

WATERY GRAVE: ONE OF THE DEATH CARE INDUSTRY'S GREENEST OPTIONS IS STILL ILLEGAL IN THIRTY-ONE STATES AND THAT NEEDS TO CHANGE

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I. INTRODUCTION

It has long been stated that the only things certain in this life are death and taxes. As depressing as it is to think about, we will all cease to be alive someday. The inevitability of death creates anxiety for many, comfort for some, and job security for others. Because of the certainty of the end of our lives, we will all come into contact with the funeral or death care industry at least once.¹

Historically, American death care has offered limited options for dealing with the physical bodies left behind by people after they have passed. Those options being the typical embalming, viewing, and casket burial or flame-based cremation.² A rise in environmental concerns has presented a third option in the form of shroud or “green” burials, but the law has yet to catch up to this concept and green cemeteries are few and far between.³ There exists a fourth, environmentally conscious and cost-effective option commonly known as alkaline hydrolysis or aquamation, but because of a lack of public knowledge and real legislation, it remains illegal and unavailable to citizens of thirty-one states.⁴

Alkaline hydrolysis or aquamation is the process of speeding up the body’s natural decaying process using water, a chemical solution, heat, and pressure.⁵ As pandemic death tolls rise, urban cemeteries overcrowd, and funeral homes become overwhelmed, access to this quick, clean, and safe body disposal option needs to become widely available as soon as possible. This comment will examine the history, process, and legality of alkaline hydrolysis while proposing the rapid federal or mass state legalization of the method as a solution to many of the problems the death care industry is currently facing.

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¹ Gale B. Robertson Jr., *Regulating Death: Occupational Licensing and Efficiency in the Deathcare Industry*, 29 LOY. CONSUMER L. REV. 343 (2017).

² Twyna Sketchly, *Elder Law and Disposition of Remains: ABCS of Body Disposal: Anatomical Gifts, Burial and Cremated Remains*, 39 MONT. LAWYER 23, 24 (Oct. 2013).

³ *Id.*

⁴ Ed Defort, *19 States Now Permit Alkaline Hydrolysis*, Memorial Bus. J. (June 13, 2019), <https://azfeca.org/19-states-now-permit-alkaline-hydrolysis/>.

⁵ *Cremation Process*, CREMATION ASSN. OF N. AM. (Last visited Oct. 10, 2020), <https://www.cremationassociation.org/page/CremationProcess>.

A. History

Prior to the late nineteenth century, funeral homes and their services did not exist as we now know them.⁶ Loved ones' bodies were cared for in the family home by family members after they had passed.⁷ Family members would bathe, clothe, and prepare their deceased loved ones for what is now known as a viewing or wake and ultimately, their burial, inside the family home with the help of other family and members of their community.⁸ The medicalization of death, the Industrial Revolution, and the Civil War all played major roles in establishing modern burial methods, funeral homes, and the death care industry.⁹

The American death care industry really came into being because of one key practice: embalming. Prior to the Civil War, most Americans opposed intervention with the natural decaying process of a loved one's dead body.¹⁰ Integrity and image were of utmost importance, even in death. Thus, when the Civil War began and the bodies of Union soldiers slain on southern battlefields had to be returned to their families, the need for serious corpse preservation in order to provide those families with a viewable body developed.¹¹ Embalming, or the practice of draining a dead body of blood and other fluids, then replacing those fluids with disinfecting and preserving chemicals, had been practiced in some form or another by different civilizations around the world for thousands of years.¹² Specialists and "embalmer-surgeons" were hired by both the families of soldiers and the government to modernize the practice and preserve soldiers' bodies until they could be returned home for proper burials.¹³ The preservation process saw a massive increase in acceptance and popularity after President Lincoln himself was embalmed and placed on display in several American cities after the war.¹⁴ Traveling chemical company representatives offered classes and certification in the practice across the country, embalmers made house calls, and funeral home operators with ties to furniture manufacturers began to shift their focus to the aesthetics of corpses.¹⁵ States began requiring occupational licenses for embalmers and funeral home operators in the 1880's and by the turn of the century, the

⁶ See Robertson Jr., *supra* note 1, at 346.

⁷ *Id.*

⁸ *The History of Home Funerals*, NAT'L HOME FUNERAL ALLIANCE (last visited Dec. 9, 2020), <https://www.homefuneralalliance.org/home-funeral-history.html>.

⁹ *Id.*

¹⁰ Gary Laderman, *Funeral Industry*, ENCYCLOPEDIA OF DEATH AND DYING (last visited Nov. 7, 2020), <http://www.deathreference.com/En-Gh/Funeral-Industry.html>.

¹¹ *Id.*

¹² Erich Brenner, *Human Body Preservation – old and new techniques*, 224(3) J. OF ANATOMY 316, 317 (2014).

¹³ See Robertson Jr., *supra* note 1.

¹⁴ See Laderman, *supra* note 9.

¹⁵ *Id.*

preservation method had become an integral part of traditional burials and is still widely practiced today.¹⁶

Cremation, or the reduction of a body to bone fragments, typically by burning, has a similar history to that of embalming. Most scholars agree that cremation was first practiced sometime during the early Stone Age, but modern cremation came into being in the 1870's.¹⁷ The modern process involves placing a body into a machine known as a cremator, heating the inside of the cremator to a temperature high enough to cause the body to combust and break down into bone fragments, and then processing those fragments into a fine powder commonly referred to as "ashes."¹⁸ In recent years, this process of body disposal has surpassed traditional burials in terms of popularity in the United States.¹⁹ People view the option as cheaper, less religious, and more environmentally friendly.²⁰

B. Relevant Law

A lack of federal legislation addressing what burial methods are proper and legal means that the power to regulate this area of the law currently lies with the states.²¹ While this may be great for the preservation of federalism, it allows for states to limit the choices their citizens have to only two options and creates massive legal inconsistencies that complicate matters for death care providers. For example, a Nevada state statute allows for the simultaneous cremation of more than one person as long as written authorization by the agent of each party being cremated is given, while Louisiana state statute strictly prohibits the simultaneous cremation of more than one adult person but allows for the simultaneous cremation of an adult and one or more child as long as written authorization is given by the agent of each party.²²

While state funeral boards have almost all of the power to regulate death care industry practices in their respective states, the federal government has stepped in to regulate before, most notably during a time of public concern over misrepresentative funeral home financial practices.²³ In 1963, Jessica Mitford published her exposé, *The*

¹⁶ See Robertson Jr., *supra* note 1, at 347.

¹⁷ *History of Cremation*, CREMATION ASSN. OF N. AM. (Last visited Oct. 10, 2020), <https://www.cremationassociation.org/page/HistoryOfCremation>.

¹⁸ See CANA, *supra* note 5.

¹⁹ *Cremation is Here to Stay: Aging Baby Boomers Proved Catalyst in Shift Beyond Traditional Burial*, NAT'L FUNERAL DIRECTORS ASSN. (July 15, 2019), <https://nfda.org/news/media-center/nfda-news-releases/id/4395/cremation-is-here-to-stay-aging-baby-boomers-proved-catalyst-in-shift-beyond-traditional-burial>.

²⁰ *Id.*

²¹ See Sketchly, *supra* note 2.

²² Nev. Rev. Stat. Ann. § 451.685 (LexisNexis, Lexis Advance through all legislation from the 80th Regular Session (2019), the 31st Special Session (2020), and the 32nd Special Session (2020); La. Rev. Stat. Ann. § 37:879 (LexisNexis, Lexis Advance through the end of the 2020 Regular Session and through the end of the 2020 First Extraordinary Session).

