

## Study of the concentration of mercury in coal used in combustion, in an area of Boyacá, Colombia, South America

**Sonia Guerra L, Daniel Ballen, Manuel Romero, Luis Carlos Ospina**  
**Servicio Geológico Colombiano, Dirección de Laboratorios, Grupo de Caracterización y Procesamiento de Minerales y Carbones, Diagonal 53 No 34-53, Bogotá, D.C., Colombia**  
 sguerra@sgc.gov.co vballen@sgc.gov.co, mhrmero@sgc.gov.co, lcospina@sgc.gov.co  
 with the collaboration of all the members of the group

**Keywords:** *mercury, coal, combustion,*

### Abstract

The most important emissions of mercury are anthropogenic, being 70% of these generated, mainly by the steel industry, combustion plants with power exceeding 50 MW coal and the incineration of waste materials.

According to research of the Colombian Geological Service policies – known as SGC, the Only Plan of mercury and the Strategic Sector Plan for the eliminate the mercury use, a project that studies the occurrence of mercury in the charcoal in an area of Boyacá is developed as an integral part in the generation of geoscientist knowledge of the subsoil of the national territory. In this context, and in order to establish a baseline of the mercury content in the coals of the area Sogamoso - Tunja and its effect on combustion processes, Characterization and Processing of Minerals and Coal group carried out 84 samples in front of mines of 16 municipalities of the area, characterizing samples in 24 parameters, physic-chemical and petrographic, obtaining an important input in aspects of: classification, research in combustion, mercury in the combustion cycle, evaluation environmental, social and economic. It includes an analysis of mercury and its relations with the other measured parameters, given its importance in the production of coal energy and the associated environmental impact. For the samples was determined the concentration of mercury using a direct mercury Analyzer DMA-80 Milestone tricell. The average content of mercury in dried base in analyzed samples is 127 µg/kg. 89% of the coals have values less than 300 µg/kg. According to the results, an acceptable significant direct correlation was identified between the mercury content with Ash, sulfur, pyritic sulfur, and no correlation with chlorine content which reacts in the combustion.



This information and that obtained in the samplings of coal, bottom ash and flyers, as well as measurements of mercury in chimneys and air quality in the area of influence of the Thermoelectric will be used to:

- Study the mercury in the combustion cycle of coal, from the mine to the emissions.
- Study the impact of the mercury in the direct influence of the thermoelectric
- Elaborate of a map about the mercury content of geological origin in the carboniferous basins of the country.