SCIENCE OF THE TOTAL ENVIRONMENT
An International Journal for Scientific Research into the Environment and its Relationship with Humankind

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DESCRIPTION

*Science of the Total Environment* is an international journal for publication of original research on the total environment, which includes the atmosphere, hydrosphere, biosphere, lithosphere, and anthroposphere.

totalenvironment.gif

The total environment is characterized where these five spheres overlap. Studies that focus on at least two or three of these will be given primary consideration. Papers reporting results from only one sphere will not be considered. Field studies are given priority over laboratory studies. The total environment is studied when data are collected and described from these five spheres. By definition total environment studies must be multidisciplinary.

Examples of data from the five spheres are given below:

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Subject areas may include, but are not limited to:

- Agriculture, forestry, land use and management
- Air pollution quality and human health
- Contaminant (bio)monitoring and assessment
- Ecosystem services and life cycle assessments
- Ecotoxicology and risk assessment
- Emerging fields including global change and contaminants
- Environmental management and policy
- Environmental remediation
- Environmental sources, processes and global cycling
- Groundwater hydrogeochemistry and modeling
- Human health risk assessment and management
- Nanomaterials in the environment
- Noise in the environment
- Persistent organic pollutants
- Plant science and toxicology
- Remote sensing
- Stress ecology in marine, freshwater and terrestrial ecosystems
• Trace metals and organics in biogeochemical cycles
• Waste and water treatment

The editors discourage submission of papers which describe results from routine surveys or monitoring programs, studies which are local in scope, laboratory experiments, hydroponic or pot studies measuring biochemical/physiological endpoints, food science studies, screening of new plant species for phytoremediation, testing known chemicals in another setting, and experimental studies lacking a testable hypothesis.

The abstract, highlights and conclusions of papers in this journal must contain clear and concise statements as to why the study was done and how readers will benefit from the results. Articles submitted for publication in *Science of the Total Environment* should establish connections among research findings with implications for environmental quality, ecological health, and/or human health.

**AUDIENCE**

Environmental Scientists, Environmental Toxicologists, Ecologists, Chemical/Environmental Engineers, Environmental Health Scientists and Epidemiologists, Risk Scientists, Environmental Science Managers and Administrators.

**IMPACT FACTOR**

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**ABSTRACTING AND INDEXING**

MEDLINE®
CSA Technology Research Database
Current Contents/Agriculture, Biology & Environmental Sciences
Biology & Environmental Sciences
Environmental Periodicals Bibliography
EMBASE
Oceanographic Literature Review
PASCAL/CNRS
Selected Water Resources Abstracts
Sociedad Iberoamericana de Informacion Cientifica (SIIC) Data Bases
Elsevier BIOBASE
Meteorological and Geoastrophysical Abstracts
Scopus

**EDITORIAL BOARD**

*Co-Editors in Chief:*

**Damià Barceló**, Consejo Superior de Investigaciones Científicas (CSIC), Barcelona, Spain
Environmental analysis; Water and soil quality; Organic mass spectrometry; Emerging organic contaminants; Nanomaterials; Biosensors for: Analysis, Fate and Risk of Emerging Pollutants such as Pharmaceuticals and Nanomaterials in the Environment Water Pollution Control and Protection Bridging analytical chemistry with ecotoxicology- toxicity identification; Evaluation techniques used: GC and LC tandem MS, biosensors, sample preparation, automated on-line techniques for water analysis environmental samples (water, including marine waters, sediments soils, biota samples)

**Jay Gan**, University of California, Riverside, Riverside, California, USA
Organic Contaminants; Pesticides; Emerging Contaminants; Adsorption; Transformation; Mitigation; Water Quality; Aquatic Toxicology; Remediation; Water Reuse

*Special Issues Editor*

**Elena Paoletti**, National Research Council of Italy (CNR), Firenze, Italy
Plant health; Plant ecophysiology; Forests; Climate stressors; Air pollution impacts on terrestrial ecosystems; BVOC; Ground-level ozone
**Associate Editors**

**Baoliang Chen**, Zhejiang University, Hangzhou, China  
Soil pollution control and remediation; Traditional and novel functional materials and environmental applications (biochar, graphene, biosorbent, and organoclay); Sorption and reactions of organic and inorganic contaminants with natural and synthesised media; Novel membrane and pollutant abatement

**Jianmin Chen**, Fudan University, Shanghai, China  
Gaseous and particulate air monitoring and chemistry (particularly urban); Secondary aerosol; Haze formation and fog chemistry; Human toxicity of atmospheric particulates; Aerosols and climate impacts

**Frederic Coulon**, Cranfield University, Cranfield, Bedfordshire, England, UK  
Remediation, hazardous waste, water and wastewater treatment; Risk assessment and remediation; Bioaerosols; Hydrocarbons; Environmental microbiology; Antarctic science

**Adrian Covaci**, University of Antwerp, Wilrijk, Belgium  
Human exposure; Exposure assessment; Human health effects; Biomarkers; Food safety; Biomonitoring; Indoor pollution; Emerging contaminants; Legacy contaminants; Wastewater epidemiology

**Xinbin Feng**, Chinese Academy of Sciences (CAS), Guiyang, China  
Mercury biogeochemical cycling in the environment and its health impact; Mercury stable isotope geochemistry and remediation of mercury contaminated lands; Cd, Pb, As and Sb biogeochemical cycling in the environment

