress in *Zea mays* seedlings by improving plant and soil characteristics

Authors: Sun CY, Yang YS, Zeeshan M and more...

Source: Ecotoxicology and Environmental Safety 228, 2021, DOI 10.1016/j.ecoenv.2021.113000

Abstract: Selenium (Se) is a beneficial trace element for certain animals including humans, while remaining controversial for plants. High Se concentration in soil is toxic to plants especially

at seedling stage of the plants. Although, arbuscular mycorrhizal fungi (AMF) are important for plant stress resistance; but the mechanisms by which AMF alleviate Se stress in crop seedlings are unclear...

Rapid degradation of the sulfonylurea herbicide-chlorimuron-ethyl by three novel strains of fungi

Authors: Wand X, Zhang YA, Bao J

Source: Bioremediation Journal 2022, DOI 10.1080/10889868.2022.2029822

Abstract: Chlorimuron-ethyl is a sulfonylurea herbicide with broad-spectrum weed control characteristics, low utilization rate, relatively high persistence in the soil. Chlorimuron-ethyl has been widely used world-over, and strategies for its removal have attracted increasing attention. Microbial degradation is considered the most acceptable dissipation method. We obtained the best biodegradation conditions using response surface methodology...

ERA / PUBLICATIONS SCIENTIFIQUES / PLASTIQUES

Effects of biodegradable film mulching on bacterial diversity in soils

Authors: Xue YH, Jin T, Gao CY and more...

Source: ARCHIVES OF MICROBIOLOGY 204, 3, 2022, DOI 10.1007/s00203-022-02799-9

Abstract: The spread of biodegradable plastic films (BDFs) not only increases grain yield but also reduces environmental pollution from plastic film to a large extent. Soil microbes are considered to be involved in biodegradation processes. However, the study of microbe diversity in soil mulched with biodegradable plastic film remains limited. Here, we compared the diversity of microbes between soils with biodegradable film and nonbiodegradable film (NBDF) mulch...

Does bacterial community succession within the polyethylene mulching film plastisphere drive biodegradation?

Authors: Wang PY, Song TJ, Bu JS, Zhang YQ et al.

Source: SCIENCE OF THE TOTAL ENVIRONMENT 824: 153884, 2022, DOI [10.1016/j.scitotenv.2022.153884](https://doi.org/10.1016/j.scitotenv.2022.153884)

Abstract: Agricultural fields are severely contaminated with polyethylene mulching film (PMF) and this plastic in the natural environment can be colonized by biofilm-forming microorganisms that differ from those in the surrounding environment. In this study, we investigated the succession of the soil microbial communities in the PMF plastisphere using an artificial micro-ecosystem as well as exploring the degradation of PMF by plastisphere communities...

Effects of residue types and plastic mulch on earthworm *Aporrectodea trapezoides* (Duges, 1828) within mesocosms at a salt-affected soil

Authors: Chen J, Tao J, Zhang H, Gu W

Source: ARCHIVES OF AGRONOMY AND SOIL SCIENCE Early Access, 2022, DOI [10.1080/03650340.2022.2052050](https://doi.org/10.1080/03650340.2022.2052050)

Abstract: Earthworm colonization is an effective management practice to improve soil conditions. In a salt-affected reclamation soil, we conducted a mesocosm experiment to test the effects of organic residue application (no organic residues, clover residues or sheep manure) and plastic film (mulching or no mulching) on the survival, biomass and production of earthworms (*Aporrectodea trapezoides* (Duges, 1828))...

The individual and combined effects of polystyrene and silver nanoparticles on nitrogen transformation and bacterial communities in an agricultural soil

Authors: Jiao KQ, Yang BS, Wang H and more...

Source: SCIENCE OF THE TOTAL ENVIRONMENT 820, 2022, DOI [10.1016/j.scitotenv.2022.153358](https://doi.org/10.1016/j.scitotenv.2022.153358)

Abstract: The effects of emerging contaminants micro/nanoplastics (MPs/NPs) and silver nanoparticles (Ag NPs) on health have attracted universal concern throughout the world. However, it is unclear on the combined effects of MPs/NPs and Ag NPs on the biogeochemistry cycle such as nitrogen transformation and functional microorganism in the soil. In the present study, we conducted a 45-day soil microcosm experiment...

Macroplastic Fragment Contamination of Agricultural Soils Supports a Distinct Microbial Hotspot

Authors: McKay O, Pold G, Martin P, Sistla S

Source: FRONTIERS IN ENVIRONMENTAL SCIENCE 10, 2022, DOI [10.3389/fenvs.2022.838455](https://doi.org/10.3389/fenvs.2022.838455)

Abstract: Agricultural plastics support crop production and quality by reducing weeds, improving irrigation efficiency, and regulating soil conditions, but can also become a soil pollutant. While microplastic effects on soil function are increasingly well-understood, the impacts of agricultural macroplastic (> 5 mm) contamination on soils are poorly documented. Prolonged exposure to plastic macrofragments may alter microbial decomposer community structure and function, since plastic can directly affect edaphic factors while leaching novel compounds...

Phthalate Esters Released from Plastics Promote Biofilm Formation and Chlorine Resistance

Authors: Wang HB, Yu PF, Schwarz C et al.

Source: ENVIRONMENTAL SCIENCE & TECHNOLOGY 56:1081-1090, 2022, DOI 10.1021/acs.est.1c04857

Abstract: Phthalate esters (PAEs) are commonly released from plastic pipes in some water distribution systems. Here, we show that exposure to a low concentration (1-10 µg/L) of three PAEs (dimethyl phthalate, di-n-hexyl phthalate, and di-(2-ethylhexyl) phthalate) promotes *Pseudomonas* biofilm formation and resistance to free chlorine. At PAE concentrations ranging from 1 to 5 µg/L, genes coding for quorum sensing, extracellular polymeric substances excretion, and oxidative stress resistance were upregulated by 2.7- to 16.8-fold, 2.1- to 18.9-fold, and 1.6- to 9.9-fold, respectively...

Microplastics benefit bacteria colonization and induce microcystin degradation

Authors: He YX, Wei GN, Tang BR et al.

Source: JOURNAL OF HAZARDOUS MATERIALS 431:128524, 2022, DOI 10.1016/j.jhazmat.2022.128524

Abstract: Microplastics can sorb toxic substances and be colonized by microorganisms. However, the interactions between the adsorbed toxic substances and the MPs biofilm remains inadequately understood. Here, a 37-days microcosm experiment was conducted to investigate the influence of polystyrene microplastics on microcystin (MC-LR) behavior in turbulent scenarios...

Environmental conditions affect the food quality of plastic associated biofilms for the benthic grazer *Physa fontinalis*

Authors: Michler-Kozma DN, Neu TR, Gabel F

Source: SCIENCE OF THE TOTAL ENVIRONMENT 816:151663, 2022, DOI 10.1016/j.scitotenv.2021.151663

Abstract: [...] This study investigates the primary production on three common plastic types in freshwater and its food quality for a benthic grazer. We hypothesized that different polymer types affect biofilm composition as well as the life parameters of its consumers. We incubated polyethylene, polyethylene terephthalate and polystyrene as well as glass (control) in a productive freshwater creek for natural biofilm establishment. To account for changes in the environmental conditions, the experiment was conducted twice during winter and late spring, respectively. These biofilms were offered to the freshwater gastropod *Physa fontinalis* as sole food source. Growth and reproduction of the snails were measured to monitor sublethal effects. Additionally, biofilm composition was observed using confocal laser scanning microscopy...

PET particles raise microbiological concerns for human health while tyre wear affect services in waters

Authors: Sathicq MB, Sabatino R, Di Cesare A et al.

Source: JOURNAL OF HAZARDOUS MATERIALS 429, 2022, DOI 10.1016/j.jhazmat.2022.128397

Abstract: Although abundant and chemically peculiar, tyre wear microplastic particles (TWP) and their impact on the microbial communities in water are largely understudied. We tested in laboratory based semi-continuous cultures the impact of TWP and of polyethylene terephthalate (PET) derived particles (following a gradient of relative abundance) on the pathobiome (the group of potential human pathogenic bacteria) of a freshwater microbial community exposed to contamination by the effluent of a urban wastewater treatment plant, for a period of 28 days...

Insights into microbial diversity on plastisphere by multi-omics

Authors: Tiwari N, Bansal M, Santhiya D, Sharma JG

Source: ARCHIVES OF MICROBIOLOGY 204:216, 2022, DOI10.1007/s00203-022-02806-z

Abstract: [...] This review summarizes the efficiency of metagenomics and next generation sequencing technology over conventionally used methods for culturing microbes. It attempts to illustrate the workflow mechanism of metagenomics to elucidate diverse microbial profiles. Further, importance of integrated multi-omics techniques has been highlighted in discovering microbial ecology residing on plastisphere for wider applications.

Microplastics can selectively enrich intracellular and extracellular antibiotic resistant genes and shape different microbial communities in aquatic systems

Authors: Zhang S, Liu XX, Qiu PX et al.

Source: SCIENCE OF THE TOTAL ENVIRONMENT 822:153488, 2022, DOI10.1016/j.scitotenv.2022.153488

Abstract: Microplastics (MPs), as emerging contaminants, are posing potential risks to environment, and animal and human health. The ubiquitous presence of MPs in natural ecosystems provides favorable platform to selectively adsorb antibiotic resistant genes (ARGs) and bacteria (ARB) and bacterial assemblages, especially in wastewater which is hotspot for MPs, ARGs and ARB. In this study, the selective capture of intracellular ARGs, extracellular ARGs, and bacterial assemblages by MPs with different materials (i.e. polyethylene, polyvinylchloride, and polyethylene terephthalate) and sizes (200 µm and 100 µm) was investigated...

Plastic mulch film residues in agriculture: impact on soil suppressiveness, plant growth, and microbial communities

Authors: Qi YL, Ossowicki A, Yergeau E and more...

Source: FEMS MICROBIOLOGY ECOLOGY, 98, 2, 2022, DOI 10.1093/femsec/fiac017

Abstract: Plastic mulch film residues did not change soil suppressiveness level in short-term experiment but created a new niche "plastisphere" that harbors a distinct microbial community dominated by potential fungal pathogens. Plastic mulch film residues have been accumulating in agricultural soils for decades, but so far, little is known about its consequences on soil microbial communities and functions. Here, we tested the effects of plastic residues of low-density polyethylene and biodegradable mulch films on soil suppressiveness and microbial community composition...

Discovery and quantification of plastic particle pollution in human blood

Authors: Leslie HA, van Velzen MJM, Brandsma SH, Vethaak D et al.

Source: Environment International 107199, 2022, DOI [10.1016/j.envint.2022.107199](https://doi.org/10.1016/j.envint.2022.107199).

Abstract: Plastic particles are ubiquitous pollutants in the living environment and food chain but no study to date has reported on the internal exposure of plastic particles in human blood. This study's goal was to develop a robust and sensitive sampling and analytical method with pyrolysis double shot - gas chromatography/mass spectrometry and apply it to measure plastic particles ≥700 nm in human whole blood from 22 healthy volunteers. Four high production volume polymers applied in plastic were identified and quantified for the first time in blood...

Macroplastic Fragment Contamination of Agricultural Soils Supports a Distinct Microbial Hotspot

Authors: McKay O, Pold G, Martin P, Sistla S

Source: FRONTIERS IN ENVIRONMENTAL SCIENCE 10: 838455, 2022, DOI [10.3389/fenvs.2022.838455](https://doi.org/10.3389/fenvs.2022.838455)

Abstract: Agricultural plastics support crop production and quality by reducing weeds, improving irrigation efficiency, and regulating soil conditions, but can also become a soil pollutant. While microplastic effects on soil function are increasingly well-understood, the impacts of agricultural macroplastic (>5 mm) contamination on soils are poorly documented. Prolonged exposure to plastic macrofragments may alter microbial decomposer community structure and function, since plastic can directly affect edaphic factors while leaching novel compounds...

The composition, biotic network, and assembly of plastisphere protistan taxonomic and functional communities in plastic-mulching croplands

Authors: Li YB, Yang R, Guo LF, Gao WL et al.

Source: JOURNAL OF HAZARDOUS MATERIALS 430: 128390, 2022, DOI [10.1016/j.jhazmat.2022.128390](https://doi.org/10.1016/j.jhazmat.2022.128390)

Abstract: The increasing use of plastic film mulching has caused the accumulation of plastic film residue in soil. To date, most researches on the plastisphere have focused on bacterial and fungal communities, with few on protistan community, especially in terrestrial ecosystems. To understand plastisphere protistan communities, we collected plastic film residues from plastic-mulching croplands. The plastisphere significantly altered the alpha-diversity, structure, and composition of taxonomic and functional (consumers, phototrophs, and parasites) communities. In both the plastisphere and surrounding soil, although some consumers

dominated the protistan community network, while their performance was weakened by mulch application...

Characterization of Microplastic-Associated Biofilm Development along a Freshwater-Estuarine Gradient

Authors: Qiang LY, Cheng JP, Mirzoyan Set al.

Source: ENVIRONMENTAL SCIENCE & TECHNOLOGY 55:16402-16412, 2021, DOI [10.1021/acs.est.1c04108](https://doi.org/10.1021/acs.est.1c04108)

Abstract: Microplastic contamination is an increasing concern worldwide. Biofilms rapidly develop on surfaces in aquatic habitats, but the processes of biofilm formation and variation in bacterial community succession on different microplastics introduced into freshwater and estuarine environments are not well understood. In this study, the biofilm bacterial communities that developed on three different types of microplastics that are prevalent in the environment, high-density polyethylene, polyethylene terephthalate and polystyrene, was investigated. Virgin microplastics were incubated in microcosms over a period of 31 days with water collected along a freshwater-estuarine gradient of the Raritan River in New Jersey...

Nano-sized polystyrene plastics toxicity to microalgae *Chlorella vulgaris*: Toxicity mitigation using humic acid

Authors: Hanachi P, Khoshnamvand M, Walker TR, Hamidian AH

Source: AQUATIC TOXICOLOGY 245:106123, 2022, DOI [10.1016/j.aquatox.2022.106123](https://doi.org/10.1016/j.aquatox.2022.106123)

Abstract: Polystyrene nanoplastics (PS-NPs) can cause toxicity in aquatic organisms, but presence of natural organic matter (NOM) may alter toxicity of PS-NPs. To better understand effects of NOM on acute toxicity of PS-NPs, humic acid (HA) as a model of NOM was added to green microalga *Chlorella vulgaris* medium in the presence of amino-functionalized polystyrene nanoplastics...

Biodegradable and conventional microplastics posed similar toxicity to marine algae *Chlorella vulgaris*

Authors: Su YY, Cheng ZR, Hou YP et al.

Source: AQUATIC TOXICOLOGY 244:106097, 2022, DOI 10.1016/j.aquatox.2022.106097

Abstract: It has been demonstrated that some conventional microplastics (CMPs) have toxicities to organisms, however, whether biodegradable microplastics (BMPs) have similar potential risks to marine ecosystems remains to be elucidated. Therefore, this study aimed to investigate i) the effects of CMPs (i. e., micro-sized polyethylene and polyamide) on marine algae *Chlorella vulgaris*; and ii) the potential effects of BMPs (i.e., micro-sized polylactic acid and polybutylene succinate) on *C. vulgaris*...

Macroplastic Fragment Contamination of Agricultural Soils Supports a Distinct Microbial Hotspot

Authors: McKay O, Pold G, Martin P, Sistla S

Source: FRONTIERS IN ENVIRONMENTAL SCIENCE 10:838455, 2022, DOI 10.3389/fenvs.2022.838455

Abstract: Prolonged exposure to plastic macrofragments may alter microbial decomposer community structure and function, since plastic can directly affect edaphic factors while leaching novel compounds. To better characterize how plastic contamination influences the soil habitat, we sampled three farms characterized by agricultural plastic pollution in Monterey County, CA, United States. Using a randomized block design, we collected surface soil samples from the fields ("bulk PC soil") to compare with soil directly in contact with the remaining polyethylene (PE) mulch and polyvinyl chloride (PVC) dripline fragments ("plastic-associated soil")...

Comparative Analysis of the Effects of Plastic Mulch Films on Soil Nutrient, Yields and Soil Microbiome in Three Vegetable Fields

Authors: Shan X, Zhang W, Dai ZL, Li JB et al.

Source: AGRONOMY-BASEL 12(2): 506, 2022, DOI [10.3390/agronomy12020506](https://doi.org/10.3390/agronomy12020506)

Abstract: Plastic film mulching is a common practice to increase vegetable yields. However, the effects of plastic mulch films on different vegetable fields remain largely unknown. In the current study, biodegradable mulch films (BDMs) and polyethylene mulch films (PEMs) were used to explore their effects on three vegetable fields (broccoli, chili pepper and garlic). Compared with bare soil, both BDMs and PEMs could effectively maintain higher exchangeable potassium contents in rhizosphere soil, and significantly increase various soil properties and microbial abundance both in rhizosphere and non-rhizosphere soils...

Effects of Irrigation Strategy and Plastic Film Mulching on Soil N₂O Emissions and Fruit Yields of Greenhouse Tomato

Authors: Li Y, Zhang MZ, Lu ZG, Zhang YS et al.

Source: AGRICULTURE-BASEL 12(2): 296, 2022, DOI [10.3390/agriculture12020296](https://doi.org/10.3390/agriculture12020296)

Abstract: Agriculture is a major source of global greenhouse gas emissions. Approximately 1/3 of vegetables in China are produced in greenhouses. However, the effects of different irrigation strategies and plastic film (PF) mulching combinations on N₂O emissions and tomato fruit yields in greenhouses are unclear. The aims of this study were to explore the effects of micro-sprinkler irrigation under plastic film (MSPF), drip irrigation under plastic film (DIPF) and micro-sprinkler irrigation (MSI) on the soil nutrients, enzyme activity, nirS-type denitrifying bacterial community, N₂O emissions and fruit yields of tomato...

Living in a bottle: Bacteria from sediment-associated Mediterranean waste and potential growth on polyethylene terephthalate

Authors: Vidal-Verdu A, Latorre-Perez A, Molina-Menor E et al.

