



Resomation
NATURAL WATER CREMATION

Water Cremation

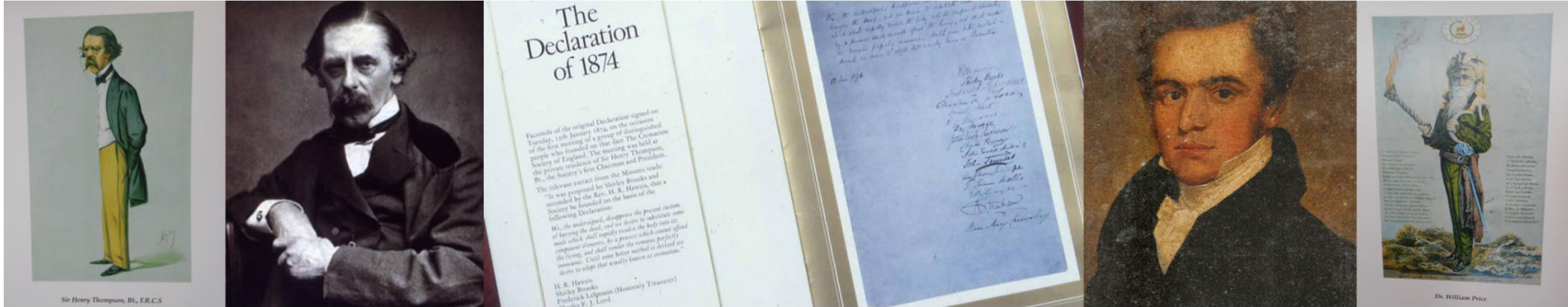
An alternative to flame that increases the public's end-of-life options.

Comparison to the adoption of flame.....

1874 UK Cremation Society Declaration

“....we desire to substitute some mode which shall rapidly resolve the body into its component elements, by a process which cannot offend the living, and shall render the remains perfectly innocuous. Until some better method is devised we desire to adopt that usually known as cremation”

In June 2008, Resomation was adopted by the society to compliment flame cremation



WELCOME TO THE CREMATION SOCIETY OF GREAT BRITAIN

The Society, a registered charity, not conducted for profit, was established in 1874. It is the pioneer of cremation in Great Britain and built and operated the very first crematorium for public use, in 1885 in Woking, Surrey.

Since the Society's formation it has worked tirelessly to promote and establish the practice of cremation among all members of the community. It has aided both private enterprise and local authorities in the setting up of new crematoria and has pressed the Government departments concerned for developments in the law so that this rational, safe and dignified method of disposal of the dead might be practiced with the least possible restriction.

The Society was responsible for drawing up the forms of certification for cremation and these were later adopted as the basis for the first Cremation Act in 1902. As a direct result of its activities cremation now accounts for approximately 75% of all funerals in Great Britain.

In 2008, the Society amended its Memorandum and Articles of Association to allow it to promote other methods of dealing with dead bodies, in particular Resomation which the Society regards as a viable adjunct to cremation due to its number of environmental advantages.



Water Cremation - Resomation

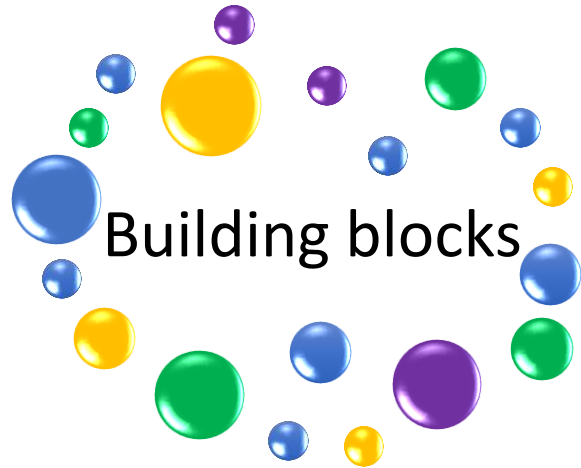
What is it.....

A water based end of life option to flame cremation and burial which replicates the chemistry used by nature after burial.

In essence, reducing the body to ash using water (hydrolysis) instead of flame.



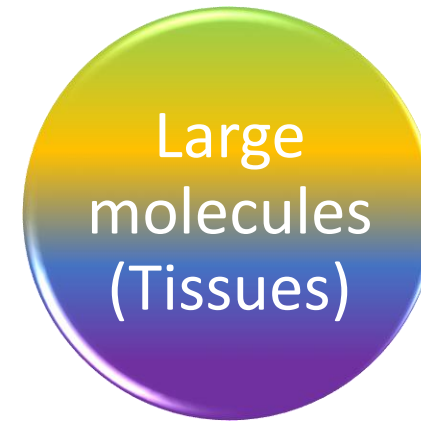
Nature's Creation of Life



Fatty acids/sugars/
nucleotides/amino acids



Dehydration
(zipping together)



+ H₂O
(water)

