

Study of Natural Ecological Problems in the Southern Regions of Uzbekistan Using Physical Research Methods

Turaev Ergash Yuldashevich¹

Niyazova O. A.²

Haydarova Muharram³

Abstract

This article describes the results of the study of the natural environmental problem in the southern regions of the Republic of Uzbekistan - "Afghan wind" using physical methods and its impact on the national economy with scientifically based results.

Keywords: *environmental problems, global, regional, local, negative situation, harmful substances, ions, atoms, heavy elements, migration.*

¹Tersu professor, DSC physics-math

²Senior lecturer of TerSU

³Tersu. Master

At present, environmental issues are the most pressing issue and are receiving a lot of attention.

Pollution of the atmosphere, water, soil with industrial and agricultural wastes, as well as pollution as a result of various natural atmospheric phenomena lead to a decrease in the productivity of agriculture and livestock.

A natural ecological problem in the southernmost part of the Republic of Uzbekistan, Surkhandarya region - a dust storm called "Afghan wind" occurs 3-4 times a month and causes great damage to the national economy [1].

The most pressing issue is the study of the impact of this environmental problem on the economy and the revision and amendment of natural resource use plans in areas where this environmental problem occurs, as well as the impact of this environmental problem on the human factor [2].

In the study of this problem, using the methods of physical research, using the method of neutron-activation analysis of atmospheric composition, certain results were obtained on the basis of quantitative study and comparison of atmospheric composition at the time of the environmental problem and in the absence of this environmental problem [3].

To do this, a certain amount of atmospheric air was passed through filters, and the amount of substances trapped in the filter was determined by irradiating the reactor with a stream of neutrons in the following order.

$$C = \frac{I_1 M_2}{I_2 M_1}$$

Here I_1 - the impulse of the under study, I_2 - the impulse of the element etalon, M_1 - the mass of the element under study, M_2 - the references element mass.

The following table shows the amounts of the elements Au, La, Na, Sm, Hg, Cs, Zn, Co, Sc, Fe, Ce, Cr, Br, I in the presence or absence of environmental problems in the atmosphere (Table 1)

Table-1

Elements	The amount of elements in the atmosphere during the dust storm "Afgan wind"	The amount of elements in the atmosphere during the absence of the "Afgan wind" dust storm
Sm	$45,05 * 10^{-6}$	$10,28 * 10^{-6}$
Au	$27,48 * 10^{-6}$	$8,33 * 10^{-6}$
Na	$16,16 * 10^{-2}$	$3,2 * 10^{-2}$
La	$30,73 * 10^{-5}$	$11,98 * 10^{-5}$
Hg	$33,08 * 10^{-4}$	$16,49 * 10^{-4}$
Cs	$0,65 * 10^{-4}$	$0,37 * 10^{-4}$
Zn	$19,6 * 10^{-3}$	$5,5 * 10^{-3}$
Co	$2,89 * 10^{-4}$	$0,63 * 10^{-4}$
Sc	$16,02 * 10^{-5}$	$0,93 * 10^{-5}$
Fe	$64,17 * 10^{-2}$	$5,01 * 10^{-2}$
Ce	$10,57 * 10^{-4}$	-----
Cr	$4,56 * 10^{-3}$	-----
Br	-----	$1,54 * 10^{-4}$
I	-----	$1,09 * 10^{-4}$

The results showed that during the "Afghan wind" the experiments showed an increase in the amount of elements La, Na, Au, Sm, Hg, Cs, Zn, Co in the atmosphere by an average of 3-4 times.

Experiments have shown that the amount of Sc and Fe elements in the atmosphere increases by 8-10 times during this dust storm, which is called "Afghan wind" and brings with it various dust elements. At the time of the "Afghan wind" environmental problem, there were also huge, dramatic changes in the atmosphere.

Experiments have shown that the elements Ce and Cr are formed in the air as a result of the "Afghan wind" dust storm. Another unexpected result was also obtained. After the onset of the dust storm, the amount of elements Br and I in the atmosphere remained zero, ie the elements Br and I in the atmosphere were completely lost.

Given that these elements Br and I are a calming element for the human body, the fact that many diseases re-emerge in humans during the "Afghan wind" dust storm confirms the accuracy of our experiments.

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