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LIGHT POLLUTION – AN IMPORTANT INTERDISCIPLINARY PROBLEM – INTRODUCTION

Artificial lighting is usually considered a benefit and one of the achievements of civilization. It allows extension of our daily activity, giving us a sense of security. Formerly, it was used sparingly and only when necessary. Currently, due to advances in the design of high-performance light sources (first the discharge mercury vapor lamps, later the sodium lamps and, now, the metal halide lamps), for some time we and our environment suffer from excess of artificial lighting.

The excessive and misused artificial lighting acts negatively on humans and the environment, mainly by interfering with biological clocks and behaviour of nocturnal animals. It has also the negative impact on human health. Worse, as a result of dispersion in the atmosphere, the city lights reach the very remote places, often the nature reserves, disrupting local ecosystems. The negative impact of this type of lighting on the environment has been highlighted at the end of the 19th century, but only in the 70. zoologists drew attention to the biological clocks abnormalities and also the abnormal behaviour of nocturnal animals related to the growth of artificial illumination. During this period, the concept of “light pollution” has been already introduced, which began to be treated as other types of pollution.

Since the beginning of the 80s. the theme of light pollution in the world has been already well studied, the numerous meetings and conferences dedicated to this subject have been held.

While initially the problem of light pollution was raised primarily by astronomers, lat-

er its interdisciplinarity has been noted and in the early 20. the zoologists, electricians, physicians or conservators of nature have began to dominate.

In the same period also in Poland, at the Faculty of Environmental Engineering of the Cracow University of Technology, the phenomenon of light pollution has began to be studied – there the first publication on this subject was published in 2006. In 2013. at the University of Warsaw the first Nationwide Conference on Light Pollution was held, which subsequent editions were held in the following years in Wrocław and Kraków. These conferences brought together a number of specialists in many fields of science and industry.

This issue of KOSMOS is entirely dedicated to the problem of light pollution.

Light pollution is defined in different ways, often referred as:

- the burdensome impact of artificial light, caused by its excessive or improper use,
- any negative impact of artificial lighting, as: blinding, light trespassing, overlighting, reduced visibility due to a faulty lights, sky glow and the waste of energy,
- change the level of lighting in the environment under the influence of an artificial light,
- direct or indirect introduction of artificial light into the environment.

On 25-27 September 2015 in Kraków was held the 3rd National Conference on Light Pollution. A very wide range of topics raised by the experts prompted the Editors

of KOSMOS to ask the participants to cooperate on the creation of this issue of the magazine. The aim of this issue is presenting the problem of light pollution in an interdisciplinary perspective, as well as presenting ways of minimizing this phenomenon and its negative effects.

Not only scientists but also entrepreneurs dealing with the problems of light pollution are the authors of the subsequent articles, trying to answer such questions as:

- Lighting Technologies – how to reduce and minimize light pollution?

- Astronomy, meteorology and physics of the atmosphere – how light pollution affects the astronomical research and how it is connected with the state of the atmosphere?

- Biology and ecology – how light pollution affects the plants and animals, and also

on the environment, with particular emphasis on the terrestrial and aquatic ecosystems?

- Medicine and sociology – how light pollution affects the public health, and also the individual health?

- Architecture – how to properly illuminate the architectural objects without adding the light pollution to the environment?

Of particular importance is the fact that the authors of the presented works try to show multi aspects of the discussed problem.

This issue will allow anyone to take a look with presented subject, becoming also the basis for a broader discussion. We hope that, as a result, this will allow for better public awareness in the field of protection against light pollution.

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