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The development tendency of transport ecology in Lithuania

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Topical issues

Studied area in northern part of Vilnius (network of Geležinis Vilkas – Ozas – Kalvarijos street)

Considering the given data by road direction, the stock of motor vehicles in Lithuania according to usable type of fuel and dominant trends during model development embraced :

- A part of light cars with a gasoline engine – 50 %. Average fuel consumption – 10 l/100 km;
- A part of light cars with a dieseline engine – 30 %. Average fuel consumption – 8 l/100 km;
- A part of light cars with a liquid gas engine – 20 %. Average fuel consumption – 12 l/100 km;
- All minibuses, buses and trucks with a dieseline engine – less than 100 % but still predominanting. Fuel consumption, respectively, is: minibuses – 11 l/100 km; buses – 20 l/100 km; trucks – 35 l/100 km;
- All motorcycles with gasoline engines. Average fuel consumption – 8 l/100 km.

Intensity of Motor Transport Flows During the Day

Time	Intensity of motor-transport flows, %
6:00–7:00 a m	50
7:00–8:00 a m	95
7:30–8:30 a m	100
8:00–9:00 a m	95
9:00–10:00 a m	75
10:00–11:00 a m	70
11:00–12:00 a m	70
12:00–1:00 p m	70
1:00–2:00 p m	80
2:00–3:00 p m	75
3:00–4:00 p m	80
4:00–5:00 p m	90
5:00–6:00 p m	100
6:00–7:00 p m	90
7:00–8:00 p m	70
8:00–9:00 p m	60
9:00–10:00 p m	50
10:00–6:00 a m	12

Conclusions

1. There are two major ways for assessing negative impact of motor transport and pollution level – monitoring the air or modeling pollution dispersion.
2. “ISC-Aermod View” is a complete and powerful air pollutant dispersion modeling system and is widely used to assess pollutant concentrations from a wide variety of sources.
3. Gasoline motor vehicles are the main source of lead aerosol and carbon monoxide, while diesel vehicles are a major source of heavy particles.

4. According to graphic pollutant dispersion modeling results, maximum amounts of pollutants from motor vehicles were estimated:

Carbon monoxide (CO) – 1,607 mg/m3

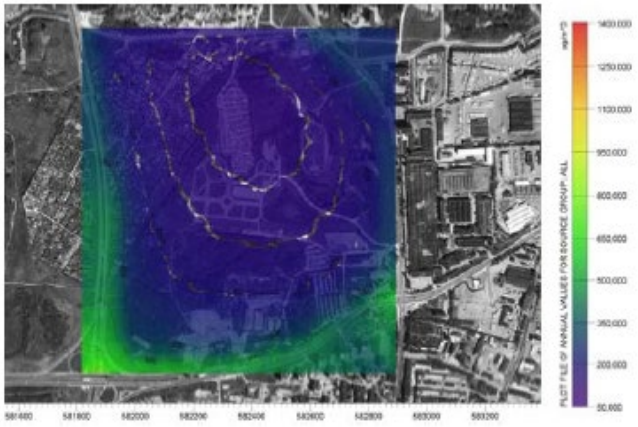
Nitrogen oxide (NOx) – 0,1731 mg/m3;

Volatile organic compounds (VOC) – 0,362 mg/m3;

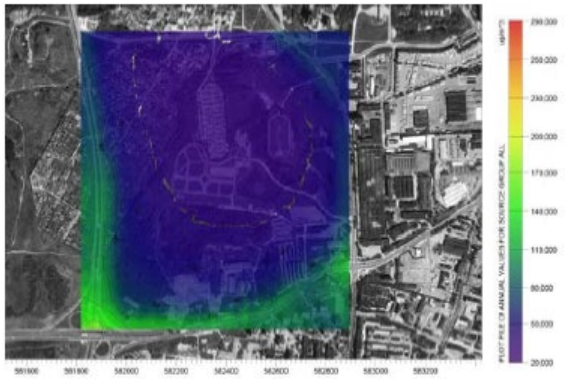
Sulphur dioxide (SO2) – 0,0048 mg/m3;

Particulate matter (PM) – 0,0107 mg/m3.

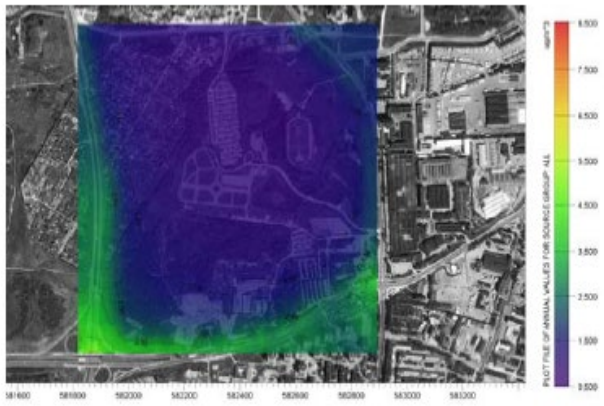
Carbon monoxide (CO)



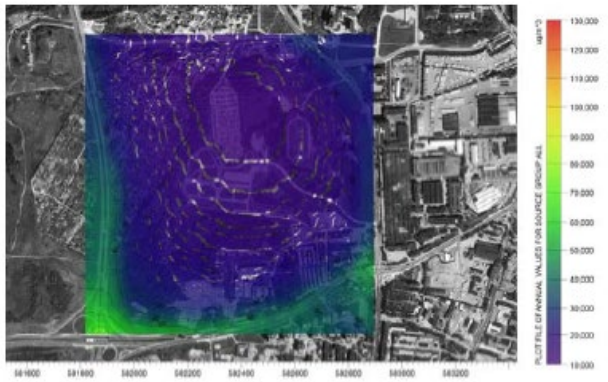
Volatile organic compounds (VOC)



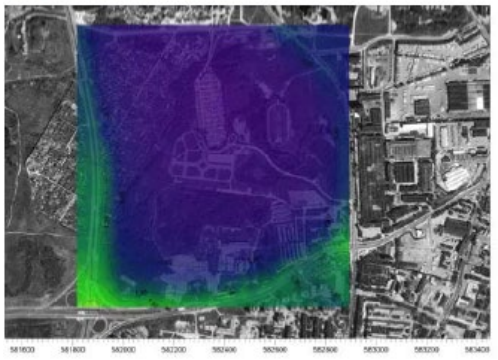
Particulate matter (PM)



Nitrogen oxide (NO_x)



Sulphur dioxide (SO_2)



5. According to increase of motor transport flows every year, new and applicable means for pollutant emission reduction are needed.

Thank you