

Reading time: 3 mins

Aquamation for a Greener Afterlife



By **Gemma Alexander**

NOV 9, 2022 [End-of-Life, natural burial](#)



Death is just one point on the circle of life and dying sustainably takes just as much mindful planning as living sustainably does. Most people avoid thinking about death, but modern death care practices make funerals a [tradition](#) with some rather deadly environmental impacts. Fortunately, more sustainable options like aquamation are become easier to access, so environmentalists can rest a little easier now about how sustainably they are going to rest in peace later.

Conventional Death Care

In most places, regulations for death care don't leave a lot of room for the environment. Humans are no longer allowed to decompose six feet underground in a natural pine box. [Modern burial](#) requires the use of toxic, persistent chemicals for embalming. Caskets use the wood from four million square acres of forest each year. More than 1.5 million tons of concrete are used to construct burial vaults while 104,000 tons of steel and 2,700 tons of copper and bronze are used in burial materials. All told, burials result in 178 tons of carbon dioxide emissions yearly. About 827,000 gallons of [formaldehyde](#)-based embalming fluid leak into the soil and groundwater annually.

What Do You Think?

Are you considering moving because of climate change?

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Cremation is better for the environment. Bodies are typically stored in cardboard rather than wooden caskets before burning. In the U.S., crematoriums are required to use [filtering systems](#) that remove pollutants (like mercury from dental fillings). But burning still uses a lot of energy (crematoria are usually powered by nonrenewable natural gas) and produces greenhouse gas emissions. Each cremation still produces [as much CO2](#) as a flight from London to Rome, for a total of about [360,000 metric tons of CO2](#) emissions each year.

There are some eco-friendly options for [natural burials](#). And there are several environmentally friendly uses for cremains, like [tree cremains urns](#) and [coral reef restoration](#). A few states have even begun to allow [human composting](#).

Aquamation

Initially developed in an agricultural context in the late 20th century, aquamation was then used by research institutions for human remains that had been donated to science. Aquamation has been commercially available in several states since 2011. But it has only recently received public attention after the body of Archbishop [Desmond Tutu was aquamated](#) early in 2022. Aquamation, like composting or cremation, is a method of rapid decomposition. Both methods use heat – composting uses the heat naturally generated by decomposition, while cremation uses powerful furnaces. But aquamation, as the name suggests, takes place in a liquid solution.

Sometimes described as “water cremation,” aquamation is a chemical process called alkaline hydrolysis, which dissolves the body. Although chemical dissolution sounds more horrifying than ecological, it isn’t particularly gruesome. The body is placed in a container with a liquid solution made of potassium hydroxide (aka lye) and water and [heated to 300 F](#) – a fraction of the 1,200 F required for cremation. The solution is strongly basic (as opposed to acidic). But it has the same result, which is a chemical reaction between the body and the solution.

What Remains of the Remains

The chemical reaction leaves behind only bone fragments and liquid. [The resulting liquid](#) is a sterile combination of salts, sugars, amino acids, and peptides in water, with no residual tissues or DNA. This liquid can be safely discharged with wastewater.

The remaining bone fragments can be heat dried or allowed to dry naturally to save energy. Then they are pulverized using the same method that follows heat cremation. Families can claim these “ashes” just as they can for cremains. Aquamation “ashes” will require a larger container than ashes from cremation but will have a finer, brighter white appearance. All told, aquamation is estimated to have [one-fourth the carbon footprint](#) of cremation. Aquamation is often considered a gentler process because medical devices like pacemakers (which can explode inside a furnace) [do not have to be removed](#) from the body before aquamation.

Aquamation Options

The aquamation of pet remains is legal everywhere in the U.S., and most states have pet aquamation providers. For human remains, it is currently legal in most states, although roughly half as many have active providers. Some providers are able to receive bodies shipped from other states. Where aquamation has been legalized, it is usually defined as a form of cremation and most providers are crematoria. The Cremation Association of North America [maintains a map of](#)

regulatory changes in U.S. and Canadian states as aquamation becomes more common. Where aquamation is available, costs average around \$3,500. That places it between the lower costs of cremation and the higher costs of burial.

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Gemma Alexander has an M.S. in urban horticulture and a backyard filled with native plants. After working in a genetics laboratory and at a landfill, she now writes about the environment, the arts and family. See more of her writing [here](#).

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