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Bulletin de veille du réseau d'écotoxicologie terrestre et aquatique

ECOTOX N°57, Juin 2022

Réalisé par l'équipe de veille sur la période du 1er mai au 30 juin 2022.
Colette Bertrand, Christian Mougin (UMR 1402 EcoSys), Annette Berard (UMR 1114 EMMAH), Soizic Morin (UR 1454 EABX), Olivier Crouzet (UPFS – OFB), Sonia Grimbuhler (UMR 1463 ITAP) et Pascale Karmasyn-Veyrines (DipSO)

Edito

Voici notre 57ème bulletin de veille, qui nous espérons toujours informatif ! Nous nous approprions la nouvelle plateforme de veille d'INRAE, toutes nos excuses pour les quelques défauts d'aspect qui subsistent dans ce bulletin.

Nous vous proposons, en fin du bulletin, une tribune concernant l'approche Triade pour améliorer l'analyse du risque environnemental face aux défis de la contamination diffuse des sols. La tribune est téléchargeable sous forme de fiche thématique sur notre site ECOTOX : https://www6.inrae.fr/ecotox/Productions/Fiches-thematiques/Fiche-thematique-N-39-juin-2022
Nous vous rappelons notre PCI pour la soumission de vos preprints : https://ecotoxenvchem.peercommunityin.org/

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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et Pascale Karmasyn-Veyrines (DipSO)

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

ERA / PUBLICATIONS SCIENTIFIQUES / COMMUNAUTES MICROBIENNES AQUATIQUES

- DEVELOPING DIATOM-BASED INFERENCE MODELS TO ASSESS LAKE ECOSYSTEM CHANGE ALONG A GRADIENT OF METAL SMELTING IMPACTS: SUDBURY LAKES REVISITED
- Stream morphology, water dynamics, and agrochemicals are important drivers of periphyton biomass in subtropical streams
- Fate of face masks after being discarded into seawater: Aging and microbial colonization
- Into the Plastisphere, Where Only the Generalists Thrive: Early Insights in Plastisphere Microbial Community Succession
- The mechanism of different cyanobacterial responses to glyphosate
- Can microplastics from personal care products affect stream microbial decomposers in the presence of silver nanoparticles?
- Effects of emerging contaminants and heavy metals on variation in bacterial communities in estuarine sediments
- Role of phosphorus in Vallisneria natans and biofilm exposure to Pb2+ and Cd2+ stress
- LipidTOX: A fatty acid-based index efficient for ecotoxicological studies with marine model diatoms exposed to legacy and emerging contaminants
- Enantioselective toxicity, degradation and transformation of the chiral insecticide fipronil in two algae culture
- Research trends and hotspots of aquatic biofilms in freshwater environment during the last three decades: a critical review and bibliometric analysis
- The sensitivity of aquatic microbial communities to a complex agricultural contaminant depends on previous drought conditions
- TiO2 nanoparticles exert an adverse effect on aquatic microbial communities

- The sensitivity of aquatic microbial communities to a complex agricultural contaminant depends on previous drought conditions
- Temperature and Photoperiod Affect the Sensitivity of Biofilms to Nickel and its Accumulation
- Toxicity of nanoparticles to algae-bacterial co-culture: Knowns and unknowns
- Effects of COVID-19 lockdown on water quality, microbial extracellular enzyme activity, and sediment-P release in the Ganga River, India
- The response of a freshwater biofilm model to a sub-inhibitory concentration of erythromycin: A metatranscriptomic study
- Linking Micropollutants to Trait Syndromes across Freshwater Diatom, Macroinvertebrate, and Fish Assemblages
- Effects of Cd2+ and Pb2+ on Growth and Photosynthesis of Two Freshwater Algae Species

ERA / PUBLICATIONS SCIENTIFIQUES / MICROBIOLOGIE ET CONTAMINANTS

- Adsorption of chromium by exopolysaccharides extracted from lignolytic phosphate solubilizing bacteria
- Bioremediation of lead-contaminated soil by inorganic phosphate-solubilizing bacteria immobilized on biochar
- Maize associated bacterial microbiome linked mitigation of heavy metal stress: A multidimensional detoxification approach
- Effects of long-term (10 years) remediation of Caragana on soil enzyme activities, heavy metals, microbial diversity and metabolic spectrum of coal gangue
- Abundant microbial communities act as more sensitive bio-indicators for ecological evaluation of copper mine contamination than rare taxa in river sediments
- Insights into the spatiotemporal differences in tailings seepage pollution by assessing the diversity and metabolic functions of the soil microbial community*
- Sulfur enhances cadmium bioaccumulation in Cichorium intybus by altering soil properties, heavy metal availability and microbial community in contaminated alkaline soil
- Passivation of lead and cerium in soil facilitated by biochar-supported phosphate-doped ferrihydrite: Mechanisms and microbial community evolution
- Application of thifluzamide alters microbial network structure and affects methane cycle genes in rice-paddy soil
- Long-term metal pollution shifts microbial functional profiles of nitrification and denitrification in agricultural soils
- Implications of the Use of Glyphosate-Based Herbicides in Agriculture in Argentina-Contribution of Fungi to the Development of Bioremediation Strategies
- Response of Poplar and Associated Fungal Endophytic Communities to a PAH Contamination Gradient
- Long-term nickel contamination increased soil fungal diversity and altered fungal community structure and co-occurrence patterns in agricultural soils
- Comparative insights into influences of co-contamination by rare-earth elements and heavy metals on soil bacterial and fungal communities
- Machine learning predicts ecological risks of nanoparticles to soil microbial communities
- A synergistic bacterial pool decomposes tebuthiuron in soil
- Effects of pyroxsulam on soil enzyme activity, nitrogen and carbon cycle-related gene expression, and bacterial community structure
- Effects of Chlorothalonil Application on the Physio-Biochemical Properties and Microbial Community of a Yellow-Brown Loam Soil
- Fe3O4 nanoparticles affect paddy soil microbial-driven carbon and nitrogen processes: roles of surface coating and soil types
- Rhizosphere microbial community composition and survival strategies in oligotrophic and metal(loid) contaminated iron tailings areas

- What role does organic fertilizer actually play in the fate of antibiotic resistome and pathogenic bacteria in planting soil?
- Fungi Can Be More Effective than Bacteria for the Bioremediation of Marine Sediments Highly Contaminated with Heavy Metals
- Dimethoate residues in Pakistan and mitigation strategies through microbial degradation: a review
- ublethal concentrations of heavy metals Cu2+ and Zn2+ can induce the emergence of bacterial multidrug resistance
- Utilization of Legume-Nodule Bacterial Symbiosis in Phytoremediation of Heavy Metal-Contaminated Soils
- Azospirillum spp. from Plant Growth-Promoting Bacteria to Their Use in Bioremediation
- Bioremediation of selenium-contaminated soil using earthworm Eisenia Effects of bacteria in feces on the soil microbiome
- Effects of long-term exposure to the herbicide nicosulfuron on the bacterial community structure in a factory field
- Interactions between bacteria and eukaryotic microorganisms and their response to soil properties and heavy metal exchangeability nearby a coal-fired power plant
- Soil microbial community structure and environmental effects of serpentine weathering under different vegetative covers in the serpentine mining area of Donghai County, China
- Characterization of Rhizosphere Microbial Communities for Disease Incidence and Optimized Concentration of Difenoconazole Fungicide for Controlling of Wheat Dwarf Bunt
- Microbial community structure and functions during chronosequence-based phytoremediation programme of Lignite tailing soil
- Effects of Mercury Contamination on Microbial Diversity of Different Kinds of Soil
- Effect of Glyphosate and Carbaryl Applications on Okra (Abelmoschus esculentus) Biomass and Arbuscular Mycorrhizal Fungi (AMF) Root Colonization in Organic Soil
- Advances and future prospects of pyrethroids: Toxicity and microbial degradation
- Microbial Interventions in Bioremediation of Heavy Metal Contaminants in Agroecosystem
- Bacterial diversity and the antimicrobial resistome in the southwestern highlands of Saudi Arabia
- Marginal lands and fungi - linking the type of soil contamination with fungal community composition
- Simulated Leaching of Foliar Applied Copper Bactericides on the Soil Microbiome Utilizing Various Beta Diversity Resemblance Measurements
- Arbuscular Mycorrhizal Fungi and Glomalin Play a Crucial Role in Soil Aggregate Stability in Pb-Contaminated Soil
- Trifluralin Impacts Soil Microbial Community and Functions
- The impact of newly synthesized sulfonamides on soil microbial population and respiration in rhizospheric soil of wheat (Triticum aestivum L.)
- Ecological effects of antibiotics on aquaculture ecosystems based on microbial community in sediments
- The influence of Bt cotton cultivation on the structure and functions of the soil bacterial community by soil metagenomics
- Effect of rice straw biochar on three different levels of Cd-contaminated soils: Cd availability, soil properties, and microbial communities
- Accumulation of high-molecular-weight polycyclic aromatic hydrocarbon impacted the performance and microbial ecology of bioretention systems
- Preservation and Recovery of Metal-Tolerant Fungi from Industrial Soil and Their Application to Improve Germination and Growth of Wheat
- Impact of arsenic on phosphate solubilization, acquisition and poly-phosphate accumulation in endophytic fungus Serendipita indica
- Environmental Behaviors of Bacillus thuringiensis (Bt) Insecticidal Proteins and Their Effects on Microbial Ecology

- Experimental Evidence for Manure-Borne Bacteria Invasion in Soil During a Coalescent Event: Influence of the Antibiotic Sulfamethazine

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

- What role does organic fertilizer actually play in the fate of antibiotic resistome and pathogenic bacteria in planting soil?
- ublethal concentrations of heavy metals Cu2+ and Zn2+ can induce the emergence of bacterial multidrug resistance
- Fate of Antibiotic Resistance Genes and Changes in Bacterial Community With Increasing Breeding Scale of Layer Manure
- Bacterial diversity and the antimicrobial resistome in the southwestern highlands of Saudi Arabia
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- Experimental Evidence for Manure-Borne Bacteria Invasion in Soil During a Coalescent Event: Influence of the Antibiotic Sulfamethazine
- Insights into structure and functioning of a soil microbial community amended with cattle manure digestate and sulfamethoxazole
- Joint effects of bacterium and biochar in remediation of antibiotic-heavy metal contaminated soil and responses of resistance gene and microbial community
- Antibiotic-resistant bacteria and antibiotic resistance genes in uranium mine: Distribution and influencing factors
- Enhanced removal of antibiotics and antibiotic resistance genes in a soil microbial fuel cell via in situ remediation of agricultural soils with multiple antibiotics
- Antibiotic use in commercial broiler chicken farming and its consequential resistance development in root colonizing bacteria of carrot grown in manure-applied soils in a middle-income country
- Plants inhibit the relative abundance of sulfonamide resistance genes and class 1 integron by influencing bacterial community in rhizosphere of constructed wetlands

ERA / PUBLICATIONS SCIENTIFIQUES / MICROBIOLOGIE ET CONTAMINANTS / BIOCONTROLE

- The influence of Bt cotton cultivation on the structure and functions of the soil bacterial community by soil metagenomics
- Environmental Behaviors of Bacillus thuringiensis (Bt) Insecticidal Proteins and Their Effects on Microbial Ecology

ERA / PUBLICATIONS SCIENTIFIQUES / MICROBIOLOGIE ET CONTAMINANTS / BIOREMEDIATION

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- Impact of arsenic on phosphate solubilization, acquisition and poly-phosphate accumulation in endophytic fungus Serendipita indica
- Effects of ultramafic topsoil stockpiling during mine activities on its microbial diversity and other microbiological and physicochemical characteristics
- A review of metal resistance mechanisms by mangrove bacteria
- Bacterial community and chemical profiles of oil-polluted sites in selected cities of Uganda: potential for developing a bacterial-based product for remediation of oil-polluted sites
- Land use and roles of soil bacterial community in the dissipation of atrazine
- Responses of microbial community composition and function to biochar and irrigation management and the linkage to Cr transformation in paddy soil
- Microbial adaptation and impact into the pesticide's degradation
- Reductive soil disinfestation with biochar amendment modified microbial community composition in soils under plastic greenhouse vegetable production
- Effect of the coexistence of endosulfan on the lindane biodegradation by Novosphingobium barchaimii and microbial enrichment cultures

ERA / PUBLICATIONS SCIENTIFIQUES / PLASTIQUES

- Geographic Dispersal Limitation Dominated Assembly Processes of Bacterial Communities on Microplastics Compared to Water and Sediment
- Spatial and temporal distributions of microplastics and their macroscopic relationship with algal blooms in Chaohu Lake, China
- Field response of N2O emissions, microbial communities, soil biochemical processes and winter barley growth to the addition of conventional and biodegradable microplastics
- From rivers to marine environments: A constantly evolving microbial community within the plastisphere
- Field response of N2O emissions, microbial communities, soil biochemical processes and winter barley growth to the addition of conventional and biodegradable microplastics
- Succession of soil bacterial communities and network patterns in response to conventional and biodegradable microplastics: A microcosmic study in Mollisol
- What will polyethylene film mulching bring to the root-associated microbial community of Paeonia ostii?
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- The influence of microplastics on the toxic effects and biodegradation of bisphenol A in the microalgae Chlorella pyrenoidosa

- Biodegradable Microplastics Affect the Wheatgrass Traits, Fe Plaque Development Involved in Sb Accumulation, and Microbial Community Functions in Antimony-Contaminated Riparian Wetlands
- Microplastics impact the accumulation of metals in earthworms by changing the gut bacterial communities
- Biofilm assemblage and activity on plastic in urban streams at a continental scale: Site characteristics are more important than substrate type
- Effects of microplastics on greenhouse gas emissions and microbial communities in sediment of freshwater systems
- Microbial pioneers of plastic colonisation in coastal seawaters
- Response of soil microbial community parameters to plastic film mulch: A meta-analysis
- Enrichment and dissemination of bacterial pathogens by microplastics in the aquatic environment
- Toxicological Effects of Microplastics and Sulfadiazine on the Microalgae Chlamydomonas reinhardtii
- Distribution, biological effects and biofilms of microplastics in freshwater systems-A review
- Polyethylene microplastics alter the microbial functional gene abundances and increase nitrous oxide emissions from paddy soils

