

## Newsletter 3

### Depollution policy

#### Call for establishing a global science-policy body on chemicals and waste



The International Panel on Chemical Pollution (IPCP, <https://www.ipcp.ch/>) is an independent international network of academic researchers in the field of chemical pollution. In an open-access article published on February 18, 2021 in *Science* (<https://www.science.org/doi/10.1126/science.abe9090>), the authors, including a number of IPCP Board Members, explain how limited and fragmented science-policy interactions on chemicals and waste have contributed to widespread health and environmental problems. To show your support, you can fill out the online form (<https://www.ipcp.ch/activities/developing-a-global-science-policy-body-for-chemical-pollution>). In the *Science* article, the authors pledge for international cooperation to address issues that transcend borders, such as the harm done by heavy metals, persistent organic pollutants, and plastic wastes. Such issues are critical in particular for developing countries which are the world's dumping grounds for toxics.

Chemical pollution is a serious global environmental problem next to climate change and biodiversity loss. Despite numerous efforts to curtail and regulate chemicals and waste, major problems and global challenges remain. Exposure to a small fraction of the over 100,000 chemicals in use was estimated to have contributed to over 1.3 million premature deaths in 2017. Harmful chemicals include the PFAS that make our rain jackets waterproof but can cause cancer; pesticides that keep farmland clear of weeds and pests but contribute to killing bees; and metals from the disposal of our used digital devices and electric car batteries that pollute e-waste workers, their families, and the environment. Although such pollution is global, international decision makers do not have a way to stay informed regarding important new scientific findings, limiting their ability to address these threats in a timely fashion.

The authors urge that a global intergovernmental science-policy body for chemicals and waste is necessary to tackle these problems. This body would be analogous to the Intergovernmental Panel on Climate Change (IPCC) for climate change and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Service (IPBES) for loss of biodiversity. Such science-policy body will provide a scientific basis for international and national action on chemicals and waste by conducting authoritative scientific assessments, identifying emerging research concerns, and connecting policy makers and scientists. It would also keep chemicals in use under review throughout their life cycles.

To address this, Switzerland and other UN Member States are intending to propose the establishment of a global science-policy body on chemicals and waste, akin to the Intergovernmental Panel on Climate Change (IPCC) and Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). This proposal will be discussed at the upcoming February 2022 session of the United Nations Environment Assembly, UNEA5.2.

*Prof. Dr. Adrian Covaci, Toxicological Center - University of Antwerp, member DCE-Belgium*

### The problem of plastics



According to the British Plastics Federation 99% of plastics are polymers obtained from non-renewable hydrocarbons, mostly resulted from oil and natural gas. A very small percentage is made from biodegradable polymers like: starch, cellulose, sugars and vegetable oil (<https://www.bpf.co.uk>).

The waste hierarchy pyramid has to be applied in the plastic products management so that the disposal is reduced to zero.



The most common consumer products include packaging (bags, containers, food packaging film), containers (milk bottles, shampoo bottles, ice cream and yogurt tubs), and PET (bottles for water, juices, etc.). Together these products represent about 36% of plastics worldwide (UNEP 2018; Geyer 2020).

Based on the *Eurostat* data, North America and Europe are the highest plastic consumers per capita yearly, with 94 kg and 85 kg, respectively.

Plastics are also used in construction, textiles, vehicles and equipments. In this case, plastics have a longer life span than packaging plastics. Their useful lifetime may range from five years (textiles and electrical equipment) to 20 years (construction materials, industrial machinery) (<https://www.circularonline.co.uk/>)

Among the consequences of the disposal of plastic materials, marine pollution became an urgent problem of global concern. Millions of tons of plastics are discharged threatening the life in oceans and not only. Effective measures have to be taken to solve the problem of marine plastic pollution.



Between 2018 and 2020 ten formal proposals were submitted related to a global instrument to address the plastics crisis. Among these are included:

- *A new global framework for plastics* (European Union);
- *A convention on Plastic Pollution* (Center for International Environmental Law (CIEL), Environmental Investigation Agency (EIA), Global Alliance for Incinerator Alternatives (GAIA), and #breakfreefromplastic);
- *A new legally binding agreement/instrument* (the African Group);

- *A new legally binding instrument/Treaty* (World Wide Fund for Nature (WWF));
- *A global architecture that includes existing and new, voluntary or potentially legally binding elements, in a multi-layered, governance approach* (Switzerland);
- *A global treaty / An overarching legally binding global framework* (Philippines);
- *A global treaty within the UN* (Vietnam);
- *A new dedicated global agreement* (Norway);
- *A new global agreement/a framework agreement* (Nordic countries).

