

# Conserve Water and Reduce Drought Problems

## WaterSavr™ Evaporation Control

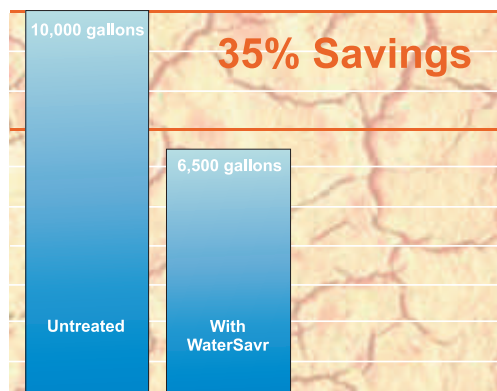
Introducing WaterSavr™ Evaporation Control: a new patented surface water evaporation control product that will conserve an average of 35% of the water loss due to evaporation, even during drought-prone periods. WaterSavr™ is more economical than mechanical covers or other chemical film-forming alternatives currently on the market. Simply spread WaterSavr™ on any body of water and it's patented, self-spreading action will provide continual coverage.

### Conserve Water

*Reduce drought problems.*

- Apply to source water reservoirs, lakes, ponds and slow moving rivers
- Reforms if wind and wave action disrupt coverage
- Apply in flood irrigation such as Rice fields

### Evaporation Loss



### Environmentally Friendly

- Composed of food grade ingredients
- NSF Certified to ANSI 60 Drinking Water Treatment Chemicals
- Designated by the United Nations Environment Programme as an **Environmentally Sound Technology**

***Have more water.....every day!***

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#### Pacific Rim

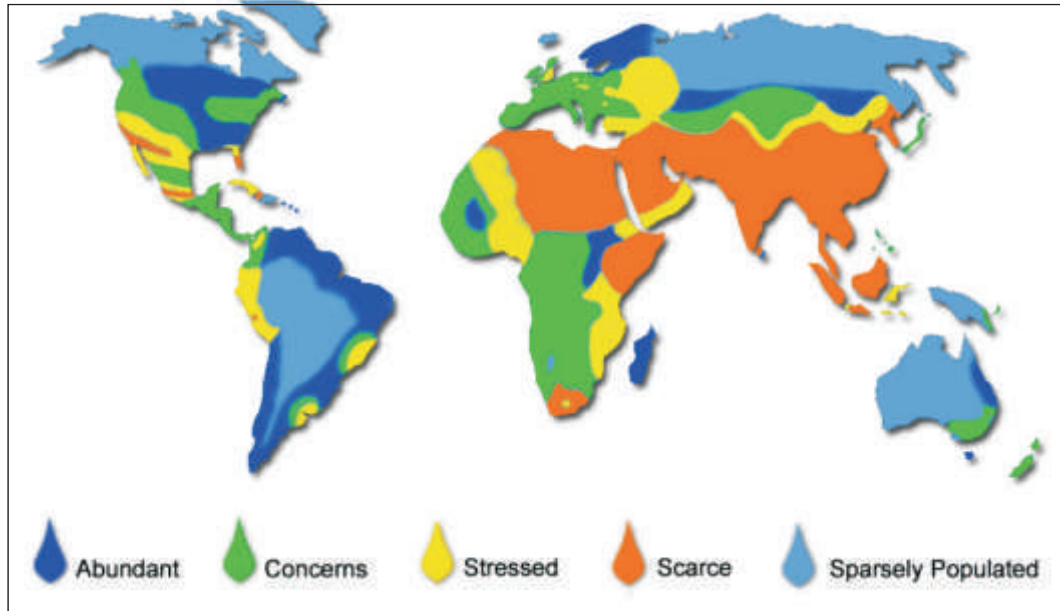
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## Where the water is, and what we are doing to save it.

Only 2.5% of the earth's water is freshwater, and of that, less than 1% is available as surface water. This water stress situation will only worsen in the future, especially on a global basis. The current options to combat this growing issue are to conserve and acquire more water.



