

Attachment A

List of Authorized Injection Material Amendments

The list below does not represent any endorsement of products or materials by the Regional Water Quality Control Board, Los Angeles Region (Regional Board). Many of the products/materials listed are patented. Users of these products/materials shall comply with any regulations and laws applicable to the use of the products/ materials. Some products/materials may contain by-products or impurities that are not authorized to be used by the Regional Board. Compounds listed under one category can also be used under another category.

Note: Highlighted Items were authorized for use in the 2007 WDR.

1. Chemical Oxidants:

- Fenton's reagent (hydrogen peroxide, ferrous iron catalyst, and pH buffer)
- Hydrogen Peroxide
- Ozone
- Potassium or Sodium Permanganate
- Sodium Percarbonate
- Sodium Persulfate

2. Chemical Oxidant Activators:

- Calcium Hydroxide
- Chelating Agents (ferric ethyldiaminetetraacetic acid (EDTA), sodium citrate, sodium malonate, sodium phytate)
- Silica and Silicates (Silicic Acid, Sodium Silicate, Silica Gel)
- Sodium Hydroxide

3. Aerobic Bioremediation Enhancement Compounds:

- Calcium Oxide/Peroxide
- Calcium Oxy-hydroxide
- Magnesium (Oxide/Hydroxide/Peroxide)
- Methane (Dissolved Phase)
- Propane (Dissolved Phase)

4. Anaerobic Degradation Enhancement Compounds:

- Calcium Sulfate (gypsum)
- Cheese Whey
- Complex organic materials (starch, wood chips, yeast extract, grain milling products)
- Complex Sugars
- Corn Syrup

- Emulsified Vegetable Oil
- Ethanol
- Glucose
- Glycerol esters of fatty acids and polylactates
- Glycerol Polylactate/Tripolylactate
- Glycerol, Xylitol, Sorbitol
- Guar
- Hematite
- Lactose
- Lecithin
- Magnesium sulfate
- Milk Whey
- Methanol
- Molasses
- Organic Acids (Acetate, Lactate, Propionate, Benzoate, and Oleate)
- Potassium Sulfate
- Propanol
- Sorbitol Cysteinate/Cysteine

5. Reduction Degradation Enhancement Compounds:

- Ferrous Chloride
- Ferrous Gluconate
- Ferrous Sulfate
- Sodium Dithionite
- Zero-Valent Iron

6. Metals Precipitation / Stabilization:

- Calcium Phosphate
- Calcium Polysulfide
- Ferrous Sulfate
- Sodium Tripolyphosphate (STPP)

7. Surfactants/Co-solvents:

- Benzenesulfonic acid
- Dioctyl Sodium Sulfocuccinate
- D-limonene
- Ethoxylated Castor Oils Surfactants
- Ethoxylated Cocamides Surfactants
- Ethoxylated Coco Fatty Acid Surfactants
- Ethoxylated Octylphenolic Surfactants
- Sorbitan Monooleate
- Xanthan Gum

8. Bioaugmentation Organisms: *The users shall prove that any bacterial genomes in the original injection form, its degradation form, other impurity or by-product shall not be human/animal pathogens. Genetically-modified organisms (GMO) should not be used.*

- Dehalococcoides Sp.
- Dehalobactor Sp.
- Geobacter
- Methanomethylovorans
- Desulfovibrio
- Desulfobacterium

9. Tracer Study Compounds: *The tracer compounds shall be highly contrasting and not reactive with current contaminants to be treated. The tracers may be chloride-based, bromide-based, or fluoride-based salts, or similar materials as approved by the Executive Officer.*

- Calcium Bromide
- Calcium Chloride
- Eosin Dyes
- Fluoride Salts
- Iodide
- Potassium Bromide
- Potassium Iodide
- Rhodamine Dyes
- Sodium Bromide
- Sodium Chloride
- Sodium Fluorescein

10. Buffer Solutions and pH Adjusters:

- Calcium Carbonate
- Calcium Magnesium Carbonate
- Potassium Bicarbonate
- Sodium (carbonate/bicarbonate)