The purpose of the future policy is the development and adoption of a new global instrument governing the **life cycle of plastics**.

The opportunity to develop a new policy is the fifth United Nation Environment Assembly (Nairobi 2022). A special session celebrating the 50<sup>th</sup> anniversary of the United Nation Environment Program will be held. The topic of this session is: "*Strengthening UNEP for the implementation of the environmental dimension of the 2030 Agenda for Sustainable Development.*"

The climate crisis cannot be solved by only one country or continent but by all nations.

*Emeritus Professor Michaela Dina Stanescu  
Romanian Chemical Society, member DCE*

## News from the DCE

### Conferences



### DCE Webinar on Covid 19 and the environment

on Thursday 18 November, 15:00 Brussels time

The division of chemistry and the environment organized a webinar regarding Covid 19 and the environment. The webinar took place on November 18<sup>th</sup>, 2021.

The chair of the division and delegate from the Association of Greek Chemists, Professor Ioannis Katsoyiannis, and Professor Roland Kallenborn, treasurer of the division and delegate from the Norwegian Chemical Society introduced the webinar and welcomed the participants. Three lectures comprised the scientific program of the webinar. First presentation was given by professor Theodore Karapantsios from Aristotle University of Thessaloniki, Greece under the title: *Contribution of Wastewater Based*

*Epidemiology (WBE) to community COVID-19 surveillance.* Second speaker was Dr. Teresa Moreno, director of the Institute of Environmental Assessment and Water Research, Spain with the title: *Aerosol transmission of human pathogens.* The third speaker, Dr. Nikolaos Evangelidou, for NILU, Norway, talked about the changes in black carbon emissions over Europe and China due to Covid 19.

More than 250 participants attended the webinar and after the end of the presentations a very interesting discussion took place. The experience was very positive and the division of Chemistry and the Environment will organize again in the future similar events.

*Professor Dr. Ioannis Katsoyiannis Chair of DCE, member DCE-Greece*

### **Overview of the 21st Meeting on Environmental Chemistry, EMEC21, Novi Sad, Serbia**

The 21st European Meeting on Environmental Chemistry, EMEC21, was jointly organized by the **Association of Chemistry and the Environment (ACE)**, **Serbian Chemical Society (SHD)**, and Matica Srpska in Novi Sad, Serbia, from November 30 - December 3, 2021. President of the Scientific Committee of the Conference was Jan Schwarzbauer (Germany), the President of the Organizing Committee, Branimir Jovančičević (Serbia), the President of the Executive Committee, Vladimir Beškoski (Serbia). Wide range of topics was included in the programme in the field of analytical methods applied in environmental science, environmental technologies, waste management and recycling, monitoring and processes in environmental compartments, green chemistry, remediation, eco-toxicology and biomarkers, sustainable development and food chemistry. Around 150 scientists from 19 countries participated. In total, 4 plenary lectures, 8 section lectures, 46 oral communications and 91 posters were presented and discussed among participants. Plenary topics included "*The cloud of microbiota- Microorganisms-H<sub>2</sub>O<sub>2</sub> interactions*" by Anne-Marie Delort (Institut de Chimie de Clermont-Ferrand, Université Clermont Auvergne, Aubierre, France), "*Emerging food contaminants*" by Tatjana Ćirković-Veličković (University of Belgrade, Faculty of Chemistry, Belgrade, Serbia), "*Mechanisms of the formation of disinfection by-products in water treatment*" by Albert Lebedev (Department of

Organic Chemistry, Moscow State University, Moscow, Russia) and "*A closer look at the elemental composition of macrofungi, with a focus on arsenic*" by Walter Gössler (Institut für Chemie Universität Graz, Austria). Section lecturers were Jasmina Nikodinović-Runić (Serbia), Vesna Antić (Serbia), Pierro Bellanova (Germany), Lydia Niemi (Great Britain), Sonja Kaišarević (Serbia), Hideyuki Inui (Japan), Tatjana Andjelković (Serbia) and Djurdja Kerkez (Serbia). Book of Abstracts was printed for the conference participants (edited by Ivana Ivančev-Tumbas, Vladimir Beškoski and Aleksandra Šajnović). The meeting was successfully organized in difficult pandemic situation by respecting pandemic measures and for the first time, in hybrid mode. It was placed in unique audience of Matica Srpska

(<https://www.maticasrpska.org.rs/en/matica-srpska/>), the oldest Serbian literary, cultural and scientific society. Two researchers were awarded prizes for the best oral presentations, Luisa Bellanova (RWTH Aachen University, Germany) and Konstantin B. Ilijević (Faculty of Chemistry, Belgrade University, Serbia) and 6 researchers were awarded for their poster presentations. An attractive cultural and social programme was organized, too. More details about the conference are available at the ACE web site (<http://www.europeanace.com/index.php>).