Source: MICROBIOLOGYOPEN 11:e1259, 2022, DOI 10.1002/mbo3.1259

Abstract: Ocean pollution is a worldwide environmental challenge that could be partially tackled through microbial applications. To shed light on the diversity and applications of the bacterial communities that inhabit the sediments trapped in artificial containers, we analyzed residues (polyethylene terephthalate [PET] bottles and aluminum cans) collected from the Mediterranean Sea by scanning electron microscopy and next generation sequencing. Moreover, we set a collection of culturable bacteria from the plastisphere that were screened for their ability to use PET as a carbon source...

Effect of LDPE and biodegradable PBAT primary microplastics on bacterial community after four months of soil incubation

Authors: Li CT, Cui Q, Li Y and more...

Source: JOURNAL OF HAZARDOUS MATERIALS 429, 2022, DOI 10.1016/j.jhazmat.2022.128353

Abstract: Biodegradable plastics would be gradually degraded by microbes after being used and discarded, forming biodegradable microplastics (BMPs). It is however not clear if it, like conventional microplastics, can affect the original soil ecological balance. In this study, the non-degradable LDPE (low density polyethylene) was used as the reference primary microplastic, and the BMP PBAT (polyadipate/butylene terephthalate) was used as the test object...

Alteration of bacterial communities and co-occurrence networks as a legacy effect upon exposure to polyethylene residues under field environment

Authors: Shi Z, Xiong L, Liu T, Wu W

Source: JOURNAL OF HAZARDOUS MATERIALS, 426, 2022, DOI 10.1016/j.jhazmat.2021.128126

Abstract: The use of plastic film mulch threatens the sustainability of the terrestrial environment because of the persistence of plastic residue. Identification of the potential long-term impacts of polyethylene (PE) residue on the soil microbiome has been overlooked in most studies. A long-term field experiment was conducted to expand this understanding by performing a co-occurrence network analysis of bacterial communities among different compartment niches (i.e. plastisphere, rhizosphere, and bulk soil) and three PE residue concentrations to determine the differential operational taxonomic units (OTUs) and keystone taxa...

Biochar alters chemical and microbial properties of microplastic-contaminated soil

Authors: Palansooriya KN, Sang MK, Igalavithana AD et al.

Source: ENVIRONMENTAL RESEARCH 209:112807, 2022, DOI10.1016/j.envres.2022.112807

Abstract: The occurrence of microplastics (MPs) in soils can negatively affect soil biodiversity and function. Soil amendments applied to MP-contaminated soil can alter the overall soil properties and enhance its functions and processes. However, little is known about how soil amendments improve the quality of MP-contaminated soils. Thus, the present study used a microcosm experiment to explore the potential effects of four types of biochar on the chemical and microbial properties of low-density polyethylene (LDPE) MP-contaminated soil under both drought and well-watered conditions...

DROIT ET POLITIQUE DE L'ENVIRONNEMENT

La transition écologique de la filière parfums et cosmétiques

CGEDD 25/03/2022

L'industrie des cosmétiques et des parfums est consciente que la demande des consommateurs pour des produits de plus en plus respectueux de l'environnement est croissante et qu'elle doit investir dans la transition écologique. [...] Elle [la mission] a tout d'abord constaté que les impacts environnementaux des produits cosmétiques étaient globalement peu connus. Seules les entreprises les plus importantes recourent à des analyses du cycle de vie (ACV) pour évaluer l'impact environnemental de leurs produits et optimiser leur conception. [...] La transition écologique est devenue un thème majeur des stratégies commerciales. La mission s'est efforcée de cerner la portée des pratiques situées entre discours et réalité. [...]

[Accès au document](#)

Substances dangereuses : vers un renforcement des règles européennes applicables aux CMR sur les lieux de travail

Red-on-Line 21/03/2022

Le jeudi 17 février 2022, le Parlement européen a adopté en première lecture un projet de directive modifiant la directive 2004/37/CE du 29 avril 2004 concernant la protection des travailleurs contre les risques liés à l'exposition à des agents cancérogènes ou mutagènes au travail. [...] Si la directive est adoptée, les principales modifications viseront les points suivants :

Les substances reprotoxiques seraient intégrées au champ d'application de la directive (et non plus que les cancérogènes et mutagènes). Plusieurs définitions seront ainsi ajoutées pour les

substances reprotoxiques, les substances reprotoxiques sans seuil et des substances reprotoxiques avec seuil ;

Des valeurs limites biologiques seraient ajoutées pour les substances visées par la directive ;

Les valeurs limites d'exposition professionnelles (VLEP) figurant en annexe III de la directive évolueraient. Il s'agit notamment de modifications applicables au benzène mais également de l'ajout de nouvelles VLEP notamment pour l'acrylonitrile, les composés du nickel, le monoxyde de carbone ou encore le mercure, pour n'en citer que quelques-uns ;

Les modalités de formation des travailleurs exposés à ces substances feraient également l'objet d'évolution permettant une meilleure gestion des risques associés à cette exposition. [...]

[Accès au document](#)

Quelles alternatives aux phytos ?

Anjou-agricole 16/03/2022

[...] L'entreprise de Beaucozé développe, fabrique et commercialise des solutions de biocontrôles et de biostimulants issues de micro-organismes. « Nous proposons depuis 2016 une solution de biocontrôle Tri-Soil, présente Pauline Berger, technical manager d'Agrauxine. C'est un champignon antagoniste qui lutte contre plusieurs champignons du sol pathogènes des cultures légumières. » Tri-Soil est utilisable en carotte, en salade et en pomme de terre. « Nos principaux utilisateurs sont les producteurs de carottes des Landes et de la Manche ». Autre produit présenté par Agrauxine, Julietta. Il s'agit d'un biofongicide à base de levures vivantes. « Cette levure, grâce à sa capacité à se développer rapidement, colonise le milieu avant le botrytis et la moniliose. Julietta s'installe dans les zones fragilisées des plantes et des fruits qui sont des portes d'entrée du botrytis et des monilioses comme les plaies de taille, les blessures de récolte... », précise la technical manager. Aujourd'hui, maraîchers, arboriculteurs et viticulteurs l'utilisent. Utilisant des mécanismes naturels, ces 2 produits sont utilisables en agriculture biologique. [...]

[Accès au document](#)

EPA releases final analysis of model used to estimate pesticide concentrations in groundwater

EPA 28/02/22

The U.S. Environmental Protection Agency (EPA) is releasing its final Analysis of Subsurface Metabolism in Groundwater Modeling (Analysis), along with a response to comments document, the results of an independent peer review, and an implementation memo.

EPA first implemented its current model for estimating pesticide concentrations in groundwater in 2012. The model is part of the Pesticides in Water Calculator, which EPA uses to estimate exposure to pesticides in drinking water when developing human dietary risk assessments. [...]

See docket [EPA-HQ-OPP-2021-0241](#) at www.regulations.gov to read the final Analysis

[Accès au document](#)

Appel à projets 2022 pour l'accompagnement de collectifs d'agriculteurs engagés dans la transition agro-écologique : GIEE/30000

Draaf Nouvelle Aquitaine 28/02/22

Objectif : renforcer la dynamique engagée de l'agriculture dans la transition agro-écologique en s'appuyant sur la force des collectifs d'agriculteurs.

Afin d'en améliorer la lisibilité et l'efficacité, sont réunis dans cet appel à projets la reconnaissance et/ou le financement des GIEE et des groupes Ecophyto 30 000 ainsi qu'un dispositif appelé « émergence », dont l'objectif est d'aider à la constitution de collectifs d'agriculteurs (GIEE ou groupes 30 000) sur une année. [...]

Date d'ouverture de l'AAP : 1er mars 2022

Date limite de réponse : 31 mai 2022

Projet complet à transmettre à l'adresse mail : giee.30000.draaf-nouvelle-aquitaine@agriculture.gouv.fr

[Accès au document](#)

REGLEMENTATION / DROIT

LMR des substances actives acide acétique, azoxystrobine, benzovindiflupyr, cyantranilprole, cyflufénamid, émamectine, flutolanil, polysulfure de calcium, maltodextrine et proquinazid

RÈGLEMENT (UE) 2022/476 DE LA COMMISSION du 24 mars 2022 modifiant les annexes II, III et IV du règlement (CE) n° 396/2005 du Parlement européen et du Conseil en ce qui concerne les limites maximales applicables aux résidus des substances actives acide acétique, azoxystrobine, benzovindiflupyr, cyantranilprole, cyflufénamid, émamectine, flutolanil, polysulfure de calcium, maltodextrine et proquinazid présents dans ou sur certains produits

Numéro officiel : UE/2022/476

Date de signature : 24/03/2022

Liens juridiques : Modification Règlement CE/396/2005 23/02/2005

[Accès au document](#)

Interdiction de production, de stockage et de circulation de certains produits phytopharmaceutiques

Décret n° 2022-411 du 23 mars 2022 relatif à l'interdiction de production, de stockage et de circulation de certains produits

phytopharmaceutiques pour des raisons liées à la protection de la santé humaine ou animale et de l'environnement

Numéro officiel : TREP2206346D / 2022-411

Date de signature : 23/03/2022

Liens juridiques : Modification Code rural et de la pêche maritime

[Accès au document](#)

Mise sur le marché des produits phytopharmaceutiques : approbation de la substance de base «chitosane»

RÈGLEMENT D'EXÉCUTION (UE) 2022/456 DE LA COMMISSION du 21 mars 2022 portant approbation de la substance de base «chitosane» conformément au règlement (CE) n° 1107/2009 du Parlement européen et du Conseil concernant la mise sur le marché des produits phytopharmaceutiques, et modifiant l'annexe du règlement d'exécution (UE) n° 540/2011

Numéro officiel : UE/2022/456
Date de signature : 21/03/2022
Liens juridiques : Modification Règlement d'exécution UE/540/2011 25/05/2011

[Accès au document](#)

Protection des travailleurs contre les risques liés à l'exposition à des agents cancérigènes ou mutagènes au travail

Rectificatif à la directive (UE) 2022/431 DU PARLEMENT EUROPÉEN ET DU CONSEIL du 9 mars 2022 modifiant la directive 2004/37/CE concernant la protection des travailleurs contre les risques liés à l'exposition à des agents cancérigènes ou mutagènes au travail

Numéro officiel : UE/2022/431
Date de signature : 17/03/2022
Liens juridiques : Rectification Directive UE/2022/431 09/03/2022

[Accès au document](#)

REGLEMENTATION / DEBAT

Néonicotinoïdes pour les betteraves sucrières : en l'absence de solution alternative, leur autorisation pour 2022 est légale

Conseil d'Etat 26/02/22

Plusieurs associations et représentants du monde agricole ont demandé au Conseil d'État de suspendre pour 2022 l'autorisation provisoire d'utilisation des néonicotinoïdes pour la culture des betteraves sucrières. Le juge des référés relève que la loi a expressément prévu cette possibilité de dérogation pour ces cultures, si certaines conditions sont remplies, tenant notamment aux risques pour ces cultures. Il estime que, au vu des éléments transmis par les parties, le risque d'une infestation massive de pucerons porteurs de maladies est réel et sérieux et qu'il n'existe à ce jour, malgré les recherches en cours, aucun autre moyen suffisamment efficace pour protéger ces cultures. [...]

[Accès au document](#)

AVIS / EXPERTISES / NORMES

Quel est l'effet des variétés rendues tolérantes aux herbicides sur la biodiversité végétale ?

ANSES 18/03/2022

La culture de variétés rendues tolérantes aux herbicides (VRTH) suscite des inquiétudes pour la biodiversité végétale. Dans une étude menée avec Inrae et les chambres régionales d'agriculture, l'Anses a mesuré l'impact de leur utilisation sur la diversité des plantes dans et autour des parcelles.

Les VRTH sont des variétés de plantes agricoles rendues volontairement tolérantes à des herbicides. Leur utilisation pourrait avoir des conséquences sur la diversité de la flore adventice, c'est-à-dire les plantes sauvages présentes dans les cultures et ciblées par les traitements herbicides, mais aussi sur la flore non-ciblée par ces traitements, présente dans les bordures de champs. [...]

[Accès au document](#)

PUBLICATIONS DU RESEAU ECOTOX

Pharmaceutical pollution of the world's rivers

Authors: Wilkinson JL, Boxall ABA, Kolpin DW, Leung KMY et al.

Source: PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA 119(8): 2113947119, 2022, DOI [10.1073/pnas.2113947119](https://doi.org/10.1073/pnas.2113947119)

Abstract: Environmental exposure to active pharmaceutical ingredients (APIs) can have negative effects on the health of ecosystems and humans. While numerous studies have monitored APIs in rivers, these employ different analytical methods, measure different APIs, and have ignored many of the countries of the world. This makes it difficult to quantify the scale of the problem from a global perspective. Furthermore, comparison of the existing data, generated for different studies/regions/continents, is challenging due to the vast differences between the analytical methodologies employed...

Ageing of copper, zinc and synthetic pesticides in particle-size and chemical fractions of agricultural soils

Authors: Meite F, Granet M, Imfeld G

Source: SCIENCE OF THE TOTAL ENVIRONMENT 824: 153860, 2022, DOI [10.1016/j.scitotenv.2022.153860](https://doi.org/10.1016/j.scitotenv.2022.153860)

Abstract: The transformation and mobility of heavy metals and synthetic pesticides in soil depend on ageing, involving their chemical and physical distributions among soil fractions over time. Heavy metals and synthetic pesticides often cooccur in soil, although their ageing is usually evaluated separately and in bulk soil. Here, contrasting vineyard and crop soils were spiked with copper (Cu; 700 mg kg⁻¹) and zinc (Zn; 200 mg kg⁻¹) and/or synthetic pesticides (5 mg kg⁻¹), i.e., the fungicide metalaxyl (MTY) and herbicide S-metolachlor (SMET), to evaluate within 200 days their distribution among soil physical and chemical fractions...

One planet: one health. A call to support the initiative on a global science-policy body on chemicals and waste

Authors: Brack W, Culleres DB, Boxall ABA, Budzinski H et al.

Source: ENVIRONMENTAL SCIENCES EUROPE 34(1): 21, 2022, DOI [10.1186/s12302-022-00602-6](https://doi.org/10.1186/s12302-022-00602-6)

Abstract: The chemical pollution crisis severely threatens human and environmental health globally. To tackle this challenge the establishment of an overarching international science-policy body has recently been suggested. We strongly support this initiative based on the awareness that humanity has already likely left the safe operating space within planetary boundaries for novel entities including chemical pollution. Immediate action is essential and needs to be informed by sound scientific knowledge and data compiled and critically evaluated by an overarching science-policy interface body...

Hormesis and insects: Effects and interactions in agroecosystems

Authors: Cutler GC, Amichot M, Benelli G, Guedes RNC et al.

Source: SCIENCE OF THE TOTAL ENVIRONMENT 825: 153899, 2022, DOI [10.1016/j.scitotenv.2022.153899](https://doi.org/10.1016/j.scitotenv.2022.153899)

Abstract: Insects in agroecosystems contend with many stressors - e.g., chemicals, heat, nutrient

deprivation - that are often encountered at low levels. Exposure to mild stress is now well known to induce hormetic (stimulatory) effects in insects, with implications for insect management, and ecological structure and function in agroecosystems. In this review, we examine the major ecological niches insects occupy or guilds to which they belong in agroecosystems and how hormesis can manifest within and across these groups. The mechanistic underpinnings of hormesis in insects are starting to become established, explaining the many phenotypic hormetic responses observed in insect reproduction, development, and behavior...

Polar organic chemical integrative samplers as an effective tool for chemical monitoring of surface waters-Results from one-year monitoring in France

Authors: Mathon B, Ferreol M, Togola A, Lardy-Fontan S et al.

Source: SCIENCE OF THE TOTAL ENVIRONMENT 824: 153549, 2022, DOI [10.1016/j.scitotenv.2022.153549](https://doi.org/10.1016/j.scitotenv.2022.153549)

Abstract: In an effort to support European Union Water Framework Directive goals, we have set up a national demonstrator project to identify the advantages and limitations of passive samplers for regulatory monitoring of polar contaminants in surface waters. Here we carried out successive 14 day-deployments of polar organic chemical integrative samplers (POCIS) for one year at three sites. In parallel, we used the passive sampler deployment/retrieval operations to collect spot water samples for comparative analysis...

Field availability and mobility of metals in Ferralsols developed on ultramafic rock of Niquelandia, Brazil

Authors: Garnier J, Quantin C, Raous S, Guimaraes E et al.

Source: BRAZILIAN JOURNAL OF GEOLOGY 51(1): 20200092, 2021, DOI [10.1590/2317-4889202120200092](https://doi.org/10.1590/2317-4889202120200092)

Abstract: Ultramafic (UM) rocks are defined as igneous rocks that contain more than 90% of mafic minerals. Soils derived from ultramafic rock are generally nutrient-deficient and have concomitant high concentrations of potentially phytotoxic trace elements (Ni, Cr, Co, Mn). Consequently, to assess the dynamics of nutrients and metals in the ultramafic complex of Niquelandia (Brazil), soil solutions have been sampled in soils characterized by high Cr(VI) availability. The metal contents in surficial water have also been analyzed to investigate the metals' leaching and mobility...

Transformation of PPCPs in the environment: Review of knowledge and classification of pathways according to parent molecule structures

Authors: Bonnot K, Benoit P, Mamy L, Patureau D

Source: CRITICAL REVIEWS IN ENVIRONMENTAL SCIENCE AND TECHNOLOGY Early Access, 2022, DOI [10.1080/10643389.2022.2045159](https://doi.org/10.1080/10643389.2022.2045159)

Abstract: Reviewing the transformation pathways and analyzing the reactions undergone according to the matrices and the parent compound chemical structures may help to progress in our understanding of transformation processes of PPCPs. Of the 199 parent molecules initially targeted, 42% had no information on their transformation products (TPs). The transformation of the remaining 116 PPCPs led to 1371 TPs formed by biotic (630), abiotic (568), and both biotic and abiotic (61) reactions in natural (solid waste, natural waters, soils, WWTP effluents, sediments) and/or synthetic matrices...