PUBLICATIONS DU RESEAU ECOTOX

- WMassive fish death associated with the toxic cyanobacterial Planktothrix sp. bloom in the Beni-Haroun Reservoir (Algeria)eb of Science
- Web ofLethal and sublethal effects of chlorantraniliprole on the migratory moths Agrotis ipsilon and A. segetum: New perspectives for pest management strategies Science
- Impact of nickel mining in New Caledonia on marbled eels Anguilla marmorataWeb of Science
- Web To what extent can soil moisture and soil Cu contamination stresses affect nitrous species emissions? Estimation through calibration of a nitrification-denitrification modelof Science
- Web of ScEarly molecular responses of mangrove oysters to nanoplastics using a microfluidic device to mimic environmental exposureience
- Web of Temporal variations in the level of chlordecone in seawater and marine organisms in Martinique Island (Lesser Antilles)Science
- Web of ScWhat are the stakes for fodder in the management of the chlordecone crisis in the French West Indies? ience
- A Generalized Physiologically Based Kinetic Model for Fish forEnvironmental Risk Assessment of Pharmaceuticals
- Target and Nontarget Screening of PFAS in Biosolids, Composts,and Other Organic Waste Products for Land Application in France
- State of the Art of Triad-Based Ecological Risk Assessment: Current Limitations and Needed Implementations in the Case of Soil Diffuse Contamination
- A new method to co-design agricultural systems at the territorial scale - Application to reduce herbicide pollution in Martinique
- Embryonic development in allis shad Alosa alosa: A baseline for stress studies
- Temporal Trends of Organochlorine and Perfluorinated Contaminants in a Terrestrial Raptor in Northern Europe Over 34 years (1986-2019)
- Contrasting effects of siderophores pyoverdine and desferrioxamine B on the mobility of iron, aluminum, and copper in Cu-contaminated soils
- Concentrations and fluxes of suspended particulate matter and associated contaminants in the Rhone River from Lake Geneva to the Mediterranean Sea
- Ecotoxic effects of the vehicle solvent dimethyl sulfoxide on Raphidocelis subcapitata, Daphnia magna and Brachionus calyciflorus
- Refinement of an OECD test guideline for evaluating the effects of endocrine disrupting chemicals on aromatase gene expression and reproduction using novel transgenic cyp19a1a-eGFP zebrafish (vol 220, 105403, 2020) - Corrigendum

- Metals and metalloids concentrations in three genotypes of pelagic Sargassum from the Atlantic Ocean Basin-scale
- Editorial overview: (Micro)plastics 2021
- Experimental Evidence for Manure-Borne Bacteria Invasion in Soil During a Coalescent Event: Influence of the Antibiotic Sulfamethazine
- Glyphosate and aminomethylphosphonic acid in human hair quantified by an LC-MS/MS method
- Accumulation of metallic trace elements in Reynoutria japonica: a risk assessment for plant biomass valorization
- Uncoupling Aluminum Toxicity From Aluminum Signals in the STOP1 Pathway
- Multiple global change impacts on parasitism and biocontrol services in future agricultural landscapes
- Temperature and Photoperiod Affect the Sensitivity of Biofilms to Nickel and its Accumulation
- Editorial: Microbial Ecotoxicology Advances to Improve Environmental and Human Health Under Global Change
- Bioaccumulation of Per and Polyfluoroalkyl Substances in Antarctic Breeding South Polar Skuas (Catharacta maccormicki) and Their Prey

OUVRAGES / RAPPORTS / ACTES DE CONGRES

- Indices and models of surface water quality assessment: Review and perspectives
- Scientific evidence of glyphosate link to cancer dismissed in ongoing EU assessment, new report reveals
- Risk assessment of rare earth elements, antimony, barium, boron, lithium, tellurium, thallium and vanadium in teas
- Distribution and ecological risk assessment of trace elements in the paddy soil-rice ecosystem of Punjab, Pakistan
- Peer review of the pesticide risk assessment of the active substance limestone powder (calcium carbonate)
- Modification of the existing maximum residue levels for prosulfocarb in herbs and edible flowers
- Peer review of the pesticide risk assessment of the active substance triflusulfuron-methyl

REGLEMENTATION

- Substance «N-(3-aminopropyl)-N-dodécylpropane-1,3-diamine», substance active dans les produits biocides (type de produits 8) non approuvée
- Autorisation pour la famille de produits biocides «SOPUROXID»

AVIS / EXPERTISES / NORMES

- Study of the different evaluation areas in the pesticide risk assessment process
- Assessment of endocrine disruptive properties of PFOS: EFSA/ECHA guidance case study utilising AOP networks and alternative methods
- Monitoring of pesticide amount in water and drinkable food by a fluorescence-based biosensor
- Impacts des produits phytopharmaceutiques sur la biodiversité et les services écosystémiques : résultats de l’expertise scientifique collective INRAE-Ifremer
- Peer review of the pesticide risk assessment of the active substance triflusulfuron-methyl

DROIT ET POLITIQUE DE L'ENVIRONNEMENT

- Micro-organisms
- Projet ADopT 30 000
- Chemicals: Commission revises the definition of nanomaterials

REVUE DE PRESSE

- Une chercheuse française récompensée dans le domaine de l'extraction des métaux par les plantes
- Pesticides et biodiversité : la FNSEA et Jeunes agriculteurs très inquiets des nouvelles contraintes fixées aux agriculteurs
- Pesticides: une carte de France des IFT publiée par Solagro

- Pesticides : la proposition en trompe-l'œil de la Commission européenne pour réduire de moitié leur usage
- La Commission européenne veut réduire de moitié l'usage des pesticides
- Stb16, un gène qui protège le blé de la septoriose - Arvalis
- Règlementation pesticides: un enjeu majeur!
- Une baisse de l'utilisation des pesticides observée dans l'UE pas assez rapide pour Bruxelles
- Antibiorésistance : des scientifiques appellent à l'action
- Une ONG dépose une pétition pour le retrait des SDHI en Europe
- Réduction des pesticides Les 27 réclament du « réalisme » à Bruxelles
- Pesticides : les oiseaux ramollissent à leur exposition
- Statistiques sur les pesticides : les avancées du trilogue européen
- Pesticides : que ressort-il du trilogue du 2 juin sur la réforme des statistiques agricoles ?
- Perspectives mondiales des plastiques : scénarios d'action à l'horizon 2060
- Pesticides dangereux : « Le Monde » maintient ses informations après la contestation de deux études
- Le glyphosate fait un pas de plus vers sa réautorisation
- WEBINAIRE GLYPHOSATE
- Phyteis réagit au rapport de PAN Europe sur les résidus phytos
- Classification ECHA du glyphosate : déni de science et non-respect du droit européen
- Il est urgent de disposer de données publiques précises sur l'utilisation des pesticides en Europe
- Pesticides et sites NATURA 2000: participez à la consultation publique
- Pourquoi la réglementation européenne n'empêche pas la vente de 55 pesticides très dangereux
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- Pesticides candidats à la substitution: la dangereuse inaction politique!
- Monitoring the journey of microplastics through the intestine of a living organism
- Produits phytopharmaceutiques et biodiversité : les liaisons dangereuses
- Des biotests de meilleure sensibilité sur couche mince
- Sites Natura 2000 : un projet de décret propose d'encadrer l'usage des pesticides par arrêté préfectoral
- Les NBT : une solution à l'impasse du cuivre
- Organophosphate pesticides in South African eutrophic estuaries: Spatial distribution, seasonal variation, and ecological risk assessment
- PFAS: Une contamination importante du sol, de l'air et de l'eau par des composés perfluorés
- Quel impact des pesticides sur la biodiversité : les sept enseignements de l'expertise collective d'Inrae et Ifremer
- With Decision on Insecticide, EPA Betrays Protection of Pollinators. . .Again
- Pesticides Used in Farmed Fish Operations Threaten Health of Swimmers
- Impact des phytosanitaires : l'Inrae et l'Ifremer dressent un vaste état des lieux des connaissances

23/06/2022

DEVELOPING DIATOM-BASED INFERENCE MODELS TO ASSESS LAKE ECOSYSTEM CHANGE ALONG A GRADIENT OF METAL SMELTING IMPACTS: SUDBURY LAKES REVISITED

Authors: Cheng YY, Michelutti N, Paterson AM et al.Source: JOURNAL OF PHYCOLOGY Early Access, DOI 10.1111/jpy.13257Abstract: Mining and smelting activities have strongly influenced the Sudbury region (Ontario, Canada) since the late 19 th century, leading to acidification and...

23/06/2022

Stream morphology, water dynamics, and agrochemicals are important drivers of periphyton biomass in subtropical streams

Authors: Bartozek ECR, Lambrecht RW, Zorzal-Almeida S et al.Source: HYDROBIOLOGIA Early Access, DOI 10.1007/s10750-022-04911-yAbstract: Several factors affect periphyton biomass by acting at local and landscape levels simultaneously. Thereunder, we quantified lo...

16/06/2022

Fate of face masks after being discarded into seawater: Aging and microbial colonization

Authors: Ma J, Chen FY, Xu H et al.Source: JOURNAL OF HAZARDOUS MATERIALS 436:129084, 2022, DOI 10.1016/j.jhazmat.2022.129084Abstract: Billions of discarded masks have entered the oceans since the outbreak of the COVID-19 pandemic....

16/06/2022

Into the Plastisphere, Where Only the Generalists Thrive: Early Insights in Plastisphere Microbial Community Succession

Authors: Wallbank JA, Lear G, Kingsbury JM et al.Source: FRONTIERS IN MARINE SCIENCE 9:841142, 2022, DOI 10.3389/fmars.2022.841142Abstract: The ubiquity of plastic debris in marine environments raises the question, what impac...

16/06/2022

The mechanism of different cyanobacterial responses to glyphosate

Authors Lin, W, Zhang, ZY, Chen, YL et al.Source JOURNAL OF ENVIRONMENTAL SCIENCES 125: 258-265, 2022Abstract Glyphosate, the most extensively used herbicide globally, has raised ecotoxicological con-cerns because it can be transported into the aquatic environment and...

09/06/2022

Can microplastics from personal care products affect stream microbial decomposers in the presence of silver nanoparticles?

Authors: Trabulo J, Pradhan A, Pascoal C, Cassio FSource: SCIENCE OF THE TOTAL ENVIRONMENT 832:155038, 2022, DOI 10.1016/j.scitotenv.2022.155038Abstract: Microplastics (MPs) are emerging contaminants of great concern due to their abundance and...

02/06/2022

Effects of emerging contaminants and heavy metals on variation in bacterial communities in estuarine sediments

Authors: Du M, Zheng MG, Liu AF et al.Source: SCIENCE OF THE TOTAL ENVIRONMENT 832:155118, 2022, DOI 10.1016/j.scitotenv.2022.155118Abstract: Emerging contaminants (ECs) and heavy metals (HMs) are universally present together in...

02/06/2022

Role of phosphorus in Vallisneria natans and biofilm exposure to Pb2+ and Cd2+ stress

Authors: Huang SZ, Huang XH, Cheng HK et al.Source: SCIENCE OF THE TOTAL ENVIRONMENT 835:155235, 2022, DOI 10.1016/j.scitotenv.2022.155235Abstract: Phosphorus (P) could improve the stress resistance and adaptability of submerged...

02/06/2022

LipidTOX: A fatty acid-based index efficient for ecotoxicological studies with marine model diatoms exposed to legacy and emerging contaminants

Authors: Duarte B, Feija E, Franzitta M et al.Source: ECOLOGICAL INDICATORS 139:108885, 2022, DOI 10.1016/j.ecolind.2022.108885Abstract: Contaminants, when present above certain thresholds, can induce physiological constrain...

31/05/2022

Enantioselective toxicity, degradation and transformation of the chiral insecticide fipronil in two algae culture

Authors: Ou YJ, Yan ZY, Shi GF et al.Source: ECOTOXICOLOGY AND ENVIRONMENTAL SAFETY 235:113424, 2022, DOI 10.1016/j.ecoenv.2022.113424Abstract: The occurrence of pesticides and their metabolites in the environment can alter the ecological...

31/05/2022

Research trends and hotspots of aquatic biofilms in freshwater environment during the last three decades: a critical review and bibliometric analysis

Authors: Qin ZR, Zhao ZH, Xia LL, Ohore OESource: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH Early Access, DOI 10.1007/s11356-022-20238-6Abstract: Freshwater periphytic biofilms (FPBs), existing widely in various aquatic environments, have...

31/05/2022

The sensitivity of aquatic microbial communities to a complex agricultural contaminant depends on previous drought conditions

Authors: Courcoul C, Leflaive J, Ferriol J, Bouletreau SSource: WATER RESEARCH 217:118396, 2022, DOI 10.1016/j.watres.2022.118396Abstract: In intermittent rivers, which represent a prominent part of worldwide rivers, aquatic organisms ar...

31/05/2022

TiO2 nanoparticles exert an adverse effect on aquatic microbial communities

Authors: Chen BF, Pan YZ, Chen YL et al.Source: SCIENCE OF THE TOTAL ENVIRONMENT 831:154942, 2022, DOI 10.1016/j.scitotenv.2022.154942Abstract: Titanium dioxide nanoparticle (n-TiO2) is a widely used nanomaterial, which is inevitably...

29/05/2022

The sensitivity of aquatic microbial communities to a complex agricultural contaminant depends on previous drought conditions

Authors Courcoul, C, Leflaive, J, Ferriol, J, Bouletreau, SSource WATER RESEARCH 217, 2022, Doi 10.1016/j.watres.2022.118396Abstract In intermittent rivers, which represent a prominent part of worldwide rivers, aquatic organisms are exposed to sequential...

12/05/2022

Temperature and Photoperiod Affect the Sensitivity of Biofilms to Nickel and its Accumulation

Authors: Laderriere V, Richard M, Morin S et al.Source: ENVIRONMENTAL TOXICOLOGY AND CHEMISTRY Early Access, DOI 10.1002/etc.5335Abstract: Whereas metal impacts on fluvial communities have been extensively investigated, effects of abiotic...

12/05/2022

Toxicity of nanoparticles to algae-bacterial co-culture: Knowns and unknowns

Authors: Rana S, Kumar ASource: ALGAL RESEARCH-BIOMASS BIOFUELS AND BIOPRODUCTS 62:102641, 2022, DOI 10.1016/j.algal.2022.102641Abstract: [...] This review gives the compilation of all the studies done in the past which have shown the benef...

12/05/2022

Effects of COVID-19 lockdown on water quality, microbial extracellular enzyme activity, and sediment-P release in the Ganga River, India

Authors: Singh M, Pandey U, Pandey JSource: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH Early Access, DOI10.1007/s11356-022-20243-9Abstract: This study investigates possible improvement in water quality and ecosystem functions in the Ganga River as...

12/05/2022

The response of a freshwater biofilm model to a sub-inhibitory concentration of erythromycin: A metatranscriptomic study

Authors: Yao Y, Pan J, Pu Y et al.Source: JOURNAL OF ENVIRONMENTAL CHEMICAL ENGINEERING 10:107248, 2022, DOI 10.1016/j.jece.2022.107248Abstract: The presence of erythromycin, an antibiotic commonly used to treat bacterial infections, at...