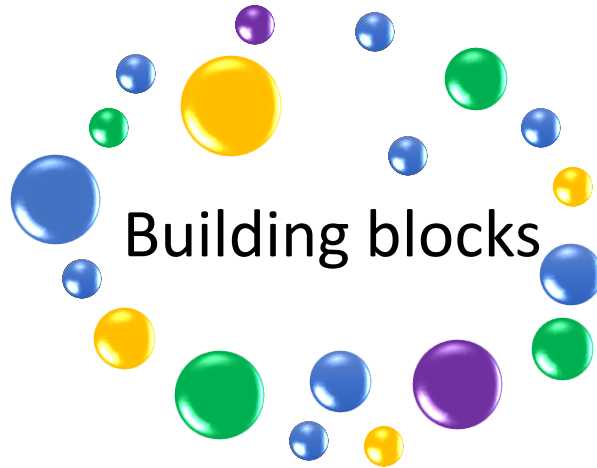
BODY

Fat/Protein/DNA/
Carbohydrates/Water



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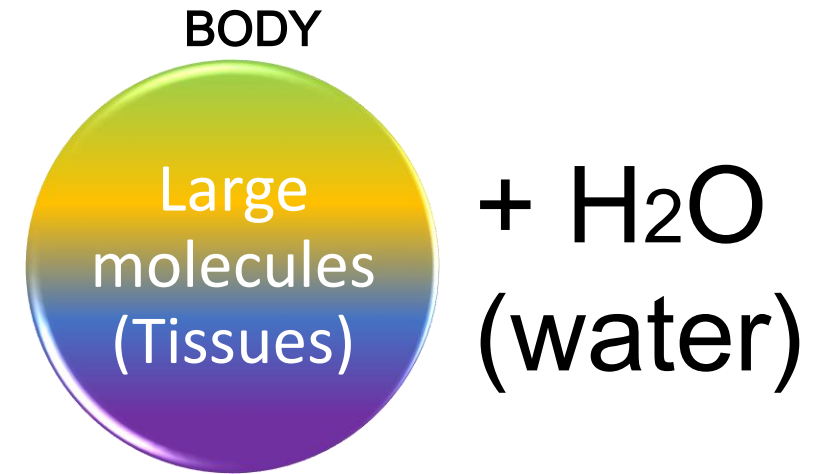
Nature's End of Life



Soap/amino acids/
nucleotides/sugars/water



Hydrolysis
(Unzipping)



Fat/Protein/
DNA/Carbohydrates/
Water

Resomator S750



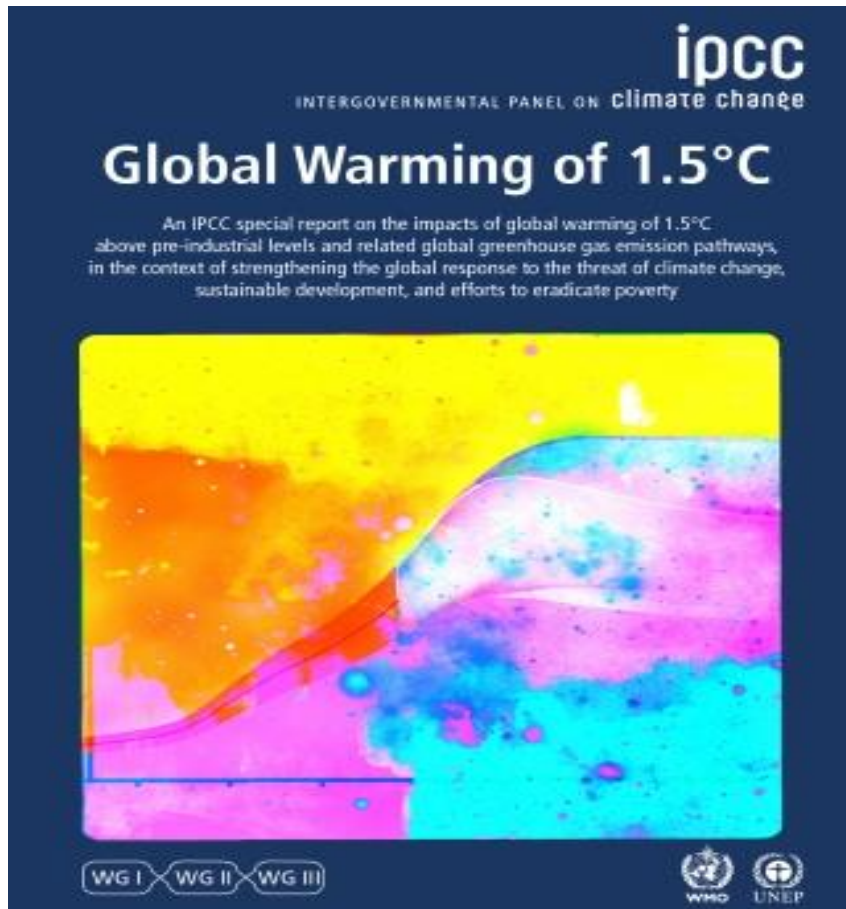
A Global Challenge Facing all Industries including the Funeral sector

It took over 200,000 years of human history for the world's population to reach **1 billion** and only 200 years more to reach **7 billion** in early 21st century.