**José Virgilio Matos Figueira Cruz**, University of the Azores, Ponta Delgada, Portugal  
Groundwater geology; Groundwater geochemistry; Surface water chemistry; Water quality; Water pollution; Water management; Water planning

**Ashantha Goonetilleke**, Queensland University of Technology, Brisbane, Queensland, Australia  
Water quality; Water pollution; Water reuse; Water treatment; Stormwater pollutant processes; Integrated Water Resources Management; Water infrastructure resilience; climate change adaptation

**Mae Gustin**, University of Nevada at Reno, Reno, Nevada, USA  
Biogeochemical cycling of mercury, metals, and isotopes; Air pollution

**Zhen (Jason) He**, Virginia Tech, Blacksburg, Virginia, USA  
Water pollution and treatment; Environmental biotechnology; Resource recovery from wastes; Bioelectrochemical systems; Bioenergy; Membrane technology; Bioremediation; Desalination

**Patricia A. Holden**, University of California, Santa Barbara, California, USA  
Henner Hollert, RWTH Aachen University (RWTH), Aachen, Germany  
Bioanalytical environmental toxicology; Aquatic toxicology; Triad (Weight of evidence) approaches; Effect directed analysis; Sediments; In-situ investigations and monitoring; In-vitro bioassays; Waste- and ground water investigations (advanced wastewater treatment); Ecology

**Ching-Hua Huang**, Georgia Institute of Technology, Atlanta, Georgia, USA  
Environmental chemistry; Water quality; Physicochemical treatment processes; Drinking water quality; Wastewater reuse; Contaminants of emerging concern; Reaction kinetics and mechanism

**Wei Huang**, Peking University, Beijing, China  
Exposure assessment; Environmental epidemiology; Health intervention

**Pavlos Kassomenos**, University of Ioannina, Ioannina, Greece  
Air pollution; Meteorology; Environmental health; Climate change; Particulates; Ozone; Bioaerosols; Dust transportation; Vehicle emissions; Noise

**Ralf Ludwig**, Ludwig-Maximilians-Universität München (LMU), Munich, Germany  
Hydrology; Water resources management; Climate change; Land use change; Extreme events; Modeling; Remote sensing

**Lidia Morawska**, Queensland University of Technology, Brisbane, Queensland, Australia  
Air pollution; Meteorology; Indoor air pollution; Exposure assessment; Contaminated particulates; VOC; anthropogenic; Characterization; Automotive; Apportionment; Pollution transport; Monitoring: Analytical

**Jose Julio Ortega-Calvo**, Consejo Superior de Investigaciones Científicas (CSIC), Sevilla, Spain  
Biodegradation and biotransformation of organic pollutants in soils and sediments; Bioremediation; Environmental microbiology; Bioavailability and persistence; Risk assessment

**Wei Ouyang**, Beijing Normal University, Beijing, China  
Water environment and climate risk; Watershed environment management; Non-point source modeling and control; Diffuse pollution assessment

**Elena Paoletti**, National Research Council of Italy (CNR), Firenze, Italy  
Plant health; Plant ecophysiology; Forests; Climate stressors; Air pollution impacts on terrestrial ecosystems; BVOC; Ground-level ozone

**Yolanda Picó**, Universitat de València, Valencia, Spain
Media / Habitats: drinking water, water quality, water pollution, rivers, lakes, sediments, watersheds, soils, exposure assessment, human health effects, biomarkers, bioindicators, dietary exposure, food contamination, food safety; Human Health Effects: pesticides, endocrine disruptors, pharmaceutical residues, organics, analytical, surveys

Charlotte Poschenrieder, Universitat Autònoma de Barcelona (UAB), Bellaterra, Spain
Plant-Environment Interactions; Plant-Soil Relationships; Salinity; Plant-Microbe Interactions; Plant Toxicology; Crop Production; Plant Natural Adaptation

Sergi Sabater, Universitat de Girona, Girona, Spain
River and stream ecology; Biofilm ecology and ecotoxicology; Mediterranean; Water scarcity; Ecosystem functioning; Biodiversity; Conservation of rivers

Scott C. Sheridan, Kent State University, Kent, Ohio, USA
Human biometeorology, climate change, synoptic climatology, extreme temperature events

Filip M.G. Tack, Universiteit Gent, Gent, Belgium
Heavy metals; Trace element biogeochemistry; Dredged materials; Soil and sediment remediation; Phytoremediation

Kevin Thomas, University of Queensland, Wooroolongabba, Queensland, Australia
Contaminants of emerging concern; Non-target analysis; High resolution Mass Spectrometry; Microplastics; Biomonitoring

Paola Verlicchi, Università di Ferrara, Ferrara, Italy
Water treatment; Wastewater treatments; Reuse of reclaimed water; Occurrence and removal of pharmaceuticals from (waste)water; Hospital effluent management and treatment; Petrochemical wastewater treatment; Environmental risk assessment

Daniel A. Wunderlin, Universidad Nacional de Cordoba (Argentina), Córdoba, Argentina
Tracing pollutants from their source to foods; Food Integrity, including the evaluation of bioactive compounds in foods; Studying links between food production and environmental pollution

