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Abstract Index

Soelistijo, Ukar W. (R&D Centre for Mineral and Coal Technology)
Control of Illegal Mining (PETI) in Indonesia : Policy and Program
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The activity program of illegal mining prevention and tackling which constitutes non-formal enterprise and employing job within the outlying regions becomes as part of the regional development program in which may include community development program as well. Community development in the sector of energy and mineral resources is the program of community empowerment including the community of illegal mining (PETI) is directed toward self-sustainability in the enterprise in lieu of the order of formal enterprise and employing job.

The management handling of illegal mining prevention and tackling program may include the components of identification of the PETI causal factors, the system of registering and mapping PETI distribution, the system of state financial loss estimation (fiscal and non-fiscal), mapping PETI players, mapping organization related to the development and supervision of PETI including its type of job and function, system of PETI prevention, tackling system of PETI impacts, systematization of the effort of PETI prevention and tackling. Successfulness indicator of PETI prevention and tackling may include the progressive and active response of PETI players and the sustainability in terms of social-economics, human and environment as well. The implementation of PETI prevention and tackling faces various challenges and opportunities which should be anticipated.

Whatever in the living circle of the people humanbeing is based on the philosophy of eager to live in the right track in term of law enforcement or legal. At one time, the living of PETI must be left which functions presently as temporary economic safety valve even with very high risk, while formal job has not been yet found out. Somehow, the government has moral responsibility to make the people alive by creating good quality of enterprise and job. The effort of PETI curb is expected to be able to carry out systematically, well-planned and well-directed up to the whole and entire goal is well reached for the shake of nation and state glory and prosperity.

Keywords: Illegal mining (PETI), policy, prevention and tackling program, direction/solution

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Improvement of Low Rank Coal Properties by Various Upgrading Processes
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A low rank coal from Banko, South Sumatera was used to study the properties improvement of the coal due to coal upgrading process. Various coal upgrading processes were conducted i.e. upgraded brown coal (UBC), hot water drying (HWD) and steam drying (SD). The UBC process was carried out in pilot scale with a capacity of 5 tons/day at temperature of 160°C and pressure of 0.35 MPa, while the HWD and SD processes were conducted in laboratory scale using autoclave at the temperature of 300ºC and pressure of about 12 MPa for 1 hour. The result indicates that the properties of Banko coals after the UBC, HWD and SD processes were improved. The calorific value of the upgraded coals was significantly increased in relevant to the decreasing of inherent moisture content and have better combustion characteristics than that of the raw coal. The highest calorific value can be achieved by SD process, followed by HWD and UBC processes.

Keywords: low rank coal, inherent moisture, calorific value

Monika, Ika and Suprapto, Slamet (R&D Centre for Mineral and Coal Technology)
Production of Activated Carbon from Subbituminous Coal Using Rotary Kiln and Cyclone Burner
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Research on the production of activated carbon from coal has been carried out by Research and Development Center for Mineral and Coal Technology since 1980 in the laboratory as well as pilot plant scale. Production of activated carbon from coal using rotary kiln and oil burner at the pilot plant of 1 ton/day has been carried out successfully to produce good quality product. To reduce the dependence upon using oil fuel, the oil fuel burner was replaced by coal fueled cyclone burner. Product quality and economic evaluation of the production of activated carbon using the burners are described in this paper. The coal used was subbituminous coal from Air Laya, South Sumatera**.** The coal passing 3 cm screen was carbonized at 500-600° C for 2 hours to produce good quality char. The variables of activation process observed

were consisted of particle size of char (+6, -6+12 and -12 +20 mesh) and residence time (1.5, 3 and 6 hours). The results showed that the optimum condition for activation process was using particle size of -6+12 mesh and residence time at a minimum of 3 hours. The activated carbon produced showed quality which fairly met the requirement of Indonesian Industrial Standard with iodine number of 600-800 mg/g compared with standard of 750-1200 mg/g and market quality of 400-1200 mg/g. Eventhough the adsorption capacity obtained was at the lowest limit of the Indonesian Industrial Standard, however the pre utilization test showed that the product could be used for treatment of shrimp farms water.

Keywords: activated carbon, coal, rotary kiln, cyclone burner

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Toxicology Test on Coal Ash from Asam-Asam Coal Fired Power Plant, Tanah Laut - South Kalimantan

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The utilization of coal at Asam-asam Coal Fired Power Plant produces a by-product of ash waste that consists of either coal ash or bottom ash. The power plant produces 720 tons of coal ash each year that threatens the environment due to pollution to surrounding waters. Based on the Government Regulation No. 85/1999, coal produces hazardous and toxic wastes. Due to that situation, toxicology test has been conducted on coal ash using *Cyprinus carpio L*. The research also analyzed chemical composition of the ash, Toxicity Characteristic Leaching Procedure (TLCP) test as well as determined the acute characteristic by setting Lethal Concentration 50 (LC50).

Chemical analysis shows that the almost 90% of coal ash and bottom ash are comprise SiO_2, Al_2O_3, and Fe_2O_3. The TCLP test using atomic absorption spectrophotometer shows that heavy metals with in the coal ash filtrate were Pb (3.1 ppm), Zn (4.3 ppm), Cd (0.2 ppm), Cu (2.2 ppm), but As and Cr were not detected; in the bottom ash. there were Zn (3.1 ppm), Cu (0.2 ppm), while Pb, Cd, As and Cr were not detected. It suggests that the power plant heavy metals with in the coal ash was still the quality standard as regulated by the Government Decree No. 85/1999 and US EPA. Therefore the coal ash is not categorized as hazardous and poisonous waste. Moreover, the result of acute toxicity test conducted by examining the number of dead fish, shows that the LC concentration values of fly ash and bottom ash are 20.564% (205,640 ppm) and 11.637% (116,370 ppm). Referring to the Association of Australian Petroleum Energy criteria of LC50 toxicity, the coal ash from Asam-asam is a non toxic waste.

Keywords: Coal ash, toxicology test, TCLP test, coal fired plant

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De-Zincing of Lead-Copper Sulphide Minerals Flotation

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Typical lead-copper-zinc sulphide minerals were found hard to be separated selectively by froth flotation in the plant practice operation due to part of sphalerite was progressively entrapped into lead-copper bulk flotation. A series of de-zincing on lead-copper flotation tests has been conducted in the laboratory to reduce unwanted zinc content. Dosages variation of common sphalerite depressant such as sodium cyanide, sodium bisulphite combined with zinc sulphate were employed in addition to flotation time and pH regulators alteration. The flotation results exhibit that lesser zinc component is still presence in lead-copper concentrate due to intricate association of the minerals particle. However, this study in general performs tendency of de-zincing requirement as well as improvement of lead-copper recovery by increasing consumption of such depressant agent and may regrind otherwise.

Keywords: froth flotation, lead-copper-zinc sulphide ore, de-zincing, flotation reagent