In the last 100 years the population has quadrupled

The levels of atmospheric CO₂ have mirrored that explosive increase to now dangerous levels

Intergovernmental Panel on Climate Change



“We have 12 years to limit climate change catastrophe”, warns UN

“Urgent changes needed to cut risk of extreme heat, drought, floods and poverty”, says IPCC

“A 45% reduction on global CO₂ needed in the next 12 years”

Statements on Climate Change

“ The world was facing its greatest threat in thousands of years and that time was running out.”



“If we don't [take action](#), the collapse of our civilisations and the extinction of much of the natural world is on the horizon.”

Sir David Attenborough

"Climate change is running faster than we are and we must catch up sooner rather than later, before it's too late,"

United Nations Secretary-General Antonio Guterres



UK Government Carbon Targets

- The Climate Change Act 2008 set the country's emission reduction targets. The "legally binding" targets are a reduction of least 80% by 2050 (against the 1990 baseline).
- The first carbon budget (2008 to 2012) was met and the UK outperformed on the second (2013 to 2017) and on target to outperform the third (2018 to 2022). However, it is not on track to meet the fourth (2023 to 2027).
- To meet future carbon budgets and the 80% target for 2050, the UK will need to reduce emissions by at least 3% a year, from now on. This **will require the government to apply more challenging measures.**

What does Water Cremation claim to offer Environmentally?

- No harmful airborne emissions
 - NO_x,
 - SO_x,
 - dioxins,
 - CO,
 - **mercury**
- Low – zero use of gas
- Low carbon footprint
- Potential to reuse medical implants
- Potential to recycle the body's nutrients back to the earth to create new life. (Nitrogen, phosphorus and potassium)



Independently verified



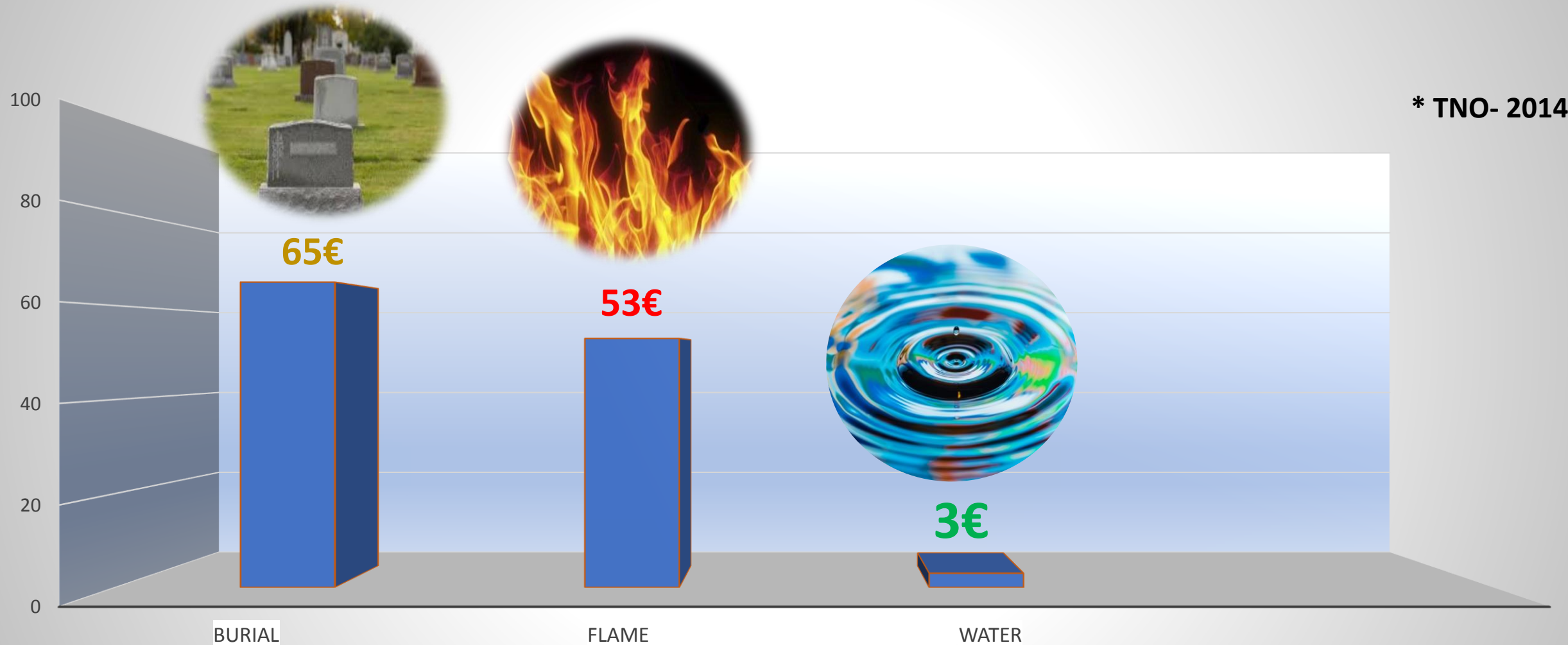
- Dutch Government Commissioned Environmental Impact Comparison of Burial, Flame and Water Cremation - 2014
- Environmental company TNO compared 18 environmental impact categories for burial, flame and water cremation
- Water cremation reported to use 7 times less energy than flame
-6 times less carbon footprint than flame
- The calculated cost in monetary terms to negate these impacts showed Water Cremation to be 17 times less than flame.
- Anticipated to become part of Dutch Law early 2020

