Setas Eternal Living, LLC

The Sustainability of MyCoffin

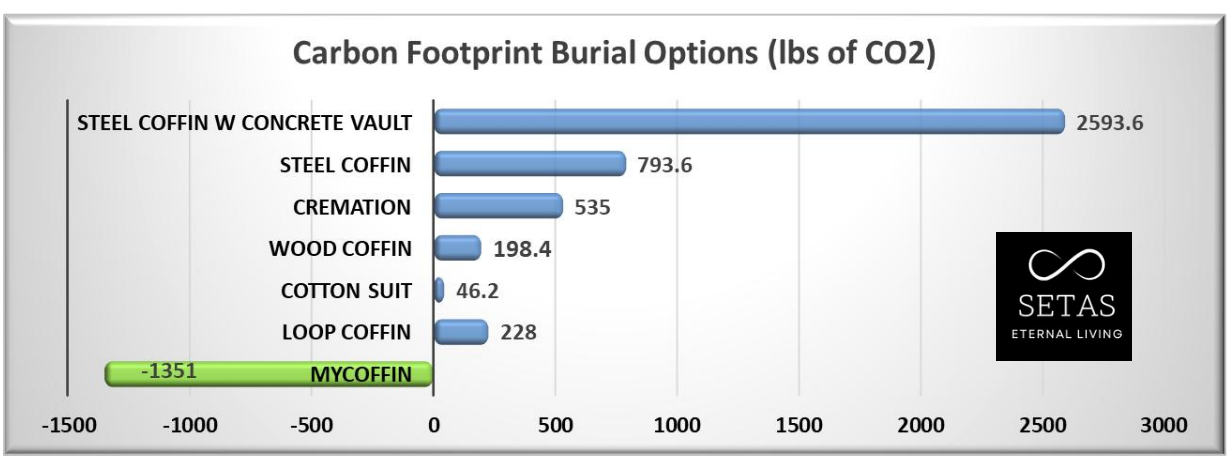
MyCoffin = Mycology + Coffin (Human & Pet)

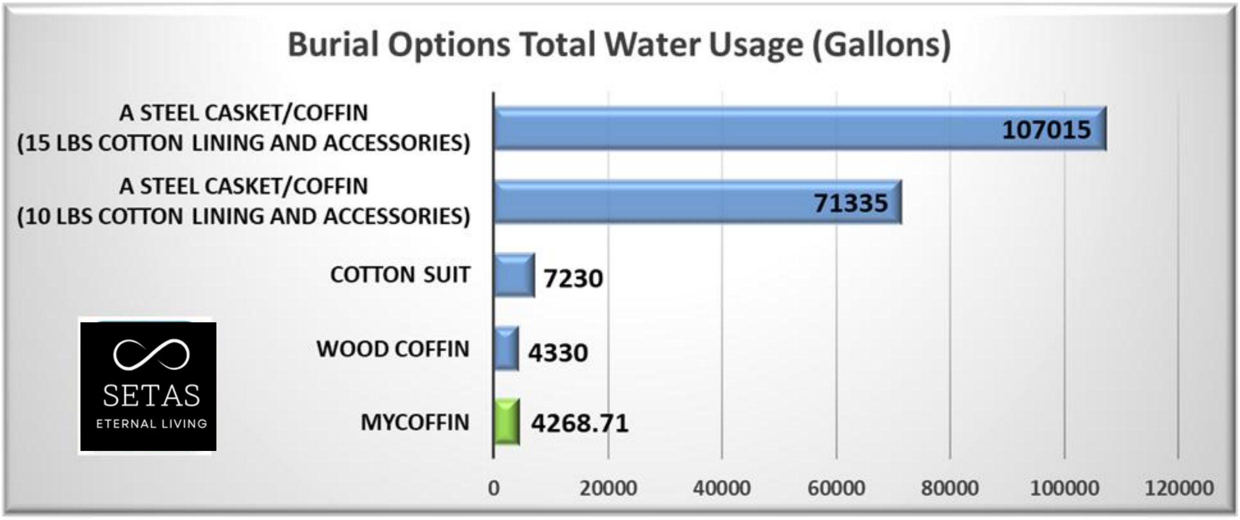
Executive Summary: The Unique Sustainability of MyCoffin

Setas Eternal Living's **MyCo**ffin redefines sustainability in the burial industry, standing as the only **carbon-negative** option available. **MyCo**ffin offsets its production emissions by sequestering an impressive 1,351 pounds of CO_2 per unit, surpassing competitors that contribute to a net-positive carbon footprint. Its innovative design, utilizing 85 pounds of locally sourced hemp, ensures minimal environmental impact with the lowest water usage across all burial options—requiring just 4,268 gallons compared to over 100,000 gallons for traditional steel coffins with concrete vaults.

With a retail price of $1,995 and a long-term goal of making this revolutionary product accessible at $495, **MyCo**ffin represents a shift towards affordability and sustainability. This cost-effective solution ensures no family must incur significant financial burdens to honor their loved ones.

The accompanying charts underscore these distinctions, illustrating **MyCo**ffin's unparalleled performance in carbon sequestration and water conservation compared to industry alternatives. For a more comprehensive analysis, including the environmental impact calculations, please refer to the detailed sustainability analysis included in this document. MyCoffin isn't just a product, it's a movement to disrupt an unsustainable industry and pioneer eco-friendly, accessible end-of-life practices





Sustainability

Setas Eternal Living emphasizes renewable energy, water conservation, and waste reduction. We aim for certifications such as USDA Organic and Fair Trade, enhancing our credibility and appeal to eco-conscious consumers. We plan to improve the following:

- **Energy**: Implement solar panels and possibly wind turbines to move Setas Eternal Living towards a self-sustaining energy model.
- **Water**: Install rainwater harvesting (90% completed) and recycling systems to minimize water usage.
- **Buildings**: Upgrade our facilities with sustainable materials and energy-efficient appliances.
- **Fulfillment**: Emphasize sustainable practices in shipping, delivery, and packaging.
- **Waste Stream Management**: Develop a comprehensive plan for recycling and composting waste products.
- **Green Certifications**: Beyond USDA Organic, aim for additional certifications like Fair Trade enhancing our brand's appeal to eco-conscious consumers.
- **Employee Sustainability Education**: Conduct regular training and workshops for employees on sustainability practices can enhance their engagement and improve the overall efficiency of sustainable practices.

