

## **Preliminary Salt Management Alternatives List**

1. Irrigation efficiency/reduce irrigation – Would reduce salt from imported or evapotranspiration of groundwater
2. Tailwater reuse/Drainage recirculation – reduced discharged salt may increase
3. Growing Salt tolerant Crops – reduces imported water and maintains some production
4. Evaporation Ponds, solar evaporators – isolates the salt
5. Land disposal and retirement uses land to store salt and retired
6. Biologic and filtration drainage treatment systems to remove salt and selenium
7. Enhanced evaporation systems – Isolate salts for management
8. Salt separation and utilization – fractionate and create products
9. Drain water and brackish water desalination Isolates salt for Management
10. Detergent reformulation - source control
11. Industrial biomass and brine management – isolates salts and potentially reuses salts
12. Plasma converter – creates fuel and products
13. Reduce Imported Feed for CAFO's – reduces salt import from feedsources
14. Reduce Seepage from Conveyance - reduces dissolution of salt from soils
15. Industrial Salt Source reduction/reuse – reduces salts for production
16. Increase export of salt containing products - exports salt unless salt is brought in to produce products
17. Increase salt export in surface water leaving the region, San Joaquin River and State Water Project- export of salts could be hampered by toxic constituents and flow required
18. Increase Outdoor Landscape Irrigation efficiency – reduces imported water and groundwater use with salts
19. Increase indoor water use efficiency – reduces imported water and groundwater use with salts
20. Reduce water softening need or shift to ocean disposal of brine – reduces salt from residential indoor plumbing
21. Water preconditioning, Lime softening and management at water plant – reduces softening need and salt related to softeners
22. Salt collection and Landfill disposal – Disposal and removal from basins
23. Increase salt discharge at EBMUD – ocean discharge and removal from basins
24. Salt collection and treatment (ocean qualified brine) for ocean discharge – ocean discharge and removal from basins
25. Deep well injection for storage and recovery of salts – Removal of salt from basins, with recovery when economic
26. Various source controls - Reduce salt imported and discharged
27. Legislation to require any new industrial use of salt to use salt produced in “salt surplus” areas of the state, as public policy to reduce transportation and minimize import
28. Tax imported salt and credit salt that is produced from salt surplus areas and exported.
29. Sell the salt to the melting polar ice cap areas to help offset the dilution of ocean water with melting ice
30. Concentrate and market to Canada, Toronto alone uses 150,000 tones of salt annually, or trade them for low TDS water.

**This list likely should be converted to a matrix by type of management effort, application and result**

## Salt Reuse Opportunities

### Nutrient or Flavor

baking, breakfast cereals, butter and cheese, canning, cattle blocks, flour mixes, heat tablets, isotonic solutions, livestock feeds, oleomargarine, pickles, potash substitute, salted nuts, table salt, spices and flavoring

### Preservative

cheese making, cucumber salting, fish bait curing, fish curing, hay preserving, hide curing, meat curing, sausage

### Food Processing Material

blanching seafood & vegetables, chicken de-boning, crabmeat pickling, egg preservative, fish striking agent, gravity separation, oyster shucking, wine stabilization, yeast processing

### Chemical Manufacturing

Calcium hypochlorite, Chlorine dioxide, Sodium chlorate, Sodium fluosilicate, Sodium hypochlorite, Sodium Perchlorate

### Freezing Point Depressant

coal antifreeze, highway de-icing, ice cream making, ice manufacture, iron ore antifreeze, refrigerating brines, refrigerating cars

### Metallurgical Processing

chloride roasting, drawing lubricant, foam killer, heat treating baths, iron ore cementation, metallurgical flux, mill scale remover, molten metal cover, rare metal refining, sink and float baths

### Miscellaneous Processing

artificial seawater, coal briquettes, dehydrating agent, dye processing, dyestuff carrier, electrolytic milling, emulsion breaker, etching aluminum foil, herbicides, ion exchange regeneration, leather tanning, rubber coagulant, soap salting-out agent, soil stabilizer, starch manufacture, synthetic leather manufacture, textile dyeing, tile glazing, water softening, weed killing, well drilling fluids.

### Soda Ash - Na<sub>2</sub>CO<sub>3</sub>

abrasives, adhesives, batteries, ceramics, cleansers, cosmetics, degreasers, dyes, explosives, fats and oils, fertilizers, fire extinguishers, inhibitors, insecticides, leather, metal fluxes, ore refining, paint removers, paper, petroleum, pigments, soap, textiles, water softeners

### Sodium - Na

bactericides, case hardening, cosmetics, detergents, dye fixation, dyes, flour conditioning, fumigation, heat transfer, ore refining, organic synthesis, paints, pharmaceuticals, photography, pigments, plating salts, pulp bleaching, starch conversion, tetraethyl lead, textile bleaching, titanium metal, zirconium metal

### Sodium Sulphate - Na<sub>2</sub>SO<sub>4</sub>

ceramics, detergents, dyes, explosives, fertilizers, metal fluxes, paper, pharmaceuticals, photography, pigments, plating salts, rubber, soap, textiles

## Business or Enterprise Model to Combine Alternative Technologies or Processes