²³ See Robertson Jr., *supra* note 1, at 349.

American Way of Death, after being inspired to investigate death care industry practices by a discussion with her labor lawyer husband.²⁴ Their discussion was centered around how union workers' death benefits always seemed to end up with funeral directors and not their surviving family members.²⁵ The book challenged the mythos or standardized set of assumptions about death care created by funeral directors, brought into question the ethics of the then billion-dollar death care industry, and proved that the negative presumptions of funeral directors as "exploiters of grief" had some truth to them.²⁶ By 1974, public concern over the ethics of the funeral industry prompted the Federal Trade Commission (FTC) to launch an investigation.²⁷ After nine years of investigation, the FTC created the "Funeral Rule," which, among other things, prevents funeral directors from misrepresenting state laws regarding costs and requirements, provides consumers with the right to an itemized price list, and prevents funeral homes from conditioning the purchase of goods and services on other goods and services.²⁸ While this rule was created with good intentions, it falls short of the FTC's goal, as state funeral boards retain the power to regulate and protect the interests of those in the industry within their state borders.²⁹

C. Costs and Concerns

One of the most substantial costs created by continued traditional burials is environmental.³⁰ Each year, about a quarter of operating U.S. cemeteries bury over 100,000 tons of steel caskets and vaults, 2,700 tons of bronze and copper caskets, 30 million feet of hardwood caskets, and over 800,000 gallons of embalming fluid, which usually contains the known carcinogen formaldehyde.³¹ High levels of exposure to formaldehyde can cause certain cancers, birth defects, and asthma, while the emission of the toxic chemical into the air can contribute to acid rain.³² In addition to the massive consumption of natural resources created by traditional burials, easily displaced liquids like embalming fluid, the toxic chemicals used in varnishing caskets, and mercury from medical products attached to a decomposing body can all seep into the surrounding soil and groundwater after a burial.³³ Groundwater contamination is not only difficult and

²⁴ *Id.*

²⁵ *Id.*

²⁶ *Id.*

²⁷ *Id.* at 350.

²⁸ *Id.* at 351.

²⁹ *Id.* at 352.

³⁰ *After Death: Environmental Impact of Death*, SEVEN PONDS (last visited Dec. 10, 2020), <https://www.sevenponds.com/after-death/environmental-impact-of-death>.

³¹ *Groundwater Pollution and Radiation Contamination in Cemeteries and Local Communities*, (last updated Mar. 2, 2019), <https://www.disabled-world.com/health/cemetery.php>.

³² *Formaldehyde Facts: Health and the Environment*, TOXIC USES REDUCTION INST. (last updated Feb. 14, 2014),

https://www.turi.org/TURI_Publications/TURI_Chemical_Fact_Sheets/Formaldehyde_Fact_Sheet/Formaldehyde_Facts/Health_and_Environment.

³³ *Id.*

expensive to clean up; it can lead to poor drinking water quality, degraded surface water systems, health problems among consumers, increased costs for alternative water sources, and even a complete loss of potable water.³⁴ The federal government is well aware of this, as casket and coffin manufacturers often make the annual list as some of the EPA's top fifty hazardous waste generators.³⁵ This is mainly due to the use of the chemicals methyl and xylene as protective coatings on the exterior of wooden caskets.³⁶

While slightly less impactful than traditional burials, cremation is still far from the environmentally friendly option that many consider it to be. Some experts estimate that cremations in the United States are responsible for the creation of approximately 360,000 metric tons of carbon dioxide emissions every year.³⁷ Although it is somewhat small in comparison to the carbon footprint left by other industries, this number will only increase as the popularity of cremation in the U.S. and worldwide continues to grow. In a similar vein to traditional burials, one of the biggest environmental concerns created by cremation is the emission of the toxic chemical mercury. According to experts, "the average cremation emits two to three grams of mercury, almost exclusively from the volatilization of dental amalgam fillings."³⁸ While some state governments have begun implementing policies holding crematories responsible for their mercury emissions, these policies are not yet widespread, and the increasing popularity of cremation presents an imminent danger of increased mercury pollution.³⁹

In addition to these environmental costs, the preservation of traditional burial and cremation as the primary methods of body disposal impose substantial financial burdens on families and individuals who have little to no choice but to pay. According to the National Funeral Directors Association, the average cost of a traditional burial with a viewing was \$7,640 in 2019.⁴⁰ This cost excludes some common options, including a casket vault that is often required by cemeteries.⁴¹ The average cremation cost around \$5,150 in the same year.⁴²

³⁴ EPA, *Magnificent Ground Water Connection: Ground Water Contamination*, (1996)

<https://www.epa.gov/sites/production/files/2015-08/documents/mgwc-gwcl.pdf>.

³⁵ JoAnne Dunec, *Grave Matters: A Journey Through the Modern Funeral Industry to a Natural Way of Burial*, 22 *Chicago Nat. Res. & Env't* 4, 62 (2008).

³⁶ *Id.*

³⁷ Becky Little, *The Environmental Toll of Cremating the Dead*, NATIONAL GEOGRAPHIC (Nov. 5, 2019), <https://www.nationalgeographic.com/science/2019/11/is-cremation-environmentally-friendly-heres-the-science/#:~:text=Matthews%20estimates%20that%20one%20cremation,of%20CO2%20emissions%20each%20year.>

³⁸ Phillip D. Batchelder, Comment, *Dust in the Wind? The Bell Tolls for Crematory Mercury*, 2 *GOLDEN GATE U. EVNTL. L.J.* 118, 124 (2008).

³⁹ *Id.* at 119.

⁴⁰ *Statistics*, NAT'L FUNERAL DIRECTORS ASSN. (last visited Oct. 10, 2020), <https://nfda.org/news/statistics>.

⁴¹ *Id.*

⁴² *Id.*

The last cost to consider is the emotional and psychological burden created by death and the unavoidable need for a death care provider. The emotional costs of the death of a loved one are clear but incalculable. As such, it is important to approach the subject of burial gently and respectfully, while providing those in need of death care services with a variety of options. While some may consider the environmental and economic costs worth it to provide their loved ones a permanent place to rest that they can visit to grieve at any time, others may desire a better, cleaner way to remember those they have lost. Implementing and providing new options is not likely to impede access to traditional burials and may, in turn, make traditional burials and burial plots more accessible.

D. New Options

In response to these costs and concerns among consumers, two new methods of burial have presented themselves as possible alternatives.⁴³ The first method is the shroud or “green” burial.⁴⁴ This is an umbrella term for shallow grave burials conducted with biodegradable caskets or simple cloth shrouds in nontraditional cemeteries.⁴⁵ The purpose of these burials is to mitigate the body’s effect on the environment after death, decompose naturally, and return nutrients to the soil.⁴⁶ Although bodies themselves can present potential to contaminate the soil they are buried in and nearby water sources by releasing gasses like nitrogen during decomposition, this potential negative effect of a green burial is still far less impactful and more unlikely when standard procedures are followed than the nearly unavoidable contamination created by traditional burials, cremation, and embalming.⁴⁷ While there are no state laws strictly prohibiting these types of burials, a lack of updated legislation makes it difficult for cemetery owners to offer these kinds of burials or operate these kinds of cemeteries.⁴⁸ Additionally, many of the same inconsistencies created by differing state body disposal laws discussed earlier create a wide range of impassible obstacles for those seeking to offer or obtain a green burial, such as required leak-proof caskets or mandated paved roads around burial plots.⁴⁹ Since the law has yet to catch up to this naturalist burial method and few states are concerned with updating their burial laws, many death care providers and

⁴³ See SEVEN PONDS, *supra* note 29.

