

# Annals of Civil and Environmental Engineering

Volume - 3, Issue - 1

**Research Article**      **Published Date:-2019-08-27 00:00:00**

[The place of health innovation in space to improve the lives of earthlings](#)

For over twenty years, following the creation of space stations, MIR first and then the ISS (International Space Station) men (3 to 6) live and succeed each other continuously about 300 - 400 km of altitude to make scientific experiments. For this reason sending men into space has become an activity "almost banal or regular" but this remains potentially a very dangerous environment for the adapted man on Earth and thus requires medical monitoring to ensure the health of astronauts and the persistence of their ability during their mission. In general, the medical benefits on Earth of space conquest go far beyond envy and the need for man to discover the cosmos but to develop many tools medicines to also offer solutions for all living beings on Earth!

---

**Research Article**      **Published Date:-2019-07-15 00:00:00**

[Research of possibilities of studying the areas of development of erosion of slope lands in Azerbaijan and fight it](#)

The study proved that in gully systems with the largest catchment area ranging from 5.0 to 28.8 km<sup>2</sup>, the degree of dismemberment of gully systems is small, varies mainly from 1 to 3 km / km<sup>2</sup>, less often from 3 to 5 km / km<sup>2</sup>. As can be seen, the average annual growth of ravines is 0.34 ... 7.48 m in length, 0.20 ... 2.48 m in width, 0.10 ... 1.16 m in depth. The intensity of erosion development (ravine, planar, etc.) is mediated by their catchment area. Moreover, the degree of division of individual gully systems here is not dependent on their catchment area, moreover, the greatest dissection is observed in gully systems that have the smallest catchment area, which is associated with the conditions of their location.

---

**Research Article**      **Published Date:-2019-05-27 00:00:00**

[Investigation and analysis of fracture failure and fatigue cracking in High-rise pavement using simulation software of ABAQUS](#)

Assuming that the road infrastructure has been implemented in accordance with specifications and standards, poor adhesion between the two layers of asphalt mix can be a significant cause of pavement problems. The general problem observed with the weak adhesion between the layers is the slip failure. Slipping disruption in areas where transport acceleration increases, in areas where acceleration decreases or may occur in bumps. One of the criteria and a test method for measuring adhesion resistance between the hot mix asphalt layers is needed to improve the surface finish. The main objective of this study is to determine the effect of reducing the coefficient of friction between asphalt layers in the displacement of asphaltic layers. Because performing experimental experiments in the country is a deterrent to this goal, the use of analytical and numerical methods has been shown to play an important role in conducting studies. Therefore, in this paper, using vehicle simulation in ABAQUS software and analyzes, it has been found that decreasing the coefficient of friction (adhesion reduction) increases the interlayer deformation, which causes the surface of the pavement to fail. Three different thicknesses for asphalt cladding, including 4, 6, and 7 centimeters, and three different thicknesses for roller concrete layers of 18, 20 and 22 centimeters are used. Modeling and analysis of pavements with finite element method has been performed and the depth of the asphalt and tensile strain slope is calculated at the maximum level. The results show that the type of asphalt mix has a high impact on the amount of sloping and tensile strain at the maximum level. So that under different conditions it is estimated to be about 2-3 times in the amount of rotation at the surface. Also, the amount of groove and strain in the middle of the procedure is increased by a thickness of 11% the thickness of the roller concrete thickness has not changed, but the surface strain has been reduced by 9%.

