9th International Conference on Urban Drainage Modeling
Belgrade 2012

CHARACTERIZATION OF ROAD-DEPOSITED SEDIMENTS IN DIFFERENT LAND-USE TYPES IN TEHRAN, IRAN

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OUTLINE

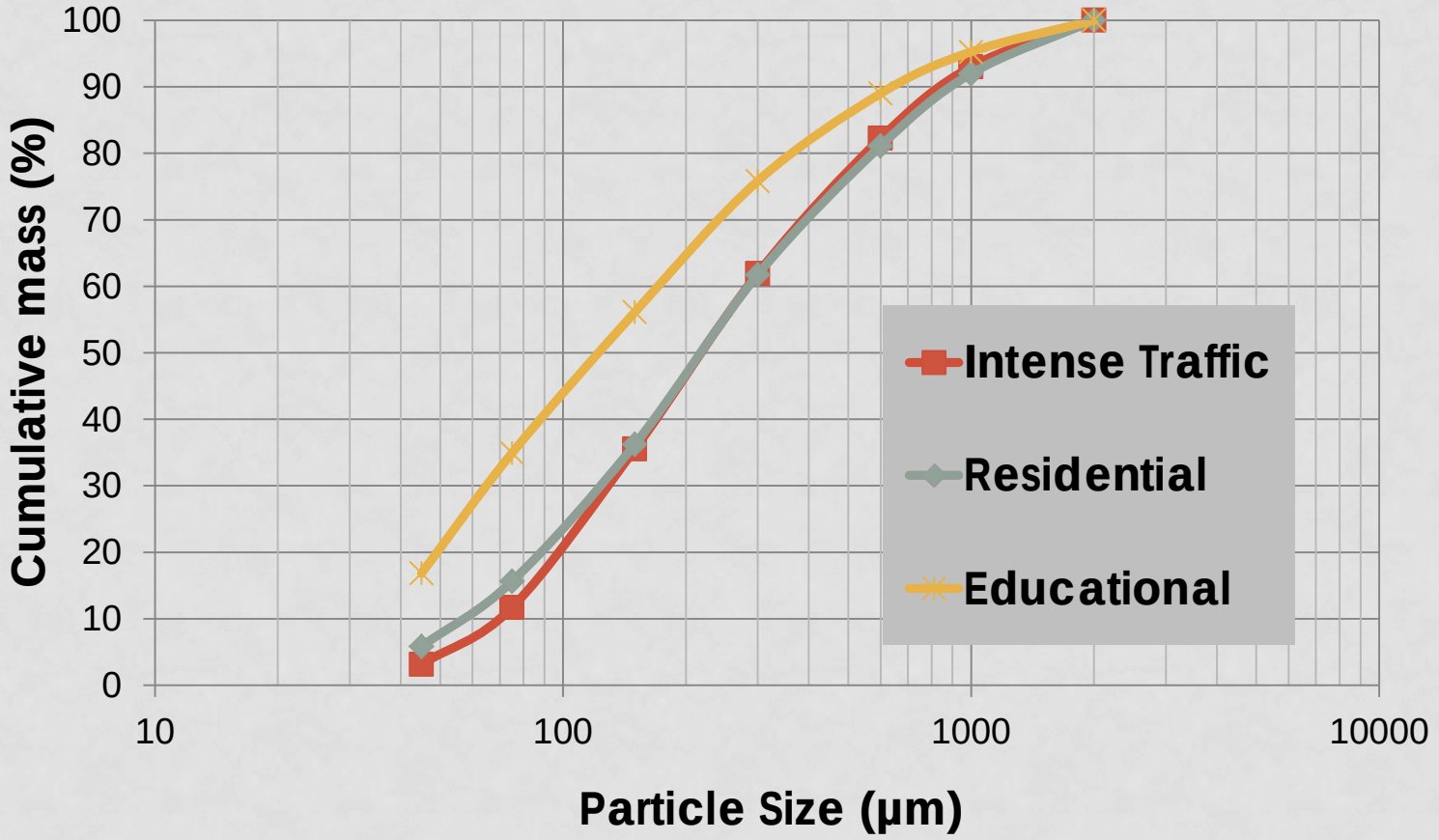
- Introduction
- Methodology
- Results and Discussion
- Conclusion

