

pathogens / hygiene

Ten reasons not to be worried about pathogens from compost toilets:

1. pathogens would have to be in the humans who use the toilet in the first place.
2. someone would have to have contact with the waste, which isn't possible inside the chamber.
3. if pathogens like the conditions inside the human body (as regards temperature, acidity / alkalinity, moisture content etc.), they certainly won't like it outside the body. Almost all human pathogens will be dead after a few hours outside the host.
4. all human pathogens will be dead within two months outside the human body, with the possible exception of two species of roundworm eggs.
5. those two roundworm species are tropical, and so to get them, the compost toilet would have to be used by someone who has been in the tropics, and was unlucky enough to pick up those particular roundworms
6. the roundworm would then have to survive and lay eggs, which would have to survive one or two years in a compost pile, then manage to get onto food in the garden, and still be there after harvesting, washing and cooking
7. if the pile reaches 55°C for three days (easy to achieve in the summer) then absolutely all pathogens will be killed.
8. if the waste is being composted, then the environment is much more hostile to pathogens than in a septic tank, yet septic tanks are accepted. Tests in the US found that compost from a Clivus Multrum compost loo contained 10,000 times less pathogenic material than sewage sludge from a septic tank. And yet farmers are still allowed to spread sewage sludge on their land. Would you rather eat food produced on land which has had compost from a compost loo, or sewage sludge. Well, you already are eating food from land which has had sewage sludge on it.
9. during aerobic decomposition, some micro-organisms actually produce antibiotics that kill pathogens.
10. the issue is acceptability rather than risk. 3,000 people a year are killed by cars in Britain, and around 30,000 either directly or indirectly by alcohol; and yet cars and alcohol are completely accepted in society. The risks from a compost toilet, if properly used, are infinitesimally small compared to the much greater risks that we come into contact with every day.

Having said all that, it is vital to deal with any waste water (urine, drain from chamber) properly, because there are some nasty waterborne diseases that can be spread via 'black' water. (see section on what to do with urine).

The only pathogenic material that can survive for more than two months outside the human body are the eggs of two species of roundworm. There is very little cause for concern though, because:

1. someone who uses your loo would have to have them in the first place (they are extremely rare in developed countries, and would only exist in the gut of people who had recently been travelling in the tropics)
2. after a year's use, and a year's decomposition, they will probably be dead anyway
3. if the pile got to 55°C, they will definitely be dead
4. you're not going to put the compost onto vegetables that come into contact with the soil
5. even if the eggs are there, survive, and get onto your vegetables, then surely you're going to either cook or wash them before eating them.

So, if these eggs were ever there in the first place, then it would be a minor miracle if they ever got into anyone else.

Flies can be a vector for pathogenic material; but - any flies that walk on you, your food, or in your kitchen have been walking on something gross in the not-too-distant past anyway. It's what flies do; they are part of nature, humans have always lived with them, and they probably help build people's immune systems. We shouldn't expose ourselves to obviously pathogenic situations, but equally we shouldn't try to hermetically seal ourselves into sterile bubbles either.

People often see compost toilets as a retrograde step back towards the unsanitary conditions before flush toilets were developed. Although the Romans had sophisticated flush toilets and sewer systems, it is true that through the dark ages and up to the twentieth century, unhygienic means of dealing with human waste caused smells, diseases (cholera, typhus, dysentery, thphoid fever) and death in most cities and towns. But the point is that the human waste wasn't composted, it was just thrown into the streets, into open sewers, and into watercourses.

Rivers through cities themselves became open sewers. Problems occurred because people came into direct contact with pathogens in faeces; flies were able to spread disease; but mainly because the waste came into contact with water. Water spread the pathogens much more effectively, and allowed disease into the drinking water supply. Also, carbon-rich material was not added, and you didn't end up with useful compost.

In the second half of the 19th Century in Britain, when sewers and WCs were starting to be introduced, death rates from diseases traceable to faeces actually increased, because it was a new technology and there were lots of teething problems, like leaks from sewers into drinking water.

Also, there was no black death in Asia, where faeces were traditionally not thrown into the street or taken away by water, but by ox-carts to spread onto agricultural fields. There weren't usually problems in rural areas where pit latrines were used either – it was only the combination of faeces and water that caused problems. Having said that, leachate from pit latrines can get into the water supply by seeping into groundwater and into wells / watercourses.

Compost toilets don't allow faeces to get into the water system, and don't allow contact by people or flies until it is no longer recognisable as of faecal origin, but is pathogen-free, useful compost.

And the alternatives are more risky if anything, as regards human health. We should be thankful that dumping of sewage sludge at sea is no longer allowed, as sewage then ended up on beaches, causing a direct health hazard if people came into contact with it.

The current system is not much better either; sewage treatment plants use large amounts of chlorine, which ends up in rivers, and is considered a cancer risk. Even McDonald's are phasing out chlorine-bleached french-fry bags because of the health risks associated with chlorine. And sewage sludge – pathogens, toxic chemicals, heavy metals and all, is still applied to agricultural land, and the leachate of course ends up in groundwater and watercourses.

It could get worse too; many sewage plants no longer work properly because industrial toxins kill the useful bacteria in the plant. There have been proposals in the US to use nuclear waste to sterilise sewage. Just how far down the wrong path can you go?