

exchange deteriorates, the food supply and fish die, and the oil that is settled at the bottom harms all living things in the reservoir for a long time.

Special attention should be paid to bulky waste. This is primarily construction debris from bridge construction and repair: leftovers of building materials and building structures. In addition, in the beds of rivers and canals, you can often see flooded building structures left over from the construction or overhaul of bridges. There are also large-diameter reinforced concrete and steel pipes left over from dismantled bypasses or technological sites when construction work is completed. You can even find flooded boats in riverbeds [2].

It is well-known fact that ecological safety of a motorway includes protection of nature from the impact of the motorway at all stages: construction, reconstruction, operation, maintenance and repair. The main task of modern builders and engineers is to create laws and rules of interaction between nature and man, and, as a result, to prevent environmental disasters in the world.

### REFERENCES

1. Енергоефективність та відновлювані джерела енергії. Під заг. ред. А.К. Шидловського. К., Українські енциклопедичні знання, 2007. 560 с.
2. Проектування автомобільних доріг. Ю. Собко, Ю. Сідун, Л. Карасева. Л., Видавництво Львівської політехніки. 2019. 228 с.
3. Навчальний посібник В.І. Братчун, Д.О. Павлюк. Г., ДонНТУ, 2013. 244 с.
4. Основи експлуатації автомобільних доріг та аеродромів. Степура В.С., Белятинський О.А., Кужель Н.В. К., НАУ, 2014. 201 с.

**R. Glibchenko, V. Ogloblin (PSACEA, Dnipro)**

*Scientific supervisor:* O. Nesterova, Cand.Sc.(Tech)., Assoc. Prof.

*Language consultant:* N. Shashkina, Cand. Sc. (Phil), Assoc. Prof.

### SAFETY AND POTENTIAL HAZARDS IN HYDROTECHNICAL STRUCTURES

Hydrotechnical structures play a crucial role in managing water resources, providing flood protection, and supporting various industrial and agricultural activities. However, ensuring the safety of these structures is paramount to prevent potential hazards and safeguard both human lives and the environment.

Safety in hydrotechnical structures is a multifaceted concern that involves the careful consideration of design, construction, maintenance, and emergency response. The consequences of failure in these structures can be catastrophic, leading to loss of life, property damage, and environmental degradation.

Understanding and recognizing potential risks associated with hydrotechnical facilities is a critical step in ensuring their safety. These risks may include structural failures, overtopping, erosion, seismic events, and environmental impacts. Thorough risk assessments are essential to identify vulnerabilities and implement effective mitigation measures.

Adherence to international safety standards and regulations is a cornerstone of ensuring the safety of hydrotechnical structures. Compliance with established guidelines helps engineers and stakeholders navigate the complexities of designing and managing these facilities while minimizing risks [1].

Regular inspection and maintenance are vital for ensuring the structural integrity of hydrotechnical structures. Neglecting routine checks and necessary repairs can lead to gradual deterioration, compromising the overall safety of the facility. Case studies illustrating the consequences of inadequate maintenance underscore the importance of proactive care.

Developing comprehensive emergency preparedness plans is essential to respond effectively to unforeseen events. Training programs for personnel, simulation exercises, and the establishment of communication protocols contribute to a swift and coordinated response in times of crisis.

Hydrotechnical projects often have environmental implications. It is crucial to mitigate negative impacts on ecosystems and biodiversity. Incorporating eco-friendly practices, such as habitat restoration and sustainable water management, ensures a harmonious coexistence between hydrotechnical structures and the environment [2].

The integration of emerging technologies can significantly enhance safety in hydrotechnical structures. Monitoring systems, advanced materials, and data analytics contribute to real-time risk assessment and early detection of potential issues, allowing for timely intervention.

Safety in hydrotechnical structures requires collaboration among various stakeholders, including government agencies, engineers, and local communities. Public engagement initiatives foster a culture of safety awareness and enable collective efforts to address potential risks.

Analyzing historical incidents related to hydrotechnical structures provides valuable insights into improving safety practices. By learning from past failures, the industry can implement measures to prevent similar incidents and continuously enhance safety protocols.

**Conclusion.** Ensuring the safety of hydrotechnical structures is a shared responsibility that requires a holistic approach. By prioritizing compliance with regulations, embracing technological innovations, and learning from past incidents, the industry can create a safer environment for both the infrastructure and the communities it serves. Continuous vigilance, collaboration, and innovation are key to mitigating potential hazards and ensuring the long-term sustainability of hydrotechnical projects [1,2,3].

## REFERENCES

1. Sargand SM, Masada T, White K, Altarawneh B. Profile-wall high-density polyethylene pipes 1050 mm in diameter under deep soil cover: comparisons of field performance data and analytical predictions. In: Transportation Research Record: Journal of the Transportation Research Board No. 1814. TRB. National Research Council; 2002. p. 186- 196.
2. Navid H. Jafari, H. Omar Ulloa. Literature Search on Use of Flexible Pipes in Highway Engineering for DOTD's Needs. FHWA/LA.17/638. Dept. of Civil and Environmental Engineering Louisiana State University. 2020 p. 63.
3. Suleiman, Muhannad Taher, The structural performance of flexible pipes (2002). Retrospective Theses and Dissertations. 1033. P.143. URL: <https://lib.dr.iastate.edu/rtd/1033>.

**K. Hordiienko (PSACEA, Dnipro)**

*Scientific supervisor:* S. Solohubova., Cand. Sc. (Phys. Ed.), Assoc. Prof.

*Language consultant:* S. Suvorova, Cand Sc. (Phil), Assoc. Prof.

## STRETCHING AS A MEANS OF FLEXIBILITY DEVELOPMENT

**Introduction.** Recently, the state of health of students is increasingly deteriorating. According to the researches of N. V. Bohdanovskoi, H. L. Apanasenko, M. V. Dutchak, "the general regularity of the increase in cardiovascular diseases and the deterioration of the body's functional reserves is revealed. In the Decree of the President of Ukraine on the approval of the State-wide program "Health-2020: Ukrainian dimension" it is stated that 61% of the population of Ukraine aged 16-19 years has a low level of physical fitness'. [3] To improve physical fitness, namely the development of flexibility, you can use stretching (the direction of fitness aimed at stretching all muscle groups, increasing flexibility and mobility). That is why the research of stretching as a means of developing flexibility is an urgent problem.

**Purpose:** to investigate stretching as a means of developing flexibility and to determine its impact on human health under the condition of constant training.