Comparison of options through “Shadow pricing” (Euros)

- Established costs for emission reduction measures to be taken in order to reach the present and future environmental policy goals in the Netherlands
- The sum of the monetary contributions of environmental impact categories can be used as an indicator for expressing the size of the overall impact
- This makes the comparison of disposition alternatives possible



Environmental Impact Costs per Body Disposition*



* TNO- 2014

FLAME Cremated Joint Implants and Ash



WATER cremated joint implants and ash

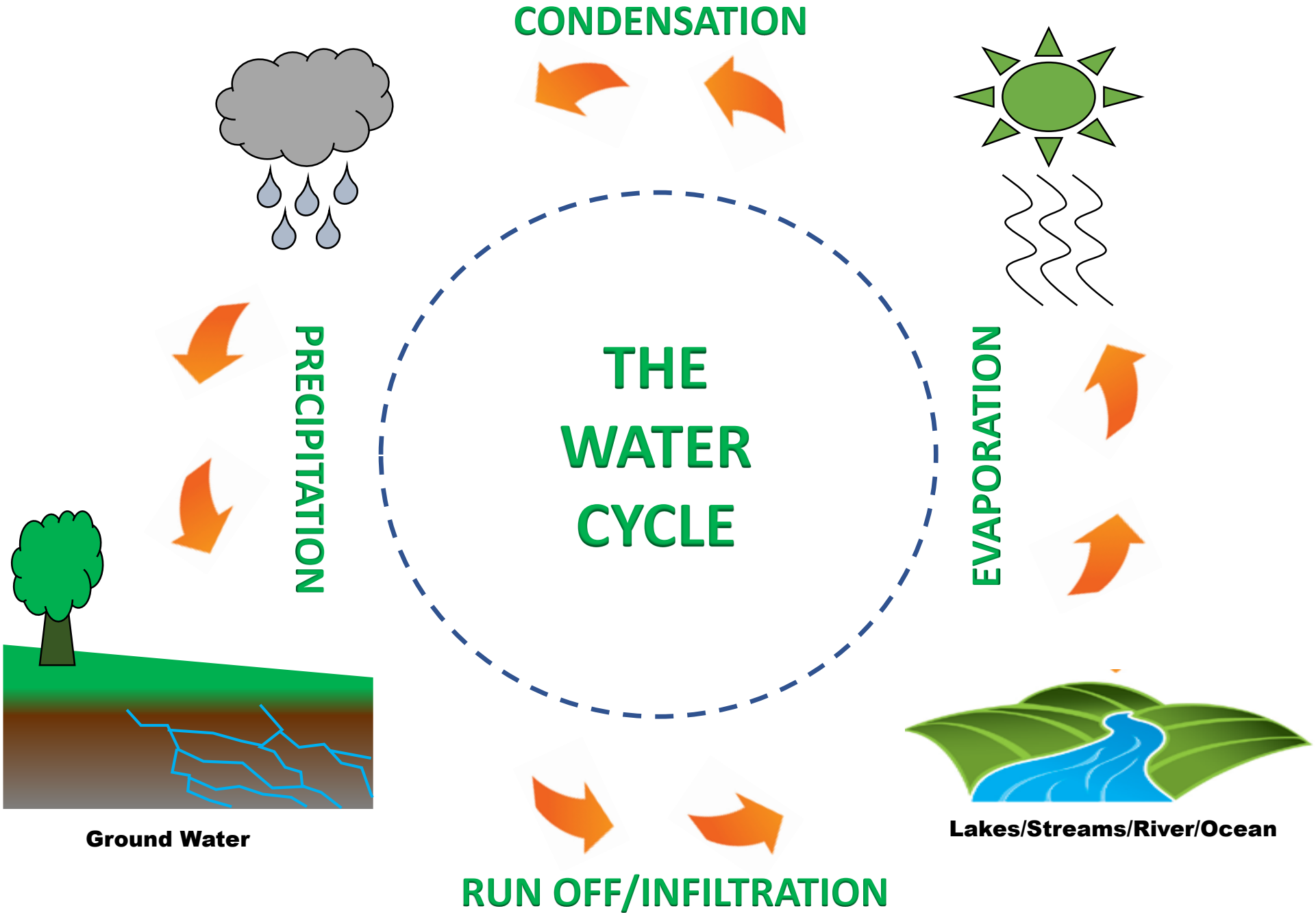


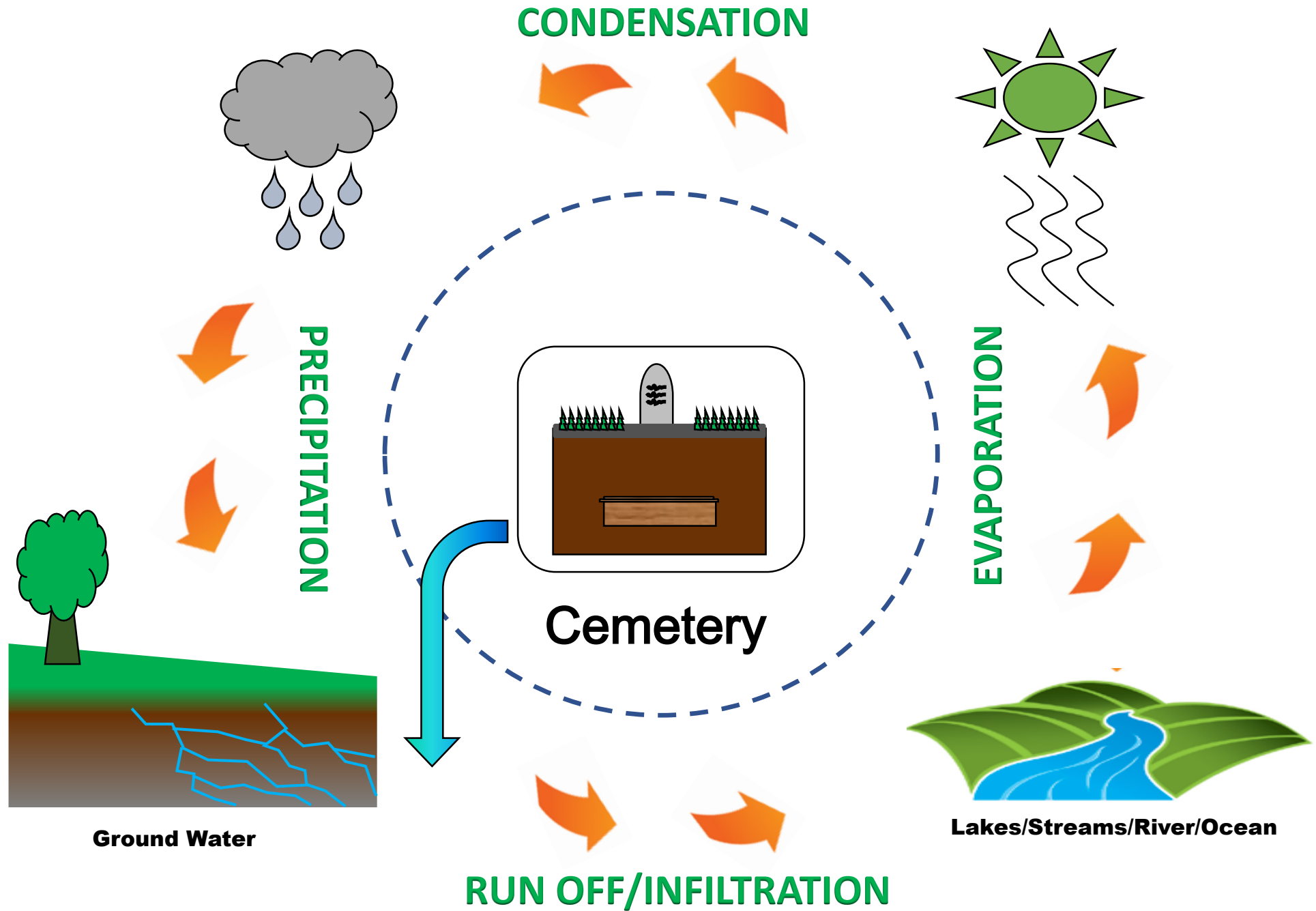
Re-use of Implants?