Implementation:

Sustainability Goals: We've set clear targets for energy self-sufficiency, water conservation, and waste reduction. We plan to implement solar panels and possibly wind turbines by Q4 2025. Additionally, we plan to install rainwater harvesting systems by Q1 2026.

Sustainability Goals

- **Carbon Neutrality:** Achieved by 2026 through renewable energy integration.
- **Energy Solutions:** Implement solar and wind energy solutions by 4th qtr 2025.

Carbon Footprint

Omissions in the Carbon Footprint Analysis:

- The analysis doesn't include transportation of raw materials or finished coffins, which could contribute significantly to the overall carbon footprint, especially given the relatively high weight of **MyCo**ffin compared to lighter options like burial shrouds. However, the opposite is true for all other forms of burial which would further distance most of our competitors as they would have a higher carbon footprint.
- Including transportation in this analysis would provide a more complete picture of M**yCo**ffin's overall carbon footprint. A challenge with defining the carbon footprint with transportation is due to the fact **MyCo**ffin may be used locally, regionally, or nationally. As we increase our data collection activities, the numbers to calculate the carbon footprint within transportation requirements may be better understood.
- Similarly, end-of-life disposal is not addressed. Although **MyCo**ffin is designed to biodegrade, competitors' products, particularly those using steel or concrete, contribute long-term environmental impacts should be considered in future comparison.

Executive Summary: Carbon Footprint Analysis for MyCoffin Compared to Competitors

Introduction

Setas Eternal Living is committed to offering sustainable burial options that significantly reduce the environmental impact associated with traditional burial practices. Our flagship product, **MyCo**ffin, utilizes 80 pounds of hemp herd, which sequesters substantial amounts of CO_2 during its growth. This executive summary provides a detailed comparison of the carbon footprint to produce **MyCo**ffin versus competitor products from Coeio, Ecoffins, Thacker Caskets, and Batesville Casket Company, focusing on their steel and concrete-based burial options.

MyCoffin Carbon Footprint

MyCoffin by Setas Eternal Living is designed to be both environmentally friendly and effective in reducing carbon emissions. The hemp used in each **MyCo**ffin sequesters approximately 1,600 pounds of CO_2 from the atmosphere. This is based on the calculation that each pound of dry hemp biomass sequesters 20 pounds of CO_2, and each **MyCo**ffin contains 80 pounds of hemp herd.

To calculate the **CO_2 usage** for producing the hemp substrate used in **MyCo**ffin, we need to estimate the energy consumption of the sterilizer and convert that into CO_2 emissions.

Steps to Calculate CO_2 Usage:

1. **Sterilizer Power Consumption**:
   - The sterilizer uses **6000 watts (6 kW)**.
   - It runs for **18 hours** per cycle.

   - Total energy consumption per cycle = **Power × Time**:
     Energy Consumption=6 kW×18 hours=108 kWh\text{Energy Consumption} = 6 \, \text{kW} \times 18 \, \text{hours} = 108 \, \text{kWh}Energy Consumption=6kW×18hours=108kWh
2. **CO2 Emissions per kWh**: The amount of CO2 emitted per kWh of electricity depends on the energy source. For renewable sources (like solar or wind), emissions are nearly **zero**. As West Penn Power does not release this information, we use the national average in 2024 of **0.92 kg CO2 per kWh** for the U.S. electricity.
3. **Total CO2 Emissions for One Cycle**: Using the average emission factor of **0.92 kg CO2 per kWh**, the CO2 emissions for one cycle of the sterilizer are:

   CO2 Emissions=108 kWh×0.92 kg CO2/kWh=99.36 kg CO2\text{CO2 Emissions} = 108 \, \text{kWh} \times 0.92 \, \text{kg CO2/kWh} = 99.36 \, \text{kg CO2}CO2 Emissions=108kWh×0.92kg CO2/kWh=99.36kg CO2

4. **CO2 Emissions per Bag**: The sterilizer can handle **60 bags** per cycle. Therefore, the CO2 emissions per bag of hemp substrate are:

   CO2 per Bag=99.36 kg CO260=1.656 kg CO2 per bag\text{CO2 per Bag} = \frac{99.36 \, \text{kg CO2}}{60} = 1.656 \, \text{kg CO2 per bag}CO2 per Bag=6099.36kg CO2=1.656kg CO2 per bag

Additionally, we use almost 10 lbs. of propane to bake and petrify one of **MyCo**ffins.

Step 1: Propane CO2 Emissions Calculation

- The combustion of propane releases **5.67 kg of CO2 per gallon**.
- Since 1 kg = 2.20462 lbs, we convert **5.67 kg CO2 per gallon** to pounds:

  5.67 kg CO2 per gallon×2.20462 lbs per kg=12.5 lbs CO2 per gallon5.67 \, \text{kg CO2 per gallon} \times 2.20462 \, \text{lbs per kg} = 12.5 \, \text{lbs CO2 per gallon}5.67kg CO2 per gallon×2.20462lbs per kg=12.5lbs CO2 per gallon

- For **2.4 gallons** of propane:

2.4 gallons×12.5 lbs CO2 per gallon=30 lbs CO22.4 \, \text{gallons} \times 12.5 \, \text{lbs CO2 per gallon} = 30 \, \text{lbs CO2}2.4gallons×12.5lbs CO2 per gallon=30lbs CO2

Thus, the CO2 emissions from burning 10 lbs of propane are **30 lbs CO2**.