Sensitivity of newly transformed juveniles of the freshwater pearl mussel: *Margaritifera margaritifera* to acute toxicity of a wide range of contaminants

Authors: Belamy T, Baudrimont M, Cordier MA, Dassie E et al.

Source: HYDROBIOLOGIA Early Access, 2022, DOI [10.1007/s10750-022-04827-7](https://doi.org/10.1007/s10750-022-04827-7)

Abstract: The freshwater pearl mussel (FWPM) *Margaritifera margaritifera* is a bivalve mollusk critically endangered in Europe. There is a special concern about the conservation of this species, but little is known about its sensitivity to environmental pollution. Here, acute toxicity tests were conducted at 16 degrees C according to a standard guide for conducting toxicity tests on freshwater mussels (ASTM international E2455), in order to assess toxicity thresholds for arsenic (As), aluminum (Al), cadmium (Cd), copper (Cu), nickel (Ni), nitrates (NO₃-), and orthophosphates (PO₄³⁻) on newly transformed juveniles of *M. margaritifera*...

Chlordecone-contaminated epilithic biofilms show increased adsorption capacities

Authors: Hubas C, Monti D, Mortillaro JM, Augagneur S et al.

Source: SCIENCE OF THE TOTAL ENVIRONMENT 825: 153942, 2022, DOI [10.1016/j.scitotenv.2022.153942](https://doi.org/10.1016/j.scitotenv.2022.153942)

Abstract: The rivers of Guadeloupe and Martinique (French West Indies) show high levels of chlordecone (CLD) contamination. This persistent molecule has a dramatic impact on both aquatic ecosystems and human health. In these rivers, epilithic biofilms are the main endogenous primary producers and represent a central food source for fish and crustaceans. Recently, their viscoelastic properties have been shown to be effective in bio-assessing pollution in tropical environments. As these properties are closely related to the biochemical composition of

the biofilms, biochemical (fatty acids, pigments, extracellular polymeric substances (EPS) monosaccharides) and molecular markers (T-RFLP fingerprints of bacteria, archaea and eukaryotes) were investigated...

Ultrasound-assisted sample preparation for simultaneous extraction of anionic, cationic and non-ionic surfactants in sediment

Authors: Wiest L, Giroud B, Fieu M, Assoumani A et al.

Source: TALANTA 241: 123220, 2022, DOI [10.1016/j.talanta.2022.123220](https://doi.org/10.1016/j.talanta.2022.123220)

Abstract: Despite their very wide use in various fields, knowledge concerning surfactants in environmental solid matrices is generally poor. One of the difficulties encountered in the analysis of surfactants is their very diverse physicochemical properties which require different extraction techniques. The objective of this work was therefore to develop an extraction method in sediments that allows the simultaneous analysis of anionic, cationic and non-ionic surfactants. Different extraction techniques (salting-out, ultrasound), solvents and additives were compared. The optimized method, followed by analysis by coupling liquid chromatography with tandem mass spectrometry, was then validated and applied to real samples in which the analytes were quantified by matrix matched calibration...

Occurrence and Seasonal Dynamics of ALNs in Freshwater Lakes Are Influenced by Their Biological Environment

Authors: Fuster M, Billard H, Bronner G, Sime-Ngando T et al.

Source: MICROBIAL ECOLOGY Early Access, 2022, DOI [10.1007/s00248-022-01974-1](https://doi.org/10.1007/s00248-022-01974-1)

Abstract: Aster-like nanoparticles (ALNs) are femtoentities, recently discovered in different

aquatic environments, whose intrinsic nature and ecological features remain to be determined. In this study, we investigate the in situ temporal dynamics of ALNs during 1 year in 3 different lakes, in relation to the physico-chemical and biological environment...

Cu phytoextraction and biomass utilization as essential trace element feed supplements for livestock

Authors: Wang XL, de Souza MF, Mench MJ, Li HC et al.

Source: ENVIRONMENTAL POLLUTION 294: 118627, 2022, DOI [10.1016/j.envpol.2021.118627](https://doi.org/10.1016/j.envpol.2021.118627)

Abstract: Copper (Cu), as an essential element, is added to animal feed to stimulate growth and prevent disease. The forage crop alfalfa (*Medicago sativa* L.) produced during Cu phytoextraction may be considered a biofortified crop to substitute the Cu feed additives for livestock production, beneficially alleviating Cu contamination in soils and reducing its input into agriculture systems. To assess this, alfalfa was grown in three similar soils with different Cu levels, i.e., 11, 439 and 779 mg kg⁻¹ for uncontaminated soil (A), moderately Cu-contaminated soil (B) and highly Cu-contaminated soil (C), respectively...

New insights into metal(loid) dynamics in the Doce River estuary (Brazil) after a massive iron ore-processing tailing dam collapse

Authors: Mulholland DS, Garnier J, Araujo DF, Duarte WC et al.

Source: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH Early Access, 2022, DOI [10.1007/s11356-021-18101-1](https://doi.org/10.1007/s11356-021-18101-1)

Abstract: The present study investigated metal and metalloid dynamics in the estuarine water of the Doce River (Brazil) after the collapse of an iron ore-processing tailing dam in 2015. Spectroscopic and isotopic techniques were applied to bring new insights into the effects of

the dam failure on the dynamics and hazardousness of particulate and dissolved metal(loid) concentrations along the fluvial-estuarine continuum. Spectroscopic analysis showed that the suspended particulate matter (SPM) of the Doce River estuary consisted of a combination of soil-delivered particles and fine tailing mud particles with small amounts of coarse tailing mud Fe oxides (similar to 150-µm width)...

The underestimated toxic effects of nanoplastics coming from marine sources: A demonstration on oysters (*Isognomon alatus*)

Authors: Arini A, Gigault J, Venel Z, Bertucci A, Baudrimont M

Source: CHEMOSPHERE 295: 133824, 2022, DOI [10.1016/j.chemosphere.2022.133824](https://doi.org/10.1016/j.chemosphere.2022.133824)

Abstract: This study aims to assess the potential toxicity of (1) nanoplastics (NPs) issued from the fragmentation of larger plastic particles collected on the Caribbean marine coast (NP-G), and (2) polystyrene NPs (NP-PS), commonly used in the literature, on Caribbean swamp oysters (*Isognomon alatus*). Oysters were exposed to 7.5 and 15 µg.L⁻¹ of each type of NPs, combined or not with arsenic (As) at 1 mg.L⁻¹ for one week before molecular analyses at gene levels. Overall, the NP-G triggered more significant changes than NP-PS, especially when combined with As...

Changes in fish skin microbiota along gradients of eutrophication in human-altered rivers

Authors: Cote J, Jacquin L, Veyssiere C, Manzi S et al.

Source: FEMS MICROBIOLOGY ECOLOGY 98(1): fiac006, 2022, DOI [10.1093/femsec/fiac006](https://doi.org/10.1093/femsec/fiac006)

Abstract: Eutrophication, due to anthropogenic pressures, is related to changes in skin microbiota composition and diversity in a freshwater fish species. The skin microbiota plays a major role in

health of organisms but it is still unclear how such bacterial assemblages respond to changes in environmental conditions and anthropogenic perturbations. In this study, we investigated the effects of the eutrophication of freshwater ecosystems on the skin microbiota of fish. We sampled wild gudgeon *Gobio occitaniae* from 17 river sites along an eutrophication gradient and compared their skin microbiota diversity and composition, using a 16s rRNA gene metabarcoding approach...

Long-term exposure to environmental diclofenac concentrations impairs growth and induces molecular changes in *Lymnaea stagnalis* freshwater snails

Authors: Bouly L, Courant F, Bonnafe, E, Carayon JL et al.

Source: CHEMOSPHERE 291(3): 133065, 2022, DOI [10.1016/j.chemosphere.2021.133065](https://doi.org/10.1016/j.chemosphere.2021.133065)

Abstract: As pharmaceutical substances are highly used in human and veterinary medicine and subsequently released in the environment, they represent emerging contaminants in the aquatic compartment. Diclofenac (DCF) is one of the most commonly detected pharmaceuticals in water and little research has been focused on its long-term effects on freshwater invertebrates. In this study, we assessed the chronic impacts of DCF on the freshwater gastropod *Lymnaea stagnalis* using life history, behavioral and molecular approaches...

Legacy-micropollutant contamination levels in major river basins based on findings from the Rhone Sediment Observatory

Authors: Delile H, Dendievel AM, Yari A, Masson M et al.

Source: HYDROLOGICAL PROCESSES 36(2): 14511, 2022, DOI [10.1002/hyp.14511](https://doi.org/10.1002/hyp.14511)

Abstract: For more than half a century, chemical contamination has progressively spread to all the large river basins. Large river outlets integrate multiple anthropogenic pressures in watersheds, making them the largest source of sediment-bound contaminants to continental shelf areas. However, comparing particulate micropollutant contaminations between the large river basins is a challenging task, especially due to the scarcity of long-term river monitoring programs. Here we address this issue, with a focus on legacy particulate micropollutants (polychlorobiphenyls [PCBi], polycyclic aromatic hydrocarbons [PAHs] and trace metal elements [TME]) yields. For this purpose, we employed a bottom-up multiscale approach to chemical contamination in river basins that takes micropollutant yields measured in the Rhone River sub-basins (France) as a benchmark of other large river basins...

Road Runoff Characterization: Ecotoxicological Assessment Combined with (Non-)Target Screenings of Micropollutants for the Identification of Relevant Toxicants in the Dissolved Phase

Authors: Sandre F, Huynh N, Gromaire MC, Varrault G et al.

Source: WATER 14(4): 511, 2022, DOI [10.3390/w14040511](https://doi.org/10.3390/w14040511)

Abstract: Road runoff (RR) is an important vector of micropollutants towards groundwater and soils, threatening the environment and ecosystems. Through combined chemical and biological approaches, the purpose of this study was to get insights on specific toxicants present in RR from two sites differing by their traffic intensity and their toxicological risk assessment. Non-target screening was performed by HRMS on RR dissolved phase. Ecotoxicological risk was evaluated in a zebrafish embryos model and on rat liver mitochondrial respiratory chain. Specific HRMS fingerprints were obtained for each site, reflecting their respective traffic intensities...

Metabolic, cellular and defense responses to single and co-exposure to carbamazepine and methylmercury in *Dreissena polymorpha*

Authors: Baratange C, Paris-Palacios S, Bonnard I, Delahaut L et al.

Source: ENVIRONMENTAL POLLUTION 300: 118933, 2022, DOI [10.1016/j.envpol.2022.118933](https://doi.org/10.1016/j.envpol.2022.118933)

Abstract: Carbamazepine (CBZ) and Hg are widespread and persistent micropollutants in aquatic environments. Both pollutants are known to trigger similar toxicity mechanisms, e.g. reactive oxygen species (ROS) production. Here, their effects were assessed in the zebra mussel *Dreissena polymorpha*, frequently used as a freshwater model in ecotoxicology and biomonitoring. Single and co-exposures to CBZ (3.9 µg L⁻¹) and MeHg (280 ng L⁻¹) were performed for 1 and 7 days. Metabolomics analyses evidenced that the co-exposure was the most disturbing after 7 days, reducing the amount of 25 metabolites involved in protein synthesis, energy metabolism, antioxidant response and osmoregulation, and significantly altering cells and organelles' structure supporting a reduction of functions of gills and digestive glands...

Responses of soil nitrification activities to copper after a moisture stress

Authors: Sereni L, Guenet B, Crouzet O, Blasi C et al.

Source: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH 2022, DOI [10.1007/s11356-022-19093-2](https://doi.org/10.1007/s11356-022-19093-2)

Abstract: Some steps of the soil nitrogen (N) cycle are sensitive to environmental pressures like soil moisture or contamination, which are expected to evolve during the next decades. Individual stresses have been well studied, but their combination is not yet documented. In this work, we aimed at assessing the importance of the soil moisture on the impact of copper (Cu) contaminations on the N cycling soil function using

the potential nitrification activities (PNA) as bioindicator...

PESTICIDES ET SANTE DES AGRICULTEURS

Residential proximity to crops and agricultural pesticide use and cause-specific mortality: A prospective census-based cohort study in the Netherlands

Authors: Simoes M, Huss A, Brouwer M, Krop E et al.

Source: SCIENCE OF THE TOTAL ENVIRONMENT 817: 152932, 2022, DOI [10.1016/j.scitotenv.2022.152932](https://doi.org/10.1016/j.scitotenv.2022.152932)

Abstract: We explored associations between residential proximity to specific crops, pesticide use and cause-specific mortality in a prospective census-based cohort study in The Netherlands. Selecting inhabitants aged ≥30 living in less urbanized areas, at the same address for nine years up to baseline (2004) from a national register-based cohort, we followed similar to 3.1 million individuals for cause-specific mortality until 2012. We estimated the area of specific crop groups cultivated within buffers of 50 m, 100 m and 250 m around each individual's residence and the amount of fungicides, herbicides and insecticides used within the same buffers for the period 1995-2003...

Exposure to non-persistent pesticides in the Spanish population using biomonitoring: A review

Authors: Yusa V, Fernandez SF, Dualde P, Lopez A et al.

Source: ENVIRONMENTAL RESEARCH, 205: 112437, 2022, DOI [10.1016/j.envres.2021.112437](https://doi.org/10.1016/j.envres.2021.112437)

Abstract: Although Spain does not have a regular national human biomonitoring program yet,

different research groups are active in evaluating the exposure of children and adults to chemicals. In the last seven years, several studies in Spain have evaluated the internal exposure of the population to currently used pesticides. The present review analyzes the scope of these studies, the employed analytical methods and the main results of the exposure and risk, mainly for children and mothers. The frequency of exposure to biomarkers of exposure to organophosphate pesticides is high. Some non-specific dialkyl phosphate metabolites (DAPs), such as the diethyl phosphate (DEP), present Detection Frequencies (DFs) in the range of 65-92% in various studies...

Determinants of Skin and Respiratory Exposure to Lufenuron During Spraying and Re-entry in Italian Ornamental Plants Greenhouses

Authors: Aprea MC, Centi L, Meniconi M, Lunghini L et al.

Source: ANNALS OF WORK EXPOSURES AND HEALTH 65(5): 554-565, 2021, DOI10.1093/annweh/wxaa108

Abstract: The aim of this study was to evaluate dermal and respiratory exposure of workers to Lufenuron during spraying and re-entry on ornamental plants (stapling) in greenhouses. Potential and real skin exposure were evaluated using filter paper pads, hand contamination by washing, and respiratory exposure by personal air sampling. Dislodgeable foliar residues (DFRs) during re-entry were determined in order to calculate the dermal transfer factor (DTF). Respiratory dose was 68.7-74.6 and 0.022-0.636% of the total real dose during spraying and stapling, respectively...

Guidance on the assessment of exposure of operators, workers, residents and bystanders in risk assessment of plant protection products

Authors: Charistou A, Coja T, Craig P, Hamey P, et al.

Source: EFSA JOURNAL, 20(1): e07032, 2022, DOI 10.2903/j.efsa.2022.7032

Abstract: This guidance is designed to assist risk assessors and applicants when quantifying potential non-dietary, systemic exposures as part of regulatory risk assessment for plant protection products (PPPs). It is based on the Scientific Opinion on 'Preparation of a Guidance Document on Pesticide Exposure Assessment for Workers, Operators, Residents and Bystanders' developed by the EFSA Panel on Plant Protection Products and their Residue (PPR) in 2010. Highlighting some inconsistencies between the approaches adopted by regulatory authorities, the PPR Panel proposed a number of changes to the practices in use...

Human Biomonitoring of Selected Hazardous Compounds in Portugal: Part I-Lessons Learned on Polycyclic Aromatic Hydrocarbons, Metals, Metalloids, and Pesticides

Authors: Pena A, Duarte S, Pereira AMPT, Silva LJG, et al.,

Source: MOLECULES 27(1): 27010242, 2022, DOI 10.3390/molecules27010242

Abstract: Human biomonitoring (HBM) data provide information on total exposure regardless of the route and sources of exposure. HBM studies have been applied to quantify human exposure to contaminants and environmental/ occupational pollutants by determining the parent compounds, their metabolites or even their reaction products in biological matrices. HBM studies performed among the Portuguese population are disperse and limited. To overcome this knowledge gap, this review gathers, for the first time, the published Portuguese HBM information concerning PAHs, metals, metalloids, and pesticides concentrations detected in the urine, serum, milk, hair, and nails of different groups of the Portuguese population.

Collection of human and environmental data on pesticide use in Europe and Argentina: Field study protocol for the SPRINT project

Authors: Silva V, Alaoui A, Schlunssen V, Vested A, et al.

Source: PLOS ONE 16(11): e0259748, 2021, DOI 10.1371/journal.pone.0259748

Abstract: PPP use may have considerable impacts on human health and the environment. A study protocol is presented aiming to determine the occurrence and levels of PPP residues in plants (crops), animals (livestock), humans and other non-target species (ecosystem representatives) for exposure modelling and impact assessment. To achieve this, we designed a cross-sectional study to compare conventional and organic farm systems across Europe. Environmental and biological samples were/are being/will be collected during the 2021 growing season, at 10 case study sites in Europe covering a range of climate zones and crops...

Asthma in pesticide users: an update from the Great Britain Prospective Investigation of Pesticide Applicators' Health (PIPAH) cohort study

Authors: Fishwick D, Harding AH, Chen Y, Pearce N, et al.

Source: OCCUPATIONAL AND ENVIRONMENTAL MEDICINE, 0: 1-8, 2022, DOI 10.1136/oemed-2021-107486

Abstract: To define the prevalence and incidence of asthma in a large working population of pesticide workers and to assess which exposures are potentially of relevance to causing or aggravating this condition. A baseline cross-sectional study at recruitment (2013-2017, n=5817), with follow-up in 2018 (n=2578), was carried out in predominantly Great Britain based pesticide workers. At baseline, participants completed a health and work questionnaire which

included questions on demographic, lifestyle, socioeconomic and work-related factors, pesticide use and doctor diagnosed health conditions.