⁴⁴ Alex Brown, *More People Want a Green Burial, but Cemetery Law Hasn’t Caught Up*, THE PEW CHARITABLE TRUSTS: STATELINE (Nov. 20, 2019), <https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2019/11/20/more-people-want-a-green-burial-but-cemetery-law-hasnt-caught-up>.

⁴⁵ *Id.*

⁴⁶ *Id.*

⁴⁷ Lee Webster, *The Science Behind Green and Conventional Burial*, GREEN BURIAL COUNCIL (2016), https://www.greenburialcouncil.org/science_green_burial.html.

⁴⁸ See Brown, *supra* note 44.

⁴⁹ *Id.*

cemeteries view the implementation of green burials as not worth the trouble and simply do not offer it, despite consumer interest.⁵⁰

The second new method and the subject of this comment is alkaline hydrolysis or aquamation.⁵¹ Alkaline hydrolysis is the process of breaking down the body into bone fragments by speeding up the natural decaying process using water, heat, a chemical solution, and pressure.⁵² Much like a green burial, aquamation is environmentally friendly and cost-effective.⁵³ However, unlike green burials, alkaline hydrolysis is illegal in thirty-one states.⁵⁴ This is mostly due to a lack of public knowledge about the method, a lack of clarity in existing legislation, and a lack of legislation specific to this method.⁵⁵

With this comment, I will explore and advocate for the federal legalization or widespread state legalization of alkaline hydrolysis. Part II will provide some general background on aquamation and briefly explain the science behind it all. Part III will examine the legality of the method by analyzing some of the state statutes that permit or prohibit it, records from legislative sessions where it was banned, and any relevant case law. This section will also include arguments from those opposed to the widespread legalization of aquamation. Part IV will present many of the issues that America and the American death care industry are currently facing and propose the complete legalization of alkaline hydrolysis as a solution.

II. BACKGROUND

Alkaline hydrolysis is a chemical process known by many other names that do little to explain it, such as: “aquamation,” “liquid cremation,” “bio-cremation,” and “resomation.”⁵⁶ The process involves combining ninety-five percent water and five percent lye in a piece of machinery that will apply pressure and heat, while simultaneously circulating the liquid.⁵⁷ Sodium Hydroxide, often referred to as lye, is a chemical compound of the basic alkali metal sodium and water.⁵⁸ It is commonly used in soap making, metal cleaning, food curing, and the production of medicine.⁵⁹ A deceased human body is placed in the machine and rapid decomposition occurs over

⁵⁰ *Id.*

⁵¹ Kent Hanson, *Choosing to be Flushed Away: A National Background on Alkaline Hydrolysis and What Texas Should Know About Regulating “Liquid Cremation”*, 5 TEX. TECH. EST. PLAN. & COM. PROP. L. J. 145, 150 (2012).

⁵² See CANA, *supra* note 5.

⁵³ *Alkaline Hydrolysis: Green Cremation*, FUNERAL CONSUMERS ALLIANCE OF MINNESOTA (last visited Oct. 16, 2020) <https://fcaofmn.org/alkaline-hydrolysis-green-cremation.html>.

⁵⁴ See Defort, *supra* note 4.

⁵⁵ *Id.*

⁵⁶ See Hanson, *supra* note 51, at 151.

⁵⁷ *Id.* at 150.

⁵⁸ *Sodium Hydroxide*, NAT’L INST. OF HEALTH: PUBCHEM (last updated Dec. 5, 2020), <https://pubchem.ncbi.nlm.nih.gov/compound/Sodium-hydroxide>.

⁵⁹ *Id.*

the course of a few hours, until only liquid, bone, and any metal implants remain.⁶⁰ Similar to the cremation process, the bones are taken and placed into a large grinder known as a cremulator, processed, and returned to the family of the deceased as “ash.”⁶¹ Metal implants can be recovered and even recycled.⁶² The remaining liquid is leftover sugars, salts, and amino acids from the breakdown of the body, containing no DNA.⁶³ The liquid is sterile and not chemically active, so it is usually disposed of through a municipal waste sewer.⁶⁴ Because the idea of disposing of this liquid by simply pouring it down the drain bothers many unfamiliar with the process, it is important to note that during the process of embalming, untreated blood from a deceased body is drained out and disposed of in the same way.⁶⁵ Additionally, the liquid has the potential to be repurposed as a strong plant fertilizer in jurisdictions that allow its use as such.⁶⁶ While this potential surely creates a large number of ethical concerns among consumers and death care providers alike, deciding whether or not to repurpose the leftover liquid is secondary to widely implementing alkaline hydrolysis and should be considered as a separate issue that warrants its own comment. The process can also use potassium hydroxide or potash, a common crop fertilizer, in place of sodium hydroxide.⁶⁷

Although the process has only begun to be used as a method of human corpse disposal in the past few decades, alkaline hydrolysis has been used for other purposes for far longer.⁶⁸ Amos Hanson, an immigrant farmer seeking to make fertilizer from the remains of deceased farm animals, invented and patented alkaline hydrolysis in 1888.⁶⁹ Since then, the process has primarily been used to dispose of animal carcasses, especially those infected with mad cow disease, as alkaline hydrolysis is the only method known to completely eliminate the protein that causes the disease to develop in livestock.⁷⁰ The first alkaline hydrolysis machine commercially sold in the United States was installed at Albany Medical College in New York in 1993.⁷¹ Several other universities and medical research facilities installed alkaline hydrolysis machines after this as a means to dispose of donated bodies that had fulfilled their research potential,

⁶⁰ See Hanson, *supra* note 51, at 150.

⁶¹ *Id.*

⁶² Ciara Dolan, *Dissolving the Dead: A Look Inside Portland's First Aqua Cremation Machine*, PORTLAND MERCURY (May 9, 2019), <https://www.portlandmercury.com/feature/2019/05/09/26448190/dissolving-the-dead-a-look-inside-portlands-first-aqua-cremation-machine>.

⁶³ *Id.*

⁶⁴ Phillip R. Olson, *Basic Cremation*, 8 WAKE FOREST J. L. & POL'Y 152 (Jan. 2018).

⁶⁵ See Dolan, *supra* note 62.

⁶⁶ See Hanson, *supra* note 51.

⁶⁷ See Dolan, *supra* note 62.

⁶⁸ See Hanson, *supra* note 51, at 151.

⁶⁹ *Alkaline Hydrolysis*, CREMATION ASSN. OF N. AM. (Last visited Oct. 10, 2020), <https://www.cremationassociation.org/page/alkalinehydrolysis>.

⁷⁰ See Hanson, *supra* note 51, at 152.

