

The background of the slide features a close-up of vibrant green leaves on the left side, with their reflection visible in a body of water at the bottom. The right side of the slide has a light blue gradient background.

# NACWA



**Resomation Ltd**

**RESOMATION /GREEN CREMATION ... an  
award winning alternative to flame  
cremation and burial developed in response  
to a growing public desire for greater choice  
and increasing environmental awareness**

NACWA Workshop  
16<sup>th</sup> May 2014 –Minneapolis

# Won the Observer Ethical Award 2010







## What is Resomation/Green Cremation ?

The deceased in a special biodegradable enclosure is placed into the Resomator capsule and instead of fire, uses a water and alkali based method at high temperature and pressure – also known as **alkaline hydrolysis** to chemically reduce the body to ash.

The pure white ash is returned to relatives at the end just as in flame cremation.





# What is Alkaline Hydrolysis ?

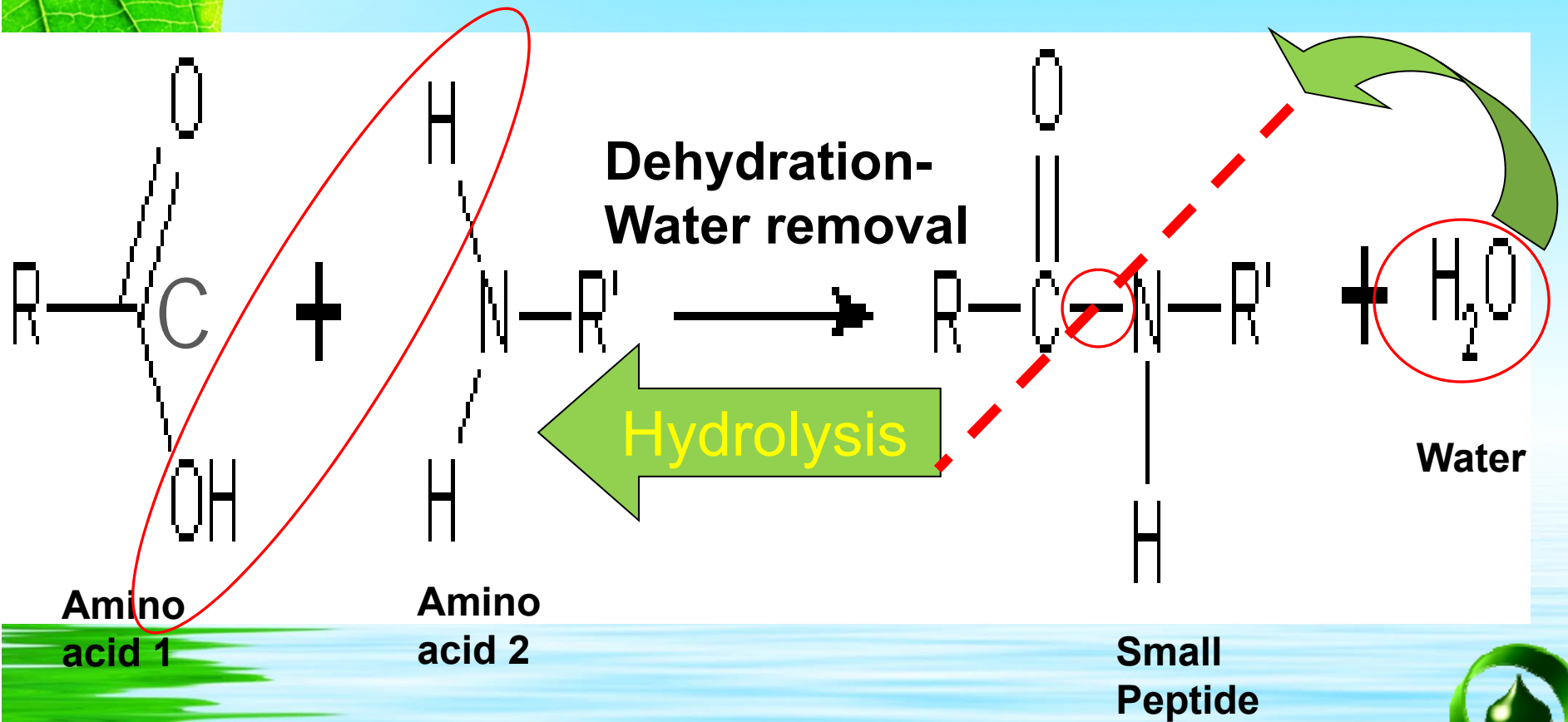
A water/chemical process that can be found in nature.