05/05/2022

Linking Micropollutants to Trait Syndromes across Freshwater Diatom, Macroinvertebrate, and Fish Assemblages

Authors: Meyer A, Alric B, Dezerald O et al.Source: WATER 14:1184, 2022, DOI 10.3390/w14081184Abstract: The ecological quality of freshwater ecosystems is endangered by various micropollutants released into the environment by human activities. The...

05/05/2022

Effects of Cd2+ and Pb2+ on Growth and Photosynthesis of Two Freshwater Algae Species

Authors: Dong LL, Wang HX, Wang Y et al.Source: POLISH JOURNAL OF ENVIRONMENTAL STUDIES 31:2059-2068, 2022, DOI 10.15244/pjoes/143256Abstract: Microalgae are biological indicators of heavy metal pollution. Cadmium (Cd) and lead (Pb) a...

27/06/2022

Adsorption of chromium by exopolysaccharides extracted from lignolytic phosphate solubilizing bacteria

Authors Kailasam, S, Arumugam, S, Balaji, K, Kanth, SVSource INTERNATIONAL JOURNAL OF BIOLOGICAL MACROMOLECULES 206: 788-798, 2022Abstract In the present study, exopolysaccharide (EPS) producing phosphate solubilizing bacterium, Enterobacter soli was...

27/06/2022

Bioremediation of lead-contaminated soil by inorganic phosphate-solubilizing bacteria immobilized on biochar

Authors Zhu, XL, Li, X, Shen, BS, Zhang, Z et al.Source ECOTOXICOLOGY AND ENVIRONMENTAL SAFETY 237, 2022Abstract In this study, a bio-composite (IBWS700) was prepared using inorganic phosphate-solubilizing bacteria (iPSB), which were...

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Maize associated bacterial microbiome linked mitigation of heavy metal stress: A multidimensional detoxification approach

Authors Rizvi, A, Ahmed, B, Khan, MS et al.Source ENVIRONMENTAL AND EXPERIMENTAL BOTANY 200, 2022Abstract The indiscriminate discharge and consequent accumulation of heavy metals (HMs) from various anthropogenic sources into the environment is a major global...

27/06/2022

Effects of long-term (10 years) remediation of Caragana on soil enzyme activities, heavy metals, microbial diversity and metabolic spectrum of coal gangue

Authors Bai, DS, Wang, YW, Yang, X et al.Source ECOLOGICAL ENGINEERING 181, 2022Abstract Phytoremediation is a means of remediation of coal gangue pollution. However, the molecular mechanism of the effect of long-term plant restoration on soil microecology has not been...

27/06/2022

Abundant microbial communities act as more sensitive bio-indicators for ecological evaluation of copper mine contamination than rare taxa in river sediments

Authors Yuan, QS, Wang, PF, Wang, X et al.Source ENVIRONMENTAL POLLUTION 305, 2022Abstract Bacterial and fungal communities have been widely applied as bio-indicators for ecological evaluation of copper (Cu) mine pollution in river sediments. However, the...

27/06/2022

Insights into the spatiotemporal differences in tailings seepage pollution by assessing the diversity and metabolic functions of the soil microbial community*

Authors Geng, YC, Peng, CR, Wang, ZC et al.Source ENVIRONMENTAL POLLUTION 306, 2022Abstract The formation of tailings ponds depends on the long-term accumulation of tailing and high terrain. Its seepage pollution characteristics may have gradient variations o...

27/06/2022

Sulfur enhances cadmium bioaccumulation in Cichorium intybus by altering soil properties, heavy metal availability and microbial community in contaminated alkaline soil

Authors Liu, HT, Luo, L, Jiang, GY et al.Source SCIENCE OF THE TOTAL ENVIRONMENT 237, 2022Abstract Cadmium (Cd) contamination seriously threatens the soil health and food safety. Combination of amendment and accumulator plant is a green and effective...

27/06/2022

Passivation of lead and cerium in soil facilitated by biochar-supported phosphate-doped ferrihydrite: Mechanisms and microbial community evolution

Authors Li, H, Jiang, Q, Li, RZ, et al.Source JOURNAL OF HAZARDOUS MATERIALS 436, 2022Abstract The massive exploitation and application of heavy metals and rare earth elements (REEs) lead to their exceeding the standard in soil. Herein, a new type of biochar...

27/06/2022

Application of thifluzamide alters microbial network structure and affects methane cycle genes in rice-paddy soil

Authors Zhang, Y, Wu, XiH, Chen, CJ et al.Source SCIENCE OF THE TOTAL ENVIRONMENT 838, 1, 2022Abstract of thifluzamide on the abundance of microbes harboring methane-cycle genes and soil microbial community assembly patterns are not well known. Thus, we conducted a three-...

27/06/2022

Long-term metal pollution shifts microbial functional profiles of nitrification and denitrification in agricultural soils

Authors Lu, L, Chen, C, Ke, T et al.Source SCIENCE OF THE TOTAL ENVIRONMENT 830, 2022Abstract The increasing contamination of heavy metals in agricultural soils and its impact on the nitrogen (N) cycle and N use efficiency have attracted...

27/06/2022

Implications of the Use of Glyphosate-Based Herbicides in Agriculture in Argentina-Contribution of Fungi to the Development of Bioremediation Strategies

Authors Aluffi, ME, Carranza, CS, Magnoli, K et al.Source JOURNAL OF SOIL SCIENCE AND PLANT NUTRITION, 2022Abstract review South American agriculture focuses on extensive cereal and oilseed production destined mainly for the international market, followed by the...

27/06/2022

Response of Poplar and Associated Fungal Endophytic Communities to a PAH Contamination Gradient

Authors Greau, L, Blaudez, D, Heintz, D et al.Source INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES 23,11, 2022Abstract Microbial populations associated to poplar are well described in non-contaminated and metal-contaminated environments but more poorly i...

27/06/2022

Long-term nickel contamination increased soil fungal diversity and altered fungal community structure and co-occurrence patterns in agricultural soils

Authors Zhang, XM, Chen, BD, Yin, RB et al.Source JOURNAL OF HAZARDOUS MATERIALS 436, 2022Abstract Nickel (Ni) contamination imposes deleterious effects on the stability of soil ecosystem. Soil fungal community as a crucial moderator of soil remediation and...

27/06/2022

Comparative insights into influences of co-contamination by rare-earth elements and heavy metals on soil bacterial and fungal communities

Authors Luo, Y, Zhang, D, Guo, Y et al.Source JOURNAL OF SOILS AND SEDIMENTS 2022Abstract Purpose Rare-earth elements (REEs) have been listed as emerging pollutants, and REEs often occur together with heavy metals (HMs) in the environment. Large...

27/06/2022

Machine learning predicts ecological risks of nanoparticles to soil microbial communities

Authors Xu, NH, Kang, J, Ye, YQ et al.Source ENVIRONMENTAL POLLUTION 307, 2022Abstract With the rapid development of nanotechnology in agriculture, there is increasing urgency to assess the impacts of nanoparticles (NPs) on the soil environment....

16/06/2022

A synergistic bacterial pool decomposes tebuthiuron in soil

Authors de Lima, EW, Brunaldi, BP, Frias, YA et al.Source SCIENTIFIC REPORTS 12, 1, 2022Abstract This study aimed to propose an eco-compatible strategy to mitigate the possible environmental contamination caused by tebuthiuron. Therefore, we screened potential...

16/06/2022

Effects of pyroxsulam on soil enzyme activity, nitrogen and carbon cycle-related gene expression, and bacterial community structure

Authors Li, DT, Sun, SJ, Zhou, TT et al.Source JOURNAL OF CLEANER PRODUCTION 355, 2022Abstract Pyroxsulam is a new herbicide which is being widely used to prevent the growth of broad-leaved weeds in wheat fields because of its low quantity of application and...

16/06/2022

Effects of Chlorothalonil Application on the Physio-Biochemical Properties and Microbial Community of a Yellow-Brown Loam Soil

Authors Jiang, JL, Yang, YW, Wang, L et al.Source AGRICULTURE-BASEL 12, 5, 2022Abstract To gain better knowledge of the effects of residual chlorothalonil on soil characteristics and soil microbial communities, we evaluated the dissipation of chlorothalonil and the effects of...

16/06/2022

Fe3O4 nanoparticles affect paddy soil microbial-driven carbon and nitrogen processes: roles of surface coating and soil types

Authors Xu, JB, Chen, YQ, Luo, JY et al.Source ENVIRONMENTAL SCIENCE-NANO 2022Abstract Magnetic Fe3O4 nanoparticles (nFe(3)O(4)) are the most widely used nanomaterials and are inevitably introduced to soils. To overcome particle agglomeration, nFe(3)O(4) are often...

16/06/2022

Rhizosphere microbial community composition and survival strategies in oligotrophic and metal(loid) contaminated iron tailings areas

Authors Geng, HH, Wang, F, Yan, CC et al.Source JOURNAL OF HAZARDOUS MATERIALS 436, 2022Abstract In this study, the metal(loid) fractions in two alkaline iron tailings areas with similar physico-chemical properties and the enrichment ability of dominant plants in these...

16/06/2022

What role does organic fertilizer actually play in the fate of antibiotic resistome and pathogenic bacteria in planting soil?

Authors Xu, Y, Li, HY, Tan, L et al.Source JOURNAL OF ENVIRONMENTAL MANAGEMENT 317, 2022Abstract Organic fertilizer increase antibiotic resistance genes (ARGs) and bacterial pathogens have widely documented. However, how organic fertilizer is involved in changing...

16/06/2022

Fungi Can Be More Effective than Bacteria for the Bioremediation of Marine Sediments Highly Contaminated with Heavy Metals

Authors Dell'Anno, F, Rastelli, E, Buschi, E et al.Source MICROORGANISMS 10, 5, 2022Abstract The contamination of coastal marine sediments with heavy metals (HMs) is a widespread phenomenon that requires effective remediation actions. Bioremediation based on...

16/06/2022

Dimethoate residues in Pakistan and mitigation strategies through microbial degradation: a review

Authors Ahmad, S, Pinto, AP, Hai, FI et al.Source ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH 2022Abstract Organophosphate pesticides (OPs) are used extensively for crop protection worldwide due to their high water solubility and relatively low persistence in the...

16/06/2022

ublethal concentrations of heavy metals Cu2+ and Zn2+ can induce the emergence of bacterial multidrug resistance

Authors Xu, Y, Tan, L, Li, Q, Zheng, XQ, Liu, WSource ENVIRONMENTAL TECHNOLOGY & INNOVATION 27, 2022Abstract The emergence of multidrug resistance has become an environmental safety issue of worldwide concern. Numerous studies have confirmed th...

16/06/2022

Utilization of Legume-Nodule Bacterial Symbiosis in Phytoremediation of Heavy Metal-Contaminated Soils

Authors Jach, ME, Sajnaga, E, Ziaja, MSource BIOLOGY-BASEL 11, 5, 2022Abstract Simple Summary The legume-rhizobium symbiosis is one of the most beneficial interactions with high importance in agriculture, as it delivers nitrogen to plants and soil, thereby enhancing plant...

16/06/2022

Azospirillum spp. from Plant Growth-Promoting Bacteria to Their Use in Bioremediation

Authors Antonia Cruz-Hernandez, M, Mendoza-Herrera, A, Bocanegra-Garcia, V, Rivera, GSource MICROORGANISMS 10, 5, 2022Abstract Xenobiotic contamination, a worldwide environmental concern, poses risks for humans, animals, microbe health, and agriculture....

16/06/2022

Bioremediation of selenium-contaminated soil using earthworm Eisenia Effects of bacteria in feces on the soil microbiome

Authors Wang, YK, Wang, ZJ, Huang, JC et al.Source CHEMOSPHERE 300, 2022Abstract Selenium (Se) contamination in the soil poses a food safety risk to humans. The present study was to investigate the role of earthworm Eisenia fetida in soil Se remediation.

16/06/2022

Effects of long-term exposure to the herbicide nicosulfuron on the bacterial community structure in a factory field

Authors Ma, QY, Tan, H, Song, JL et al.Source ENVIRONMENTAL POLLUTION 307, 2022Abstract This study aims to investigate the effects of long-term nicosulfuron residue on an herbicide factory ecosystem. High-throughput sequencing was used to investigate the...

16/06/2022

Interactions between bacteria and eukaryotic microorganisms and their response to soil properties and heavy metal exchangeability nearby a coal-fired power plant

Authors Yang, TY, Tang, GT, Li, L et al.Source CHEMOSPHERE 302, 2022Abstract Persistent heavy metal (HM) contaminated soil provides special habitat for microorganisms, HM stress and complex abiotic factors bring great uncertainty for the development of bacteria an...

16/06/2022

Soil microbial community structure and environmental effects of serpentine weathering under different vegetative covers in the serpentine mining area of Donghai County, China

Authors Lu, MX, Wang, XX, Li, Y et al.Source SCIENCE OF THE TOTAL ENVIRONMENT 835, 2022AbstractThe use of serpentine biological weathering to capture atmospheric CO2 has attracted much attention. In the long-term mining activities in a serpentine mining area, a...

16/06/2022

Characterization of Rhizosphere Microbial Communities for Disease Incidence and Optimized Concentration of Difenoconazole Fungicide for Controlling of Wheat Dwarf Bunt

Authors Jia, HY, Muhae-Ud-Din, G, hang, H et al.Source FRONTIERS IN MICROBIOLOGY 13, 2022Abstract Rhizosphere soil microorganisms have great agricultural importance. To explore the relationship between rhizosphere microorganisms and the disease incidence, an...

16/06/2022

Microbial community structure and functions during chronosequence-based phytoremediation programme of Lignite tailing soil

Authors Singh, P, Jain, KR, Lakhmapurkar, J et al.Source ENVIRONMENTAL TECHNOLOGY & INNOVATION 27, 2022Abstract The eco-restoration of mine-tailing sites has a profound impact on native microbial communities and soil physicochemical properties. The adaptive...

16/06/2022

Effects of Mercury Contamination on Microbial Diversity of Different Kinds of Soil

Authors Zheng, XQ, Cao, HY, Liu, B et al.Source MICROORGANISMS 10,5, 2022Abstract Soil microorganisms promote the recovery of contaminated soil by influencing the cyclic transformation of various substances. In this study, we investigated the impact of mercury...

16/06/2022

Effect of Glyphosate and Carbaryl Applications on Okra (Abelmoschus esculentus) Biomass and Arbuscular Mycorrhizal Fungi (AMF) Root Colonization in Organic Soil

Authors Freidenreich, A, Chanda, S, Dattamudi, S, Jayachandran, K Source HORTICULTURAE 8, 5, 2022 Abstract Pesticide application in horticultural crops has recently multiplied to increase crop yields and boost economic return. Consequently, the effects of pesticides on soil...