*Prof. Dr. Branimir Jovančičević, University of Belgrade, Faculty of Chemistry, Prof. Dr. Ivana Ivančev-Tumbas, University of Novi Sad, Faculty of Sciences, member DCE-Serbia*

Due to the Covid 19 the traditional ICCE conferences will be held as follows:

- **ICCE 2023 in Venice, Italy;**
- **ICCE 2025 in Belgrade, Serbia;**
- **ICCE 2027 in Gdańsk, Poland.**

The announcement will be done in due time.

Other scientific events of interest:

**1st Green and Sustainable Analytical Chemistry**, 14-16.03.2022, On-line (see EUCHEMS site)

**8th EUCHEMS Chemistry Congress**, 28.08-1.09, Lisbon.

**International Conference on Environmental Engineering and Management (ICEEM11)** 8-10 September 2021, Muttenz, Switzerland

**Third International Conference on Anaerobic Biological Dehalogenation DehaloCon III**, 27-30 September 2021, Rome, Italy

## National Section for young chemists

The **Junge Umweltchemie & Ökotoxikologie (JUCÖT, Young Environmental Chemistry and Ecotoxicology)** (<https://en.gdch.de/network-structures/gdch-structures/environmental-chemistry-ecotoxicology/junge-umweltchemie-oekotoxikologie.html>) was founded as the youth wing of the German Chemical Society (GDCh)'s **Division of Environmental Chemistry and Ecotoxicology** (<https://en.gdch.de/network-structures/divisions/environmental-chemistry-and-ecotoxicology.html>) in April 2021. The first meeting of **JUCÖT, Junge Umweltchemie Forum (JUF, Young Environmental Chemistry Forum)**, took place online on September 6<sup>th</sup>, 2021, in German language. **JUF** gathered 15 participants and started with an exciting presentation on “*Biocides in food, products and agencies*” i.e., showcasing scientific and legal/administrational aspects, by Stefanie Wieck from the **Federal Environmental Agency (UBA)**, Dessau-Roßlau. The following seven presentations, given by junior scientists, were on chemical processes in environmental media, instrumental and effect-oriented environmental analysis, and nano-sized particles/nano-materials. **JUCÖT** ([jucoet@gdch.de](mailto:jucoet@gdch.de)) looks forward to meet again soon in person/presence format. The next event **JUF 2022**, entitled “*Perspectives Day*”, is dedicated to the work environments for environmental chemists and eco-toxicologists in agencies, industries and consulting, which hosted the event.

*Prof. Dr. Gerhard Lammel, Max Planck Institute for Chemistry, Mainz, member DCE-Germany*

## Environmental research in European Universities and Research Institutions



**Research Development and Innovation Institute in Natural and Technical Sciences**

of “**Aurel Vlaicu**” University from Arad (**ICDISTN**) was created to address several priority areas (materials, products and processes, health, environment, agriculture, food security and safety). Two research centers form the **ICDISTN: Research Centre in Natural and Technical Sciences** (developed mainly with financial support from European Union - Project POSCCE 621/2014) and **Research Centre in Intelligence Systems**. Other research centers from different faculties are affiliated with the **ICDISTN** and use the infrastructure. A new **Research Center in Bio-Eco-Sustainable Economy** will be built in the next two years (developed with financial support from the European Union - Project POC128019/2021).



The main objective of the **ICDISTN** is to promote research in the field of natural sciences as advanced materials, environmental science and engineering, biology, biochemistry, analytical chemistry, mathematics, and food technology. **ICDISTN** strategy for research development in the “**Aurel Vlaicu**” University includes supporting people to apply for national and international projects, consulting services for industry, participation in congresses, conferences, innovation fairs, and patent applications and implementation of different technologies or products. In the laboratories of **ICDISTN**, the Ph.D. students from the Environmental Engineering Doctoral School are working.



Regarding the environmental engineering study, within the *Faculty of Food Engineering, Tourism, and Environmental Protection*, there is a bachelor program:

*BioTechnical and Ecological Systems Engineering* and a master program: *Environmental Engineering: Assessment & Control*. Starting with 2019 in the Interdisciplinary Doctoral School of Aurel Vlaicu University, there is the domain of Environmental Engineering with four Ph.D. supervisors (accredited by ARACIS in 2021).