⁷¹ See CANA, *supra* note 69.

including Minnesota's Mayo Clinic and the University of Florida.⁷² The process was not used commercially until 2011, when a funeral home in Florida and a funeral home in Ohio purchased alkaline hydrolysis machines and began offering the method to consumers.⁷³ While many states have yet to regulate the practice of using alkaline hydrolysis for human body disposal, either illegalizing it through a lack of legislation or prohibiting it in existing cremation statutes, the method has been widely accepted and implemented for disposing of deceased pets.⁷⁴

Alkaline hydrolysis has a number of benefits that are not present in traditional burials and cremations.⁷⁵ Aquamation reduces greenhouse gas emissions by using less electricity and gas than flame-based cremation and eliminates the possibility of toxins or pollutants seeping into the earth as a result of a traditional burial.⁷⁶ According to the Funeral Consumers Alliance of Minnesota, an organization based in one of the states where commercial alkaline hydrolysis is legal and currently practiced, aquamation has a carbon footprint that is seventy-five percent less than that of flame-based cremation.⁷⁷ Further, Alkaline hydrolysis eliminates the potential of mercury emissions that exist with traditional cremation.⁷⁸ Further still, the only byproduct created by the process, the liquid containing the body's leftover sugars and aminos, is sterile and can safely be returned to the water cycle via a sanitary sewer system.⁷⁹ In addition to these substantial environmental benefits, the Funeral Consumers Alliance of Minnesota also provides two alkaline hydrolysis pricing options from two in-state death care providers.⁸⁰ At \$2,295 and \$3,425 each, aquamation is less expensive than some more traditional options but still somewhat costly.⁸¹ However, some death care insiders estimate that prices for the service will decrease as more providers purchase the necessary technology and alkaline hydrolysis becomes more widely available.⁸²

While the benefits appear to be substantial, as with the implementation of any new technology, there are some drawbacks.⁸³ Since the process requires the circulation of water and fresh water must be used for every body that enters the machine, the process requires about 300 gallons of water per body.⁸⁴ However, since the liquid byproduct created by the process is sterile, it can be safely dumped into a sanitary

⁷² See Hanson, *supra* note 51.

⁷³ See CANA, *supra* note 69.

⁷⁴ *Id.*

⁷⁵ See Hanson, *supra* note 51, at 151.

⁷⁶ *Id.*

⁷⁷ See Minnesota, *supra* note 53.

⁷⁸ See Hanson, *supra* note 51.

⁷⁹ *Id.*

⁸⁰ See Minnesota, *supra* note 53.

⁸¹ *Id.*

⁸² *Id.*

⁸³ Emily Atkin, *The Fight for the Right to Be Cremated by Water*, THE NEW REPUBLIC (June 14, 2018), <https://newrepublic.com/article/148997/fight-right-cremated-water-rise-alkaline-hydrolysis-america>.

⁸⁴ *Id.*

sewer, where it will likely be treated at a wastewater treatment plant before returning to the water cycle, essentially recycling the water from the leftover liquid.⁸⁵ This is not a complete solution though, as increased dumping of this liquid could strain wastewater treatment facilities and result in water with a PH level that violates local regulations.⁸⁶ This effect could be avoided by requiring funeral homes to treat remaining liquid that has a high PH level with carbon dioxide before disposing of it in a sanitary sewer.⁸⁷

Although highly unlikely due to its status as an alternative burial method, opponents of alkaline hydrolysis argue that widespread implementation and popularization could increase production at alkali manufacturing plants, which would result in an increase in pollutants created during the alkali manufacturing process.⁸⁸ Those same opponents often contribute to the continued narrative that alkaline hydrolysis is disrespectful to the dead or undignified.⁸⁹ Despite the National Funeral Directors Association recognizing the process as, “a dignified [manner for] disposing of human remains,” state lawmakers and religious interest groups insist that the process is undignified and similar to the practices of fictitious criminals who use acid to dispose of their victims quickly.⁹⁰ This is far from the truth and many death care providers argue that the process is no more disrespectful than a flame-based cremation.⁹¹ As mentioned previously, the process uses only water, heat, pressure, and a basic chemical compound to break down a body, not acid.⁹² No tissue is burned, nothing is dissolved, the process of natural decomposition is simply sped up.⁹³ Further, both the inside of a cremation machine and the inside of an alkaline hydrolysis machine are not visible during each process, maintaining the same level of respect for the deceased in both processes.⁹⁴

III. LEGALITY AND CHALLENGES

A. History

Although alkaline hydrolysis was already being practiced by medical research institutions with special privileges, the first state to legalize the practice for the disposal of human remains by statute was Minnesota in 2003.⁹⁵ The statute is one of the few that does not classify alkaline hydrolysis as a form of cremation, but appropriately as

⁸⁵ *Id.*

⁸⁶ *Id.*

⁸⁷ *Id.*

⁸⁸ *Id.*

⁸⁹ See Hanson, *supra* note 51, at 152.

⁹⁰ *Id.* at 151–52.

⁹¹ Steph Panecasio, *The Misunderstood Funeral Tech That’s Illegal in 30 States*, CNET (June 1, 2020), <https://www.cnet.com/features/the-misunderstood-funeral-tech-thats-illegal-in-30-states/>.

⁹² *Id.*

⁹³ *Id.*

⁹⁴ *Id.*

⁹⁵ See Hanson, *supra* note 51, at 154.

a separate practice.⁹⁶ Formerly, the statute did not have its own specific regulatory scheme for alkaline hydrolysis, making the process and its practitioners subject to the same regulation as cremation.⁹⁷ However, this statute was repealed in 2013 and replaced with one that provides specific standards and practices for providers of alkaline hydrolysis.⁹⁸ The statute defines alkaline hydrolysis as simply, “the reduction of a dead human body to essential elements through a water-based dissolution process using alkaline chemicals, heat, agitation, and pressure to accelerate natural decomposition...” and includes the post-hydrolysis processing, placement in a container, and return to the appropriate party as part of the process.⁹⁹ The regulatory scheme for alkaline hydrolysis created by the statute contains thirty subdivisions regarding licensing, authorization, sanitation, and recordkeeping requirements among other things, like how and when the process should actually be conducted.¹⁰⁰ The statute is so detailed and thorough that it could serve as a model for other states who want to legalize alkaline hydrolysis but are unsure of how to appropriately regulate it.¹⁰¹

Although one of the first states to offer alkaline hydrolysis commercially, Florida took a very different approach when legalizing the process by statute.¹⁰² Florida legalized aquamation by simply adding two words to the state’s existing statute regulating cremation chamber requirements.¹⁰³ The words “or consumable” were added to the subsection of the law regarding the materials permitted for use in a cremation chamber in 2009 and that was all it took.¹⁰⁴ The statute provides that, “‘cremation’ means any mechanical or thermal process whereby a dead human body is reduced to ashes and bone fragments,” and a “cremation container” must, “be composed of readily combustible or consumable materials suitable for cremation.”¹⁰⁵ This legalization through the addition of only two words survived review from the Florida Funeral Cemetery and Consumer Services Board as a complete regulation of the process because it simply required alkaline hydrolysis providers to comply with already existing laws regarding cremation.¹⁰⁶ Along with a funeral home in Ohio, a funeral home in St. Petersburg, Florida began offering alkaline hydrolysis as an eco-

⁹⁶ *Id.* at 155.

⁹⁷ *Id.*

⁹⁸ 2013 MINN. ALS 108, 2013 MINN. CHAPTER LAW 108, 2013 MINN. H.F. No. 1233.

⁹⁹ MINN. STAT. ANN. § 149A.02 (LexisNexis, Lexis Advance through the end of the 2020 Regular Session, and Fifth Special Session, of the 91st Legislature).

¹⁰⁰ MINN. STAT. ANN. § 149A.941 (LexisNexis, Lexis Advance through the end of the 2020 Regular Session, and Fifth Special Session, of the 91st Legislature).

¹⁰¹ *Id.*

¹⁰² See Hanson, *supra* note 51, at 156.

¹⁰³ *Id.*

¹⁰⁴ *Id.*

¹⁰⁵ FLA. STAT. ANN. § 497.005 (22), (24)(a) (LexisNexis, Lexis Advance through all 2020 general legislation).