INTRODUCTION

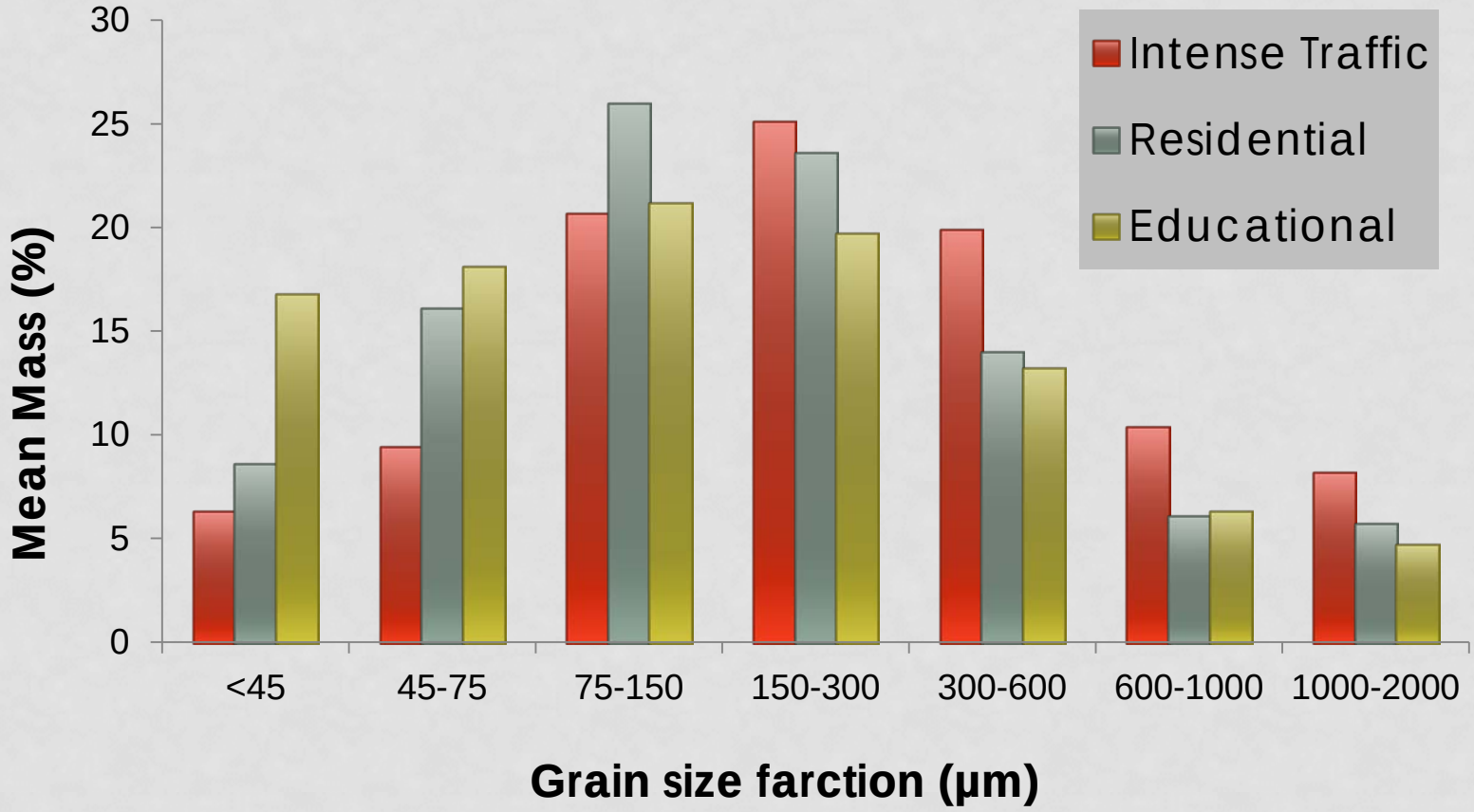
- Stormwater pollution: important issue in urban areas
- Natural and manmade pollutants accumulate on impervious surfaces
- Value of Investigating particle size distribution and size resolved pollutants
- The major objectives of our study were:
    1. Determine PSD of road deposited sediments (RDS)
    2. Quantify total mean concentration of heavy metals in RDS samples
    3. Quantify the mean concentration of heavy metals in selective particle size range of the RDS

