CLAIMS

What is claimed is:

1. A method for producing a stable disinfecting solution comprising a plurality of halosulfamate species and/or halosulfamic acid species and one or more halogen species, the method comprising:

preparing an aqueous acidic solution comprising halide ions and sulfamic acid and having a pH of less than 7; and

electrolyzing said aqueous acidic solution to produce the stable disinfecting solution, wherein the concentrations of the halide ions and the sulfamic acid in said aqueous acidic solution and the pH of said aqueous acidic solution being such as to produce the stable disinfecting solution having a total halogen content of at least 2100 mg/L and exhibiting less than 5% loss of halogen content over a 24 hour time period.

2. The method of claim 1, wherein the aqueous acidic solution further comprises one or more additional halogen stabilizing compounds.

3. The method of claim 2, wherein the one or more additional halogen stabilizing compounds are selected from the group consisting of lithium sulfamate, sodium sulfamate, potassium sulfamate, organic sulfonamide, methylsulfonamide, o-toluenesulfonamide, m-toluenesulfonamide, p-toluenesulfonamide, cyanuric acid, a derivative of cyanuric acid, succinimide, a derivative of succinimide, hydantoin, a derivative of hydantoin, and combinations thereof.

4. The method of claim 3, wherein the stable disinfecting solution comprises N-halosulfonamide compounds and/or N,N-dihalosulfonamide compounds.

5. The method of claim 1, wherein the halosulfamate species comprise N-halosulfamate compounds and/or N,N-dihalosulfamate compounds.

6. The method of claim 1, wherein the halosulfamic acid species comprise N-halosulfamic acid compounds and/or N,N-dihalosulfamic acid compounds.

7. The method of claim 1, wherein the stable disinfecting solution has a total halogen content of at least 2500 mg/L.

8. The method of claim 1, wherein the aqueous acidic solution does not comprise a non-amine base.

9. The method of claim 1, wherein the preparing step comprises:

providing a salt blend comprising sulfamic acid and one or more salts comprising the halide ions; and

diluting the salt blend with water.

10. The method of claim 9, wherein the salt blend comprises a pellet, briquette, or compacted form.

11. The method of claim 9, wherein the salt blend comprises a solid solution.

12. The method of claim 9, wherein the salt blend comprises an anti-caking agent.

13. The method of claim 1, further comprising flowing the aqueous acidic solution through an electrolytic cell at a flow rate selected to produce the desired pH of the stable disinfecting solution.

14. The method of claim 13, further comprising increasing the flow rate, thereby maintaining the acidity of electrolyte in the vicinity of cathodes in the electrolytic cell during the electrolyzing step.

15. The method of claim 14, further comprising removing scale from surfaces of the cathodes or preventing the formation of scale on the surfaces of the cathodes.

16. The method of claim 1, wherein the pH of the aqueous acidic solution is less than 4.

17. The method of claim 16, wherein the pH of the aqueous acidic solution is less than 2.

18. The method of claim 1, wherein the pH of the stable disinfecting solution is greater than 9.

19. The method of claim 18, wherein the pH of the stable disinfecting solution is greater than 11.

20. The method of claim 1, wherein the pH of the stable disinfecting solution is less than 3.