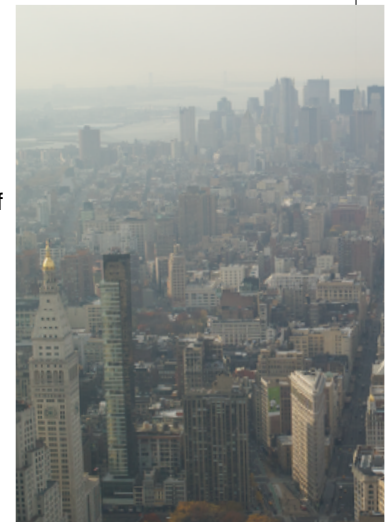


waste management

chapter 15

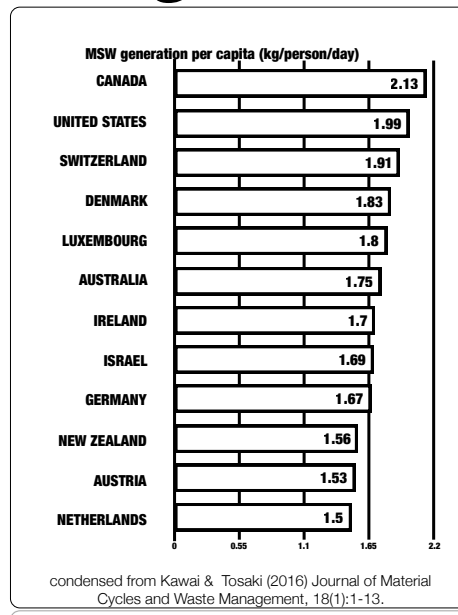
pollution

- **air pollution**
 - mostly from fossil fuels
 - carried by winds into rural areas
 - health effects
 - WHO - 2.4 million people die from effects of prolonged exposure to air pollution
- **acid deposition**
- **water pollution**
 - discharge from factories
 - sewage
 - fertilizers, pesticides
- **solid waste (trash)**
 - open dumps, landfills
- **noise, light pollution**



solid waste management

- **reduction in output?**
 - estimated that MSW could be reduced by 80%
 - reductions in packaging
 - Canada leads the world in trash per capita
- **dealing with trash**
 - open dumps
 - incinerators
 - sanitary landfills



landfills

- **sanitary landfills**
 - arranged in cells
 - liner - pipes - gravel - soil
 - trash layered on top
 - covered in soil
 - layered until full
 - when full, capped off
 - gas pipes



incinerators

- **lot of euphemisms**
 - waste-to-energy, gasification, pyrolysis
- **pros** -
 - useful for biohazard/medical
 - uses less space than landfills
 - can be used to produce steam/energy
- **cons** -
 - releases particulate into air
 - releases harmful gases
 - cost to build



waste diversion



- **zero waste initiatives**
 - aim for 100% diversion from landfills
 - a real solution must involve reducing consumption
 - extended producer responsibility
- **composting**
 - about 40% of canadian waste is actually compostable

waste diversion

- **recycling**
 - quality degradation
 - market for materials
 - not everything can be recycled
 - ethics? - much recycling happens in poorer countries
 - low wages
 - lack worker protections
 - lower environmental standards



waste diversion

- **four R's**
 - recycling alone is not a solution
- **REFUSE**
 - choose items that can be reused
- **REDUCE**
 - use less
- **REUSE**
 - reuse items if you can
- **RECYCLE**
 - recycle items if you can
 - sort properly



resource use / waste



port of portland headquarters
Living Machine® System

- **water use reduction**
 - water saving solutions
 - real-cost water prices
- **solutions for resource use**
 - end-of-pipe solutions
 - trap pollutants - clean up factories
 - use wetlands to treat sewage
 - Living Machine® System
 - front-of-pipe solutions
 - reduce production of pollutants
 - better thought-out solutions

discussion

- what are barriers to recycling that you experience?
- what items do you recycle? which ones do you not?
- what do you think about zero waste? do you think you could live a “zero waste” lifestyle?