operations in last years are performed both legally and illegally, with the increased use of heavy machinery to recover larger quantities of alluvial material. Altogether with Hg amalgamation, ASGM process allows obtaining gold-rich silts. However, intense ASGM activity in bench sides and river shores allows the release of large amounts of pollutants to the environment as tailings in addition to Hg, including mainly arsenic (As), cobalt (Co), lead (Pb), manganese (Mn), and zinc (Zn), which are mostly known carcinogens, exposing surrounding populations to unknown additive/synergic effects in health. In the present study, we assessed cytogenetic damage in isolated human peripheral lymphocytes using the cytokinesis-block micronucleus cytome assay (CBMN-Cyt) and its association with multi-elemental exposure in exposed populations, evaluated in hair samples via Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES). The study population comprised 112 healthy subjects, 39 individuals from the municipality of Cotorra (Reference area) in Colombia considered as non-exposed, and 73 residents from several municipalities pertaining to "La Mojana" region, an area with a well-documented Hg contamination and an intense gold mining activity. Data showed a significant increase in micronuclei (MNBN), nucleoplasmic bridges (NPB) and necrotic and apoptotic cells frequencies in binucleated cells of individuals with residential proximity to ASGM areas. Hair samples showed that essential elements Mg, Mn, V and Sr were increased in exposed residents, whereas toxic elements such as Pb, Hg, As, Cd and Ba presented a similar behavior. Hg showed positive association with MNBN, whereas increased Mn and Pb levels correlated with NPB. Since MNBN frequency in lymphocytes is considered as a predictive biomarker of cancer risk, our current report provides important evidence suggesting that populations living in proximity to ASGM show higher frequencies of chromosomal damage and multi-elemental exposure that could be associated with initial steps in the cancer development.\n

TP023 Heavy metals (arsenic, cadmium and lead) in rice grains (Oryza sativa L.) on sale in Colombia, dietary exposure calculations and risk assessment S. Mosquera González , Universidad de Los Andes / Ingeniería Civil y Ambiental; J. Husserl Orjuela, Universidad de Los Andes / Department of Civil and Environmental Engineering. Rice is the third cereal produced and consumed worldwide after corn and wheat. It is a cereal with high nutritional value. In Colombia, 73% of the population consumes rice on daily basis. The presence of heavy metals such as As, Cd, Cr, Hg and Pb in rice due to mining, industrial processes, pesticides, chemical fertilizers and irrigation of crops with contaminated water has become an object of study. Prolonged exposures to these pollutants may cause cancer in lung, stomach, kidney and skin. In some recent studies the ingestion doses of these heavy metals exceed the established maximum limits (RfD) and cancer risk of 1 per 1.000.000 cases. Therefore, the aim of this project was to establish an analytical methodology (by microwave assisted digestion and quantification by optical emission spectroscopy by inductive coupling plasma ICP-OES) to quantify As, Cd and Pb in white rice in Colombia. This methodology will be used to analyze rice samples to determine the risk of consumins rice in Colombia. Preliminary results show concentrations of 114.5±42.5 µg Kg-1 As, < 32.2 µg Kg-1 Cd and < 154.9 µg Kg-1 Pb in white rice. These preliminary results show the presence of heavy metals in white rice that is commercialized in Colombia and the importance of proposing a methodology of risk analysis through a pilot test\n