- ❑ A body shallow buried in alkaline soil is in part decomposed by alkaline hydrolysis, expedited by the soil bacteria – a slow process
- ❑ Food in the small intestine is digested to usable nutrients by alkaline hydrolysis, expedited by pancreatic enzymes that operate at alkaline pH  $>7-8$  at body temperature – a moderately fast process for relatively small amounts of tissue





# Protein Synthesis and breakdown

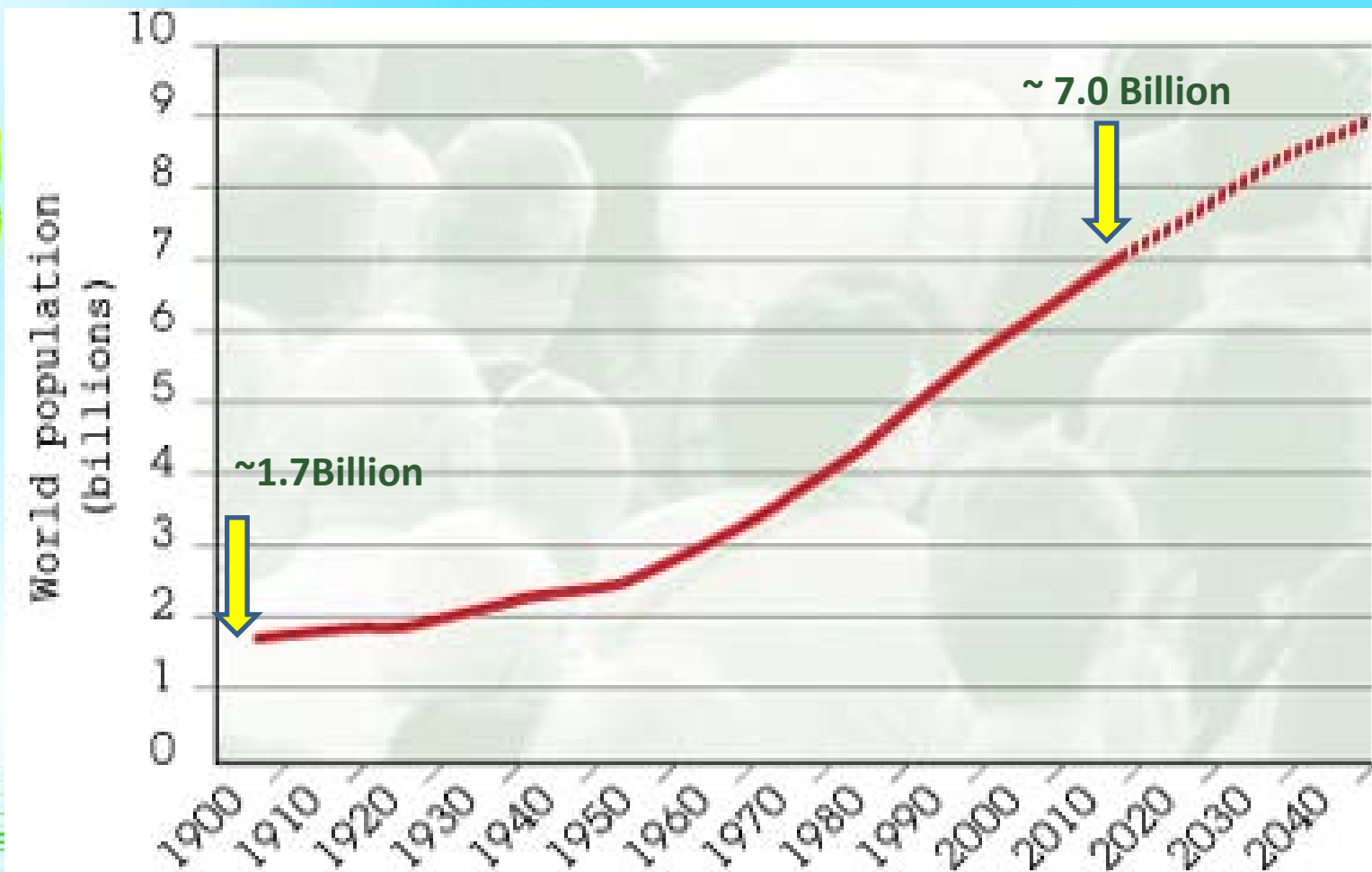




