GOVERNMENT OF DUBAI
حكومة دبي
DUBAI MUNICIPALITY
بلدية دبي

إرشـــاد فنـــي
TECHNICAL GUIDELINE

Number (13) رقم

الاشتراطات البيئية لاستخدام المياه العادمة المعالجة في الري والحمأة المعالجة حرارياً في الزراعة

Environmental Regulations for the Reuse of Treated Wastewater for Irrigation & Thermal Treated Sludge for Agricultural Purposes

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قسم الرقابة البيئية - إدارة البيـــئة
ENVIRONMENTAL CONTROL SECTION (ECS)
ENVIRONMENT DEPARTMENT

Purpose of this Guideline:

Adverse effects to human health and environment safety are the most significant concerns that have to be considered in the re-use of treated wastewater and thermal treated sludge in agriculture and irrigation purposes. These concerns are attributed to the presence of pollutants, such as organic matter, toxic chemicals and pathogens among others, are the factors that would likely cause adverse impact once the wastewater and sludge are released to the environment. This guideline is prepared consistent with the provisions of *Local Order No. 61 of 1991* (*Protection of the Environment in the Emirate of Dubai*), which lay down the foundation of regulating the reuse and land disposal of treated wastewater and sludge within the Emirate of Dubai. Also, this guideline provides minimum standards and common approach for the reuse of treated wastewater and sludge as well as minimum requirements for the design of distribution systems of treated wastewater to ensure reuse and eventual release to the environment will not in anyway compromise public health.

Definitions of Terms:

Wastewater - liquid waste discharged by domestic residences, commercial properties, industry, and / or agriculture and can encompass a wide range of potential contaminants and concentrations.

Sludge - refers to the residual semi-solid material left from industrial wastewater, or sewage treatment processes. It can also refer to the settled suspension obtained from conventional drinking water treatment, and to numerous other industrial processes

Unrestricted Irrigation - The use of treated wastewater to grow crops that are normally eaten raw.

Restricted Irrigation - The Use of wastewater to grow crops that are not eaten raw by humans.

Field capacity - is the amount of soil moisture or water content held in soil after excess water has drained away and the rate of downward movement has materially decreased, which usually takes place within (1-2) days after a rain or irrigation in pervious soils of uniform structure and texture.

General Requirement:

A. **Environmental and Public health Requirements of using treated wastewater in Irrigation:**

To protect public health:

- Wastewater treatment station should meet the standard limits for treated wastewater issued by Dubai Municipality. Annex (1).

- Treated wastewater should be at any point within the limits of Dubai Municipality starting from inlet point to the outlet point of irrigation network from both governmental and private treatment facility stations.
- Periodical monitoring for green spaces irrigated by treated wastewater shall be conducted by Environmental Control Section in cooperation with Dubai Central Laboratory, every sixth months by collecting & analyzing samples of irrigated grasses in varied periods after the completion of irrigation process.
- Concerned parties should ensure that the public shall not be exposed to irrigation water neither spray water nor irrigated green spaces by treated wastewater, in order to protect them from any bacterial / fungal pollutant especially for the pathogenic type and worm eggs that can be transmitted to human.
- Irrigation process should be compatible with the water holding capacity for soil, type of plants and roots depth in order to reduce water consumption and to avoid soil pollution and soil saltiness, In addition to protect ground water from any leaks can be reached from excess usage of irrigation water.
- Concerned party should implement necessary medical test periodically for the people who are in charge in irrigation processes.
- Dubai Municipality Acceptable limits should be followed in accordance with administration legislation (30) of 2008 for restricted and unrestricted irrigation as tabulated in Annex (1).

B. Public health Environmental and Requirements of thermal treated sludge in agriculture:

- Produced thermal treated sludge by treatment facilities should meet the minimal acceptable limits.
- Thermal treated sludge quality should be monitored in order to ensure it will be within the range of Dubai Municipality acceptable limits through collecting and analyzing samples.
- Environment Department in coordination with the Dubai Central Laboratory shall regularly collect and analyze samples from fertilized green spaces at least a week after fertilizing process to verify presence and numbers of pathogenic bacteria, intestinal worm eggs and protozoan vehicles.
- In case of exceedances to Dubai Municipality thermal treated sludge acceptable limit, Treatment process should be adjusted properly to meet the standard requirements.
- Dubai Municipality Acceptable limits should be followed in accordance with the Administration Legislation (30) of 2008 for restricted and unrestricted irrigation (*Please refer to* Annex 2):

For further information please visit
www.dm.gov.ae
or call
Environmental Control Section
Tel.: 6066824 / 6066793 Fax: 7033568

Annex (1)

DM Accepted Limits of Treated Wastewater for Restricted and Unrestricted Irrigation

No.	Symbol	Unit	Max. limits for Unrestricted Irrigation	Max. limits for Restricted Irrigation
2.	BOD5	mg/l	5	20
3.	COD	mg/l	150	200
4.	TSS	mg/l	15	30
5.	TDS	mg/l	2000	2000
6.	DO	mg/l	4-5	3
7.	F.R.C	mg/l	1-2	1-2
8.	PH	mg/l	6-8	6-8
9.	Al	mg/l	5	5
10.	As	mg/l	0.05	0.1
11.	Ba	mg/l	0.5	1
12.	Be	mg/l	0.1	0.3
13.	B	mg/l	0.5	1
14.	Cd	mg/l	0.01	0.01
15.	Cl	mg/l	500	500
16.	Cr (Hexa)	mg/l	0.05	0.05
17.	Co	mg/l	0.05	0.05
18.	Cu	mg/l	0.5	1
19.	Cn	mg/l	0.05	0.05
20.	F	mg/l	1	2
21.	Fe	mg/l	1	5
22.	Pb	mg/l	0.1	0.2
23.	Li	mg/l	0.05	0.05
24.	Mg	mg/l	150	150
25.	Mn	mg/l	0.1	0.5
26.	Hg	mg/l	0.001	0.001
27.	Mo	mg/l	0.01	0.05
28.	Ni	mg/l	0.1	0.1

29.	NH3	mg/l	5	10
30.	NO3	mg/l	50	50
31.	N	mg/l	5	50
32.	Oil & Grease	mg/l	0.5	0.5
33.	Phenols (Total)	mg/l	0.001	0.002
34.	PO4	mg/l	30	30
35.	Se	mg/l	0.02	0.02
36.	Ag	mg/l	0.01	0.01
37.	Na	mg/l	200	300
38.	SO4	mg/l	400	400
39.	S	mg/l	0.1	0.1
40.	V	mg/l	0.1	0.1
41.	Zn	mg/l	5	5
42.	*E.coli*	mg/l	100 >	1000 >
43.	Worm Eggs	mg/l	-	1 >
44.	Protozoal Vesicle	mg/l	-	1 >
45.	Pathogenic Bacteria	mg/l	-	1 >

Annex (2)

DM Accepted Limits of Thermal Treated Sludge in Agriculture

No.	Symbol	Unit	Max. Limits in sludge	Max. Limit in dried soils treated with sludge
1.	Cd	mg/l	20	3
2.	Cr	mg/l	1000	400
3.	Cu	mg/l	1000	150
4.	Pb	mg/l	1000	30
5.	Hg	mg/l	10	1
6.	Mo	mg/l	20	3
7.	Ni	mg/l	6300	75
8.	Se	mg/l	50	5
9.	Zn	mg/l	3000	300
10.	Worm Eggs	mg/l	-	1 >
11.	Protozoal Vesicle	mg/l	-	1 >
12.	Pathogenic Bacteria	mg/l	-	1 >

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