

## Illustration of the situation of air, water and soil pollution in the region of Moldova Noua (Romania) at the beginning of project

By consulting published scientific papers and reports of the Romanian National Agency of Environment, we have extracted data regarding the quality of air, water and soil in the region of Moldova Noua, around the Tăușani–Boșneag pond, one of the three tailing ponds related to the former mining enterprise from the Moldova Nouă and situated between Moldova Veche and Coronini villages. These three tailings ponds contain about 30 million m<sup>3</sup> of tailings covering an area of 130 hectares with a height of 20-22.5 meters and are one of the main sources of environmental pollution of the surrounding areas due to the mining waste.

The content of various particles, especially heavy metals, in the air around the tailing ponds in Moldova Noua in the period 2017-2019, is presented in Figure 1.

Annual average values measured in 2017 - 2019 period for air pollution at Moldova Nouă, Romania

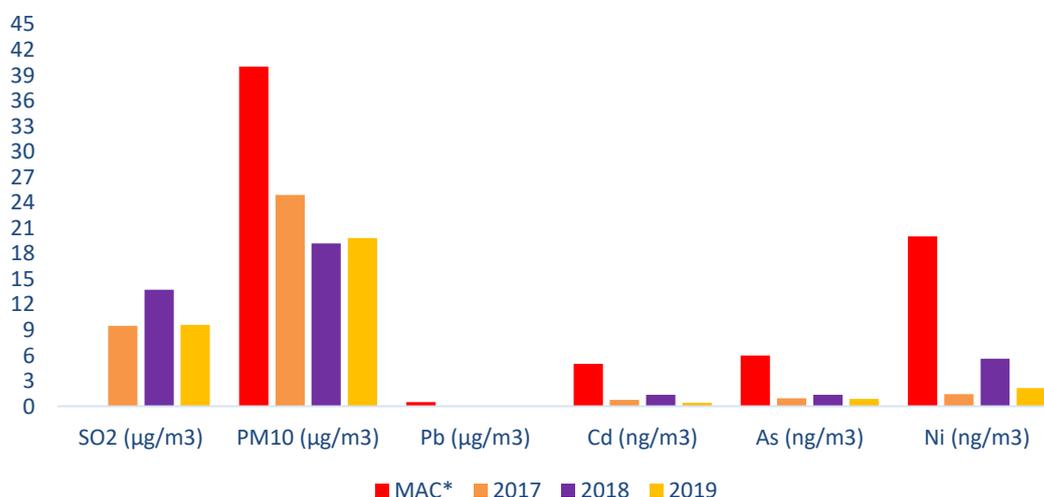


Figure 1. Illustration of the average content of air pollutants, especially heavy metals, in the Moldova Noua area in the period 2017-2019: MAC - maximum admissible concentration.

Figure 1 illustrates that all of the heavy metals and other air pollutants have concentration under the maximum admissible concentrations. These are annual average values, but occasionally every of these values may be higher, especially in windy conditions.

Figure 2 illustrates the mean values registered in the period 2014-2017 (last data that were available), for the concentrations of heavy metals in the water of Bosneag river, a direct affluent of Danube, with the confluence point being situated near the tailing ponds in Moldova Veche. The concentration of heavy metals have been also registered and illustrate din Figure 2. Figure 3 emphasizes the concentrations of heavy metals registers in the sediment from the Bosneag river in 2017.