## Why do we need an alternative to standard Flame Cremation ?

- ❑ More Choice for Public
- ❑ Mercury and other emissions
- ❑ Relatively high volumes of ever more expensive and unsustainable gas is used
- ❑ Levels of CO<sub>2</sub> greenhouse gas produced

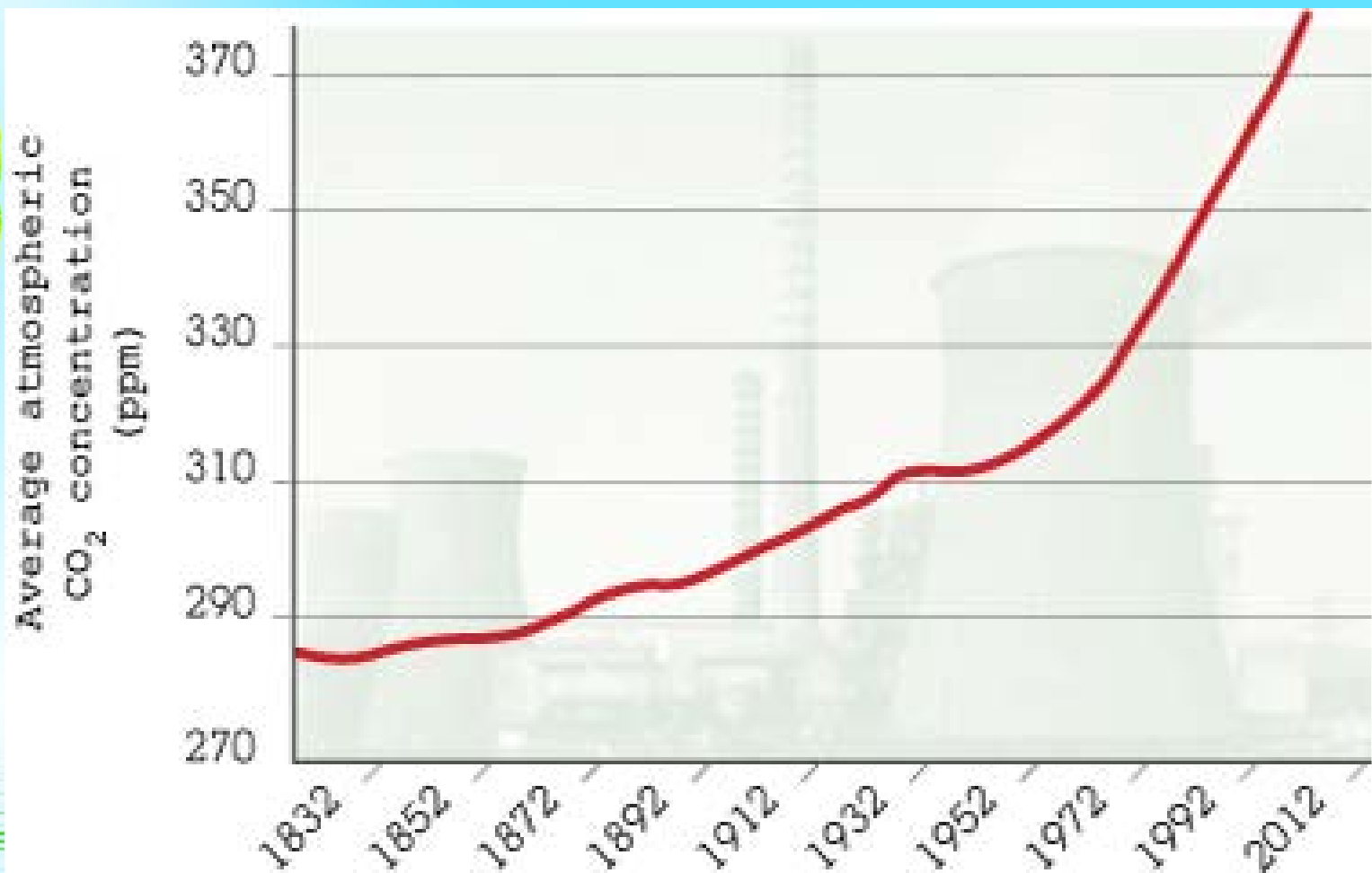




source: [www.globaltrees.co.uk](http://www.globaltrees.co.uk)







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## What are the key Environmental Benefits over Flame Cremation ?

