JOURNAL OF PURE AND APPLIED MICROBIOLOGY, Sept. 2015. Vol. **9**(3), p. 2105-2113

The Feasibility of Using the Aerobic-Anaerobic Bioreactor (Microbiological Processes) Sludge of Municipal Wastewater Treatment Plant of Tabriz for Agricultural Purpose

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(Received: 20 May 2015; accepted: 27 July 2015)

Sewage disposal produced by human societies and treatment of wastewater is essential for urban management and public health. With Plant construction, problems of production and disposal of sludge drying generally occur. With the development of communities and increase the refineries, treatment and disposal of sludge, optimal and comprehensive management is required. The disposal of sludge if containing organic matter, nutrients and micronutrients in the case of pollutants such as heavy metals concentrations, pathogens and ... are in standard, its application is in agriculture. This study was carried out in order to assess the quality of sludge produced from wastewater of treatment plant in Tabriz to use in agricultural production, in terms of heavy metals chromium, nickel, zinc, cadmium, copper and lead. Sampling was done in Four Seasons for 5 years from 2009 to 2014 based on the standard method. Determining the concentration of heavy metals by atomic absorption Varian 220 depending on the desired parameter analysis, were analyzed using the VGA, GTA, Flame Atomic Absorption method. To compare the measured amounts of heavy metals in different seasons and years, one-sided ANOVA and to compare the measured values with national and international standards one-sided t-test was used. The results showed that levels of heavy metals studied in different seasons and years had no significant difference. Compare the measured values with the standards of the EPA and the Environmental Protection Agency of Iran were determined, Average heavy metal sludge of Tabriz were lower than standard doses of EPA and Environmental Protection Agency of Iran And can be used as fertilizer for agricultural production.

Key words: Sludge management, sewage sludge, heavy metals, agricultural purposes, Tabriz.

Global move towards public health and wastewater treatment will certainly increase sludge production. Sludge management is now a major problem in many countries of the world. It is generally believed that sludge management is one of the most critical environmental issues today. Because Global production of sludge as a result of the development of new sewage systems and modernization of existing systems is, is now increasing. Furthermore, in recent years a global move towards more strategic utilization of matter and energy is created from waste[4]. Environmental experts, consider municipal wastewater treatment necessary in order to prevent pollution and protect the existing natural resources. This with producing both wastewater and sludge has quality that having no access to each of them is considered as conflict with the general objectives of waste water treatment. The general attitude of the wastewater treatment process in our country is like the main attention was focused mainly on the quality of exit wastewater and excreted sludge quality unfortunately been rarely considered. Sewage disposal produced by human societies and treatment of wastewater is the need for urban

