Hazards assessment of water resources to pollution caused by landfill's Yasouj

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Introduction

Contaminated drinking water significantly affects the health of consumers and the environment [1]. Numerous scientific reports have shown that the consumption of contaminated drinking water endangers human health and may lead to diseases such as cholera, diarrhea, typhoid, dysentery, polio, guinea worm and skin infections [3]. Various factors threaten the quality of water resources and cause its pollution, including the growing population, followed by increased production of waste, municipal and industrial wastewater and uncontrolled fertilizers in the agricultural sector. Waste management issues in many developing countries often reflect the main environmental problems that arise due to limited urban budget, poor understanding and lack of data and information. One of the serious problems resulting from waste disposal operations is waste leachate, which has significant negative effects on the environment [4, 5]. In general, the nature and content of leachate pollution varies considerably from landfill to landfill and depends on various factors including waste composition, seasons, area hydrology, compaction grade, waste age, landfill technology and sampling process. In order to assess the environmental impact of waste management, the impact of leachate from waste disposal sites on groundwater quality around each landfill must be carefully monitored [2]. Therefore, the study of spatial and temporal changes in groundwater quality parameters is of particular importance in understanding the aquifer quality status, pollutant sources and determining the most appropriate management strategy. Since the landfill of Yasuj city is located in a higher place than the drinking water supply wells of Yasuj city, surface and groundwater sources are always at risk of pollution. Therefore, the aim of this study was to evaluate the probable contamination of surface and groundwater resources around the landfill of Yasouj city over a period of 12 months.

Materials and Methods

After explaining the morphology and field surveying of the area, drinking water wells, east and west stream of landfill, Shah-Qasem dam reservoir and two springs (Sarabtaveh and Parikadan) were sampled monthly for one year.

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Samples for measuring hydrochemical properties include turbidity, pH, electrical conductivity, cations (sodium, magnesium, potassium, calcium), anions (chlorine, bicarbonate, sulfate, nitrate, phosphate), heavy metals (arsenic, iron, copper, zinc, mercury, chromium, cadmium, nickel, lead), dissolved oxygen, BOD and TDS and its comparison with the limits allowed in the National Drinking Water Standard of Iran and the World Health Organization were transferred to the laboratory.

Discussion and Results

The results showed that despite the desirability of many physicochemical properties of pumping drinking water from the karst aquifer of the Tangeh-Kenarah, some very dangerous properties of wells have been more than allowed during several months of the year. The results of analysis of surface water sources also showed that leachate from waste from Yasouj landfill had a significant effect on the flow of water in the landfill route, so that the amounts of phosphate, iron, turbidity, dissolved oxygen, BOD, arsenic, cadmium, lead and mercury in the surface water flow in the stream of the landfill route, in some months and sometimes the whole year, have been more than allowed. Also, the results of the spring water samples analysis showed that Sarabtaveh spring was more than the allowable in cadmium, lead and mercury pollution in the rainy months, and the amount of lead and mercury in the Perikdan spring also increased during the rainy season. In general, surface and groundwater resources around the landfill of Yasouj city are affected by leachate, so that it is more intense in the rainy season.

Conclusion

One of the main sources of drinking water supply in Yasuj city is eight wells drilled in a karst aquifer. Due to the nature of its fractures, this aquifer is inherently very sensitive to any kind of contaminant and may be easily contaminated with the least amount of chemicals. Disposal conditions and waste management in this place are such that the term landfill cannot be used for it. In fact, the landfill refers to a standard landfill in compliance with all scientific standards and principles, while the principles of engineering and standard design are not observed in this landfill. So that all kinds of wastes are discharged in different parts of the area without proper planning to prevent water and soil pollution caused by leakage and infiltration. On the other hand, this place, however, has been selected in one of the highest points of the study area. So, the most disadvantage of this landfill is its high altitude compared to other surrounding areas. Therefore, surface and groundwater resources around this landfill, especially in the rainy season, can be severely affected by contaminants in the waste. What is certain is that the landfill requires special management that

must be implemented as soon as possible to prevent contamination of water resources.

Keywords: Water pollution, waste dumping, leachate, karst aquifer, Yasouj, hazards assessment.