TP024 Identification and quantification of pesticide residues, present in the coastal lagoon, Laguna Madre de Dios, Limón, Costa Rica V. Villalobos, Universdad Nacional Costa Rica / IRET; C. Ruepert, Universidad Nacional Costa Rica / Central American Institute for Studies on Toxic Substances IRET. The Laguna Madre de Dios, is an estuary located in the Costa Rican Caribbean, a site of scenic beauty, and rich in aquatic and terrestrial ecosystems. Unfortunately, this place is threatened by the runoff of nutrients and pesticides, which come from nearby crops (banana, rice and pineapple). The agricultural impact has reached the point of causing massive mortalities of fish, including large fish such as shad, bass and snapper. The presence of these pollutants and their effects on biota, has been studied in the lagoon since 2005, registering over the years, an increase in the variety and concentration of these toxic substances. The presence of pesticide residues, was monitored during 2016-2017, in 11 fieldtrips, for five sampling sites in the lagoon, with a total 40 surface water samples. Surface water samples were extracted by solid phase. The analytical techniques used, for the identification and quantification of pesticide residues, were gas chromatography with mass detector and liquid chromatography coupled to a triple-quadrupole detector (UPLC-MS / MS).More than 23 pesticide residues were detected; herbicides; as ametryn (0.50?g/L), bromacil (0.15 ?g/L), hexazinone (0.33?g/L) and diuron (0.36?g/L); insecticides; such as buprofesin (0.56?g/L), diazinon (0.3?g/L), fenamiphos (0.15?g /L) and ethoprofos (0.6?g/L), fungicides; as boscalid (0.27 ?g /L), azoxystrobin (2.70?g/L), chlorothalonil (0.08?g /L), tebuconazole (0.17 ?g/L), diphenoconazole (0.26?g/L),thiabendazole (0.72µg /L), epoxiconazole, (0.95µg/L) myclobutanil (0.17µg /L), fluopyram (0.21µg /L), flutalonil (0.20?g /L) triadimefon (0.20 ?g /L), triadimenol (0.31?g/L), metalaxyl (0.06?g/L), pyrimethanil (0.18?g /L) and propiconazole (0.08?g /L). According to the Classification of Risk for Acute Toxicity proposed by Arias-Andrés et al. 2016, some of the concentrations detected in substances such as ametryn, diuron, hexazinone, buprofezin, azoxystrobin, thiabendazole, epoxiconazole and ethoprofos, exceed the levels that represent a high risk for the biodiversity of the aquatic ecosystems in the lagoon urgent to intervene in actions to protect it.\n\n\n

TP025 In silico identification of protein targets for three optical brighteners I. Castro, Universidad de Cartagena / Environmental and Computational Chemistry Group. School of Pharmaceutical Sciences.; J. Olivero-Verbel, University of Cartagena / Environmental and Computational Chemistry Group. School of Pharmaceutical Sciences.. Optical brighteners (OB) are fluorescent whitening agents extensively used in a broad range of everyday products, such as paper, detergents, and plastics. The generalized exposure to these chemicals is of concern, as well as their capacity to migrate from packing materials into food. However, little is known about the potential risks they represent to the environment and human health. The aim of this study was to use molecular docking tools to identify possible target proteins and signaling pathways modulated by three OBs (DAST, DASC-4 and FWA-1). PharmMapper web server was used to identify human proteins contained in PharmTargetDB with the potential to generate energetically-stable complexes with each examined OB. Selected proteins were subsequently downloaded from Protein Data Bank (PDB), prepared using Sybyl-X, and then used for docking studies with the Gaussian-optimized OB structures. The best docking af?nity values (lower than -9.0 kcal/mol) were found for complexes formed between OBs and nuclear receptors ERbeta, RARgamma, PPAR; as well as with proteins involved in the metabolism of glutathione, apoptosis, insulin pathway, and phospholipid metabolism, among others. FWA-1 was the chemical that exhibited the greatest binding affinities for target proteins. Results presented here suggest OBs have the potential capacity to act as endocrine disruptors and alter mechanisms involved in oxidative stress and cell death. In short, OBs could be potentially active chemicals that should be subjected to greater toxicological scrutiny to minimize human and environmental risks.\n

TP026 Influence of seasonal variation and air mass trajectories in the mutagenicity of atmospheric particulate matter l.c. silva, Universidade Federal do Cariri / Instituto de Formação de Educadores; G. Umbuzeiro, School of Technology- UNICAMP / LAEG Lab of Ecotoxicology and Genotoxicity; A. Cardoso, Universidade Estadual Paulista / Analytical. Rainfall patterns, displacement of air masses and anthropic activity may modified the composition and amount of atmospheric particulate matter (PM). Understanding how these changes affect PM mutagenicity is a scientific challenge. This study aimed to verify whether the seasonal variation and air mass trajectories are affecting PM mutagenicity from a metropolitan region under the influence of both urban (as intense motor vehicle traffic) and agricultural activities (as sugarcane plantation). Particulate matter samples were collected by High Volume Sampler using fiberglass filters