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management and public health. Since the sludge is rich in nutrients needed by plants in case of its use in agriculture must be ensured that in any case, will not harm the soil or plants and the use of agricultural products is possible as food for animals or humans[4]. The use of sewage sludge as caudal in sustainable agriculture has been considered in recent years, but existence of heavy metals in sludge and the possibility of absorption of these nutrients by plants and enter the food chain to humans and animals, should also be considered[3]. According to the dried sludge produced in refineries in general is high and for a specific use of it is not defined, Always Discussion about the problem of the accumulation of dry sludge in treatment plant area is proposed. Also disposal of these materials due to environmental considerations and the lack of maintenance limitations are important, therefore, proper management of sludge in treatment plants is necessary[5]. Thus choice of the appropriate method of disposal and re-use it should be done taking into account the environmental and economic conditions[1]. In addition to the health benefits of proper management of sludge, it has the special economic benefits such as the provision part of water and fertilizer to plants and soil restoration, too. One of the economic Wastewater disposal, is using the sludge produced in agriculture and soil amendment that is considered in the project and research, However, because of the possibility of numerous microbial pollutants and heavy metals in sludge, quality control and ensure compliance with environmental standards, before use of land is necessary[2] . On the topic, studies have been done on sewage sludge. Farzadkya *et al.,* (2001) in a study assessed the quality the sludge of treatment plant wastewater in Serkan city (located in the Hamadan province) and compared it with the environmental standards for their re-use. In this study, establishment criteria, such as pH-ratio of volatile solids to total solids (Vs / Ts), the rate of oxygen absorption SOUR, flotation, the smell and colors of sludge and biological characteristics of the sludge, the number of coliforms and fecal coliforms and counting the number of parasite eggs were analyzed and evaluated. The results showed that the fecal sludge of treatment, are raw and unproven sludge and their microbial quality is below Class B of USEPA microbial regulations. Thus disposal or reuse of sludge in agriculture, seriously endanger public health. Therefore stabilize of the sludge before disposal, must be emphasized. Kyamrsy Zadeh, in a study found the effect of sewage sludge on concentrations of heavy metals (Ni, Cd) in the soil and concentrations of these elements in alfalfa. The treatments included sewage sludge at zero and control are 50 and 100 tons per ha. Addition of sewage sludge significantly increased concentrations of Absorbable cadmium and nickel soil. But Cadmium and nickel increase in plant, was not significant. Levels of Cadmium and nickel at the highest level of sewage sludge application are below toxicity. Maliki et al in 2012 studied the use of sludge and sludge compost in organic agriculture. In this study various elements in the sludge compost were measured and the results showed that the most common treatment options are as follows: Anaerobic digestion, aerobic digestion and preparation of the compost. In the process of vermicomposting for organic agriculture and the use of improved sludge containing carbon (such as wood, paper, etc.) permitted concentrations of elements such as lead (450 kg), cadmium (5 kg), chromium (450 kg), copper (400 kg), nickel (100 kg) and zinc (1250 mg kg) must be met. Limitations on light soils containing less than 5 percent clay and pH value greater than 5 and less than 6 must be met. Under these circumstances permitted concentration of cadmium is 25mg / kg and for lead is 1000 mg / kg respectively. In relation to agricultural land that their soil is less than 5% clay or has pH value greater than 5 and is less than6, the permitted amount of cadmium in the soil is mg / kg 0.1 and for lead are mg / kg 150. The use of sludge or sludge compost in agricultural lands that they have soil pH less than 5 is not permitted. Lu et al (2012) in a study investigated the utilization of the models TOPSIS and AHP in order to optimize decision-making process reuse of sludge, in a municipal treatment plant wastewater in Ardabil. In this research first each of the parameters and indicators related to the reuse of urban sludge in treatment plant wastewater, were compared by Delphi questionnaire. Then the weights entered in Expert choice software for analyzing AHP model and weighting and paired comparisons were performed on the parameters and indicators. Then the weights were entered in software TOPSIS and TOPSIS

model was analyze so that the best and most appropriate option is selected. This study in was performed in regard to reuse municipal sludge of treatment plant wastewater in Ardabil In which four options for reuse of sludge is introduced that are compared by four main parameters: 1. The physico-chemical 2. Biological 3-economic, social, cultural, 4-position of environment pollution, the result of this comparison showed that the use of sludge in green space with 0.56488 were the best choice then use in agriculture with 0.5283 , biogas with 0.43378 and desertification with 0.41376 are in second to fourth priority for the reuse of municipal sludge of treatment plant wastewater. Cheney et al (1980) in the study that lasted for six years, reported that more than 90% of heavy metals added with sewage sludge, remains at a depth of 15 cm And with the increase of sludge added to the soil, zinc and cadmium uptake by plants increases. WANG et al in 2005 in a study on copper-nickel-zinc-lead-chromium- cadmium in municipal and industrial sludge, stated that the highest content was for zinc and copper, and the least was for nickel and lead chromium and cadmium content. Therefore, mobility and absorption of nickel and zinc in the sludge, is higher than its absorption compared to other heavy metals In our country, despite the reuse of waste to fertilize the fields has many applications and in the cities of Tehran, Isfahan, Tabriz and Shiraz sewage is used for irrigation in farms and gardens and sludge as fertilizer in farms. The main attention was focused mainly on the quality of the exit wastewater, but unfortunately rarely considered fecal sludge quality (2). However, in today's world of new and advanced treatment systems based on membrane system and advanced oxidation reuse of treated wastewater is used even for drinking purposes and the provision of food (6). Considering that daily 11 cubic meters of wastewater in Tabriz, dried sludge is produced, so management is essential. For this purpose, in order to know the quality for use in agriculture this research was performed. This study was done to determine the amount of heavy metals in sludge from municipal treatment plant wastewater in Tabriz and compare with existing standards. Tabriz treatment plant sewage is activated sludge. Produced Sludge was used through anaerobic digesters for the extraction of gas in drying beds for agricultural products.