16/06/2022

Advances and future prospects of pyrethroids: Toxicity and microbial degradation

Authors Singh, S, Mukherjee, A, Jaiswal, DK et al.Source SCIENCE OF THE TOTAL ENVIRONMENT 829, 2022Abstract Pyrethroids are a class of insecticides structurally similar to that of natural pyrethrins. The application of pyrethrins in agriculture and pest control lead...

16/06/2022

Microbial Interventions in Bioremediation of Heavy Metal Contaminants in Agroecosystem

Authors Pande, V, Pandey, SC, Sati, D, Bhatt, P, Samant, MSource FRONTIERS IN MICROBIOLOGY 13, 2022Abstract Soil naturally comprises heavy metals but due to the rapid industrialization and anthropogenic events such as uncontrolled use of agrochemicals their...

16/06/2022

Bacterial diversity and the antimicrobial resistome in the southwestern highlands of Saudi Arabia

Authors Yasir, M, Khan, R, Ullah, R et al. Source SAUDI JOURNAL OF BIOLOGICAL SCIENCES 29, 4: 2138-2147, 2022 Abstract Soil is a reservoir of microbial diversity and the most supportive habitat for acquiring and transmitting antimicrobial resistance. Resistance transfer...

16/06/2022

Marginal lands and fungi - linking the type of soil contamination with fungal community composition

Authors Okrasinska, A, Decewicz, P, Majchrowska, M et al. Source ENVIRONMENTAL MICROBIOLOGY 2022 Abstract Fungi can be found in almost all ecosystems. Some of them can even survive in harsh, anthropogenically transformed environments, such as post-...

13/06/2022

Simulated Leaching of Foliar Applied Copper Bactericides on the Soil Microbiome Utilizing Various Beta Diversity Resemblance Measurements

Authors Strayer-Scherer, A., Timilsina, S., Liao, Y. Y. et al. Source MICROBIOLOGY SPECTRUM 2022 Abstract Copper bactericides are routinely used to control Xanthomonas perforans (XP), causal agent of bacterial spot of tomato. Given the widespread tolerance to copper in XP...

13/06/2022

Arbuscular Mycorrhizal Fungi and Glomalin Play a Crucial Role in Soil Aggregate Stability in Pb-Contaminated Soil

Authors Li, YN, Xu, JZ, Hu, J et al. Source INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH 19, 9, 2022 Abstract With the rapid development of industrialization and urbanization, soil contamination with heavy metal (HM) has...

13/06/2022

Trifluralin Impacts Soil Microbial Community and Functions

Authors Li, S, Du, PQ, Wu, XH et al. Source FRONTIERS IN ENVIRONMENTAL SCIENCE 10, 2022 Abstract A 3-month experiment was designed to research the impact of trifluralin (TFL) on soil microbial communities and functions under the condition of greenhouse....

13/06/2022

The impact of newly synthesized sulfonamides on soil microbial population and respiration in rhizospheric soil of wheat (Triticum aestivum L.)

Authors Saleem, A, Zulfiqar, A, Arshed, MZ et al. Source PLOS ONE 17, 14, 2022 Abstract Antibiotics released into agricultural fields through the manure of grazing animals could exert harmful impacts on soil microbes and plants. Antibiotics exert high impacts on...

13/06/2022

Ecological effects of antibiotics on aquaculture ecosystems based on microbial community in sediments

Authors Feng, Y, Hu, JC, Chen, YS et al. Source OCEAN & COASTAL MANAGEMENT 224, 2022 Abstract Antibiotics are commonly used in aquaculture facilities during the production cycle, resulting in the gradual development of antibiotic adaptability with prolonged...

29/05/2022

The influence of Bt cotton cultivation on the structure and functions of the soil bacterial community by soil metagenomics

Authors Lv, NN, Liu, Y, Guo, TF et al.Source ECOTOXICOLOGY AND ENVIRONMENTAL SAFETY 236, 2022, Doi 10.1016/j.ecoenv.2022.113452Abstract Bt cotton successfully controlled major devastating pests in cotton,such as Helicoverpa armigera and...

29/05/2022

Effect of rice straw biochar on three different levels of Cd-contaminated soils: Cd availability, soil properties, and microbial communities

Authors Xu, ML, Dai, WJ, Zhao, ZL et al.Source CHEMOSPHERE 301, 2022, Doi 10.1016/j.chemosphere.2022.134551Abstract Biochar can be effective in immobilizing soil cadmium (Cd), but the difference in its immobilization mechanisms for different level...

29/05/2022

Accumulation of high-molecular-weight polycyclic aromatic hydrocarbon impacted the performance and microbial ecology of bioretention systems

Authors Chai, GD, Wang, DQ, Shan, JQ et al.Source CHEMOSPHERE 298, 2022, Doi 10.1016/j.chemosphere.2022.134314Abstract Bioretention has been considered as an effective management practice for urban stormwater in the removal of pollutants...

29/05/2022

Preservation and Recovery of Metal-Tolerant Fungi from Industrial Soil and Their Application to Improve Germination and Growth of Wheat

Authors Akbar, M, El-Sabrout, AM, Shokralla, S et al.Source SUSTAINABILITY 14, 9, 2022, Doi 10.3390/su14095531Abstract Heavy metals contaminate soil and adversely affect plant growth. These soils contain different fungi and bacteria which exhibit metal tolerance and wo...

29/05/2022

Impact of arsenic on phosphate solubilization, acquisition and poly-phosphate accumulation in endophytic fungus Serendipita indica

Authors Kushwaha, AS, Thakur, RS, Patel, DK, Kumar, MSource MICROBIOLOGICAL RESEARCH 259, 2022, DOI 10.1016/j.micres.2022.127014Abstract Symbiotic interactions play a crucial role in the phosphate (Pi) nutrient status of the host plant and offer...

28/05/2022

Environmental Behaviors of Bacillus thuringiensis (Bt) Insecticidal Proteins and Their Effects on Microbial Ecology

Authors Li, YJ, Wang, C, Ge, L et al.Source PLANTS-BASEL 11, 9, 2022, DOI 10.3390/plants11091212Abstract Bt proteins are crystal proteins produced by Bacillus thuringiensis (Bt) in the early stage of spore formation that exhibit highly specific insectici...

28/05/2022

Experimental Evidence for Manure-Borne Bacteria Invasion in Soil During a Coalescent Event: Influence of the Antibiotic Sulfamethazine

Authors Billet, L, Pesce, S, Martin-Laurent, F, Devers-Lamrani, MSource MICROBIAL ECOLOGY, 2022, DOI 10.1007/s00248-022-02020-wAbstract The fertilization of agricultural soil by organic amendment that may contain antibiotics, like manure, can transfer bacterial...

16/06/2022

What role does organic fertilizer actually play in the fate of antibiotic resistome and pathogenic bacteria in planting soil?

Authors Xu, Y, Li, HY, Tan, L et al.Source JOURNAL OF ENVIRONMENTAL MANAGEMENT 317, 2022Abstract Organic fertilizer increase antibiotic resistance genes (ARGs) and bacterial pathogens have widely documented. However, how organic fertilizer is involved in changing...

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16/06/2022

Fate of Antibiotic Resistance Genes and Changes in Bacterial Community With Increasing Breeding Scale of Layer Manure

Authors Wang, LX, Chai, BFSource FRONTIERS IN MICROBIOLOGY 13, 2022Abstract The use of antimicrobials in intensive poultry production is becoming increasingly common because of its high throughput of meat and egg products. However, the profile of antibiotic resistance...

16/06/2022

Bacterial diversity and the antimicrobial resistome in the southwestern highlands of Saudi Arabia

Authors Yasir, M, Khan, R, Ullah, R et al. Source SAUDI JOURNAL OF BIOLOGICAL SCIENCES 29, 4: 2138-2147, 2022 Abstract Soil is a reservoir of microbial diversity and the most supportive habitat for acquiring and transmitting antimicrobial resistance. Resistance transfer...

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The impact of newly synthesized sulfonamides on soil microbial population and respiration in rhizospheric soil of wheat (Triticum aestivum L.)

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28/05/2022

Insights into structure and functioning of a soil microbial community amended with cattle manure digestate and sulfamethoxazole

Authors Garbini, GL, (Grenni, P, Rauseo, J et al.Source JOURNAL OF SOILS AND SEDIMENTS, 2022, DOI 10.1007/s11368-022-03222-yAbstract Purpose The present work aimed to fill some knowledge gaps on the effects on non-target natural soil microbial communities of the...

28/05/2022

Joint effects of bacterium and biochar in remediation of antibiotic-heavy metal contaminated soil and responses of resistance gene and microbial community

Authors Zhang, XR, Gong, ZQ, Allinson, G et al.Source CHEMOSPHERE 299, 2022, DOI 10.1016/j.chemosphere.2022.134333Abstract Soils containing both veterinary antibiotics (VAs) and heavy metals necessitate effective remediation approaches, and microbial and...

28/05/2022

Antibiotic-resistant bacteria and antibiotic resistance genes in uranium mine: Distribution and influencing factors

Authors Zhou, S, Xiong, C, Su, YL et al.Source ENVIRONMENTAL POLLUTION 304, 2022, DOI 10.1016/j.envpol.2022.119158Abstract Both heavy metals and radiation could affect the proliferation and dissemination of emerging antibiotic resistance pollutants. As an...

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Enhanced removal of antibiotics and antibiotic resistance genes in a soil microbial fuel cell via in situ remediation of agricultural soils with multiple antibiotics

Authors Song, HL, Zhang, C, Lu, YX et al.Source SCIENCE OF THE TOTAL ENVIRONMENT 829, 2022, DOI 10.1016/j.scitotenv.2022.154406Abstract Soil microbial fuel cells (MFCs) have been applied for the in situ remediation of soils polluted by...

12/05/2022

Antibiotic use in commercial broiler chicken farming and its consequential resistance development in root colonizing bacteria of carrot grown in manure-applied soils in a middle-income country

Authors Dandeniya, WS, Herath, EM, Lowe, AM et al.Source CANADIAN JOURNAL OF SOIL SCIENCE, 2022, DOI 10.1139/cjss-2021-0001Abstract Broiler chicken litter (BCL) is a cheap manure for vegetable crops in developing countries. Extensive antibiotic use...

10/05/2022

Plants inhibit the relative abundance of sulfonamide resistance genes and class 1 integron by influencing bacterial community in rhizosphere of constructed wetlands

Authors Man, Y, Li, WX, Wang, JX et al.Source SCIENCE OF THE TOTAL ENVIRONMENT 824, 2022, DOI 10.1016/j.scitotenv.2022.153977Abstract Antibiotic resistance genes (ARGs) commonly detected in wastewater can potentially lead to...

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29/05/2022

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27/06/2022

Adsorption of chromium by exopolysaccharides extracted from lignolytic phosphate solubilizing bacteria

Authors Kailasam, S, Arumugam, S, Balaji, K, Kanth, SVSource INTERNATIONAL JOURNAL OF BIOLOGICAL MACROMOLECULES 206: 788-798, 2022Abstract In the present study, exopolysaccharide (EPS) producing phosphate solubilizing bacterium, Enterobacter soli was...

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Bioremediation of lead-contaminated soil by inorganic phosphate-solubilizing bacteria immobilized on biochar

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Maize associated bacterial microbiome linked mitigation of heavy metal stress: A multidimensional detoxification approach

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Effects of long-term (10 years) remediation of Caragana on soil enzyme activities, heavy metals, microbial diversity and metabolic spectrum of coal gangue

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27/06/2022

Sulfur enhances cadmium bioaccumulation in Cichorium intybus by altering soil properties, heavy metal availability and microbial community in contaminated alkaline soil

Authors Liu, HT, Luo, L, Jiang, GY et al.Source SCIENCE OF THE TOTAL ENVIRONMENT 237, 2022Abstract Cadmium (Cd) contamination seriously threatens the soil health and food safety. Combination of amendment and accumulator plant is a green and effective...

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Passivation of lead and cerium in soil facilitated by biochar-supported phosphate-doped ferrihydrite: Mechanisms and microbial community evolution

Authors Li, H, Jiang, Q, Li, RZ, et al.Source JOURNAL OF HAZARDOUS MATERIALS 436, 2022Abstract The massive exploitation and application of heavy metals and rare earth elements (REEs) lead to their exceeding the standard in soil. Herein, a new type of biochar...

27/06/2022

Implications of the Use of Glyphosate-Based Herbicides in Agriculture in Argentina-Contribution of Fungi to the Development of Bioremediation Strategies

Authors Aluffi, ME, Carranza, CS, Magnoli, K et al.Source JOURNAL OF SOIL SCIENCE AND PLANT NUTRITION, 2022Abstract review South American agriculture focuses on extensive cereal and oilseed production destined mainly for the international market, followed by the...

16/06/2022

A synergistic bacterial pool decomposes tebuthiuron in soil

Authors de Lima, EW, Brunaldi, BP, Frias, YA et al.Source SCIENTIFIC REPORTS 12, 1, 2022Abstract This study aimed to propose an eco-compatible strategy to mitigate the possible environmental contamination caused by tebuthiuron. Therefore, we screened potential...

16/06/2022

Fungi Can Be More Effective than Bacteria for the Bioremediation of Marine Sediments Highly Contaminated with Heavy Metals

Authors Dell'Anno, F, Rastelli, E, Buschi, E et al.Source MICROORGANISMS 10, 5, 2022Abstract The contamination of coastal marine sediments with heavy metals (HMs) is a widespread phenomenon that requires effective remediation actions. Bioremediation based on...

16/06/2022

Utilization of Legume-Nodule Bacterial Symbiosis in Phytoremediation of Heavy Metal-Contaminated Soils

Authors Jach, ME, Sajnaga, E, Ziaja, MSource BIOLOGY-BASEL 11, 5, 2022Abstract Simple Summary The legume-rhizobium symbiosis is one of the most beneficial interactions with high importance in agriculture, as it delivers nitrogen to plants and soil, thereby enhancing plant...

16/06/2022

Azospirillum spp. from Plant Growth-Promoting Bacteria to Their Use in Bioremediation

Authors Antonia Cruz-Hernandez, M, Mendoza-Herrera, A, Bocanegra-Garcia, V, Rivera, GSource MICROORGANISMS 10, 5, 2022Abstract Xenobiotic contamination, a worldwide environmental concern, poses risks for humans, animals, microbe health, and agriculture....

16/06/2022

Bioremediation of selenium-contaminated soil using earthworm Eisenia Effects of bacteria in feces on the soil microbiome

Authors Wang, YK, Wang, ZJ, Huang, JC et al.Source CHEMOSPHERE 300, 2022Abstract Selenium (Se) contamination in the soil poses a food safety risk to humans. The present study was to investigate the role of earthworm Eisenia fetida in soil Se remediation.