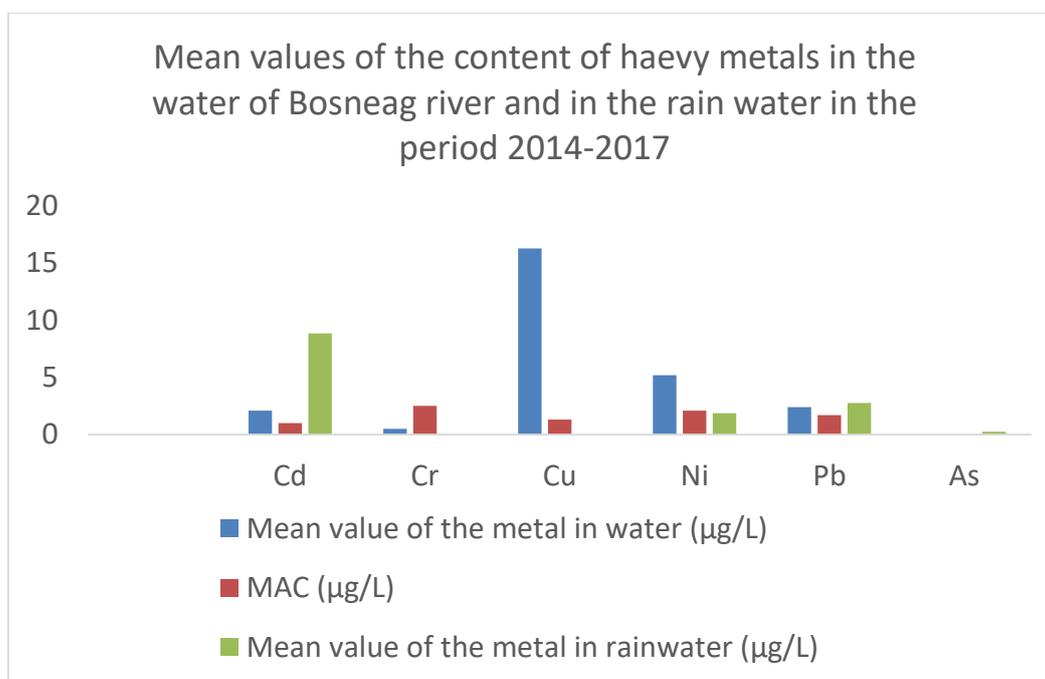


Figure 2. Illustration of the mean values of the content of heavy metals in the water of the Bosneag river and in the rain water in the period 2014-2017: MAC- maximum admissible concentration.