MATERIALS AND METHODS

For this research, sampling of sewage sludge produced in drying beds was conducted over five years from 2009 to 2013 in four seasons. Sampling was done every three months from drying beds with amount of 100 grams and was transferred in containers to the laboratory of treatment plant sewage in Tabriz. In the lab, the concentration of heavy metals like chromium, cadmium, nickel, zinc, lead and copper were analyzed by atomic absorption Varian 220 depending on the desired parameter analysis, using the VGA, GTA, Flame Atomic Absorption. For the extraction, 1 gram of sample was taken and by adding distilled water its volume reached to one liter (1000 mL). Then 10 ml of 65% concentrated nitric acid was added and the resulting liquid has evaporated on heaters without boiling (at least). When the liquid volume reached 100 ml we turn heater off and reach liquid volume to 100 ml. To measure seasonal and annual changes in heavy metals one-sided ANOVA were used. Duncan test was used to compare data. To study heavy metals in the produced sludge with the Environmental Protection Agency's standards and international standards, t-test was used. Statistical analysis was performed using spss software.

RESULTS AND DISCUSSION

The results of the measurement of the heavy metals concentration such as chromium, nickel, zinc, cadmium, copper and lead in sludge samples of treatment plant wastewater in Tabriz city during the years 2009 to 2013 are presented in diagrams 1 to 4 in different seasons during the years:

Global move towards public health and wastewater treatment will certainly increase sludge production. Sludge management is now a major problem in many countries of the world. It is generally believed that sludge management is one of the most critical environmental issues today. Because Global production of sludge as a result of the development of new sewage systems and modernization of existing systems is, is now increasing. Furthermore, in recent years a global move towards more strategic utilization of matter and energy is created from waste. (4) Environmental

Table 1. Results of variance analysis of heavy metals from the treatment plant wastewater in Tabriz city during the years 2013 to 2009

Resource change	Degrees of freedom	Average square of test elements					
		chromium	nickel	zinc	copper	cadmium	lead
year	4	**20/3458	Ns 55/186	**17/146834	**12/6519	Ns 57/5	**12/99
season	3	ns64/341	ns43/49	ns40/10301	ns93/3456	ns98/6	ns60/12
error	12	16/415	01/71	60/4530	72/2040	77/2	39/6
Coefficient of variation	-	51/22 percent	89/16percent	34/11percent	67/18percent	82/18percent	44/17percent

experts, consider municipal wastewater treatment necessary in order to prevent pollution and protect the existing natural resources. This with producing both wastewater and sludge has quality that having no access to each of them is considered as conflict with the general objectives of waste water treatment. The general attitude of the wastewater treatment process in our country is like the main attention was focused mainly on the quality of exit wastewater and excreted sludge quality unfortunately been rarely considered. Sewage disposal produced by human societies and treatment of wastewater is the need for urban management and public health. Since the sludge is rich in nutrients needed by plants in case of its use in agriculture must be ensured that in any case, will not harm the soil or plants and the use of agricultural products is possible as food for animals or humans (4). The use of sewage sludge as caudal in sustainable agriculture has been considered in recent years, but existence of heavy metals in sludge and the possibility of absorption of these nutrients by plants and enter the food chain to humans and animals, should also be considered (3). According to the dried sludge produced in refineries in general is high and for a specific use of it is not defined, Always Discussion about the problem of the accumulation of dry sludge in treatment plant area is proposed. Also disposal of these materials due to environmental considerations and the lack of maintenance limitations are important, therefore, proper management of sludge in treatment plants is necessary (5). Thus choice of the appropriate method of disposal and re-use it should be done taking into account the environmental and economic conditions (1). In addition to the health benefits of proper management of sludge, it has the special economic benefits such as the provision part of water and fertilizer to plants and soil restoration, too. One of the economic Wastewater disposal, is using the sludge produced in agriculture and soil amendment that is considered in the project and research, However, because of the possibility of numerous microbial pollutants and heavy metals in sludge, quality control and ensure compliance with environmental standards, before use of land is necessary (2) . On the topic, studies have been done on sewage sludge. Farzadkya et al (2001) in a study assessed the

Table 2. Table standard deviation and error deviation of measured heavy metals in sludge wastewater of treatment plant in Tabriz during the years 2013 to 2009

Lead	Copper	Cadmium	Zinc	Nickel	Chromium	Elements Statistics
19/5	74/124	01/2	15/188	59/9	31/32	Standard deviation
16/1	89/27	45/0	07/42	14/2	23/7	Standard error SE
5/14	242	85/8	7/593	9/49	53/90	X total average