Agricultural exposure and risk of soft tissue sarcomas and gastrointestinal stromal sarcoma in the AGRiculture and CANcer (AGRICAN) cohort

Authors: Renier M, Busson A, Boulanger M, Piel C, Pons R, Tual S, Amadeo B, Meryet-Figuere M, Marcotullio E, Clin B, Baldi I, Lebailly

Source: CANCER EPIDEMIOLOG, 2022:1-12, DOI 10.1002/ijc.33936

Abstract: Sarcomas are a heterogeneous group of tumors whose incidence is nearly 5 per 100 000 inhabitants in Europe. Their causes are poorly understood, although occupational exposures are suspected. The AGRICAN cohort is a prospective study of 181 842 individuals enrolled in 2005 to 2007. Associations between agricultural exposure and sarcoma overall, gastrointestinal stromal tumors and myomatous and fibrous sarcoma together, were analyzed. The risk of sarcomas was increased in several farming activities with differences according to histological subtype...

The effectiveness of educational interventions aimed at agricultural workers' knowledge, behaviour, and risk perception for reducing the risk of pesticide exposure: a systematic review and meta-analysis

Authors: Ayaz D, Oncel S, Karadag E

Source: International Archives of Occupational and Environmental Health 13, 2022, DOI 10.1007/s00420-022-01838-8

Abstract: The aim of this study was to determine the effectiveness of educational interventions aimed at agricultural workers' knowledge,

behaviour, and risk perception for reducing the risk of pesticide exposure. All studies published in the English language between the years 2000 and 2020 were screened on relevant databases. It was determined that educational interventions are an appropriate method for reducing the pesticide exposure risks of agricultural workers. To increase the effectiveness of these interventions, it is recommended that consideration is given to a theoretical basis, the use of multiple education components, and evidence-based practices.

OUVRAGES / RAPPORTS / ACTES DE CONGRES

RAPPORT AST de l'Anses relatif à la cartographie des utilisations des produits phytopharmaceutiques à base de cuivre en France en considérant leur application en agriculture biologique et conventionnelle

ANSES 23/02/2022

Anses. (2022). Cartographie des utilisations des produits phytopharmaceutiques à base de cuivre en France en considérant leur application en agriculture biologique et conventionnelle. (saisine 2021-AUTO-0060). Maisons-Alfort : Anses, 133 p.

Mots-clés :

Composés du cuivre, produits phytopharmaceutiques, traitements phytosanitaires, alternatives chimiques et non-chimiques, viticulture, arboriculture, grande culture, maraîchage

Copper compounds, plant protection products, crop protection, chemical and non-chemical alternatives, viticulture, arboriculture, field crops, vegetable crops

[Accès au document](#)

REVUE DE PRESSE

Agriculture : des choix décisifs s'imposent pour sortir de la dépendance

Reseau-environnement-santé 31/03/2022

Le RES soutient l'action de plusieurs dizaines de militants et militantes de 24 organisations paysannes, environnementales et citoyennes qui sont rassemblés le 30 mars à Besançon devant le palais des congrès où s'est déroulé le "grand oral" des candidats et candidates à l'élection présidentielle organisé par la FNSEA, pour déployer plusieurs banderoles, la principale affichant le message suivant : « Agriculture : plan de dépendance ou plan de résilience ? ». Face à la crise engendrée par la guerre en Ukraine, les organisations expriment leurs inquiétudes sur l'orientation politique proposée à court terme par le gouvernement et demandent que leurs propositions soient prises en compte. [...]

Voir le document de mesures

["Crise agricole et crise alimentaire : une alternative est possible"](#)

[Accès au document](#)

Révision des règlements Reach et CLP : des textes déjà presque inapplicables, selon les associations

Actu-environnement 31/03/2022

Les nouveaux règlements Reach et CLP répèteront-ils les erreurs des textes actuels ? Générations futures et l'Association des médecins contre les pesticides rappellent leurs déficiences et leurs écueils.

En termes de législation sur les pesticides, l'Europe entre dans une phase particulièrement importante, puisque la Commission devrait présenter, en juillet prochain, ses propositions de [modification](#) du [règlement Reach](#). [...]

[Accès au document](#)

Animals in Wildlife Sanctuaries at Greater Risk of Pesticide Exposure from Internal Agricultural Practices

Beyond Pesticides, March 30, 2022

An article by the Audubon Society covers ongoing advocacy to end pesticide spraying in wildlife refuges. Wildlife refuges act as a sanctuary, providing habitat and protection essential for the survival and recovery of species nationwide. However, portions of the wildlife sanctuary can have agricultural uses, allowing farmers to cultivate crops on various acres, subsequently applying pesticides. Pesticide spraying in or around wildlife refuges threatens the survivability and recovery of species that inhabit the area. Moreover, many of these pesticides are highly toxic to human and animal health. Analyses like these are significant, especially since the globe is currently going through the Holocene Extinction, Earth's 6th mass extinction, with one million species of plants and animals at risk. [...]

[Accès au document](#)

Les vrais chiffres des résidus de pesticides dans les aliments non bios d'origine végétale en France

Générations futures 30/03/2022

Générations Futures suit régulièrement les données sur la présence de résidus de pesticides dans les aliments d'origine végétale en France fournies par la DGCCRF. [...]

De nouveaux chiffres globaux plus précis des plans de surveillance^[2] concernant les échantillons prélevés en 2019 et 2020 fournis par la DGCCRF nous permettent aujourd'hui de présenter un pourcentage d'aliments végétaux non bio contenant au moins un résidu de pesticides plus proche de la réalité. [...]

Source : Résidus de pesticides dans les denrées d'origine végétale, Bilan de TN, DGCCRF, 11/02/22

^[2] Les prélèvements réalisés dans le cadre des plans de surveillance de la DGCCRF sont effectués de façon à donner une image représentative de la

présence de résidus de pesticides dans les produits d'origine végétale commercialisés en France.

[Accès au document](#)

Pesticides Perturbateurs endocriniens : Il faut agir !

Générations futures 29/03/2022

L'association des médecins contre les pesticides et Générations Futures publie un nouveau rapport exclusif qui démontre que des pesticides perturbateurs endocriniens sont encore sur le marché parce que non (mal) évalués ! [...]

Conclusion : Notre analyse des rapports d'évaluation disponibles concernant ces 13 substances, conduit nos associations à faire le constat que trois ans après l'adoption des critères d'identification des PE (avec 8 ans de retard sur le calendrier européen) les autorités en charge de l'évaluation attendent toujours les données nécessaires à leur mise en œuvre (de la part des industriels) et les tests validés permettant la mise en évidence de mécanismes caractéristiques de la perturbation endocrinienne.

Disponible en ligne : <https://shaketonpolitique.org/wp-content/uploads/sites/25/2021/04/version-finale-rapport-pe-thyroide-vol2.pdf>

[Accès au document](#)

Producers Warned by EPA that PFAS Is Contaminating Pesticides and Food

Beyond Pesticides, March 29, 2022

Plastic storage barrels contaminated with polyfluoroalkyl substances (PFAS) may be in violation of the Toxic Substances Control Act (TSCA), according to an open letter released by the U.S. Environmental Protection Agency (EPA) last month. Manufacturers, producers, processors, distributors, users, and those that dispose of fluorinated High-Density Polyethylene (HDPE) containers or other similar plastics that form PFAS as a byproduct were notified in the letter of requirements under federal law. The notice comes two years after EPA was first alerted

to the presence of PFAS in a mosquito pesticide used by the state of Massachusetts known as Anvil 10+10. "Today's action will help ensure that responsible parties are held accountable for any future PFAS contamination affecting communities," said Assistant Administrator for the Office of Chemical Safety and Pollution Prevention Michal Freedhoff PhD. [...]

[Accès au document](#)

Qualité de l'eau potable : un nouveau casse-tête s'annonce pour les collectivités

Actu-environnement 28/03/2022

Un changement dans la méthodologie pour surveiller la présence de contaminants ainsi que la transposition de la nouvelle directive Eau potable pourraient multiplier les cas de non-conformité de la ressource, mettant hors-jeu certains captages.

2,3 % : c'est la part des prélèvements d'eau potable qui se sont révélés non conformes pour les paramètres physico-chimiques, en 2019, en France, dans le cadre du suivi de la qualité de l'eau potable. Notamment à cause des pesticides. [...]

[Accès au document](#)

Liberté d'expression et pesticides : Quand des agriculteurs font pression pour faire taire Générations Futures

Générations futures 25/03/2022

[...] notre Déléguée générale Nadine Lauverjat devait faire une intervention hier en fin d'après-midi dans le cadre de la Semaine pour les alternatives aux pesticides. Cette conférence intitulée « Toutes et tous contaminés par les pesticides ? » devait se tenir à la médiathèque de Bagnols-sur-Cèze. [...]

Mais à 15h [...] notre relais local, Michel Tachon, contactait notre DG pour l'informer que cette conférence n'aurait pas lieu pour la simple et bonne raison que des agriculteurs avaient menacé

le maire par téléphone de venir perturber cette conférence si elle devait se tenir ! Le maire a pris peur et pour éviter selon ses dires « tout trouble à l'ordre public » a décidé tout simplement d'annuler [...] la tenue de la conférence. [...]

[Accès au document](#)

Exposition aux pesticides : lancement de la deuxième étape de l'étude PestiRiv

Actu-environnement 2/03/2022

Après une première période d'enquête menée d'octobre 2021 à février 2022, Santé publique France et l'Anses lance la deuxième étape de l'étude PestiRiv. De mars à août 2022, 784 foyers résidant près de vignes seront de nouveau interrogés alors que s'enclenche une période de traitement dans les cultures. L'étude vise, en effet, à mieux connaître l'exposition aux pesticides des personnes vivant près de vignes (à moins de 500 mètres de vignes et à plus de 1 000 mètres d'autres cultures) et de celles vivant loin de toute culture (plus de 1 000 mètres), ainsi qu'à suivre l'évolution des expositions potentielles aux pesticides selon les saisons. [...]

[Accès au document](#)

ICPE : le champ des installations soumises à garanties financières est élargi

Actu-environnement 23/03/2022

Un arrêté de la ministre de la Transition écologique, publié le 23 mars au *Journal officiel*, modifie la liste des installations classées (ICPE) soumises à l'obligation de constitution de garanties financières en raison des risques de pollution des sols ou des eaux qu'elles présentent. Ces garanties doivent couvrir la mise en sécurité du site et, le cas échéant, les mesures de gestion de ces pollutions. [...]

[Accès au document](#)

L'Europe acte la remise en culture de jachères et repousse la réforme des pesticides

Actu-environnement 23/03/2022

Afin d'assurer la sécurité alimentaire de l'Europe face à la guerre en Ukraine, les ministres de l'Agriculture sont tombés d'accord pour cultiver les jachères, tandis que la présentation du règlement sur les pesticides est sortie de l'ordre du jour. [...]

[Accès au document](#)

Onewater : un programme de recherche pour appréhender l'eau dans sa globalité

Actu-environnement 22/03/2022

Six défis scientifiques pour mieux appréhender l'eau dans sa globalité dans un contexte de [changement climatique](#) : c'est l'objectif ambitieux de OneWater - Eau bien commun, un programme et équipement prioritaire de recherche (PEPR) exploratoire. Lancé le 16 mars, il sera copiloté par le CNRS, le BRGM et l'Inrae et vise notamment l'anticipation de l'évolution de la ressource, le développement d'une empreinte eau, l'accompagnement d'une nouvelle gouvernance des ressources ou encore favoriser des approches et des usages plus raisonnés et intégrés. [...]

[Accès au document](#)

L'Europe consulte le public pour lutter contre le déclin des pollinisateurs

Actu-environnement 21/03/2022

La Commission européenne ouvre, jusqu'au 9 juin 2022, une consultation publique dans le but de réviser les mesures de l'initiative de juin 2018 pour protéger les insectes pollinisateurs sauvages. La consultation invite le public et les parties prenantes à proposer de nouvelles actions « pour mettre pleinement en œuvre les objectifs de

l'initiative et respecter l'engagement d'inverser le déclin des pollinisateurs d'ici à 2030 ». [...]

[Accès au document](#)

Des ONG, élus et scientifiques appellent à un « Giec » de la santé environnementale

Actu-environnement 21/03/2022

Le 19 mars, le Réseau environnement santé (RES) et la Ville de Grenoble, Capitale verte européenne 2022, ont lancé un appel à la création d'un « Giec » de la santé environnementale. Son objectif serait d'établir une synthèse des connaissances scientifiques pour « éclairer les décisions publiques et répondre à l'objectif "Zéro pollution en 2050" du Pacte vert pour l'Europe », expliquent les partenaires de l'initiative. [...]

[Accès au document](#)

Glyphosate : l'INRAE au rapport

Que Choisir 21/03/2022

Voilà une publication qui tombe à point nommé ! L'INRAE a en effet publié une synthèse bibliographique compilant plusieurs publications scientifiques révélant que le glyphosate perturberait la fertilité mâle et femelle chez les animaux mais aussi les humains. Les chercheurs ont montré qu'il existait des perturbateurs endocriniens des fonctions de reproduction.

Alors que l'Europe examine la ré-autorisation de l'herbicide tant décrié, et que vous êtes près de 500 000 à réclamer son interdiction via notre pétition commune avec d'autres ONG, cette sortie de l'INRAE vient utilement muscler le dossier contre le glyphosate. [...]

[Accès au document](#)

Air pollution exposure may increase severity and fatality of COVID-19 infections

ec.europa 21/03/2022

Researchers evaluate the increased risk of severe and fatal COVID-19 in those patients exposed to air pollutants. This study uses data from hospitals in Catalonia, Spain, to assess whether patients from more polluted areas were more likely to have a severe or fatal COVID-19 response. It finds that exposure to high levels of particulates (microscopic airborne particles) increases the risk of severe disease and death.

Science for environment policy, 16th March 2022, Issue 577

[Accès au document](#)

Les ventes de pesticides ont entamé leur décrue, mais elles restent importantes

Actu-environnement 18/03/22

Durant la dernière décennie, les volumes de pesticides vendus ont un peu diminué, en France, selon un récent état des lieux du ministère de la Transition écologique. Cette décroissance s'accroît depuis 2019, mais les niveaux restent élevés [...] si l'on en croit l'état des lieux publié, hier, par le ministère de la Transition écologique. [...]

[Accès au document](#)

Emmanuel Macron confirme le tournant vers une agriculture du « produire plus »

Le Monde 18/03/2022

Le président-candidat à la présidentielle 2022 n'a accordé que peu de place aux questions environnementales lors de la présentation de son programme. [...]

De biodiversité, de pollution, de transports... le chef de l'Etat n'a pas parlé, mais il a développé ses intentions sur la question agricole. Il a

confirmé son tournant engagé au cours du quinquennat en faveur du « produire plus ». « La France portera une adaptation de la stratégie européenne "Farm to Fork" [de la ferme à la fourchette] qui reposait sur un monde d'avant-guerre en Ukraine, qui prévoyait une diminution de la production de 13 %. » Plus question de produire moins, a insisté Emmanuel Macron,

[Accès au document](#)

Unleashing the influence of invertebrates through application of new approach methods

EPA 18/03/2022

Presentation to the University of Minnesota Entomology Seminar January 2022.

Many new methods are being developed to make greater use of existing toxicity data for understanding chemical safety. The focus in development of these approaches has been to reduce and/or replace animal testing, generally referring to vertebrate toxicity testing. However, the approaches being developed may also be applied more broadly and could be used to understand the effects of chemicals on invertebrates as well. In particular, there are methods that gather toxicity data from the published literature to understand how a chemical may adversely affect biological pathways in tested model organisms. This pathway knowledge can aid in understanding where research may be lacking for invertebrate species and help guide the development of screening assays that can capture the unique biology of invertebrates. Further, because few invertebrates are used as model organism for chemical risk assessment to protect the > 1.25 million invertebrate species that have been described it is important to understand how broadly data generated can be extrapolated to other organisms. The US EPA SeqAPASS tool can be used to understand similarities and differences between species at the molecular level to predict chemical susceptibility for untested species. [...]

[Accès au document](#)

Infographic: Europe needs to ban glyphosate to protect farmers, our health and the environment

ENV-HEALTH 17/03/2022

A new infographic and social media assets launched by the Health and Environment Alliance (HEAL) today illustrate why the European Commission and governments must ban the harmful pesticide glyphosate to protect farmers, our health and the environment [1].

Available for download as [PDF](#) or [PNG](#)

Glyphosate is the most widely used pesticide in the world, which is of concern since its negative impacts on human health and the environment are well-documented. The World Health Organization's International Agency for Research on Cancer (IARC), the gold standard for cancer research, finds exposure to glyphosate may cause cancer. Exposure to glyphosate-based pesticides has also been linked to adverse effects on human development, reproduction and hormonal systems, according to evidence from the independent scientific literature. [...]

[Accès au document](#)

Conférence de presse : L'exposition aux pesticides est une menace pour l'environnement et les droits humains

Michèle Rivasi 16/03/2022

Aujourd'hui mercredi 16 mars 2022, à Bruxelles, des agriculteurs, des travailleurs agricoles, la société civile et des députés du Parlement européen se sont réunis pour demander instamment à la Commission européenne et aux États membres de protéger la santé humaine, les systèmes alimentaires et l'environnement, et de mettre fin aux pesticides. La conférence a lieu peu avant la publication par la Commission européenne de la révision de la directive sur l'utilisation durable des pesticides (SUD), attendue le 23 mars. [...]

[Le communiqué de presse en version PDF](#) [Voir aussi l'article similaire d'EEB](#)

[Accès au document](#)

Application of a Quality Scoring System for Assessing Per- and Polyfluoroalkyl Substances (PFAS) in Organic Solvents for In Vitro Toxicokinetic Testing (SOT 2022)

Cfpub.epa 15/03/2022

This poster will be presented at the 61st Annual SOT meeting being in San Diego, CA in March 2022 and is focused on the development of a quality scoring system to assess PFAS stock solutions. More than 450 unique PFAS-organic solvent stocks were assessed by mass spectrometry to guide further in vitro testing by providing a pass/fail score with informational flags. One application of this scoring system was to assess plasma protein binding, a toxicokinetic property that informs bioaccumulative potential, on more than 60 PFAS, where most chemicals displayed very high binding rates. [...]