Shuzhen Zhang, Chinese Academy of Sciences (CAS), Beijing, China
soil contamination; Sorption/desorption of organic contaminants; Bioaccumulation and transformation of organic contaminants in the terrestrial environment; Applications of synchrotron-based spectroscopy techniques in environmental chemistry, NOM analysis and effects on contaminant behaviors

Editorial Board

Jésus R. Aboal Viñas, Universidade de Santiago de Compostela, Santiago de Compostella, Spain
Biomonitoring; Moss biomonitoring; Raptor biomonitoring; Algae biomonitoring; PAHs contamination; Heavy metal contamination; Cellular localization of metals; Hydrological fluxes of forest canopies

Souhail R. Al-Abed, U.S. Environmental Protection Agency (EPA), Cincinnati, Ohio, USA
Environmental implication and applications of nanomaterials; Sediment and water remediation; Contaminant (metals and organics) transformations in the environment; Reuse of materials in environmental applications

Takashi Azuma, Osaka University of Pharmaceutical Sciences, Osaka, Japan
Pharmaceuticals and personal care products; Hospital effluent; Water environment; Sewage treatment plant; Occurrence and environmental fate; Water treatment system; Water management; Environmental science; Environmental hygiene; Public health

Roya Bahreini, University of California, Riverside, Riverside, California, USA
Aerosol sources; Formation processes; Composition and microphysical properties; Direct and indirect effects on climate

Carlos Barata, IDAEA-CSIC, Barcelona, Spain
Analytical chemistry; Aquatic toxicology; Environmental risk assessment; Toxicogenomics

Roberto Bargagli, Università degli Studi di Siena, Siena, Italy
environmental biogeochemistry, active and passive biomonitoring of persistent contaminants in terrestrial and aquatic ecosystems

Georgios Bartzas, National Technical University of Athens (NTUA), Athens, Greece
Expertise in Waste management; Environmental monitoring and Risk assessment; Life cycle analysis; Soil and Groundwater decontamination; Geochemical/Thermodynamic modelling; Environmental economics

Ivan Bergier, EMBRAPA Brazil, Corumbá, Brazil
Expertise in sustainable development, particularly in the following areas: environmental services, ecology and biogeochemistry of ecosystems and agroecosystems; Bioenergy; Biofuels; Biochar; Remote sensing; Electron microscopy; Applied to nanotechnology, electronics and automation; Climate change adaptation; Mitigation of greenhouse gases emissions

Harald Biester, Technische Universität Braunschweig, Braunschweig, Germany
Biogeochemical cycling of mercury and trace elements; Biogeochemistry of peatlands
Julian Blasco, Instituto de Ciencias Marinas de Andalucía (CSIC), Puerto Real (Cádiz), Spain
Metals; Pharmaceuticals; Nanoparticles; Pollution; Ecotoxicology; Risk assessment; Seawater; Sediment

Paul Bradley, U.S. Geological Survey (USGS), Columbia, South Carolina, USA
Drinking Water Exposure; Water Quality; Environmental and Public Health; Contaminants of emerging concern; Pharmaceuticals; Water Reuse; Remediation; Environmental microbiology; Urban and Aquatic Ecology

Cristina M. Branquinho, Universidade de Lisboa, Lisbon, Portugal
air quality, water quality, forests, ecological effects, bioavailability, bioindicators, PAHs, Dioxin, nutrients, copper, natural, anthropogenic, diffuse, apportionment, bioremediation, restoration, climate change, eutrophication, desertification, deforestation, monitoring, sequential extraction, remote sensing, moss biomonitoring, lichens, tree rings (dendrochronology), historical monitoring, Africa, Western Europe, Mediterranean region, South America

Satinder Brar Kaur, Institut National de la Recherche Scientifique (INRS), Québec, Quebec, Canada
Wastewater; Wastewater sludge; Treatment; Emerging contaminants; Antibiotics; Fermentation; Value-added bioproducts, such as enzymes, organic acids, platform chemicals, biocontrol agents, biopesticides, butanol and biohydrogen

Birgit Braune, Environment and Climate Change Canada, Ottawa, Ontario, Canada
Arctic, marine ecosystems, birds, metals, organo-compounds, biomonitoring, biological effects.

Bryan W. Brooks, Baylor University, Waco, Texas, USA
Water Quality, Environmental and Aquatic Eco- Toxicology, Risk and Hazard Assessment, Comparative Pharmacology and Toxicology, Environmental Public Health, Harmful Algal Blooms, Green and Sustainable Chemistry, Urban and Aquatic Ecology, Water Reuse.

Giorgio Buonanno, Università degli Studi di Cassino e del Lazio Meridionale, Cassino (FR), Italy
10.020: Air pollution; 10.030: Air quality; 10.040: Indoor air pollution; 70.050: Clean technologies; 80.050: Incineration

Joanna Burger, Rutgers University, Piscataway, New Jersey, USA
Eco-toxicology; Behaviour; Monitoring and assessment; Birds and reptiles

Glòria Caminal Saperas, Consejo Superior de Investigaciones Científicas (CSIC), Barcelona, Spain
Biochemical engineering; Environmental engineering (focused on biodegradation of pollutants by microorganisms or enzymes); Bioreactors; Immobilization; Kinetics

Art Chappelka, Auburn University, Auburn, Alabama, USA
Air pollution and global climate effects to terrestrial ecosystems; Native plant community responses (shifts in diversity) to air pollutants and global climate change; Plant-stress-air pollution/global climate change interactions; Urban ecology and ecosystem services

Da Chen
Environmental chemistry; Analytical chemistry; Ecotoxicology; Persistent organic pollutants; Flame retardants; Pesticides; Mass spectrometry; Gas/liquid chromatography.

