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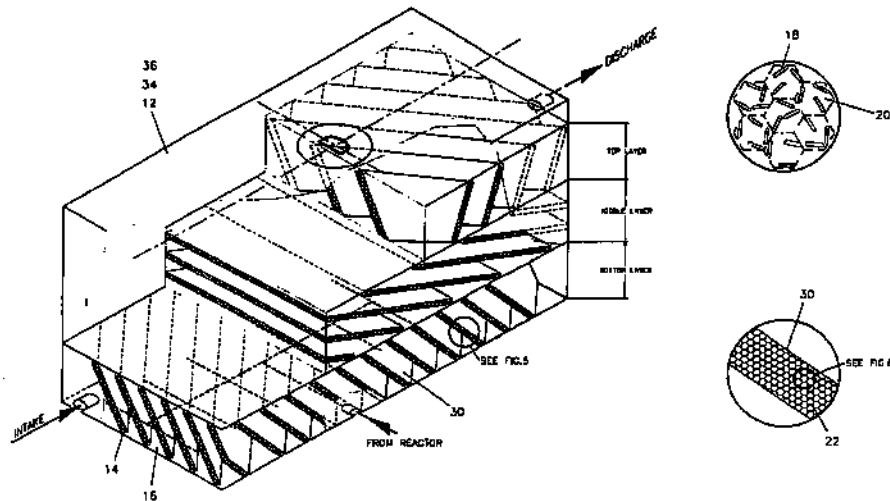
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  - (74) Agent: THOMPSON, Douglas, B.; Thompson Lambert, Suite 103, 10328 - 81 Avenue, Edmonton, Alberta T6E 1X2 (CA).
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  - (71) Applicant: AQUATEX CORPORATION [CA/CA]; 17893 - 106A Avenue, Edmonton, Alberta T5S 1V8 (CA).
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  - (72) Inventors: MAO, Huazhong; 327J Michener Park, Edmonton, Alberta T6H 4M5 (CA). LOURENCO, Jose, J.; 367 Lessard Drive, N.W., Edmonton, Alberta T6M 1A6 (CA).
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(54) Title: BIOLOGICAL METHOD OF WASTE WATER TREATMENT



(57) Abstract: A method of treating waste water is described. Firstly, providing specially acclimatized microbial consortia (18) with relatively low sensitivity to changes in pH and changes in temperature, such that the microbial consortia (18) is capable of metabolizing contaminants (26) efficiently within a predetermined broad pH range and broad temperature range. Secondly, maintain the microbial consortia (18) in a space limited and a substrate limited mode within an immobilized bioreactor (12) operating within the predetermined pH range and the predetermined temperature range. Thirdly, introduce waste water with liquified insoluble organic contaminants (26) into the immobilized bioreactor (12). The organic contaminants (26) are metabolized by the microbial consortia (18) working under space limited and substrate limited conditions, thereby treating the waste water with a minimal sludge production rate. The best mode of waste treatment should include an anaerobic immobilized bioreactor, an anoxic immobilized bioreactor, an aerobic immobilized bioreactor and a nitrification immobilized bioreactor arranged in desired series to accommodate a continuous flow of waste water.



WO 96/30306 A3

## AMENDED CLAIMS

[received by the International Bureau on 24 December 1996 (24.12.96);  
original claim 1 amended; remaining claims unchanged (2 pages)]

1. A method of treating waste water, comprising the step of:

firstly, inoculating a porous immobilized media (22) with specially pre-acclimatized microbial consortia (18) having relatively low sensitivity to changes in pH and changes in temperature, such that the microbial consortia (18) is capable of metabolizing contaminants efficiently within a predetermined broad pH range and broad temperature range;

secondly, maintaining the microbial consortia (18) within an immobilized bioreactor (12) operating within the predetermined pH range and the predetermined temperature range; and

thirdly, introducing waste water with liquified organic contaminants (26) into the immobilized bioreactor (12) at a flow rate sufficient to shear microbial consortia (12) from an exposed surface of the immobilized media (22), thereby maintaining the microbial consortia (18) in a space limited mode within the pores (20) of the immobilized media (22), the organic contaminants (26) being metabolized by the microbial consortia (18) working under space limited conditions, thereby treating the waste water with a minimal sludge production rate.

2. The method of treating waste water as defined in Claim 1, the microbial consortia (18) being in both a space limited and a substrate limited mode.

3. The method of treating waste water as defined in Claim 1, the microbial consortia (18) being capable of