Heavy metals belong to a very heterogenous group of elements which strongly varied in their chemical properties and biological functions. Heavy metals are treated as the environmental pollutants (e.g., soil, water, air) because of their toxic effects on plants, animals and human being. Additionally, their contamination and concentration in soil result from anthropogenic as well as natural activities. One of the heavy metals which is xenobiotic and can be taken up by plants or animals from the soil more avidly than the other heavy metals (e.g., lead, mercury) is cadmium. This metals is nowadays treated as one of the most interesting for human being mainly because of its usage in industry. Cadmium can enter animals' body via the digestive system, with the nourishments, or by the epidermis that covers the body. It can be distributed through the animals' body through cavities and body fluids. Eventually, cadmium can affect all organs. Many processes, which will try to stop these changes must be activated, but we know nothing about the relationship between such processes which can be activated in different organs, in a different time of stressors effecting, or even at different level of animals' body. It is worth mentioning that there are some organs in animals' body which are treated as taking part in the homeostasis maintenance, activation of processes which can protect the organism (invertebrates) or even accumulate numerous chemical compounds which could be used during stressful events, e.g. the midgut (the main part of the digestive system), the fat body (adipose tissue, the main detoxification organ), salivary glands (organs that produce various substances like enzymes, anticoagulants, antibodies, etc.) and gonads: testes and ovaries (organs responsible for the reproduction). Up to now, we can find in the literature many data on the effects of cadmium at animals, plants and the environment, however, they are mainly related to only one of the mentioned problems: the functioning of the organ/tissue, the cell, organelles, the production of energy, or the synthesis of ROS and enzymes, etc. Researches linking these problems have not yet been conducted, while it is important to present the complete and global state of view at the relationship: organism – polluted environment. Therefore, in our project we plan to approach the problem comprehensively and not fragmentarily and to combine the aspects of different fields of study. The results obtained will be added and compared together in order to establish how changes at the tissue or even cells level can break the functioning of organelles, their membranes or even the synthesis of some substances, so we hope that they will probably have the wide field of interests. All methods used in this project are commonly used in laboratories (histological, histiochemical, cytochemical, immunocytochemical and toxicological laboratories) all over the world, but they are mainly limited to only one of problems: describe only changes at the ultrastructural level, at ATP/ADP level, synthesis of numerous chemical compounds – proteins or even the activation of the cell death processes, while we are going to join all these aspects of the cell biology, physiology and environmental sciences, to provide the global science. As a model animal, the brown centipede *Lithobius forficatus* Linnaeus, 1758 (Myriapoda, Chilopoda), a well-known and a widespread European species, especially in central and northern Europe, has been chosen. It lives under upper layers of soil, under stones, litter, rocks and leaves. It is also commonly found in human habitats, e.g. gardens and parks. This species is a predator, but also feeds on litter with organic and inorganic matter (omnivorous species). It is supposed to be as one of the bioindicators of the natural environment. The doses of cadmium concentration will be determined according to high levels of cadmium found in polluted area of Europe. They correspond to cadmium concentrations observed in plants in polluted, post-industrial areas. Modern and widely used methods, such as e.g., TEM, flow cytometry, AAS, confocal microscope, etc. will help us to obtain the results which can be join together in order to present the holistic state of view at the animals' body organization.