Wei Chen, Nankai University, Jinnan District, Tianjin, China
Nanoparticles; Nanomaterials; Adsorption; Reactivity; Transport; Remediation; Groundwater; Soil; Organic contaminants

Joaquín Cochero, Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Buenos Aires, Argentina
Biofilm; Stream ecology; Biomonitoring; Urban streams; Citizen science

Xinyi (Lizzy) Cui, Nanjing University, Nanjing, China
Organics; Bioavailability

Rui da Silva Coutinho, Universidade Dos Açores, Ponta Delgada, Portugal
Hydrogeology, Volcanology, Natural Hazards, Water Resources Management, Environmental Geology.

Guido Del Moro, National Research Council of Italy (CNR), Bari, Italy
novel processes for wastewater treatment, aerobic granular biomass technologies, integration of chemical oxidation and biological processes for industrial wastewater, advanced oxidation processes, electro-degradation processes, wastewater treatment modelling

José L. Domingo, Universitat Rovira i Virgili, Reus, Catalonia, Spain
Avian toxicology; Wildlife toxicology; Ecotoxicology; Physiological, neurological and behavioral effects of contaminants; Developmental exposure; Flame retardants; Pesticides; Dioxin-like compounds

Zhaozhong Feng, Chinese Academy of Sciences (CAS), Beijing, China
Air pollutant; BVOCs; Crop growth; Forest health; N deposition; N use and allocation; Ozone pollution; Photosynthesis and C cycle; Water use efficiency; Urban environment and forestry

Jose Angel Fernández, Universidad de Santiago de Compostela, Santiago de Compostela, Spain
Air pollution; Air quality; Water pollution; Rivers; Ecological effects; Bioavailability; Bioindicators; Aquatic toxicology; Heavy metals; Biomagnification; Bioaccumulation; Surveys; Moss; Biomonitoring; Western Europe

Jean-Francois Focant, Université de Liège, Liège (Sart-Tilman), Belgium
exposure assessment, dietary exposure, food contamination, Human Health Effects, POPs, VOC, PCBs, Dioxin, analytical, measurement methods

Bo Gao, China Inst. of Water Resources and Hydropower (IWHR), Beijing, China
Geochemy of trace metals in environment; Water and sediment transport; Large-scale watershed management

Jorge Gardea-Torresdey, University of Texas at El Paso, El Paso, Texas, USA
Applications of spectroscopy techniques in environmental chemistry; Phytoremediation; Novel methods for the bioproduction of nanoparticles; Development of analytical methods to detect nanomaterials; Study of the fate of nanoparticles in the environment; Applications of nanotechnology to clean water

Leobardo Manuel Gómez Oliván, Universidad Autónoma del Estado de México, Toluca, Mexico
Aquatic toxicology; Fish toxicity; Emerging contaminants; Metals; Genotoxicity; Citotoxicity; Embryotoxicity; Teratogenesis; Oxidative stress; Biomarkers

Daren Gooddy, British Geological Survey, Oxfordshire, England, UK
Groundwater; Biogeochemical cycles; Residence time indicators

Andrew Gray, University of California, Riverside, Riverside, California, USA
Sediment transport; Hydrology; Water quality; Plastic pollution; Watershed sediment dynamics; Sedimentology; Paleoenvironmental analysis

John Gulliver, University of Leicester, Leicester, England, UK
Noise and air pollution exposure assessment; Air pollution monitoring; Dispersion modelling; Land use regression modelling; Geographical information systems; Geo-statistical techniques (Kriging etc.); Spatial analysis of environmental and health data; Geographical studies of environment and health; Health risk assessments

Ying Guo, New York State Department of Health (NYSDOH), Albany, New York, USA
My research interests: (1) biomonitoring organic chemicals in human body, such as phthalates, PAHs, organophosphate pesticide and environmental phenols; (2) monitoring organic pollutants in environment, e.g., persistent organic pollutants; (3) Analytical method development for novel organic contaminants in various environmental matrix. Recently, I am working on Exposome to women with fertility problems.