¹⁰⁶ See Hanson, *supra* note 51, at 156.

friendly end of life solution in 2011.¹⁰⁷ Close to the end of 2011, the Florida funeral home reported it had completed over twenty bio-cremations.¹⁰⁸ Since then, the independently owned funeral home was purchased by a corporate funeral services entity and it is now unclear whether or not alkaline hydrolysis is still offered by the funeral home that first introduced the process to Florida residents.¹⁰⁹

In the years following Florida's legalization of the process, Maine, Kansas, and Maryland legalized alkaline hydrolysis through similar means.¹¹⁰ Although Kansas and Maryland required their state funeral boards to draft separate regulations for alkaline hydrolysis, all three states characterize the process as a form of cremation.¹¹¹ This misclassification of alkaline hydrolysis as a form of cremation has become a common occurrence among states legalizing the method by amending their death care statutes.¹¹² While it has the benefit of speeding up the legislative approval process, it also presents additional problems in defining, regulating, and providing the method.¹¹³

B. A Lack of Specific Legislation

Usually, in states where alkaline hydrolysis remains illegal, it is simply not specified as legal by the language in that state's statute regarding the disposal of human remains.¹¹⁴ Additionally, most existing or pending legislation on alkaline hydrolysis is simply an amendment or an attachment to that state's pre-existing cremation statute.¹¹⁵ This creates several problems that would be nonexistent if the process were either strictly prohibited or legalized as a practice separate from standard cremation by statutory language.¹¹⁶

Some death care practitioners worry that labelling alkaline hydrolysis as a form of cremation could be confusing to clients.¹¹⁷ The term "flameless cremation" only does the bare minimum to explain what alkaline hydrolysis is by explaining what it is not. This could mislead consumers into choosing a death care option they or their loved ones do not actually want, which could, in turn, subject funeral homes and crematories to expensive litigation.¹¹⁸ Additionally, some state cremation statutes require crematories to be located on cemetery property, meaning that if alkaline hydrolysis is

¹⁰⁷ *Id.*

¹⁰⁸ *Id.*

¹⁰⁹ Andrew Meacham, *Foundation Partners Buys Anderson-McQueen Funeral Home*, TAMPA BAY TIMES (Aug. 23, 2017), <https://www.tampabay.com/news/business/foundation-partners-buys-anderson-mcqueen-funeral-home/2334776/>.

¹¹⁰ See Hanson, *supra* at 156–57.

¹¹¹ *Id.*

¹¹² See Olson, *supra* note 64, at 155.

¹¹³ *Id.*

¹¹⁴ See Hanson, *supra* note 51, at 162.

¹¹⁵ See Olson, *supra* note 64, at 155.

¹¹⁶ *Id.*

¹¹⁷ *Id.*

¹¹⁸ *Id.*

considered a form of cremation by the state, it would be subject to the same requirement.¹¹⁹ If alkaline hydrolysis were regulated as a process separate from cremation, the equipment required for the process could be located inside funeral homes or other facilities outside of cemetery property, as long as local zoning ordinances are satisfied.¹²⁰ This would create the possibility for new providers to enter the market and create new avenues for revenue.¹²¹

C. Lack of Public Knowledge

In recent years, the United States death care industry has seen the number of standard cremations surge past the number of traditional burials for the first time in history.¹²² Some experts attribute this to an increase in both economic and environmental concerns.¹²³ However, many Americans remain somewhat in the dark about death care industry practices. In 2018, based on a survey conducted by the National Funeral Directors Association, almost fifty-four percent of Americans were considering having a green burial.¹²⁴ That same survey concluded that only about forty-eight percent of Americans knew that embalming is not required for cremation services.¹²⁵ Funeral professionals claim this lack of awareness, alongside a lack of resources, presents one of the biggest obstacles for the widespread implementation of green burial methods.¹²⁶ Considering its comparability to cremation, it is possible to conclude that if more people knew about this process or had access to it and information about it, then alkaline hydrolysis could see a similar surge in popularity to that of standard cremation.

D. Religious and Moral Opposition

There have been many outspoken opponents to the legalization of alkaline hydrolysis, many of whom base their opposition on the moral or religious belief that aquamation is somehow disrespectful to deceased loved ones. One such opponent is the Catholic Church of New Hampshire. New Hampshire was actually the second state to legalize alkaline hydrolysis in 2006, when a provision that made the process legal was attached to a larger bill that revised the state's cremation statute and went largely

¹¹⁹ *Id.*

¹²⁰ *Id.*

¹²¹ *Id.*

¹²² See Little, *supra* note 37.

¹²³ *Id.*

¹²⁴ Sonya Votamsky, *Thinking About Having a 'Green' Funeral? Here's What to Know*, N.Y.

TIMES (Mar. 22, 2018), <https://www.nytimes.com/2018/03/22/smarter-living/green-funeral-burial-environment.html>.

¹²⁵ *Id.*

¹²⁶ *Id.*

unnoticed.¹²⁷ A funeral home director asked for a permit to install an alkaline hydrolysis machine in 2008 and a temporary ban was placed on the process.¹²⁸ Several New Hampshire legislators spoke out against the process and the provision was ultimately repealed.¹²⁹ The Church testified, in the form of a letter addressed to the members of the state's Health, Human Services, and Elderly Affairs Committee, against efforts to re-legalize alkaline hydrolysis twice, in both 2013 and 2014.¹³⁰ The testimony, which the New Hampshire House of Representatives and Senate found persuasive, flatly characterized aquamation as lacking the "reverence and respect" citizens deserve at the end of their lives.¹³¹

Alkaline hydrolysis finds additional opponents in legislators themselves. Indiana Representative Dick Hamm gave an impassioned and effective speech opposing alkaline hydrolysis when a bill that would have legalized the method in the state was proposed in 2015.¹³² Representative Hamm expressed his disgust at dissolving bodies in acid and pouring them down the drain, comparing the process to flushing a loved one down the toilet.¹³³ These are massive misconceptions about alkaline hydrolysis, as it has been noted consistently that the process does not use acid to dissolve bodies and the leftover liquid does not resemble human remains in any form.¹³⁴ As one might expect, the bill did not pass, and alkaline hydrolysis remains illegal in Indiana.¹³⁵ It is worth noting that Hamm, who claims it did not affect his opinion on the matter, owned and operated two casket manufacturing companies at the time he gave this speech.¹³⁶ While this potential occurrence of serving one's own interests before the interests of the public does not defeat the moralist argument against legalizing alkaline hydrolysis, it certainly raises questions about conflicts of interests between the death care industry and state legislatures moving forward.¹³⁷

E. Case Law

¹²⁷ See Hanson, *supra* note 51, at 159.

¹²⁸ *Id.*

¹²⁹ See Atkin, *supra* note 83.

¹³⁰ *Id.*

¹³¹ Robert Dunn Jr., *Alkaline Hydrolysis (Chemical Cremation)*, The Catholic Church of New Hampshire (Jan. 28, 2014), <https://www.catholicnh.org/community/public-issues/issues/chemical-cremation/>.

¹³² See Atkin, *supra* note 83.

¹³³ *Id.*

¹³⁴ See Panecasio, *supra* note 93.

¹³⁵ See Atkin, *supra* note 83.

¹³⁶ Tony Cook, *Casket-making Lawmaker Helps Kill Bill Allowing Alternative to Burial*, INDYSTAR (Mar. 20, 2015, 6:11 PM) <https://www.indystar.com/story/news/politics/2015/03/20/casket-making-lawmaker-helps-kill-bill-allowing-alternative-burial/25109443/>.