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The Role of Neighborhood Environmental Quality in Maintaining the Citizens' Mental Health during the Covid-19 Epidemic (Case Study: Kermanshah City)

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Introduction

The worldwide challenge of Covid-19 disease (especially in 2020 and 2021) and concerns about its consequences on people's mental health, once again drew attention to improving the quality of the urban environment. In fact, the policies of governments in the face of the Covid-19 pandemic, which were mainly in the form of quarantine, banning people from attending crowded centers, telecommuting, e-learning, etc., have raised concerns about the consequences of such policies on people's mental health. In other words, during the Covid-19 Crisis, it is felt that familiar, vibrant, and social public spaces are lost. This issue caused the present study to be based on the role of urban neighborhoods in maintaining the mental health of citizens during the Covid-19 epidemic. Accordingly, the present study answers the following two questions:

1. What are the environmental variables affecting the mental health of people in the neighborhood scale?
2. During the Covid-19 epidemic, which environmental factors in cities have played a more prominent role in maintaining the mental health of society?

Materials and Methods

The present research is a descriptive-analytical study based on documentary studies and field surveys. The purpose of this study is to evaluate the relationship between environmental factors and the mental health of citizens during the Covid-19 epidemic. Therefore, awareness of the environmental factors in the city and the mental health of citizens is a prelude to achieving the research goal. At first, in order to estimate the status of environmental factors, related indicators have been extracted from reliable sources, which has led to a total of 23 indicators. On the other hand, in order to assess the mental health status of citizens, the Dass-21 standard questionnaire was used. Therefore, each respondent must answer two questionnaires, including 1- Environmental Factors Questionnaire and 2- Dass-21 Mental Health Questionnaire. The Environmental

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Factors Questionnaire includes a set of closed questions that have been compiled based on the indicators extracted from previous scientific articles. The question options are based on a 5-point Likert scale. As this questionnaire is a researcher-made type, so it is necessary to check its validity and reliability. The validity of the questions was checked through interviews with experts and the reliability was confirmed according to the Cronbach's alpha test (0.846) for the first 30 questionnaires. The Dass-21 questionnaire, which is known as a standard questionnaire in the field of mental health, has been used with the environmental factors' questionnaire at the same time.

In order to test the research hypotheses, the city of Kermanshah has been selected as the case study and the citizens of Kermanshah have been selected as the statistical society. The sample size based on Cochran's formula and values of $p = q = 0.5$ and $d = 0.07$ was almost equal to 200 people, which was selected randomly among the residents of this city. After completing the questionnaires of environmental factors and mental health, the data was entered in SPSS software. Environmental variables are first categorized using exploratory factor analysis model. Also, the values of three components of stress, anxiety and depression were calculated based on the Dass-21 questionnaire. In the following, the focal correlation coefficient has been investigated between environmental factors and mental health components.

Discussion and Results

The variables that explain the subject were summarized in the form of 5 factors including "functional structure", "environmental comfort", " quality of urban space", "visual image" and "social scape". Considering that the total cumulative variance of the five factors is equal to 60.185, it can be said that about 60% of the efficiency of the variables in explaining the environmental quality of urban neighborhoods is confirmed, which is an acceptable statistic. In the following, the correlation of these factors with the three components of mental health has been investigated. For this purpose, Focal Correlation analysis has been used in SPSS software. In the first focal, the correlation coefficient between the two concepts of environmental quality and mental health is equal to 0.563 and the corresponding significant value (Sig.) is less than 0.05. The square of the focal correlation coefficient is called the focal root, which is equal to 0.317, it means the main variables related to environmental quality predict and explain about 31.7% of the changes in the main variables of mental health.

By calculating the square of the focal loads, the role of each factor in predicting the variance of mental health can be understood. Based on this, it can be said that the first factor is about 51%, the second factor is about 17%, the third factor is about 23%, the fourth factor is about 50% and the fifth factor is about 7% of the variance of mental health.

Conclusion

Findings show that the environmental quality of neighborhoods can be classified into 5 factors: "functional structure", "environmental comfort", " quality of urban space", "visual image" and "social scape". On the other hand, mental health was obtained based on the Dass-21 questionnaire in the form of three components: "stress", "anxiety" and "depression". In the following, the focal correlation between 5 environmental quality factors and 3 components of mental health has been investigated and the findings confirm the correlation between them.

According to the research findings, some macro strategies are suggested as follows:

- Organizing the space structure of Kermanshah neighborhoods based on meeting the daily and weekly needs of the people on a local scale.
- Recreating the structure and configuration of the neighborhoods of Kermanshah with the approach of improving pedestrianization.
- Improving the visual image of neighborhoods through cleanliness of the environment, improving the brightness of streets, maintaining and promoting key elements and identity building.
- Improving the legibility of neighborhoods by eliminating the shortcomings of the five elements of path, node, edge, landmark and district.
- Increasing the sense of responsibility of the people by encouraging the people participation.

Keywords: Environmental Quality, Residential Neighborhood, Mental Health, Environmental Psychology, Covid-19.