Neil S. Harris, University of Alberta, Edmonton, Alberta, Canada
Expertise: cadmium, micronutrients, membrane transporters, trace metal uptake and translocation in plants

Roy M. Harrison, University of Birmingham, Birmingham, England, UK
Air Pollution; Atmospheric Science; Environmental Health; Environmental Chemistry; Aerosol Science

Gerard Hoek, Utrecht University, Utrecht, Netherlands
Exposure assessment; Air pollution modelling; Environmental epidemiology

Peter Hooda, Kingston University, Kingston upon Thames, England, UK
Biogeochemical Cycling of Nutrients and Environmental Contaminants; Catchment Water Quality; Land Degradation; Climate Change Impacts on Soil Processes; Emerging Contaminants

Kiril Hristovski, Arizona State University, Mesa, Arizona, USA
Nanomaterials; Water/Wastewater Quality and Treatment; Solid and Hazardous Waste; Developing Countries

Hafiz M. N. Iqbal, Instituto Tecnológico y de Estudios Superiores de Monterrey, Monterrey NL Mexico
Environmental Engineering; Bioengineering; Biomedical Engineering; Bioremediation; Emerging contaminants; Wastewater treatment; Biomaterials; Bio-catalysis; Enzymes; Enzyme-based pollutant degradation; Immobilization; Toxic heavy elements; Liquid and solid waste management; Valorization of agro-industrial wastes and by-products

Rong Ji, Nanjing University, Nanjing, China
Organics; Terrestrial; Biodegradation; Environmental process; Radiotracer

Sunny Jiang, University of California, Irvine, California, USA
Pathogens; Water treatment; Membrane fouling; Microbial water quality; Risk assessments; Water reuse

Weiying Jiang, California Environmental Protection Agency, Sacramento, California, USA
Organics; Pesticides; Dust; Analytics

Begoña Jiménez, Consejo Superior de Investigaciones Científicas (CSIC), Madrid, Spain
Persistent Organic Pollutants (POPs); Dioxins; PCBs; Fate of POPs; Contaminants of emerging concern; Organic pollutants in aquatic and terrestrial ecosystems; Bioindicators; Marine mammals; Air Pollution; Environmental chemistry; Monitoring
Sarah Jovan, Pacific Northwest Forest Inventory and Analysis (PNW-FIA), Portland, Oregon, USA
My greatest expertise is in using lichen community composition for monitoring and quantifying nitrogen pollutants. But I also work with lichen/moss tissue assays (for N, S, metals, PAHs), landscape-scale community-based gradient modeling more generally, and biomass modeling for ground-dwelling non-vascular communities in boreal and tundra systems.

Anna Jurado, Technische Universität Dresden, Dresden, Germany
Aquifer recharge quantification; Emerging organic contaminants; Greenhouse gases; Groundwater quality; Groundwater management; Urban groundwater; River-groundwater interaction; Managed aquifer recharge; Numerical modelling; Quantitative hydrogeology

Athanasios Katsoyiannis, European Commission, Ispra (VA), Italy
Development and optimisation of analytical chemistry techniques and sampling methodologies to the source understanding; Occurrence and fate of organic contaminants in all environmental compartments, including indoor air, atmospheric air, soil, water and/or wastewater

Nerantzis Kazakis, Aristotle University of Thessaloniki, Thessaloniki, Greece
Groundwater modelling; Groundwater vulnerability; Hydrogeochemistry; Hydrogeophysics; Isotope hydrology; Water resources management; Floods; Climate change impacts on water resources; Managed Aquifer Recharge

M.B. Kirkham, Kansas State University, Manhattan, Kansas, USA
Soil-plant-water relations; Drought stress; Elevated carbon dioxide; Uptake of heavy metals by plants

Charles Knapp, University of Strathclyde, Glasgow, Scotland, UK
Microbial ecology; Bacteria; Microorganisms; Wastewater; Surface water; Nutrients; Eutrophication; Antibiotic resistance; Antimicrobial resistance; Molecular ecology

Dana Kolpin, U.S. Geological Survey (USGS), Iowa City, Iowa, USA
Endocrine disruptors; Pharmaceutical residues; Non-point; Pollution transport; Chemical transport

Ewa Korzeniewska, University of Warmia and Mazury, Olsztyn, Poland
Air pollution quality and human health; Contaminant (bio)monitoring and assessment; Ecotoxicology and risk assessment; Environmental management and policy; Human health risk assessment and management; Waste and water treatment; Antibiotic resistance; Biogas production

Prashant Kumar, University of Surrey, Surrey, England, UK
Air quality and health; Airborne ultrafine and nanoparticles; Exposure assessment; Low-cost pollution sensing; Exhaust and non-exhaust emissions; Air pollution control; Grey-grey infrastructure interactions; Indoor air quality; Dispersion modelling; Urban nexus; Future cities/megacities

Keisuke Kuroda, National Institute for Environmental Studies, Fukushima, Japan
Subsurface geochemistry and mitigation technologies of contaminants of emerging concern (CECs)

James Lam, The Education University of Hong Kong, Tai Po, New Territories, Hong Kong
POPs; Emerging contaminants; Risk assessment

Dimitra Lambropoulou, Aristotle University of Thessaloniki, Thessaloniki, Greece
Emerging Contaminants, Organic Pollutants, Transformation Products, Environmental fate, Sample preparation and analysis, Advanced mass spectrometry techniques, Environmental monitoring and risk assessment, water quality, Treatment processes for water and wastewaters

Joakim Larsson, Göteborgs Universitet, Göteborg, Sweden
Antibiotic resistance; Pharmaceuticals in the environment

Juying Li, Shenzhen University, Shenzhen, Guangdong, China
Organics; Bioavailability; Isotopes; Analysis; Degradation; Soil-plant system; Transformation; Toxicity

Shibin Li, Syngenta Crop Protection, Greensboro, North Carolina, USA
Environmental toxicology; Regulatory toxicology; Ecotoxicology; Exposure science; Risk assessment; Product safety