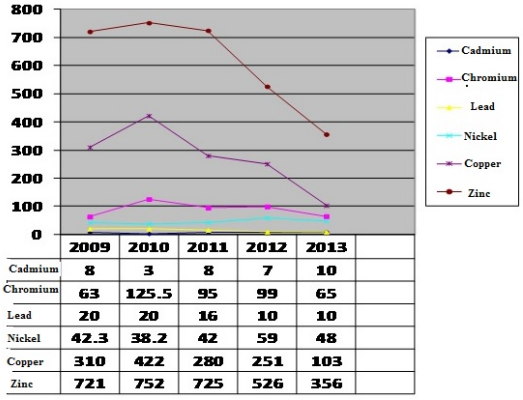
Table 3. Results of t-test measurements of heavy metals and standards of environmental organizations of Iran and EPA

Lead	Copper	Cadmium	Zinc	Nickel	Chromium	Elements Statistics
300	1500	34	2800	420	3000	Environmental standards (1)
840	4300	85	7500	420	3000	(2)EPA standard
**12/246	**11/45	**89/55	**44/52	**93/172	**42/402	(1)tStatistics
**64/711	**50/145	**22/169	**16/164	**93/172	**42/402	(2)tStatistics

quality the sludge of treatment plant wastewater in Serkan city (located in the Hamadan province) and compared it with the environmental standards for their re-use. In this study, establishment criteria, such as pH- ratio of volatile solids to total solids (Vs / Ts), the rate of oxygen absorption SOUR, flotation, the smell and colors of sludge and biological characteristics of the sludge, the number of coliforms and fecal coliforms and counting the number of parasite eggs were analyzed and evaluated. The results showed that the fecal sludge of treatment, are raw and unproven sludge and their microbial quality is below Class B of USEPA microbial regulations. Thus disposal or reuse of sludge in agriculture, seriously endanger public health. Therefore stabilize of the sludge before disposal, must be emphasized. Kyamrsy Zadeh, in a study found the effect of sewage sludge on concentrations of heavy metals (Ni, Cd) in the soil and concentrations of these elements in alfalfa. The treatments included sewage sludge at zero and control are 50 and 100 tons per ha. Addition of sewage sludge significantly increased concentrations of Absorbable cadmium and nickel soil. But Cadmium and nickel increase in plant, was not significant. Levels of Cadmium and nickel at

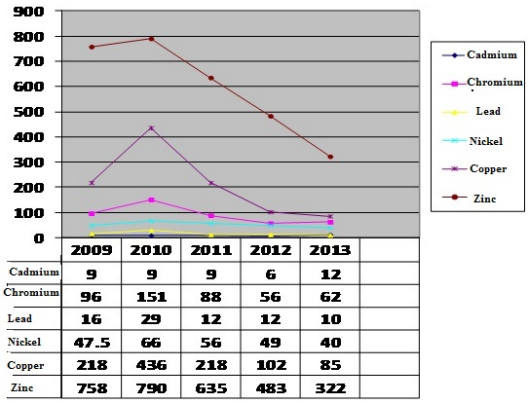
Table 4. Comparison of measured heavy metals in sewage sludge of Tabriz with present standards

		Standard values for heavy metals in terms of mg / kg										
		Canada					New Jersey					
Heavy metals	Testing values In terms of mg/kg	Agriculture (1)	Great Britain (2)	Ireland**(2)**	Taiwan**(3)**	Netherland**(4)**	Non-residential(5)	Georgia**(6)**	Australia**(7)**	Belgium**(8)**	**(9**)EPA	Environmental Protection Organization of Iran
cadmium	**8/85**	**1/4**	**3**	**1**	**2**	**1**	**100**	**2**	**3**	**5**	**85**	**34**
nickel	**49/9**	**50**	**-**	**30**	**60**	**-**	**2400**	**50**	**50**	**200**	**420**	**420**
zinc	**593/7**	**200**	**360**	**150**	**120**	**200**	**1500**	**100**	**300**	**2000**	**7500**	**2800**
chromium	**390/5**	**64**	**400**	**-**	**100**	**100**	**-**	**100**	**100**	**800**	**3000**	**3000**
copper	**242**	**63**	**-**	**50**	**45**	**-**	**600**	**100**	**100**	**800**	**4300**	**1500**
lead	**14/5**	**70**	**300**	**50**	**50**	**50**	**600**	**75**	**100**	**500**	**840**	**300**



