[0015a] ~~Accordingly, in one~~In another ~~aspect of the invention~~embodiment, there is provided a method for reducing sulfhydryl compounds from a hydrocarbon fluid stream, said method comprising providing a high temperature stable, highly water soluble aldehyde-releasing compound selected from the group consisting of hydantoins, imidazolidinyl ureas, dimethyloxazolidines, glutaraldehydes, and mixtures thereof; adding an effective amount of the aldehyde-releasing compound to a hydrocarbon fluid stream containing a sulfhydryl containing compound; and allowing the aldehyde-releasing compound to mix into the hydrocarbon fluid stream and react with at least a portion of the sulfhydryl compound.

[0015b] In another ~~aspect~~embodiment, there is provided a method for reducing sulfhydryl compounds from an oil and gas production well or injection well, said method comprising providing a high temperature stable, highly water soluble aldehyde-releasing compound, selected from the group consisting of hydantoins, imidazolidinyl ureas, dimethyloxazolidines, glutaraldehydes, and mixtures thereof ; and adding an effective amount of the aldehyde-releasing compound to a well having a downhole additive means, the aldehyde-releasing compound being added via the downhole additive means during production of oil or gas from the production well or injection well.

[0015c] In one aspect, there is provided a method for reducing sulfhydryl compounds from an oil and gas production well or injection well, said method comprising (i) providing a high temperature stable, highly water soluble aldehyde releasing compound, selected from the group consisting of hydantoins, imidazolidinyl ureas, dimethyloxazolidines, glutaraldehydes, and mixtures thereof ; and (ii) adding an effective amount of the aldehyde-releasing compound to the production well or the injection well at a position downhole and below ground surface, the aldehyde-releasing compound being added downhole and below ground surface during production of oil or gas from the production well or injection well.

[0016] These and other aspects will become apparent when reading the detailed description of the invention.

What is claimed is:

1. A method for reducing sulfhydryl compounds from an oil and gas production well or injection well, said method comprising

(i) providing a high temperature stable, highly water soluble aldehyde releasing compound, selected from the group consisting of hydantoins, imidazolidinyl ureas, dimethyloxazolidines, glutaraldehydes, and mixtures thereof ; and

(ii) adding an effective amount of the aldehyde-releasing compound to the production well or the injection well at a position downhole and below ground surface, the aldehyde-releasing compound being added downhole and below ground surface during production of oil or gas from the production well or injection well.

2. The method according to claim 1, wherein the aldehyde-releasing compound is added to a hydrocarbon fluid being produced from the production well or the injection well.

3. The method according to claim 1, wherein the downhole addition is achieved using a capillary string, umbilical cord, a perforation in the annulus of a production pipe, addition at the backside of the production or injection well.

4. The method according to claim 1, wherein the aldehyde-releasing compound comprises a hydantoin.

5. The method according to claim 4, wherein the hydantoin comprises a hydroxymethyl hydantoin, a bis(hydroxymethyl)hydantoin or a mixture thereof.

6. The method according to claim 5, wherein the hydroxymethyl hydantoin is selected from the group consisting of 1-hydroxymethyl-5,5-dimethylhydantoin, 3-hydroxymethyl-5,5-dimethylhydantoin, and mixtures thereof; and the bis(hydroxymethyl)hydantoin is 1,3-bis(hydroxymethyl)-5,5-dimethylhydantoin.

7. The method according to claim 1, wherein the sulfhydryl compound present in the hydrocarbon fluid comprises hydrogen sulfide.

8. The method according to claim 1, wherein the aldehyde-releasing compound is continuously fed to the production well or injection well.

9. The method according to claim 1, wherein the aldehyde-releasing compound is fed to the production well or injection well in a batchwise manner.

10. The method according to claim 1, wherein the aldehyde-releasing compound is added in amount of at least 0.3 moles of the aldehyde-releasing compound per mole of the sulfhydryl present in the hydrocarbon fluid stream to be treated.

11. The method according to claim 10, wherein the aldehyde-releasing compound is added in amount between about 1 to about 10 moles of the aldehyde releasing compound per mole of the sulfhydryl present in the hydrocarbon fluid stream to be treated.

