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# Choices: Installing a Composting or a Vault Toilet

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Composting toilets usually are installed to eliminate the need for pumper truck visits and to provide a healthy, safe, environmentally sound recreational experience for National Forest System (NFS) patrons. Field experience with composting toilets has increased knowledge about the proper conditions for their use. This article summarizes the potential limitations that have been experienced in installing, operating, and maintaining composting toilets and also summarizes previously published material concerning the advantages and disadvantages of composting and vault toilets.

Frequent information requests to the San Dimas Technology and Development Center (SDTDC) have highlighted previously unrecognized limitations associated with the use of composting toilets. Issues of employee health and safety, proper maintenance, and climatic conditions required for proper operation of the digester have consistently generated questions.

Employee health and safety are of concern because staff must enter the toilet building's basement to access the digester for raking. Staff must open the digester weekly and rake raw feces to facilitate proper operation, requiring close contact with waste and potentially pathogenic organisms. Basements may house rodents and snakes, and access stairways are often steep, poorly lit, and sited in confined spaces.

As performing weekly digester maintenance demands a large amount of staff time, limited staff resources may be a major drawback. Additionally, its unpleasant nature may discourage staff from performing maintenance and raking as frequently as is required. As a result, composting toilet facilities require a substantial resource commitment.

Finally, composting toilets are not operationally robust; they operate well only under climatic conditions conducive to biodegradation of human wastes. To function properly, composting toilets must be located in moderate climates. Considerations for siting composting toilets merit particular attention because the optimal climatic range is fairly narrow. For more detailed information, see the publication *Composting Toilet Systems, Planning, Design, and Maintenance*, 1995, 9523 1803-SDTDC, San Dimas Technology and Development Center, USDA Forest Service, San Dimas, CA.

The following table summarizes information from *Guidelines for the Selection of a Toilet Facility*, April 1991, 9123 1204-SDTDC, San Dimas Technology and Development Center, USDA Forest Service, San Dimas, CA, and knowledge gained from installing, operating, and maintaining composting toilets.

## Vault and Composting Toilet Comparison

<b>Vault Toilets</b>	<b>Composting Toilets</b>
<i>Employee Health and Safety</i>	<i>Employee Health and Safety</i>
<ul style="list-style-type: none"> <li>• Contact with feces is limited or nonexistent</li> <li>• Confined space is not an issue</li> </ul>	<ul style="list-style-type: none"> <li>• Close contact with raw feces is required</li> <li>• Confined space and safety are issues because of basement location</li> </ul>
<b>Maintenance Requirements</b>	<b>Maintenance Requirements</b>
Periodic pumping based on intensity of use	Weekly raking and material addition
<b>Climatic Conditions</b>	<b>Climatic Conditions</b>
Impervious, except to extreme cold	Biodegradation processes are very sensitive; easily upset by climatic variation
<b>Patron Satisfaction</b>	<b>Patron Satisfaction</b>
Can be impaired by odor	Very good, if functioning properly
<b>Installation Costs</b>	<b>Installation Costs</b>
Generally less than composters	Generally more than vault because of basement construction and cost of digester
<b>Residuals Disposal</b>	<b>Residuals Disposal</b>
Generally not difficult but can be problematic because of local regulations	Generally not problematic, subject to local regulations
<b>Capacity</b>	<b>Capacity</b>
Restricted by frequency of pumper truck visits	Restricted because of limitation on biological process of degradation
<b>Use Limitations</b>	<b>Use Limitations</b>
Limited to locations accessible by pumper truck or boat	Can serve all locations if construction is accessible and weekly maintenance is provided