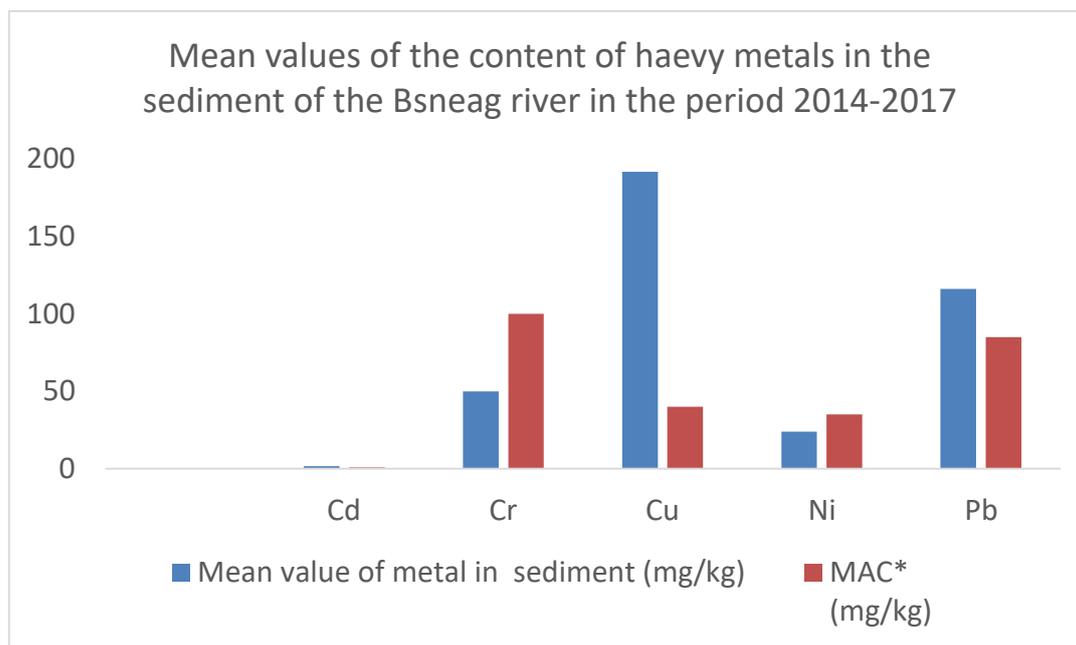


Figure 3. Illustration of the mean values of the content of heavy metals in sediment of the Bosneag river in the period 2014-2017: MAC- maximum admissible concentration.

The case of zinc is not illustrated in Figures 2 and 3, as its concentrations are much higher than those of the other metals: 1249.0  $\mu\text{g/L}$  in water of the Bosneag river (not available date for MAC) and 365.7  $\mu\text{g/L}$  in sediment of the Bosneag river, the MAC values being 1507  $\mu\text{g/L}$ .

If the content in heavy metals of the air in the region of Moldova Noua was under the maximum admissible values for all registered metals, the situation is quite different for the water quality. Many heavy metals exceed the maximum admissible values in the river and rain water: Cd, Ni, Cu, Pb. The content of Cu and Ni also exceed maximum admissible values in the sediment of Bosneag river.

Figure 4 illustrates the situation of soil pollution with heavy metals in the region of Moldova Noua, Tausani-Bosneag tailing pond. Data were registered in 2015 (last data available).

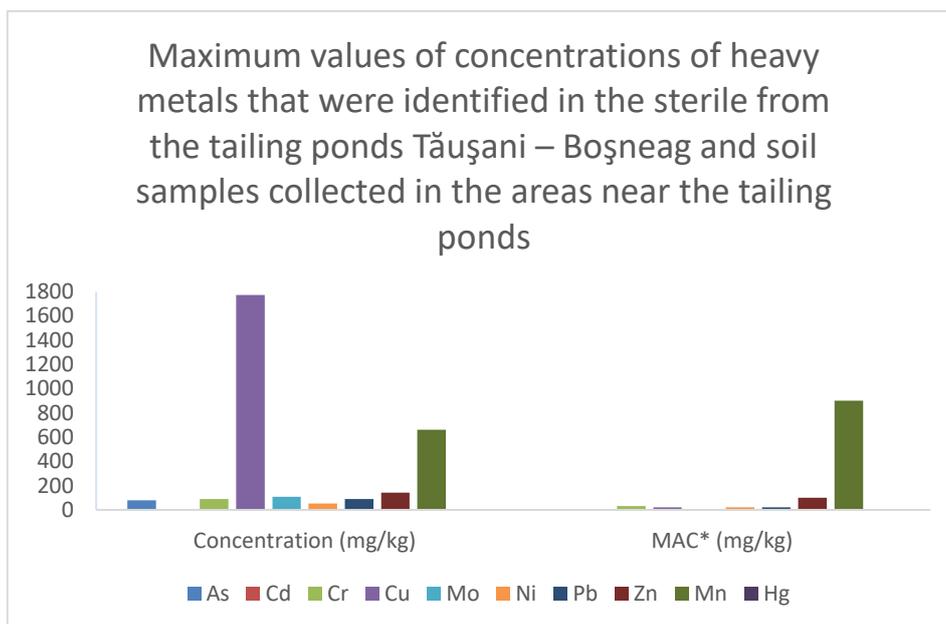


Figure 4. Illustration of the maximum values of the content of heavy metals in the soil around Tausani-Bosneag tailing ponds. MAC- maximum admissible concentration.

As expected, sterile and soil around Tausani-Bosneag tailing ponds contains high amount of heavy metals. All registered values are higher than the maximum admissible concentrations, Cu and Mn being the most abundant.

## Selected references

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