REVISTA AIDIS

de Ingeniería
y Ciencias Ambientales:

Investigación, desarrollo y práctica.

http://www.journals.unam.mx/index.php/aidis/index

Vol. 8 No. 3
6 de diciembre de 2015

ISSN 0718-378X

Con el patrocinio de:
INSTITUTO DE INGENIERÍA UNAM

Foto: Carlos Magno Marques Cardoso
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REVISTA AIDIS

de Ingeniería y Ciencias Ambientales: Investigación, desarrollo y práctica.

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La Revista AIDIS de Ingeniería y Ciencias Ambientales: Investigación, desarrollo y práctica es una publicación electrónica cuatrimestral, editada en el Instituto de Ingeniería, UNAM.
Editor responsable: Germán Buitrón Méndez.
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04-2011-011413271800-203

ISSN
0718-378X

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ISSN 0718-378X

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Investigación, desarrollo y práctica. ISSN 0718-378X

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Investigación, desarrollo y práctica. ISSN 0718-378X

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REVISTA AIDIS

de Ingeniería y Ciencias Ambientales: Investigación, desarrollo y práctica.

MANEJO DE RESIDUOS SÓLIDOS URBANOS: CASO DE ESTUDIO EN LAS MARGARITAS, CHIAPAS.

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Claudia del Socorro López Arguello[1]
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MUNICIPAL SOLID WASTE MANAGEMENT: CASE STUDY IN LAS MARGARITAS, CHIAPAS.

Recibido el 20 de agosto de 2014; Aceptado el 19 de junio de 2015

Abstract

Municipal Solid Waste (MSW) management in Mexico is complex and it has evolved with urbanization, economic growth and industrialization. For these reasons the Secretariat of Environment and Natural Resources has promoted integrated waste management through plans, programs and regulatory framework; however, it is still necessary to continue implementing actions to obtain sustainable waste management. In this paper a comprehensive review of the management of municipal solid waste in the municipality of Las Margaritas, Chiapas, was developed for evaluation its current status and identifying the main problems related to waste management. The collection coverage was found well below that reported by the National Institute of Ecology and Climate Change (81.61% in Municipal Head & 21.48% at the municipal level) as well as inadequate and inefficient final disposal of MSW. On the other hand, it is estimated that there could be a possible utilization of about 70% of MSW generated, if the Municipal council promotes awareness strategies, source separation of household waste, promotion of recycling or reuse of segregated material.

Key Words: Municipal Solid Waste, Municipalities of Chiapas, Solid Waste Management.

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Revista AIDIS de Ingeniería y Ciencias Ambientales:
Investigación, desarrollo y práctica. ISSN 0718-378X

Vol. 8, No. 3, 312 – 327
6 de diciembre de 2015

REVISTA AIDIS

de Ingeniería y Ciencias Ambientales: Investigación, desarrollo y práctica.

EFICIÊNCIA DA FLOCULAÇÃO EM CORTINAS INTEGRADA À FLOTAÇÃO POR AR DISSOLVIDO APLICADA AO TRATAMENTO DE AGUA DE LAVAGEM DE FILTROS

Karina Oliveira Chaves[1]
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EFFICIENCY OF CURTAIN FLOCCULATION INTEGRATED WITH DISSOLVED AIR FLOTATION APPLIED TO WATER TREATMENT SLUDGE

Recibido el 15 de octubre de 2014; Aceptado el 9 de septiembre de 2015

Abstract

The idea of integrating hydraulic flocculation with Dissolved Air Flotation (DAF) into one unit had as fundamental hypothesis the simplicity of this type of flocculation, the reduction of the required volumes and the high efficiency and robustness provided by dissolved air flotation. A pilot Flocculation - Dissolved Air Flotation (FDAF) unit was built to treat filter backwash-sludge produced by a direct filtration water treatment plant. The new system required a low overall hydraulic detention time (22 min) and showed high efficiency with significant removal of colour (98.1%), total coliform (98.2%), suspended solids (87.1%), COD (92.5%), aluminium (88.5%) and turbidity (99.2%). The FDAF adjusted the effluent to Brazilian reuse standards and presented a high resilience to affluent quality variations. Thus, FDAF technique proved to be feasible for the treatment of filter backwash-sludge and for other types of wastewater containing low-density solids, reducing significantly the volume requirement as compared to conventional sedimentation or dissolved air flotation clarification processes.

