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## **THE SYSTEM OF AIR IONIZATION PRODUCTIVITY**

**Introduction.** Health and normal functioning of the organism largely depends on the condition of ambient air surrounding people. That is what exactly one of the most important of human habitats. Advanced technologies, urbanization of cities, cars, factories and so on have not only improved our lives in the sense of development and opportunities, but also had a negative impact on the environment (ecological situation) in big cities, and at the same time on the health and well-being of people. Ecologists, who observe the condition of the air, are sounding the alarm. [1 p.149]. They affirm that different chemical impurities are found in the air, which negatively influence the health of people and the state of their body. Literary sources analysis has shown that the "right", namely close to natural, balance of positive and negative air ions have a beneficial effect on the health and general human well-being. That is why the problem of managing air quality parameters is one of the most important for many fields of medicine and hygiene.

**Problem statement and relevance.** Today quite developed range of materials are accumulated for studying, development and introduction into medical and environmental practices: research methods of influence negatively charged air particles on the human body on the whole and its separate systems; ionization as air decontamination method of the working area; development and research of methods of air ionization in enclosed spaces (Chizhevskiy A.L., Lepikhov P.V., Nedobora O.A., Gliva V.A., Zaporozhets O.I., Korenovskaya O.L. et al.)

A comparative table of existing ionizers and counter air ions was in the work [1]. The disadvantage of all existing ionizers is impossibility of indicating the number of generated ions and opportunity to regulate and establish the necessary air ions dose. It limits the use of air ionizers in medicine and explains the fact that air ionizers are used either at home for improvement of air or in special research laboratories [1 p.149].

**Main part.** Counters, which are produced nowadays based on the aspiration method of measurement, which has some significant drawbacks:

1. time-consuming to measure the concentration of ions;
2. air blowing through the aspiration chamber greatly distorts the picture of the field, that is why it becomes impossible to measure the concentration in a certain space point;
3. low accuracy.

The device for evaluation of air ionizers productivity consists of exploring ionizers, capacitor and air ions counter. Linear sensor is placed in the chamber, which is made of antistatic material. The source of air ionization is in the upper plane of antistatic camera. Holes are placed on the sides of the camera vertically to ionizer that allows you to move the linear sensor, distancing it from the power with a step of 5 cm. Also, a capacitor plays an important role in this system which has two outputs. A metal

plate is attached to the first output of a capacitor, which is located at the bottom of the camera, and to the second output of the capacitor the linear conductor is attached, the size of which is determined by the number of air ions. System shown in Figure 1.

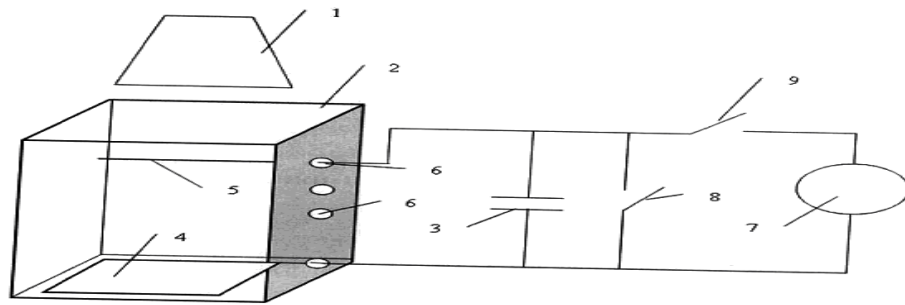


Figure 1 – «The system of air ionization productivity»

1– ionization; 2 – antistatic chamber; 3 – capacitor; 4 – metal plate; 5 – linear conductor; 6 – holes; 7 – microcoulometer; 8,9 – button.

The advantages of the offered system are [2]:

- antistatic chamber - due to antistatic chamber, the impact of the movement of environmental air masses on the ions flow reduces, that increases the reliability of evaluation;

- using buttons of the capacitor charge and discharge reset allows simplify the operation of determining the number of charges or air ions;

- the use of a linear conductor reduces dependence of the sensor impact on the estimating flow, as a linear conductor creates less resistance to estimating flow of air ions, namely selects only a small portion of the ions flow, and sensor sensitivity is determined only by the active length of the linear conductor and by range of the microcoulometer.

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