Step 2: Combine with Sterilizer CO2 Emissions

- The CO2 emissions from running the 6000-watt sterilizer for 18 hours were calculated as **99.36 kg CO2**.
- Convert this to pounds:

  99.36 kg ×2.20462 = **218.96 lbs CO2**

Step 3: Total CO_2 Emissions for Producing One MyCoffin

- Combining the emissions from the sterilizer and propane use:

  Total CO_2 emissions = **218.96 lbs CO_2 (sterilizer)** + **30 lbs CO_2 (propane)** = **248.96 lbs CO_2**

Conclusion:

The total CO_2 emissions for producing one **MyCo**ffin, including both the electricity used in the sterilizer and the propane used for baking and petrifying, are approximately **249 lbs CO_2**.

If **MyCo**ffin sequesters **1,600 pounds of CO_2** (making it carbon-negative), and the total CO_2 emissions for producing one **MyCo**ffin is **249 pounds of CO_2**, the net carbon footprint is calculated by subtracting the emissions from the sequestration:

Net CO_2 Footprin t=1,600 lbs CO_2 (sequestered) − 249 lbs CO_2 (emitted) =
1,351 lbs CO_2 (net negative)

Therefore, the net carbon footprint for producing one **MyCo**ffin is **-1,351 pounds of CO_2**, meaning it sequesters **1,351 pounds more CO_2** than it emits during production, making it highly carbon-negative.

Competitor Analysis: Carbon Footprint

1. **Coeio and Ecoffins**:
   - **Material**: Coeio and Ecoffins offer burial shrouds and coffins made from natural fibers like cotton, wool, and bamboo.
   - **Carbon Footprint**:
     - **Cotton**: High carbon footprint due to intensive agricultural practices, emitting approximately 2.1 kg of CO_2 per kg of fabric (Sustainable Apparel Coalition).
     - **Wool**: Lower carbon footprint than cotton but involves methane emissions from sheep. Producing 1 kg of wool can emit about 9 kg of CO_2 (Textile Exchange).
     - **Bamboo**: Generally considered a low-carbon material but varies depending on processing methods.
2. **Thacker Caskets**:
   - **Material**: Thacker produces both wooden and steel caskets. The wooden caskets use materials like oak, mahogany, and pine.
   - **Carbon Footprint**:
     - **Steel**: Steel production is highly energy-intensive, with Nucor's Electric Arc Furnace (EAF) process requiring about 400 kWh per ton of steel produced (Jyoti Metal). Each ton of steel produced emits approximately 1.8 tons of CO_2 (World Steel Association). Equaling five coffins from one ton of steel. One steel coffin, with nothing else in the coffin (cloth, foam, liner) uses 793.6 lbs of CO_2.

        - **Wood**: Carbon footprint varies based on wood type and sourcing. Hardwood forests typically sequester carbon but harvesting and processing contribute to emissions.
3. **Batesville Casket Company**:
    - **Material**: Batesville produces a range of steel, wood, and concrete caskets and burial vaults.
    - **Carbon Footprint**:
        - **Concrete Vaults**: The production of concrete involves significant CO2 emissions, especially from cement production. On average, producing one ton of cement emits 0.9 tons of CO2 (Portland Cement Association).
        - **Steel Caskets**: Similar to Thacker, the carbon footprint is high due to the energy-intensive nature of steel production.

Nucor's Steel Production Process

Extraction and Processing

1. **Raw Material Acquisition**:
    - **Iron Ore**: Nucor primarily uses scrap steel, which is melted down and recycled. However, in cases where iron ore is used, it is extracted through mining.
    - **Scrap Steel**: Collected from various sources, including old vehicles, appliances, and demolished buildings.
2. **Melting and Refining**:
    - **Electric Arc Furnace (EAF)**: Nucor uses EAFs, which are more energy-efficient and flexible compared to traditional blast furnaces. Scrap steel is charged into the furnace, and electric arcs are used to melt it.
    - **Refining**: The molten steel is refined to remove impurities. Alloying elements are added to achieve the desired chemical composition.
3. **Casting**:
    - **Continuous Casting**: The refined steel is cast into slabs, blooms, or billets. This process involves pouring molten steel into a mold, where it solidifies while being continuously withdrawn.
4. **Rolling and Forming**:
    - **Hot Rolling**: The cast steel is heated and passed through rolling mills to reduce its thickness and form it into sheets, bars, or other shapes.
    - **Cold Rolling**: For certain products, hot-rolled steel undergoes further processing at room temperature to achieve a smoother finish and tighter tolerances.
5. **Finishing**:
    - **Coating and Treatment**: The steel may be coated with zinc (galvanizing) or other materials to prevent rusting. It may also undergo heat treatments to improve its mechanical properties.

Energy Requirements

- **Electricity**: The EAF process is electricity-intensive. On average, it requires about 400 kWh of electricity per ton of steel produced (Jyoti Metal).

- **Natural Gas**: Used for heating and rolling processes.
- **Oxygen**: Used in the refining process to help remove impurities.

Emissions

- **Greenhouse Gases**: The primary emissions are CO2, resulting from the use of electricity (especially if sourced from fossil fuels), natural gas, and the chemical reactions in the EAF.
- **Particulate Matter**: Dust and particulates released during the melting and refining stages.
- **Volatile Organic Compounds (VOCs)**: Released during coating processes.

