CLAIMS

1. A process for removing urea in concentrations of less than 1000 parts per billion from feed water, the process comprising the step of: providing the feed water to one or more ion exchange columns in series filled up with strong acid cation exchange resins and an addition of a nitrite ion (NO_2-) by adding at least one of a salt like $NaNO_2$, Nitrous acid (HNO_2) or NO_2 gas in front of the ion exchange resin column.

2. A process in accordance with Claim 1 wherein the ion exchange resins are loaded with cations from raw water and replaced with hydronium during regeneration.

3. A process in accordance with Claim 1 wherein the ammonium ions which are partially produced by the reaction of urea with the nitrite ion is at same time removed by the resin during saturation and replaced with hydronium during regeneration.

4. A process in accordance with Claim 1 wherein the process includes the step of controlling the process by one of either electrical conductivity or pH to trigger a regeneration of the resin phase with acidic solutions.

5. A process in accordance with Claim 1 wherein the column is regenerated with acid and rinsed out with water.

6. A process in accordance with Claim 1 wherein the excess of nitrite ion present in the water added in front of the ion exchange columns is removed by one of a following anion exchange resin or reaction with hypochlorite solutions or hydrogen peroxide or other oxidant or a downstream reverse osmosis process.

7. A process according to claim 1, and further including the step of heating the dosed feed up to at least about 30°C.

8. A process according to claim 1 wherein the dosed molar ratio of NO_2 to urea is between 50 and 1500.

9. A process according to claim 8 wherein the dosed molar ratio of NO_2 to urea is between 100 and 700.

10. A process for removing urea in concentrations of less than 1000 parts per billion from a feed, the process comprising the steps of:

dosing the feed with a nitrite ion (NO_2-) by adding at least one of a salt like $NaNO_2$, Nitrous acid (HNO_2) or NO_2 gas; and

then passing the dosed feed through a strong acid cation exchange resin in an exchange column.

11. A process according to claim 10 wherein the dosed molar ratio of NO_2 to urea is between 50 and 1500.

12. A process according to claim 11 wherein the dosed molar ratio of NO_2 to urea is between 100 and 700.

13. A process according to claim 12, and further including the step of heating the feed up to at least about 30°C.

14. A process according to claim 13 wherein the ion exchange resins are loaded with cations from raw water and replaced with hydronium during regeneration.

15. A process in accordance with Claim 14 wherein the ammonium ions which are partially produced by the reaction of urea with the nitrite ion is at same time removed by the resin during saturation.

16. A process in accordance with Claim 15 wherein the process includes the step of controlling the process by one of either electrical conductivity or pH to trigger a regeneration of the resin phase with acidic solutions.

17. A process in accordance with Claim 16 wherein the column is regenerated with acid and rinsed out with water.

18. A process in accordance with Claim 17 wherein the excess of nitrite ion present in the water added in front of the ion exchange columns is removed by one of a following anion exchange resin or reaction with hypochlorite solutions or hydrogen peroxide or another oxidant or a downstream reverse osmosis process.