



















Parameters Affecting k

- k represents how fast waste decomposes
- Waste Composition
 - paper (slow) vs. food waste (fast)
- Moisture/Climate
- Temperature
- pH
- Particle Size

Rate of CI	H ₄ Produc	ction	
 Can assume half-lives o kinetic expression for ra example, dividing orgar assuming half-lives for f 	of specific com ite of decompo nics in refuse a first order equ	ponents and a osition.* For is follows, and ation:	
	Min. half life	Max. half life	
rapidly decomposable (food, garden wastes)	1/2 ут.	1-1/2 yrs.	
moderately decomposable (paper, wood)	5 yrs.	25 yrs.	
refractory (plastics, rubber)	infinite	infinite	
First-order kinetic expression:			
$-\frac{dc}{dt} = kc$ where $c = dt$	amount decomposable matter left at time t		
k =	= constant and is a	function of half-life	
=	0.69 half-life		

















Relating Gas Production to Emissions

- Collection efficiency
- Oxidation in cover soil
- Gas treatment method







	Bioreactor Acceleration		
	Conventional Landfilling (years)	Bioreactor Landfilling (years)	
Time to get 50% of LFG generated	28.8	1.3	
Time to get 95 % of LFG generated	125	5.8	







Equipment for Compaction in Biocells

- Equipment for biocells - Dozer 800-1000 lb/yd3
- 475- 595 kg/m3 715-950 kg/m3
- Compactor 1200-1600

Densification Efforts

- Performance is premised on extensive water movement within biocell
- Avoid leachate breakout
- Shredding of wastes
- Bag openers

Costs of Shredding

- Capital cost approximately 400 K
- Electric power for shredder 6 d/wk; 600 kw; .06 \$/kwh equivalent to 142K per year
- Additional repairs & maintenance
 360 K/year