Nucor is committed to reducing its environmental impact and employs several strategies to minimize emissions:

1. **Energy Efficiency**: EAFs are generally more energy-efficient than traditional blast furnaces, consuming less energy per ton of steel produced.
2. **Recycling**: By using scrap steel, Nucor reduces the need for raw material extraction and the associated environmental impacts.
3. **Emissions Control**: Implementing advanced filtration and scrubbing systems to capture particulates and other emissions before they are released into the atmosphere.
4. **Renewable Energy**: Investing in renewable energy sources to power its operations and reduce the carbon footprint associated with electricity consumption.

Environmental Impact of Steel Coffin Production

The energy requirements and emissions associated with the production of a steel coffin can be broken down as follows:

1. **Energy**:
    - Production of steel sheets or bars used in coffins involves significant electricity consumption, primarily through EAFs.
    - Additional energy is required for shaping, cutting, welding, and finishing the steel into coffin forms.
2. **Emissions**:
    - CO2 emissions from electricity consumption, especially if the grid is powered by fossil fuels.
    - Emissions from natural gas used in heating processes.
    - Particulates and VOCs from coating and finishing operations.

Overall, while steel production is energy-intensive and has associated emissions, Nucor's use of EAFs, commitment to recycling, and efforts to improve energy efficiency and reduce emissions help mitigate the environmental impact (General Steel) (Jyoti Metal) (ThePipingMart Blog).

Materials Used for Coffin Interiors

1. Cloth Bed and Pillow

Common Materials:

- **Cotton**: Often used for its softness and breathability.
- **Polyester**: A synthetic fiber used for its durability and ease of maintenance.
- **Silk**: Sometimes used for high-end caskets for its luxurious feel and appearance.

Carbon Footprint:

- **Cotton**: High carbon footprint due to the intensive agricultural practices, significant water usage, and pesticides involved in its cultivation. Producing 1 kg of cotton fabric can emit approximately 2.1 kg of CO_2.
- **Polyester**: Derived from petroleum, polyester has a high carbon footprint due to its energy-intensive production process. Producing 1 kg of polyester fabric can emit approximately 5.5 kg of CO_2.
- **Silk**: Lower carbon footprint compared to cotton and polyester but involves sericulture, which includes the rearing of silkworms and can be labor-intensive. Producing 1 kg of silk can emit approximately 1.7 kg of CO_2.

Sourcing and Manufacturing:

- **Cotton**: Grown in regions like the United States, India, and China. The manufacturing process includes spinning, weaving, dyeing, and finishing.
- **Polyester**: Produced globally with major producers in China, the United States, and India. The production involves polymerization, spinning, and weaving.
- **Silk**: Sourced primarily from China and India. The production process involves sericulture, spinning, and weaving.

Disposal:

- **Cotton**: Biodegradable and can be composted, though it can release methane if not properly managed.
- **Polyester**: Not biodegradable and can persist in landfills for hundreds of years. Recycling is possible but not always practiced.
- **Silk**: Biodegradable and can be composted, though the process is slower than cotton.

2. Liner

Common Materials:

- **Cotton**: Used for its natural and breathable properties.
- **Satin**: Often polyester-based, used for its smooth and shiny appearance.
- **Velvet**: Made from either cotton or synthetic fibers, used for its rich texture and appearance.

Carbon Footprint:

- Similar to the cloth bed and pillow, the carbon footprint of the liner will depend on the material used:

- **Cotton Liner**: High carbon footprint similar to that of cotton fabric.
- **Satin Liner (Polyester-based)**: High carbon footprint similar to polyester fabric.
- **Velvet Liner**: Varies based on whether it is cotton or synthetic.

Sourcing and Manufacturing:

- The sourcing and manufacturing processes are similar to those described for the cloth bed and pillow materials.

Disposal:

- The disposal methods and environmental impacts are similar to those described for the cloth bed and pillow materials.

Interior Materials Carbon Footprint Summary

The carbon footprint of the materials used in casket interiors can vary widely depending on the type of fabric and its production process. Cotton, while natural, has a high carbon footprint due to agricultural practices. Polyester, derived from petroleum, also has a high carbon footprint due to its energy-intensive production. Silk has a lower carbon footprint but involves labor-intensive production processes.

Let's focus on the carbon footprint of the typical contents found within a steel coffin or casket, excluding the steel itself:

1. Interior Lining (Fabric)

- **Polyester:** Producing one kilogram of polyester fabric emits approximately 9.52 kg of CO_2. A casket might use around 2-3 kg of fabric, leading to a carbon footprint of approximately **19 to 28.5 kg of CO_2**.
- **Cotton:** Producing one kilogram of cotton fabric emits about 5.88 kg of CO_2. For the same amount, the carbon footprint is approximately **12 to 17.6 kg of CO_2**.

2. Cap Panel (Interior Lid)

- **Foam Padding:** Producing one kilogram of polyurethane foam emits approximately 3.7 kg of CO_2. The padding might weigh around 0.5-1 kg, adding **1.85 to 3.7 kg of CO_2**.

3. Gasket (in Sealed Caskets)

- **Synthetic Rubber:** Producing one kilogram of synthetic rubber emits approximately 3.7 kg of CO_2. The gasket might weigh around 0.5 kg, adding approximately **1.85 kg of CO_2**.

4. Handles and Hardware

- **Metal (Steel/Brass):** If the total weight of handles and hardware is around 5-10 kg, the carbon footprint could be approximately **9.25 to 18.5 kg of CO_2**.
- **Plastic Components:** Producing one kilogram of plastic emits about 2.5 kg of CO_2. If 0.5-1 kg of plastic is used, the footprint is **1.25 to 2.5 kg of CO_2**.

5. Locking Mechanism

- **Metal/Plastic Combination:** Depending on the material and weight, this could add another **2 to 4 kg of CO_2**.

Total Estimated Carbon Footprint (Excluding Steel):

- The total carbon footprint of the typical non-steel contents within a steel coffin or casket is approximately **34.2 to 56.1 kg of CO_2** (or **0.0342 to 0.0561 metric tons of CO_2**).

