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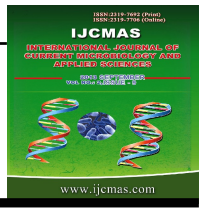

Original Research Article

Sewage pharmaceutical industries impacts assessment on chemical characteristics of runoff at their around in Tehran province

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K e y w o r d s

Pharmaceutica Tehran; Sewage; Assessment.

A B S T R A C T

In this paper we assessed Sewage pharmaceutical industries impacts assessment on chemical characteristics of runoff at their around in Tehran province,t hat did with experimental method. this project studied six pharmaceutical industries in different part of Tehran province .this result showed that process of sewage treatment in industries been Anaerobic Treatment. That caused reduced environmental pollution special reduced negative effect on surface water around there.

Introduction

Pharmaceuticals are a class of emerging environmental contaminants that are extensively and increasingly being used in human and veterinary medicine. These chemicals are designed to have a specific mode of action and many of them for some persistence in the body. These features among others make pharmaceuticals to be evaluated for potential effects on aquatic flora and fauna. The current investigations are mainly driven by advances in environmental residue analysis, particularly after the establishment of chemical analysis methods able to determine more polar compounds such as liquid chromatography–tandem mass spectrometry, which allows the identification of trace quantities of polar organic pollutants without dramatization (Terns *et al.*, 1998, 2001; Colin *et al.*, 2002; Cumberer, 2004). Accordingly, many environmental analyses have been performed in various countries, which are summarized by various reports (e.g. Halling-Sorensen *et al.*, 1998; Daughton and Ternes, 1999;K¨ummerer, 2004). These monitoring studies demonstrate that drug residues in treated.

On the surface this review is to evaluate the impact of pharmaceutical industry wastewater on surface water resources around them will be discussed in Tehran. The reason is that Tehran province has the highest concentration in the pharmaceutical industry.

Materials and Methods

Introduction of the companies

Iran Daru is one of the leading well recognized pharmaceutical Iranian Companies. The company was founded and exploited by the permission of the ministry of public health & Industries in 1966 in Tehran under the name Cyanamid KBC with an area of 20000 square meters. In 1979, After the Islamic revolution in Iran, the name of the company changed to Iran Daru (Daru means "drug"). Iran Daru has ever since strived to improve its existing facilities by carrying out regular inspection and updating of the technology of its products and processes according to GMP standards which are set by WHO. These criteria are continuously supervised by hi-tech quality control laboratories.

Rouz Daru Pharmaceuticals Company was founded in 1963 by a group of faculty of pharmacy graduates. Their objective was based on their strong belief and dedication to maintain the professional and national mission to keep the quality of pharmaceutical products pervades our country's healthcare system.

One of the greatest medical and pharmaceutical phenomena in the recent half a century in Iran is the establishment of the Daru Pakhsh Pharmaceutical Manufacturing Company. In 1956 The Daru Pakhsh Company, as the most experienced domestic pharmaceutical company, was established under the title of the charity institution of Daru Pakhsh affiliated to Social Service Organization with the collaboration of the British Pharmaceutical Company called Allen & Hanburys. This company is now the largest and the most experienced medicine manufacturing company in the country and it is regarded as the first market in terms of quantative and monetary sales.

Physico-chemical tests on wastewater samples

In this paper the physico-chemical parameters include (BOD, COD, TSS, TDS, T, Tur, Colour, EC, Sal ...) that is measured COD, BOD meter, PH meter, flow meter, EC meter and HPLC after that, input & output wastewater in the wastewater treatment system is analyzed

Introduction to Wastewater Treatment Processes

Wastewater treatment is closely related to the standards and/or expectations set for the effluent quality. Wastewater treatment processes are designed to achieve improvements in the quality of the wastewater. The various treatment processes may reduce:

Suspended solids

Physical particles that can clog rivers or channels as they settle under gravity.

Biodegradable organics

(e.g. BOD) which can serve as “food” for microorganisms in the receiving body. Microorganisms combine this matter with oxygen from the water to yield the energy they need to thrive and multiply; unfortunately, this oxygen is also needed by fish and other organisms in the river. Heavy organic pollution can lead to “dead zones” where no fish can be found; sudden releases of heavy organic loads can lead to dramatic “fish kills”.

Pathogenic bacteria and other disease causing organisms these are most relevant

where the receiving water is used for drinking, or where people would otherwise be in close contact with it; and Nutrients, including nitrates and phosphates. These nutrients can lead to high concentrations of unwanted algae, which can themselves become heavy loads of biodegradable organic load Treatment processes may also neutralize or removing industrial wastes and toxic chemicals. This type of treatment should ideally take place at the industrial plant itself, before discharge of their effluent in municipal sewers or water courses.

