CHAPTER V

CONCLUSION

In this study, PAHs in diesel exhaust consisted of naphthalene, methylnaphthalene, dimethylnaphthalene, acenaphthene, phenanthrene, methylphenanthrene, fluoranthene, and pyrene. The concentration of PAHs in Table 5.1 is the average of every condition in this experiment.

Table 5.1 Concentration of PAHs in Diesel Exhaust.

PAHs	Average Concentration ($\mu g/m^3$)
Naphthalene	46.94
Methylnaphthalene	100.65
Dimethylnaphthalene	90.41
Acenaphthene	70.34
Phenanthrene	10.42
Methylphenanthrene	21.83
Fluoranthene	3.26
Pyrene	5.62

Addition of cetane improvers to diesel fuel could reduce PAHs in diesel exhaust. Di-t-butyl peroxide and 2-ethylhexyl nitrate affect the reduction of PAHs in diesel exhaust about equally.

Increasing cetane number by distillation does not directly affect the reduction of PAHs in diesel exhaust but high cetane number was low level of PAHs in diesel exhaust.

In the study of engine load, the amount of PAHs in diesel exhaust was lowest at 50% of engine load, but it was highest at 80% of engine load. If fuel consumption was considered, it was found that the amount of PAHs was highest at no load. For the engine speed test, the amount of PAHs in diesel exhaust at 2500 rpm was slightly higher than 1500 and 3500 rpm.

Finally, it indicated that diesel fuel with higher cetane number by distillation or addition of cetane improver was good for reduction of PAHs in diesel exhaust and driving conditions at 50% of engine load was good for low level of PAHs in diesel exhaust.

Suggestion

Use of diesel fuel with high cetane numbers or addition of cetane improvers is a way to reduced PAH emission.

In the case of traffic jams, motor vehicles are operated at no load and low speed, which they emit a high concentration of PAHs. Therefore, driving conditions should be a moderate speed and load.