



Pengaruh kepadatan lalu lintas terhadap konsentrasi karbon monoksida (CO) di udara ambien Studi kasus di daerah Kartasura propinsi Jawa Tengah
Wiwit Agung S., Dr. H.A. Sudibyakto, M.S.

Universitas Gadjah Mada, 2007 | Diunduh dari <http://etd.repository.ugm.ac.id/>

PENGARUH KEPADATAN LALULINTAS TERHADAP KONSENTRASI KARBON MONOKSIDA (CO) DI UDARA AMBIEN STUDI KASUS DI DAERAH KARTASURA PROPINSI JAWA TENGAH

Oleh
Wiwit Agung S.
00/140431/GE/04833

INTISARI

Penyumbang terbesar emisi gas karbon monoksida diperkotaan adalah kepadatan lalu lintas yang tinggi akibat peningkatan pemakaian kendaraan bermotor. Iklim mikro juga memiliki peranan dalam peningkatan konsentrasi karbon monoksida.

Penelitian ini dilakukan untuk mengetahui pengaruh kepadatan lalu lintas dan variabel-variabel iklim mikro (suhu, kelembaban, dan angin) terhadap konsentrasi karbon monoksida di daerah Kartasura. Lokasi pengambilan sampel di pilih di lokasi yang memiliki perbedaan morfologi jalan.

Penelitian ini menggunakan metode observasi dengan 3 lokasi pengamatan. Masing-masing titik di ukur selama 17 jam dengan mengambil data kepadatan lalu lintas, konsentrasi karbon monoksida, suhu, kelembaban, dan kecepatan angin. Analisis deskriptif digunakan untuk menggambarkan kondisi daerah penelitian, sedangkan analisis statistik korelasi dan regresi untuk mengetahui besarnya hubungan variabel-variabel yang terlibat.

Di Jalan Jendral Sudirman kepadatan lalu lintas dengan karbon monoksida berkorelasi kuat (0,561) dengan regresi $CO_{\text{Jalan Jend. Sudirman}} = 1,234 + 0,001 \text{ smp}$. Sedangkan suhu berkorelasi kuat (0,544), kelembaban berkorelasi kuat (-0,582), dan angin berkorelasi cukup (-0,304), persamaan regresinya $CO_{\text{Jalan Jend. Sudirman}} = 35,181 + 0,001 \text{ smp} - 0,596 \text{ suhu} - 0,271 \text{ kelembaban} - 0,006 \text{ angin}$. Di Jalan Ahmad Yani kepadatan lalu lintas dengan karbon monoksida berkorelasi kuat (0,711) dengan regresi $CO_{\text{Jalan Ahmad Yani}} = -1,315 + 0,002 \text{ smp}$. Sedangkan suhu berkorelasi cukup (0,441), kelembaban berkorelasi lemah (-0,153), dan angin berkorelasi cukup (-0,350), persamaan regresinya $CO_{\text{Jalan Ahmad Yani}} = -54,121 + 0,002 \text{ smp} + 0,971 \text{ suhu} + 0,386 \text{ kelembaban} - 0,645 \text{ angin}$. Di Jalan Kartasura Solo kepadatan lalu lintas dengan karbon monoksida berkorelasi sangat kuat (0,896) dengan regresi $CO_{\text{Jalan Kartasura Solo}} = -1,229 + 0,001 \text{ smp}$. Sedangkan suhu berkorelasi kuat (0,550), kelembaban berkorelasi cukup (-0,456), dan angin berkorelasi lemah (-0,020), persamaan regresinya $CO_{\text{Jalan Kartasura Solo}} = -23,869 + 0,002 \text{ smp} + 0,407 \text{ suhu} + 0,145 \text{ kelembaban} + 0,939 \text{ angin}$

Kata kunci : Kepadatan lalu lintas, suhu, kelembaban, angin, karbon monoksida

THE EFFECT OF TRAFFIC DENSITY TOWARDS THE CARBON MONOXIDE (CO) CONCENTRATION IN THE AMBIENT AIR A CASE STUDY IN KARTASURA, CENTRAL JAVA

By

Wiwit Agung S.

00/140431/GE/04833

ABSTRACT

The high traffic density, caused by the increasing usage of motorized vehicle, give the biggest carbon monoxide emission contribution in the urban area. The micro climate also give role in the carbon monoxide concentration improvement.

The study was aimed to identify the effect of traffic density and the micro climate variables (temperature, humidity, and wind) towards the carbon monoxide concentration in Kartasura. The sample was taken from the location that had road morphology differences.

The study applied the observation method that had three observation points. Each observation point was measured for 17 hours by taking the data on traffic density, carbon monoxide concentration, temperature and wind speed. Descriptive analysis was used to describe the condition of the study area. Whereas, statistic analysis of correlation and regression was used to identify the amount of the relations among the variables involved.

In Jalan Jendral Sudirman, the traffic density and the carbon monoxide were strongly correlated (0,561) with the regression $CO_{Jalan\ Jendral\ Sudirman} = 1,234 + 0,001\ smp$. Meanwhile, the temperature was strongly correlated (0,544), the humidity was strongly correlated (-0,582), and the wind was adequately correlated (-0,304), the regression equation was $CO_{Jalan\ Jendral\ Sudirman} = 35,181 + 0,001\ smp - 0,596\ temperature - 0,271\ humidity - 0,006\ wind$. In Jalan Ahmad Yani, the traffic density and the carbon monoxide were strongly correlated (0,711) with the regression $CO_{Jalan\ Ahmad\ Yani} = -1,315 + 0,002\ smp$. Whereas the temperature was adequately correlated (0,441), the humidity was weakly correlated (-0,153), and the wind was adequately correlated (-0,350), the regression equation was $CO_{Jalan\ Ahmad\ Yani} = -54,121 + 0,002\ smp + 0,971\ temperature + 0,386\ humidity - 0,645\ wind$. In Jalan Kartasura Solo, the traffic density and the carbon monoxide were very strongly correlated (0,896) with the regression $CO_{Jalan\ Kartasura\ Solo} = -1,299 + 0,001\ smp$. Meanwhile, the temperature was strongly correlated (0,550), the humidity was adequately correlated (-0,456), and the wind was weakly correlated (-0,020), the regression equation was $CO_{Jalan\ Kartasura\ Solo} = -23,869 + 0,002\ smp + 0,407\ temperature + 0,145\ humidity + 0,939\ wind$.

Key words: Traffic density, temperature, humidity, wind, carbon monoxide