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Investigation of land use changes and its relationship with groundwater level (Case Study: Mallard County)

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Introduction

Land use **c**hanging affected quantity and quality of the groundwater resources. As land use reflects human impact, concerns about global environmental change have increased today, and also warnings about the importance of land use issues and temporal change have increased. Accurate and timely recognition of these changes is very important to understand the relationship and interaction between humans and natural phenomena in order to make appropriate decisions [16]. Optimal management of natural resources of an area requires understanding the effects of land use change on the hydrological cycle of water in that area [8] It is also necessary to be aware of changes in water level in order to understand the status of groundwater aquifers and its optimal management. By assessing groundwater level fluctuations, it can be used in water resources management [6].

Materials and methods

In conducting this research, the Landsat satellite image series for 2020 from the Landsat satellite image of 8 OLI sensors was used in order to extract the land use map. Also for the year 2000, the LandsatTM 5 sensor image was used to prepare the land use map using visible and infrared bands.

Also, groundwater depth data of piezometer well in Mallard plain were used and the data period was from 2000 to 2020. The steps of the research were as follows: after statistical post-processing of piezometric wells, data elongation method was used to eliminate defects in the study data. The detection method used only to correct the data defects is the interpolation method performed by Neural Power software (based on artificial neural network). To normalize the data, logarithmic conversion was used in SPSS software and GS + software was used for statistical analysis. For atmospheric, radiometric and geometric corrections, ENVI5.3 software and radiance and flash methods were used and GIS10.5 software was used to prepare the desired maps. Object-oriented classification method was used in Developer64 eCogn software for land use classification. In the object-oriented classification method, spectral information

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is merged with spatial information and the pixels are segmented based on the shape, texture and gray tone of the image surface at a specific scale, and the image is classified based on these components [11].

Discussion and Results

The groundwater level map is shown in Tables (6 and 7). As can be seen from the map above, the highest average water level in 2000 for agricultural use was recorded at 64.50 meters and the lowest average water level for barren land use was recorded at 26.00 meters. Considering the land use map and groundwater level map of 2020, the highest average water level in this year belongs to agricultural use with 61.19 meters and the lowest average recorded water level is related to soil use with 28.00 meters. As can be seen from Tables (6 and 7), if we compare the water level of both years in the study area, it is inferred that the average level of all land uses has decreased in 20 years, except for grassland use, which indicates Groundwater is critical and overuse of these resources. Rangeland use has not only not decreased but has also increased significantly.

Conclusion

Knowing the ratio of uses and how it changes over time is one of the most important issues in planning and policy making. For this reason, in this study, in the first step, in order to classify and then examine the changes that occurred in a specific period of time in the Mallard plain. For this purpose, in this study, in the first stage, in order to classify and record changes over a period of 20 years, images were classified in an objective way in eCognition software and output maps were extracted in ArcGIS10.5 software. Classification accuracy per year Classification accuracy 2000 has an overall accuracy of 0.91 and a kappa coefficient of 0.89. While the classification in 2020 with overall accuracy of 94% and kappa coefficient of 0.92 has provided a relatively lower accuracy. Looking at the 2020 land use map, the rangeland class with an area of 151556 had the most and after that, the residential area with 69164 had the most area. Looking at the uses of two years, the results show a significant difference that the use of gardens has decreased significantly from 65981 in 2000 to 2256 in 2020, which indicates the lack of management and felling of trees and the destruction of forests and Gardens and its conversion into residential and agricultural areas, etc., also the use of residential area in 2000 has increased from 42187 to 69164.

Keywords: Object-oriented classification, Groundwater, Geostatistical methods, Malard.

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Hazards science strategy
Does Hazards science have a strategy?

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Introduction

To investigate the scientific nature of hazardology, despite the efforts that have been made, it is insignificant and this is a global challenge. Because there is little scientific-experimental research in this field. On the other hand, in many countries, the traditional view of this science is more than the academic view. The understanding of hazards has gradually increased through the patient research of many thinkers over the past years. It started with systematic scientific content since the formulation of the Yokohama Strategy for a Safer World and is planned with a more comprehensive approach in the Sendai Framework for Risk Reduction for 2015-2030.

Necessity: By developing and explaining the scientific nature of hazards, contemporary scientists of the cognitive sciences related to hazards turn the complexity of scientific research related to hazards into simple knowledge through the direct investigation of hazards events and laboratory practice and sometimes work and scenario formulation. Hazards strategy is explained on the same basis. It means simplifying hazards knowledge, easier understanding, beneficial education and strengthening of policies and measures to reduce hazards. And a partial credit to the way that the scientists of this field travel. The question "Does hazards science have a strategy and if so, what is it?" It is in this direction.

