

# Monitoring of air quality in an iron foundry (Case of NO<sub>x</sub>, SO<sub>2</sub>, benzene and dust)

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**Abstract:** The requirements as regards ecology are imposed more and more by the legislator. The cast iron foundries, using the cupola furnace like means of fusion and several other materials for the clothes industry of the moulds and the cores, produce a great quantity of noxious gas and dust. These pollutants are discharged into the atmosphere and are very harmful for the human health of the workers and the environment bordering the sites of production. So, our study relates to the monitoring of polluting gases such as: the SO<sub>2</sub> and NO<sub>x</sub> continuously during a working station by passive sensors and to measure the dust level reigning in the various workshops of the foundry by the method of decantation (method of Bergeroff). All these pollutants are known for their harmful effect on human health. The strategic aims had by this study is to index the atmospheric emissions, to determine the level of the air pollution generated by the activity of a manufacturing unit of castings out of cast iron using like moulding the traditional process, to determine the peaks of concentration of polluting gases (SO<sub>2</sub> and NO<sub>x</sub>), to quantify and analyze pollution by the suspended particles, to work out a cartography of the air pollution and to compare the values obtained relating to the current situation with limiting values. The results of taken measurements showed a very strong pollution reaching of the values 333.6 µg/m for benzene (C<sub>6</sub>H<sub>6</sub>), 508.2 µg/m for the dioxide of sulfur (SO<sub>2</sub>) and 722.4 µg/m for oxides of nitrogen (NO<sub>x</sub>). The concentrations of dusts are in on this side limiting value of WHO. Their chemical analysis showed the presence of much silica and iron.

**Keywords :** cast iron foundry, gaseous pollutant, atmosphere, dust, values WHO.