

(AQI)

knadafi@tums.ac.ir :

// : // :

(PM PM₁ PM_{2.5})

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(Environmental Dust Monitor) GRIMM 107

(ANOVA)

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($p < /$)

(NAAQS) / $\mu\text{g}/\text{m}^3$ / $\mu\text{g}/\text{m}^3$ / $\mu\text{g}/\text{m}^3$ / $\mu\text{g}/\text{m}^3$ / $\mu\text{g}/\text{m}^3$ / $\mu\text{g}/\text{m}^3$ / $\mu\text{g}/\text{m}^3$

PM₁₀ PM_{2.5} PM_{2.5}
PM₁₀ PM_{2.5} PM_{2.5}

EPA () %

(PM₁₀)

(PM_{2.5})

USEPA

(AQI)

/

PM₁₀

(AQI)

PM₁₀ PM_{2.5} (PM_{2.5})

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(PM)

) PM PM / PM

) (/
(PM /

PM

()

(Sharma and Maloo 2005)

PM (ultrafine)

Krzyzanowski 2008;)

(Krzyzanowski 2008; WHO 2006)

(WHO 2006

()

World Health Organization Project)

(2004

(PM)

PM

(de Kok et al. 2006)

Borrego et al.)

(2006

(NAAQS)

(TSP)

NAAQS

TSP PM EPA (PM)

EPA %

(Wellenius et al. 2006) %

%

% PM

(PM₁₀) (Fang et al. 2005)

(EPA 1997a)

EPA)

(2006 (<)

/ PM₁₀ PM

(PM₁₀)

PM PM₁₀ PM

PM

(EPA 2007)

PM

PM

PM

PM

PM

%

de) PM

% (Kok et al 2006; Van Der Zee et al. 1998

EPA

(Kermani 2003)

U.S. EPA Mohammadi Moghaddam 2007)
(1998

PM / PM

Environmental Dust Monitor

Envirocheck 107

PM PM / PM

//)

EPA

(/ /

(Excel SPSS)

Microsoft Excel

(Mohammadi Moghadam 2006)

SPSS

One-way ANOVA

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(Light-scattering)

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EPA

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PTFE

(Kermani 2003)

PM (EPA 1997b) $\mu\text{g}/\text{m}^3$

EPA PM₁₀ $\mu\text{g}/\text{m}^3$

(EPA 1997a) PM₁₀

EPA (PSI)

(EPA 2006) $\mu\text{g}/\text{m}^3$ (U.S. EPA) (AQI) (PM₁₀)

PM₁₀ EPA (AQI)

AQI

()

(PM₁₀ PM_{2.5} PM₁)

($p < /$)

() PM

(EPA

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PM EPA

(EPA 2007)

EPA (PM₁₀) PM₁₀ PM

(USEPA) / /

Chaloulakou et al. 2003; Houthuijs et al.)
(2001

(EPA 2006)

(PM)

()

(AQI)

(PM)

(Harrison and Yin 2000)

PM /

(AQI)

(PM /)

(ANOVA)

($p < /$)

USEPA (NAAQS)

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) (PM)

(PM /

EPA ()

PM /

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Houthuijs et al. 2001;)

(TSP)

(Manalis et al. 2005

(PM)

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(TSP

(AQI)

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\pm	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	
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PM₁₀ PM_{2.5} (AQI)