- ❑ No Mercury or other harmful airborne emissions
- ❑ Uses many times less energy
- ❑ Reduces flame cremation funeral carbon footprint

... and like flame cremation does not use up valuable land for burial

It is also a third real choice for the public

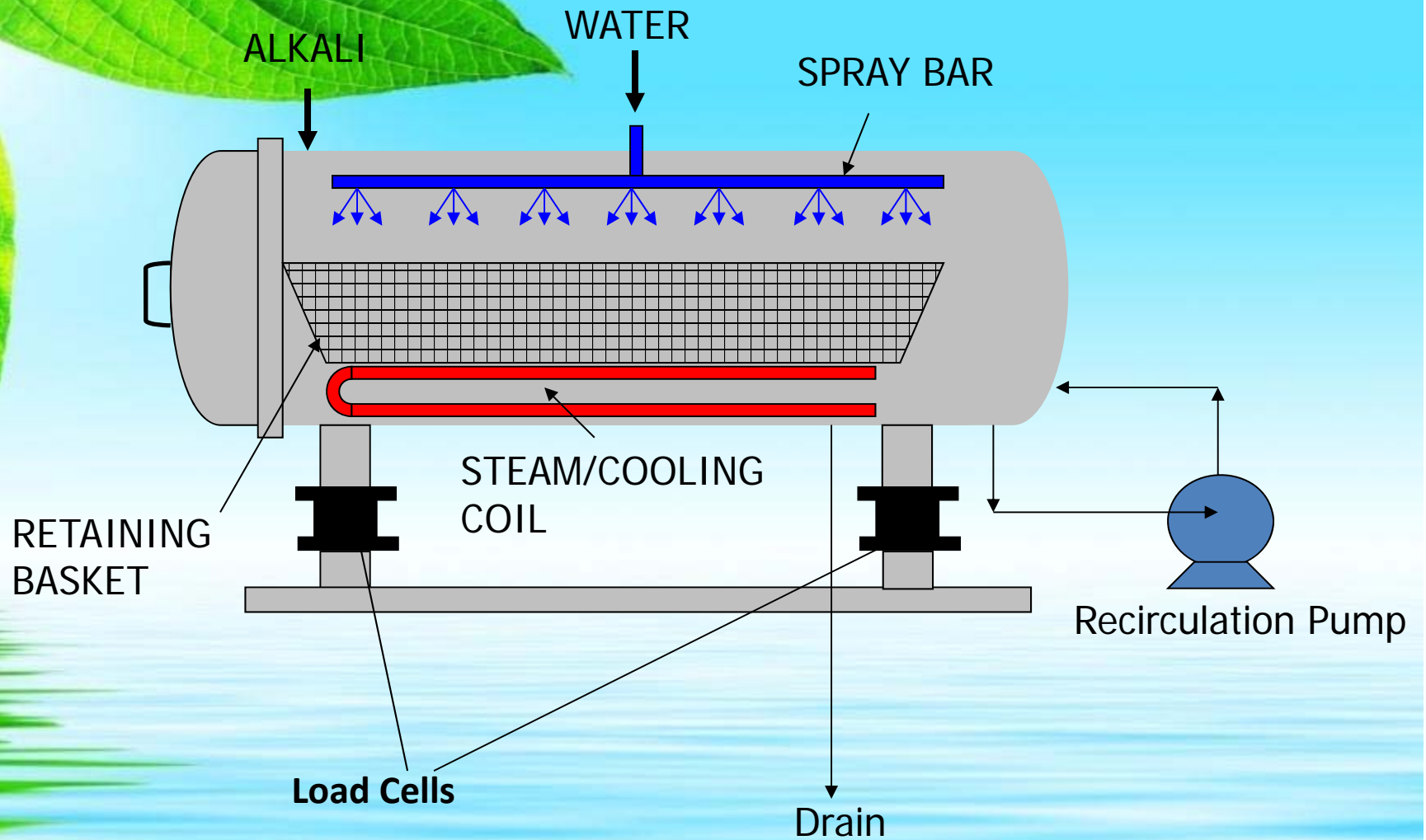


# The Resomator S750 Green Cremator





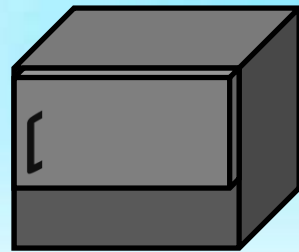
# The Resomator : Basic Diagram



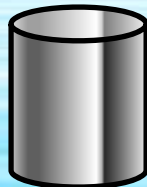
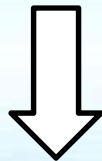




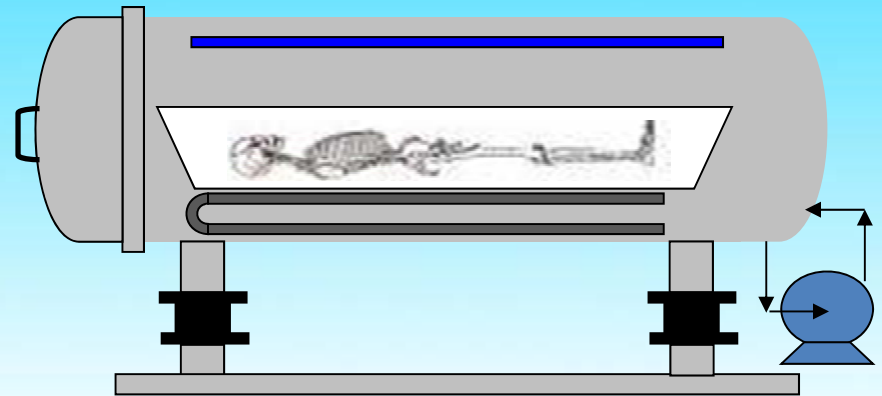
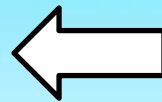
# Bone Processing to Ash



DRYING OVEN



BONE PROCESSOR



URN (white ash)

