

Many former industrial plants are abandoned as a result of economic changes or industrial decline in a given region. They create a unique post-industrial landscape of cities creating space of meanings that strengthen its identity, as well as constituting their unquestionable heritage. Some of the historical complexes, which can boast outstanding values (tangible and intangible), acquire the status of monuments and are subject to legal protection. This results in the obligation to preserve them and implement conservation procedures during their renovation. Post-industrial facilities are now willingly adapted to new functions. For example, many former production plants become offices, cultural institutions and apartment buildings, so-called lofts. It can't be underestimated that basically, every industrial plant has emitted a significant amount of toxic substances into the environment over the years of its operation. Some of them penetrated the building structures and their surroundings, remaining there to this day. Also, construction materials used for the construction of industrial buildings, or products used during their operation to protect the surfaces of walls, floors and other elements, may contain poisonous substances, which include chemical elements (arsenic, chromium, zinc, cadmium, cobalt, manganese, nickel, lead or mercury).

In recent years, more and more attention has been paid to the threat related to the harmfulness of compounds found in former industrial facilities, many of which have proven carcinogenic effects. It is assumed that they can be found in the soil, dust accumulated on the building's elements, as well as in external layers of paint coatings and other building materials. Pollution deposited on and in the structures of post-industrial objects may pose a threat not only to their users but also to the monuments themselves. Their detection may lead to the following solutions: (1) the need to demolish such an object due to toxic pollutants contained in its materials, (2) the need to carry out radical conservation procedures that deprive the substance of layers of surface contamination, and at the same time valuable content carriers related to accumulations, transformations, the passage of time and authenticity; or (3) contribute to the progressive destruction of the historic substance by aggressive contamination.

This project aims **to examine the relationship between the resources of post-industrial cultural heritage and the pollutants accumulated within it and their potential harmfulness to new users, as well as the historic structure itself.** This issue will be examined based on the case of the complex of the former Gdańsk Shipyard which is under legal protection. This complex is characterized by a high position on the cultural map of Poland, and at the same time, before the start of adaptation works, it is a challenge of a conservation nature. In the course of the research, representative objects belonging to the former Shipyard complex will be selected, which will be examined in terms of their history of construction and operation, with an emphasis on comprehending their life cycle, and thus exposure to potential sources of harmful pollution. Then, their building substance will be chemically analyzed to detect the toxicity of its components. As a result of the analyses, the project aims to answer the following research questions: (a) what are the impact of the former function and historical use of the facility on the saturation and types of accumulated post-industrial pollution? (b) is there a relationship between the age of the examined structure and its historical use, and the saturation and types of accumulated post-industrial pollution? (c) how does the type of building material affect the saturation and types of accumulated industrial pollution? and, (d) how to use the knowledge about the saturation of the historic substance with post-industrial pollution in the planned conservation works?

The project operates in an interesting, multidisciplinary research area. It will be the first attempt to analyze the mutual influence of toxic pollution and historic post-industrial complexes. The research planned in the project carries a significant element of novelty because so far this issue has not been the subject of broader scientific research. In the face of the growing investment pressure on post-industrial areas, taking into account this aspect, which has been marginalized in scientific research and conservation protection to date, becomes particularly important and urgent. Based on the obtained knowledge, **a conservation protection tool will be created in the form of a research model for searching for toxins in various types of substances of historic post-industrial objects.** The priority of the research is to indicate the methods of conducting conservation works that cause the least damage to the preservation of the value of monuments. The ambition of the project is to contribute to the development of more effective conservation methods and procedures for post-industrial facilities, which will put the health of the people carrying out these works and the future user in the first place.