Methods: The method used in this article is qualitative explanation and it has been analyzed by quantitative and qualitative evaluation of the methods and data related to the risks we have faced. Also, comparative and analytical reasoning and inductive inference based on observations and studies have been used, and taking into account the presuppositions effective on decision-making and decision-making and choosing the best accepted scientific approach, hazards strategies have been obtained.

Result: The answer to this question is obtained from the investigation of hazards events, the scientific response to those events, and the scientific development of hazard science over time.

Therefore, the purpose of this article, while introducing the strategy of hazard science knowledge, is to show the transcendental role of strategy to strengthen the intellectual foundation of hazard science and to provide an insight

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into the scientific nature and usefulness of this knowledge in contemporary times. This article was written using the qualitative explanation method and taking into account the assumptions affecting decision-making and choosing the best scientific approach. As a result, fourteen strategies for hazard management were explained.

Innovation: The innovation of this article is inventing new and reliable concepts about hazards and recognizing a newer approach in facing it and paying attention to the design school of this science, which is expected to be informative strategies to strengthen the knowledge of hazards in the present and future and to national and international working groups. Help to reduce the effect of risks by using strategy.

Keywords: Strategy, Hazards, Science, Vulnerability reduction.

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Social hazards caused by ignorance of the law with an attitude toward the judiciary

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Introduction

Ignorance of the law means the lack of knowledge of the law that has been published and the timing of its implementation has passed. In general, after the publication of the law, it is assumed that everyone is aware of it and the legislator accepts in a few cases the opposite. It should be said that there are many rules in Iranian law that one of the most important of them is the rule of "ignorance does not resolve the assignment" or "ignorance is not the responsibility of the law." In fact, according to the article of a civil law, the parliamentary approvals are signed by the president after the legal process, and he has signed it for five days and communicated to the executives and issued a release order. The official newspaper should also notify these rules within 72 hours. The laws of 15 days after publication throughout the country are binding, and the principle is that all people know the law. Therefore, it should be said that ignorance is not accepted in most cases. But the court's view of public awareness is more practical and is for better enforcement, because anyone may commit a crime and say he has not been informed of the law, but there are also exceptions to ignorance Because, for example, a foreign person may travel to Iran and do not have precise information about the official laws of the country and observe them that he has accepted such cases because a person has been ignorant of ignorance, that is, the act he has done has not been attributed to his will But this ignorance is not accepted by an Iranian.

Materials and methods

The present research method is descriptive-analytical. A description of this is that all the parameters and angles discussed should be fully explained and expanded using sources and references. The analytical method is also because it examines and analyzes social communication for achieving and measuring variables.

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Discussion and Results

Today, the concept of risk is one of the important issues of interest to societies. In fact, in one approach, hazards are considered to be a component of harm and crime and are associated with the person committing it. In other words, the risk of the obvious element of the harmful and criminal behavior of the individual is for other individuals or communities (Ahmadi Manesh and Saybani, 2021). Increasing crimes on the one hand and increasing laws, in some way suggests a growing change in the issues supported by lawmakers. On the other hand, it can be said that the issues protected in risky rights have taken on an abstract aspect, and in this regard include other important and general components such as security, health, etc. (Foroughi and Iran, 2018).

Social hazards and behaviors leading to crime will lead to a lot of serious problems in a wide circle. Social risks can occur in different ways in social contexts. These risks may in some way affect the social life of the people of the community and violate the rights of individuals (Van Ham, 2013). But from the point of view of criminology, there has been less study and study of social hazards (Howard Daniels and colleagues, 2018). It should be emphasized that ignorance of the law causes many dangers and crimes. At present, more than 50% of prisoners are illiterate and have no knowledge of the laws. According to investigations, the occurrence of crimes in a society is directly related to the level of literacy of individuals, so that ignorant people commit crimes more than other people. Ignorance of laws in various fields can lead to social hazards, not only the people themselves, but the community around them in difficulty and problems. For example, in the area of goods liberation, customs clearance laws are observed in order to get out of the goods from the situation of smuggling and to find the legal aspect of goods. In the event of ignorance and ignorance, people may be in trouble for smuggling goods. Other important issues in the clearance of goods that threaten traders are the lack of familiarity with the customs value rules of the goods. The customs value of the goods or the value of the goods entered in the customs is the basis on which the entrance fees and duties are determined. If they are not aware of the customs duties of the goods, they will be confused in calculating the cost and will suffer a lot of financial losses. The law which has been passed on the subject of ignorance is article 56 of the law on combating smuggling of goods and currency.