20 seconds ..fine white ash powder





## Side by Side comparison with cremains



**Cremated ash**

**Resomated ash**



# Cremated Joint Implants

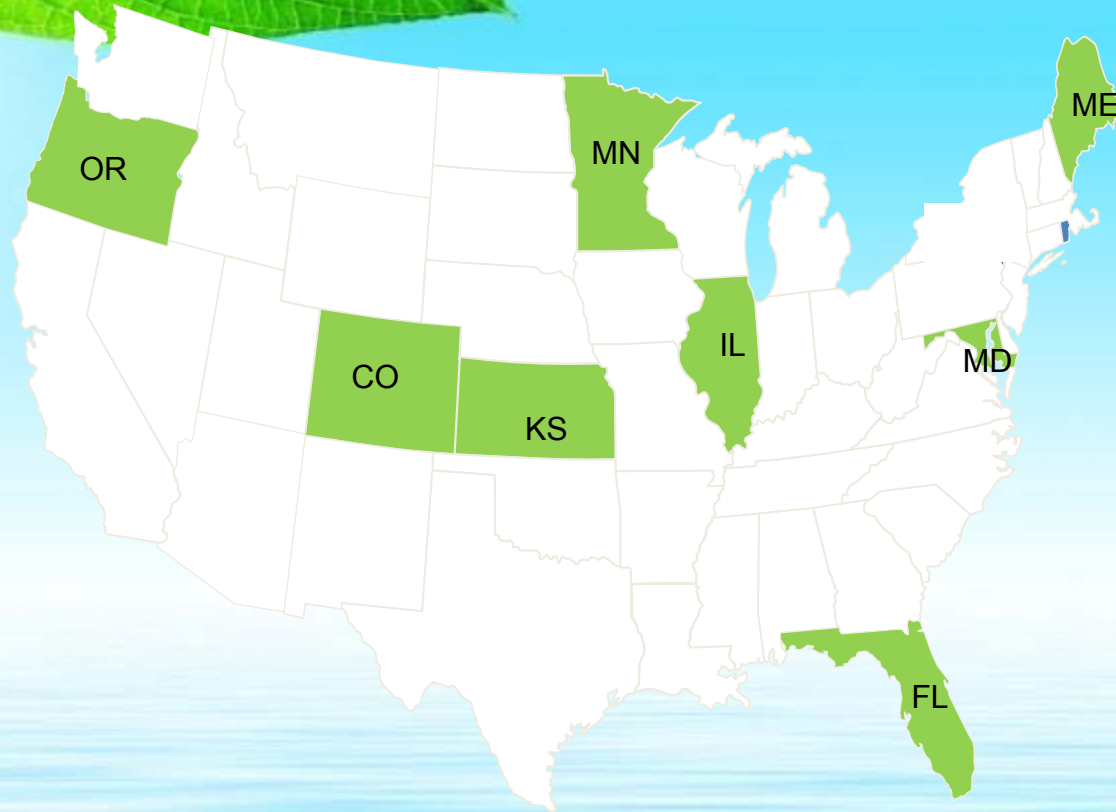




# "Resomated " Joint Implants



# USA- Where Alkaline Hydrolysis is legal



**Population wise:-**  
**Currently 54M = 17% legal**



The background of the slide features a light blue gradient. On the left side, there are large, vibrant green leaves with detailed vein patterns. Below the leaves, there is a reflection of the leaves in a body of water, creating a symmetrical effect. The water is depicted with horizontal blue and white lines, suggesting ripples.

