

Conservation Laws Three (or 5) Rs

09 March 2007
25th class meeting

(Happy Spring Break)

READINGS, Wed 07 March:
None
Monday 19 Mar:
to be posted



Lab 07/09 Mar:
No lab
(work on creativity projects!)
12-16 March: Spring Break

Environmental Biology (ECOL 206)
University of Arizona, spring 2007

Kevin Bonine, Ph.D.
Anna Tyler, Graduate TA

http://eebweb.arizona.edu/courses/Ecol206/206_Page2007.html

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Recycling Video 12:50

<http://www.tucsonaz.gov/esd/>



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<http://www.earth911.org/master.asp> (make every day earthday)

<http://www.earth911.org/master.asp?s=lib&a=Energy/Conservation/FlexYourPower/flexyourpower.html>
(energy conservation)

<http://www.earth911.org/master.asp?s=lib&a=energy/transport.asp>
(transportation efficiency)

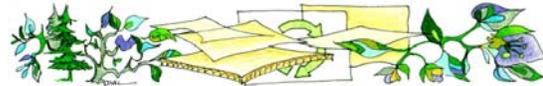
<http://www.earth911.org/master.asp?s=lib&a=energy/EnergyFacts.html>
(energy and recycling)

<http://arizona.earth911.org/usa/master.asp?s=ls&a=Recycle&cat=1&serviceid=>
(where to recycle)

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SOLID WASTE LANDFILLS THE 5R's

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Mobro Barge Incident



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The MOBRO Barge left Long Island City in March 1987, loaded with 3,186 tons of garbage from the metropolitan area. The barge, accompanied by the tugboat 'Break of Dawn,' was headed to Morehead City, North Carolina, where it was slated for use in an experiment which, if successful, would have turned the garbage into methane fuel.

En route to North Carolina, state officials discovered that 16 balls of the garbage contained hospital dressing gowns, syringes and 'diaper-like material, deeming the trash 'toxic.' Based on these findings, North Carolina refused to accept the garbage anchoring the MOBRO off local shores for 11 days. The 'Break of Dawn' lifted anchor on the twelfth day after North Carolina gave the barge what was dubbed a 'royal sendoff.'

The floating dump then headed to Louisiana, where it was refused after it sat offshore for three days. On April 24, Mexican officials sent their navy to the Yucatan Channel to prevent the 'garbage' from entering Mexican waters. Three days later, it was rejected in Belize, British Honduras. With nowhere to go, the MOBRO headed back to New York City, where Lowell Harrelson, the man who owned the garbage, felt sure he could reach an agreement with local officials for disposal of the trash.

What Harrelson encountered instead was the wrath and determination of Claire Shulman, who refused to let the garbage travel by truck through the streets of Queens. Harrison would later jokingly compare Shulman's determination to a 'Tew dozen Mexican navies.'

Queens' feisty first lady wasted no time seeking action by the courts to prohibit the MOBRO from anchoring off Queens so that its contents could be trucked across the borough to Islip, Long Island.

Shulman said she and her then counsel Nick Garaufis, the 'man around' that Friday afternoon went, 'looking for a judge to issue a restraining order.

'I didn't want the garbage in Queens, since I had no idea what was in it,' she said.

The pair found a judge — Supreme Court Justice Linakos (now retired), 'who was at home cleaning her closets,' Shulman said.

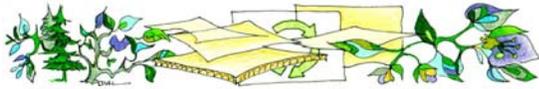
'She is my heroine,' Shulman continued, 'she issued a temporary restraining order which we served by hand that same day.' Queens Supreme Court Justice Angelo Grazi ruled in May that the garbage would have to remain at sea. The MOBRO anchored off Gravesend Bay, Brooklyn, where it would remain until its final disposition — months later.

By June 1987, the garbage had been refused by six states, three countries and Claire Shulman.



The U.S. makes up 5% of the world's population.

We produce 32% of the world's solid waste.



ISW vs. MSW

- Industrial Solid Waste makes up 97% of solid waste in the U.S.
- Includes solid waste from agriculture, mining, fuel production, sewage sludge, and manufacturing activities
- Equals 7.6 billion tons per year
- Municipal Solid Waste makes up 3% of solid waste in the U.S.
- Includes solid waste from homes and businesses
- Equals 116 million tons per year



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Hazardous Waste

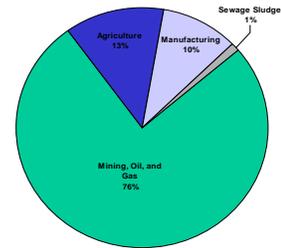
- The U.S. produces 75% of the world's hazardous waste, over 6 billion tons/year, over 1 billion of which is HHW
- Hazardous waste is legally defined and regulated by the EPA
- Does not include
 - HHW (Household Hazardous Waste)
 - eWaste
 - Hazardous waste from businesses that produce <220 lbs/mo
- 11 million people in the U.S. live within 4 miles of a National Priorities List hazardous waste site
- There are 9 NPL sites in Arizona



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Industrial Solid Waste

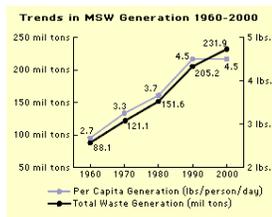
- Mostly byproducts of production
- 20,000 industrial waste generators produced 40 million tons of regulated hazardous waste



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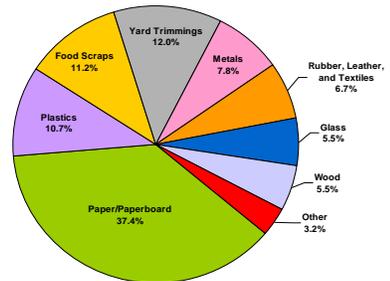
Municipal Solid Waste

Average U.S. MSW is 4.5 lbs/person/day
 Average Arizona MSW is 5.9 lbs/person/day
 Average U of A MSW is 0.7 lbs/person/day



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U.S. Trash Composition



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Out of Sight, Out of Mind

What if there were no trash cans?