16/06/2022

Microbial community structure and functions during chronosequence-based phytoremediation programme of Lignite tailing soil

Authors Singh, P, Jain, KR, Lakhmapurkar, J et al.Source ENVIRONMENTAL TECHNOLOGY & INNOVATION 27, 2022Abstract The eco-restoration of mine-tailing sites has a profound impact on native microbial communities and soil physicochemical properties. The adaptive...

16/06/2022

Advances and future prospects of pyrethroids: Toxicity and microbial degradation

Authors Singh, S, Mukherjee, A, Jaiswal, DK et al.Source SCIENCE OF THE TOTAL ENVIRONMENT 829, 2022Abstract Pyrethroids are a class of insecticides structurally similar to that of natural pyrethrins. The application of pyrethrins in agriculture and pest control lead...

16/06/2022

Microbial Interventions in Bioremediation of Heavy Metal Contaminants in Agroecosystem

Authors Pande, V, Pandey, SC, Sati, D, Bhatt, P, Samant, MSource FRONTIERS IN MICROBIOLOGY 13, 2022Abstract Soil naturally comprises heavy metals but due to the rapid industrialization and anthropogenic events such as uncontrolled use of agrochemicals their...

29/05/2022

Accumulation of high-molecular-weight polycyclic aromatic hydrocarbon impacted the performance and microbial ecology of bioretention systems

Authors Chai, GD, Wang, DQ, Shan, JQ et al.Source CHEMOSPHERE 298, 2022, Doi 10.1016/j.chemosphere.2022.134314Abstract Bioretention has been considered as an effective management practice for urban stormwater in the removal of pollutants...

29/05/2022

Preservation and Recovery of Metal-Tolerant Fungi from Industrial Soil and Their Application to Improve Germination and Growth of Wheat

Authors Akbar, M, El-Sabrout, AM, Shokralla, S et al.Source SUSTAINABILITY 14, 9, 2022, Doi 10.3390/su14095531Abstract Heavy metals contaminate soil and adversely affect plant growth. These soils contain different fungi and bacteria which exhibit metal tolerance and wo...

29/05/2022

Impact of arsenic on phosphate solubilization, acquisition and poly-phosphate accumulation in endophytic fungus Serendipita indica

Authors Kushwaha, AS, Thakur, RS, Patel, DK, Kumar, MSource MICROBIOLOGICAL RESEARCH 259, 2022, DOI 10.1016/j.micres.2022.127014Abstract Symbiotic interactions play a crucial role in the phosphate (Pi) nutrient status of the host plant and offer...

28/05/2022

Effects of ultramafic topsoil stockpiling during mine activities on its microbial diversity and other microbiological and physicochemical characteristics

Authors Amir, H, Bordez, L, Cavaloc, Y et al.Source ECOLOGICAL ENGINEERING 117, 2022, DOI 10.1016/j.ecoleng.2022.106563Abstract Nowadays, ecological restoration is considered the best solution for the rehabilitation of mining-degraded areas, particularly when it...

28/05/2022

A review of metal resistance mechanisms by mangrove bacteria

Authors Das D, Sourav, G, Srimoyee, BSource RESEARCH JOURNAL OF BIOTECHNOLOGY 17, 3, 2022: 209-215Abstract Unchecked disposal of wastes into the environment has led to metal contamination in many ecosystems. The mangroves which are one of the most...

28/05/2022

Bacterial community and chemical profiles of oil-polluted sites in selected cities of Uganda: potential for developing a bacterial-based product for remediation of oil-polluted sites

Authors Ssenku, JE, (Walusansa, A, Oryem-Origa, H et al.Source BMC MICROBIOLOGY 22, 1, 2022, DOI 10.1186/s12866-022-02541-xAbstract Background: Oil spills are ranked among the greatest global challenges to humanity. In Uganda, owing to the forthcoming full-scale...

28/05/2022

Land use and roles of soil bacterial community in the dissipation of atrazine

Authors de Souza, AJ, Pereira, APD, Pedrinho, A et al.Source SCIENCE OF THE TOTAL ENVIRONMENT 827, 2022, DOI 10.1016/j.scitotenv.2022.154239Abstract Atrazine (ATZ) is one of the most widely used herbicides in the world even though it is...

28/05/2022

Responses of microbial community composition and function to biochar and irrigation management and the linkage to Cr transformation in paddy soil

Authors Xiao, WD, Ye, XZ, Ye, ZQ et al.Source ENVIRONMENTAL POLLUTION 304, 2022, DOI 10.1016/j.envpol.2022.119232Abstract Combining biochar with irrigation management to alter the microbial community is a sustainable method for remediating soils...

12/05/2022

Microbial adaptation and impact into the pesticide's degradation

Authors Ahmad, S, Ahmad, HW, Bhatt, PSource ARCHIVES OF MICROBIOLOGY 204, 5, 2022 DOI 10.1007/s00203-022-02899-6Abstract ... Here we address the knowledge gaps by highlighting systematic biology and their role in adaptation of microbial species from agricultural soils wit...

11/05/2022

Reductive soil disinfestation with biochar amendment modified microbial community composition in soils under plastic greenhouse vegetable production

Authors Ji, CY, Ye, RZ, Yin, YF et al.Source SOIL & TILLAGE RESEARCH 218, 2022, DOI 10.1016/j.still.2022.105323Abstract Reductive soil disinfestation (RSD) and biochar amendment are considered sustainable management practices to improve degraded...

08/05/2022

Effect of the coexistence of endosulfan on the lindane biodegradation by Novosphingobium barchaimii and microbial enrichment cultures

Authors Wu, SC, Chang, BS, Li, YYSource CHEMOSPHERE 297, 2022, DOI 10.1016/j.chemosphere.2022.134063Abstract Organochlorine pesticides, especially lindane and endosulfan, have been demonstrated to be both biodegradable and frequently coexistent,...

29/06/2022

Geographic Dispersal Limitation Dominated Assembly Processes of Bacterial Communities on Microplastics Compared to Water and Sediment

Authors: Zhang WH, Chen L, Chen HY et al.Source: APPLIED AND ENVIRONMENTAL MICROBIOLOGY Early Access, DOI 10.1128/aem.00482-22Abstract: Microplastics provide new microbial niches in aquatic environments. Nevertheless, information on th...

29/06/2022

Spatial and temporal distributions of microplastics and their macroscopic relationship with algal blooms in Chaohu Lake, China

Authors: Liu HT, Sun KX, Liu XY et al.Source: JOURNAL OF CONTAMINANT HYDROLOGY 248:104028, 2022, DOI 10.1016/j.jconhyd.2022.104028Abstract: Microplastics are emerging pollutants with sizes less than 5 mm, and they are ubiquitous. The...

27/06/2022

Field response of N2O emissions, microbial communities, soil biochemical processes and winter barley growth to the addition of conventional and biodegradable microplastics

Authors Greenfield, LM, Graf, M, Rengaraj, S et al.Source AGRICULTURE ECOSYSTEMS & ENVIRONMENT 336, 2022Abstract Microplastic contamination in agroecosystems is becoming more prevalent due to the direct use of plastics in agriculture (e.g., mulch films) and via...

23/06/2022

From rivers to marine environments: A constantly evolving microbial community within the plastisphere

Authors: Delacuvellerie A, Ballerini T, Frere L et al.Source: MARINE POLLUTION BULLETIN 179:113660, 2022, DOI 10.1016/j.marpolbul.2022.113660Abstract: Plastics accumulate in the environment and the Mediterranean Sea is one of the most polluted...

23/06/2022

Field response of N2O emissions, microbial communities, soil biochemical processes and winter barley growth to the addition of conventional and biodegradable microplastics

Authors: Greenfield LM, Graf M, Rengaraj S, Bargiela R et al.Source: AGRICULTURE ECOSYSTEMS & ENVIRONMENT 336: 108023, 2022, DOI 10.1016/j.agee.2022.108023Abstract: Microplastic contamination in agroecosystems is becoming more prevalent due to the direct...

22/06/2022

Succession of soil bacterial communities and network patterns in response to conventional and biodegradable microplastics: A microcosmic study in Mollisol

Authors: Hu XJ, Gu HD, Wang YB, Liu JJ et al.Source: JOURNAL OF HAZARDOUS MATERIALS 436: 129218, 20223, DOI 10.1016/j.jhazmat.2022.129218Abstract: Significant soil contamination of microplastics (MPs) by the application of agricultural mulch...

22/06/2022

What will polyethylene film mulching bring to the root-associated microbial community of Paeonia ostii?

Authors: Yuan YD, Zu MT, Zuo JJ, Li RZ et al.Source: APPLIED MICROBIOLOGY AND BIOTECHNOLOGY Early Access, 2022, DOI 10.1007/s00253-022-11986-zAbstract: Plastic film mulching can increase crop yield and is widely used in agricultural production, but lon...

16/06/2022

What will polyethylene film mulching bring to the root-associated microbial community of Paeonia ostii?

Authors Yuan, YD, Zu, MT, Zuo, JJ, Li, RZ, Tao, JSource APPLIED MICROBIOLOGY AND BIOTECHNOLOGY 2022Abstract Plastic film mulching can increase crop yield and is widely used in agricultural production, but long-term mulching could adversely affect plant growth....

16/06/2022

The influence of microplastics on the toxic effects and biodegradation of bisphenol A in the microalgae Chlorella pyrenoidosa

Authors: He DD, Zeng YM, Zhou GMSource: AQUATIC ECOLOGY Early Access, DOI 10.1007/s10452-022-09966-6Abstract: Bisphenol A (BPA) and polystyrene microplastics have attracted much attention because they are widely distributed in the environment, while...

16/06/2022

Biodegradable Microplastics Affect the Wheatgrass Traits, Fe Plaque Development Involved in Sb Accumulation, and Microbial Community Functions in Antimony-Contaminated Riparian Wetlands

Authors Cao, WC, Gong, JL, Qin, M et al.Source ACS SUSTAINABLE CHEMISTRY & ENGINEERING 10, 18: 5847-5858, 2022Abstract Alternative biodegradable plastics have been the primary protocols to alleviate traditional plastic pollution in terrestrial systems. However, few studies...

13/06/2022

Microplastics impact the accumulation of metals in earthworms by changing the gut bacterial communities

Authors Yang, Y, Xu, GH, Yu, Y Source SCIENCE OF THE TOTAL ENVIRONMENT 831, 2022 Abstract Microplastics (MPs) are defined as plastic debris with particle size smaller than 5 mm, which have been frequently detected in environments. In this study, earthworms...

09/06/2022

Biofilm assemblage and activity on plastic in urban streams at a continental scale: Site characteristics are more important than substrate type

Authors: Vincent AES, Chaudhary A, Kelly JJ, Hoellein TJSource: SCIENCE OF THE TOTAL ENVIRONMENT 835:155398, 2022, DOI 10.1016/j.scitotenv.2022.155398Abstract: The fate of plastics in rivers is a key component of the global plastic cycle. Plastics entering...

09/06/2022

Effects of microplastics on greenhouse gas emissions and microbial communities in sediment of freshwater systems

Authors: Zhang WZ, Liu XM, Liu LA et al.Source: JOURNAL OF HAZARDOUS MATERIALS 435:129030, 2022, DOI 10.1016/j.jhazmat.2022.129030Abstract: Microplastics can regulate greenhouse gas emissions from environmental systems and...

09/06/2022

Microbial pioneers of plastic colonisation in coastal seawaters

Authors: Latva M, Dedman CJ, Wright RJ et al.Source: MARINE POLLUTION BULLETIN 179:113701, 2022, DOI 10.1016/j.marpolbul.2022.113701Abstract: Plastics, when entering the environment, are immediately colonised by microorganisms. Th...

03/06/2022

Response of soil microbial community parameters to plastic film mulch: A meta-analysis

Authors: Li YZ, Xie HX, Ren ZH, Ding YP et al.Source: GEODERMA 418: 115851, 2022, DOI 10.1016/j.geoderma.2022.115851Abstract: Plastic film mulch alters the soil environment and improves crop production. Although the response of aboveground parts of...

02/06/2022

Enrichment and dissemination of bacterial pathogens by microplastics in the aquatic environment

Authors: Junaid M, Siddiqui JA, Sadaf M et al.Source: SCIENCE OF THE TOTAL ENVIRONMENT 830:154720, 2022, DOI 10.1016/j.scitotenv.2022.154720Abstract: Microplastic pollution and associated impacts in the aquatic environment are spreading at an...

31/05/2022

Toxicological Effects of Microplastics and Sulfadiazine on the Microalgae Chlamydomonas reinhardtii

Authors: Li Z,; Dong S, Huang F et al.Source: FRONTIERS IN MICROBIOLOGY 13:865768, 2022, DOI 10.3389/fmicb.2022.865768Abstract: Despite the fact that microplastics (MPs) facilitate the adsorption of environmental organic pollutants and influence their toxicity...

31/05/2022

Distribution, biological effects and biofilms of microplastics in freshwater systems-A review

Authors: Wang Y, Zhou BH, Chen HL et al.Source: CHEMOSPHERE 299:134370, 2022, DOI 10.1016/j.chemosphere.2022.134370Abstract: The rapidly rising output and mass use of plastics have made plastics pollution a major...

28/05/2022

Polyethylene microplastics alter the microbial functional gene abundances and increase nitrous oxide emissions from paddy soils

Authors Yu, YX, Li, X, Feng, ZY et al.Source JOURNAL OF HAZARDOUS MATERIALS 432, 2022, DOI 10.1016/j.jhazmat.2022.128721Abstract The accumulation of microplastics (MPs) in terrestrial ecosystems can affect greenhouse...

PUBLICATIONS DU RESEAU ECOTOX

29/06/2022

WMassive fish death associated with the toxic cyanobacterial Planktothrix sp. bloom in the Beni-Haroun Reservoir (Algeria)eb of Science

Authors: Benayache NY, Afri-Mehennaoui FZ, Kherief-Nacereddine S, Bao VQ et al.Source: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH Early Access, 2022, DOI 10.1007/s11356-022-21538-7Abstract: In July 2017, a massive bloom of the potentially toxic...

29/06/2022

Web ofLethal and sublethal effects of chlorantraniliprole on the migratory moths Agrotis ipsilon and A. segetum: New perspectives for pest management strategies Science

Authors: Zhang DW, Dai CC, Ali A, Liu YQ et al.Source: PEST MANAGEMENT SCIENCE Early Acess, 2022, DOI 10.1002/ps.7029Abstract: BACKGROUND Agrotis ipsilon and A. segetum are major migratory pests of many crops in China, and frequent regional outbreaks cause...

