ABSTRACT

Sticking wax or slamming process in the batik industry uses wax which contains paraffin, microstalin, besswax, and resin. Melting wax produces smoke containing CO, NO2, SO2, CO2, HC, H2S and the other particles. The use of batik wax continuously would risk in decreasing the forced vital capacity (FVC) of the lung. This study aimed to look at the forced vital capacity (FVC) in the batik industry workers at Jetis Batik Village, Lemahputro, Sidoarjo District.

This observational research used a cross sectional study design type. There were 9 respondents. Data collection was done by measurement, interview, and observation. Collecting individual characteristic data by using interviews, the behavioral data collection by using interviews and observations, the measurement of height and weight, the measurement of temperature and humidity by using a thermohygrometer, the measurement of carbon monoxide (CO) levels by using lAQ CALC TSI Monitor and the measurement of forced vital capacity by using spirometer by laboratory staff. The data analysis used distribution and it was explained descriptively.

CO levels measured at batik A production sites was 13.2 ppm, batik B production sites was 8.8 ppm, batik C production sites was 13.7 ppm, and batik D production sites was 15.4 ppm. The results of Carbon Monoxide (CO) levels measured at all locations showed a number above the Threshold Limit Value which is <8.7 ppm. One respondent was found in having abnormal volume of forced vital capacity (11.11%) with restrictive and obstructive disorders and the rest (88.89%) had normal forced vital capacity.

The conclusion of this research was that the measured carbon monoxide (CO) levels in the production sites of the batik industry did not fulfill the applicable standard and it was found that one worker who got an abnormal forced vital capacity. According to the data, it suits best to have some controls such as the changes of the furnace location and the addition of local exhauster.

Keywords: Carbon monoxide (CO), forced lung vital capacity, batik industry workers

ABSTRAK

Proses pelekatan lilin batik atau mencanting pada industri batik menggunakan lilin batik yang mengandung parafin, mikrostalin, *besswax*, resin. Pelelehan lilin atau malam menghasilkan asap yang mengandung CO, NO_2, SO_2, CO_2, HC, H_2S dan partikel lain. Penggunaan lilin batik secara terus menerus dapat memiliki risiko mengalami penurunan kapasitas vital paksa paru. Penelitian ini bertujuan untuk melihat kapasitas vital paksa paru pada pekerja industri batik di Kampung Batik Jetis, Kelurahan Lemahputro, Kecamatan Sidoarjo, Kabupaten Sidoarjo.

Penelitian ini merupakan jenis penelitian observasional, dengan menggunakan desain studi *cross sectional*. Jumlah responden sebanyak 9 orang. Pengumpulan data dilakukan dengan pengukuran, wawancara, observasi. Pengambilan data karakteristik individu menggunakan wawancara, pengambilan data perilaku menggunakan wawancara dan observasi, pengukuran tinggi badan dan penimbangan berat badan, pengukukuran suhu dan kelembapan menggunakan *thermohygrometer*, pengukuran kadar karbon monoksida (CO) menggunakan lAQ CALC TSI Monitor dan pengukuran kapasitas vital paksa paru menggunakan spirometer oleh tenaga laboratorium. Analisis data menggunakan distribusi dan dijelaskan secara deskriptif.

Pengukuran kadar CO asap lilin batik di tempat produksi batik A sebesar 13,2 ppm, tempat produksi batik B sebesar 8,8 ppm, tempat produksi C sebesar 13,7 ppm, tempat produksi D sebesar 15,4 ppm. Hasil pengukuran kadar Karbon Monoksida (CO) pada asap lilin batik di semua lokasi produksi batik menunjukkan angka di atas NAB (Nilai Ambang Batas = <8,7 ppm). Responden yang memiliki volume kapasitas vital paksa paru tidak normal satu orang (11,11%) dengan gangguan restriktif dan obstruktif dan sisanya sebanyak 8 orang (88,89%) memiliki kapasitas vital paksa paru yang normal.

Kesimpulan dari penelitian ini adalah bahwa kadar karbon monoksida (CO) yang terukur pada asap lilin batik di tempat produksi industri batik tidak memenuhi standar yang berlaku dan terdapat satu pekerja yang memiliki kapasitas vital paksa paru tidak normal. Untuk itu sebaiknya dilakukan pengendalian seperti perubahan letak tungku pembakaran dan penambahan local *exhauster*.

Kata kunci: Karbon monoksida (CO), kapasitas vital paksa paru, pekerja industri batik