¹³⁷ *Id.*

Despite the controversial nature of alkaline hydrolysis and the complex legal history that accompanies it, there is a surprisingly small body of case law regarding the process. The case of *Edwards Funeral Service v. State* is one of the only cases involving a direct challenge to a state's body disposal laws in relation to alkaline hydrolysis.¹³⁸ Ohio funeral home director Jeff Edwards aquamated nineteen bodies over a period of two months before the Ohio Department of Health and Board of Embalmers and Funeral Directors denied him a permit necessary to continue the practice, claiming the practice was not allowed by state law.¹³⁹ Edwards sued for an injunction, seeking issuance of the permit and the prevention of further refusal to do so if the method of body disposal was listed as alkaline hydrolysis.¹⁴⁰ Edwards claimed that the law did not explicitly prohibit aquamation as a form of final disposition and thus, it was a proper method.¹⁴¹ The Department argued that Edwards failed to state a claim for relief and that it had the authority to determine whether alkaline hydrolysis was a proper form of final disposition.¹⁴² The relevant Ohio statute states that, "'final disposition' means the interment, cremation, removal from the state, donation, or other authorized disposition of a dead body or a fetal death."¹⁴³ Edwards also claimed estoppel barred the Department from refusing to issue the new permits based on the issuance of the nineteen prior death certificates with the method of disposition listed as alkaline hydrolysis.¹⁴⁴ The funeral home's petition survived two motions to dismiss before the Attorney General of Ohio moved for a directed verdict, which the court granted.¹⁴⁵ In dismissing the still unpublished case, the Judge noted that the Ohio statute regarding final disposition is confusing but it is up to the Department and State Board to determine whether alkaline hydrolysis is an acceptable form of final disposition when there is a lack of specific legislation determining the method as such.¹⁴⁶

Since the dismissal of the case, Edwards Funeral Service still offers alkaline hydrolysis services but has amended the page on their website relating to it.¹⁴⁷ The webpage notes that the death care provider has had to increase their pricing structure for the service because of the now necessary transportation of a body into Illinois or Missouri, two states where the process is legal, in order to avoid further litigation with

¹³⁸ *Edwards Funeral Service v. State*, No. 11CVH03-3772, 2011 Ohio Misc. LEXIS 2475 (Ct. Com. Pl. Oct. 12, 2011).

¹³⁹ *Id.*

¹⁴⁰ *Id.* at 2.

¹⁴¹ *Id.*

¹⁴² *Id.* at 4.

¹⁴³ OHIO REV. CODE ANN. § 3705.01 (J) (LexisNexis 2020)

¹⁴⁴ *See Edwards*, 2011 Ohio Misc. LEXIS 2475 at *6.

¹⁴⁵ T. Scott Gilligan, *Ohio Court Rules Against Alkaline Hydrolysis*, OHIO FUNERAL DIRS. ASSN., (Feb. 14, 2012),

https://ofdaonline.org/aws/OFDA/pt/sd/news_article/56232/_PARENT/layout_details/true.

¹⁴⁶ *Id.*

¹⁴⁷ *Edwards Funeral Services, Aquamation Packages*, (last visited Jan. 20, 2021), <https://www.edwardsfuneralservice.com/aquamation-packages>.

the state of Ohio.¹⁴⁸ Edwards states, “the aquamation method was not deemed illegal or undignified, but the courts decided they felt more comfortable if the method was approved through legislation before being performed again in Ohio.”¹⁴⁹ The webpage also details the death care providers more recent efforts to have the method made available in-state through legislation with little success.¹⁵⁰

While not directly relating to alkaline hydrolysis, the case of *Roselawn Cemetery v. City of Roseville* is still relevant because it illustrates the legal difficulties death care providers can face when attempting to implement new technologies into their practice and the power that the concerns of the general public about the environment can hold.¹⁵¹ Here, the Court of Appeals of Minnesota affirmed a summary judgment against a cemetery, prohibiting them from placing a crematory on their property based on their location in a residential area and pollution concerns.¹⁵² The City Council of Roseville had voted to deny the permit after several residents, including an engineer and former safety equipment specialist, spoke publicly about the possible dangerous pollutants the crematory would emit.¹⁵³ The court held that this denial was reasonable given the concerns voiced by the general public and the requirement that the City Council must consider the impact of proposed projects on the city’s general health, safety, and welfare.¹⁵⁴ By voicing their concern about the environmental effects a crematory would have on their community, citizens of Roseville protected their city from an environmental hazard and inadvertently expressed their desire for cleaner local death care options.

IV. PROBLEMS AND SOLUTIONS

A. Death Care Problems

As cities grow and more Americans move to them, urban cemeteries are beginning to run out of available space and what space is available is becoming more expensive.¹⁵⁵ It is predicted that Arlington National Cemetery in Washington D.C. will run out of burial plot space by 2041, leaving some younger soldiers without the choice to be buried there.¹⁵⁶ Some experts say that there is enough room to bury most baby

¹⁴⁸ *Id.*

¹⁴⁹ *Id.*

¹⁵⁰ *Id.*

¹⁵¹ *Roselawn Cemetery v. City of Roseville*, 689 N.W.2d 254 (Minn. Ct. App. 2004).

¹⁵² *Id.* at 262.

¹⁵³ *Id.* at 257.

¹⁵⁴ *Id.* at 259.

¹⁵⁵ Randy Lilleston, *What if There’s No Space at the Cemetery?*, AARP (Nov. 20, 2017), <https://www.aarp.org/home-family/friends-family/info-2017/urban-cemeteries-overcrowded-fd.html>.

¹⁵⁶ Jarred Schenke, *Urban Cemeteries Running Out Of Space As Baby Boomers Enter Twilight Years*, BISNOW (Nov. 1, 2017), <https://www.bisnow.com/national/news/neighborhood/many-urban-cemeteries-running-out-of-space-as-baby-boomers-enter-twilight-years-81029>.

boomers, but urban cemetery space will be hard to come by for the generations following them.¹⁵⁷ What space is available in the future will be priced at a premium, with families currently paying anywhere between \$7,000 and \$10,000 on average for a burial plot in densely populated areas.¹⁵⁸ This lack of availability and rise in costs is partially responsible for the recent rise in popularity of cremation.¹⁵⁹ However, flame-based cremation remains somewhat detrimental to the environment and shifting further towards it as the preferred method of burial for Americans could worsen the method's overall impact on the planet.¹⁶⁰ Alkaline hydrolysis could present a possible solution to this problem if it were widely legalized and made available to those in need of death care services in urban areas.

Recently, the Covid-19 pandemic has presented an unprecedented challenge for U.S. death care providers.¹⁶¹ While there is no scientific evidence that a Covid positive corpse can still transmit the virus, some experts have still found traces of the virus in bodily fluids up to twenty-seven hours after death.¹⁶² This rapidly changing virus and the rising death tolls have created the overwhelming need for quick, accessible, and sterile body disposal methods.¹⁶³ In fact, the need for cremation has increased so much in “hot zone” state California that the city of Los Angeles has temporarily lifted an air quality permit condition for crematoriums that limits the number of cremations that can be performed in a month.¹⁶⁴ Aquamation has been legal in California since 2017 but, as previously noted, is not nearly as widely known, advertised, or available as the more standard forms of disposition.¹⁶⁵ If public opinion could be swayed and death care providers could more easily offer alkaline hydrolysis, this method could be better utilized to help deal with the backlog of the deceased without further worsening the air quality of a notoriously smog covered city.¹⁶⁶

¹⁵⁷ *Id.*

¹⁵⁸ *Id.*

¹⁵⁹ *Id.*

¹⁶⁰ See Little, *supra* note 37.