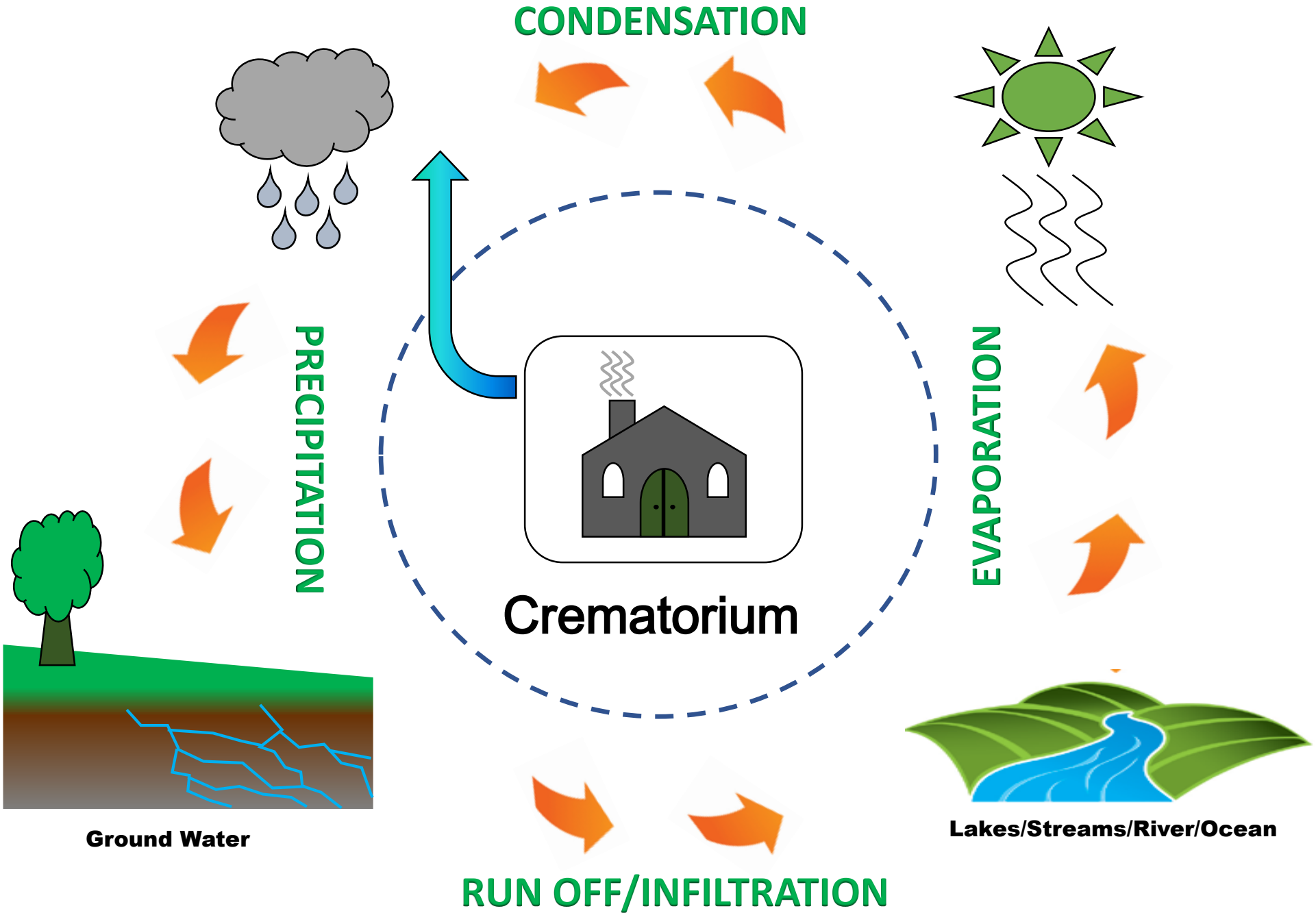


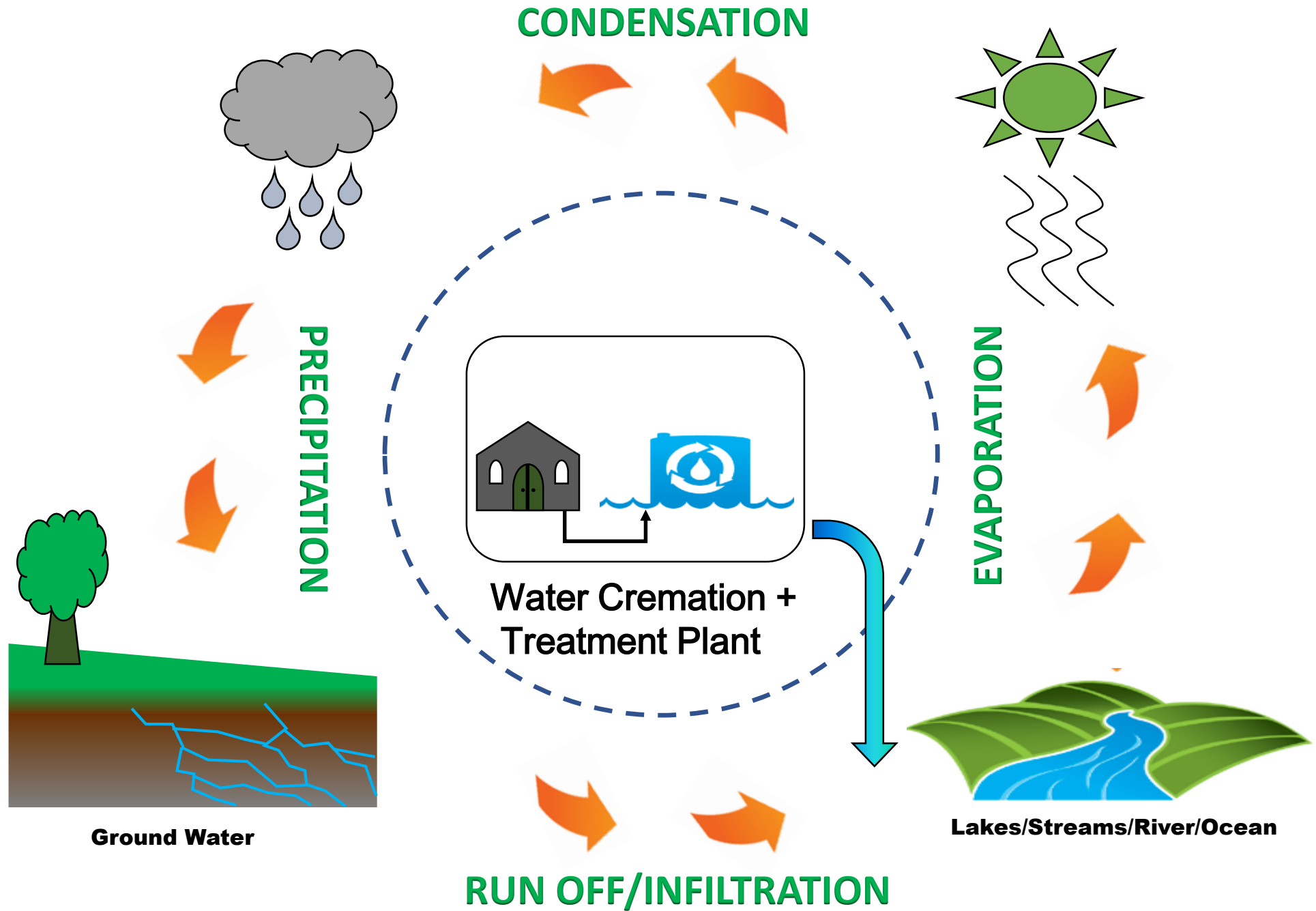
Collection and recycling (smelting/re-manufacture) of stainless steel, cobalt-chromium and titanium metal implants is preferred to land disposal.