Widely used terminology refers to three levels of wastewater treatment: primary, secondary, and tertiary (or advanced). Primary (mechanical) treatment is designed to remove gross, suspended and floating solids from raw sewage. It includes screening to trap solid objects and sedimentation by gravity to remove suspended solids. This level is sometimes referred to as “mechanical treatment”, although chemicals are often used to accelerate the sedimentation process. Primary treatment can reduce the BOD of the incoming wastewater by 20-30% and the total suspended solids by some 50-60%. Primary treatment is usually the first stage of wastewater treatment. Many advanced wastewater treatment plants in industrialized countries have started with primary treatment, and have then added other treatment stages as wastewater load has grown, as the need for treatment has increased, and as resources have become available.

Secondary (biological) treatment removes the dissolved organic matter that escapes primary treatment. This is achieved by microbes consuming the organic matter as food, and converting it to carbon dioxide, water, and energy for their own growth and reproduction. The biological process is then followed by additional settling tanks (“secondary sedimentation", see photo) to remove more of the suspended solids. About 85% of the suspended solids and BOD can be removed by a well running plant with secondary treatment. Secondary treatment technologies include the basic activated sludge process, the variants of pond and constructed wetland systems, trickling filters and other forms of treatment which use biological activity to break down organic matter.

Tertiary treatment is simply additional treatment beyond secondary! Tertiary treatment can remove more than 99 percent of all the impurities from sewage, producing an effluent of almost drinking-water quality. The related technology can be very expensive, requiring a high level of technical know-how and well trained treatment plant operators, a steady energy supply, and chemicals and specific equipment which may not be readily available. An example of a typical tertiary treatment process is the modification of a conventional secondary treatment plant to remove additional phosphorus and nitrogen.

Disinfection, typically with chlorine, can be the final step before discharge of the effluent. However, some environmental authorities are concerned that chlorine residuals in the effluent can be a problem in their own right, and have moved away from this process.

Disinfection is frequently built into treatment plant design, but not effectively practiced, because of the high cost of chlorine, or the reduced effectiveness of ultraviolet radiation where the water is not sufficiently clear or free of particles.

Results and Discussion

Comparative experiments raw sewage into the wastewater treatment system, experiments show that the wastewater input to Daroupakhsh & Rouz Daru wastewater treatment system are Respectively the most alkaline and total dissolved solids is highest from all over. Experiments show that the output of the Sewage, Daroupakhsh & Rouz Daru wastewater was well acidity so it is normal. as total dissolved solids on the Rouse Dare company's less than. The biological and chemical oxygen demands for experiments pharmaceutical companies were all normal.

Current water quality guidelines for reclaimed wastewater predominantly address risks associated with the presence of microbial organisms and parameters like Chemical Oxygen Demand, suspended solids and at some cases heavy metals. Comparatively, other chemical parameters including organic compounds (e.g. xenobiotic recalcitrant compounds and endocrine disrupting compounds) have been largely overlooked. One important aspect to solve the load of pharmaceutical residues in wastewater and surface water is to optimize STP processes. There is a need to increase the knowledge about the fate of pharmaceuticals during sewage treatment for implementation of better removal techniques.

Future work on STP treatment optimization will show to what extend pharmaceuticals can be removed from wastewater and to what extent the implementation of an improved technology is feasible, taking into account other macro- and micro-pollutants as well as the broad variety of complex wastewater matrices.

The findings of this study indicate that the extent of wastewaters pharmaceuticals pH, electrical conductivity, total dissolved solids, and biological and chemical oxygen demand have a greater impact.
In conclusion, wastewater reuse is a practice related not only to a number of benefits in regards to water balances and management but also to a number of question marks. Intense research must be launched towards this direction so as to safeguard human health and the environmental ecosystems

Recommendations

Improved methods of production so as to produce the least amount of dirt brought in industry. Education and public awareness of the effects of environmental pollution, especially water pollution.

To better manage the health of the pharmaceutical industry in a way that continuous monitoring of wastewater and sewage treatment systems shall be in the best shape.

Continuous control of water pollution so that they can be predicted to increase approximately in order to better management and control of water pollution. Use a green space and trees for reducing water pollution have a greater role.

Remove old wastewater treatment systems and contaminated pharmaceuticals maker of networking. Assessment of surface water on the pharmaceutical industry in terms of water pollution prevention and control activities in the pharmaceutical industry to spill any water.

Table.1 Testson the wastewater entering the wastewater treatment system

Daru Pakhsh	Rouz Daru	Iran Daru	Parameter
9.32	7.08	8.04	**PH**
845	1014	488	**TDS**
890	1060	507	**EC**

Table.2 Tests on the wastewater exiting the wastewater treatment system

Daru Pakhsh	Rouz Daru	Iran Daru	parameter
8.5	7.84	9.1	**PH**
750	251	22	**TDS**
1085	862	1460	**EC**
Daru Pakhsh	**Rouz Daru**	**Iran Daru**	**parameter**
74	15	68	**BOD**
156	36	30	**COD**
96	10	20	**TSS**

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