Key Words: Curtin flocculation, dissolved air flotation, WTP sludge treatment.

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Revista AIDIS de Ingeniería y Ciencias Ambientales:
Investigación, desarrollo y práctica. ISSN 0718-378X

Vol. 8, No. 3, 328 – 343
6 de diciembre de 2015

REVISTA AIDIS

de Ingeniería y Ciencias Ambientales: Investigación, desarrollo y práctica.

DEGRADAÇÃO DE ÍNDIGO CARMIM EM REATOR EM BATELADAS SEQUENCIAIS COM ASPERGILLUS NIGER AN 400 NO TRATAMENTO DE ÁGUA RESIDUÁRIA TÊXTIL *IN NATURA*

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INDIGO CARMINE DEGRADATION IN SEQUENCING BATCH REACTOR WITH ASPERGILLUS NIGER AN 400 IN THE TREATMENT OF IN NATURA WASTEWATER

Recibido el 27 de noviembre de 2014; Aceptado el 2 de octubre de 2015

Abstract

The textile industry is an important industrial sector. However, it produces large amounts of wastewater containing high concentration of mutagenic and carcinogenic dyes that need to be removed prior to final disposition there of on the environment. In this research, *Aspergillus niger* AN 400 was immobilized in aerobic reactor operated in sequencing batch by adding glucose as cossubstrate for treatment of textile industry wastewater diluted, containing Indigo Carmine (17 mg / L) and concentration of dissolved organic matter in 3492 mg COD / L. The average stain removal was 97% at a wavelength of the chromophore of which only 6% occurred by adsorption of the dye on the material support; 57% average removal of dissolved organic matter; 82.5% ammonia nitrogen and 80% nitrate, resulting in the average concentration in the final effluent of 14.12 mg /L and 0.23 mg / L, respectively. The system was capable of good removal of nitrogen and Indigo Carmine, further optimization of its operation is necessary in order to increase the efficiency of removal of organic matter especially the by-products formed from degradation of the dye.

Keywords: Indigo carmine, fungal degradation, sequencing batch reactor.

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Revista AIDIS de Ingeniería y Ciencias Ambientales:
Investigación, desarrollo y práctica. ISSN 0718-378X

Vol. 8, No. 3, 344 – 359
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REVISTA AIDIS

de Ingeniería y Ciencias Ambientales: Investigación, desarrollo y práctica.

INFLUÊNCIA DA ADIÇÃO DE ÁGUA DE PRODUÇÃO PRÉ-OZONIZADA NO DESEMPENHO DE UM REATOR ANAERÓBIO

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THE INFLUENCE OF THE ADDITION OF PRE-OZONATED WATER PRODUCTION IN THE PERFORMANCE OF AN ANAEROBIC REACTOR

Recibido el 4 de diciembre de 2014; Aceptado el 2 de octubre de 2015

Abstract
Water production is an undesirable by-product presented in oil extraction. This residue is distinguished by the generated volume, toxicity and high salinity. These characteristics make it difficult to biological treatment, necessitating pre-treatment and / or dilution with other residue in order to increase their biodegradability. Thus, this research studies an alternative treatment for oil water production in biological reactor on anaerobic condition preceded by pre-treatment by ozonation on a laboratory scale. The pre-ozonated water production (POWP) was mixed with a synthetic substrate simulating sewage (SS) in increasing proportions in five operational phases. The results showed an average of 75% removal of organic matter in terms of COD, for phase 1 (without addition of POWP). In subsequent phases, it was found that efficiency decreases with the increase of the percentage of POWP, with values of 73%, 64%, 47% and 23% for phases containing 2%, 5%, 8% and 10% POWP, respectively. The study of the temporal profile of organic matter showed that the batch reaction time could be reduced from 22 to 8 hours. These results showed that 5% is the largest POWP dilution percentage at SS for the system to operate with stability and COD removal efficiency over 60%. The inhibition of anaerobic process may be attributed to osmotic stress caused by high salinity, which in phases 4 and 5 were, respectively, 7.9 $gCl^{-}.L^{-1}$ and 11.7 $gCl^{-}.L^{-1}$.