<https://doi.org/10.23645/epacomptox.19341857>

[Accès au document](#)

#Alertemytho n°4: Générations Futures décortique les propos de Julien Denormandie sur les ZNT riverains - pesticide

Générations futures 14/03/2022

Le 2 février 2022 a eu lieu un débat à l'Assemblée Nationale sur les nouveaux décrets et arrêtés publiés ce 26 janvier par le gouvernement concernant les zones de non traitement (ZNT) situées entre des habitations et des cultures traitées aux pesticides. Organisé à l'initiative du groupe UDI- Indépendant, différents députés ont exposé leurs points de vue et posé leurs questions

au ministre de l'Agriculture, Julien Denormandie. Au cours de cette séance, nous avons identifié différents propos problématiques de la part de M. Denormandie et certains députés. [...]

[Accès au document](#)

Glyphosate : une synthèse scientifique de l'INRAE

Générations futures 14/03/2022

Le glyphosate perturbe les fonctions de reproduction animale et humaine

Une synthèse bibliographique met en évidence les mécanismes d'action du glyphosate et des herbicides à base de glyphosate sur la fertilité mâle et femelle sur les animaux modèles et chez les humains (lire l'étude: Review: Mechanisms of Glyphosate).

Pour en savoir plus lire l'article sur le site de l'INRAE c'est [ici](#)

[Accès au document](#)

600 ans d'histoire de la contamination du delta du Danube par les métaux lourds

CNRS-INEE 09/03/2022

La pollution aux métaux lourds fait l'objet d'une attention croissante en raison de son impact sur la santé des écosystèmes et sur la qualité de l'eau. Dans le delta du Danube, au cœur de la Réserve de Biosphère de l'UNESCO, la question de la pollution de l'eau par les métaux lourds n'avait à ce jour que très peu été documentée et aucune donnée antérieure aux années 1900 n'était connue. Une étude publiée dans Science of the Total Environment dévoile près de 600 ans d'histoire de la contamination de la plus grande zone humide d'Europe. Les chercheurs à l'origine de cette étude présentent dans cet article les origines possibles de cette pollution aux métaux lourds, touchant les sédiments. [...]

[Accès au document](#)

Responsabilité des multinationales pour dommages environnementaux : une décision favorable aux associations

Actu-environnement 10/03/2022

La Cour de cassation a rendu, mercredi 9 mars, une décision qui va faciliter l'action des associations recherchant la responsabilité des multinationales pour leurs activités à l'étranger. Selon cette décision, la qualité à agir d'une association pour la défense d'un intérêt collectif en vue d'obtenir une mesure d'instruction s'apprécie non au regard de la loi étrangère, mais de celle du lieu où la juridiction a été saisie. [...]

[Accès au document](#)

Pollution de l'air : une étude établit un lien avec la baisse des performances cognitives

Actu-environnement 10/03/22

Un lien entre la pollution de l'air et de moins bonnes performances cognitives. C'est ce que suggèrent les résultats d'une étude scientifique réalisée par des chercheurs de l'Inserm, de l'université Rennes-I et de l'École des hautes études en santé publique, publiée le 10 mars dans *The Lancet Planetary Health*. [...]

[Accès au document](#)

Néonicotinoïdes : l'Inrae et l'ITB dressent un premier bilan des recherches de solutions alternatives

Actu-environnement 03/03/22

L'État a récemment renouvelé la dérogation annuelle autorisant l'utilisation de semences de betterave traitées aux néonicotinoïdes. Cette décision, en conformité de la loi du 14 décembre 2020, dépend néanmoins d'une recherche de solutions alternatives à employer avant 2024. Lors

du Salon international de l'agriculture, à Paris, l'Institut national de recherche agronomique (Inrae) et l'Institut technique de la betterave (ITB) ont présenté un bilan de la première année de trois études réalisées dans le cadre du Plan national de recherche et d'innovation (PNRI), déployé à cet effet. [...]

Article réservé aux abonnés

[Accès au document](#)

Pesticide Use on Crops for Meat and Dairy Feed Further Threatens Endangered Species

Beyond Pesticides, March 1, 2022

A report by the Independent finds chemical-intensive farming of crops for animal feed puts thousands of endangered species at risk. U.S. farmlands use more than 235 million pounds of pesticide (i.e., herbicides and insecticides) solely for animal feed production, many of which are highly hazardous pesticides (HHPs). Several HHP hazard categories include acutely toxic, chronic health hazards, and environmental hazards. Therefore, animal feed production intensifies global pollution, increases pesticide exposure, and degrades human, animal, and ecological health. [...]

[Accès au document](#)

Belgium set to launch its first-ever national action plan to increase health and environment protection from endocrine disrupting chemicals

Env-health 28/02/22

Health groups have welcomed Belgium's first-ever draft national action plan on endocrine disrupting chemicals (EDCs) as an important step towards better identification of and health protection against the risks associated to exposure to such harmful substances. A public consultation on the draft plan came to a close February 14th [1]. [...]

With the launch of its action plan, Belgium is joining a small group of other EU countries taking national action to address the challenge of EDC exposure through simultaneous actions on several levels: 1) increase efforts to better identify and regulate those substances at national and European levels, 2) better inform the population about EDCs to serve exposure reduction, including through training of relevant professionals in the health and social fields and boosting substitution efforts across sectors, 3) continue to develop research to serve more accurate identification and to monitor the exposure of the population and the environment. Other countries that have already taken similar initiatives include France, Denmark and Sweden [2]. [...]

[Accès au document](#)

Joint statement: The EU Commission must do better to transition away from synthetic pesticides

HEAL 28/02/22

Over 70 European organisations sent a joint statement to European Commission Executive Vice-President Timmermans and Health & Food Safety Commissioner Kyriakides to express their deep concern about the lack of ambition of the Commission's draft proposal for a "Sustainable Use of Plant Protection Products" Regulation to be published on 23 March. They make 10 demands to reach an ambitious Regulation. [...]

Voir aussi l'article de [Génération futures](#) :

[Accès au document](#)

Interdiction du phosmet : une mauvaise nouvelle pour l'environnement

Agriculture-Environnement 28/02/22

Bien qu'attendue, la suppression du phosmet entraîne des conséquences en cascade pour l'ensemble de la filière colza, avec une diminution des surfaces cultivées à prévoir dans les prochaines années.

Depuis le retrait du Patton (chlorpyrifos-méthyl) en 2020, le phosmet représentait la dernière solution réellement efficace pour lutter contre les grosses altises du colza, un coléoptère de 3 à 5 mm baptisé *Psylliodes chrysocephala*, reconnaissable à son corps noir et brillant aux reflets bleu métallique. [...]

[Accès au document](#)

Statistiques agricoles : nous demandons des résultats et des actions ambitieuses

Générations futures 25/02/22

Près de 80 ONG* de toute l'Europe, dont Générations Futures, écrivent ce jour aux ministres français de l'Agriculture, de la Santé et de l'Environnement ainsi qu'aux Commissaires européens en charge de ces questions pour faire part de leurs préoccupations concernant la réforme en cours des statistiques agricoles de l'UE.

Plus précisément, nos ONG sont préoccupées par la disponibilité limitée des données d'utilisation des pesticides et autres produits chimiques toxiques dans l'agriculture. [...]

[Accès au document](#)

Mosquito Exposed to Pesticides Can Withstand Further Pesticide Chemical Controls

Beyond Pesticides, February 24, 2022

Widespread, intensive pesticide use for mosquito control has allowed genetic mutations to persist among mosquito populations, causing subsequent resistance to future chemical exposure. According to a study published in *Scientific Reports*, two common species of female mosquitoes learned to evade pesticides following non-fatal exposure through smell. More concerning is the survival rate of these pre-exposed mosquitoes, as it is more than double that of unexposed mosquitoes. [...]

[Accès au document](#)

Aubert et Veillerette livrent leur vision utopique de l'agriculture biologique

Agriculture Environnement 23/02/22

Préfacé par leur ami le sénateur écologiste Joël Labbé, le dernier livre de Claude Aubert et François Veillerette a pour ambition d'expliquer comment arrêter l'usage des pesticides [CL. Aubert et F.Veillerette : Pour en finir avec les pesticides : des solutions pour y parvenir. Terre vivante, janvier 2022">1](#)

[...] Ainsi, pour convaincre de l'inutilité de ces produits, les deux responsables de Générations Futures [Claude Aubert et François Veillerette] prennent le parti de se focaliser sur le système immunitaire des plantes. [...]

[Accès au document](#)

Deadly fungus resistant to fungicide jumps from farms to people, as human pathogen spreads

Beyond Pesticides, February 23, 2022

Fungicide use in agriculture is driving the spread of multi-fungicide resistant human pathogens, finds a recent study conducted by scientists at the University of Georgia. While this occurrence has long been an assumption based on the rampant overuse of fungicides in chemical-dependent farming, scientists have now found clear evidence linking the development of widespread fungal resistance to farming practices, rather than health care use. Despite strong evidence that commonly used synthetic pesticides in chemical-intensive farming are driving resistance that threatens human health on a global scale, the U.S. government has not only failed to take action, it has fought against international efforts to slow the crisis, at the behest of the agrichemical industry. [...]

[Accès au document](#)

Pesticides c'est dans l'air : Un nouveau rapport exclusif de Générations Futures

Générations futures 22/02/22

Alors que le Salon International de l'Agriculture s'ouvre en fin de semaine, Générations Futures se penche sur la question de l'exposition des riverains aux pesticides agricoles et publie un nouveau rapport montrant l'inefficacité des Zones Non Traitées (ZNT) de 5 et 10 m. Notre association demande un renforcement de ces ZNT !

Selon nos premières mesures une distance de 33 mètres ne réduit même pas de moitié l'exposition aux pesticides constatée en limite de champ ! [...]

[Accès au document](#)

Bulletin de veille du réseau d'écotoxicologie terrestre et aquatique



N° 56 Avril 2022

Réalisé par l'équipe de veille sur la période du 1er Avril au 30 Avril 2022.

Colette Bertrand, Christian Mougin (UMR 1402 EcoSys), Annette Berard, Sonia Grimbuhler (UMR 1463 ITAP), Soizic Morin (UR 1454 EABX), Olivier Crouzet (UPFS – ONCFS)

et Pascale Karmasyn-Veyrines (DipSO)

Destinataires : les membres de la liste : ecotox@inrae.fr

ERA / PUBLICATIONS SCIENTIFIQUES / COMMUNAUTES MICROBIENNES AQUATIQUES

- Changes to the amino acid profile and proteome of the tropical freshwater microalga *Chlorella* sp. in response to copper stress
- Transcriptomic mechanisms for the promotion of cyanobacterial growth against eukaryotic microalgae by a ternary antibiotic mixture
- Toxic effect of nickel on microalgae *Phaeodactylum tricornutum* (Bacillariophyceae)
- The Joint Toxicity of Organic Three-dimensional Layered Double Hydroxide and Methyl Orange to Green Algae *Chlorella Vulgaris*
- UV-B radiation enhances the toxicity of TiO₂ nanoparticles to the marine microalga *Chlorella pyrenoidosa* by disrupting the protection function of extracellular polymeric substances
- Trophic transfer of copper decreases the condition index in *Crassostrea gigas* spat in concomitance with a change in the microalgal fatty acid profile and enhanced oyster energy demand
- Community metabolomics provides insights into mechanisms of pollution-induced community tolerance of periphyton
- Development of environmentally friendly biological algicide and biochemical analysis of inhibitory effect of diatom *Skeletonema costatum*
- Impact of salinities, metals and organic compounds found in saline oil & gas produced water on microalgae and cyanobacteria

ERA / PUBLICATIONS SCIENTIFIQUES / MICROBIOLOGIE ET CONTAMINANTS / ANTIBIOTIQUE ET ANTIBIORESISTANCES

- Combined effects of oxytetracycline and microplastic on wheat seedling growth and associated rhizosphere bacterial communities and soil metabolite profiles
- Mechanisms of the effects of humic acid on antibiotic resistance genes and microbial communities in Cd-contaminated soils
- The Occurrence and Distribution Pattern of Antibiotic Resistance Genes and Bacterial Community in the Ili River
- Responses of the Soil Bacterial Community, Resistome, and Mobilome to a Decade of Annual Exposure to Macrolide Antibiotics
- Enteric bacterial pathogens and their antibiotic-resistant patterns from the environmental sources in different regions of Ethiopia: A laboratory-based cross-sectional study
- Bacterial Community under the Influence of Microplastics in Indoor Environment and the Health Hazards Associated with Antibiotic Resistance Genes
- Application of Pig Manure Compost with Different Biochar Modifies the Antibiotic Resistome and Bacterial Community in Agriculture Soil

ERA / PUBLICATIONS SCIENTIFIQUES / MICROBIOLOGIE ET CONTAMINANTS / BIOCONTROLE

- Prevalence and Correlates of Phenazine Resistance in Culturable Bacteria from a Dryland Wheat Field
- Herbicides effects on symbiotic nitrogen-fixing bacteria

ERA / PUBLICATIONS SCIENTIFIQUES / MICROBIOLOGIE ET CONTAMINANTS / BIOREMEDIATION

- Microbial application in remediation of heavy metals: an overview
- Microbial Degradation of Aldrin and Dieldrin: Mechanisms and Biochemical Pathways
- Interaction of pristine and mineral engineered biochar with microbial community in attenuating the heavy metals toxicity: A review
- Indigenous microbial populations of abandoned mining sites and their role in natural attenuation
- Cadmium-Tolerant Plant Growth-Promoting Bacteria *Curtobacterium oceanosedimentum* Improves Growth Attributes and Strengthens Antioxidant System in Chili (*Capsicum frutescens*)
- Microbial bioremediation strategies with wastewater treatment potentialities - A review
- Synthesis, optimization, and characterization of biogenic manganese oxide (BioMnOx) by bacterial isolates from mangrove soils with sorbents property towards different toxic metals
- Fungal-bacterial biofilm mediated heavy metal rhizo-remediation
- Heavy Metals Contained Within a Pb-Zn Waste Heap Exhibit Selective Association with Microbial Modules as Revealed by Network Analysis
- Beneficial rhizospheric associated traits of chromate resistant bacteria for remediation of Cr (VI) contaminated soil

ERA / PUBLICATIONS SCIENTIFIQUES / PLASTIQUES

- Exposure of *Goniopora columna* to polyethylene microplastics (PE-MPs): Effects of PE-MP concentration on extracellular polymeric substances and microbial community
- Nanoplastics enhance the toxic effects of titanium dioxide nanoparticle in freshwater algae *Scenedesmus obliquus*
- Responses of nitrogen removal under microplastics versus nanoplastics stress in SBR: Toxicity, microbial community and functional genes
- Nanoscale polystyrene intensified the microbiome perturbation and antibiotic resistance genes enrichment in soil and *Enchytraeus crypticus* caused by tetracycline
- Plastic Debris As a Vector for Bacterial Disease: An Interdisciplinary Systematic Review
- Responses of submerged plant *Vallisneria spiralis* growth and leaf biofilms to water contaminated with microplastics
- Hydrolyzable microplastics in soil-low biodegradation but formation of a specific microbial habitat?
- Hydrolyzable microplastics in soil-low biodegradation but formation of a specific microbial habitat?

- Highly effective removal of microplastics by microalgae *Scenedesmus abundans*
- Microplastics decrease the toxicity of sulfamethoxazole to marine algae (*Skeletonema costatum*) at the cellular and molecular levels
- Effects of Plastic versus Straw Mulching Systems on Soil Microbial Community Structure and Enzymes in Strawberry Cultivation
- PET particles raise microbiological concerns for human health while tyre wear affect services in waters
- Nano-sized polystyrene plastics toxicity to microalgae *Chlorella vulgaris*: Toxicity mitigation using humic acid
- Microplastics can selectively enrich intracellular and extracellular antibiotic resistant genes and shape different microbial communities in aquatic systems
- Microplastics benefit bacteria colonization and induce microcystin degradation
- Macroplastic Fragment Contamination of Agricultural Soils Supports a Distinct Microbial Hotspot
- Long-term exposure to polyethylene microplastics and glyphosate interferes with the behavior, intestinal microbial homeostasis, and metabolites of the common carp (*Cyprinus carpio* L.)
- Living in a bottle: Bacteria from sediment-associated Mediterranean waste and potential growth on polyethylene terephthalate
- Insights into microbial diversity on plastisphere by multi-omics
- Environmental conditions affect the food quality of plastic associated biofilms for the benthic grazer *Physa fontinalis*
- Characterization of Microplastic-Associated Biofilm Development along a Freshwater-Estuarine Gradient
- Biodegradable and conventional microplastics posed similar toxicity to marine algae *Chlorella vulgaris*
- Biochar alters chemical and microbial properties of microplastic-contaminated soil
- Alteration of bacterial communities and co-occurrence networks as a legacy effect upon exposure to polyethylene residues under field environment
- Assessment of the Influence of Size and Concentration on the Ecotoxicity of Microplastics to Microalgae *Scenedesmus* sp., Bacterium *Pseudomonas putida* and Yeast *Saccharomyces cerevisiae*
- Preliminary Findings of Polypropylene Carbonate (PPC) Plastic Film Mulching Effects on the Soil Microbial Community
- Preliminary Findings of Polypropylene Carbonate (PPC) Plastic Film Mulching Effects on the Soil Microbial Community
- Metal-binding processes on nanoplastics: rare earth elements as probes
- How does multiannual plastic mulching in strawberry cultivation influence soil fungi and mycotoxin occurrence in soil?
- Effect of LDPE microplastics on chemical properties and microbial communities in soil