Conclusion

It should be said that the innovation that has been considered in this research is the subject of social hazards due to ignorance that has not been considered in any research. It should be said that social hazards and behaviors leading to crime will lead to a lot of serious problems in a wide circle. But unfortunately, from a criminal point of view, less attention has been paid to the study of social hazards. The point about ignorance is that the rule of "ignorance to the law is not

responsible" is a general rule and refers to it. The most important basis of this rule, as well as the most important goal of the rule, is the consolidation of public order, but the failure to implement the rule, in some special circumstances, does not lead to the collapse of public order. The results of this study should be said that the publication of the laws of the law, in the community (the official newspaper), is not a good way to do this and does not have good information power.

The deadline that after passing, persons who are aware of the new law is assumed (15 days) considering the publication and scientific and cultural structure of the society is very little time. On the other hand, it is true that if the assumption of the knowledge of individuals is not about the law, public order will be at risk, but it must be accepted that the assumption of one thing, at least, must be slightly in accordance, if very few people in our society are familiar with the law in practice.

Keywords: Ignorance, law, dangers, crime. Hazards.

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Effects of Plan Geometry and Twisting Architectural Form on the Seismic Vulnerability of Tall Buildings' Non-structural Components (NSCs)

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Introduction

Earthquake is one of the most important risks in high seismic countries like Iran and, considering solutions to reduce the seismic vulnerability of buildings is one of priorities for designers, builders, and regulations in this area. Experiences of past earthquakes show that a significant part of the human injuries and financial loses is due to damage to NSCs in buildings - including architectural, mechanical and electrical components. Tall buildings are more important in reducing NSC's seismic vulnerability due to their size, large number of residences and occupancies and the special characteristics of their structures. If earthquake happen, even if it does not cause serious damage to the structural stability of tall buildings, any damage to their NSCs such as the facade, stairs, facilities, interior decoration, etc., in addition to the possibility of causing physical injuries and loss of life, It can leave significant costs for reconstruction. Managing these damages includes awareness, prevention and reduction of their vulnerability before the earthquake occurred and in the process of designing and constructing buildings.

Research Necessity

Tall buildings, due to their height and scale, have a considerable impact on the urban landscape, and for this reason, designers mostly like to use complex forms with complicated and impressive geometric in the design of these buildings. However, architectural forms play a major role in the seismic performance of tall buildings. This research explores the effect of the "Twisted forms" as a complex architectural form, with various plans and different heights on the seismic performance of tall buildings with steel diagrid structural system. The seismic performance indicators are drift and lateral displacement as indicators of measuring the vulnerability of NSCs and the weight per unit area of the structure as an indicator of the optimal structural design of buildings

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Research Method

This research is of a quantitative type and has been done by computer simulation and analysis method. For this purpose, first, the initial models with triangle, square, hexagon, and circle plans and with various heights including 160, 180, and 200 meters were made parametrically in Rhino software and the Grasshopper plugin. Then, twisted forms are made by twisting the floors of the primary models relative to each other by 1, 2, and 3 degrees. After that, the diagrid structural system has been designed for all of the architectural forms directly in the parametric design environment using the Karamba3D finite element analysis plugin. The linear static analysis for serviceability earthquake load has been used for designing and tuning the diagrid structures Finally, the seismic performance indicators including drift and lateral displacement as the indicators of measuring the vulnerability of NSCs and the weight per unit area of the structure as the indicator of the optimal structural design of tall buildings are extracted and analyzed using charts and tables.

Innovations and Results

The effects of simple various architectural forms on the seismic performance of tall buildings, have been studied in previous researches including taper, concave and convex forms. However, so far, complex forms have been less investigated. This research explores the effect of the “Twisting forms” as a complex architectural form, with various plans and different heights on the seismic performance of tall buildings with steel diagrid structural system. This issue has not been investigated in previous studies. The results show that in the diagrid structure with steel materials at the heights and plans investigated in this research, the twisting of the floors in the height increases the drift, lateral displacement, and weight per unit area of the structure in the forms with triangular and quadrilateral plans in all 160,180 and 200 meters height. As a result, choosing these types of plans for twisting forms can reduce the lateral stability of tall buildings and increase the probability of damage to NSCs during an earthquake. On the other hand, by increasing the number of sides of the plan (forms with circular and hexagonal plans), the relative twist of the floors in terms of degrees (from zero to 3 degrees) has not cause significant changes in any of evaluated indicators. Resultantly, using plans with more sides for tall buildings with twisted forms would make it possible to avoid the adverse effects of twisting and to design optimal tall buildings from a seismic point of view.

Keywords: Twisted Architectural Forms؛ Tall Buildings؛ Non-structural Components' Vulnerability؛ Seismic Hazard Reduction.

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