29/06/2022

Impact of nickel mining in New Caledonia on marbled eels Anguilla marmorataWeb of Science

Authors: Germande O, Gunkel-Grillon P, Dominique Y, Feurtet-Mazel A et al.Source: JOURNAL OF HAZARDOUS MATERIALS 436: 129285, 2022, DOI 10.1016/j.jhazmat.2022.129285Abstract: New Caledonia is particularly affected by nickel ope...

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Web To what extent can soil moisture and soil Cu contamination stresses affect nitrous species emissions? Estimation through calibration of a nitrification-denitrification modelof Science

Authors: Sereni L, Guenet B, Blasi C, Crouzet O et al.Source: BIOGEOSCIENCES 19(12): 2953-2968, 2022, DOI 10.5194/bg-19-2953-2022Abstract: Continental biogeochemical models are commonly used to predict the effect of land use, exogenous organic matter input o...

29/06/2022

Web of ScEarly molecular responses of mangrove oysters to nanoplastics using a microfluidic device to mimic environmental exposureience

Authors: Arini A, Venel Z, Tabuteau H, Gigault J et al.Source: JOURNAL OF HAZARDOUS MATERIALS 436: 129283, 2022, DOI 10.1016/j.jhazmat.2022.129283Abstract: This study assessed the effects of nanoplastics (NPs) using for the very first time microfluidic devic...

29/06/2022

Web of Temporal variations in the level of chlordecone in seawater and marine organisms in Martinique Island (Lesser Antilles)Science

Authors: Dromard CR, Allenou JP, Tapie N, Budzinski H et al.Source: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH, Early Access, 2022, DOI 10.1007/s11356-022-21528-9Abstract: The present study, conducted in the Galion Bay in Martinique, aims to highlight the...

29/06/2022

Web of ScWhat are the stakes for fodder in the management of the chlordecone crisis in the French West Indies?ience

Authors: Feidt C, Collas C, Mantran M, Liber Y et al.Source: FOURRAGES 249: 9-18, 2022Abstract: The height of the forage harvest seems to be a determining factor in the contamination of cattle by chlordecone (CLD), which is not quantified in the part of the plant above 10 cm...

22/06/2022

A Generalized Physiologically Based Kinetic Model for Fish forEnvironmental Risk Assessment of Pharmaceuticals

Source: Wang JQ, Nolte TM, Owen SF, Beaudouin R et al.Source: ENVIRONMENTAL SCIENCE & TECHNOLOGY 56(10): 6500-6510, 2022, DOI 10.1021/acs.est.1c08068Abstract: An increasing number of pharmaceuticals found in the environment potentially impose...

22/06/2022

Target and Nontarget Screening of PFAS in Biosolids, Composts,and Other Organic Waste Products for Land Application in France

Authors: Munoz G, Michaud AM, Liu M, Duy SV et al.Source: ENVIRONMENTAL SCIENCE & TECHNOLOGY 56(10): 6056-6068, 2022, DOI 10.1021/acs.est.1c03697Abstract: Zwitterionic, cationic, and anionic per- and poly-fluoroalkyl substances (PFAS) are increasingly reported...

22/06/2022

State of the Art of Triad-Based Ecological Risk Assessment: Current Limitations and Needed Implementations in the Case of Soil Diffuse Contamination

Authors: Grassi G, Lamy I, Pucheux N, Ferrari BJD et al.Source: FRONTIERS IN ENVIRONMENTAL SCIENCE 10: 878238, 2022, DOI 10.3389/fenvs.2022.878238Abstract: Soils can be sinks of pollutant mixtures, whose effects on terrestrial ecosystems are not of...

09/06/2022

A new method to co-design agricultural systems at the territorial scale - Application to reduce herbicide pollution in Martinique

Authors: Della Rossa P, Mottes C, Cattan P, Le Bail MSource: AGRICULTURAL SYSTEMS 196: 103337, 2022, DOI 10.1016/j.agsy.2021.103337Abstract: CONTEXT: Chronic environmental pollutions are one of the most striking examples of negative externaliti...

09/06/2022

Embryonic development in allis shad Alosa alosa: A baseline for stress studies

Authors: Blaya M, Geffard O, Jatteau P, Pierre M et al.Source: JOURNAL OF APPLIED ICHTHYOLOGY Early Access, 2022, DOI 10.1111/jai.14336Abstract: From experimentations in optimal conditions, we identified the main features of embryogenesis...

03/06/2022

Temporal Trends of Organochlorine and Perfluorinated Contaminants in a Terrestrial Raptor in Northern Europe Over 34 years (1986-2019)

Authors: Bustnes JO, Bardsen BJ, Herzke D, Bangjord G et al.Source: ENVIRONMENTAL TOXICOLOGY AND CHEMISTRY Early Access, 2022, DOI 10.1002/etc.5331Abstract: Fourteen legacy organochlorine (OC) contaminants and 12 perfluoroalkyl substances (PFASs) were...

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Contrasting effects of siderophores pyoverdine and desferrioxamine B on the mobility of iron, aluminum, and copper in Cu-contaminated soils

Authors: Cornu JY, Gutierrez M, Randriamamonjy S, Gaudin P et al.Source: GEODERMA 420: 115897, 2022, DOI 10.1016/j.geoderma.2022.115897Abstract: Siderophores are biogenic metallophores that can play significant roles in the dynamics of a...

03/06/2022

Concentrations and fluxes of suspended particulate matter and associated contaminants in the Rhone River from Lake Geneva to the Mediterranean Sea

Authors: Lepage H, Gruat A, Thollet F, Le Coz JM et al.Source: EARTH SYSTEM SCIENCE DATA 14(5): 2369-2384, 2022, DOI 10.5194/essd-14-2369-2022Abstract: The Rhone River is among the main rivers of western Europe and the biggest by freshwater discharge and sediment...

03/06/2022

Ecotoxic effects of the vehicle solvent dimethyl sulfoxide on Raphidocelis subcapitata, Daphnia magna and Brachionus calyciflorus

Authors: Andrade-Vieira LF, Bojic C, Alvarenga IFS, de Carvalho TS et al.Source: CHEMISTRY AND ECOLOGY Early Access, 2022, DOI 10.1080/02757540.2022.2076838Abstract: Dimethyl sulfoxide (DMSO) is widely used as a vehicle solvent in ecotoxicity bioassays.Despite...

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Refinement of an OECD test guideline for evaluating the effects of endocrine disrupting chemicals on aromatase gene expression and reproduction using novel transgenic cyp19a1a-eGFP zebrafish (vol 220, 105403... Corrigendun

Authors: De Oliveira J, Chadili E, Piccini B, Turies C et al.Source: AQUATIC TOXICOLOGY 247: 106166, 2022, DOI 10.1016/j.aquatox.2022.106166

30/05/2022

Metals and metalloids concentrations in three genotypes of pelagic Sargassum from the Atlantic Ocean Basin-scale

Authors: Cipolloni OA, Gigault J, Dassie EP, Baudrimont Met al.Source: MARINE POLLUTION BULLETIN 178: 113564, 2022, DOI 10.1016/j.marpolbul.2022.113564Abstract: Since 2011, the Caribbean Islands have witnessed unprecedented massive stranding of a pelagic...

30/05/2022

Editorial overview: (Micro)plastics 2021

Authors: Rocha-Santos T, Mouneyrac CSource: CURRENT OPINION IN GREEN AND SUSTAINABLE CHEMISTRY 35: 100616, 2022, DOI 10.1016/j.cogsc.2022.100616Edito: Plastic production has increased in the last years and in 2019 with an effort to also increase plastic...

30/05/2022

Experimental Evidence for Manure-Borne Bacteria Invasion in Soil During a Coalescent Event: Influence of the Antibiotic Sulfamethazine

Authors: Billet L, Pesce S, Martin-Laurent F, Devers-Lamrani MSource: MICROBIAL ECOLOGY Early Access, 2022, DOI 10.1007/s00248-022-02020-wAbstract: The fertilization of agricultural soil by organic amendment that may contain antibiotics, like manure, can transfer bacterial...

30/05/2022

Glyphosate and aminomethylphosphonic acid in human hair quantified by an LC-MS/MS method

Authors: Alvarez JC, Etting I, Larabi IASource: BIOMEDICAL CHROMATOGRAPHY 5391, 2022, DOI 10.1002/bmc.5391Abstract: An LC-MS/MS method for hair testing of glyphosate and aminomethylphosphonic acid (AMPA), its main biodegradation product, has been developed....

30/05/2022

Accumulation of metallic trace elements in Reynoutria japonica: a risk assessment for plant biomass valorization

Authors: Lerch S, Sirguey C, Michelot-Antalik A, Jurjanz S Source: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH Early Access, 2022, DOI 10.1007/s11356-022-20485-7Abstract: Sustainable solutions aiming at limiting Reynoutria japonica invasion consist of freque...

30/05/2022

Uncoupling Aluminum Toxicity From Aluminum Signals in the STOP1 Pathway

Authors: Le Poder L, Mercier C, Fevrier L, Duong N et al.Source: FRONTIERS IN PLANT SCIENCE 13: 785791, 2022, DOI 10.3389/fpls.2022.785791Abstract: Aluminum (Al) is a major limiting factor for crop production on acidic soils, inhibiting root growth and plan...

17/05/2022

Multiple global change impacts on parasitism and biocontrol services in future agricultural landscapes

Authors: Monticelli LS, Bishop J, Desneux N, Gurr GM et al.Source: FUTURE OF AGRICULTURAL LANDSCAPES, PT III, Book Series Advances in Ecological Research, 65:245-304, DOI 10.1016/bs.aecr.2021.10.002Abstract: Parasitoids are a significant mortality factor in...

11/05/2022

Temperature and Photoperiod Affect the Sensitivity of Biofilms to Nickel and its Accumulation

Authors: Laderriere V, Richard M, Morin S, Le Faucheur S et al.Source: ENVIRONMENTAL TOXICOLOGY AND CHEMISTRY Earlu Access, 2022, DOI 10.1002/etc.5335Abstract: Whereas metal impacts on fluvial communities have been extensively investigated, effects of abiotic...

09/05/2022

Editorial: Microbial Ecotoxicology Advances to Improve Environmental and Human Health Under Global Change

Authors: Cebron A, Karpouzas DG, Martin-Laurent F, Morin S et al.Source: FRONTIERS IN MICROBIOLOGY 13:870404, 2022, DOI 10.3389/fmicb.2022.870404Edito: Microbial Ecotoxicology is an interdisciplinary science at the intersection of microbial ecology,...

06/05/2022

Bioaccumulation of Per and Polyfluoroalkyl Substances in Antarctic Breeding South Polar Skuas (Catharacta maccormicki) and Their Prey

Authors: Garcia LAA, Descamps S, Herzke D, Chastel O et al.Source: FRONTIERS IN MARINE SCIENCE 9:819525, 2022, DOI 10.3389/fmars.2022.819525Abstract: Per and polyfluoroalkyl substances (PFASs) are found in Antarctic wildlife, with high levels in the avian...

OUVRAGES / RAPPORTS / ACTES DE CONGRES

18/06/2022

Indices and models of surface water quality assessment: Review and perspectives

Many technologies have been designed to monitor, evaluate, and improve surface water quality, as high-quality water is essential for human activities including agriculture, livestock, and industry. As such, in this study, we investigated water quality indices (WQIs),...

pubmed.ncbi.nlm.nih.gov

08/06/2022

Scientific evidence of glyphosate link to cancer dismissed in ongoing EU assessment, new report reveals

A HEAL report published today shows that scientific evidence that glyphosate is carcinogenic has so far been dismissed in the EU scientific assessment ...

www.env-health.org

25/05/2022

Risk assessment of rare earth elements, antimony, barium, boron, lithium, tellurium, thallium and vanadium in teas

EFSA Journal, Volume 20, Issue S1, May 2022.

efsa.onlinelibrary.wiley.com

21/05/2022

Distribution and ecological risk assessment of trace elements in the paddy soil-rice ecosystem of Punjab, Pakistan

Trace elements (TEs) contamination of agricultural soils requires suitable criteria for regulating their toxicity limits in soil and food crops, which depends on their potential ecological risk spanning regional to global scales. However, no comprehensive study is...

pubmed.ncbi.nlm.nih.gov

20/05/2022

Peer review of the pesticide risk assessment of the active substance limestone powder (calcium carbonate)

The conclusions of EFSA following the peer review of the initial risk assessments carried out by the competent authority of the rapporteur Member ...

www.efsa.europa.eu

18/05/2022

Modification of the existing maximum residue levels for prosulfocarb in herbs and edible flowers

EFSA Journal, Volume 20, Issue 5, May 2022.

efsa.onlinelibrary.wiley.com

18/05/2022

Peer review of the pesticide risk assessment of the active substance triflusulfuron-methyl

EFSA Journal, Volume 20, Issue 5, May 2022.

efsa.onlinelibrary.wiley.com

REGLEMENTATION

23/06/2022

Substance «N-(3-aminopropyl)-N-dodécylpropane-1,3-diamine», substance active dans les produits biocides (type de produits 8) non approuvée

DÉCISION D'EXÉCUTION (UE) 2022/986 DE LA COMMISSION du 23 juin 2022 n'approuvant pas la substance «N-(3-aminopropyl)-N-dodécylpropane-1,3-diamine» en tant que substance active existante destinée à être utilisée dans les produits biocides relevant du type de produits 8Numéro officiel : UE/2022/986Date de signature : 23/06/2022

eur-lex.europa.eu

10/06/2022

Autorisation pour la famille de produits biocides «SOPUROXID»

RÈGLEMENT D'EXÉCUTION (UE) 2022/964 DE LA COMMISSION du 10 juin 2022 accordant une autorisation de l'Union pour la famille de produits biocides «SOPUROXID»Numéro officiel : UE/2022/964Date de signature : 10/06/2022

eur-lex.europa.eu

AVIS / EXPERTISES / NORMES

25/05/2022

Study of the different evaluation areas in the pesticide risk assessment process

Both chemical and microbial active substances can currently be approved as pesticides in the EU, the provisions of their approval being set under ...

www.efsa.europa.eu

25/05/2022

Assessment of endocrine disruptive properties of PFOS: EFSA/ECHA guidance case study utilising A... alternative method

Endocrine disruptors (EDs) are chemical substances that interfere with the endocrine system, adversely affecting human health and environment. ...

www.efsa.europa.eu

25/05/2022

Monitoring of pesticide amount in water and drinkable food by a fluorescence-based biosensor

The identification of pollutants is crucial to protect water resources and ensure food safety. The available analytical methodologies allow...

www.efsa.europa.eu

25/05/2022

Impacts des produits phytopharmaceutiques sur la biodiversité et les services écosystémiques : résultats de l'exp... IN..