The infrastructure of **ICDISTN** is one of the most modern in Romania. It includes the unique QTOF MS with Ionic Mobility System in Europe, GCGC MSMS with thermo-desorption system, UHPLC-MSMS system (configurations unique in Romania), an outstanding microscopy laboratory (in which there are AFM-RAMAN system, optical microscope with fluorescence system, SEM, and TEM) and other laboratories for samples preparation and extraction. The link for the **ICDISTN** web page is: <https://www.uav.ro/en/academic/scientific-research/research-institutes-and-centers/the-institute-for-research-development-and-innovation-in-natural-and-technical-sciences>

There are a number of international and national projects coordinated by the members of the Institute. Prof. Dr. Florentina Munteanu coordinated an international project: FP7- NMP-2008-LARGE-2, Project No. 228827-*"Folate-based nanobiodevices for integrated diagnosis/ therapy targeting chronic inflammatory diseases"*, during 2008-2013 and three national projects: (i) 2014-2017-PN2, a Collaborative Project for Applied Research, *"Interatomic of Galactosaminoglycans in the Extracellular Matrix by Advanced Mass Spectrometry"*, ii) 2010-2012-PN2, Capacities, Module III, *"Folate-based nanobiodevices for integrated diagnosis/therapy targeting chronic inflammatory diseases"*, (iii) 2017-2018 - PN3, Romania-France Bilateral Cooperation Projects, BM46, *"Valorization of winemaking by-products-applications for waste water treatment"*.

Prof. Dr. Lucian Copolovici coordinated three institutional development projects won within the CNFIS competitions: CNFIS-FDI Project -2018-0347, Pilot-scale distillation laboratory for student practice (value 275,660 RON); CNFIS-FDI project-2019-0150, Pilot-scale laboratory for processing meat products (value 246,000 RON); CNFIS FDI 2020-0178 project, Laboratory for environmental quality assessment for student practice, (value 260,000 RON).

There are currently four ongoing projects (all with environmental engineering themes) as follows: *"Closing the value chains in the bio-economy by obtaining innovative bioproducts required by the market"*

PROSPER, Project PN-III-P1-1.2-PCCDI-2017-0569, UAV Manager: Prof. Dr. Habil. Florentina Munteanu; *"Nanoparticles from natural waste with potential medical applications"*, PN-III-P1-1.1-PD-2019-0607, Director: Dr. Cristian Moisa, Mentor: Prof. Dr. Habil. Dana Copolovici, *"The influence of abiotic factors on the physiological characteristics and of the secondary metabolites from aromatic plants"*, PN-III-P1-1.1-PD-2019, Director: CS III Dr. Andreea Lupitu, Mentor: Prof. Dr. Habil. Lucian Copolovici, *"The impact of abiotic and biotic stress on plants due to climate change"*, Project PN-III-P4-ID-PCE-2020-0410, Director: Prof. Dr. Habil. Lucian Copolovici.

International scientific communications session of "Aurel Vlaicu" University ISREIE takes place every two years, supporting and promoting the capitalization of scientific research results.

Most of the research presented during the Scientific Communications Sessions is published subsequently in the University journal *"Scientific and Technical Bulletin. Series Chemistry, Food Science & Engineering"*



*.Prof. Dr. Habil Lucian Copolovici University Aurel Vlaicu of Arad, Romania*

## **DCE publication**

**Environmental Science and Pollution Research (ESPR)** *A scientific journal with a broad interdisciplinary outlook.*

4.223 (2020) Impact factor; Q2

**Editor in chief:** Philippe Garrigues



Our journal covers all areas of Environmental Science and related subjects, with emphasis on chemical compounds.

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Environmental Science and Pollution Research (ESPR) serves the international community in all areas of Environmental Science and related subjects with emphasis on chemical compounds. It reports from a broad interdisciplinary outlook. Apart from the strictly scientific contributions as research articles (short and full papers) and reviews, ESPR publishes: news & views from research and technology, legislation and regulation, hardware and software, education, literature, institutions, organizations, conferences.

Editorial Policy is directed to the maximum benefit to the environmental community, the journal has the following features: ESPR represents the international perspective, with emphasis on the natural

generally chemically oriented but cover all the broad areas within environmental science.

ESPR was conceived as a truly international scientific journal. Information from ESPR should also be useful for planning lectures and university environmental curricula.

*Prof. Dr. Philippe Garrigues, DCE member-France*

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sciences but also includes the impacts of legislation, regulation, and the economy on pollution control; and ESPR articles are