**NOISE IN WIELUN**

**A study of the intensity of sound in Wieluń**

The intensity of sound – the measurement of the energy of acoustic waves with the units W/m2.

Noise - sounds of too great an intensity for a particular place and/or time, perceived as "pointless, troublesome, unpleasant and harmful". It might be dangerous for our health.

Researchers who study hearing loss in the workplace have found that a person who is exposed to noise levels at 85 decibels or higher for a prolonged period of time is at risk for hearing loss. For this reason, these workers are required to wear hearing protectors, such as earplugs or earmuffs, while they are on the job. Many devices that children use today have noise levels much higher than 85 decibels. For example, an MP3 player at maximum level is roughly 105 decibels. That's 100 times more intense than 85 decibels! Scientists recommend no more than 15 minutes of unprotected exposure to sounds that are 100 decibels. In addition, regular exposure to sounds at 110 decibels for more than one minute risks permanent hearing loss.

Average values of sounds in everyday life:

Painful

150 dB = fireworks at 3 feet

140 dB = firearms, jet engine

130 dB = jackhammer

120 dB = jet plane takeoff, siren

Extremely Loud

110 dB = maximum output of some MP3 players, model airplane, chain saw

106 dB = gas lawn mower, snowblower

100 dB = hand drill, pneumatic drill

90 dB = subway, passing motorcycle

Very Loud

80–90 dB = blow-dryer, kitchen blender, food processor

70 dB = busy traffic, vacuum cleaner, alarm clock

Moderate

60 dB = typical conversation, dishwasher, clothes dryer

50 dB = moderate rainfall

40 dB = quiet room

Faint

30 dB = whisper, quiet library

**Measurements:**

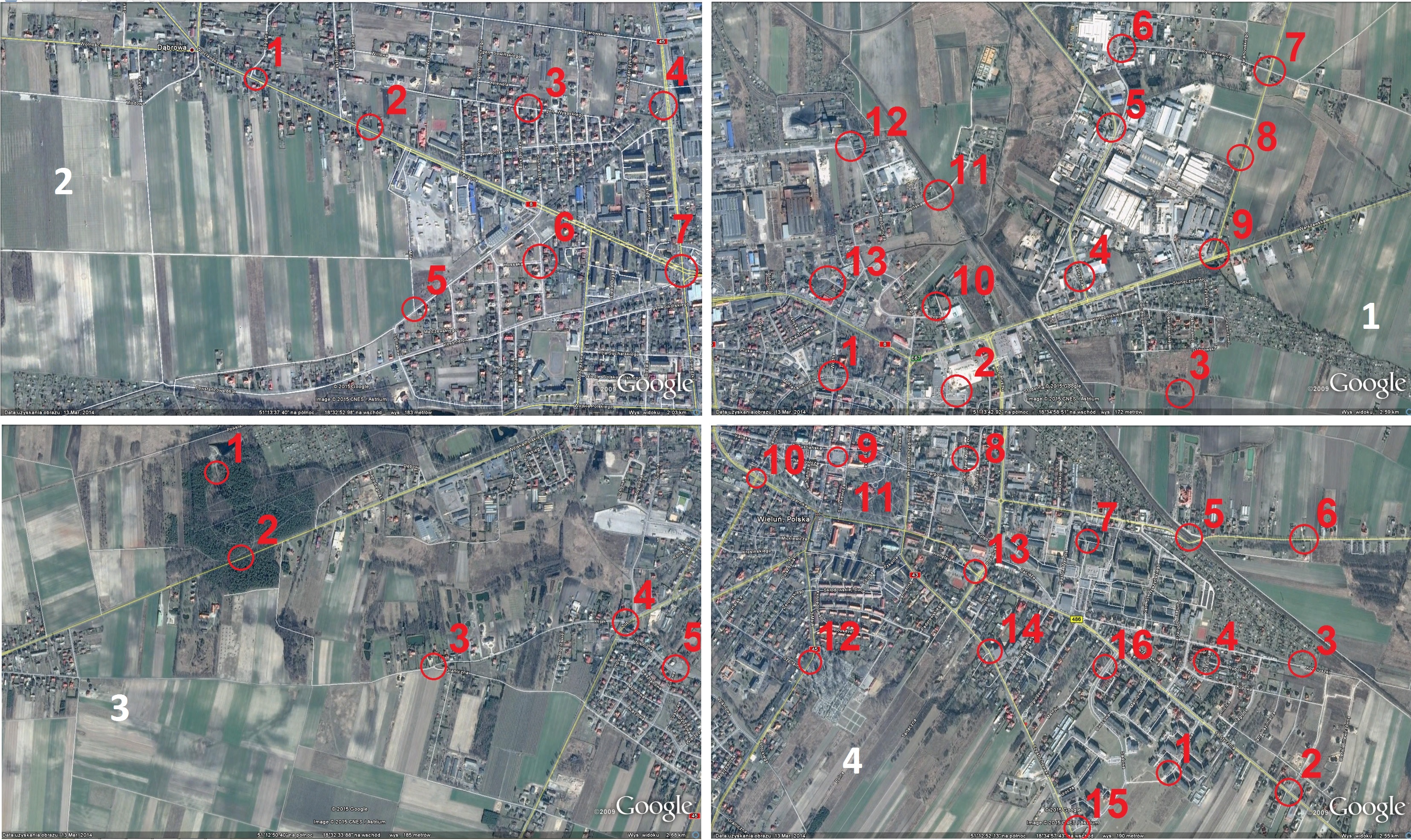
For the measurements we used a Sony Xperia J mobile phone with a sound meter ver. 1.6 app. During the taking of readings we kept the phone covered to minimise the disruptive effects of the wind.