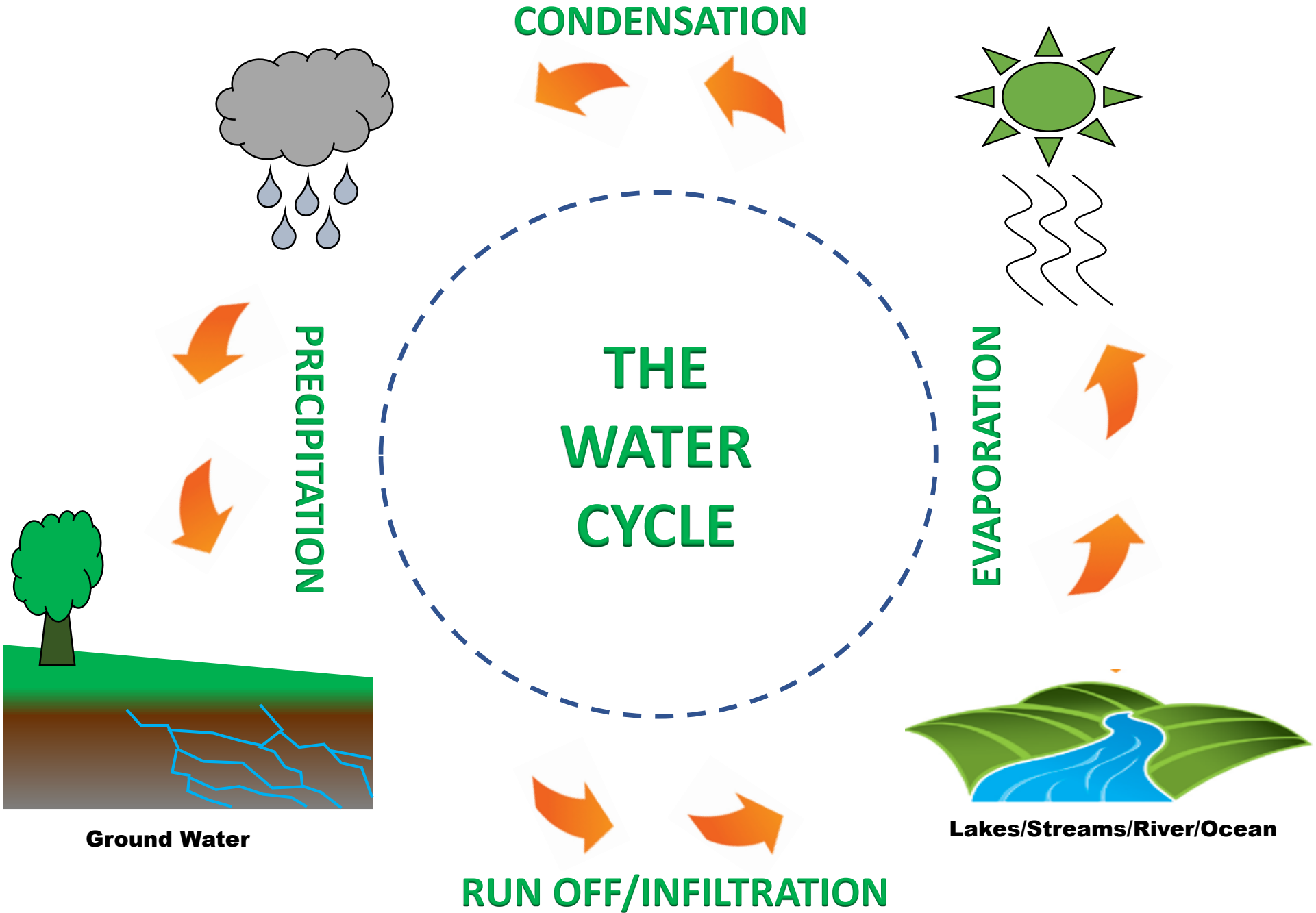
However Water Cremation offers potential for collection and REUSE of such implants so removing smelting and re-manufacturing environmental impacts.