This estimate covers the interior lining, cap panel, gasket, handles, hardware, and locking mechanism, providing a detailed breakdown of the carbon footprint excluding the steel itself.

Production of a Concrete Vault

Process

1. **Raw Material Acquisition**:
   - **Cement**: Produced from limestone and other materials through a process involving quarrying, crushing, and heating in a kiln to form clinker, which is then ground to make cement.
   - **Aggregates**: Sand, gravel, or crushed stone, sourced from quarries.
   - **Water**: Mixed with cement and aggregates to form concrete.
2. **Mixing**:
   - The raw materials (cement, aggregates, and water) are mixed in precise proportions in a concrete mixer to form a homogeneous mixture. Admixtures may be added to enhance properties like workability, setting time, and durability.
3. **Forming**:
   - The concrete mixture is poured into molds designed to shape the vault. These molds can be made of steel, wood, or composite materials.
4. **Curing**:
   - The concrete is allowed to cure, typically for 28 days, to achieve its full strength. During this period, it may be kept moist and at a controlled temperature to ensure proper hydration of the cement.
5. **Finishing**:
   - Once cured, the concrete vault is removed from the molds and any necessary finishing touches are applied, such as smoothing surfaces or adding decorative elements.
6. **Inspection**:

- The vault undergoes quality control inspections to ensure it meets required specifications and standards.

Energy Requirements and Emissions

1. **Energy Requirements**:
    - **Cement Production**: Highly energy-intensive, involving significant electricity and thermal energy for kiln operation. Approximately 3.6-6.3 GJ (gigajoules) of energy is required to produce one ton of cement.
    - **Concrete Mixing and Curing**: Less energy-intensive compared to cement production. Energy is required for mixing and transportation of materials.
2. **Emissions**:
    - **CO2 Emissions**: Cement production is a major source of CO_2 emissions due to the calcination process and the combustion of fossil fuels in the kiln. Producing one ton of cement typically emits about 0.9 tons of CO_2.
    - **Other Emissions**: Includes particulates, NO_x, and SO_x from combustion processes.

Transport and Installation

1. **Transportation**:
    - The concrete vault is transported from the production site to the installation location. This typically involves trucks, and the distance and vehicle efficiency will affect fuel consumption and emissions.
2. **Installation**:
    - Involves heavy machinery to place the vault in its final location, such as a burial site. The installation process includes excavation, placement, and sealing, which require additional energy.

End-of-Life Scenarios

1. **Reuse**:
    - Concrete vaults can sometimes be reused if they remain intact after exhumation. This is not common but possible in certain circumstances.
2. **Recycling**:
    - Concrete from vaults can be crushed and recycled into aggregate for new concrete or other construction applications. This helps reduce the demand for virgin aggregates and minimizes waste.
3. **Landfill**:
    - If recycling is not feasible, concrete vaults can be disposed of in landfills. While concrete is inert and does not pose significant environmental hazards, it occupies landfill space.
4. **Environmental Impact**:
    - Recycling concrete reduces the environmental footprint by lowering the need for new raw materials and reducing CO_2 emissions associated with cement production. However, landfill disposal does not offer these benefits and contributes to waste management challenges.

Summary

The production of a concrete vault involves sourcing raw materials, mixing, forming, curing, finishing, and inspection. The energy requirements and emissions associated with this process are significant, particularly for cement production. End-of-life scenarios include reuse, recycling, or landfill disposal, with recycling being the most environmentally beneficial option.

Loop Biotech Coffin (Netherlands to United States)

Material & Production Footprint

Loop Biotech's *Living Cocoon* is made from mycelium and natural fibers. Publicly available lifecycle assessments suggest production emissions of approximately **85–110 kg CO_2** (187–243 lbs) per coffin, depending on energy mix and material sourcing. This estimate excludes transport and end-of-life.

Transport Footprint – Ocean Freight

- **Weight:** ~90 lbs (≈ 41 kg) per coffin.
- **Origin/Destination:** Rotterdam, Netherlands → New York, USA (~3,650 nautical miles).
- **Emission Factor:** Container ship ≈ 10 g CO_2 per tonne-km (Clean Cargo Working Group, 2018).
- **Calculation:**
  - Distance in km: 3,650 nm × 1.852 = 6,758 km
  - Tonne-km: 0.041 tonnes × 6,758 km ≈ 277 tonne-km
  - Emissions: 277 × 0.010 kg CO_2/tonne-km ≈ **2.77 kg CO_2** (~6.1 lbs)

Transport Footprint – Trucking (Port to Funeral Home)

- **Assumption:** 500 miles (805 km) by medium-duty diesel truck.
- **Emission Factor:** ~62 g CO_2 per tonne-km (EPA SmartWay, 2022).
- **Calculation:**
  - Tonne-km: 0.041 tonnes × 805 km ≈ 33 tonne-km
  - Emissions: 33 × 0.062 kg CO_2/tonne-km ≈ **2.05 kg CO_2** (~4.5 lbs)

Total Estimated CO_2 (Production + Shipping)

- Production: 187–243 lbs CO_2
- Ocean freight: ~6 lbs CO_2
- U.S. trucking: ~4.5 lbs CO_2
- **Total: 197.5–253.5 lbs CO_2** (≈ 89.6–115 kg CO_2)

Cubic Feet of CO_2 Equivalent

Using 1 kg CO_2 ≈ 0.791 ft^3 × 22.73 moles/kg:

- 89.6 kg CO_2 ≈ **1,605 ft^3 CO_2**
- 115 kg CO_2 ≈ **2,061 ft^3 CO_2**

Summary Table (including transport)

Coffin Type	Total CO_2 (lbs)	Total CO_2 (kg)	CO_2 Volume (ft³)
MyCoffin (US-made, hemp)	**-1,351** (net negative)	**-612**	**Sequesters ~11,574**
Loop Biotech (NL→US)	197.5–253.5	89.6–115	1,605–2,061

Conclusion
While Loop Biotech's mycelium coffin is far more sustainable than steel or concrete options, its overseas production adds a measurable carbon cost when transported to the U.S. MyCoffin eliminates this transport footprint entirely by being grown and sold domestically, while also delivering a carbon-negative lifecycle.