PESTICIDES ET SANTE DES AGRICULTEURS

- Association of Glyphosate Exposure with Blood DNA Methylation in a Cross-Sectional Study of Postmenopausal Women
- Pesticide Exposure in Fruit-Growers: Comparing Levels and Determinants Assessed under Usual Conditions of Work (CANEPa Study) with Those Predicted by Registration Process (Agricultural Operator Exposure Model)
- Geospatial Assessment of Pesticide Concentration in Ambient Air and Colorectal Cancer Incidence in Arkansas, 2013-2017
- Assessing the External Exposome Using Wearable Passive Samplers and High-Resolution Mass Spectrometry among South African Children Participating in the VHEMBE Study
- Prenatal and childhood exposure to chlordecone and adiposity of seven-year-old children in the Timoun mother-child cohort study in Guadeloupe (French West Indies)
- Metabolic syndrome and pesticides: A systematic review and meta-analysis

- Risk Factors for Brain Health in Agricultural Work _ A Systematic Review
- Exposure to Endocrine Disrupting Chemicals in Canada: Population-Based Estimates of Disease Burden and Economic Costs
- Impact of occupational pesticide exposure assessment method on risk estimates for prostate cancer, non-Hodgkin's lymphoma and Parkinson's disease: results of three meta-analyses
- OBOMod-Integrated modelling framework for residents' exposure to pesticides

PUBLICATIONS DU RESEAU ECOTOX

- Biomass partitioning of plants under soil pollution stress
- Passive Sampling as a Tool to Assess Atmospheric Pesticide Contamination Related to Vineyard Land Use
- Integrating Selection and Risk Assessment of Chemical Mixtures: A Novel Approach Applied to a Breast Milk Survey
- Assessment of an NDL-PCBs Sequestration Strategy in Soil Using Contrasted Carbonaceous Materials through In Vitro and Cucurbita pepo Assays
- Worldwide cases of water pollution by emerging contaminants: a review
- Field assessment of organic amendments and spring barley to phytomanage a Cu/PAH-contaminated soil
- Response of Three Miscanthus x giganteus Cultivars to Toxic Elements Stress: Part 2, Comparison between Two Growing Seasons
- A critical review of effect modeling for ecological risk assessment of plant protection products
- Polar organic chemical integrative samplers as an effective tool for chemical monitoring of surface waters - Results from one-year monitoring in France
- Transgenerational hormesis effects of nitenpyram on fitness and insecticide tolerance/resistance of Nilaparvata lugens
- Trophic transfer of copper decreases the condition index in Crassostrea gigas spat in concomitance with a change in the microalgal fatty acid profile and enhanced oyster energy demand
- Impacts of chemical stress, season, and climate change on the flounder population of the highly anthropised Seine estuary (France)
- Methods for selenium removal from contaminated waters: a review
- Screening of the Toxicity of Polystyrene Nano- and Microplastics Alone and in Combination with Benzo(a)pyrene in Brine Shrimp Larvae and Zebrafish Embryos
- Accumulation-depuration data collection in support of toxicokinetic modelling
- A multiresidue analytical method on air and rainwater for assessing pesticide atmospheric contamination in untreated areas
- Integration of Genotoxic Biomarkers in Environmental Biomonitoring Analysis Using a Multi-Biomarker Approach in Three-Spined Stickleback (Gasterosteus aculeatus Linnaeus, 1758)
- Urban afforestation: using phytotoxicity endpoints to compare air pollution tolerance of two native Brazilian plants Aroeira (Schinus terebinthifolius) and Cuvata (Cupania vernalis)

OUVRAGES / RAPPORTS / ACTES DE CONGRES

- RAPPORT sur un plan d'action de l'UE pour l'agriculture biologique - A9-0126/2022

REGLEMENTATION

- Inscription des pesticides, des produits chimiques industriels, des polluants organiques persistants et du mercure : modification du règlement (UE) n° 649/2012
- Enregistrement, évaluation et autorisation des substances chimiques, ainsi restrictions applicables à ces substances (REACH)

DROIT ET POLITIQUE DE L'ENVIRONNEMENT

- EPA Issues in Final Certain Pesticide Product Performance Data Requirements to Improve Clarity and Reduce Burden for Registrants

REVUE DE PRESSE

- Researchers calculate lost value of landfilled plastic in US
- Combined effects of polystyrene nanoplastics on lead toxicity in dandelion seedlings
- Produits phytosanitaires La souveraineté alimentaire passe aussi par la protection des cultures
- Implications for Human Health: Glyphosate Breakdown Product, AMPA, Associated with Oxidative Stress and DNA Damage Among Children
- Nanoplastic particles love company: Researchers analyze polyethylene degradation in the environment
- [Video] Agricall : une websérie sur les risques liés à l'utilisation des phytos
- Microplastics are everywhere, but their dangers largely remain a mystery, experts say
- Pathogens can hitch a ride on plastic to reach the sea
- Feuille de route « Produits chimiques » de la Commission Européenne : Un tournant historique
- CDC Study: Pesticide Use Does Not Reduce Risk of Lyme, Other Tick-Borne Disease
- When male bees don't get lucky: A connection between fenbuconazole and mating behavior
- PFOS-induced thyroid hormone system disrupted rats display organ-specific changes in their transcriptomes
- Lutte contre l'oïdium La solution de biocontrôle Messenger désormais autorisée sur céréales
- Bumblebees' nutrition influences their pesticide resistance
- A midge fly can be a source of currently used pesticides for birds, bats
- Pesticides : un nouveau tableau de maladie professionnelle pour le cancer de la prostate
- L'agriculture utilisant la chimie de synthèse doit de toute urgence réformer ses pratiques
- Pollution de l'air : une étude cerne le profil des conducteurs les plus émetteurs à Paris
- Source tracing with cadmium isotope and risk assessment of heavy metals in sediment of an urban river, China
- Gut microbiota promote biotransformation and bioaccumulation of arsenic in tilapia
- Nanoparticles prove effective against the yellow fever mosquito
- Microplastics permeate seafood across southern Australia
- Field mixtures of currently used pesticides in agricultural soil pose a risk to soil invertebrates
- Plan stratégique national : le ministère de l'Agriculture invité à revoir sa copie
- Reach : modification des exigences d'enregistrement des substances
- Reach : cinq nouvelles substances soumises à autorisation
- Sulfoxaflor : la Commission européenne va restreindre son usage, sans l'accord des États membres
- Pesticides dans l'alimentation : l'opacité et la complexité des données nationales et européennes
- Pesticides dans l'eau potable : vers une adoption provisoire des valeurs sanitaires allemandes

28/04/2022

Changes to the amino acid profile and proteome of the tropical freshwater microalga *Chlorella* sp. in response to copper stress

Authors: Shakya M, Silvester E, Rees G et al. Source: ECOTOXICOLOGY AND ENVIRONMENTAL SAFETY 233:113336, 2022, DOI 10.1016/j.ecoenv.2022.113336 Abstract: Contamination of freshwaters is increasing globally, with microalgae considered one of th...

18/04/2022

Transcriptomic mechanisms for the promotion of cyanobacterial growth against eukaryotic microalgae by a ternary antibiotic mixture

Authors: Xu SJ, Liu Y, Zhang J Source: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH Early Access, DOI 10.1007/s11356-022-20041-3 Abstract: This study evaluated the responses of a mixed culture of two cyanobacterial species (*Microcystis aeruginosa*...

17/04/2022

Toxic effect of nickel on microalgae *Phaeodactylum tricornutum* (Bacillariophyceae)

Authors: Guo RY, Lu DD, Liu CG et al. Source: ECOTOXICOLOGY Early Access, DOI 10.1007/s10646-022-02532-8 Abstract: Nickel acts as an essential trace nutrient or toxicant for organisms, depending on its concentration. The increased concentrations of nickel, due to...

14/04/2022

The Joint Toxicity of Organic Three-dimensional Layered Double Hydroxide and Methyl Orange to Green Algae *Chlorella Vulgaris*

Authors: Qiu FF, Xie YX, Wang QY et al. Source: BULLETIN OF ENVIRONMENTAL CONTAMINATION AND TOXICOLOGY Early Access, DOI 10.1007/s00128-022-03509-3 Abstract: Organic modified layered double hydroxides (O-LDHs), known as attractive...

13/04/2022

UV-B radiation enhances the toxicity of TiO₂ nanoparticles to the marine microalga *Chlorella pyrenoidosa* by disrupting the protection function of extracellular polymeric substances

Authors: Zhu L, Booth AM, Feng SL et al. Source: ENVIRONMENTAL SCIENCE-NANO Early Access, DOI 10.1039/d1en01198g Abstract: Enhanced UV-B radiation (UVBR) has been a global environmental problem for decades due to stratospheric ozone depletion. Simultaneously...

12/04/2022

Trophic transfer of copper decreases the condition index in *Crassostrea gigas* spat in concomitance with a change in the microalgal fatty acid profile and enhanced oyster energy demand

Authors: Akcha F, Coquille N, Sussarellu R et al. Source: SCIENCE OF THE TOTAL ENVIRONMENT 824:153841, 2022, DOI 10.1016/j.scitotenv.2022.153841 Abstract: Due to new usages and sources, copper (Cu) concentrations are increasing in the Arcachon...

11/04/2022

Community metabolomics provides insights into mechanisms of pollution-induced community tolerance of periphyton

Authors: Lips S, Larras F, Schmitt-Jansen M
Source: SCIENCE OF THE TOTAL ENVIRONMENT 824:153777, 2022, DOI 10.1016/j.scitotenv.2022.153777
Abstract: Chemical pollution is a major concern for freshwater ecosystems, but the impact and...

07/04/2022

Development of environmentally friendly biological algicide and biochemical analysis of inhibitory effect of diatom *Skeletonema costatum*

Authors: Yang J, Zhu QZ, Chai JL et al.
Source: CHINESE CHEMICAL LETTERS 33:1358-1364, 2022, DOI 10.1016/j.cclet.2021.09.053
Abstract: *Skeletonema costatum* is a diatom widely distributed in red tide microalgae blooms and as one of the main algae causing harmful algal...

01/04/2022

Impact of salinities, metals and organic compounds found in saline oil & gas produced water on microalgae and cyanobacteria

Authors: Parsy A, Guyoneaud R, Lot MC et al.
Source: ECOTOXICOLOGY AND ENVIRONMENTAL SAFETY 234:113351, 2022, DOI 10.1016/j.ecoenv.2022.113351
Abstract: This work evaluates the impact of salinity and the toxicity of some metals and organic compound...

ERA / PUBLICATIONS SCIENTIFIQUES / MICROBIOLOGIE ET CONTAMINANTS / ANTIBIOTIQUE ET ANTIBIORESISTANCES

27/04/2022

Combined effects of oxytetracycline and microplastic on wheat seedling growth and associated rhizosphere bacterial communities and soil metabolite profiles

Authors: Guo, AY, Pan, CR, Su, XM et al.
Source: ENVIRONMENTAL POLLUTION 302, 2022, DOI 10.1016/j.envpol.2022.119046
Abstract: The widespread application of antibiotics and plastic films in agriculture leads to new characteristics of soil pollution with the coexistence of...

27/04/2022

Mechanisms of the effects of humic acid on antibiotic resistance genes and microbial communities in Cd-contaminated soils

Authors: Fu, YL, Zhu, Y, Dong, H et al.
Source: PROCESS SAFETY AND ENVIRONMENTAL PROTECTION 160: 62-69, 2022, DOI 10.1016/j.psep.2022.02.006
Abstract: Humic acid (HA) is an organic macromolecular compound that widely exists in nature, but its effect on...

22/04/2022

The Occurrence and Distribution Pattern of Antibiotic Resistance Genes and Bacterial Community in the Ili River

Authors Yang, XB, Yan, L, Yang, YT et al. Source FRONTIERS IN ENVIRONMENTAL SCIENCE 10, 2022, DOI 10.3389/fenvs.2022.840428 Abstract The emergence of antibiotic resistance genes (ARGs) is a great risk to the ecosystem and human health; however, there are rare...

04/04/2022

Enteric bacterial pathogens and their antibiotic-resistant patterns from the environmental sources in different regions of Ethiopia: A laboratory-based cross-sectional study

Authors Denku, CY, Ambelu, A, Mitike, G Source HEALTH SCIENCE REPORTS 5, 2, 2022, DOI 10.1002/hsr2.521 Abstract Background and Aim Antimicrobial resistance (AMR) resulting in the most significant public health and economic threat. Unfortunately, it is one of the missing...

01/04/2022

Application of Pig Manure Compost with Different Biochar Modifies the Antibiotic Resistome and Bacterial Community in Agriculture Soil

Authors Zhang, Y, Chen, ML, Bao, CX et al. Source WATER AIR AND SOIL POLLUTION 233, 4, 2022, DOI 10.1007/s11270-022-05582-0 Abstract The antibiotic resistance gene (ARG) content of composted pig manure remains high, but little is known about the impacts of its use...

21/04/2022

Responses of the Soil Bacterial Community, Resistome, and Mobilome to a Decade of Annual Exposure to Macrolide Antibiotics

Authors Brown, LP, Murray, R, Scott, A et al. Source APPLIED AND ENVIRONMENTAL MICROBIOLOGY 88, 8, 2022, DOI 10.1128/aem.00316-22 Abstract Biosolids that are applied to agricultural soil as an organic fertilizer are frequently contaminated with...

02/04/2022

Bacterial Community under the Influence of Microplastics in Indoor Environment and the Health Hazards Associated with Antibiotic Resistance Genes

Authors Peng C, Zhang XF, Zhang XY et al. Source ENVIRONMENTAL SCIENCE & TECHNOLOGY 56, 1: 422-432, 2022, DOI 10.1021/acs.est.1c04520 Abstract Selectively colonized microbial communities and enriched antibiotic resistance genes (ARGs) in...

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03/04/2022

Prevalence and Correlates of Phenazine Resistance in Culturable Bacteria from a Dryland Wheat Field

Authors Perry, EK, Newman, DKSource APPLIED AND ENVIRONMENTAL MICROBIOLOGY 88, 6, 2022, DOI 10.1128/aem.02320-21Abstract Phenazines are a class of bacterially produced redox-active natural antibiotics that have demonstrated potential as a sustainable...

01/04/2022

Herbicides effects on symbiotic nitrogen-fixing bacteria

Authors Burul, F, Baric, KI, Lakic, J et al.Source JOURNAL OF CENTRAL EUROPEAN AGRICULTURE 23, 1:89-102, 2022, DOI 10.5513/JCEA01/23.1.3320Abstract Rhizobia are an important component of sustainable agricultural production. In symbiosis with...

ERA / PUBLICATIONS SCIENTIFIQUES / MICROBIOLOGIE ET CONTAMINANTS / BIOREMEDIATION

29/04/2022

Microbial application in remediation of heavy metals: an overview

Authors Choudhury, S, Chatterjee, ASource ARCHIVES OF MICROBIOLOGY, 204, 5, 2022, DOI 10.1007/s00203-022-02874-1Abstract ... The current review article describes the sources and effects of metal ions in the environment followed by bioremediation strategies followe...

29/04/2022

Microbial Degradation of Aldrin and Dieldrin: Mechanisms and Biochemical Pathways

Authors Pang, SM, Lin, ZQ, Li, JY et al.Source FRONTIERS IN MICROBIOLOGY 13, 2022, DOI 10.3389/fmicb.2022.713375Abstract Review: As members of the organochlorine group of insecticides, aldrin and dieldrin are effective at protecting agriculture from insect pests....

27/04/2022

Interaction of pristine and mineral engineered biochar with microbial community in attenuating the heavy metals toxicity: A review

Authors Batool, M, Khan, WUD, Hamid, Y et al.Source APPLIED SOIL ECOLOGY 175, 2022, DOI 10.1016/j.apsoil.2022.104444Abstract Soil ecology may be economically altered via microbiota and nutrient management in an organic agricultural setting. While biochar may...

21/04/2022

Indigenous microbial populations of abandoned mining sites and their role in natural attenuation

Authors Dey, SSource ARCHIVES OF MICROBIOLOGY, 204,5, 2022, DOI 10.1007/s00203-022-02861-6Abstract Environmental contamination by toxic effluents discharged by anthropogenic activities including the mining industries has increased extensive...

20/04/2022

Cadmium-Tolerant Plant Growth-Promoting Bacteria *Curtobacterium oceanosedimentum* Improves Growth Attributes and Strengthens Antioxidant System in Chili (*Capsicum frutescens*)

Authors Patel, M, Patel, K, Al-Keridis, LA et al. Source SUSTAINABILITY 14, 7, 2022, DOI 10.3390/su14074335 Abstract The remediation of potentially toxic element-polluted soils can be accomplished through the use of microbial and plant-assisted bioremediation. A total of 32...

16/04/2022

Synthesis, optimization, and characterization of biogenic manganese oxide (BioMnOx) by bacterial isolates from mangrove soils with sorbents property towards different toxic metals

Authors Jeyaraj, A, Subramanian, S Source BIOMETALS, 2022, DOI 10.1007/s10534-022-00378-5 Abstract Manganese oxidizing bacteria, *Bacillus mycoides* and *Bacillus subtilis* were isolated from mangrove soils and optimized for the removal of Mn(II) with simultaneous...

09/04/2022

Heavy Metals Contained Within a Pb-Zn Waste Heap Exhibit Selective Association with Microbial Modules as Revealed by Network Analysis

Authors Sun, CL, Wu, P, Wang, GH, Kong, X Source BULLETIN OF ENVIRONMENTAL CONTAMINATION AND TOXICOLOGY, 2022, DOI 10.1007/s00128-022-03499-2 Abstract Heavy metal contamination is a global environmental concern due to its persistence and toxicity. To...

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Microbial bioremediation strategies with wastewater treatment potentialities - A review

Authors Saeed, MU, Hussain, N, Sumrin, A et al. Source SCIENCE OF THE TOTAL ENVIRONMENT 818, 2022, DOI 10.1016/j.scitotenv.2021.151754 Abstract The demand for innovative waste treatment techniques has arisen because of the...

13/04/2022

Fungal-bacterial biofilm mediated heavy metal rhizo-remediation

Authors Henagamage, A. P., Peries, C. M., Seneviratne, G. Source WORLD JOURNAL OF MICROBIOLOGY & BIOTECHNOLOGY 38,5, 2022, DOI 10.1007/s11274-022-03267-8 Abstract Heavy metal pollution due to excessive use of chemical fertilizers (CF) causes major damage...

