matory responses. Such biomarkers would be of value to diagnose whether an exposed individual would be at risk for persistent lung injuries. *Methods*: BALB/c mice were exposed to 200 ppm Cl_2, during 15 min (nose-only). The experiment terminated after 2 h, 6 h, 12 h, 24 h, 48 h and 72 h, respectively. Inflammatory cell counts in bronchoalveolar lavage, analysis of inflammatory mediators, wet/dry lung weight ratio (edema) and lung histology was conducted at each time-point. Lung mechanics was performed in mice after 24 and 48 h, respectively. *Results and conclusions of the study*: In our mouse model there was a marked acute response at 12 h post exposure as indicated by changes in lung function, induced lung edema, increased airway reactivity and an airway inflammation dominated by macrophages and neutrophils in both central and peripheral airways. The inflammation declined rapidly and animals appeared to be almost normalized after 72 h. Markers of acute lung injury will be correlated with late-phase responses developed at 28 and 90 days post exposure. In conclusion, this model can be used for improved understanding of adverse inflammatory responses following inhalation of chlorine and for identification of biomarkers for diagnostic use.

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P03-04
Effect of nephrotoxic treatment with gentamicin on rats exposed to fluoride

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Fluoride (F−) is a frequent contaminant in drinking water. Several studies support its deleterious effects on renal function, particularly at proximal tubule level. However, the existing studies used high F− levels (>100 mg/L, via drinking water) and insensitive and nonspecific biomarkers. The aim of this study was to determine the kidney injury induced by F− exposure at environmental relevant concentrations and if this event would increase the susceptibility to renal damage caused by gentamicin, a well-known nephrotoxic agent.

Male rats were exposed to F− at 0, 15 or 50 mg/L, through drinking water for 40 days. Other groups, received gentamicin (40 mg/kg/day, 7 days, sc) plus F− (0, 15 or 50 mg/L). At the end of the exposure period, Kim-1 and Clusterin, novel markers of tubular injure were measured in urine.

Renal abnormalities were not observed at 15 mg/L of F−. However, mean urinary Kim-1 was significantly higher in rats treated with 50 mgF−/L, 10.3 (±7.1) vs. Control 3.8 (±2.5) ng/day. While in co-exposure to F− and gentamicin the median urinary concentration for Kim-1 was 5735 (1974–29,240) vs. Control 249 (66.9–2025) ng/day. Similar results were observed for urinary Clusterin: rats exposed to 50 mg F−/L presented a mean of and 655 (±321.8) vs. Control 277.5 (±154.8) ng/day. While rats exposed to 50 mg F−/L – and gentamicin-treatment, the median of Clusterin was 4460 (2866–6410) vs. Control 197.8 (61.82–311) ng/day. Exposure to F− induced elevation in urinary Kim-1 and Clusterin and enhances gentamicin sensitivity to nefrotoxic effects.

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P03-05
Proteomic approach for the detection of biomarkers of exposure in mussels exposed to PCB

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Purpose: In the current study, a preliminary proteomic approach has been used in *Mytilus galloprovincialis* as a screening of changes in protein expression caused by a mixture of polychlorinated biphenyls (PCBs), in order to characterize the effects of PCBs on the protein profile and to develop new molecular biomarkers, after identifying the proteins more drastically altered. *Methods*: Mussels were exposed for three weeks to three polychlorinated biphenyls under controlled conditions. The edible parts were homogenized and lyophilized. Extracted proteins were quantified and separated by two-dimensional electrophoresis (2-DE) in IPG strips (pH 3–10). The protein spots in gels were visualized by Coomassie Brilliant Blue staining. Gel images were obtained using a Image Scanner. Image analysis included spot detection, quantification and matching. The volume of each spot from each gel was normalized to the total gel spot volume in order to correct it for differences in gel staining. More than 500 spots were resolved and altered expression was qualitatively detected. *Results and conclusions of the study*: Our results showed a well conserved protein pattern regardless of the treatments, demonstrating that the exposition to the PCB mixture did not impair the normal physiological function of the mussels. However, the levels of a restricted number of proteins were clearly and reproducibly affected by the treatment; therefore, these polypeptides were considered promising biomarker candidates.

In conclusion, even if further studies are needed to validate these findings, our data demonstrated that proteomic approach represents a valuable tool for identifying biomarkers of exposure to environmental contaminants.

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P03-06
Neopterin as a predictive biomarker in bitumen workers

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Bitumen is a complex mixture of agents derived from the distillation of crude petroleum oil. It is widely used in road paving and roofing. During hot applications of bitumen, volatile compounds, mainly consisting of aliphatic hydrocarbons, are released. The International Agency for Research on Cancer (IARC) has classified extracts of steam-refined and air-refined bitumen in Group 2B as possible human carcinogens. Occupational health and safety is a field that involves many disciplines which are dealing with occupational toxicity. Chemicals are found in many workplaces and require careful attention to avoid overt acute poisoning as well as long-term health effects that may occur. Today it is known that neopterin is mainly produced by activated monocytes/macrophages and is a marker of immune activation. Increased neopterin concentrations are observed in diseases