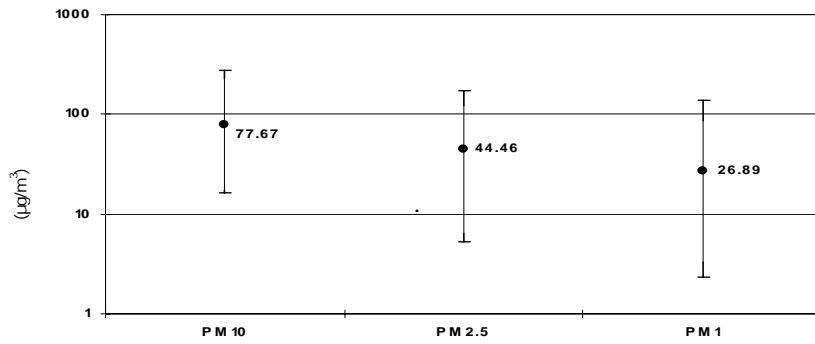
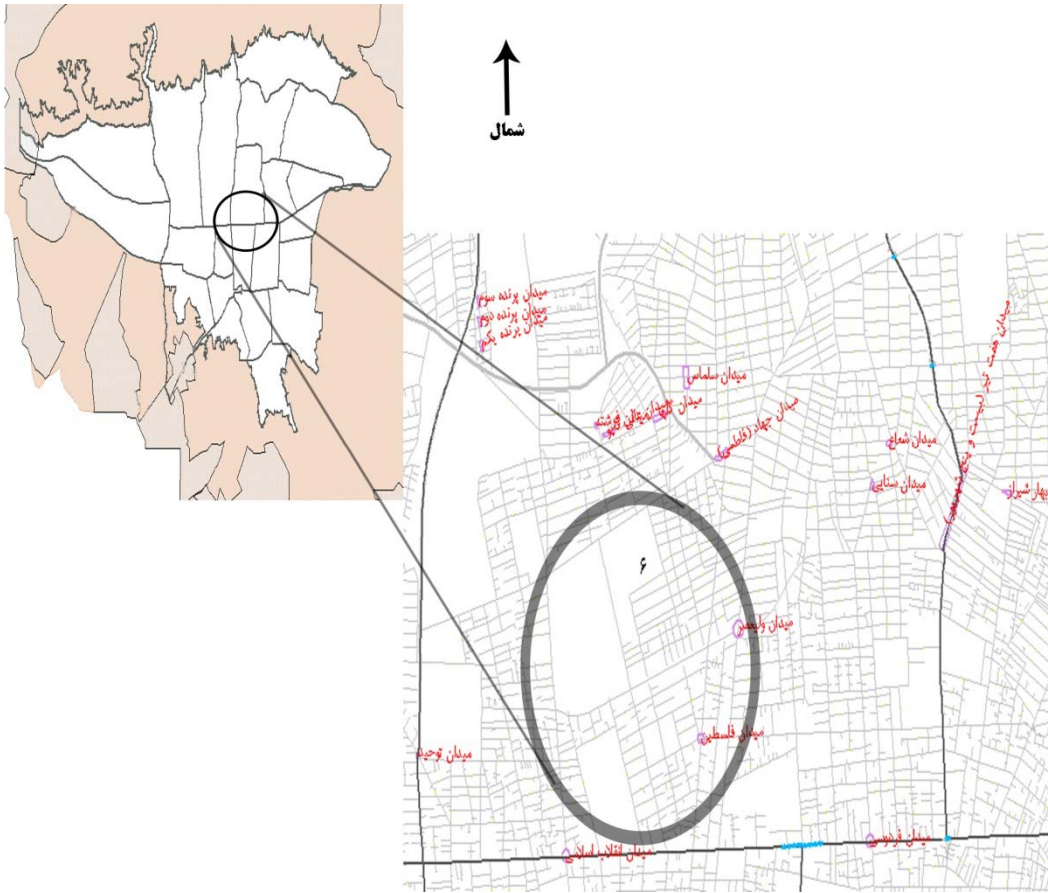
(AQI)

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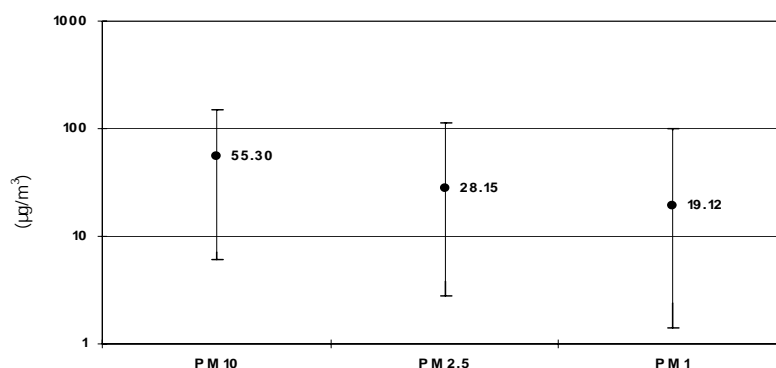
PM₁₀ PM_{2.5} (AQI)

(AQI)