References

Clean Cargo Working Group. *Carbon Emissions Accounting for Ocean Transport*, BSR, 2018.
U.S. Environmental Protection Agency. *SmartWay Truck Carrier Partner Tool: Technical Documentation*, EPA-420-B-22-011, 2022.
Loop Biotech. "Living Cocoon – Product Overview." *Loop Biotech*, 2023.
World Shipping Council. *Carbon Emissions Data for Maritime Transport*, 2023.

Cremation (Average U.S. Case)
Cremating an average adult releases an estimated **535 pounds (≈243 kg) of CO_2** into the atmosphere (Gabriel, 2024; United Nations Environment Programme, 2020). At standard temperature and pressure, one mole of CO_2 occupies 0.791 cubic feet. Since 1 kg of CO_2 equals 1,000 g ÷ 44.01 g/mol ≈ 22.73 moles, we can calculate the cubic feet released:

243 kg CO_2 × (1,000 g/kg) ÷ 44.01 g/mol × 0.791 ft³/mol ≈ **4,360 cubic feet of CO_2** per cremation.

This is roughly equivalent to the volume of a **two-car garage completely filled with CO_2 gas**. Unlike MyCoffin's carbon-negative performance (net sequestration of 1,351 lbs CO_2), cremation adds significant greenhouse gases directly to the atmosphere without any offset.

Cremating a body is energy-intensive. According to National Geographic, each cremation generates an average of 534.6 pounds of CO2, which is equivalent to driving a petrol vehicle for over 600 miles. In the United States, for example, cremation generates about 0.02% of national greenhouse gas emissions.

According to Professor Anne Thompson, an environmental studies expert at Stanford University and a former researcher at NASA, cremation may seem like a more convenient option, particularly as a space-saving alternative to burial. Still, the energy consumption from the high temperature is staggering, as it consumes a significant amount of fossil fuel. Each cremation adds to the cumulative burden of carbon emissions that accelerate climate change."

Carbon Footprint Comparison

This carbon footprint analysis is limited to only the growth and production of the coffin in its final form. It does not include harvesting materials, extracting materials from the ground, or transporting raw or finished materials. This analysis does not include

- Transportation of Finished Coffins: Once the coffins are produced, they need to be transported to the place of sale or directly to the consumer. Depending on the distance and the mode of transportation (truck, ship, or air), transportation can contribute significantly to the overall carbon footprint, especially as for the heavier burial options.

  The weight of **MyCo**ffin is 85 lbs, so it is not the lightest burial option. The lightest burial option is within a shroud ranging from 10-15 lbs. The weight of a wood coffin ranges between 150-200 lbs, a steel coffin averages between 200-300 lbs, and a concrete vault ranges between 2000-2500 lbs. Because of the weight of the burial options, the cost for transportation could add up but was not included in this analysis.
- End-of-Life Disposal: The analysis doesn't appear to consider the environmental impact of the coffins after burial. For example, steel and concrete coffins do not degrade as easily as cotton, wool, or mushroom-based coffins, which would contribute to the environmental load over time.
- Maintenance and Upkeep of Burial Sites: Traditional burial methods, especially those that involve steel or concrete, typically require land maintenance, which might include lawn care, use of pesticides, herbicides, and energy for upkeep. Green burial methods, such as those using **MyCo**ffin, are often designed to avoid these impacts.
- Packaging Materials: The analysis should also take into account the materials used to package and ship the coffins to their final destinations, which can further add to the carbon footprint.
- Carbon Emissions from Supporting Industries: For example, the production of steel requires the mining of raw materials like iron ore, which indirectly adds to the footprint and was not factored in this analysis. Similarly, cotton and wool production are part of larger agricultural systems that involve fertilizers, pesticides, and land use changes, which might not be included in the direct carbon calculation.

Producing a Coffin

- **MyCo**ffin**:** 85 lbs. of hemp is used to produce one **MyCo**ffin, and it sequesters 1,600 pounds of CO_2 **(carbon-negative)** during the growth of hemp. Actual production of **MyCo**ffin s defined above equates to 249 lbs CO_2 (emitted) for a grand total of **negative 1,351 pounds of CO_2 (**net negative**).**
- **Coeio (Cotton):** If using 2.1 kg CO_2 per kg of cotton, and assuming an average cotton coffin uses around 10 kg of cotton, the footprint would be around 21 kg (46.2 pounds).
- **Ecoffins (Wool):** Wool has a higher carbon footprint, approximately 9 kg CO_2 per kg of wool. Assuming an average wool coffin uses around 10 kg of wool, the footprint would be around 90 kg (198.4 pounds).
- **Cremation:** Each cremation generates an average of 534.6 pounds of CO_2.
- **Thacker (Steel):** Steel coffins typically require a significant amount of steel. A steel coffin using about 200 kg of steel would result in around 360 kg CO_2 (793.6 pounds).

