Effective Factors on Increasing Rivers Pollution and Its Control Strategies

Seyyed Ali Noorhosseini[1]*, Dariush Ashoori[1] and Reza Alishiri[2]

[1]*Young Researchers and Elite Club, Rasht Branch, Islamic Azad University, Rasht, Iran*
[2]*Young Researchers and Elite Club, Karaj Branch, Islamic Azad University, Karaj, Iran*
*Contact Author

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Abstract

To identify effective factors on increasing rivers pollutions and ways for control at Guilan province, a project was done with Zarjub and Guharood rivers by method walking-describing at 2014. Questionnaire was used instead of main tool for gathering data. Statistical crowd for the study were suburb crowd Zarjub and Guharood rivers that 150 of them were studied. Describing data were used to analyze data such plenty, percent, average and Standard error. SPSS 16 software was used to analyze data. Results indicate that industrial towns and hospitals and aviculture are main factors for polluting the rivers at Guilan province (average: 4.45 and standard error: 0.824). City sewages were main factor at polluting the rivers of course second grade (average: 4.35 and standard error: 0.898). Establishment of green park, river dredging, establishment refinery, establishment waste-burner and separation wastes are main ways to control and decrease.

Keywords: Rivers polluting, Zarjub and Guharood, Industrial towns, City sewages.

Introduction

An ecosystem or an environment is a complicated complex that is composed by different and active factors and ecosystem's structure was formed gradually and completed and them were affected on the human activities and were affected by them (Tavakkol and SabetRaftar, 2013). Scientific view to world its problems at second half at 20 century and beginning decade of 21 century shows that giant differences was gotten at ecosystem's structure. Progressing of environment pollution, decreasing biodiversity, damage O_3 layer, over-warming earth, climatically fluctuations, premonition bio systems are used by daily increasing populations, technology progress and consumption mode (Bahar, 1998).

Traditional method for sowing rice and direct-contact human with water and soil cause to increasing disease factors at north Iran. Water-depended diseases such Gaiunne-warm, Leptospirosis, digestive duct cancer, heavy metal such Pb, Kd, Ni and pesticides diseases are very known. Diazinone is a pesticide that is used at Guilan province to manage rice stem-chewer worms. The pesticide has residue period at 7-15 days. Toxicity of diazinone is very high for human and mammalian and its skinny absorption establishes acute and chronic toxicities (Rakhshani, 2002). Butacholor is an herbicide and used at rice fields to control weeds and has residue period 7-21 days and its toxicity is low for human and domesticated animals. Edifenophus is a fungicide that is used at rice farms to control rice blast disease. It causes to sterility human so the toxin is forbid to use from few years ago (Sanaiee, 2006).

Amount of BOD, COD, total account coliforms, water nitrate, total amount of Fe, Pb, Cu, Ni, Zn in soil and Ni and Zn amount in rice grains was over-normal dose at irrigation and drainage system's Sefidrood River at Guilan (Pandam, 2004). Cd amount at stations Manjil barrier, Tarik barrier, KianShahr bridge was 0.004, 0.01 and 0.005 respectively and for Arsenic 0.65, 0.65 and 0.62 respectively. Nitrate doses surface water was reported less than 5 ppm but sometimes, higher doses are showed at underground waters (Khani, 2001). Production factors, metal working and mines are main sources of heavy metals through industrial sewages. Other sources of the heavy metals of surface waters are city sewages and waters of cleaning-roads (Stanley, 1999).

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Zarjub river is originated from low height mountains such Hezarmarz, Neyzehsar, Chukulbandan and Kacha that are located at 25 Km of south Rasht city and height as 810 m as free seas and cross in Rasht city as strength 8 Km in order to south to north from villages such Behdan, Chumach, Donahre-Siavoush, Sangar, Bijarpass, Roodberah, Golpardehsar, Kabakh and it is linked to Garmrood river into Rasht city Busar town and finally, it is entered to Anzali pond. The river has length of head-branch as 41 Km as and has moderated discharge as 173.4 million m3. Rasht city is capital province and Guilan province is main polar of tourism that is damaged by wastes and agricultural, industrial, city sewages and Siahroud river is known to Zarjub river and crossed from Rasht city and wastes that are entered to Anzali pond. Guilan province is suffered with cases of pollutions and destruction of ecosystems at the decade. Progress industry, citizens, have main role to increase quantity and quality pollution and to die rapidly natural resources. These factors effect on pollution of Zarjub River on title of separate factors and they have direct effect on another. Rasht city has first class of population increasing and citizens at Guilan province (Monavari, 1990).

Researches Zarjub River shows that pollution casual heavy metals at the river are very high close because entrance of industrial, city and agricultural wastes and sewages and not decomposition of metallic materials (Binayemotlaq, 1980). Tavakkol and SabetRaftar (2013) showed that survey of multi regression equations, population and density on the pollution factors shows that density has main effect on pollution at Anzali pond zones. Studies indicate that human activities establish little pollution at Anzali pond. Establishing changes at the conditions is very hard and none notable control and its results will not predicated until arising results so they are not programmable. The problems are not control notable people are not wise to the problems that are established by poverty, illiteracy, economic-social structural. At finally, it shows that polluted making factors are depended on population density of watershed and are affected with surface and crowd slow sharply.