Daohui Lin, Zhejiang University, Hangzhou, China
Nanomaterials; Ecotoxicity; Nantoxicity; Bioavailability; Colloidal behavior; Sorption

Kunde Lin, Xiamen University, Xiamen City, Fujian 361102, China
Organic contaminants; Active sampler

Weiping Liu, Zhejiang University, Hangzhou, China
Organics, monitoring, human health, ecotoxicology

Xiaobo Liu, The University of Hong Kong, Hong Kong SAR, China
Microbial biofilms; Biocatalysis for biosynthesis; Biodegradation of cultural heritages; Microbial electrochemistry; Extracellular electron transfer; Bacterial syntrophy; Environmental microbiology; Fermentation engineering; Biofuel & biomass; Food microbiology and processing; Microbial ecology

Rasha Maal-Bared, EPCOR Water Services, Edmonton, Alberta, Canada
Applied and environmental microbiology; Freshwater microbiology; Drinking water and wastewater; Microorganisms; Pathogens; Biofilms; Antibiotic resistance; Water quality; Water pollution; Food safety; Monitoring
<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Research Interests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheila Macfie</td>
<td>Western University, London, Ontario, Canada</td>
<td>Metal toxicity in plants; Metal localization in plants; Rhizosphere chemistry</td>
</tr>
<tr>
<td>Sonia Manzo</td>
<td>ENEA, Portici, Italy</td>
<td>Ecotoxicology; Nanomaterials; Aquatic environment; Seawater; Microalgae; Seaurchin; Risk assessment</td>
</tr>
<tr>
<td>Adriaan Albert Markus</td>
<td>Deltares, Delft, Netherlands</td>
<td>Water quality modelling; Numerical modelling and programming in various languages (notably Fortran, in relation to numerical modelling); Transport and fate of nanoparticles and microplastics in the aquatic environment</td>
</tr>
<tr>
<td>Ioannis Matiatos</td>
<td>International Atomic Energy Agency (IAEA), Vienna, Austria</td>
<td>Isotope hydrology; Water resources management; Hydrogeochemistry; Groundwater modeling; Applied statistical modeling; Climate change impact; Environmental monitoring; Water quality</td>
</tr>
<tr>
<td>Janine McCartney</td>
<td>HHC Services Inc., Lester, Pennsylvania, USA</td>
<td>Chemical Exposures: Toxic tort, Biomarkers, Industrial Hygiene, Employee chemical exposures and community chemical exposures, Safety Engineering; Arc Flash Analyses and Accidents; Electrical Safety; Falls; Equipment &amp; Machinery; Human Factors; Accident Investigation/ Reconstruction; OSHA; Guarding; Construction; Industrial &amp; Premises Accidents; Oil &amp; Gas Extraction; Pipeline Safety and Refinery Safety; Lead and Electrocrution</td>
</tr>
<tr>
<td>Thomas Meinelt</td>
<td>Institute of Freshwater Ecology and Inland Fisheries, Berlin, Germany</td>
<td>Alternative treatments in aquaculture; Impact (and interaction) of humic substances on environment and animals.</td>
</tr>
<tr>
<td>Derek Muir</td>
<td>Environment and Climate Change Canada, Burlington, Ontario, Canada</td>
<td>Environmental chemistry; Biogeochemistry; Bioaccumulation; Persistent organic pollutants; Chemicals of emerging concern; Chemical inventories; Mercury; Polycyclic aromatic compounds; Arctic; Marine mammals; Fish</td>
</tr>
<tr>
<td>Jacek Namieśnik</td>
<td>Technical University of Gdańsk, Gdańsk, Poland</td>
<td>Environmental analytics and monitoring; Food analysis; QA/QC systems; Green analytical chemistry; Envirometrics</td>
</tr>
<tr>
<td>Howard S. Neufeld</td>
<td>Appalachian State University, Boone, North Carolina, USA</td>
<td>The effects of ozone on plants; The role of anthocyanins in vegetative tissues in plants; Climate change impacts on plants in the southern Appalachian mountains; Measuring plant gas exchange and plant water relations, using the Li-Cor 6400 and 6800 gas exchange systems, a Sperry hydraulic conductivity apparatus and Scholander pressure chamber, as well as a variety of other instrumentation (including leaf fluorescence meter) to monitor plant responses to environmental stresses</td>
</tr>
<tr>
<td>Huu Hao Ngo</td>
<td>University of Technology Sydney, Ultimo, New South Wales, Australia</td>
<td>Water and wastewater treatment and reuse technologies; Alternative water resources; Water management and impact assessment; Solid waste management; Specific green technologies; Water – waste – energy nexus; Greenhouse gas emission control and minimisation</td>
</tr>
<tr>
<td>Hong-Gang Ni</td>
<td>Peking University, Shenzhen, China</td>
<td>Organic pollutants (persistent organic pollutants and environmental molecular markers); Environmental model (process and impact); Human exposure and health risk.</td>
</tr>
<tr>
<td>Fernando Pacheco-Torgal</td>
<td>University of Minho, Guimarães, Portugal</td>
<td>Eco-efficient construction and building materials; Construction and demolition wastes; Geopolymers; Waste recycling; Durability; Mechanical properties; Alkali-activated cement-based binders; Concrete nanotechnology</td>
</tr>
<tr>
<td>Anastasia K. Paschalidou</td>
<td>Democritus University of Thrace, Orestiada, Greece</td>
<td>Air pollution meteorology; Urban meteorology ; Dust transportation; Climate change; Environmental health / Environmental epidemiology; Biometeorology; Synoptic climatology; Dispersion Modeling; Air Quality Indices</td>
</tr>
<tr>
<td>Momir Paunovic</td>
<td>University of Belgrade, Beograd, Serbia</td>
<td>Hydrobiology; Aquatic macroinvertebrates; Freshwater mollusks; Invasive aquatic species; Feeding of benthivorous fish; Functional analyses of aquatic ecosystems; Relation of aquatic biota and environmental variables; Bio-monitoring in freshwater; Genotoxicological investigations on aquatic organisms; Microbiology of freshwaters</td>
</tr>
<tr>
<td>Alexandra Pavlidou</td>
<td>Hellenic Centre for Marine Research, Mavro Lithari, Anavissos, Greece</td>
<td>Eutrophication and eutrophication indexes according to WFD and MSFD; Biogeochemical cycles and nutrient dynamics in marine environments (coastal and open sea)</td>
</tr>
<tr>
<td>Alexandre R. Péry</td>
<td>AgroParisTech, Paris, France</td>
<td>Toxicokinetic modelling; Toxicodynamic modelling; Ecotoxicology; Mixtures; Integrated risk assessment</td>
</tr>
<tr>
<td>Maria Pignata</td>
<td>Universidad Nacional de Cordoba (Argentina), Cordoba, Argentina</td>
<td></td>
</tr>
</tbody>
</table>
Human Health Effects: pesticides, endocrine disruptors, pharmaceutical residues, organics, analytical, surveys

