Do we have an influence on personal exposure to polluted air?

Air pollution is a big problem in many cities around the world. This pollution comes from: car exhaust, industrial emissions, and even natural sources like dust. It includes harmful substances such as particulate matter (PM10, PM2.5), nitrogen oxides (NOx), sulfur oxides (SOx), and ozone. These pollutants can cause serious health problems, including respiratory diseases, heart problems, and cancer.

Understanding how pollution affects us in our daily lives is very important. However, we don't have enough detailed information about how different activities and places in the city impact our exposure to these harmful substances. For example, the air quality can be very different in a busy street compared to a park, or inside buildings compared to outside. Regular air quality monitoring stations provide useful data, but they cannot tell us everything about the air we breathe in various parts of the city or during different activities.

This project aims to fill that gap by conducting detailed research on air quality in Wrocław. We will measure the levels of pollution in the immediate surroundings of people as they go about their daily lives. This includes public spaces, residential areas, workplaces, and commercial areas. We will also analyze how people move around the city, what modes of transportation they use, and their physical activities to understand how these factors influence their exposure to air pollution. To do this, we will recruit a group of participants and equip them with devices that measure air quality. We will then analyze this data to identify patterns and understand how different urban environments affect air quality. Additionally, we will combine the data we collect with existing data from the national environmental monitoring system. This will help us understand how weather conditions, like temperature and wind, affect pollution levels. By integrating all this information, we intend to create models that can predict exposure to air pollution according to behavioural patterns.

Our research will also focus on identifying areas and situations with the highest risk of pollution exposure. For example, we will look at how air quality varies between different types of buildings and open spaces, and during various times of the day. This will help us make recommendations on how to reduce exposure to harmful pollutants. For example, we might suggest the best times and places for outdoor activities to minimize health risks.

In summary, this project aims to better understand air quality using the example of Wrocław and the exposure to polluted air of its inhabitants. By studying the patterns of air pollution and human activity, we hope to find effective ways to reduce exposure to pollution and make the city a healthier place to live.