Results research of Kafilzadeh et al (2007) showed that station 1 (Maali abad bridge) hasn't heavy metals and its water is suitable to use. Water of station 2 (Namazi bridge), 3 (Parking bridge), 4 (Salman bridge) and 5 (Sharifabad bridge) are not suitable for using at drinking, irrigation and fishes but are suitable surface running water. Water's station 6 (Kharchul) are not suitable to use drinking and fishes but are suitable for irrigating and surface running water. At agricultural products, some of them have heavy metals but Cu amount at all plants and Fe amount at one sample significantly were more than limit. Based on the researches' result of Yousofi Falakdehi et al (2012) pollution caused by mercury and agricultural toxins such edifenophus, diazinone and butacholor were showed. Results indicated that consumption of fertilizers and pesticides at sow condition at rice farms that is water logging must be studied carefully and doing soil-test before fertilization is a main low-learning of suitable consumption of agricultural pesticide recommended. Using from non-standard agricultural pesticides must be prevented such edifenophus that is a forbid toxin and fertilizers must be used that they have low residue period at environment. Biological management must be progressed for decreasing consumption of fertilizers and pesticides.

Results gather at Kiusho gulf Japan (1970) and Jakarta Indonesia (1986) shows that main evidence to die 2000 people at Japan and 20 Indonesian Childs were consumption of polluted fishes to mercury from industrial sewages to sea (Minamata, 1986). Result showed that Cd pollution dose at upland river animals is least 7 nanogram/gr and lowland river animal is 150 nanogram/gr dry weights (Duker schein, 1999).

Results of polluted fields from south Louisiana at United States of America on the environmental changes Zn, Cu, Ni, Fe, Pb, Kr, Al and Ag that indicated metallic doses at Upland River is more than Lowland River. Surveyors showed that city sewages had most effect on the heavy metal amount at environment (Ramelow, 1992). Aim's the study is survey and identify effective factors on the increasing pollution rivers and ways for decreasing at Guilan province (case study: Zarjub & Guharood rivers) for doing critical steps to

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decrease pollution at Guilan province especially at Zarjub and Guharood rivers.

Materials and Method:

The study was done with running-describing method at Rasht city 2014. Statistical population's the study was suburb citizen Zarjub and Guharood rivers that data were gathered by random sampling method based on table; minimum volume sample Bartlett et al (2001) together 5% error. 150 members were selected on title statistical sampling. Data gathered method was closed questionnaire that used from five steps Likert spectrum (very low, low, moderate, high, and very high). Face and content validity of the questionnaire was determined by the opinions of experts and professionals. To test stability questionnaire, a guide study was done at outside of main suburb study and based on results of guide study so guide questionnaire was reviewed. To analyze data, we used from described statistical such plenty, percent, averages and standard error. SPSS 16 software was done for analyzing data.

Results & Discussion:

Results of survey at main effective factors on the increasing pollution of Zarjub and Guharood rivers at Guilan province were showed at table 1. The study was done that industrial towns, hospitals and aviculture are main synergist factors of Zarjub and Guharood rivers at Guilan province (average: 4.45, standard error: 0.824). Second pullulated making factor for the rivers are city sewages (average: 4.35, standard error: 0.898). Inattention of environment protection organization is third factor for polluting Zarjub and Guharood rivers (average: 4.09, standard error: 0.859) and finally, life activities of suburb people at rivers is a factor to increase pollution (average: 3.97, standard error: 1.132).

Table 1: Factors influencing the increasing pollution of the river Zarjub and Guharood

Items	Mean	SD	Rank
industrial towns, hospitals and aviculture	4.45	0.824	1
City wastewater disposal	4.35	0.989	2
Inattention of environment protection organization	4.09	0.859	3
life activities of suburb people at rivers	3.97	1.132	4

Table 2 expresses main ways to decrease pollution of Zarjub and Guharood rivers. Main ways based on degree average are meant: establishment green park (average: 4.39, standard error: 0.768). River dredging (average: 4.21, standard error: 0.756), establishment refinery (average: 4.17, standard error: 0.849). Establish waste burner and waste separation (average: 4.06, standard error: 0.914). Too establishment duct to gather rain-water (average: 3.97, standard error: 0.843). Establishment NGO for gathering waste (average: 3.93, standard error: 1.004) and city keepers increasing (average: 3.51, standard error: 1.047) are low significant than other factors.

Table 2: Strategies to reduce pollution in Zarjub and Guharood rivers

Items	Mean	SD	Rank
Establishment Green Park	4.39	0.768	1
River Dredging	4.21	0.756	2
Establishment Refinery	4.17	0.849	3
Establish Waste Burner	4.06	0.914	4
Waste Separation	4.01	0.934	5
Establishment Duct To Gather Rain-Water	3.97	0.843	6
Establishment NGO For Gathering Waste	3.93	1.004	7

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City Keepers Increasing	3.51	1.047	8

Conclusion:

Results indicated that industrial towns, hospitals and aviculture are main agents to pollute Zarjub and Guharood rivers synergistically at Guilan province. City sewages are second factors for polluting the rivers. Main ways to decrease pollution Zarjub and Guharood rivers are composed such: establishment green park, river dredging, establishment refinery, establish waste-burner and waste separation. Industrial development, urbanization, increasing population has main role to polluting and rapid restructure of natural resources. City growth and industry development have effective on the pollution river but they have direct and contact effect with other factor. Rasht city has first class at Guilan province at aspect incensement population and urbanization and consequently this had most bio systemic, social, economic problems so administrators must manage the phenomena.

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