Moldering Privies

Back Country Sanitation

Jim Kozik - USFS
National Trails & Millennium Program

US Nat’l Trail System – 14,260 mi

US Nat’l Historic Trails – 21,916 mi

- Eastern Continental Divide Trl – 4417 mi
- Continental Divide Trl – 3200 mi
- Pacific Crest Trl – 2650 mi
- Florida Nat’l Scnc Trl – 1300 mi
- Colorado Trl – 500 mi
Appalachian Trail – Maine to GA
U.S. Forest Service – Region 8
Appalachian Trail – R8
Appalachian Trail - Georgia
Springer Mountain, GA
Issues

- Increased Popularity of Backpacking.
  - Use levels are surpassing 1970s.
- Active Seniors - Baby Boomer Retirements.
- Escaping Urban Congestion.
- Solitude - Personal Down Time.

User Impacts –
- Overuse
- Public Health Concerns
Waste Disposal Methods

- Batch Bin Systems
- Continuous Composting Systems
- Moldering Privy Systems
- Pit Toilet
Batch Bin Composting

- Significant Costs.
- Labor Intensive.
- Requires Weekly Manipulation.
- Requires Lots of Bulking Agent.
- Field Personnel, Raw Sewage exposure.
- Kills Pathogens by generating heat.
- Best with High Volume of Use.
Continuous Composting

- Most Expensive Disposal System.
- Commercially Manufactured.
- Suitable for Very High Use Sites.
- Reduced Labor Requirements.
Moldering Toilets

MOULDERING PRIVY

Siting notes:
Proper siting will optimize the functioning of the privy, provide for privacy, and encourage use.

The Moldering Privy is designed for the usual site to sit above ground, not in a box. The space within the box, however, should be slightly concave to contain the pile.
The ground around the privy should slope away from the crib and should drain water around the privy.

Construction notes:

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Grand total: 48
Pit Toilets
Moldering Privy - Introduction

- Experimental.
- Cheaper than other composting systems.
- Less Labor required.
- Less Risk of Infection.
- Less Pollution Problems.
- Serves Low to Moderate Volume of Users.
Moldering Privy

- Waste Processes –
  - Slow, or Cool Composting.
  - Temps below that of human body.
    - 4 °C ~ 37 °C
  - Below 4 °C - Dormancy - Composting stops.
Components

- Privy Shelter – Outhouse
- Crib
- Waste w/Bulking Agent
- Screening & Hardware Cloth
- Microorganisms & Invertebrates
- Red Wiggler Worms
Crib Construction

- Pyramidal – wider base than top
  - Better Stability
  - Increased Volume for Height
  - Increased Soil Contact Surface
  - Facilitates Banking Duff
  - Reduces Contact w/Compost
  - Prolonged Crib Life

**But** - Rectangular is easier to build.
Components
Operation

- Users add bulking agent with each use.
- Occasionally stir pile.
- Regular light watering.
- Separation is unnecessary.
- Begin w/Generous bulking layer.
- Fills more slowly than pits.
Operation - Stirring
Bulking Agents

- Less used than for Batch Bins.
  - Forest Duff
  - Wood Shavings
    - Hardwood
    - Softwood
  - Coarse Sawdust

> Avoid using –
  - Woodchips
  - Fine Sawdust
  - Hay or Straw
  - Peat Moss
  - Unrotted Leaves or Conifer Needles
Composting
Operations – cont.

- Composting occurs at Ambient Temps.
  - Monitoring is unnecessary.


- Venting is unnecessary.
  - Stacks are ineffective.
  - Methane is minimal.
  - Crib is permeable.
Operations – cont.

- Red Wiggler Worms
  - Speeds & Improves Composting.
  - Better Waste Consumption.
  - Improved Aeration of Pile.
  - Wider Spread of Microorganisms & Spores.

> Wiggler Concerns -
  - Over-Winter Survival.
  - Predation.
  - Exotic Species issues.  {GSMNP}
Compost Disposal

- Apply to Forest Floor.
  - Away from trail traffic.
  - Away from tenting areas.
  - Away from water sources.

- Shallow Burial.

- Packed Out.

- Incinerated in place.
Disposal
Issues

- Increasing Popularity
- Boomer Retirees
- Active Seniors
- Accessibility
- ADA Compliance
Design Solutions
Solutions – cont.
Design Solutions
Design Solutions
Costs

- **Maintenance** -
  - Done by Volunteer(s).
  - Frequency Depends on Use.

- **Composting** – $10,000 ~ 80,000

- **Batch Bin** - $1,000 ~ 5,000

- **Moldering** - $200 ~ 500
Acknowledgements

- Green Mountain Club
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- U.S. Forest Service – Southern Region
Contact Info

- Ann Christensen – Director, Recreation
  - 404.347.2479

- George Kulick – Director, Engineering
  - 404.347.7395

- David Culp – R8 Architect
  - 404.347.4593

- Jim Kozik – Transportation Engineer
  - 404.347.2470
??? QUESTIONS ???