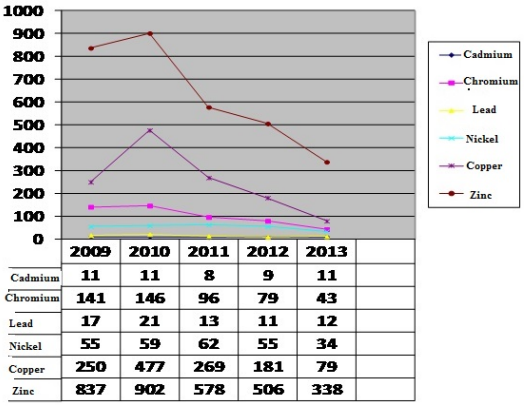
	2009	2010	2011	2012	2013
Cadmium	8	3	8	7	10
Chromium	63	125.5	95	99	65
Lead	20	20	16	10	10
Nickel	42.3	38.2	42	59	48
Copper	310	422	280	251	103
Zinc	721	752	725	526	356

Fig. 1. Average of measured heavy metals in the spring, during the period 2009-2013 in terms of mg / kg



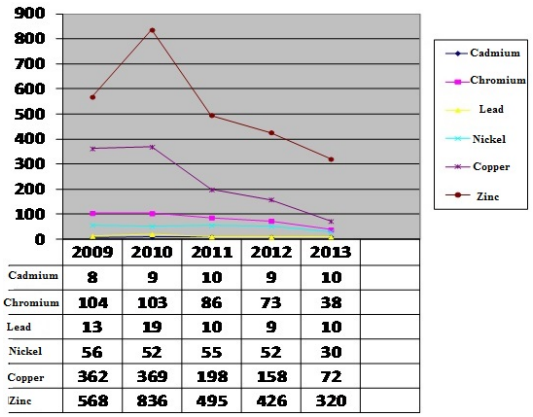
	2009	2010	2011	2012	2013
Cadmium	9	9	9	6	12
Chromium	96	151	88	56	62
Lead	16	29	12	12	10
Nickel	47.5	66	56	49	40
Copper	218	436	218	102	85
Zinc	758	790	635	483	322

Fig. 2. Average of measured heavy metals in the summer, during the period 2009-2013 in terms of mg / kg



	2009	2010	2011	2012	2013
Cadmium	11	11	8	9	11
Chromium	141	146	96	79	43
Lead	17	21	13	11	12
Nickel	55	59	62	55	34
Copper	250	477	269	181	79
Zinc	837	902	578	506	338

Fig. 3. Average of measured heavy metals in the autumn during 2009-2013 in terms of mg / kg



	2009	2010	2011	2012	2013
Cadmium	8	9	10	9	10
Chromium	104	103	86	73	38
Lead	13	19	10	9	10
Nickel	56	52	55	52	30
Copper	362	369	198	158	72
Zinc	568	836	495	426	320

Fig. 4. Average of measured heavy metals in winter in years 2009 to 2013 mg / kg

the highest level of sewage sludge application are below toxicity. Maliki et al in 2012 studied the use of sludge and sludge compost in organic agriculture. In this study various elements in the sludge compost were measured and the results showed that the most common treatment options are as follows: Anaerobic digestion, aerobic digestion and preparation of the compost. In the process of vermicomposting for organic agriculture and the use of improved sludge containing carbon (such as wood, paper, etc.) permitted concentrations of elements such as lead (450 kg), cadmium (5 kg), chromium (450 kg), copper (400 kg), nickel (100 kg) and zinc (1250 mg kg) must be met. Limitations on light soils containing less than 5 percent clay and pH value greater than 5 and less than 6 must be met. Under these circumstances permitted concentration of cadmium is 25mg / kg and for lead is 1000 mg / kg respectively. In relation to agricultural land that their soil is less than 5% clay or has pH value greater than 5 and is less than6, the permitted amount of cadmium in the soil is mg / kg 0.1 and for lead are mg / kg 150. The use of sludge or sludge compost in agricultural lands that they have soil pH less than 5 is not permitted. Lu et al (2012) in a study investigated the utilization of the models TOPSIS and AHP in order to optimize decision-making process reuse of sludge, in a municipal treatment plant wastewater in Ardabil. In this research first each of the parameters and indicators related to the reuse of urban sludge in treatment plant wastewater, were compared by Delphi questionnaire. Then the weights entered in Expert choice software for analyzing AHP model and weighting and paired comparisons were performed on the parameters and indicators. Then

