CLAIMS

1. A method (200, 300, 400) of at least partly removing at least one micropollutant from wastewater (104) comprising carbogenous compounds and at least one micropollutant, the method comprising the steps of:

(a) dividing the wastewater (104) into a main stream (105) and a side stream (106);

(b) treating main stream (105) with bacteria to reduce the content of carbogenous compounds to provide depleted wastewater (107) comprising at least one micropollutant;

(c) treating the depleted wastewater (107) with a second portion of microorganisms (162), having the ability of degrading the at least one micropollutant, to, at least partly, remove the at least one micropollutant thereby providing treated water (170), wherein the second portion of microorganisms (162) have been enriched by feeding the side stream (106) to it before using the second portion of microorganisms (162) in treating the depleted wastewater (107);

(d) feeding a first portion of microorganisms (161), having the ability of degrading the at least one micropollutant, with the side stream (106), to enrich them for subsequent use in treating the depleted wastewater (107) to at least partly remove the at least one micropollutant; and

wherein the biochemical oxygen demand (BOD) of the side stream (106) wastewater is higher than 100 $gO_2/m^3/5d$ and the depleted wastewater (107) has a biochemical oxygen demand (BOD) of 0 to 50 $gO_2/m^3/5d$.

2. The method (200, 300, 400) of claim 1, wherein step (b) comprises;

i.) treating the main stream (105) with bacteria (130) to remove organic compounds;

ii.) treating the main stream (105) with bacteria under aerobic conditions (140) to oxidize NH_4^+ to NO_3^-; and/or

iii.) treating the main stream (105) with bacteria under anoxic conditions (150) to convert NO_3^- to N_2.

3. The method according to claim 2, wherein step (b) comprises the consecutive steps of:

i.) treating the main stream (105) with bacteria (130) to remove organic compounds;

ii.) treating the stream resulting from step i) with bacteria under aerobic conditions (140) to oxidize NH_4^+ to NO_3^-; and

iii.) treating the stream resulting from step ii) with bacteria under anoxic conditions (150) to convert NO_3^- to N_2.

4. The method (200, 300, 400) according to any of claims 1 to 3, wherein the method comprises treating the depleted wastewater (107) with a second portion of microorganisms (162) in series with a third portion of microorganisms (163), both having the ability of degrading the at least one micropollutant, thereby providing treated water (170), while the first portion of microorganisms (161) is being enriched by feeding with the side stream (106).

5. The method (200, 300, 400) of any of claims 1 to 4, wherein the portions of microorganisms (161, 162, 163) having the ability of degrading the at least one micropollutant are either aerated or unaerated or a combination of aerated and unaerated.

6. The method (200, 300, 400) of any of claims 1 to 5, wherein the side stream (106) is fed back to the main stream (105) in step (b) for treatment with bacteria to reduce the content of carbogenous compounds, after the side stream (106) has been used for feeding microorganisms (161, 162, or 163) in step (d).

7. The method (200, 300, 400) of any of claims 1 to 6, wherein the microorganisms (161, 162, 163) are grown on suspended carrier elements (108).

8. The method (200, 300, 400) of any of claims 1 to 7, wherein the method comprises at least two cycles, in the first cycle the second portion of microorganisms (162) is used to treat the depleted wastewater (107), whereas the first portion of microorganisms (161) is used to treat the side stream (106), and in the second cycle the first portion of microorganisms (161) is used to treat the depleted wastewater (107), whereas the second portion of microorganisms (162) is used to treat the side stream (106).

9. The method (200, 300, 400) of any of claims 1 to 7, wherein the method comprises at least three cycles: in the first cycle the second portion of microorganisms (162) followed by the third portion of microorganisms (163) is used to treat the depleted wastewater (107), whereas the first portion of microorganisms (161) is used to treat the

side stream (106); in the second cycle, the first portion of microorganisms (161) followed by the second portion of microorganisms (162) is used to treat the depleted wastewater (107), whereas the third portion of microorganisms (163) is used to treat the side stream (106); and in the third cycle the third portion of microorganisms (163) followed by the first portion of microorganisms (161) is used to treat the depleted wastewater (107), whereas the second portion of microorganisms (162) is used to treat the side stream (106).

10. The method (200, 300, 400) of any of claims 1 to 9, wherein the method comprises at least two different reactors stages (164 and 165), preferably at least three different reactors stages (164, 165 and 166), for use in steps (c) and (d) of claim 1.

11. The method (200, 300, 400) of any of claims 1 to 10, wherein the at least one micropollutant is selected from the group consisting of: pharmaceuticals or metabolites from pharmaceuticals, such as synthetic hormones, painkillers, lipid regulators, ß-blockers, antibiotics, antidipressants, analgesics, antiepileptics, or psychostimulants; medical products, such as radiocontrast agents (iodinated X-ray contrast media); Veterinary pharmaceuticals, such as hormones, or antibiotics; Animal feed additives, such as growth enhancers; Personal care products (PCPs), such as sun/UV screens, antioxidants, preservatives, antimicrobials, nitro- and polycyclic musks, disinfection by-products, or insect repellants; biocides, such as herbicides, insecticides, fungizides, or biocides; or industrial chemicals, such as flame retardants, anti-oxidants, plasticizers, coordination complexes, corrosion inhibitors, coolants, incineration products.

12. The method (200, 300, 400) of any of claims 1 to 11, wherein the at least one micropollutant is selected from the group consisting of sulfadiazines (sulfamethoxazole, AC-sulfadiazine, sulfadiazine), diclofenac, propranolol, sulfamethizole, venlafaxine, carbamazepine, iopromide, iohexol, iopamidol, iomeprol, citalopram, atenolol, metoprolol, propranolol, sotalol, trimethoprim, ciprofloxacin, tramodol, 17a-ethinylestradiol, clarothromycin, erythromycin, roxithromycin, diatrizoic acid, phenazone, 17a-ethinylestradiolibuprofen, naproxen, bezafibrate, fenofibric acid, clofibric acid, caffeine, exiopromide, trenbolone acetate, tetracyclines, chloramphenicol, arsenic roxarsone, methylbenzylidene camphor (4-MBC), hydroxy benzoic acid, triclosan, tonalide (AHTN), N-nitrosodimethyl-amine (NDMA), N,N-diethyl-metatoluamide (DEET), alachlor, atrazine, bentazone, 2,4 D, diuron, carbaryl, dieldrin, dichlorodiphenyltrichloroethane (DDT), vinclozolintributyl tin (TBT), brominated

diphenyl ethers (PBDE), nonyl phenol (NP), bisphenol A, perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), butylated hydroxyanisole (BHA), diethyl phthalate (DEP), ethylene-diaminetetraacetic acid (EDTA), benzotriazole (BTSA), dioxins, and polyaromatic hydrocarbons (PAHs).

13. The method (200, 300, 400) of any of claims 1 to 12, wherein a carbon additive, such as methanol or ethanol, is added to the side stream (106) wastewater of step (a), to adjust the biochemical oxygen demand (BOD) to higher than 100 $gO_2/m^3/5d$.