Key-words: Anaerobic treatment, biodegradability, water production and pre-ozonation.

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Revista AIDIS de Ingeniería y Ciencias Ambientales:
Investigación, desarrollo y práctica. ISSN 0718-378X

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REVISTA AIDIS

de Ingeniería y Ciencias Ambientales: Investigación, desarrollo y práctica.

TRATAMENTO ANAERÓBIO E AERÓBIO DE LIXIVIADO DE ATERRO SANITÁRIO

ANAEROBIC TREATMENT AND AEROBIC LANDFILL LEACHATE

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Recibido el 10 de febrero de 2015; Aceptado el 21 de octubre de 2015

Abstract

Landfill leachate can be considered a liquid waste holder of high concentration of ammonia nitrogen, recalcitrant organic matter and, according to the chemical composition of solid waste landfill and the age of the earth, significant concentrations of heavy metals. Such characteristics require sophisticated alternative technologies for the treatment of leachate due to its imbalance between the nutrient and the possible generation of potential toxic products in case of biological process, or other byproducts in case of physical and chemical processes. Conjugated treatment of landfill leachate and sewage is emerging as a promising technological alternative, however, it also recognizes the necessity of operating parameter settings, especially regarding the application of this type of treatment in real scale. In this context, this study worked with the conjugated treatment of landfill leachate and domestic sewage in UASB reactor, followed by biological trickling filter, applying volumetric organic loads of 1.0 kgBOD_5 / m^3.dia (step 1), 1.2 kgBOD_5 / m^3.dia (step 2) and 1.5 kgBOD_5 / m^3.dia (step 3) and HRT of 7.5, 5.0 and 18.0 hours, respectively. The efficiency of total COD removal in the two reactors were 85%, 57% and 89% for steps 1, 2 and 3, respectively. It also presented satisfactory removal of N-NH_4 +, producing, in step 2, an effluent with average concentration of 17 mg N-NH_4^+.L^{-1}. This result meets the discharge standards into water bodies, once that the maximum value allowed is 20 mg N-NH_4^+.L^{-1}.

Key words: wastewater; combined treatment; UASB reactor; percolator biological filter.

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Revista AIDIS de Ingeniería y Ciencias Ambientales:
Investigación, desarrollo y práctica. ISSN 0718-378X

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de Ingeniería y Ciencias Ambientales: Investigación, desarrollo y práctica.

OTIMIZAÇÃO DA TÉCNICA DE ELETROCOAGULAÇÃO/FLOCULAÇÃO POR MEIO DA REDUÇÃO DE DQO UTILIZANDO ELETRODOS DE AÇO CARBONO

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REMOVAL OF COD AND TURBIDITY OF WASTE STABILIZATION POND ELECTROCOAGULATION/FLOCULATION