04/04/2022

Beneficial rhizospheric associated traits of chromate resistant bacteria for remediation of Cr (VI) contaminated soil

Authors Kalsoom, A, Batool, R, Jamil, N Source BIOREMEDIATION JOURNAL, 2022, DOI 10.1080/10889868.2022.2054930 Abstract Agricultural fields are polluted with Cr (VI) due to the excessive use of industrial effluent for irrigation purposes. The current study was...

30/04/2022

Exposure of *Goniopora columna* to polyethylene microplastics (PE-MPs): Effects of PE-MP concentration on extracellular polymeric substances and microbial community

Authors: Hung CM, Huang CP, Hsieh SL et al. Source: CHEMOSPHERE 297:134113, 2022, DOI 10.1016/j.chemosphere.2022.134113 Abstract: Although the pollution of coral reefs by microplastics (MPs) is an environmental...

25/04/2022

Responses of nitrogen removal under microplastics versus nanoplastics stress in SBR: Toxicity, microbial community and functional genes

Authors: Zhou CS, Wu JW, Ma WL et al. Source: JOURNAL OF HAZARDOUS MATERIALS 432:128715, 2022, DOI 10.1016/j.jhazmat.2022.128715 Abstract: Microplastics (MPs) and nanoplastics (NPs), as emerging pollutants, are frequently detected ...

21/04/2022

Plastic Debris As a Vector for Bacterial Disease: An Interdisciplinary Systematic Review

Authors: Beloe CJ, Browne MA, Johnston EL Source: ENVIRONMENTAL SCIENCE & TECHNOLOGY 56:2950-2958, 2022, DOI 10.1021/acs.est.1c05405 Abstract: Pathogens and polymers can separately cause disease; however, environmental and medical...

27/04/2022

Nanoplastics enhance the toxic effects of titanium dioxide nanoparticle in freshwater algae *Scenedesmus obliquus*

Authors: Das S, Thiagarajan V, Chandrasekaran N et al. Source: COMPARATIVE BIOCHEMISTRY AND PHYSIOLOGY C-TOXICOLOGY & PHARMACOLOGY 256:109305, 2022, DOI 10.1016/j.cbpc.2022.109305 Abstract: The increased usage of titanium dioxide...

23/04/2022

Nanoscale polystyrene intensified the microbiome perturbation and antibiotic resistance genes enrichment in soil and *Enchytraeus crypticus* caused by tetracycline

Authors: Yang LH, Wang XT, Ma J, Li G et al. Source: APPLIED SOIL ECOLOGY 174:104426, 2022, DOI 10.1016/j.apsoil.2022.104426 Abstract: Defined as plastic debris with size of 1-1000 nm, nanoplastics might be potentially more...

20/04/2022

Responses of submerged plant *Vallisneria natans* growth and leaf biofilms to water contaminated with microplastics

Authors: Zhang JW, Huang DY, Deng H, Zhang JB Source: SCIENCE OF THE TOTAL ENVIRONMENT 818:151750, 2022, DOI 10.1016/j.scitotenv.2021.151750 Abstract: Microplastics pose a serious threat to ecological processes and environmental health. To...

16/04/2022

Hydrolyzable microplastics in soil-low biodegradation but formation of a specific microbial habitat?

Authors Schoepfer, L, Schnepf, U, Marhan, S et al. Source BIOLOGY AND FERTILITY OF SOILS, 58, 4:471-486, 2022, DOI 10.1007/s00374-022-01638-9 Abstract Microplastics (MP, plastic particles between 0.1 and 5000 μm) contaminate agricultural soils through the...

16/04/2022

Highly effective removal of microplastics by microalgae Scenedesmus abundans

Authors: Cheng YR, Wang HY Source: CHEMICAL ENGINEERING JOURNAL 435:135079, 2022, DOI 10.1016/j.cej.2022.135079 Abstract: The highly effective removal of multiple kinds of microplastics (MPs) by microalgae Scenedesmus abundans was accomplished and the main...

13/04/2022

Effects of Plastic versus Straw Mulching Systems on Soil Microbial Community Structure and Enzymes in Strawberry Cultivation

Authors: Munoz K, Thiele-Bruhn S, Kenngott KGJ, Meyer M et al. Source: SOIL SYSTEMS 6(1): 21, 2022, DOI 10.3390/soilsystems6010021 Abstract: This study aimed to evaluate changes in abundance, structure, and enzyme activity of the soil...

16/04/2022

Hydrolyzable microplastics in soil-low biodegradation but formation of a specific microbial habitat?

Authors: Schopfer L, Schnepf U, Marhan S, Brummer F et al. Source: BIOLOGY AND FERTILITY OF SOILS Early access, 2022, DOI 10.1007/s00374-022-01638-9 Abstract: Microplastics (MP, plastic particles between 0.1 and 5000 μm) contaminate agricultural soils...

15/04/2022

Microplastics decrease the toxicity of sulfamethoxazole to marine algae (Skeletonema costatum) at the cellular and molecular levels

Authors: Li X, Luo JW, Zeng H et al. Source: SCIENCE OF THE TOTAL ENVIRONMENT 824:153855, 2022, DOI 10.1016/j.scitotenv.2022.153855 Abstract: Microplastics (MPs) and sulfamethoxazole (SMX) are ubiquitous in various aquatic environmen...

12/04/2022

PET particles raise microbiological concerns for human health while tyre wear affect services in waters

Authors: Sathicq MB, Sabatino R, Di Cesare A et al. Source: JOURNAL OF HAZARDOUS MATERIALS 429, 2022, DOI 10.1016/j.jhazmat.2022.128397 Abstract: Although abundant and chemically peculiar, tyre wear microplastic particles (TWP)...

12/04/2022

Nano-sized polystyrene plastics toxicity to microalgae *Chlorella vulgaris*: Toxicity mitigation using humic acid

Authors: Hanachi P, Khoshnamvand M, Walker TR, Hamidian AH
Source: AQUATIC TOXICOLOGY 245:106123, 2022, DOI10.1016/j.aquatox.2022.106123
Abstract: Polystyrene nanoplastics (PS-NPs) can cause toxicity in aquatic organisms, but presence of...

12/04/2022

Microplastics benefit bacteria colonization and induce microcystin degradation

Authors: He YX, Wei GN, Tang BR et al. Source: JOURNAL OF HAZARDOUS MATERIALS 431:128524, 2022, DOI10.1016/j.jhazmat.2022.128524
Abstract: Microplastics can sorb toxic substances and be colonized by microorganisms. However, the...

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Long-term exposure to polyethylene microplastics and glyphosate interferes with the behavior, intestinal microbial homeostasis, and metabolites of the common carp (*Cyprinus carpio* L.)

. Authors: Chen JJ, Rao CY, Yuan RJ et al. Source: SCIENCE OF THE TOTAL ENVIRONMENT 814:152681, 2022, DOI10.1016/j.scitotenv.2021.152681
Abstract: Polyethylene microplastics (PE-MPs) and glyphosate (GLY) occur widely and have...

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Microplastics can selectively enrich intracellular and extracellular antibiotic resistant genes and shape different microbial communities in aquatic systems

Authors: Zhang S, Liu XX, Qiu PX et al. Source: SCIENCE OF THE TOTAL ENVIRONMENT 822:153488, 2022, DOI10.1016/j.scitotenv.2022.153488
Abstract: Microplastics (MPs), as emerging contaminants, are posing potential risks to...

12/04/2022

Macroplastic Fragment Contamination of Agricultural Soils Supports a Distinct Microbial Hotspot

. Authors: McKay O, Pold G, Martin P, Sistla S
Source: FRONTIERS IN ENVIRONMENTAL SCIENCE 10:838455, 2022, DOI10.3389/fenvs.2022.838455
Abstract: Prolonged exposure to plastic macrofragments may alter microbial decomposer community...

12/04/2022

Living in a bottle: Bacteria from sediment-associated Mediterranean waste and potential growth on polyethylene terephthalate

. Authors: Vidal-Verdu A, Latorre-Perez A, Molina-Menor E et al. Source: MICROBIOLOGY OPEN 11:e1259, 2022, DOI10.1002/mbo3.1259
Abstract: Ocean pollution is a worldwide environmental challenge that could be partially tackled throu...

12/04/2022

Insights into microbial diversity on plastisphere by multi-omics

. Authors: Tiwari N, Bansal M, Santhiya D, Sharma JG Source: ARCHIVES OF MICROBIOLOGY 204:216, 2022, DOI10.1007/s00203-022-02806-z Abstract: [...] This review summarizes the efficiency of metagenomics and next generati...

12/04/2022

Characterization of Microplastic-Associated Biofilm Development along a Freshwater-Estuarine Gradient

. Authors: Qiang LY, Cheng JP, Mirzoyan S et al. Source: ENVIRONMENTAL SCIENCE & TECHNOLOGY 55:16402-16412, 2021, DOI10.1021/acs.est.1c04108 Abstract: Microplastic contamination is an increasing concern worldwide. Biofilms rapidly develop o...

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Biochar alters chemical and microbial properties of microplastic-contaminated soil

. Authors: Palansooriya KN, Sang MK, Igalavithana AD et al. Source: ENVIRONMENTAL RESEARCH 209:112807, 2022, DOI10.1016/j.envres.2022.112807 Abstract: The occurrence of microplastics (MP...

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Environmental conditions affect the food quality of plastic associated biofilms for the benthic grazer *Physa fontinalis*

. Authors: Michler-Kozma DN, Neu TR, Gabel F Source: SCIENCE OF THE TOTAL ENVIRONMENT 816:151663, 2022, DOI10.1016/j.scitotenv.2021.151663 Abstract: [...] This study investigates the primary production on three common plastic types in...

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Biodegradable and conventional microplastics posed similar toxicity to marine algae *Chlorella vulgaris*

. Authors: Su YY, Cheng ZR, Hou YP et al. Source: AQUATIC TOXICOLOGY 244:106097, 2022, DOI10.1016/j.aquatox.2022.106097 Abstract: It has been demonstrated that some conventional microplastics (CMPs) have toxicities to organisms, however, whether...

12/04/2022

Alteration of bacterial communities and co-occurrence networks as a legacy effect upon exposure to polyethylene residues under field environment

Authors: Shi Z, Xiong L, Liu T, Wu W Source: JOURNAL OF HAZARDOUS MATERIALS 426:128126, 2022, DOI10.1016/j.jhazmat.2021.128126 Abstract: The use of plastic film mulch threatens the sustainability of the terrestrial environment...

11/04/2022

Assessment of the Influence of Size and Concentration on the Ecotoxicity of Microplastics to Microalgae *Scenedesmus* sp., Bacterium *Pseudomonas putida* and Yeast *Saccharomyces cerevisiae*

Authors: Miloloza M, Bule K, Prevaric V et al. Source: POLYMERS 14:1246, 2022, DOI 10.3390/polym14061246 Abstract: The harmful effects of microplastics are not yet fully revealed. This study tested harmful effects of polyethylene, polypropylene, polystyrene,...

07/04/2022

Preliminary Findings of Polypropylene Carbonate (PPC) Plastic Film Mulching Effects on the Soil Microbial Community

Authors: Liang J, Zhang JF, Yao ZM, Luo SY et al. Source: AGRICULTURE-BASEL 12(3): 406, DOI 10.3390/agriculture12030406 Abstract: The farmland residual film pollution caused by traditional PE film has an adverse impact on crops and the environment. Polypropylene...

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How does multiannual plastic mulching in strawberry cultivation influence soil fungi and mycotoxin occurrence in soil?

Authors Meyer, M, Schaumann, G E, Munoz, K Source MYCOTOXIN RESEARCH 38, 2: 93-105, 2022, DOI 10.1007/s12550-022-00451-5 Abstract The production of mycotoxins is often interpreted as fungal response to cope with unfavorable growth conditions induced by tox...

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Preliminary Findings of Polypropylene Carbonate (PPC) Plastic Film Mulching Effects on the Soil Microbial Community

Authors Liang, J, Zhang, JF, Yao, ZM et al. Source AGRICULTURE-BASEL 12, 3, 2022, DOI 10.3390/agriculture12030406 Abstract The farmland residual film pollution caused by traditional PE film has an adverse impact on crops and the environment. Polypropylene...

01/04/2022

Metal-binding processes on nanoplastics: rare earth elements as probes

Authors: Blancho F, Davranche M, Marsac R, Leon A et al. Source: ENVIRONMENTAL SCIENCE-NANO Early Access, 2022, DOI 10.1039/d2en00048b Abstract: The presence of nanoplastics in the ocean and soil demonstrates their global distribution in the environment. D...

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Effect of LDPE microplastics on chemical properties and microbial communities in soil

Authors Palansooriya, KN, Shi, L, Sarkar, B et al. Source SOIL USE AND MANAGEMENT, 2022, DOI 10.1111/sum.12808 Abstract The accumulation of plastics in the soil ecosystem poses an increasing environmental concern worldwide. However, little is known about the...

29/04/2022

Association of Glyphosate Exposure with Blood DNA Methylation in a Cross-Sectional Study of Postmenopausal Women

Authors: Lucia RM, Huang WL, Pathak KV, McGilvrey M, et al. Source: ENVIRONMENTAL HEALTH PERSPECTIVES, 130(4):047001, 2022, DOI 10.1289/EHP10174 Abstract: Glyphosate is the most commonly used herbicide in the world and is purported to have a variety of health...

29/04/2022

Geospatial Assessment of Pesticide Concentration in Ambient Air and Colorectal Cancer Incidence in Arkansas, 2013-2017

Authors: Su LJ, Young SG, Collins J, Matich E et al. Source: INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH, 19(6):3258, 2022, DOI 10.3390/ijerph19063258 Abstract: Exposure to various agricultural pesticides has been linked...

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Prenatal and childhood exposure to chlordecone and adiposity of seven-year-old children in the Timoun mother-child cohort study in Guadeloupe (French West Indies)

Authors: Costet N, Lafontaine A, Rouget F, Michineau L, et al., Source: ENVIRONMENTAL HEALTH, 21(1): 42, 2022, DOI 10.1186/s12940-022-00850-2 Abstract: Exposure to persistent environmental organic pollutants may contribute to the development of obesity amo...

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Pesticide Exposure in Fruit-Growers: Comparing Levels and Determinants Assessed under Usual Conditions of Work (CANEPA Study) with Those Predicted by Registration Process (Agricultural Operator Exposure Model)

Authors: Bresson M, Bureau M, Le Goff J, Lecluse Y, et al., Source: INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH, 19(8):4611, 2022, DOI 10.3390/ijerph19084611 Abstract: Knowledge of pesticide exposure levels in farmers is...

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Assessing the External Exposome Using Wearable Passive Samplers and High-Resolution Mass Spectrometry among South African Children Participating in the VHEMBE Study

Authors: Koelmel JP, Lin EZ, DeLay K, Williams AJ, et al. Source: ENVIRONMENTAL SCIENCE & TECHNOLOGY, 56(4):2191-2203, 2022, DOI 10.1021/acs.est.1c06481 Abstract: Children in low- and middle-income countries are often exposed to higher levels of chemicals and are...

19/04/2022

Metabolic syndrome and pesticides: A systematic review and meta-analysis

The relation between pesticides exposure and metabolic syndrome (MetS) has not been clearly identified. Performing a systematic review and meta-analysis, PubMed, Cochrane Library, Embase, and ScienceDirect were searched for studies reporting the risk of MetS following...

16/04/2022

Risk Factors for Brain Health in Agricultural Work _ A Systematic Review

Authors: Sturm ET, Castro C, Mendez-Colmenares A, Duffy J, et al. Source: INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH, 19(6):3373, 2022, DOI 10.3390/ijerph19063373 Abstract: Certain exposures related to agricultural work...

08/04/2022

Impact of occupational pesticide exposure assessment method on risk estimates for prostate cancer, non-Hodgkin's lymphoma and Parkinson's disease: results of three meta-analyses

Authors: Ohlander J, Fuhrmann S, Basinas I, Cherrie JW, et al. Source: OCCUPATIONAL AND ENVIRONMENTAL MEDICINE, 2022, DOI 10.1136/oemed-2021-108046 Abstract: Assessment of occupational pesticide exposure in epidemiological studies of chronic diseases...

15/04/2022

Exposure to Endocrine Disrupting Chemicals in Canada: Population-Based Estimates of Disease Burden and Economic Costs

Authors: Malits J, Naidu M, Trasande L, Source: TOXICS, 10(3):146, 2022, DOI 10.3390/toxics10030146 Abstract: Exposure to endocrine-disrupting chemicals (EDCs) contributes to substantial disease burden worldwide. We aim to quantify the disease...

07/04/2022

OBOMod-Integrated modelling framework for residents' exposure to pesticides

Authors : Figueiredo DM, Vermeulen RCH, Jacobs C, Holterman HJ et al. Source : SCIENCE OF THE TOTAL ENVIRONMENT 825:153798, 2022, DOI 10.1016/j.scitotenv.2022.153798 Abstract : Pesticides can be transported from the site of...

PUBLICATIONS DU RESEAU ECOTOX

29/04/2022

Biomass partitioning of plants under soil pollution stress

Authors: Delerue F, Scattolin M, Atteia O, Cohen GJV et al. Source: COMMUNICATIONS BIOLOGY 5(1):365, 2022, DOI 10.1038/s42003-022-03307-x Abstract: Polluted sites are ubiquitous worldwide but how plant partition their biomass between different organs in this context is...

29/04/2022

Passive Sampling as a Tool to Assess Atmospheric Pesticide Contamination Related to Vineyard Land Use

Authors: Martin S, Devier MH, Cruz J, Duporte G et al. Source: ATMOSPHERE 13(4):504, 2022, DOI 10.3390/atmos13040504 Abstract: The massive use of pesticides in agriculture has led to widespread contamination of the environment, particularly the atmospheric compartment....

29/04/2022

Integrating Selection and Risk Assessment of Chemical Mixtures: A Novel Approach Applied to a Breast Milk Survey

Authors: Crepet A, Vasseur P, Jean J, Badot PM et al. Source: ENVIRONMENTAL HEALTH PERSPECTIVES 130(3):035001, 2022, DOI 10.1289/EHP8262 Abstract: BACKGROUND: One of the main challenges of modern risk assessment is to account for combined...

