Carbon to nitrogen ratio
For organic material to break down, microbes need a good balance of carbon and nitrogen. A good Carbon/Nitrogen ratio for a compost pile is between 20/1 and 35/1, or roughly 30/1

Sources of nitrogen include:

Manure, urine, proteins, feathers, green material, legumes such as alfalfa

Sources of Carbon include:

(untreated) sawdust, straw, hay, bark mulch, coffee chaff, pine shavings, corn husks, paper, other cellulose waste, cardboard, cocoa husks, Yesterday's News kitty litter (recycled paper pellets), peat moss (not renewable), coconut fibre

A humanure system remains odourless if waste nitrogen can be kept covered with a carbon medium. Make your deposit into your carbon medium, and keep it covered with more carbon medium. On dumping a bucket onto your pile, cover the contents with more dry carbon medium, and a bulky material such as straw to trap oxygen.

Oxygen and Water

Sufficient water is provided by urine. In a wet environment like Nova Scotia it may be necessary to cover your pile with a tarp during heavy rains.

Oxygen fuels the high temperatures necessary for safe composting. Use bulky materials such as twigs, yard waste or wood chips to trap air between layers, or turn your pile occasionally.

Safe temperatures

Thermophilic composting occurs when composting material has access to enough oxygen. Thermophilic composting achieves hotter temperatures, killing more harmful pathogens and weed seeds. Anaerobic decomposition occurs when the compost does not have access to air. While anaerobic compost has an odour, aerobic compost does not, and the finished product has a pleasant, earthy smell. However, anaerobic composting sequesters more carbon, while a lot of carbon in aerobic composting is given off as CO_2

The destruction of human, animal, and plant pathogens in compost arises out of a combination of factors:

* Competition for food from compost microorganisms

* Inhibition, antagonism and antibiotics by compost microorganisms

* Consumption by compost organisms

* Biological heat generated by compost microorganisms

A long curing period (e.g., a year after the thermophilic stage) adds a safety net for pathogen destruction. Many human pathogens only have a limited period of viability in the soil, and the longer they are subjected to the microbiological competition of the compost pile, the more likely they will die a swift death.

Home Humanure

Build your own composting toilet

Why compost human waste?

In many tropical nations, deforestation coupled with heavy rain lead to severe erosion and nutrient runoff in the soil, a condition exacerbated by conventional monocropping and large scale agriculture

In conventional agriculture these effects are offset by applying synthetic nitrogen and phosphorous fertilizer. However nitrogen is obtained through a process that uses fuel oil, and rock phosphorous comes from fossilized guano, a non renewable and mined resource. Peak Phosphorous may occur as early as 2030. Wastewater treatment is also a process that requires large inputs of fossil fuel energy.

Many parts of the world suffer from water contaminated by cholera and e-coli. One major reason for infant death in the undeveloped world is from dehydration and diarrhoea caused by water contaminated by human waste.
Humanure composting could simultaneously solve the need for cheap sewage treatment, and of soil nutrient depletion. The nutrient requirement of our crops is matched exactly by that provided by our wastes. All it takes is a change in attitude.

This change might come when we no longer have access to the vast investments of energy and money required for conventional first world sewage systems. Can we use the science of composting and microbiology to see us into an uncertain future without the twin curse of soil crisis and water contamination?

Bylaws

It is not against the law in Halifax to build your own composting toilet. The only law pertaining to this practice states that a house must be built with a standard connection to sewage treatment as it exists or a septic tank or field.

Building a pile is easy

Make your deposit into a suitable receptacle or manage a compost pile inside and deposit directly onto the pile. Then, cover the deposit with a high-carbon substance (sawdust, straw, coffee chaff, cocoa hulls, wood chips, autumn leaves, shredded newspaper, or other).

As you build the pile, introduce large branches or straw to trap oxygen in your pile. A thermometer is useful to make sure your pile gets up to 40-80 degrees Celsius for at least 2 weeks, for maximum pathogen destruction. Large piles are easier to get hot, a box 4' by 4' will contain a pile large enough to provide enough material and insulation. Turn as necessary. Make sure your pile rests for a year before use on food crops.

Do:

Make sure the pile is at least 4 feet cubed on either side (critical mass)

Add kitchen waste to the pile in order to reach critical mass.

Use a compost thermometer

Fill your bin for a year. Then let it cure for a year before using. In this way with two bins you can have compost every year

Use any and all toilet resources, excepting those that contain plastic.

Keep the top of the pile flat and add fresh material to the centre of the pile. Rob Avis of Verge Permaculture uses straw to line the sides of his bins.

Read the Humanure Handbook by Joseph Jenkins! (www.weblife.org/humanure)

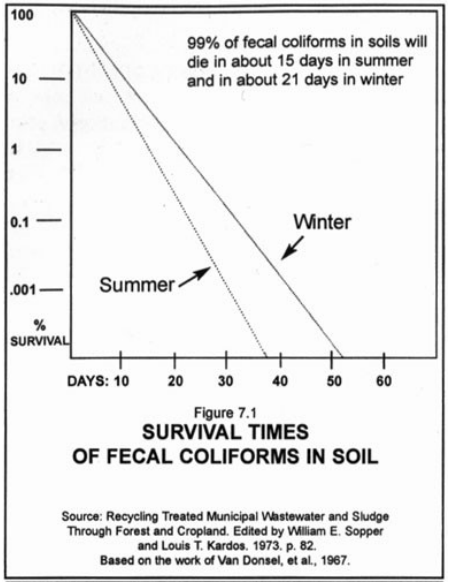

Figure 7.1
SURVIVAL TIMES OF FECAL COLIFORMS IN SOIL

Source: Recycling Treated Municipal Wastewater and Sludge Through Forest and Cropland. Edited by William E. Sopper and Louis T. Kardos. 1973. p. 82. Based on the work of Van Donsel, et al., 1967.

Although fecal coliforms can survive for several years under optimum conditions, a 99% reduction is likely within 25 days in warm climates (see Figure 7.1).

The viruses, bacteria, protozoa, and worms that can be passed in human excrement all have limited survival times outside of the human body.