# Three Working USA Installations

- ❑ Anderson McQueen Funeral Home- Florida
- ❑ UCLA Medical Donation- Los Angeles
- ❑ Bradshaw Funeral Home- Minnesota



# Anderson McQueen, Florida





# Sandy Sullivan & John McQueen



# Public Viewing Room





# Bradshaw Celebration of Life Center





# Bradshaw Celebration of Life Center- Minnesota

System installed May 2012

Comments to follow  
directly .....

.... *Jason Bradshaw*





# Donated Body Program at UCLA







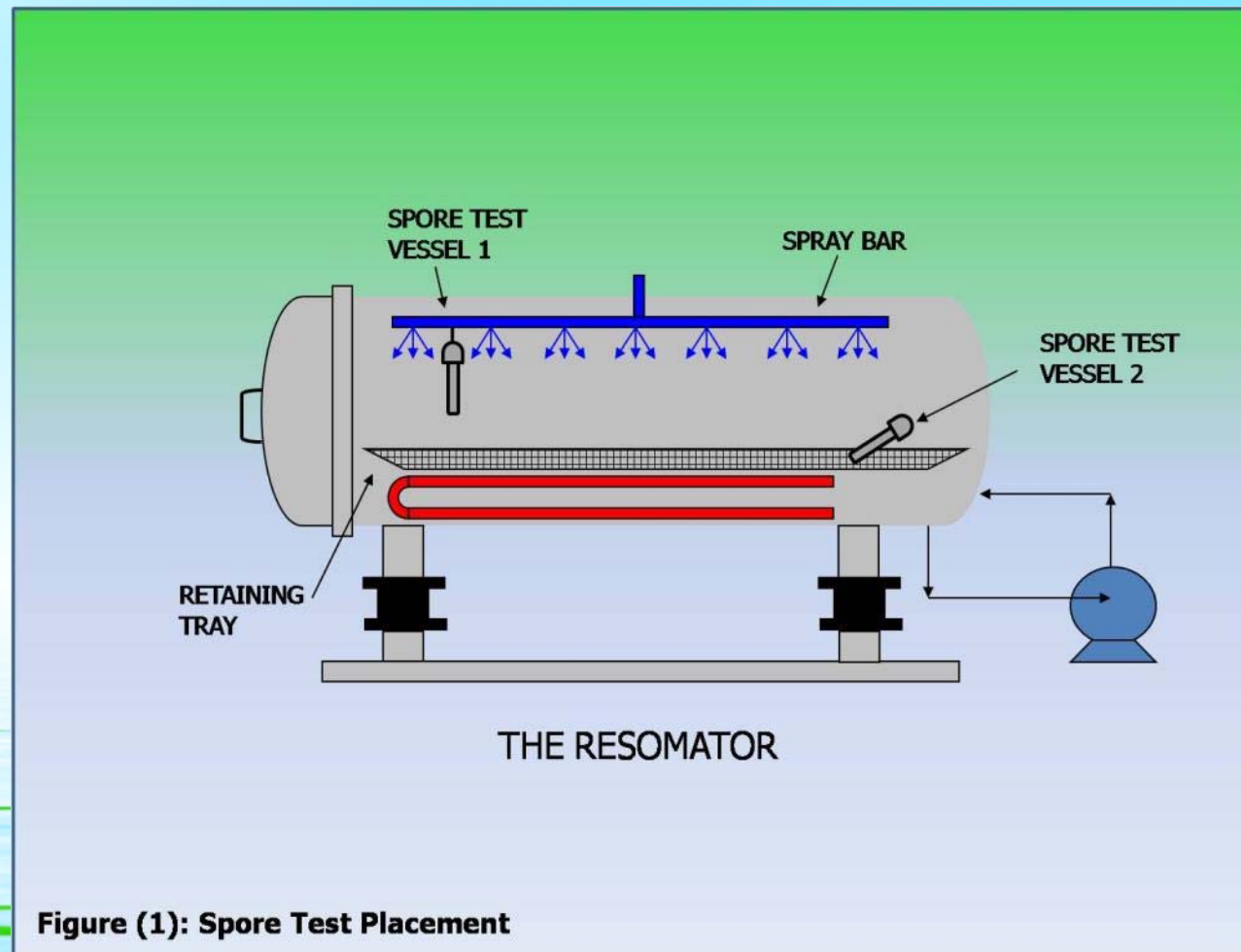
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# Self Contained $10^6$ Biological Indicators