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PM PM / PM



PM PM₁ PM

References

- Borrego, C., Tchepel, O., Costa, A. M., Martins, H., Ferreira, J. and Miranda, A. I., 2006. Traffic-related particulate air pollution exposure in urban areas, *Atmospheric Environment*, **40**(37), pp. 7205-7214.
- Chaloulakou, A., Kassomenos, P., Spyrellis, N., Demokritou, P. and Koutrakis, P., 2003. Measurements of PM₁₀ and PM_{2.5} particle concentrations in Athens, Greece, *Atmospheric Environment*, **37**(5), pp. 649-660.
- de Kok, T.M., Drieste, H.A., Hogervorst, J. G. and Briede, J.J., 2006. Toxicological assessment of ambient and traffic-related particulate matter: a review of recent studies, *Mutat.Res.*, **613**(2-3), pp.103-122.
- Environmental Protection Agency (EPA), 2006. Final Revisions to the National Ambient Air Quality Standards for Particulate Pollution Environmental Protection Agency, United States of America.
- Environmental Protection Agency (EPA), 2007. "National Ambient Air Quality Standards for Particulate Matter"; Final Rule (40 CFR Part 50). **71**(200), pp. 10-17-2007. No. EPA-HQ-OAR-2001-017, ENVIRONMENTAL PROTECTION AGENCY.
- EPA., 1997a. EPA's Office of Air Quality Planning and Standards (National Ambient Air Quality Standards) Environmental Protection Agency, United States of America.
- EPA., 1997b. EPA's Office of Air Quality Planning and Standards, National Ambient Air Quality Standards Environmental Protection Agency, United States of America.
- Fang, G.C., Wu, Y.S., Huang, S.H. and Rau, J.Y., 2005. Review of atmospheric metallic elements in Asia during 2000-2004. *Atmospheric Environment*, **39**(17), pp. 3003-3013.
- Harrison, R.M. and Yin, J., 2000. Particulate matter in the atmosphere: which particle properties are important for its effects on health?, *Science of the Total Environment*. **249**(1-3), pp. 85-101.
- Houthuijs, D., Breugelmans, O., Hoek, G., van der, E., Miha?likova?, E., Pastuszka, J. S., Jirik, V., Sachelarescu, S., Lolova, D., Meliefste, K., Uzunova, E., Marinescu, C., Volf, J., De Leeuw, F., Van De Wiel, H., Fletcher, T., Lebret, E. and Brunekreef, B., 2001. "PM₁₀ and PM_{2.5} concentrations in Central and Eastern Europe: Results from the Cesar study. *Atmospheric Environment*, **35**(15), pp. 2757-2771.
- Kermani, M., 2003. The evaluation of TSP and PM₁₀ concentration and their content near the shariati hospital (Tehran), "MSPH thesis, Department of Environmental Health Engineering, School of Public

- Health and Institute of Public Health Research, Tehran university of Medical Sciences, Tehran, Iran [In Persian].
- Krzyzanowski, M., 2008. WHO Air Quality Guidelines for Europe, *J. Toxicol. Environ. Health A*, **71**(1), pp. 47-50.
- Manalis, N., Grivas, G., Protonotarios, V., Moutsatsou, A., Samara, C. and Chaloulakou, A., 2005. Toxic metal content of particulate matter (PM₁₀), within the Greater Area of Athens, *Chemosphere*, **60**(4), pp. 557-566.
- Mohammadi Moghadam, F., ??????, 2006. The evaluation of TSP, PM₁₀, PM_{2.5}, PM₁, PC and PD concentration in one of the central part of Tehran city (Tehran university) and its relation with meteorological parameters, MSPH thesis, Department of Environmental Health Engineering, School of Public Health and Institute of Public Health Research, Tehran university of Medical Sciences, Tehran, Iran [In Persian].
- Sharma, M. and Maloo, S., 2005. Assessment of ambient air PM₁₀ and PM_{2.5} and characterization of PM₁₀ in the city of Kanpur, India. *Atmospheric Environment*, **39**(33), pp. 6015-6026.
- U.S. EPA., 1998. SLAMS/NAMS/PAMS NETWORK REVIEW GUIDANCE; EPA-454/R-98-003. United States Environmental Protection Agency .Air Quality Index (A Guide to Air Quality and Your Health). 8-1-2003. Air and Radiation (EPA-454/K-03-002).
- Van Der Zee, S. C., Hoek, G., Harssema, H., and Brunekreef, B. 1998, "Characterization of particulate air pollution in urban and non-urban areas in the Netherlands, *Atmospheric Environment*, **32**(21), pp. 3717-3729.
- Wellenius, G.A., Schwartz, J. and Mittleman, M.A., 2006. Particulate air pollution and hospital admissions for congestive heart failure in seven United States cities, *Am. J. Cardiol.*, **97**(3), pp. 404-408.
- WHO., 2006. WHO's global air-quality guidelines, *Lancet*, **368**(9544), p. 1302.
- World Health Organization Project., 2004. Health Aspects of Air Pollution. Results From The WHO Project "Systematic Review of Health Aspects of Air Pollution in Europe"; Scherfigsvej 8, DK-2100 Copenhagen, Denmark.