the weights were entered in software TOPSIS and TOPSIS model was analyze so that the best and most appropriate option is selected. This study in was performed in regard to reuse municipal sludge of treatment plant wastewater in Ardabil In which four options for reuse of sludge is introduced that are compared by four main parameters: 1. The physico-chemical 2. Biological 3-economic, social, cultural, 4-position of environment pollution, the result of this comparison showed that the use of sludge in green space with 0.56488 were the best choice then use in agriculture with 0.5283 , biogas with 0.43378 and desertification with 0.41376 are in second to fourth priority for the reuse of municipal sludge of treatment plant wastewater. Cheney et al (1980) in the study that lasted for six years, reported that more than 90% of heavy metals added with sewage sludge, remains at a depth of 15 cm And with the increase of sludge added to the soil, zinc and cadmium uptake by plants increases. WANG et al in 2005 in a study on copper-nickel-zinc-lead-chromium- cadmium in municipal and industrial sludge, stated that the highest content was for zinc and copper, and the least was for nickel and lead chromium and cadmium content. Therefore, mobility and absorption of nickel and zinc in the sludge, is higher than its absorption compared to other heavy metals In our country, despite the reuse of waste to fertilize the fields has many applications and in the cities of Tehran, Isfahan, Tabriz and Shiraz sewage is used for irrigation in farms and gardens and sludge as fertilizer in farms. The main attention was focused mainly on the quality of the exit wastewater, but unfortunately rarely considered fecal sludge quality (2). However, in today's world of new and advanced treatment systems based on membrane system and advanced oxidation reuse of treated wastewater is used even for drinking purposes and the provision of food (6). Considering that daily 11 cubic meters of wastewater in Tabriz, dried sludge is produced, so management is essential. For this purpose, in order to know the quality for use in agriculture this research was performed. This study was done to determine the amount of heavy metals in sludge from municipal treatment plant wastewater in Tabriz and compare with existing standards. Tabriz treatment plant sewage is activated sludge. Produced Sludge was used through anaerobic digesters for the extraction of gas in drying beds for agricultural products.

Comparison of the measured values of heavy metals with sludge consumption standards in agricultural production in Iran and EPA is presented in Table 3. According to Table 3 the mean for all tested Elements a very significant difference with the standard. So that the measured values are lower than Iran standard of the environment and the EPA.

In Table 4, the measured average results of heavy metals in the sludge wastewater of treatment in Tabriz with Environmental Protection Agency standards for use in agriculture were compared with the standards of other countries. According to Table 4 parameters including chromium, cadmium, lead, copper, nickel and zinc were in consistent with Environmental Protection Agency and EPA standards for agricultural use however the use of sludge on agricultural land should be examined in terms of other parameters (e.g., salinity, pH, BOD, COD, especially In terms of coliform bacteria).

Table reference

1) CCME,2007
2) CARINY,1995
3) Chen2000
4) ECDGE,2010
5) NJDEP,1992
6) Metal concentration in Georgia ,2012 7)Chen et al,1999 8)Langenkamp ,H.2001 9)US-EPA,2007

As can be seen in Table 4, the average lead in terms of milligrams per kilogram of dry weight in dewatered sludge samples was equal to 19/5 ± 5/14 That compared with the standards, the average lead is below the permissible limit of Environmental Protection Agency standards of Iran (300), EPA (840), Canada (farming purposes = 70 = 140 residential purposes and park land, commercial, industrial = 260), Great Britain (300), Taiwan (50), New Jersey (target = 400 residential, non-residential purposes = 600), the Netherlands (50), Australia (100) Belgium (500), Ireland (50) and Georgia (400). Average nickel in terms of milligrams per kilogram of dry matter in dewatered sludge is equal to 59/9 ± 9/49's That compared with the standards, the mentioned average nickel sample was below permissible limit of Environmental Protection Agency standards of Iran (420), EPA (420), Canada (50 for the purposes of agricultural, residential and