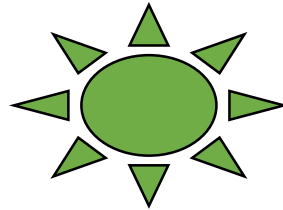








CONDENSATION

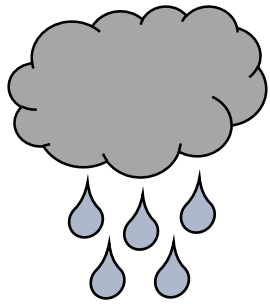


EVAPORATION

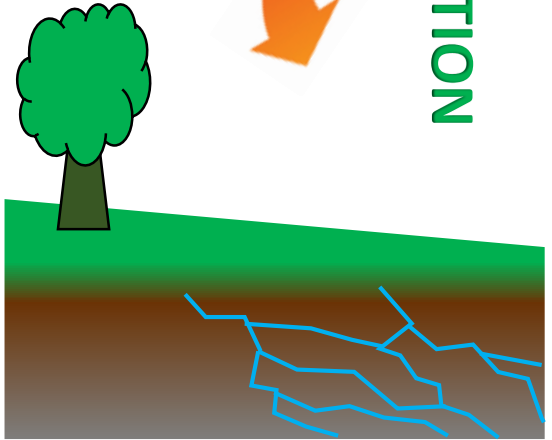


Lakes/Streams/River/Ocean

RUN OFF/INFILTRATION



PRECIPITATION



Ground Water

THE WATER CYCLE

Use of Water in Water Cremation

We have an Energy Reclamation tank in our system that re-uses water and heat energy.

The process, however, uses about 1500 litres of water per cycle

- Water is never lost but is treated and purified before returning to the water cycle
- The average UK person uses
 - 450 litres per day,
 - 3,150 litres per week,
 - 164,000 litres per year
 - 13,120,000 litres per lifetime

So 1,500 litres is not too high...for a 'one off'



Comparative Use of Water

In the 2014 TNO report, Life Cycle Analysis water use of flame cremation and burial versus water cremation is ...

Disposition Process	Burial	Flame	Resomation
Water (x1000 litres)	11	10	5



Bradshaws Minnesota USA- TIME Magazine Interview

"We anticipated the reason [for choosing Resomation] was going to be the environmental side of it. The larger reason has actually been the people who don't like the fire component. They see this as being a gentler alternative"

Jason Bradshaw- Owner (2013)



Current status

- Law Commission 13th Programme of Law Reform Dec 2017
 - A Modern Framework for Disposal of the Dead

The law governing how we dispose of the bodies of our loved ones when they die is unfit for modern needs. While we often think of the choice as being between burial and cremation, new methods of disposal are being developed and are being used in other countries. These include resomation (a process using alkaline hydrolysis to reduce the body to ash)

- Engagement with water company
 - Understanding of impact on treatment facilities
 - Analysis of liquid from process
- Open Days
 - > 100 visitors to Resomation, Leeds
 - 86% consider public will embrace water cremation
- FBCA Working Group

FBCA Working Group

- Attended Open Day at factory
- November 2018, FBCA Executive approved secretary's engagement with Resomation
- January 2019, FBCA working group set up with 4 LA's represented
- 1st meeting on 10th January 2019
- Total of 4 meetings now held
- Reviewed process, suitable documentation, procedures/code of practice
- Liaised with MoJ
- Engaged with Water Company

From the above involvement, this process is going to happen in UK

Recommendation that Local Authorities consider Water Cremation in their strategic plans/strategy for the future



Resomation
NATURAL WATER CREMATION

Water Cremation

A complimentary alternative to flame that augments the public's end-of-life options and helps to reduce the environmental impact of body disposition

“

Just as British inventive engineering helped ‘save the land for the living’ in 20th century UK through flame-cremation so, in the 21st century, this innovative water-based process of accommodating human bodies offers new opportunities for an age framed by ecological concerns of land use and air quality.”



Professor Douglas J Davies
Director of Centre for Death and Life
Studies, Durham University