

# Dampak penggunaan bahan bakar batubara terhadap keluhan sistem pernafasan dan gangguan faal paru pekerja pada industri di Kecamatan Majalaya Kabupaten Bandung tahun 2007 = The effect of coal use on respiratory complaints and pulmonary disorder of the workers at Kecamatan Majalaya Community, Bandung in 2007

Nur Aminah Soediredja, author

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## Abstrak

Sejalan dengan meningkatnya harga BBM di Indonesia sejak tiga tahun terakhir terjadi peningkatan penggunaan bahan bakar batubara sebagai pengganti solar dan residu dengan alasan ekonomi. Di Kabupaten Bandung penggunaan bahan bakar batubara yang berisi air, uapan hasil pemanasan ini dialirkan ke tiap ruangan unmk pmses indusui. Penggunaan batubara kakan berdampak terhadap kesehatan berupa keluhan sistem pernafasan, gangguan faal paru bersifat obstruktif restriktif dan campuran. Desain penelitian adalah Studi Cross Sectional lmtuk mengetahui hubungan dampak penggunaan bahu bakar batubara dengm keluhan sistem pemafrican dan gangguan faal pada pekerja pada industri di kecamatan Majalaya Kabupamen Bandung Tahun 2007. Dilakukan pengujian antara faktor dependen (keluhan sistem pernafasan dan gangguan faal paru) dengan independen (Radar NO<sub>2</sub>, SO<sub>2</sub>, CO, CO<sub>2</sub>, PMN dan debu respirabel), dan faktor confounding (kebiasan mkok, lama kerja, APD), karakteristik pekerja (status sizi, riwayat penyakit, umur. Hasil telitian menunjukkan bahwa kadar NO<sub>2</sub>, SO<sub>2</sub>, CO, dan CO<sub>2</sub> semuanya (100%) kurang atau sama dengan NAB sedangkan PM<sub>10</sub>, semuanya (100%) melebihi NAB, debu respirabel sebesar 97,1% melebihi NAB, nanmn di semna industli NAB gabungan melebihi angka 1. Prevalensi keluhan sistem pemaihsan sebesar 71,4%, gangguan hal pam 16,2%. Gangguan faal paru bC¥hl1b\lD@11 bermakna dengan penggunaan APD. Sehingga dapat dibuat model yaitu logit gngguan faal paru=-1,946 + 5,266\*APD. Dari model di atas dapat dijelaskan bahwa pekerja yang bekerja di ruangan boiler batubara yang tidak menggunakan APD akan mempunyai risiko terjadinya gangguan faal pam sebesar 5 kali dibanding pekerja yang bekezza di ruangan boiler batubara yang menggunakan APD. Untuk mengetahui lebil mendalam perlu di lakukan penelitian kohon minimal selama 10 tahm; yang mencakup debu respirabel, komposisi batubara, dan faktor genetika yang berpengaruh terhadap gangguan faal Pam Pekerja boiler mempnmyai gizi kurang sebesar 24,8%. \_ kebiasaan memkok 81,9% dan tergolong perokok berat, perusahaan perlu menyediakan makanan tambahan dan penyuluhan tentang bahaya merokok terhadap kmehatan. Pemerintah perlu mempertimbangkan lebih lanjut tentang penggunaan batubara dan apabila penggunaannya dilanjutkan dengan syarat adanya minimasi kadar debu dan komitmen penggunaan APD yang benar.

<hr><i>Align with the BBM price increase in Indonesia since the last three years,there has been an increase of coal use as a diesel substitute and residue due to economic reason. In Kabupaten Bandung this coal use is aimed to heat a boiler which contain of water, and the vapor which is released by the water is flowed to each chamber for the industry PTOCBSS. This industry has been using coal from 2003 until now. This coal use will give a negative impact on our health, especially on our respiratory system and could cause pulmonary disorders which are obstructive, restrictive, or mix of both. This research is using Cross Sectional design to know the relation of coal use and respiratory complaints and pulmonary disorders at Kecamatan Majalaya, Kabupaten Bandung in year 2007. Atesting was done on dependant factors (respiratory complain and

pulmonary disorder) and independent factors (NO<sub>2</sub>, SO<sub>2</sub>, CO, CO<sub>2</sub>; PMN level and respirable dust), and confounding factor (Smoking habit, service year, PPE), workplace characteristic (nutrition status, medical history, age).

The result of this research shows that NO<sub>2</sub>, SO<sub>2</sub>, CO, and CO<sub>2</sub> level, all (100%) less or equal with the NAB, for PMN all 100% exceeds the NAB, respirable dust is 97,1% exceeds the NAB, but 100% of NAB combine industry exceeds 1. The prevalence of respiratory complaint is 1,4%, pulmonary disorders 15,2%. Pulmonary disorders related significantly with the PPE use. We can formulate a model, The Model explain that worker who work in coal boiler room who do not use PPE will have lung function disorder risk 5 times greater than worker who use PPE. To know this problem comprehensively, another cohort research will need to be carried forward for next 10 years, which includes respirable dust, coal composition, and genetics factors which influence the pulmonary disorders. Boiler workers have several supporting factors, such as lack of nutrition 24,8%, smoking habit 81,9% and categorized as heavy smokers, therefore the company will need to provide extra nutrients and health education on the danger of smoking on our health. Guidance and observation on the industry will need to be done from cross programs and related sectors continuously!! still can be used if only there is a dust volume minimization and PPE usage commitment.