We divided the map of the town into 4 parts and drew a grid over each of them. Later, we walked round the town and measured the intensity of sound in the places near the junctions of the grid lines. The results are presented in the tables below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Map I | | | | |
| point of measurement | date | time | maximal value (db) | average value (db) |
| 1 ( ul. Wodna) | 17.01.2015 | 10:10 | 95 | 72 |
| 2 ( ul. Moniuszki) | 17.01.2015 | 10:20 | 65 | 52 |
| 3 | 17.01.2015 | 10:53 | 85 | 76 |
| 4 ( ul. Fabryczna) | 17.01.2015 | 11:07 | 91 | 70 |
| 5 ( ul. Fabryczna) | 17.01.2015 | 11:16 | 77 | 66 |
| 6 ( ul. Rymarkiewicz) | 17.01.2015 | 11:25 | 88 | 40 |
| 7 ( ul. Rymarkiewicz) | 17.01.2015 | 11:34 | 97 | 81 |
| 8 ( ul. Przemysłowa) | 17.01.2015 | 11:40 | 82 | 81 |
| 9 ( ul. Warszawska) | 17.01.2015 | 11:51 | 92 | 78 |
| 10 ( ul. Poprzeczna) | 17.01.2015 | 12:11 | 78 | 62 |
| 11 ( ul. Błońska) | 17.01.2015 | 12:27 | 89 | 75 |
| 12 ( ul. Ciepłownicza) | 17.01.2015 | 12:35 | 64 | 49 |
| 13 ( ul. Wodna) | 17.01.2015 | 12:42 | 66 | 54 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Map II | | | | |
| point of measurement | date | time | maximal value (db) | average value (db) |
| 1 ( ul.Wrocławska) | 23.12.2014 | 09:51 | 96 | 82 |
| 2 ( ul. Wrocławska) | 23.12.2014 | 10:00 | 102 | 86 |
| 3 ( ul. Gen Wysockiego) | 23.12.2014 | 10:18 | 84 | 69 |
| 4 (ul. Sieradzka) | 23.12.2014 | 10:30 | 86 | 71 |
| 5 ( ul. Miła) | 23.12.2014 | 11:52 | 103 | 84 |
| 6( ul. Wyspiańskiego) | 23.12.2014 | 11:00 | 102 | 86 |
| 7 ( ul. Sieradzka) | 23.12.2014 | 10:40 | 102 | 85 |
| Rynek | 23.12.2014 | 12:11 | 93 | 81 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Map III | | | | | | | | |
| point of measurement | Date | | time | | maximal value (db) | | average value (db) | |
| 1(Park Miejski) | 30.12.2014 | | 13:11 | | 55 | | 38 | |
| 2(ul. Wojska Polskiego) | 30.12.2014 | | 13:25 | | 69 | | 54 | |
| 3(ul. Graniczna) | 30.12.2014 | | 14:00 | | 50 | | 34 | |
| 4(ul. Kijak) | 30.12.2014 | | 14:15 | | 87 | | 64 | |
| 5(ul. Wiśniowa) | 30.12.2014 | | 14:23 | | 54 | | 41 | |
|  |  | |  | |  | |  | |
| Map IV | | | | | | | |
| point of measurement | | date | | time | | maximal value (db) | average value (db) |
| 1(ul. Agrestowa) | | 05.01.2015 | | 14:12 | | 69 | 55 |
| 2(ul. 18 stycznia) | | 05.01.2015 | | 14:25 | | 86 | 72 |
| 3(ul. gen. Kościuszki) | | 05.01.2015 | | 14:33 | | 78 | 63 |
| 4(ul. Wspólna) | | 05.01.2015 | | 14:47 | | 71 | 55 |
| 5(ul. POW) | | 05.01.2015 | | 15:00 | | 87 | 74 |
| 6(ul. POW) | | 05.01.2015 | | 15:05 | | 84 | 70 |
| 7(os. Wyszyńskiego) | | 05.01.2015 | | 15:17 | | 70 | 57 |
| 8(ul. Moniuszki) | | 05.01.2015 | | 15:29 | | 90 | 78 |
| 9(Plac Legionów) | | 05.01.2015 | | 15:42 | | 78 | 65 |
| 10(ul. Św. Barbary) | | 05.01.2015 | | 15:46 | | 93 | 78 |
| 11(Park Żwirki i Wigury) | | 05.01.2015 | | 16:00 | | 68 | 54 |
| 12(ul. 3-go Maja) | | 05.01.2015 | | 16:05 | | 92 | 77 |
| 13(ul. 18 stycznia) | | 05.01.2015 | | 16:23 | | 78 | 67 |
| 14(ul. Częstochowska) | | 05.01.2015 | | 16:32 | | 84 | 70 |
| 15(ul. Sadowa) | | 05.01.2015 | | 16:41 | | 65 | 31 |
| 16(ul. Sadowa) | | 05.01.2015 | | 16:50 | | 78 | 64 |



Map 1 is meanly industrial area of Wieluń. The biggest noticed values (maximal and average) appear near big factories on the suburbs. The other place of intensified noise is by a big route leading out of the city.

Map 2 presents the biggest values of intensity of sound, because of routes of big importance to the communication of the city.

Map 3 shows quiet places on fields and housing estates, which makes the values this little. Average values are much smaller here than in different parts of city.

Map 4 brings the biggest amount of measurements, because it takes a big part of city including both big roads and housing estates. The biggest values were visible near the big roads.

**Results:**

The highest intensity of sound and noise occurred near congested main roads and public places.

The uncertainties of measurements may have been caused by the lack of an anti-wind cover on the appliance.

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