

**POLITECHNIKA ŚLĄSKA**  
**WYDZIAŁ GÓRNICTWA I GEOLOGII**

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**ROZPRAWA DOKTORSKA**

**WPLYW PARAMETRÓW STRUMIENIA ZRASZAJĄCEGO  
NA REDUKCJĘ ZAPYLENIA GENEROWANEGO  
PRZEZ KOMBAJN ŚCIANOWY**

Promotor

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**IMPACT OF PARAMETERS OF SPRAYING STREAM  
ON REDUCTION OF CONCENTRATION OF DUST GENERATED  
BY LONGWALL SHEARER**

Determination of impact of parameters of spraying stream on reduction of dust generated by mining the solid coal by longwall shearer was the cognitive objective of the work.

Essential scope of work included the following actions:

- identification of dust concentration around the longwall shearer,
- analysis of size of water drops in a spraying stream,
- laboratory tests simulating the flow of dust-laden air in area of shearer's arm and operator's stand,
- determination of impact of the mentioned factors on effectiveness of dust control on the basis of comparative analysis including especially the following relationships:
  - impact of the separated fraction of drops in a spraying stream on effectiveness of dust reduction in relation to each fraction of dust particles at two different rates of airflow,
  - impact of spraying intensity on effectiveness in reducing the dust concentration considering size of drops, size of dust particles and two different rates of airflow,
  - effectiveness in reducing the dust concentration considering the same influential factors two types of dust (of different content of inflammable particles).

Effectiveness of dust control was determined on the basis of comparison of dust concentration with use of water spraying stream of specified parameters and without spraying. Comparison of the results from testing all combination of parameters enabled assessing the impact of each factor on dust control efficiency with use of statistical analysis.

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Zulaj*