Source: University of New Hampshire Water System Analysis Group, 1995

### Options for acquiring more water:

- **Forced Control**
  - Tax users
  - Regulate usage
  - Litigation
  - War

#### *Does not solve water scarcity problem*

- **Technology**
  - Wells
  - Dams
  - Canals, pipelines
  - Desalination plants

*High capitalization, long lead time, varying cost effectiveness*

### Available methods for reducing Surface Water Evaporation:

- **Mechanical Covers**
  - Costly: \$10/square foot
  - Limited to small surface areas
- **Film forming chemicals before WaterSavr™**
  - Technology tested since 1957
  - Effective in reducing evaporation
  - Requires large amounts of chemical
  - Difficult to apply & maintain film integrity
  - Uneconomical



# Water Conservation via Evaporation Control



## What is WaterSavr™

WaterSavr™ is a patented hydrated lime powder with hydroxy alkanes that is applied to the surface of the water. Ionic repulsion causes the hydroxy alkanes to self-spread, resulting in a mono-molecular film on the surface of the water, and the even spreading of Bti. This same mechanism enables reforming of the film if integrity is lost due to wind or wave action.

### How ionic repulsion creates the self spreading effect

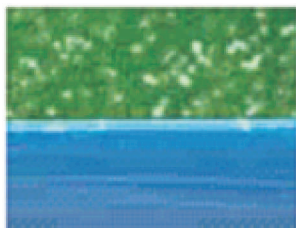
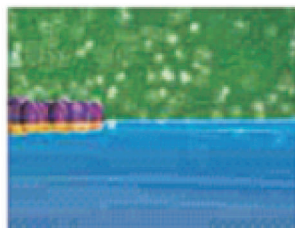


Diagram of water/atmosphere perspective before WaterSavr™ treatment. White "clouds" represent normal water evaporation rate.



These diagrams represent the constant, self-spreading action created with WaterSavr™. As the hydrated lime (represented in yellow) starts to dissolve in the water, the resulting positively charged calcium ions (represented in purple) repel each other and spread across the water's surface, carrying the hydroxy alkanes (represented in purple) along with the lime particle.

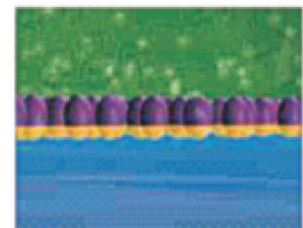
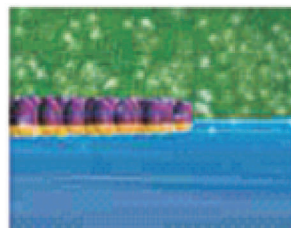


Diagram shows the mono-molecular layer of WaterSavr™ in place after spreading. Note the reduced rate of evaporation, indicated by the fewer number of "clouds".

### The features of WaterSavr™

- A breakthrough in surface water evaporation technology
- Forms invisible film on water surface that reduces evaporation
- Reforms after wind or wave action
- Degrades in two to three days
- Easily applied powdered form:
  - hydrated lime
  - Cetyl/stearyl hydroxy-alkanes
- U.S. Pat 6,303,133 - global patent filed

### WaterSavr™ and the Environment

- Environmentally compatible due to biodegradability of alkanes
- Food grade and potably approved ingredients
- No effect on alkalinity
- No decrease in dissolved oxygen
- Certified by NSF to ANSI 60: Drinking Water Treatment Chemicals
- Designated as *Environmentally Sound Technology* by the Environmental Programme of the United Nations

#### ACKNOWLEDGEMENTS:

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## Effectiveness Trial Results

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Trials conducted around the world have shown that WaterSavr™ reduces evaporation by 25-42%.

### WaterSavr™ Case Study Owens Lake, California

Owens Lake is located in southeastern California at the south end of the Owens Valley. It is the source of the Los Angeles Aqueduct, which supplies one third of LA's drinking water.

WaterSavr™ trials conducted in September and October 2004 resulted in an **average reduction in evaporation of 37.5%**



### WaterSavr™ Trial Catalan Water Agency Siurana Reservoir

Pan evaporation tests conducted at the Siurana reservoir in Spain, September 2004, resulted in an **average water savings of 34%**.



### Full Scale Application Latur, India Municipal Reservoir

WaterSavr™ was applied to a 900 hectare (2,224 acres) surface area, and **averaged 34% reduction** in evaporation. 199,000<sup>m<sup>3</sup></sup> (161 acre-ft) of water was saved for end use, over the first 15 days of the WS application.



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## Summary

- ▶ New cost-effective technology to conserve water via water evaporation retardation.
- ▶ Product is environmentally compatible and has NSF certification and UN EST (Environmentally Sound Technology) designation.
- ▶ Reduced water evaporation at an average of 35%.

**30% evaporation reduction** on a 1,000 acre or 400 hectare reservoir with 120 inches or 3,048mm annual evaporation rate saves ~3,000 acre-feet or 3,700,000 cubic meters of water  
**...enough water to supply 8,000 homes for a year!**