METHODOLOGY

RESULTS AND DISCUSSION



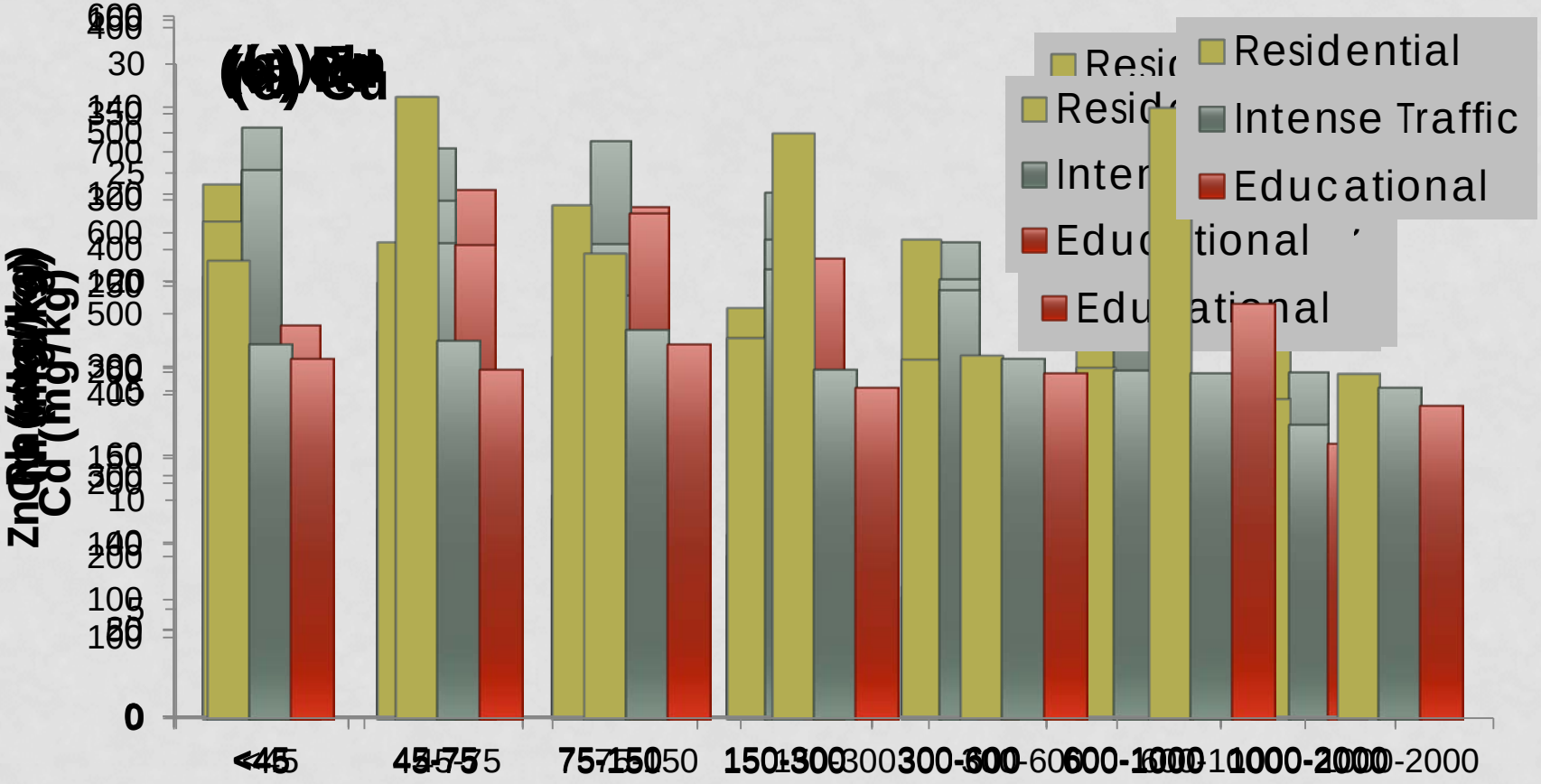
PARTICLE SIZE DISTRIBUTION VERSUS GRAIN SIZE FRACTION FOR RDS



HISTOGRAM OF MEAN MASS PERCENTAGE VERSUS GRAIN SIZE FRACTION FOR RDS

Heavy metals	Total particulate mean concentration (mg/kg) from three land use areas[a]		
	Intense Traffic	Residential	Educational
Zn	536.4	319.3	430.4
Pb	422.4	502.9	219.4
Cu	210.3	114.2	189.8
Ni	96.6	124.6	92.1
Cd	16.6	30.3	16.3

TOTAL HEAVY METAL CONCENTRATION OF RDS SAMPLED FROM THREE LAND USE AREAS



DISTRIBUTION OF HEAVY METALS IN RELATIONSHIP TO SEVEN DIFFERENT PARTICLE SIZE RANGES FOR RDS

COLLECTED FROM THREE LAND USE AREAS

CONCLUSION

- Land use can play an important role on particle size distribution of RDS.
- The trend in PSD in all land use areas were the same, their mass distribution was different.
- The percent mass distribution of finer particles <45 µm in educational and residential areas were higher than that of intense traffic areas.
- The highest mass distribution (up to about 80%) of particles for all land use areas were within the particle size range of < 300 µm.

CONCLUSION

- The highest average concentrations of heavy metals with the exception of Cd at the residential area, were related to the intense traffic land use.
- The order of the average measured metal concentration in intense traffic and educational landuse were Zn > Pb > Cu > Ni > Cd and in residential landuse were Pb > Zn > Ni > Cu > Cd.
- The metal concentration generally increased with decreasing particle size.
- Maximum average heavy metal concentrations frequently occurred in particle size smaller than 75 µm.

THANK YOU FOR YOUR ATTENTION