Recibido el 9 de marzo de 2015; Aceptado el 2 de noviembre de 2015

Abstract

This paper proposes to develop a technology electrocoagulation/electroflotation for post-treatment of wastewater The paper investigated the application of electrocoagulation/electroflotation with two sets of electrodes, carbon steel and aluminum, in the treatment of the effluent from the stabilization pond wastewater treatment Set New Metropolis, located in Caucaia, Ceará station. Studies applying the technique of electrocoagulation/electroflotation for wastewater treatment are made, mostly at the level of Countertop. In order to assess the technical and economic feasibility of implementing the electrolytic polishing of wastewater stabilization ponds, tests were carried out in electrolytic cells operating 4L batch, varying some settings, such as pH , mechanical agitation and electrolyte concentration . Based on the removal efficiency of turbidity and COD were determined optimal settings for electrodes of aluminum and carbon steel. It was noted that the optimal settings for aluminum electrodes were pH = 8.95, 0.078 = rpm mechanical agitation and electrolyte concentration = 0.8405 mg / l of NaCl and HDT = 20 min, while for carbon steel electrodes were pH = 8.12, mechanical stirring = 193.04 rpm and electrolyte concentration = 0.4865 mg / L NaCl and HRT = 10 min. In both conditions effluent to values lower than 50 NTU turbidity of less than 50 mg / L, COD pH of 9 was obtained.

Keywords: Electrocoagulation, wastewater, wastewater treatment, stabilization pond.

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Revista AIDIS de Ingeniería y Ciencias Ambientales:
Investigación, desarrollo y práctica. ISSN 0718-378X

Vol. 8, No. 3, 385 – 396
6 de diciembre de 2015

REVISTA AIDIS

de Ingeniería y Ciencias Ambientales: Investigación, desarrollo y práctica.

AVALIAÇÃO DA MATURAÇÃO E CONTAMINAÇÃO DE COMPOSTOS OBTIDOS PELA COMPOSTAGEM DE RESÍDUOS DOMICILIARES COM APLICAÇÃO DE FEZES CANINAS

*Juliene Paiva Flores[1]
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EVALUATION OF MATURITY AND CONTAMINATION OF PRODUCTS FROM WASTE COMPOSTING WITH DOMESTIC APPLICATION OF STOOL CANINE

Recibido el 20 de marzo de 2015; Aceptado el 2 de octubre de 2015

Abstract

Composting is a process of bio-oxidation by a group of microorganisms and have as final result, stabilized organic matter. Amongst manures of animals, canine faeces are less used in composting processes, due to contaminations that could be a risk to the use of the final compound. Currently in Brazil there are over than 52 millions that correspond of an average of 1.8 dogs per household with this animal, related with that amount 41% of them are located in urban areas, indicating the need to develop alternatives for the generated solid waste disposal. The current study proposed to survey a possible destination for dog faeces as home composting, through the study of aging and contamination of compounds. The composting procedure was carried out in 3 buckets of 60 liter drilled in the side cover and containing: (1) 8 kg of household organic waste; (2) 1 kg of cow dung and 7 kg of organic domestic waste and (3) 1 kg of dog faeces and 7 kg of organic household waste. Where it could be observed that the addition of dog faeces did not affect the maturation process of the compounds. The assay of pathogens after 11-weeks of maturation it was detected the presence of coliform thermotolerant in all the compounds. The presence of Salmonella and helminth eggs was not observed in any of the samples. This study demonstrated that the use of dog faeces in home composting small-scale systems is a feasable alternative for the treatment of this waste at the place of its origin.

Key Words: compost, dog faeces. maturation compounds, organic matter.

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Revista AIDIS de Ingeniería y Ciencias Ambientales:
Investigación, desarrollo y práctica. ISSN 0718-378X

Vol. 8, No. 3, 397 – 412
6 de diciembre de 2015

REVISTA AIDIS

de Ingeniería y Ciencias Ambientales: Investigación, desarrollo y práctica.