# Agreed Efficacy Testing Protocol -Spore Test Placement





First tube secured above liquid level on spray bar-  
Spore test Vessel 1





## Second tube secured in the head area under liquid- Spore Test VESSEL 2







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November 21, 2012

Mr. Lonnie Ayers, Environmental Engineer  
Permitting and Enforcement  
Industrial Waste Management Division  
2714 Media Center Drive  
Los Angeles, CA 90085

Dear Mr. Ayers:

UCLA has asked our Department to review the alkaline hydrolysis technology as an alternative treatment technology for medical waste, not autoclave or incineration. As you are aware the technology must demonstrate that its treatment method results in the total destruction of pathogenic microorganisms.

After reviewing the standards used by the California Department of Public Health (CDPH) for its review of this disposal process, results from UCLA's tests confirmed that it passed the efficacy testing beyond the guideline of a log4 pathogen destruction rate established by the Centers for Disease Control and Prevention (CDC). After discussions with staff in the Environmental Health Program's Solid Waste Disposal Section and the Public Health Laboratory, I am confident in declaring on behalf of the Los Angeles County Department of Public Health that all infectious microorganisms will be destroyed with this treatment process of extreme alkaline pH, temperature, pressure, and time.

The permit issued to UCLA by CDPH allows the facility to treat human remains with known infectious agents, such as bacteria, viruses and prions, and I believe that your agency can abide by these assessments. Please be reassured that this technology is safe and in no way will harm the public. We kindly ask that you amend the UCLA permit to allow for this provision. Otherwise there could be confusion among the general public and the media about the safety of this novel process. Please let me know if you have further questions.

Sincerely,

David E. Dessey, MD MPH  
Deputy Chief, Acute Communicable Disease Control Program  
Department of Public Health

DD:mb



# CDPH Position since Nov 2012

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# Key Effluent Analyte Levels

- ❑ COD 12,000-40,000 mg/l (BOD ~ 2/3 COD)
- ❑ TSS 1000- 4000 mg/l
- ❑ Heavy Metals typically well below limits
- ❑ Volatile/s.volatile organics well below limits
- ❑ “FOG” 2000-5000mg/l ..but not fats!

Also...

- ❑ pH is adjusted to < 10.5-11.0 as required before release





# “FOG” Anomaly

- Does not contain a visible sheen
- Does not contain solid grease particles
- Does not cause accumulation of grease or unacceptable impact to collection system
- Does not cause or contribute to any unacceptable impacts to the water reclamation facility

**The hexane extracted material is actually saponified salts of fatty acids - soft soap**







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Questions Please

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