Dans le cadre du programme Ecophyto II+, les ministères en charge de la transition écologique, de l'agriculture et de la recherche ont confié ...

fcsrovaltain.org

18/05/2022

Peer review of the pesticide risk assessment of the active substance triflusulfuron-methyl

EFSA Journal, Volume 20, Issue 5, May 2022.

efsa.onlinelibrary.wiley.com

DROIT ET POLITIQUE DE L'ENVIRONNEMENT

20/06/2022

Micro-organisms

New rules to facilitate access for farmers across Europe to biological alternatives to chemical pesticides.

ec.europa.eu

14/06/2022

Projet ADopT 30 000

Accompagner la dynamique des groupes 30 000 dans la transition agro-écologique Appel à Projet National - Ecophyto 2017 - 2018 Le projet ADopT ...

ecophytopic.fr

10/06/2022

Chemicals: Commission revises the definition of nanomaterials

The European Commission is clarifying the definition of nanomaterials in a new Recommendation.

ec.europa.eu

REVUE DE PRESSE

27/06/2022

Une chercheuse française récompensée dans le domaine de l'extraction des métaux par les plantes

Le 21 juin, à Munich, l'Office européen des brevets (OEB) a décerné l'un de ses prix annuels de l'inventeur européen à une inventrice française. La première depuis 2019. Claude Grison, chercheuse en écochimie au Centre national de la recherche scientifique (CNRS), a...

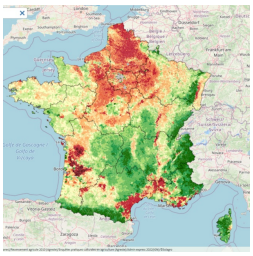
www.actu-environnement.com

23/06/2022

Pesticides et biodiversité : la FNSEA et Jeunes agriculteurs très inquiets des nouvelles contraintes fixées au... agriculteurs

Pesticides et biodiversité : la FNSEA et Jeunes agriculteurs très inquiets des nouvelles contraintes fixées aux agriculteurs n.marchand@reu... jeu ...

www.reussir.fr



23/06/2022

Pesticides: une carte de France des IFT publiée par Solagro

Pesticides: une carte de France des IFT publiée par Solagro v.godement@reu... jeu 23/06/2022 - 10:40 Pesticides ...

www.reussir.fr

22/06/2022

Pesticides : la proposition en trompe-l'œil de la Commission européenne pour réduire de moi... usage

La nouvelle réglementation vise à réduire de 50 % l'usage et les risques des pesticides d'ici à 2030, mais l'indicateur retenu compromet cet ...

www.lemonde.fr

22/06/2022

La Commission européenne veut réduire de moitié l'usage des pesticides

Le projet de règlement presse les Etats d'atteindre l'objectif dès 2030. Des cibles nationales seront fixées et les agriculteurs seront soutenus grâce à la politique agricole commune. Le projet est jugé hors sol par les professionnels dans un contexte d'inquiétudes...

www.lesechos.fr

20/06/2022

Stb16, un gène qui protège le blé de la septoriose - Arvalis

Arvalis participe à des projets de recherche en génétique pour améliorer la tolérance des variétés afin de réduire l'emploi des pesticides. - ...

www.arvalisinstitutduvegetal.fr

17/06/2022

Règlementation pesticides: un enjeu majeur!

Il est urgent de publier rapidement un règlement sur les pesticides qui fixe des objectifs... L'article Règlementation pesticides: un enjeu majeur! ...

www.generations-futures.fr

16/06/2022

Une baisse de l'utilisation des pesticides observée dans l'UE pas assez rapide pour Bruxelles

Une baisse de l'utilisation des pesticides observée dans l'UE pas assez rapide pour Bruxelles Anonyme (non vérifié) jeu 16/06/2022 - 12:48 ...

www.reussir.fr

15/06/2022

Antibiorésistance : des scientifiques appellent à l'action

La pollution pharmaceutique dans un contexte d'augmentation de l'antibiorésistance souligne l'importance d'une approche One Health. Retour sur les derniers résultats de recherche et des leviers pour agir lors d'une journée organisée par Inrae et le Graie.La crise de la...

www.actu-environnement.com

15/06/2022

Une ONG dépose une pétition pour le retrait des SDHI en Europe

À ce jour, Pollinis a obtenu plus de 400 000 signatures de citoyens européens pour l'adoption de tests d'évaluation mieux adaptés aux modes d'actions ...

www.lafranceagricole.fr

14/06/2022

Réduction des pesticides Les 27 réclament du « réalisme » à Bruxelles

Les ministres européens de l'agriculture ont accru lundi la pression sur Bruxelles avant la présentation d'un projet de loi crucial imposant ...

www.terre-net.fr

07/06/2022

Pesticides : les oiseaux ramollissent à leur exposition

Moins vigilants face aux prédateurs, plus apathiques ou amorphes : les oiseaux exposés à des pesticides n'ont rien de vigoureux, constatent des scientifiques français du CNRS. Dans une étude publiée dans la revue Agriculture, Ecosystems & Environment, des...

www.actu-environnement.com

07/06/2022

Statistiques sur les pesticides : les avancées du trilogue européen

Rendu moins contraignant par le Conseil européen, le futur règlement relatif aux statistiques sur les pesticides a été retravaillé dans le cadre d'un trilogue. Cette mouture rassure légèrement les ONG, inquiètes pour l'avenir de ce texte important.

www.actu-environnement.com

07/06/2022

Pesticides : que ressort-il du trilogue du 2 juin sur la réforme des statistiques agricoles ?

Les organisations européennes (ClientEarth, GLOBAL 2000 (FOE Autriche) et PAN Europe) qui suivent de près... L'article Pesticides : que...

www.generations-futures.fr

03/06/2022

Perspectives mondiales des plastiques : scénarios d'action à l'horizon 2060

Une action internationale globale sur la pollution plastique serait plus efficace que des actions régionales, constate l'OCDE. Mais pour qu'une stratégie mondiale se mette en place, il faudra que les pays riches aident les pays en développement.

www.oecd.org

02/06/2022

Pesticides dangereux : « Le Monde » maintient ses informations après la contestation de deux études

La controverse fait rage dans la presse autour d'un rapport de PAN Europe et d'une étude américaine dont Le Monde avait rendu compte.

www.lemonde.fr

31/05/2022

Le glyphosate fait un pas de plus vers sa réautorisation

Le glyphosate fait un pas de plus vers sa réautorisation n.marchand@reu... mar 31/05/2022 - 17:29 Glyphosate ...

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31/05/2022

WEBINAIRE GLYPHOSATE

Après la Commission PEST, les questions autour du glyphosate ne sont toujours pas résolues Ce webinaire en ligne vous permettra de faire le poin...

www.michele-rivasi.eu

31/05/2022

Phyteis réagit au rapport de PAN Europe sur les résidus phytos

Selon l'organisation professionnelle, les niveaux de contamination et les risques pour la santé sont à nuancer du fait de la méthodologie utilisée par l'ONG. De plus, il existe des situations où les producteurs ont peu de marge de manœuvre quant à l'utilisation de solutions...

www.lafranceagricole.fr

30/05/2022

Classification ECHA du glyphosate : déni de science et non-respect du droit européen

L'Agence européenne des produits chimiques (ECHA) vient de décider de maintenir la classification existante du... L'article Classification ECHA ...

www.generations-futures.fr

30/05/2022

Il est urgent de disposer de données publiques précises sur l'utilisation des pesticides en Europe

Générations Futures et des dizaines d'autres ONG européennes publient une déclaration commune sur l'état d'avancement des... L'article Il est ...

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30/05/2022

Pesticides et sites NATURA 2000: participez à la consultation publique

Les sites NATURA 2000 sont des zones de protection et de conservation des habitats naturels... L'article Pesticides et sites NATURA..

www.generations-futures.fr

24/05/2022

Pourquoi la réglementation européenne n'empêche pas la vente de 55 pesticides très dangereux

En dépit du principe de substitution mis en place par l'Europe, censé faire disparaître les substances les plus toxiques du marché, 55 d'entre ...

www.actu-environnement.com

24/05/2022

Pourquoi la réglementation européenne n'empêche pas la vente de 55 pesticides très dangereux

En dépit du principe de substitution mis en place par l'Europe, censé faire disparaître les substances les plus toxiques du marché, 55 d'entre elles sont toujours en vente. Les explications du réseau d'ONG Pan Europe.

www.actu-environnement.com

24/05/2022

Pesticides candidats à la substitution: la dangereuse inaction politique!

55 pesticides très préoccupants candidats à la substitution toujours sur le marché européen et de... L'article Pesticides candidats à la substitution...

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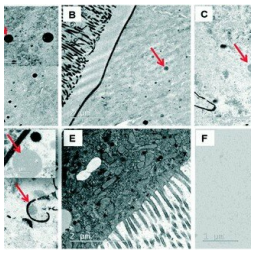


23/05/2022

Monitoring the journey of microplastics through the intestine of a living organism

A UAB research team has managed to track the movement of microplastics during their journey through the intestinal tract of a living organism ...

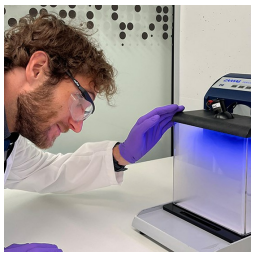
phys.org

19/05/2022

Produits phytopharmaceutiques et biodiversité : les liaisons dangereuses

Largement utilisés dans l'agriculture, les pesticides contaminent l'environnement sur de très larges zones. Leurs actions délétères sur les...

theconversation.com



19/05/2022

Des biotests de meilleure sensibilité sur couche mince

Le Centre Ecotox a mis au point une nouvelle méthode qui permet de déterminer de manière très sensible la toxicité de mélanges de composition...

www.centreecotox.ch

17/05/2022

Sites Natura 2000 : un projet de décret propose d'encadrer l'usage des pesticides par arrêté préfectoral

Un projet de décret permet aux préfets de restreindre l'usage de pesticides dans les sites Natura 2000, lorsque les chartes ne prévoient pas ...

www.actu-environnement.com

17/05/2022

Les NBT : une solution à l'impasse du cuivre

En février dernier, l'Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail (Anses) a rendu publique une ...

www.agriculture-environnement.fr

13/05/2022

Organophosphate pesticides in South African eutrophic estuaries: Spatial distribution, seasonal variation, and ecological risk assessment

The seasonal variation, spatial distribution, and ecological risks of thirteen organophosphate pesticides (OPPs) were studied in the Sundays and Swartkops estuaries in South Africa. Ten pesticides were detected in surface water samples from both estuaries, while all OPPs...

pubmed.ncbi.nlm.nih.gov

11/05/2022

PFAS: Une contamination importante du sol, de l'air et de l'eau par des composés perfluorés

Générations Futures dénonce dans un rapport une contamination importante du sol, de l'air et de... L'article PFAS: Une contamination importante...

www.generations-futures.fr

10/05/2022

Quel impact des pesticides sur la biodiversité : les sept enseignements de l’expertise collective d’Inrae et Ifremer

Quel impact des pesticides sur la biodiversité : les sept enseignements de l’expertise collective d’Inrae et Ifremer n.marchand@reu... mar...

www.reussir.fr

09/05/2022

With Decision on Insecticide, EPA Betrays Protection of Pollinators. . .Again

(Beyond Pesticides, May 9, 2022) While the U.S. Environmental Protection Agency (EPA) updated its guidelines for pollinator risk assessments in 2014, the agency continues to either fail to conduct full assessments, or dismiss concerning data it receives. EPA appears to discount threa...

beyondpesticides.org

06/05/2022

Pesticides Used in Farmed Fish Operations Threaten Health of Swimmers

(Beyond Pesticides, May 6, 2022) A December 2021 report commissioned by the trade group Salmon Scotland concludes that the use of pesticide products by the nation’s salmon farms represents potential risk to “wild” swimmers (those who swim in open ocean waters). The...

beyondpesticides.org

05/05/2022

Impact des phytosanitaires : l'Inrae et l'Ifremer dressent un vaste état des lieux des connaissances

Pendant deux ans, une cinquantaine d'experts ont étudié la littérature scientifique pour faire le point sur les impacts des produits phytopha...

www.actu-environnement.com

Réseau d'écotoxicologie terrestre et aquatique

Fiche thématique N°39 - Juin 2022

L'approche Triade pour améliorer l'analyse du risque environnemental face aux défis de la contamination diffuse des sols

La gestion des risques environnementaux est désormais une priorité face au nombre croissant d'écosystèmes impactés par des activités anthropiques. La nécessité d'outils de diagnostic dédiés à l'évaluation du risque écologique (ERE) s'impose donc dans le contexte de la prévention et de la remédiation des environnements pollués. Les sols représentent des compartiments environnementaux primordiaux qui contribuent à de nombreux services écosystémiques, et leur dégradation suite à différentes pressions anthropiques peut entrainer une détérioration de ces fonctions. En particulier, les sols sont des puits de substances chimiques qui s'y accumulent, qu'il s'agisse de contamination ponctuelle ou diffuse. Les caractéristiques intrinsèques des sols déterminent largement la biodisponibilité des contaminations chimiques, et par conséquent le risque environnemental. Il y a ainsi de nombreux scenarios pour décrire les pollutions chimiques dans les sols, suivant les teneurs mises en cause, l'historique de la contamination, sa chronicité etc. Dans ce panorama, les outils pour l'ERE sont confrontés à leurs limites et nécessitent d'évoluer continument pour mieux s'adapter aux défis imposés par les sols contaminés.

Historiquement, différents cadres pour la réalisation d'une ERE existent, encadrés par des législations nationales ou faisant l'objet de standardisation dans des lignes guides. L'approche la plus simple et directe consiste toujours à mesurer les concentrations d'une ou plusieurs substances dans le sol et à comparer cette teneur totale avec des seuils de risques qui, si dépassés, entrainent différentes actions d'atténuation du risque. Cependant, le problème avec une telle approche est double. Si d'un côté la mesure des teneurs en contaminants est rapide, de l'autre les valeurs seuil ne sont pas toujours existantes et dépendent de plusieurs facteurs tels que la géochimie du sol et l'usage considéré du site. En second lieu, l'information apportée par la seule mesure chimique des teneurs totales est réputée un indicateur restrictif du risque environnemental, d'autant que la disponibilité chimique des contaminants dans un sol n'est prise en compte que rarement. De ce fait, les approches ERE multidisciplinaires semblent bien plus adaptées pour mieux quantifier le risque lié à la pollution chimique. Parmi celles-ci, l'approche dite « Triade » se base sur la complémentarité de différentes disciplines, telles que la chimie, l'écotoxicologie et l'écologie et se veut une mesure du risque écologique plus globale et non plus seulement ancrée qu'aux analyses chimiques.

