Polluted cities across the Western Balkans region have over 50 µg / m3 (PM 2.5), which is twice the permitted annual values and can reduce fertility by up to 10% in women. In men, contamination with powdery substances reaches the testicles, where it causes a decrease in sperm production, less sperm motility, and more frequent miscarriages during pregnancy due to programmed cell death. Poor air quality is one of the causes of increasing infertility and increasing sterility rates for both women and men across the Western Balkans. This especially affects women who live in polluted areas, because due to air pollution, they can have fewer healthy eggs, and as a result, lower fertility, while in vitro fertilization is less successful. PM 2.5 powders reduce fertility by 2% for every 10 µg / m3 of the presence of these particles in the air.

The human body is an adaptable, but also a very delicate organism. Adaptability to different environmental conditions, and thus to pollution, is often paid for by a shorter lifespan, diseases, but also problems in reproduction. Air pollution contributes to additional contamination of fertile soil, plants, animals, or the food chain, and thus increases the impact of harmful substances on human health. It is known that outdated technology, lack of filtration and environmental pollution with waste can lead to infertility and sterility. Several international studies have linked air pollution to infertility, birth complications, increased congenital defects in offspring and stillbirths. The fertility rate decreases statistically with increasing levels of air pollution. Certain air pollutants, such as lead and copper, affect the functioning of glands in the human body, whose disturbed work negatively affects reproduction.

Consequences of air pollution on infertility in women

Several studies prove that women living in contaminated areas have fewer vital eggs, lower fertility rates, and higher rates of embryo implantation failure during in vitro fertilization compared to women who are not exposed to air pollution. PM 2.5 powders weaken the quality of oocytes, reducing fertility by 2% for every 10 µg / m32 of these tiny particles in the air. The most polluted cities in the Western Balkans have an average of over 50 µg / m3 per year, which is twice the maximum prescribed annual values, while daily values often exceed 200 µg / m3. Prolonged exposure to polluted air in the Western Balkans can reduce women’s fertility by more than 10%, and during days with high levels of pollution, the chances of conceiving are reduced and abortions are increased.

A study from Brazil showed that women exposed to high levels of PM 10 (> 56.72 µg / m 3), as is the case in several cities across the Western Balkans, have an increased abortion rate despite undergoing IVF. A 2010 study covering the town of Labin in Croatia shows that the

incidence of abortions and stillbirths in the town was significantly higher during exposure to polluted air from a nearby coal-fired power plant – compared to when there was no such exposure. Sulfate compounds produced in the coal burning process increase, by up to 13%, the risk of miscarriage, while exposure to PM 2.5 and PM 10 reduces the rate of conception. From these data, we can unequivocally conclude that air pollution negatively affects fertility in women and that it is necessary to radically improve air quality in order for fertility to return to normal and in vitro fertilization to be more efficient.

Consequences of air pollution on infertility in men

Several studies have shown that powdered substances PM 10 and PM 2.5, in addition to easily entering the pulmonary alveoli, can also reach the testicles and reduce fertility, affect fetal anomalies and increase the chance of miscarriage. Several animal experiments have shown that prenatal exposure to exhaust fumes can also lead to a significant reduction in daily sperm production. A study from the Czech Republic showed that air pollution is also associated with a decrease in sperm motility, and this parameter is one of the most important for natural fertilization.

How to reduce infertility in the Western Balkans?

In order to reduce infertility in the Western Balkans, it is necessary to take various health measures as soon as possible and measures to improve air quality. Pollution with powdery substances, sulfur oxides and heavy metals must be reduced as soon as possible in order for fertility to return to normal within time. Abandoning the use of coal for electricity production is the most important measure to improve air quality, and the replacement of boilers in households with more environmentally friendly solutions, solar panels on the roofs of houses and buildings, and energy efficiency improvement projects can play an important role. Action must be taken as soon as possible, because if infertility is observed through the prism of time, it is constantly increasing and is one of the important factors in the decline of the population of the Western Balkan countries. One of the measures to reduce the harmful effects of polluted air is to reduce the use of disposable plastics, especially non-recyclable packaging, as well as the replacement of synthetic fibers with natural ones.

Countries in the region should encourage reproductive endocrinologists and gynecologists to promote healthy pregnancies by educating women to adopt a safe lifestyle during the period before conception. In order to reduce infertility, it is necessary to provide highly efficient indoor air filters, with timely notification of air pollution, in order to avoid outdoor activities when the air quality is poor. This measure is especially important for special institutions that treat sterility, in order to create optimal conditions for patients during the

process of in vitro fertilization and reduce the negative impact of laboratory air pollution on very sensitive eggs and embryos. Infertility treatment and in vitro fertilization must become much more accessible to anyone who wants to have children. Today, this type of treatment has become a privilege and couples who want to have children have to set aside large sums of money, and often have to travel abroad to perform certain procedures. In addition to current short-term improvements, the capacity of diagnostic centers needs to be improved and joint studies encouraged to use monitoring and measurement data from the Western Balkans. The creation of joint interactive maps and mathematical models would summarize short-term and long-term exposure to harmful particles in the air, with special emphasis on their impact on infertility, premature births, disease and infant mortality. In the end, the countries of the Western Balkans need to start working harder instead of just talking about birth rates and provide people who want to have children with support and conditions where those children will be able to grow up and breathe clean air.
Source: reri.org.rs