- **Batesville (Steel + Concrete Vault):** Producing 1 ton of concrete emits about 0.9 tons (1,800 pounds) of CO2. Assuming a vault weighs around 1 ton, the footprint would be 1,800 pounds of CO2 for only the vault. Adding the vault and the coffin equates to a 2593.6 pounds of CO2

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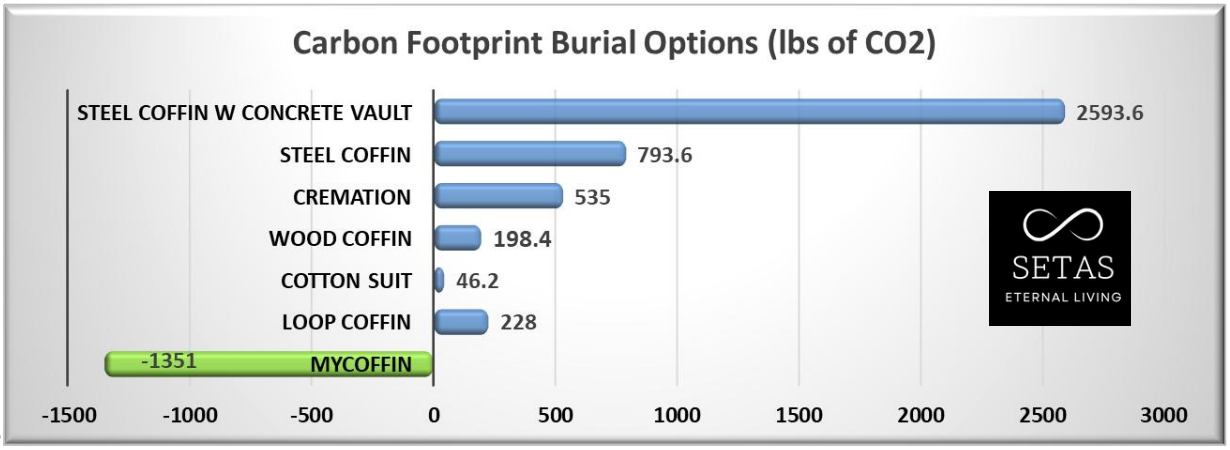

Executive Summary: Conclusion

MyCoffin by Setas Eternal Living stands out as an environmentally superior option compared to traditional burial or cremation methods used by competitors. The carbon sequestration from the hemp used in **MyCo**ffin results in a product that not only offsets its carbon footprint but actively contributes to reducing CO2 levels in the atmosphere. In contrast, steel and concrete-based burial options, as well as natural fiber options like cotton and wool, generally contribute to a net-positive carbon footprint due to the energy-intensive processes involved in their production.

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Competitor Analysis – Water Usage Footprint

Executive Summary: Water Usage Analysis for MyCoffin Compared to Competitors

Setas Eternal Living's **MyCo**ffin is a sustainable alternative to conventional burial products, designed using natural hemp herd, which is significantly more water-efficient than other materials like cotton, wool, or steel. This analysis compares the water usage of **MyCo**ffin with products from competitors such as Coeio, Ecoffins, Thacker Caskets, and Batesville Casket Company. While **MyCo**ffin uses a considerable amount of water in hemp cultivation, it remains one of the most water-efficient burial options available. However, the scope of this analysis is limited to the water required for the **growth and production** of the coffin in its final form. It does **not** account for the water used in other phases, such as harvesting, material extraction, or transporting raw and finished materials.

What This Analysis Does Not Measure:

- **Water for Harvesting Materials**: The water required for harvesting raw materials like hemp, cotton, or wool is excluded from the analysis.
- **Material Extraction**: The water usage involved in extracting materials such as iron ore for steel or processing natural fibers like cotton and wool is not factored in.
- **Manufacturing and Assembly**: The water consumed during the production and assembly processes of items like steel components, concrete vaults, or additional coffin hardware.
- **Shipping and Transportation**: This analysis excludes water use related to transportation and shipping, both for raw materials and finished coffins.
- **End-of-Life Processing**: Water used for maintaining burial sites or in the degradation of materials post-burial is also not included.

Detailed Water Usage Analysis

1. MyCoffin

Analysis: MyCoffin stands out as a highly water-efficient option, utilizing significantly less water than other coffins that rely on more water-intensive materials like cotton and wool. The local sourcing of hemp further minimizes indirect water usage.

- **Direct Water Usage**: **MyCo**ffin requires approximately 4,265.11 gallons of water to grow the 85 pounds of hemp herd used in each coffin. This figure includes all water needed for irrigation and cultivation. Additionally, 30 pounds or 3.6 gallons of water is added to the help substrate for the mycelium to grow
- **Indirect Water Usage**: Given that Setas Eternal Living sources hemp locally, the indirect water usage related to transportation and processing is minimal.
- **Total Water Usage**: **4,268.71 gallons**.

2. Coeio (Cotton Suit)

Analysis: Coeio body suits are the most water-intensive due to the substantial amount of cotton required. Cotton's high water demand during growth and additional processing needs contribute to Coeio's large water footprint.

- **Direct Water Usage**: Cotton production is highly water-intensive, requiring approximately 7,230 gallons to produce the cotton needed for one coffin.
- **Indirect Water Usage**: Additional water is required for processing, transportation, and energy use; however, it was not taken into account to keep the analysis similar in scope.
- **Total Water Usage**: **7,230 gallons**.

3. **Ecoffins (Wood Coffin)**

Analysis: Wool coffins are less water-intensive than cotton coffins but still require considerable water for production and processing. They offer a more water-efficient alternative to cotton-based coffins but are not as efficient as hemp-based options like **MyCo**ffin.

- **Direct Water Usage**: Wool production uses around 4,330 gallons of water for one coffin's worth of wool.
- **Indirect Water Usage**: Similar to cotton, additional water is required for processing, transportation, and energy use; however, it was not taken into account to keep the analysis similar in scope.
- **Total Water Usage**: **4,330 gallons**.

4. **Thacker Caskets (Steel Coffin w/o Concrete Vault)**

Analysis: Thacker's steel coffins, when lined with cotton, result in an extremely high water footprint. The majority of the water usage comes from the cotton lining, which significantly increases the overall water consumption, making it one of the least water-efficient options.

