

COMPARATIVE EVALUATION OF CALCIUM FEED PHOSPHATE PRODUCTION METHODS USING LIFE CYCLE ASSESSMENT

ZYGMUNT KOWALSKI¹, JOANNA KULCZYCKA², GRZEGORZ SKOWRON³,
AGNIESZKA SOBCZAK³

¹ Institute of Environmental Engineering of the Polish Academy of Sciences
ul. M. Skłodowskiej-Curie 34, 41-819 Zabrze, Poland

² Mineral and Energy Economy Research Institute of the Polish Academy of Sciences
ul. Wybickiego 7, 31-261 Kraków, Poland

³ Cracow University of Technology, Institute of Inorganic Chemistry and Technology
ul. Warszawska 24, 31-155 Kraków, Poland

Keywords: dicalcium feed phosphates, defluorinated feed phosphate, LCA method, environmental evaluation.

Summary

This paper presents a comparative analysis of feed phosphates production processes using the Life Cycle Assessment (LCA) methodology and process analysis in the quantification of cumulated calculation. Three feed phosphates production processes were compared: a modified thermal process and two different low temperature endothermic units (one working in the “Bonarka” Inorganic Works (BIW) in Cracow and the other in the Phosphoric Fertilizers Works (PFW) “Fosfory” in Gdańsk). The LCA results indicated that the most advantageous technology is the feed phosphates production unit in “Fosfory”. It was shown that LCA can be an efficient instrument for evaluating environmental impact, though it should be compared with other estimation methods.