**Xavier Querol**, Consejo Superior de Investigaciones Científicas (CSIC), Barcelona, Spain
Environmental geochemistry; Air quality; Atmospheric aerosols; Tropospheric ozone; Black carbon; Ultrafine particles; Metals; Organic pollutants; Inorganic gaseous pollutants, NO2, NO, NOx, SO2, SO3, CO, NH3; Source apportionment; Urban and regional pollution; Atmosphere and climate change; Air quality policy; Mobile, industrial, domestic and agricultural emissions of air pollutants; Leaching of industrial wastes; Impact of mining on environment; Recycling of industrial wastes; Coal use related pollution

**Clemens Reimann**, Norges geologiske undersøkelse - NGU, Trondheim, Norway
Geochemistry; Environmental Geochemistry; Biogeochemistry; Hydrogeochemistry; Regional Geochemistry; Geochemical mapping; Critical Zone Research; Soil chemistry

**Eric Reiner**, Ontario Ministry of the Environment and Climate Change, Toronto, Ontario, Canada
Gas Chromatography, Liquid Chromatography, mass spectrometry, Quality Control / Quality Assurance, Environmental Analysis.

**Tiina Reponen**, University of Cincinnati, Cincinnati, Ohio, USA
Indoor air pollution; Exposure assessment; Bacteria; Fungi; Microorganisms; Microbiome; Biohazards; Monitoring

**Robert Risebrough**

**Anacleto Rizzo**, IRIDRA, Florence, Italy
Constructed Wetland; Nature-Based Solution for Wastewater Treatment; Sustainable Water Management; Sustainable Sanitation Modelling; Sustainable Urban Drainage Systems; Water Sensitive Urban Design; Low Impact Development; Green Infrastructure; Ecosystem Service

**Teresa Rocha-Santos**, Universidade de Aveiro, Aveiro, Portugal
Micro(nano)plastic; Plastic; Microfibres; Organic contaminants; Marine monitoring; Environmental monitoring; Wastewater treatment; Biodegradation of microplastics; Sensors; Biosensors

**Chelsea M. Rochman**, University of Toronto, Toronto, Ontario, Canada
Marine debris; Plastic debris; Persistent organic pollutants; Aquatic toxicology; Marine ecotoxicology

**David Roser**, UNSW Australia, Sydney, New South Wales, Australia

**Mª Jesús Sánchez-Martín**, IRNASA, CSIC, Salamanca, Spain
Pesticides, soil, water, organic amendments; Adsorption, desorption, degradation, mobility; Soil and water contamination by pesticides and emerging pollutants; Behaviour of pesticides in soils; Influence of organic amendments

**Nan Sang**, Shanxi University, Taiyuan, Shanxi, China
Environmental exposure and health risk of chemicals; Biological effect and toxic mechanism of environmental chemicals

**Ralf Bernhard Schäfer**, Universität Koblenz-Landau, Landau, Germany
Water quality; Rivers; Ecological effects; Chemicals; Aquatic toxicology; Invertebrates; Microorganisms; Modelling; Statistics

**Gabriele E. Schaumann**, Universität Koblenz-Landau, Landau, Germany
Soil quality in agricultural practices; Engineered nanoparticles in the Environment Soil Chemistry; Soil organic matter fate; Transformation of organic and inorganic pollutants

**Jianwen She**, California Department of Public Health, Richmond, California, USA
Environmental analysis; Persistent organic chemical analysis; Biomonitoring; Source apportionment; Non target analysis; Endocrine disruptors; Mass spectrometry