- **Direct Water Usage**: Steel production for one coffin requires approximately 2 gallons of water directly for cooling during processing.
  - **Fabric Lining (Cotton):**
    - If a significant portion of the casket interior is lined with cotton, the water usage for this could be substantial. For example:
      - **Cotton Usage:** If 10-15 pounds of cotton are used for the lining (a rough estimate based on typical interior lining needs), the water requirement would be:
        - **10 pounds of cotton:** 7,130 gallons of water × 10 pounds = **71,300 gal**
        - **15 pounds of cotton:** 7,130 gallons of water × 15 pounds = **106,950 gal**
  - **Foam Padding:** Minimal water usage in the production process, approximately 1-2 gallons.
  - **Gasket (Rubber):** Water usage for synthetic rubber production is approximately 10-15 gallons.
  - **Handles and Hardware:** Minimal water usage, largely in indirect processes, approximately 20-30 gallons.

- **Indirect Water Usage:** Additional water is required for the transportation and assembly of each coffin/casket and its components; however, it was not taken into account to keep the analysis similar in scope.
- **Total Water Usage: 71,335-106,980 gallons**.

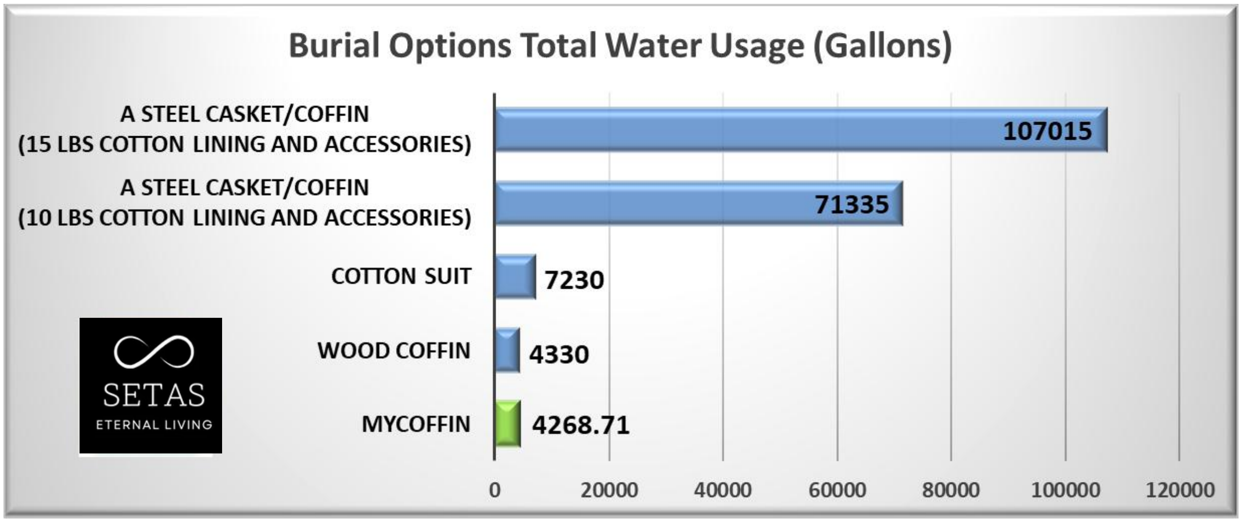
5. **Batesville Casket Company (Steel Coffin + Concrete Vault)**

   Analysis: Similar to Thacker, Batesville's concrete vaults with cotton linings have a very high-water footprint. The extensive water requirements for cotton production make these vaults less sustainable in terms of water usage.

- **Direct Water Usage**: Steel production for one coffin requires approximately 2 gallons of water directly for cooling during processing.
  - **Concrete Vault**: 30 Gallons
  - **Fabric Lining (Cotton):**
    - If a significant portion of the casket interior is lined with cotton, the water usage for this could be substantial. For example:
      - **Cotton Usage:** If 10-15 pounds of cotton are used for the lining (a rough estimate based on typical interior lining needs), the water requirement would be:
        - **10 pounds of cotton:** 7,130 gallons of water × 10 pounds = **71,300 gal**
        - **15 pounds of cotton:** 7,130 gallons of water × 15 pounds = **106,950 gal**
  - **Foam Padding:** Minimal water usage in the production process, approximately 1-2 gallons.
  - **Gasket (Rubber):** Water usage for synthetic rubber production is approximately 10-15 gallons.
  - **Handles and Hardware:** Minimal water usage, largely in indirect processes, approximately 20-30 gallons.
  - **Indirect Water Usage:** Additional water is required for the transportation and assembly each coffin/casket and its components; however, it was not taken into account to keep the analysis similar in scope.
- **Total Water Usage: 71,365-107,015 gallons**.

Summary of Findings

- **MyCoffin**: While **MyCo**ffin requires a significant amount of water due to the cultivation of hemp, it is still more efficient than the highly water-intensive cotton coffins and comparable to wood coffins.
- **Competitors**: Cotton coffins from Coeio have the highest water usage, making them less sustainable from a water usage perspective. Wood coffins from Ecoffins are slightly more efficient but still require substantial water. Steel and concrete options from Thacker and Batesville use far less water in direct processes, but when considering the full lifecycle, including additional items typically found in a steel coffin, the water usage has a substantial an impact.



Setas Eternal Living's **MyCo**ffin is the most water-efficient option among the products analyzed. In contrast, coffins and vaults that use cotton linings, such as those from Coeio, Thacker, and Batesville, are the least water-efficient, with Thacker and Batesville showing particularly high water usage due to the significant amount of cotton required. Ecoffins' wool coffins fall somewhere in between, offering a more sustainable alternative to cotton but still requiring more water than hemp-based coffins like **MyCo**ffin.