ESTUDO DE CROMO NAS ÁGUAS E SEDIMENTOS DE RIOS LOCALIZADOS NA REGIÃO AMAZÔNICA DO BRASIL

*Carlos Magno Marques Cardoso[1]
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Marcelo Mendes Pedroza[3]
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STUDY OF CHROME ON WATER AND SEDIMENTS OF RIVERS LOCATED IN BRAZILIAN AMAZON REGION

Recibido el 3 de abril de 2015; Aceptado el 25 de agosto de 2015

Abstract

The process of treatment of liquid waste employed by Tannery Tocantins is the chemical precipitation method, however this method has limited metal removal capability, especially potentially toxic metals contained in the liquid waste. Given the complexity of the problem, this research science seeks to determine, through quantitative analysis, the concentration of potentially toxic metal, chrome, in water and sediments in the No Name stream that receives the liquid waste from tannery industry in the city of Governor Edison Lobão and in the Posse stream which is a tributary of the river Campo Alegre. The determination of potentially toxic metals, collected in five (5) sampling points and periods of dry and rainy seasons, were made by spectrophotometry and physical and chemical parameters: pH, turbidity and electrical conductivity. The results showed significant variations in metal concentrations investigated denoting anthropogenic character input associated with the lithology of the region, which together with point sources contribute to the deterioration of surface water of water bodies studied here.

Key words: contamination; water bodies; tanning; chromium salts; sediments.

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Revista AIDIS de Ingeniería y Ciencias Ambientales:
Investigación, desarrollo y práctica. ISSN 0718-378X

Vol. 8, No. 3, 413 – 422
6 de diciembre de 2015

REVISTA AIDIS

de Ingeniería y Ciencias Ambientales: Investigación, desarrollo y práctica.

UN ANÁLISIS ECONÓMICO DEL RECICLAJE DE RESIDUOS URBANOS BIODEGRADABLES

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AN ECONOMIC ANALYSIS OF BIODEGRADABLE URBAN DISCARDS RECYCLING

Recibido el 11 de mayo de 2015; Aceptado el 2 de octubre de 2015

Abstract

This research starts with restaurants that are large producers of biodegradable discards and are primary targets for recycling initiatives. Data collected in 120 restaurants in the medium-size city of Uberlândia, Brazil challenges the importance of this economical sector. Only 1.0% of the city's biodegradable discards originate from restaurants. Iteration leads to individual residences with 48.7%, condominium buildings with 16.2%, shopping centers with 1.9%, institutions with 1.0% and fruit and vegetable merchants with 31.2%. Consequently, the research turns to initiating the reverse logistics and states, that biodegradable discards from restaurants, condominium buildings and fruit and vegetable merchants, together, can generate sufficient revenue for a composting operation to be economically viable. The collected data confirms that idea. With revenues originating from compost sales and avoided tipping fees, the study identifies a potential income of BRL 0.39 per kg of biodegradable discards collected and processed. This surprising result poses to the municipal administration the challenge of developing collection procedures and engaging private enterprises in the compost business.

Key words: biodegradable urban discards, recycling economics, reverse logistics, urban waste, urban discards recycling.

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Revista AIDIS de Ingeniería y Ciencias Ambientales:
Investigación, desarrollo y práctica. ISSN 0718-378X
Vol. 8, No. 3, 423 – 425
6 de diciembre de 2015

La *Revista AIDIS Ingeniería y Ciencias Ambientales: Investigación, desarrollo y práctica* agradece a los siguientes revisores su valioso apoyo en el proceso de evaluación 2015:

Adalberto Noyola Robles, Instituto de Ingeniería, UNAM, México

Alan Michell B. Alexandre, Universidade Federal do Ceará, Brasil

Alejandro Vargas Casillas, Instituto de Ingeniería UNAM, México

Ana Elisa Silva Martínez, Facultad de Ingeniería, México

André Bezerra dos Santos, Universidade Federal do Ceará, Brasil.

Anita Maria de Lima, Universidade Federal de Sergipe, Brasil

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Revista AIDIS de Ingeniería y Ciencias Ambientales:
Investigación, desarrollo y práctica. ISSN 0718-378X
Vol. 8, No. 3, 423 – 425
6 de diciembre de 2015

Revista AIDIS de Ingeniería y Ciencias Ambientales:
Investigación, desarrollo y práctica. ISSN 0718-378X
Vol. 8, No. 3, 423 – 425
6 de diciembre de 2015