METHODOLOGY FOR SELECTION AND SOLUTION IN ECOLOGICAL PROBLEMS IN MOLECULAR PHYSICS

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ABSTRACT

The article outlines the principles and methods of selecting molecular physics in environmental terms, with logical, consistent, and didactic principles.

Keywords: Ecology, education, upbringing, principle, knowledge, skills, skills, environmental security, environmental disaster, ecological crisis.

INTRODUCTION, LITERATURE REVIEW AND DISCUSSION

It is desirable for secondary school students to develop theoretical knowledge, practical skills and abilities related to environmental issues in the physical education process.

The use of quantitative examples related to farming based on the ideal gas state equation in the physical education process helps students to understand the physical nature of environmental events and apply them in practice.

Every future farmer who works in agriculture after graduating from high school, first of all, with the use of agricultural machinery and technology, that is, soil preparation, knowledge of the physical, mechanical, biological, chemical properties of soil and seeds for planting, the physical occurrence of the planting process. They need to be familiar with the scientific basis of processes, processes and regularities.

Taking into account the above, the following objectives are set for the lessons intended for the selection and solution of quantitative environmental problems in the physical education process:

1. Expanding students' knowledge on the ecology of the choice issues.
2. The use of ecology in the classroom by students in the classroom environment helps students to master the teaching materials relevant to agriculture.
3. Choosing and solving quantitative environmental issues helps students to understand the nature of physical laws.
4. The use of environmental issues in physics gives students a feeling of love for their country.

Choosing and solving environmental problems based on the ideal gas equation will help students apply their theoretical knowledge to practice.

The following is an example of quantitative and quantitative issues in the environmental context for the 9th graders on physics: "Evaporation" and "Capillary events", "Molecules size, mass, and Avagadro constant."

Issue 1. What is the reason for the low humidity in the arable land during the hot summer days?

Answer:

A. The diffusion event.

B. Condensation of steam.
V. Convection phenomenon.
G. Liquid evaporation.
D. Heat exchange.

Issue 2. Why protect the sick from flooding during the coldest winters?
Answer:
A. Cold leaves can be strangled by severe frost.
B. Water freezes and keeps the body of the alfalfa from moving.
V. The alfalfa is covered with ice, separating it from the environment and soil.
G. Water between the roots of the alfalfa and the soil froze and separated the root from the soil.

Issue 3. As a result of the Esholon accident, the fuel in two tanks of 49 m3 spilled over the river. The thickness of the spreading layer is 1.9 • 10-7 mm. Find the surface of the oil spread.

Issued by:	**In SI:**	**Formula:**
$V = 2 \cdot 49\ м^2 = 98\ м^3$ $d = 1{,}9 \cdot 10^{-7} мм$ s = ?	$98\ м^3$ $1{,}9 \cdot 10^{-10} м$	$d = \frac{V}{S}(1) \quad S = \frac{V}{d}(2)$

Solving

$$S = \frac{V}{d} \approx \frac{98\ м^3}{1{,}9 \cdot 10^{-10}\ м} \approx 5{,}2 \cdot 10^{-11} м^2$$

Answer. S = 5,2 · 10^{-11} $м^2$.

Issue 4. It is known that at the oil refinery, about 6 tons of wastewater flow into the pond and form a layer of 1.2 · 10-7mm thickness on the surface. How much space does this waste have when it spreads to the surface?

Issued by:	**In SI:**	**Formula:**
$m = 6м$ $d = 1{,}2 \cdot 10^{-7} мм$ $\rho_к = 0{,}8 \cdot 10^3$ кг/$м^3$ s = ?	$6 \cdot 10^3$ кг $1{,}2 \cdot 10^{-10} м^3$ $0{,}8 \cdot 10^3$ кг/$м^3$	$\rho = \frac{m}{V}(1) \quad d = \frac{V}{s}(2)$ $V = \frac{m}{\rho}(3) \quad S = \frac{V}{d}(4)$

Solving

$$V = \frac{6 \cdot 10^3\ кг}{0{,}8 \cdot 10^3\ кг/м^3} = 7{,}5\ м^3. \quad S = \frac{V}{d} = \frac{7?5\ м^3}{1{,}2 \cdot 10^{-10}\ м} \approx 6{,}2 \cdot 10^{-11} м^2$$

Answer. S = 6,2 · 10^{-11} $м^2$.

The following questions can be addressed to students as homework.

Issue 1. One of the features of forestry ecology, that is, why is there a tendency for coastal trees to fall when rivers freeze in winter? Explain the nature of this process.
Issue 2. The emergence of moisture in plants causes their extinction. What is the function of the perennial tree trunks?
Issue 3. Lightning often strikes trees that are deeply rooted in the ground. Why not?

Issue 4. Why can't plants sprinkle water when exposed to sunlight?
In the 6th grade, the following topics can be addressed as a homework on Temperature, Density and Units, Pressure.
Issue 1. Draw and graph the function of changing the soil moisture content under the film for the sowing of the seeds relative to the depth of the layer.
Issue 2. If the tractor is pressed to the ground at a weight of 55 kH during the cultivation process, the volume of the soil below the chain tractor chain decreases 1/3 and the density increases three times. If the weight gain increases from 55 kH to 65 kH, draw the diagram of the change in soil density accordingly. Explain the difference between the soil ecology.

3- Wheeled tractor mass is 3.2 and the total number of base surfaces of wheels is 0.5 m2. Draw a graph of the change in pressure of the tractor on the soil when the base surface is unchanged and the mass of the tractor varies from 3.2 t to 4 t. Explain the difference between the soil ecology.

By selecting and solving experimental problems in physics in the region, students are more interested in pursuing a career in agriculture, as the skills they acquire are needed in their own production activities.

The following is an example of selected and structured experimental and quantitative issues for physics students on the subject "Pressure", "The Law of Archimedes", "The forces acting on fluid and gaseous bodies."

1. A total of 1.68 kg of soil was extracted from the cropland. If the soil is 0.001 m3, what is its density?
Required tools and materials: scales, weights, soil samples from different areas of the land.

Procedure of work:

1) weighing of soil sample on the scales (kg);
2) measuring the size of the soil sample using a casing (m3);
3) determination of sample soil density according to the formula (kg / m3);
4) Writing the results of measurements in a table.

Object	weight, kg	Size, m^3	Density of kg / m^3
Soil	1,68	0,001	1680

$\rho = m / V = 1{,}68$ kg / 0,001 $m^3 = 1680$ kg/m^3.

The selection and solution of quantitative issues in the context of the local area ecology is important for students to apply theoretical knowledge gained in physics to agriculture in their home country and to acquire a profession in farming.

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