Claims

1. A method of decontaminating a vessel, comprising:

providing a solvent composition comprising an amine oxide, polydimethylsiloxane, and water, wherein the polydimethylsiloxane is present in an amount of 1 ppm to 100 ppm;

introducing the solvent composition into the vessel;

allowing the solvent composition to contact at least a portion of contaminants present in the vessel, wherein the contact forms emulsions comprising trapped gas molecules that are destabilized by the polydimethylsiloxane; and

discharging the solvent composition from the vessel.

2. The method of claim 1, wherein the contaminants comprise a hydrocarbon, hydrogen sulfide, a metal sulfide, or combinations thereof.

3. The method of claim 1, wherein the solvent composition further comprises an enzyme blend.

4. The method of claim 1, wherein the step of introducing the solvent composition into the vessel comprises circulating the solvent composition within the vessel.

5. The method of claim 1, wherein the step of introducing the solvent composition into the vessel comprises a liquid boilout.

6. The method of claim 1, wherein the step of introducing the solvent composition into the vessel comprises introducing steam into the vessel.

7. The method of claim 6, further comprising injecting the solvent composition into a steam line comprising steam, wherein the steam line introduces the steam into the vessel.

8. The method of claim 7, wherein the steam is saturated steam at a pressure of 50 psi to 200 psi.

9. The method of claim 7, further comprising the step of adjusting the concentration of each component of the solvent composition such that a boiling point of the solvent composition equals about the boiling point of water in the steam line.

10. The method of claim 1, wherein the solvent composition is discharged to a waste vessel and wherein the spent amine oxide is skimmed off.

11. A system for decontaminating a vessel, comprising:

a solvent composition comprising an amine oxide, polydimethylsiloxane, and water, wherein the polydimethylsiloxane is present in an amount of 1 ppm to 100 ppm;

a steam line connected to the vessel; and

an introduction of the solvent composition into the steam line, wherein the introduction allows the solvent composition to contact at least a portion of contaminants present in the vessel, and wherein the contact forms emulsions comprising trapped gas molecules that are destabilized by the polydimethylsiloxane.

12. The system of claim 11, wherein the steam line comprises saturated steam at a pressure of 50 psi to 200 psi.

13. The system of claim 11, wherein the steam line comprises unsaturated steam at a pressure of 50 psi to 200 psi.

14. The method of claim 3, wherein the enzyme blend comprises a lipase, a cellulase, an amylase, a protease, a pectinase, or combinations thereof.