¹⁶¹ Cindy Loose, *Funeral Homes, Morgues Grapple with Surge in U.S. Covid-19 Deaths*, CNN (Dec. 15, 2020), <https://www.cnn.com/2020/12/15/health/funeral-homes-morgues-covid-deaths-wellness-partner/index.html>.

¹⁶² L.G.M. Dijkhuizen, H.T. Gelderman & W.L.J.M. Duijst, *Review: The safe handling of a corpse (suspected) with COVID-19*, 73 J. FORENSIC LEG. MED. 1 (2020).

¹⁶³ *Id.*

¹⁶⁴ Rachel Treisman, *Cremation Limits Lifted in LA Due to “Backlog” As Covid-19 Deaths Skyrocket*, NPR (Jan. 21, 2021), <https://www.npr.org/sections/coronavirus-live-updates/2021/01/19/958354466/cremation-limits-lifted-in-la-due-to-backlog-as-covid-19-deaths-skyrocket>.

¹⁶⁵ Jared Gilmour, *A Cremation Process That Leaves Only Bones and Brown Syrup is Coming to California*, THE SACRAMENTO BEE (Oct. 17, 2017), <https://www.sacbee.com/news/nation-world/national/article179423001.html#:~:text=to%20environmental%20impact.-,Gov.,lye%20solution%2C%20according%20to%20Wired.>

¹⁶⁶ Tony Barboza, *Los Angeles Began 2020 With a Clean-Air Streak but Ended With Its Worst Smog In Decades*, PHYS.ORG (Dec. 7, 2020), <https://phys.org/news/2020-12-los-angeles-began-clean-air-streak.html#:~:text=Environment->

States where the process is not yet legal may have a much harder time. An image of a mass grave of Covid victims on Hart Island in New York was spread around social media in April of last year.¹⁶⁷ While New York City has long used this island as a place to bury the unclaimed, unidentified, and those unable to pay for a funeral, the sheer number of bodies in the image shocked the nation and showed the true gravity of the pandemic.¹⁶⁸ Legislation on alkaline hydrolysis in New York has been pending since 2011.¹⁶⁹ If it were passed, it could save New Yorkers from the possible trauma of seeing loved ones and neighbors buried en masse during future pandemics, preserve public burial space by providing another option, reduce the city's carbon footprint, and possibly prevent the further spread of deadly disease.

It is hard to dispute that dying is getting more expensive in America. The National Funeral Directors Association conducted a price study in 2019 that concluded funeral costs increased by 6.4% for standard burials and 7.3% for cremations over the past five years.¹⁷⁰ As these costs continue to rise, fewer people will be able to afford these options, resulting in more unclaimed bodies in already overcrowded funeral homes. Alkaline hydrolysis could be a cost-effective solution to financially strained families and funeral homes.

While the environmental costs of continued traditional burials and cremations are not nearly as substantial as the continued use of coal fired power plants or fracking for example, they still heavily contribute to emission levels and groundwater pollution.¹⁷¹ Offsetting these costs by making environmentally friendly options, like alkaline hydrolysis, more widely available would be inherently helpful in protecting our environment for future generations.¹⁷²

B. Federal Legalization as a Solution

,Los%20Angeles%20began%202020%20with%20a%20clean%20Dair%20streak%20but,its%20worst%20smog%20in%20decades&text=In%20all%20C%20this%20year%20there,Riverside%20and%20San%20Bernardino%20counties.

¹⁶⁷ Meg Anderson, *Burials on New York Island Are Not New, But Are Increasing During Pandemic*, NPR (Apr. 10, 2020, 3:36 PM), <https://www.npr.org/sections/coronavirus-live-updates/2020/04/10/831875297/burials-on-new-york-island-are-not-new-but-are-increasing-during-pandemic>.

¹⁶⁸ *Id.*

¹⁶⁹ S. ASSEMB. B. A8883, 2011-2012 Leg. Sess. (Ny. 2011).

¹⁷⁰ 2019 NFDA General Price List Study Shows Funeral Costs Not Rising as Fast as Rate of Inflation, NAT'L FUNERAL DIRS. ASSN. (Dec. 19, 2019), [https://nfda.org/news/media-center/nfda-news-releases/id/4797/2019-nfda-general-price-list-study-shows-funeral-costs-not-rising-as-fast-as-rate-of-](https://nfda.org/news/media-center/nfda-news-releases/id/4797/2019-nfda-general-price-list-study-shows-funeral-costs-not-rising-as-fast-as-rate-of-inflation#:~:text=%E2%80%93%20The%20National%20Funeral%20Directors%20Association,th)

[inflation#:~:text=%E2%80%93%20The%20National%20Funeral%20Directors%20Association,th](https://nfda.org/news/media-center/nfda-news-releases/id/4797/2019-nfda-general-price-list-study-shows-funeral-costs-not-rising-as-fast-as-rate-of-inflation#:~:text=%E2%80%93%20The%20National%20Funeral%20Directors%20Association,th)
[e%20past%20five%20years%20to_](https://nfda.org/news/media-center/nfda-news-releases/id/4797/2019-nfda-general-price-list-study-shows-funeral-costs-not-rising-as-fast-as-rate-of-inflation#:~:text=%E2%80%93%20The%20National%20Funeral%20Directors%20Association,th)

¹⁷¹ See Little, *supra* note 37.

¹⁷² *Id.*

There are two potential avenues for the nationwide legalization of alkaline hydrolysis as a method for human corpse disposal. The first and most likely to result in full legalization of the method is for Congress to legalize human alkaline hydrolysis under some kind of federal death care act. Potential for the federal legalization of alkaline hydrolysis likely exists under Congress' Commerce Clause power. This power, granted to the legislative branch by Article I, Section 8 of the U.S. Constitution, allows congress to, "regulate commerce with foreign nations, and among the several states, and with Indian Tribes."¹⁷³

Historically, this clause has been interpreted to mean that Congress may regulate interstate commerce, the instrumentalities of it, and local activities that have a substantial effect on it.¹⁷⁴ In the case of *Heart of Atlanta Motel, Inc. v. United States*, the Supreme Court issued a unanimous opinion against an Atlanta motel owner who only allowed white Americans to stay in the motel in defiance of the Civil Rights Act of 1964.¹⁷⁵ The Court ruled that although the motel only operated in the state of Georgia, Congress' Commerce Clause power allowed it to prevent the motel from discriminating on the basis of race because the motel received the majority of its business from out of state travelers and was located between two large interstates, causing it to have a substantial effect on interstate commerce.¹⁷⁶

More recently, the Court has taken this substantial effect test even further. For example, in the case of *Gonzales v. Raich*, the Supreme Court of the United States held that even though medically prescribed marijuana was legal under California law, the federal government could still enforce the Controlled Substances Act against California residents who were growing and cultivating marijuana for their own use.¹⁷⁷ The Court reasoned that the Controlled Substances Act and the regulation of marijuana under it were well within Congress' Commerce Clause powers because the growth and cultivation of marijuana for personal use had or could have a substantial effect on the national market for the drug and thus, could be regulated as interstate commerce despite being an entirely intrastate activity.¹⁷⁸

It can be argued that funeral services are local activities that have a substantial effect on interstate commerce because if a desired service is not available in a decedent's home state, their family may travel to another state in order to procure the desired service for their loved one. If it were to see a similar shift in popularity to that of standard cremation, access to or a lack of access to alkaline hydrolysis could have a substantial effect on the national market for death care services, similar to how the Supreme Court held that the home growth of marijuana could affect the national drug

¹⁷³ U.S. Const. art. I, § 8, cl. 3.