Principe et déroulement de la Triade

Théorisée initialement par Long et Chapman (Long and Chapman, 1985), la méthode Triade à fait récemment l'objet de standardisation avec la publication d'une norme ISO (ISO 19204, 2017), qui définit le cadre d'usage et les grandes lignes de la démarche. Plus précisément, cette méthode se base sur l'utilisation en parallèle d'outils chimiques, écotoxicologiques et écologiques, organisés en différents faisceaux de preuves, ou « *lines of evidence* (LoE) ». Ces faisceaux de preuves sont structurés en une démarche itérative qui vise à prioriser les méthodes simples et moins onéreuses, avant de progresser vers un niveau de complexité plus important s'il s'avère nécessaire d'améliorer les résultats de la procédure, comme montré en Fig. 1.

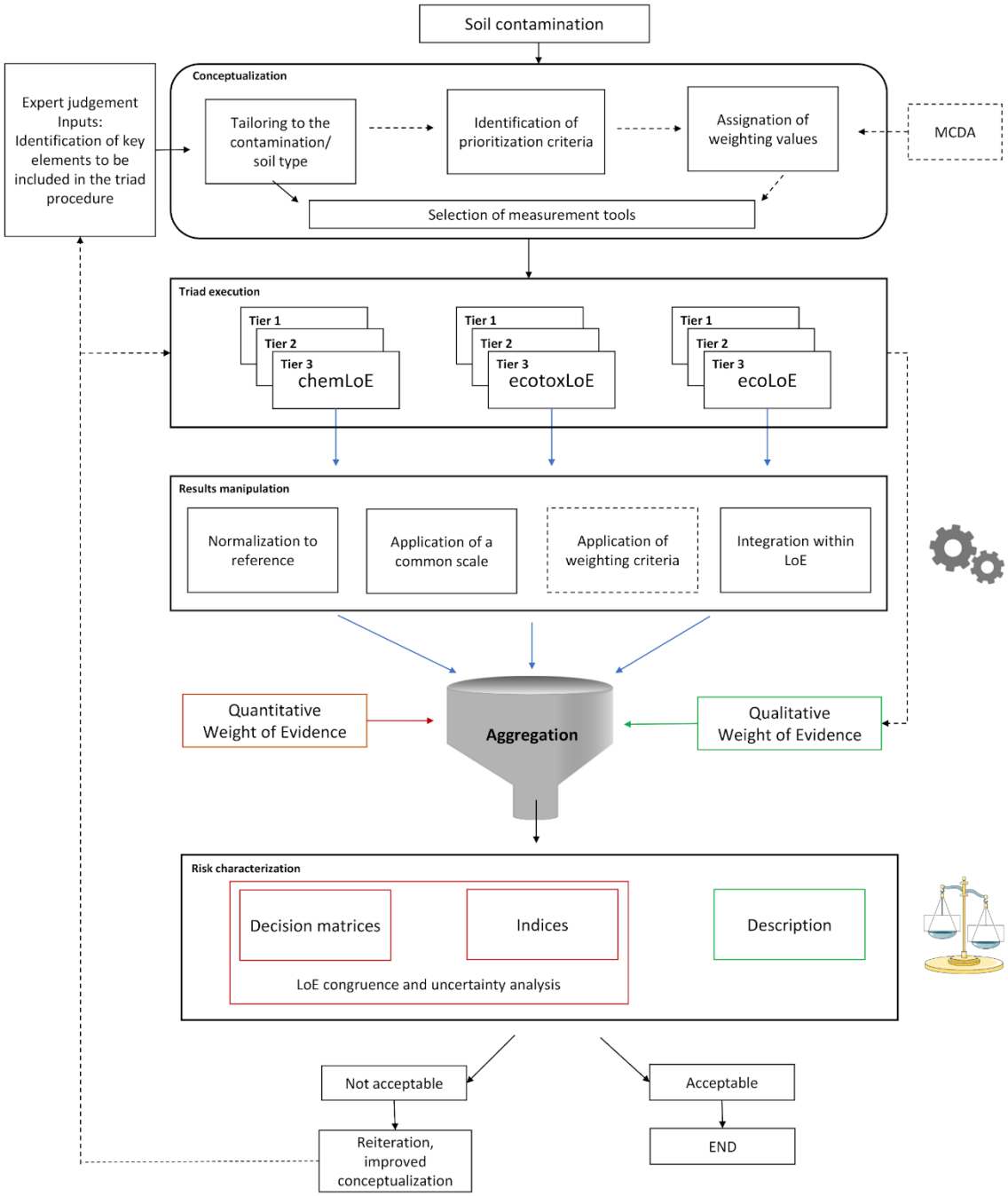


Figure 1. Schema des différentes étapes qui constituent le déroulement d'une ERA au moyen de l'approche Triade, de la formulation du problème à l'execution de analyses et synthèse des résultats. Les lignes pleines indiquent le workflow minimal pour la réalisation d'une Triade, et les lignes pointillées répresentent des integrations possible aux diffèrentes étapes de la procedure (MCDA : multicriteria decision analysis – analyse décisionnelle multicritères)

Classiquement, la méthode préconise trois itérations de la procédure, depuis la première en tant que criblage simple pour arriver à une évaluation détaillée au troisième niveau, avec une complexité croissante des analyses utilisées. Bien qu'il n'existe pas de liste exhaustive des analyses pouvant intégrer les trois LoEs aux différents niveaux, des indications pour le choix de celles-ci sont données dans la norme ISO. En se voulant un outil « site-spécifique », cela permet une grande flexibilité aux utilisateurs qui peuvent décider des contenus de chaque LoE pour mieux s'adapter à leur problématique. Par exemple, la simple mesure des teneurs totales d'une substance dans un sol, bien adaptée pour le premier niveau de la Triade, peut être complétée avec des mesures de leur disponibilité dans les niveaux supérieurs. De la même façon, pour la LoE écotoxicologique, des endpoints de toxicité aigüe ou de tests en batterie sont utilisés dans un premier temps, pour ensuite cibler, par exemple, des effets sublétaux tels que les traits de vie ou de réponses de biomarqueurs. Les investigations écologiques reposent souvent sur des inventaires de couverture végétale au premier niveau, et sur l'étude des communautés d'oligochètes, la diversité microbienne du sol ou la caractérisation de traits fonctionnels d'organismes du sol aux niveaux deux et trois. A l'issue de la phase expérimentale, les résultats sont confrontés avec ceux obtenus sur un sol témoin, normalement aux caractéristiques similaires à celui étudié mais non contaminé, et normalisés pour permettre l'intégration au sein de chaque LoE. Ensuite, un indice de risque final synthétise la contribution de chaque discipline à la mesure du risque environnemental selon une approche de poids de la preuve « *weight-of-evidence (WoE)* », qui vise à intégrer la multidisciplinarité des informations obtenues en évaluant l'ampleur de leurs apports à l'évaluation. Enfin, l'indice de risque final, d'une valeur comprise entre 0 et 1, est comparé à des seuils préalablement établis qui catégorisent le risque lié à la contamination du sol selon une échelle de préoccupation, à la base d'une décision sur la prise d'action ou non face à la contamination du sol. Au moment de l'intégration, la cohérence des indications chimiques, écotoxicologiques et écologiques est évaluée, et en cas d'incongruence (e.g. risque chimique mis en évidence sans correspondance avec effets biologique du même sol) le processus est répété au niveau suivant, jusqu'à ce que l'incertitude associée à l'évaluation soit considérée acceptable.

Applications in situ, problématiques et propositions

Une revue sur l'application de la Triade dans des scenarios réels de contamination des sols (Grassi et al., 2022) a montré l'état actuel de son utilisation. Bien que la Triade présente de nombreux avantages et de potentiel pour une ERE site-spécifique, le nombre d'études appliquées aux écosystèmes terrestres témoigne d'une littérature peu développée autour de ce sujet. En particulier, cette revue a mis en évidence des traits communs des procédures en question. La plupart des sites étudiés étaient impactés par des activités industrielles ayant engendré des émissions locales de substances chimiques, caractérisant les sols concernés comme des « hotspots » de pollution avec des teneurs élevées en contaminants. De plus, les contaminants plus souvent ciblés par l'application de la Triade se limitent aux éléments potentiellement toxiques (PTE ; métaux, éléments en trace) et aux hydrocarbures aromatiques polycycliques (HAP). Si l'ERE a été conçue avant tout pour répondre à l'urgence que présentent les sites fortement contaminés, cela dénote les défis associés à la contamination diffuse des sols, où les teneurs en contaminants sont beaucoup plus faibles, sublétales pour les organismes. En général, les difficultés rencontrées par l'évaluation du risque des sols contaminés de façon diffuse sont plus importantes par rapport aux contaminations aigues, et nécessitent une approche site-spécifique (Posthuma et al., 2008). Par exemple, pour les apports continus de mélanges de contaminants provenant de plusieurs sources spatialement hétérogènes, la mise en évidence des conséquences environnementales est rendue complexe par différents facteurs. Ainsi, les seuils de contamination connus dans la littérature sont peu adaptés à la complexité engendrée par ces faibles

teneurs en contaminants, laissant la place à de nombreux facteurs confondants interférant dans la réponse des organismes. De plus, le processus connu de vieillissement des contaminants dans les sols peut entrainer une diminution de biodisponibilité. Enfin, les batteries de tests plus communément utilisées et qui ciblent des effets aigus ne sont pas adaptés à la mise en évidence d'effets écotoxiques qui se manifestent au niveau sublétal, et par conséquent ne sont pas adaptées pour établir un lien cause-effet. La Triade s'est donc révélée jusqu'à présent comme un outil site-spécifique qui théorise une ERE basée sur les effets biologiques d'un sol contaminé en lien avec les substances qui y sont retrouvées, plutôt que simplement basée sur leur concentration dans le sol. Par contre, les applications concrètes aux sols faiblement contaminés sont rares.

Les méthodes utilisées dans les trois LoEs appartiennent majoritairement au premier niveau. Pour la LoE chimie, cela se traduit concrètement par la mesure des teneurs totales d'éléments traces métalliques (ETM) ou de HAPs et, le cas échéant, le calcul d'indices de risque à partir de celles-ci. En revanche, la fraction disponible de contaminants n'est pas souvent prise en compte et les méthodes telles que les extractions avec agents chélatants pour les ETM sont peu représentées, ou totalement absentes. C'est aussi le cas d'extractions partielles et de méthodes biomimétiques pour les contaminants organiques (Cachada et al., 2014). De façon similaire, les approches écotoxicologiques se limitent souvent à des tests d'immobilisation avec des organismes modèles en aquatique, comme *Daphnia magna,* ou des tests d'évitement avec des organismes du sol. L'utilisation de test d'inhibition de bioluminescence est également très répandue pour le LoE écotoxicologique qui ne va souvent pas au-delà du premier niveau dans la littérature analysée. Finalement, les méthodes écologiques se basent majoritairement sur des inventaires des invertébrés du sol. *In fine*, il n'y a pas de retour important sur l'application de la Triade à l'évaluation du risque liée à la contamination diffuse du sol. Les techniques qui pourraient permettre de mieux déchiffrer les effets liés à ce type de problématique n'enrichissent pas encore de façon systématique l'approche multidisciplinaire mise en place par la Triade.

Il est intéressant de remarquer qu'il y a plusieurs étapes critiques lors de la mise en place de la Triade, qui ressortent de la littérature actuelle sur le sujet. Ainsi, au moment de l'intégration des résultats des LoEs, il y a une perte d'information qui provient de la nécessité de synthétiser des informations de natures différentes. En effet, même-si un compromis entre la réduction de la complexité environnementale et le gain en simplicité d'interprétation est nécessaire pour arriver à un indice final concrètement utile à la catégorisation du risque, il y a souvent une forte discordance entre les LoEs. Ceci impacte la robustesse des résultats et demande le passage au niveau supérieur. Au même temps, les seuils d'incertitude préconisés afin de considérer fiables les résultats de la Triade semblent peu conservatifs et en général questionnent la raison scientifique de divisions si tranchantes. Une solution pourrait être une approche qui permet une meilleure prise en compte de l'incertitude associée aux LoEs et de sa propagation jusqu'à l'estimation du risque final. A cet effet, les networks Bayésiens ont été récemment proposés comme des outils novateurs pour les ERE (Landis, 2021; Moe et al., 2021), en raison des possibilités qu'ils offrent dans le traitement des incertitudes associées avec des données multidisciplinaires. Une autre amélioration en ce sens serait de moduler le pouvoir décisionnel d'une LoE, ou d'une méthode au sein de celle-ci, en établissant des facteurs de poids, ou « *weighting factors* ». Avec un processus décisionnel structuré *a priori*, et basé sur les inputs des experts, la contribution de chaque analyse dans l'ERE site-spécifique du risque serait évaluée selon des critères précis, prenant en compte leur sensibilité, leur pertinence pour le type de contamination, et la capacité de l'information produite à révéler un dommage environnemental. Cette approche serait envisageable pour rééquilibrer les contributions des LoEs et harmoniser les méthodes qui se veulent complémentaires dans le concept de la Triade. En outre, cette démarche pourrait faciliter l'intégration des analyses qui peuvent améliorer la Triade dans le cas de contaminations diffuses. En fait, cela

demande, par exemple, la prise en compte de la biodisponibilité ou de certaines caractéristiques du sol, afin d'orienter l'évaluation du risque vers la fraction de contaminants plus pertinent en terme d'effet toxique. De même, la LoE écotoxicologique devrait prendre en compte plus systématiquement les réponses de biomarqueurs d'exposition et d'effet pour mettre en évidence des effets sublétaux de sols moyennement et faiblement contaminés. Or ceci est à présent peu développé dans une ERE alors que de nombreux biomarqueurs ont démontré dorénavant leur pertinence. A titre d'exemple, bien que des effets au niveau subcellulaire soient détectables chez les organismes impactés par une contamination diffuse, il est encore compliqué dans la pratique de les mettre en relation de façon causale avec le risque environnemental. L'assignation d'un poids à ce type de réponses pourrait formaliser leur contribution dans une démarche WoE, par rapport à des tests écotoxicologiques ciblant des critères d'effet à plus haut niveau d'organisation biologique.

Conclusion

Dans le but d'évaluer les risques liés à une contamination diffuse impactant de nombreux écosystèmes terrestres, l'approche Triade est prometteuse et offre une grande flexibilité aux évaluateurs pour répondre aux spécificités rencontrées. Cependant cet outil à l'interface de la recherche et du management environnemental est encore peu utilisé, alors que de simples aménagements des critères pourraient permettre de rendre compte de la spécificité des écosystèmes faiblement multi-contaminés de façon chronique. Il faut noter que l'année 2022 voit la norme actuelle sur l'utilisation de la Triade remise en révision, ce qui annonce une évolution vers la prise en compte de différents types de milieux, qu'ils soient fortement ou faiblement contaminés.

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Pour en savoir plus

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