28/04/2022

Worldwide cases of water pollution by emerging contaminants: a review

Authors: Morin-Crini N, Lichtfouse E, Liu GR, Balaram V et al. Source: ENVIRONMENTAL CHEMISTRY LETTERS Early Access, 2022, DOI 10.1007/s10311-022-01447-4 Abstract: Water contamination by emerging contaminants is increasing in the context of rising urbanizatio...

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Response of Three Miscanthus x giganteus Cultivars to Toxic Elements Stress: Part 2, Comparison between Two Growing Seasons

Authors: Al Souki KS, Line C, Moravec J, Douay F et al. Source: PLANTS-BASEL 11(7):945, 2022, DOI 10.3390/plants11070945 Abstract: The positive impact on restoring soil functionality, decreasing toxic elements (TE) bioaccessibility, and enhancing soil physicochemical and...

29/04/2022

Assessment of an NDL-PCBs Sequestration Strategy in Soil Using Contrasted Carbonaceous Materials through In Vitro and Cucurbita pepo Assays

Authors: Piutti S, El Wanny N, Laflotte A, Baroudi M et al. Source: APPLIED SCIENCES-BASEL 12(8):3921, 2022, DOI 10.3390/app12083921 Abstract: Featured Application A sequestration-based remediation strategy using several types of carbonaceous...

27/04/2022

Field assessment of organic amendments and spring barley to phytomanage a Cu/PAH-contaminated soil

Authors: Mench M, Matin S, Szulc W, Rutkowska B et al. Source: ENVIRONMENTAL GEOCHEMISTRY AND HEALTH Early Access, 2022, DOI 10.1007/s10653-022-01269-x Abstract: The INTENSE project, supported by the EU Era-Net Facce Surplus, aimed at increasing crop...

22/04/2022

A critical review of effect modeling for ecological risk assessment of plant protection products

Authors: Larras F, Charles S, Chaumot A, Pelosi C t al. Source: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH Early Access, 2020, DOI 10.1007/s11356-022-19111-3 Abstract: A wide diversity of plant protection products (PPP) is used for crop protection leading to the...

21/04/2022

Polar organic chemical integrative samplers as an effective tool for chemical monitoring of surface waters - Results from one-year monitoring in France

Authors: Mathon B, Ferreol M, Togola A, Lardy-Fontan S et al. Source: SCIENCE OF THE TOTAL ENVIRONMENT 824:153549, 2022, DOI 10.1016/j.scitotenv.2022.153549 Abstract: In an effort to support European Union Water Framework Directive goals, we have set up a...

21/04/2022

Trophic transfer of copper decreases the condition index in *Crassostrea gigas* spat in concomitance with a change in the microalgal fatty acid profile and enhanced oyster energy demand

Authors: Akcha F, Coquille N, Sussarellu R, Rouxel J et al. Source: SCIENCE OF THE TOTAL ENVIRONMENT 824:153841, 2022, DOI 10.1016/j.scitotenv.2022.153841 Abstract: Due to new usages and sources, copper (Cu) concentrations are increasing in the Arcachon...

20/04/2022

Methods for selenium removal from contaminated waters: a review

Authors: Lichtfouse E, Morin-Crini N, Bradu C, Boussouga YA et al. Source: ENVIRONMENTAL CHEMISTRY LETTERS Early Access, 2022, DOI 10.1007/s10311-022-01419-8 Abstract: Worldwide contamination of waters by metals, metalloids, and organometallic pollutants is a...

21/04/2022

Transgenerational hormesis effects of nitenpyram on fitness and insecticide tolerance/resistance of *Nilaparvata lugens*

Authors: Gong YH, Cheng SY, Desneux N, Gao XW et al. Source: JOURNAL OF PEST SCIENCE Early access, 2022, DOI 10.1007/s10340-022-01494-4 Abstract: Brown planthopper (*Nilaparvata lugens*) (BPH) is a devastating migratory rice pest in tropical, subtropical, an...

21/04/2022

Impacts of chemical stress, season, and climate change on the flounder population of the highly anthropised Seine estuary (France)

Authors: Laurent J, Lavergne E, Couteau J, Le Floch S et al. Source: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH Early Access, 2022, DOI 10.1007/s11356-022-20000-y Abstract: The main objective of this study was to improve our knowledge on the responses of fish populatio...

20/04/2022

Screening of the Toxicity of Polystyrene Nano- and Microplastics Alone and in Combination with Benzo(a)pyrene in Brine Shrimp Larvae and Zebrafish Embryos

Authors: Martinez-Alvarez I, Le Menach K, Devier MH, Cajaraville MP et al. Source: NANOMATERIALS 12(6):941, 2022, DOI 10.3390/nano12060941 Abstract: The occurrence of nanoplastics (NPs) and microplastics (MPs) in aquatic ecosystems and their capacity to sorb...

20/04/2022

Accumulation-depuration data collection in support of toxicokinetic modelling

Authors: Ratier A, Charles S
Source: SCIENTIFIC DATA 9(1):130, 2022, DOI 10.1038/s41597-022-01248-y
Abstract: Regulatory bodies require bioaccumulation evaluation of chemicals within organisms to better assess toxic risks. Toxicokinetic (TK) data are particularly useful i...

20/04/2022

A multiresidue analytical method on air and rainwater for assessing pesticide atmospheric contamination in untreated areas

Authors: Decuq C, Bourdat-Deschamps M, Benoit P, Bertrand C et al.
Source: SCIENCE OF THE TOTAL ENVIRONMENT 823: 153582, 2022, DOI 10.1016/j.scitotenv.2022.153582
Abstract: The use of pesticides in agriculture to protect crops against pests and diseases generates...

20/04/2022

Integration of Genotoxic Biomarkers in Environmental Biomonitoring Analysis Using a Multi-Biomarker Approach in Three-Spined Stickleback (*Gasterosteus aculeatus* Linnaeus, 1758)

Authors: Cant A, Bonnard M, Porcher JM, Prygiel J et al.
Source: TOXICS 10(3), 2022, DOI 10.3390/toxics10030101
Abstract: Water is impacted by a variety of increasing pressures, such as contaminants, including genotoxic pollutants. The proposed multi-biomarker...

20/04/2022

Urban afforestation: using phytotoxicity endpoints to compare air pollution tolerance of two native Brazilian plants *Aroeira* (*Schinus terebinthifolius*) and *Cuvata* (*Cupania vernalis*)

Authors: Storch-Bohm RF, Somensi CA, Testolin RC, Rossa UB et al.
Source: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH Early access, 2022, DOI 10.1007/s11356-022-19890-9
Abstract: Urban afforestation can mitigate the effects of air pollution, but the suitability of...

OUVRAGES / RAPPORTS / ACTES DE CONGRES



28/04/2022

RAPPORT sur un plan d'action de l'UE pour l'agriculture biologique - A9-0126/2022

RAPPORT sur un plan d'action de l'UE pour l'agriculture biologique
Commission de l'agriculture et du développement rural
Simone Schmiedtbauer
Source : © Union européenne, 2022 - PE

REGLEMENTATION

12/04/2022

Inscription des pesticides, des produits chimiques industriels, des polluants organiques persistants et du mercure : modification du règlement (UE) n° 649/2012

RÈGLEMENT DÉLÉGUÉ (UE) 2022/643 DE LA COMMISSION du 10 février 2022 modifiant le règlement (UE) n° 649/2012 du Parlement européen et du Conseil en ce qui concerne l'inscription des pesticides, des produits chimiques industriels, des polluants organiques persistants et du mercure ainsi qu'une mise à jour des codes douaniers Numéro officiel : UE/2022/643 Date de signature : 10/02/2022 Liens juridiques : Modification le 01/07/2022 Règlement UE/649/2012 04/07/2012

08/04/2022

Enregistrement, évaluation et autorisation des substances chimiques, ainsi restrictions applicables à ces substances (REACH)

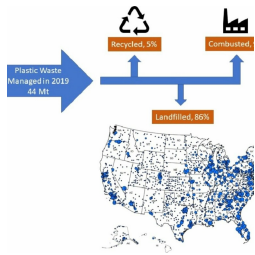
RÈGLEMENT (UE) 2022/586 DE LA COMMISSION du 8 avril 2022 modifiant l'annexe XIV du règlement (CE) n° 1907/2006 du Parlement européen et du Conseil concernant l'enregistrement, l'évaluation et l'autorisation des substances chimiques, ainsi que les restrictions applicables à ces substances (REACH) Numéro officiel : UE/2022/586 Date de signature : 08/04/2022 Liens juridiques : Modification Règlement CE/1907/2006 18/12/2006

DROIT ET POLITIQUE DE L'ENVIRONNEMENT

22/04/2022

EPA Issues in Final Certain Pesticide Product Performance Data Requirements to Improve Clarity and Reduce Burden for Registrants

By Heather F. Collins, M.S. and Barbara A. Christianson On April 15, 2022, the U.S. Environmental Protection Agency (EPA) announced final product performance data requirements for products claiming efficacy against certain pests. 87 Fed. Reg. 22464. This action officially incorporates EPA's already existing product performance standards requirements for certain invertebrate pests into the Code of Federal Regulations (CFR). EPA states this action ...



29/04/2022

Researchers calculate lost value of landfilled plastic in US

With mountains of plastic waste piling up in landfills and scientists estimating that there will be more plastics by weight than fish in the ...

29/04/2022

Combined effects of polystyrene nanoplastics on lead toxicity in dandelion seedlings

Increasing rates of commercialization and industrialization have led to the comprehensive evaluation of toxic effects of microplastics on crop plants. However, research on the impact of functionalized polystyrene nanoplastics on the toxicity of heavy metals remains limited. This...



28/04/2022

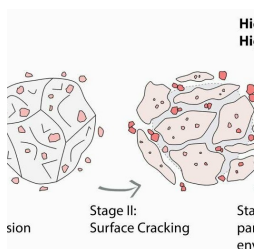
Produits phytosanitaires La souveraineté alimentaire passe aussi par la protection des cultures

Pour les invités de la rencontre "Oui à l'innovation" sur le thème de la place des produits phytosanitaires en agriculture, la réponse es...

28/04/2022

Implications for Human Health: Glyphosate Breakdown Product, AMPA, Associated with Oxidative Stress and DNA Damage Among Children

(Beyond Pesticides, April 28, 2022) A study in Environmental Research finds that glyphosate's primary metabolite (breakdown product), aminomethylphosphonic acid (AMPA), induces DNA damage through oxidative stress among subpopulations of primary school...



27/04/2022

Nanoplastic particles love company: Researchers analyze polyethylene degradation in the environment

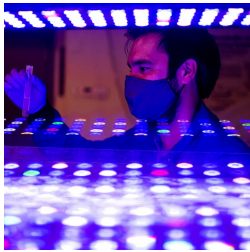
Polyethylene, a plastic that is both cheap and easy to process, accounts for nearly one-third of the world's plastic waste. An interdisciplinary ...



27/04/2022

[Video] Agricall : une websérie sur les risques liés à l'utilisation des phytos

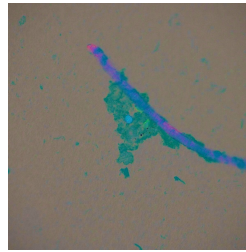
[Video] Agricall : une websérie sur les risques liés à l'utilisation des phytos n.marchand@reu... mer 27/04/2022 - 08:38 ...



26/04/2022

Microplastics are everywhere, but their dangers largely remain a mystery, experts say

They are everywhere: in riverbanks, on glaciers, in deserts, in fish populations, even in the air we breathe. And these are just a few of the ...



26/04/2022

Pathogens can hitch a ride on plastic to reach the sea

Microplastics are a pathway for pathogens on land to reach the ocean, with likely consequences for human and wildlife health, according to a ...



26/04/2022

Feuille de route « Produits chimiques » de la Commission Européenne : Un tournant historique

Depuis 2007 et l'adoption du règlement REACH, qui avait doté l'Union Européenne de la législation la plus avancée au monde, force était de...

26/04/2022

CDC Study: Pesticide Use Does Not Reduce Risk of Lyme, Other Tick-Borne Disease

(Beyond Pesticides, April 26, 2022) Using pesticides to reduce the number of ticks in residential areas does not translate to lower rates of tick-borne disease in humans. This finding is the culmination of research overseen by scientists at the U.S. Centers for Disease...



25/04/2022

When male bees don't get lucky: A connection between fenbuconazole and mating behavior

Bees are among the most important pollinators on earth. They pollinate not only plants with beautiful flowers, but also many crops. But despite ...

23/04/2022

PFOS-induced thyroid hormone system disrupted rats display organ-specific changes in their transcriptomes

Perfluorooctanesulfonic acid (PFOS) is a persistent anthropogenic chemical that can affect the thyroid hormone system in humans and animals. In adults, thyroid hormones (THs) are regulated by the hypothalamus-pituitary-thyroid (HPT) axis, but also by organs such as...

21/04/2022

Lutte contre l'oïdium La solution de biocontrôle Messenger désormais autorisée sur céréales

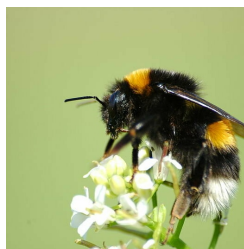
« Lancée en 2016 pour la vigne et l'agriculture biologique, la solution de biocontrôle Messenger est désormais utilisable en céréales et arbor...



20/04/2022

A midge fly can be a source of currently used pesticides for birds, bats

Non-biting midges are the tiny flies that swarm together as thick masses around lakes and streams, annoying passers-by in warm weather. But early ...



20/04/2022

Bumblebees' nutrition influences their pesticide resistance

How susceptible bumblebees are to a common fungicide depends on the flowering plants to which it is applied on and how diverse the...



20/04/2022

Pesticides : un nouveau tableau de maladie professionnelle pour le cancer de la prostate

Un décret, publié le 20 avril au Journal officiel, vient créer dans le régime général de la sécurité sociale un tableau de maladie professionnelle ...



20/04/2022

L'agriculture utilisant la chimie de synthèse doit de toute urgence réformer ses pratiques

Consommations comparées de cuivre et de fongicides de synthèse en agriculture biologique et en agriculture... L'article L'agriculture utilisant ...



19/04/2022

Pollution de l'air : une étude cerne le profil des conducteurs les plus émetteurs à Paris

Quels conducteurs émettent le plus dans Paris ? Deux chercheurs se sont attelés à répondre à cette question dans une étude récemment publiée...

19/04/2022

Source tracing with cadmium isotope and risk assessment of heavy metals in sediment of an urban river, China

The Nanfei River was one of dominant inflowing rivers of the fifth largest freshwater Chaohu Lake in China, which had been subjected to increasing nutrients and contaminants from population expansion, rapid industrialization and agricultural intensification in recent...



18/04/2022

Nanoparticles prove effective against the yellow fever mosquito

Before being accidentally introduced to the New World by the 16th century slave trade, the yellow fever mosquito was a species native only to ...

18/04/2022

Field mixtures of currently used pesticides in agricultural soil pose a risk to soil invertebrates

Massive use of pesticides in conventional agriculture leads to accumulation in soil of complex mixtures, triggering questions about their potential ecotoxicological risk. This study assessed cropland soils containing pesticide mixtures sampled from conventional and...

14/04/2022

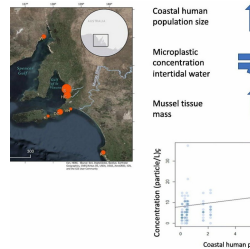
Reach : modification des exigences d'enregistrement des substances

La Commission européenne a révisé certaines exigences d'informations pour l'enregistrement des produits chimiques dans le cadre du règlement Reach. Les entreprises « doivent commencer à se préparer », a indiqué, le 12 avril, l'Agence européenne des produits...

19/04/2022

Gut microbiota promote biotransformation and bioaccumulation of arsenic in tilapia

Aquatic organisms such as fish can accumulate high levels of arsenic (As) and transform toxic inorganic As (iAs) to non-toxic arsenobetaine (AsB). Whether the gut microbiota are involved in the process of As accumulation and transformation in fish is unclear. Herein, we...



18/04/2022

Microplastics permeate seafood across southern Australia

Plastic rubbish is everywhere and now broken-down microplastics have been found in variable concentrations in blue mussels and water...

15/04/2022

Plan stratégique national : le ministère de l'Agriculture invité à revoir sa copie

Comme dix-huit autres États, la France a reçu les observations critiques de la Commission européenne sur son plan stratégique élaboré dans le cadre de la nouvelle PAC. L'exécutif européen relève un manque d'ambition environnementale.

11/04/2022

Reach : cinq nouvelles substances soumises à autorisation

Par un règlement publié, le 11 avril, au Journal officiel de l'UE, la Commission européenne a ajouté cinq nouvelles entrées à la liste des substances soumises à autorisation au titre du règlement Reach. Le précédent ajout avait été opéré par un règlement paru en février 2020....

08/04/2022

Sulfoxaflor : la Commission européenne va restreindre son usage, sans l'accord des États membres

Jeudi 7 avril, la Commission européenne a confirmé sa volonté de limiter l'utilisation du Sulfoxaflor. « Conformément à son engagement de protéger les pollinisateurs (...), la Commission adoptera, dans les semaines à venir, une législation limitant l'utilisation du...

08/04/2022

Pesticides dans l'alimentation : l'opacité et la complexité des données nationales et européennes

Chaque année, l'Union européenne, par le biais de l'Efsa, et le ministère de l'Agriculture chiffrent publiquement le taux de pesticides dans l'alimentation. Cette transparence apparente se heurte cependant à la complexité de l'échantillonnage. Décryptage.

08/04/2022

Pesticides dans l'eau potable : vers une adoption provisoire des valeurs sanitaires allemandes

Quelque 10 millions d'habitants pourraient être alimentés par une eau non conforme. Avec des conséquences sanitaires difficiles à anticiper pour certaines substances. Plusieurs solutions de gestion sont envisagées, inspirées de l'exemple allemand.