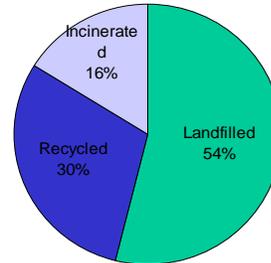
Arizonans produce approximately 41 lbs of trash per week

- Paper/Paperboard = 37.4%, or 15.3 lbs/week
- Plastics = 10.7%, or 4.4 lbs/week
- Food/Yard Waste/Wood = 28.7%, or 11.8 lbs/week
- Metals = 7.8%, or 3.2 lbs/week
- Rubber, Leather, Textiles, and Other = 9.9%, or 4.0 lbs/week
- Glass = 5.5%, or 2.3 lbs/week



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Where Does MSW Go?



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U.S. Landfills

- There are over 2300 landfills in the U.S.
- 1 out of every 5 Superfund sites are old landfills



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Fresh Kills

- 2200 acres (3.5 sq. miles)
- Can be seen by the naked eye from space
- Highest mound is as tall as the Washington Monument
- Closed in March 2001
- Opened briefly to accept 9/11 debris, now a memorial sight



<http://maps.google.com/maps?sourceid=navclient&q=fresh%20kills%20new%20york&ie=UTF-8&is=RNWE:RNWE:2004-45:RNWE:en&q=google+map&oe=UTF-8&um=1&as=N&ab=nl>

Fresh Kills, NY (Staten Island)

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Tucson Landfills

- 27 closed and open landfills exist in the Tucson area
- 23 of those landfills have been filled in the last 30 years
- None have been properly closed to current EPA standards
- To properly close three of the most pressing sites it will cost taxpayers \$11.3 million
- At least 4 of the landfills are known to contaminate groundwater
- After 2007 it will cost Tucson \$51 million to properly close and maintain landfills



Tucson Landfills



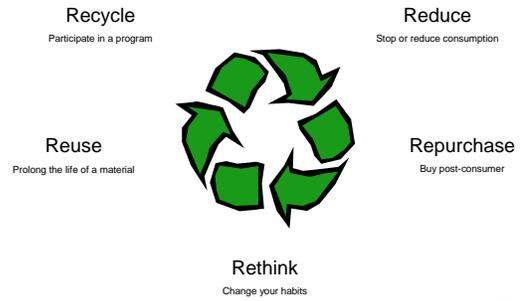
Los Reales Landfill

- Accepts approximately 550,000 tons per year
- Will last until 2016
- Each cell costs over \$6 million to create
- Remediation costs not yet known
- Where UA trash goes



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What Are The 5R's?



2nd Law of Thermodynamics

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Rethink

- Use the big calculator
- Global economic system
- Vote



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Reduce

- Stop buying so much junk!
- Buy durable, not disposable
- Purchase items that have little or no packaging
- Buy in bulk
- No current government mandated waste reduction
- EPA estimates that over 55 million tons of MSW was source-reduced in the U.S. in 2000



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Reuse

- Find another use for something you would normally throw away
- Donate usable items
- Use refillable containers
- 5% of MSW is actually reusable
- No government mandated reuse



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Recycle

- Participate in the UofA and City programs now
- Participate in recycling programs at work and at home in the future
- Encourage others to recycle
- Start a recycling program
- Compost



U.S. Recycling

- The national recycling rate is about 30%
- National laws are not in place requiring the public to recycle
- Presidential mandates require that Federal agencies recycle waste paper
- RCRA (1987) and the Universal Waste Rule (1995) require that industry properly disposes of hazardous waste and take at least some action to recycle
- Arizona Statute 41-2661 states that all state agencies must recycle at least 50% of waste paper



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Tucson Recycling

- With the new single-stream Tucson Recycles Blue Barrel Program, Tucson recycling rate is currently about 22%, and accepts 14 different types of materials
- With the old source-separated curbside program the recycling rate was 9% and only 5 different types of materials were accepted



http://tucsonrecycles.org/Waste_Education/waste_education.html#videos

[Recycling Dos and Don'ts 7:23](#)

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Repurchase

- Buy back what you recycle
- Watch your packaging
- Recycled vs. Post-consumer



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<http://www.earth911.org/master.asp> [\(make every day earthday\)](#)

<http://www.earth911.org/master.asp?s=lib&a=Energy/Conservation/FlexYourPower/flexyourpower.html>
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[\(transportation efficiency\)](#)

<http://www.earth911.org/master.asp?s=lib&a=energy/EnergyFacts.html>
[\(energy and recycling\)](#)

<http://arizona.earth911.org/usa/master.asp?s=ls&a=Recycle&cat=1&serviceid=>
[\(where to recycle\)](#)

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