What is claimed is:

1. A method for reducing sulfhydryl compounds from a hydrocarbon fluid stream, said method comprising
   (i) providing a high temperature stable, highly water soluble aldehyde-releasing compound selected from the group consisting of hydantoins, imidazolidinyl ureas, dimethyloxazolidines, glutaraldehydes, and mixtures thereof;
   (ii) adding an effective amount of the aldehyde-releasing compound to a hydrocarbon fluid stream containing a sulfhydryl containing compound; and
   (iii) allowing the aldehyde-releasing compound to mix into the hydrocarbon fluid stream and react with at least a portion of the sulfhydryl compound.

2. The method according to claim 1, wherein the aldehyde-releasing compound is a compound.

3. The method according to claim 1, wherein the aldehyde-releasing compound comprises a hydantoin.

4. The method according to claim 2, wherein the hydantoin comprises a hydroxymethyl hydantoin, a bis(hydroxymethyl)hydantoin or a mixture thereof.

5. The method according to claim 4, wherein the hydroxymethylhydantion is selected from the group consisting of 1-hydroxymethyl-5,5-dimethylhydantoin, and 3-hydroxymethyl-5,5-dimethylhydantoin, and the bis(hydroxymethyl)hydantoin is 1,3-bis(hydroxymethyl)-5,5-dimethylhydantoin.

6. The method according to claim 1, wherein the sulfhydryl compound present in the hydrocarbon fluid comprises hydrogen sulfide.

7. The method according to claim 1, wherein the aldehyde-releasing compound is continuously fed to the hydrocarbon fluid.

8. The method according to claim 1, wherein the aldehyde-releasing compound is fed to hydrocarbon fluid in a batchwise manner.

9. The method according to claim 1, wherein the aldehyde-releasing compound is added in amount of at least 0.3 moles of the aldehyde-releasing compound per mole of the sulfhydryl present in the hydrocarbon fluid stream to be treated.

10. The method according to claim 9, wherein the aldehyde-releasing compound is added in amount between about 1 to about 10 moles of the aldehyde-releasing compound per mole of the sulfhydryl present in the hydrocarbon fluid stream to be treated.

11. A method for reducing sulfhydryl compounds from an oil and gas production well or injection well, said method comprising
    (i) providing a high temperature stable, highly water soluble aldehyde-releasing compound, selected from the group consisting of hydantoins, imidazolidinyl ureas, dimethyloxazolidines, glutaraldehydes, and mixtures thereof ; and
    (ii) adding an effective amount of the aldehyde-releasing compound to a well having a downhole additive means, the aldehyde-releasing compound being added via the downhole additive means during production of oil or gas from the production well or injection well.

12. The method according to claim 11, wherein the aldehyde-releasing compound is added to a hydrocarbon fluid containing the being produced from the production well or the injection well.

13. The method according to claim 11, wherein the downhole additive means comprises a capillary string, umbilical cord, a perforation in the annulus of a production pipe, addition at the backside of the production or injection well.

14. The method according to claim 11, wherein the aldehyde-releasing compound comprises a hydantoin.

15. The method according to claim 14, wherein the hydantoin comprises a hydroxymethyl hydantoin, a bis(hydroxymethyl)hydantoin or a mixture thereof.

16. The method according to claim 15, wherein the hydroxymethylhydantion is selected from the group consisting of 1-hydroxymethyl-5,5-dimethylhydantoin, 3-hydroxymethyl-5,5-dimethylhydantoin, and mixtures thereof; and the bis(hydroxymethyl)hydantoin is 1,3-bis(hydroxymethyl)-5,5-dimethylhydantoin.

17. The method according to claim 11, wherein the sulfhydryl compound present in the hydrocarbon fluid comprises hydrogen sulfide.

18. The method according to claim 11, wherein the aldehyde-releasing compound is continuously fed to the production well or injection well.

19. The method according to claim 11, wherein the aldehyde-releasing compound is fed to the production well or injection well in a batchwise manner.

20. The method according to claim 11, wherein the aldehyde-releasing compound is added in amount of at least 0.3 moles of the aldehyde-releasing compound per mole of the sulfhydryl present in the hydrocarbon fluid stream to be treated.

21. The method according to claim 20, wherein the aldehyde-releasing compound is added in amount between about 1 to about 10 moles of the aldehyde-releasing compound per mole of the sulfhydryl present in the hydrocarbon fluid stream to be treated.