park land = 50), Taiwan (60), New Jersey (= 250 residential, non-residential = 2400), Belgium (200), Georgia (420), Australia (50) and exceeded permissible limit of Ireland (30). Average cadmium in terms of milligrams per kilogram of dry matter in a sample of dewatered sludge is equal to 01/2 ± 85/ 8 That compared with the standards, the average cadmium sludge samples, was below the permissible limit Environmental Protection Agency's standards of Iran (34), EPA (85), residential land Parks Canada (10), New Jersey nonresidential (100) Industrial Trade Canada (22) and is higher than permissible standards of Canada for agricultural purposes (4/1), England (3), Taiwan (2), New Jersey for residential (1), Netherlands (1), Belgium (5), Ireland (1), Georgia (2) and Australia (3). Average chromium in terms of milligrams per kilogram of dry matter in a sample of dewatered sludge is equal to 31/32 ± 51/90's That compared with the standards, the average chromium sample, is lower than permissible limit of Environmental Protection Agency's standards of Iran (3000), EPA (3000), England (400), Taiwan (100), the Netherlands (100), Belgium (800), Georgia (100) and Australia (100) and is higher than permissible limit of Canada standards for agricultural purposes (64), residential land Park (64) industrial and commercial (87). Average copper in terms of milligrams per kilogram of dry matter in a sample of dewatered sludge is equal to 74/124 ± 242 That compared with the standards, the average copper sample, is below the permissible limit standards of the Environmental Protection Agency of Iran (1500), EPA (4300), Belgium (800), New Jersey (residential and nonresidential purposes = 600) and is higher than the limit of Canadian standards (agriculture = 63, residential land the park = 63), Taiwan (45), Ireland (50), Georgia (100) and Australia (100). Average zinc in terms of milligrams per kilogram of dry matter in a sample of dewatered sludge is equal to 15/188 ± 593 That compared with the standards, the average zinc sample is below the permissible limit standards of the Environmental Protection Agency of Iran (2800), Belgium (2000) and EPA (7500) and is higher than Canada standards for agricultural purposes (200), residential land Park (200), industrial carpentry (360), Taiwan (100), Belgium (100), Ireland (150), England (300) and Australia (100).

The sludge management in many countries is as a major problem. Hence proper management of sludge produced by the treatment plant is necessary. Sludge disposal requires compliance with certain rules that due to failure in these standards, the environment is polluted. Accumulation of dry sludge in treatment plant area is a major problem in this field. The best way to control this problem is the use of the waste material because if treated properly it can become a useful material. During our evaluation, output tests in five-year-on heavy metal of sludge produced from treatment plant wastewater in the city of Tabriz, the results showed that Heavy metal of sludge produced from the treatment plant wastewater, is significantly lower than environmental and global standards and comparing these values with a mean clean soil from different countries for various applications, especially for agricultural purposes is acceptable. Application of sewage sludge as a fertilizer in addition to increasing crop yield and deliver nutrients to the soil, improves soil physical properties (such as soil permeability, aggregate stability, etc.) and is useful in improving agricultural fields. According to the results of the survey, the average amount of heavy metals tested over the years and seasons for cadmium 85/8, nickel 9/49 , zinc 7/596, chromium 5/390, copper 242 and lead was obtained 5.14 mg kg dry weight of sludge from municipal treatment plant wastewater in Tabriz And these numbers are much lower than the national and international standards, taking into account that daily 11 cubic meters of dried sludge is produced in treatment plant of Tabriz, Therefore, management is necessary. For this purpose, this research was carried out to the know the quality for using in agriculture. The study was done to determine the amount of heavy metals in sludge from municipal treatment plant wastewater in Tabriz and compare with existing standards. Proposes the use of sewage sludge in agriculture looks well However since the environmental decisions have their advantages and disadvantages, the implementation of these decisions needs a correct management, so that positive effects increases to the maximum possible level and negative effects reduces to minimum. In this regard, the proposed sewage sludge from treatment plant wastewater in the city of Tabriz, a comprehensive study of the physical (such as pH- stabilization of volatile solids to solids ratio of all - the smell and color of sludge

- salinity, etc.), And the presence or absence of pathogens (biological properties) contains the number of coliforms - fecal coliform counting the number of parasite eggs are assessed and analysis. So than in comply with Iran environmental standards and international organizations, be used for agricultural purposes. Because use of sludge in agriculture as an economic solution on condition that they contain valuable material And the concentration of hazardous substances, is less than the allowed amount and does not in any way cause damage to soil or plants and using agricultural products results as animal or human food may be appropriate.

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