---

**Research Article**      **Published Date:-2019-04-25 00:00:00**

---

The analytical models are mainly combined with numerical equations for the problems of the pavement under the wheel load. Different assumptions can be considered, such as elastic asphalt and viscoelastic as well as static or dynamic load. Mainly on deformation at the bottom of asphalt and tension layers focus on subgrid. The pavement structure was considered as layers with uniform characteristics. Therefore, this analytical model calculates the three-dimensional contact tension between the wheel and the pavement and the shape of the contact area. Basis and subgrid are considered linear and the asphalt layers can be linear or viscoelastic. This model is based on the results of direct shear stress tests at an axial load constant. The curves obtained from this experiment can be defined by three parameters: the maximum shear stress (shear stress curve versus shear displacement), the interaction modulus between the layers (the same curve slope) and the friction coefficient after the failure. Due to the ability of ABAQUS software, this project is done with this software. One of the methods widely used to predict viscoelastic responses of asphalt mixtures is the finite element method. ABAQUS software is one of the tools that can simulate mixed asphalt behavior based on a finite element method, taking into account all the determinant parameters. The use of the Prony series is one of the common techniques for describing the viscoelastic behavior of asphalt mixtures in ABAQUS software. For this purpose, it is necessary to determine the parameters required for this field, including proven constants, moment elastic modulus, and asphalt mixture poison ratio. On the other hand, the determination of these parameters through testing in addition to spending time and costs requires laboratory equipment. Therefore, in this thesis, a three-dimensional finite element model with ABAQUS software was constructed to analyze the persistent pavement using theoretical relations without conducting the experiment. Also, viscoelastic behavior of common asphalt mixtures and time dependence of its responses at different temperatures can be modeled in ABAQUS software. After performing the shear stress test for different axial loads, different temperatures, with or without a single coil, they found that all parameters are temperature dependent and the coefficient of friction does not depend on the applied axial load. This new model improves the accuracy of the finite element model and its important role can be an analytic expression that includes all the variables that are effective in the problem.

---

**Research Article**

**Published Date:-2019-04-16 00:00:00**

[Study the effect of transient vibration on multi-storey building structure according to equivalent spring-mass system performed by Ansys](#)

The carried work has based on transient vibration response of multiple degrees of freedom (MDOF) system. By this work study of Time–history analysis and prediction of the displacement for excitation has done. For the MDOF system, we have taken the four-storey building to done transient vibration. We establish the equivalent spring-mass system. Transient analysis has done for both Undamped and Damped of the forced system of multiple degrees of freedom (MDOF) system. In the case of the Damped system, we have done three stages of damping, i.e., (1) Underdamped system, (2) Critically damped system, (3) Overdamped system. The time-history graph obtained for two different time stages i.e. 0.001 sec & 0.01 sec with initial time 0.000001 sec. The natural frequency has determined by both theoretical calculation and ANSYS. The whole study of transient vibration makes it possible to predict the damping values that oppose any kind of sudden impact or force vibration, such as blasts, earthquakes and tsunamis. The ANSYS is the modelling and simulation software is used to perform the transient vibration response. The Mode Superposition method is used by ANSYS to calculate the structure response

---

**Research Article**

**Published Date:-2019-01-11 00:00:00**

[Damu-Safen pesticide exposure risk assessment, EC \(fomesafen, 250 g/l\)](#)

---

Annually the list of pesticides is replenished by new ones. One of the main criteria for their registration is toxicological and hygienic assessment and its impact on the environment.

In order to register the new soy herbicide Damu - Safen, EC (fomesafen, 250 g/l) it was necessary to assess its toxicological and hygienic impact on the environment and humans. Therefore, for the first time we conducted studies of the environmental objects under the influence of Damu-Safen, EC (fomesafen, 250 g/l) and the risk assessment of the active substance fomesafen and pesticide Damu - Safen, EC on the workers. According to the results of the assessment of working conditions for the workers of the tanker and the tractor operator, an acceptable risk was obtained that meets regulatory and hygienic requirements. Residual amounts of fomesafen not exceeding the normative levels were found during conducted studies on environmental objects.

Consequently, the results of the risk assessment in the application of pesticide Damu-Safen, EC (fomesafen, 250 g/l) and its impact on the working people and environmental objects indicate the possibility of its application in compliance with optimal environmental conditions and compliance with regulations for appliances and personal protective equipment.

---