**Wei Shi**, Nanjing University, Nanjing, China
Environmental fate of emerging organic pollutants; Effect directed analysis based on instrumental analysis and bioassays

**Luis Felipe Silva Oliveira**, Universidad de la Costa (CUC), Barranquilla, Colombia
Nanothechnology in Real Samples (in special nanominerals and advanced electron bean); Soil and water researches; Atmosphere impacts (in special particulate matter)

**Andreas Skouloudis**

**Athanasiou S. Stasinakis**, University of the Aegean, Mytilene, Greece
wastewater treatment and reuse; Sludge management; Emerging contaminants; Aquatic pollution; Biodegradation; Ecotoxicity; Risk assessment

Groundwater pollution; Agrochemicals; Emerging contaminants in groundwater; Industrial contaminants in groundwater; Shale gas exploitation

**Qian Sui**, East China University of Science and Technology, Shanghai, China
Pharmaceuticals and personal care products; Micro-plastics; Emerging contaminants; Analytical methods; Environmental behaviors; Source apportionment; Advanced oxidation processes; Treatment processes
Piotr Szefer, Medical University of Gdańsk, Gdańsk, Poland
Biomagnification of major and minor elements along the sequential trophic levels of the marine biosphere; Bioavailability of metallic pollutants to benthic organisms as potential biomonitor in relation to the adjacent sediments and sea water; Analytical and chemometric assessment of food quality

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Wastewater analysis; Sewer-based epidemiology; Air quality monitoring; Air pollution epidemiology; Environmental monitoring

Maria Concetta Tomei, Consiglio Nazionale delle Ricerche (CNR), Rome, Italy
Processes and Technologies for Urban and Industrial Wastewater Treatment; Modelling and Control of Biological Processes, Removal of Xenobiotic Compounds, Two-Phase Partitioning Bioreactors (TPPBs); Sludge Treatment; Soil Bioremediation

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Environmental analysis; Geochemistry; Oceanography; Marine and Antarctic science; Materials science; Human health areas

Richard Van Curen, University of California, Davis, Davis, California, USA
Aerosol Science, atmospheric pollution, climate science, atmospheric modeling

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Soil pollution and remediation; Persistent organic pollutants; Polycyclic aromatic compounds; Antibiotics; Antibiotic resistance; Phthalate ester; Emerging Contaminants; Biochar; Bioavailability; Biodegradation and biotransformation of organic pollutants; Biofilms; Signaling molecules; Analytical method; Environmental monitoring

Wei (Vivienne) Wang, Zhejiang University, Hangzhou, China
Radio-isotopic tracing and photographing; Pesticides; Organic pollutants; Bioavailability; Degradation; Metabolism: chemical analysis

Xiaoping Wang, Chinese Academy of Sciences (CAS), Beijing, China
Global cycling of POPs; Mechanism of long range atmospheric transport; POPs accumulation in polar region; Risk assessment of POPs, Brown carbon; Emerging contaminants;Tibet Plateau

Shaun Watmough, Trent University, Peterborough, Ontario, Canada
Ecosystem biogeochemistry; ecological impact of trace metals; ecosystem acidification; air pollution impacts on ecosystems

Ishwar Chandra Yadav, Tokyo University of Agriculture and Technology, Tokyo, Japan
Persistent organic pollutants; Brominated and phosphate flame retardants; Heavy metal pollution; Aerosols; South Asia; PM2.5; Solid waste; E-waste; Himalayas

Kun Yang, Zhejiang University, Hangzhou, China
Organics, adsorption, organic matter

Samantha Ying, University of California, Riverside, Riverside, California, USA
Trace elements; Soil; Biogeochemistry ; Redox processes; X-ray spectroscopy

Jing You, Jinan University, Guangzhou, China
Organics; Ecotoxicology; Bioavailability; Sediment; Pesticides

Teng Zeng, Syracuse University, Syracuse, New York, USA
Occurrence and fate of organic micro-pollutants; Formation and control of disinfection by-products

Chaosheng Zhang, National University of Ireland, Galway, Ireland
Geographical Information System (GIS); Spatial analysis of environmental variables; Heavy metals; Organic carbon in soils/sediments; Precision Agriculture; E-Waste; Big Data in Environmental Sciences

Xiaowei Zhang, Nanjing University, Nanjing, China
Toxicogenomics of chemicals, Ecogenomics of pollution, Ecotoxicology

Yong Zhang, Xiamen University, Xiamen City, Fujian 361102, China
PAHs; Organic matter; Marine environments
INTRODUCTION

Aims and Scope

Science of the Total Environment is an international journal for publication of original research on the total environment, which includes the atmosphere, hydrosphere, biosphere, lithosphere, and anthroposphere.

totalenvironment.gif-Total Environment

The total environment is characterized where these five spheres overlap. Studies that focus on at least two or three of these will be given primary consideration. Papers reporting results from only one sphere will not be considered. Field studies are given priority over laboratory studies. The total environment is studied when data are collected and described from these five spheres. By definition total environment studies must be multidisciplinary.

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• Groundwater hydrogeochemistry and modeling
• Human health risk assessment and management
• Nanomaterials in the environment
• Noise in the environment
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• Trace metals and organics in biogeochemical cycles
• Waste and water treatment

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