¹⁷⁴ Randy E. Barnett & Andrew Koppelman, *Common Interpretation: The Commerce Clause*, NAT'L CONSTITUTION CENTER (last visited Jan. 10, 2021), <https://constitutioncenter.org/interactive-constitution/interpretation/article-i/clauses/752>.

¹⁷⁵ *Heart of Atlanta Motel v. United States*, 379 U.S. 241, 258 (1964).

¹⁷⁶ *Id.*

¹⁷⁷ *Gonzales v. Raich*, 545 U.S. 1, 19 (2005).

¹⁷⁸ *Id.*

market in *Gonzales*.¹⁷⁹ If a death care provider mostly receives business from customers from outside of their state, like the motel in *Heart of Atlanta*, they would be participating in interstate commerce and thus, could be regulated by Congress.¹⁸⁰ Additionally, the family, body, and method of travel could be considered instrumentalities in the stream of interstate commerce. The result of the *Edwards Funeral Services* case supports this, as the death care provider began transporting bodies across state lines in order to procure the service when requested and avoid further legal action from the state of Ohio.¹⁸¹ Edwards Funeral's price increase to compensate for the body transportation costs proves that Ohio's lack of legislation on alkaline hydrolysis and continued refusal to permit it is placing somewhat of a burden on intrastate commerce while simultaneously creating a stream of interstate commerce which Congress may regulate.¹⁸²

However, because the legality of alkaline hydrolysis in most states is determined by a lack of legislation which does not specifically outlaw the method, a unique issue could arise if Congress tried to legalize aquamation under its Commerce Clause power. Under the 10th Amendment, powers not granted to congress belong to the states.¹⁸³ The Supreme Court has held that states cannot be commandeered into legislating by the federal government in a multitude of cases.¹⁸⁴ For example, in *New York v. United States*, the Court struck down a provision of the federal Low-Level Radioactive Waste Management Act Amendments of 1985 that required states to either "take title" to radioactive wastes from the waste generators and accept all liability for them or comply with the federal program as unconstitutional.¹⁸⁵ The Court reasoned that because the provision's choices, or lack thereof, were essentially an attempt to coerce states into enacting federal regulations, the provision violated the 10th Amendment.¹⁸⁶ Justice O'Connor's opinion states, "whatever the outer limits of [state] sovereignty may be, one thing is clear: The Federal Government may not compel the States to enact or administer a federal regulatory program," which Congress could be doing if it forced all states to legalize and regulate alkaline hydrolysis.¹⁸⁷ Further, the 10th Amendment reserves the police power to regulate public health issues within their jurisdictions to the states and many would argue that death care services are a public health issue.¹⁸⁸ Thus, the only potential avenue for federal legalization under the Commerce Clause

¹⁷⁹ *Id.*

¹⁸⁰ *Heart of Atlanta*, 379 U.S. at 258.

¹⁸¹ *See Edwards Funeral*, *supra* note 147.

¹⁸² *Id.*

¹⁸³ U.S. CONST. AMEND. X.

¹⁸⁴ *Tenth Amendment: Commandeering Prohibitions*, CONSTITUTION ANNOTATED (last visited Jan. 9, 2021), https://constitution.congress.gov/browse/essay/amdt10_2_4_1/.

¹⁸⁵ *New York v. United States*, 505 U.S. 144 (1992).

¹⁸⁶ *Id.* at 176.

¹⁸⁷ *Id.* at 188.

¹⁸⁸ *Two Centuries of Law Guide Legal Approach to Modern Pandemic*, ABA (Apr. 2020), <https://www.americanbar.org/news/abanews/publications/youraba/2020/youraba-april-2020/law-guides-legal-approach-to-pandemic/>.

that would surely not violate the 10th Amendment or the principles of federalism would be if a state statute strictly prohibiting alkaline hydrolysis were challenged and found to be an unconstitutional burden on interstate commerce.

C. Mass State Legalization as a Solution

The second avenue for the nationwide legalization of alkaline hydrolysis for human corpses is to simply continue on the current path towards mass state legalization. While this option is viable, avoids violating the principles of federalism, and requires no action from congress, it is also time consuming and has the potential to perpetuate the current lack of uniformity in state alkaline hydrolysis statutes.

Despite clear interest from states in adopting the method as a permitted form of body disposal, with Texas, New York, New Jersey, and several other states proposing legislation that has yet to pass, legalizing and regulating a new and admittedly unorthodox method of burial is far from the top of the list of concerns in any state legislature.¹⁸⁹ When coupled with the lack of public knowledge about the method, this lack of concern causes bills like New York's 2011 Senate Assembly Bill A8883, which would quickly legalize the method by changing the statutory definition of cremation, to stall and die before even being voted on.¹⁹⁰ As such, a large amount of support for similar bills will be necessary to sustain momentum going forward. State funerary boards should find it in their best interest to both support these bills and educate death care clientele about new body disposal methods in order to meet the rising interest in and demand for more environmentally friendly burials.¹⁹¹ However, state legislatures and funeral boards should be cautious to not continue the streak of simply classifying alkaline hydrolysis as a form of cremation.¹⁹² Despite the fact that simply modifying an existing cremation statute to include aquamation speeds up the legalization process significantly, it makes strictly regulating the method later on more difficult and creates the potential for confusion among unknowledgeable consumers and litigation against funeral homes who wish to offer the method as soon as possible.¹⁹³

V. CONCLUSION

Alkaline hydrolysis has been around since the 1800's but is still a fairly new concept to most people outside of the death care industry.¹⁹⁴ The environmental and financial benefits of the method are clear and convincing enough to warrant the interest

¹⁸⁹ *What Are The Aquamation Regulations in Your State?*, Green Cremation Texas (last visited Jan. 20, 2021), <https://www.greencremationtexas.com/what-are-the-aquamation-regulations-in-your-state/>.

¹⁹⁰ See S. ASSEMB., *supra* note 169.

¹⁹¹ See Brown, *supra* note 44.

¹⁹² See Olson, *supra* note 64 at 155.

¹⁹³ *Id.* at 156.

¹⁹⁴ See CANA, *supra* note 69.

of the death-conscious and many medical research institutes.¹⁹⁵ That interest has been enough to get the process legalized in at least nineteen states with several others proposing legislation about it.¹⁹⁶ Even so, aquamation still has a long way to go in terms of public opinion, accessibility, regulation, and legality.¹⁹⁷ Federal legalization seems difficult but perhaps still possible and mass state legalization is a slow, but fairly sure shot that leaves the door open for confusion, inconsistencies, and litigation.¹⁹⁸ As urban cemeteries run out of room, funeral costs rise, and pandemics cause death on a scale rarely seen even by professionals, the need for options like alkaline hydrolysis becomes more apparent.

There is no perfect way to go about rectifying the law, respect for the dead, long-standing cultural traditions, new technologies, consumer concerns, and the desire to be more kind to the Earth.¹⁹⁹ However, that does not mean an attempt should not be made. In more ways than one, death is not the end. Our physical bodies remain after we have passed on to whatever comes next and they can either be preserved to defy nature or simply broken down to become a part of it.²⁰⁰ Regardless of what we choose to be done with what we leave behind, the goal of leaving the Earth in a better state than we found it in is always worth pursuing, even in death.

¹⁹⁵ See Hanson, *supra* note 51 at 152.

¹⁹⁶ See Panecasio, *supra* note 91.

¹⁹⁷ See Atkin, *supra* note 83.

¹⁹⁸ See Hanson, *supra* note 51 at 154.

¹⁹⁹ See Brown, *supra* note 44.

²⁰⁰ See Atkin, *supra* note 83.