

# **Producer Responsibility, the Plastic Industry and Marine Debris, What Can Be Done?**

**Richard Anthony**

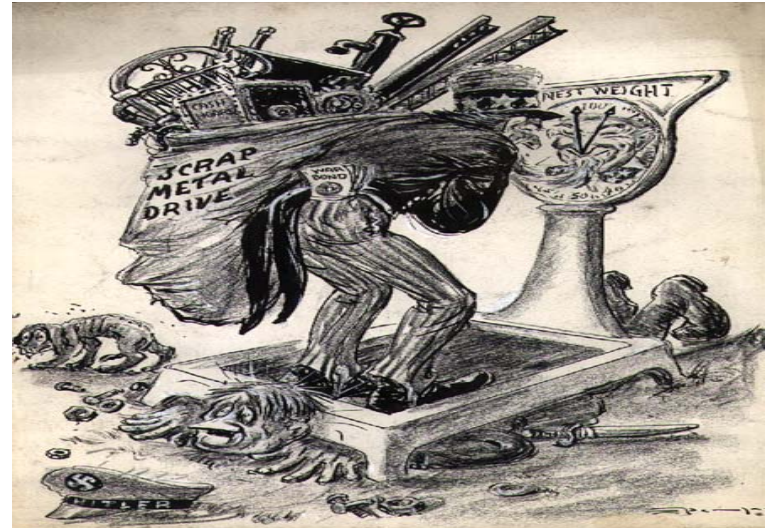
**Richard Anthony Associates**

**Marine Debris in the Pacific**

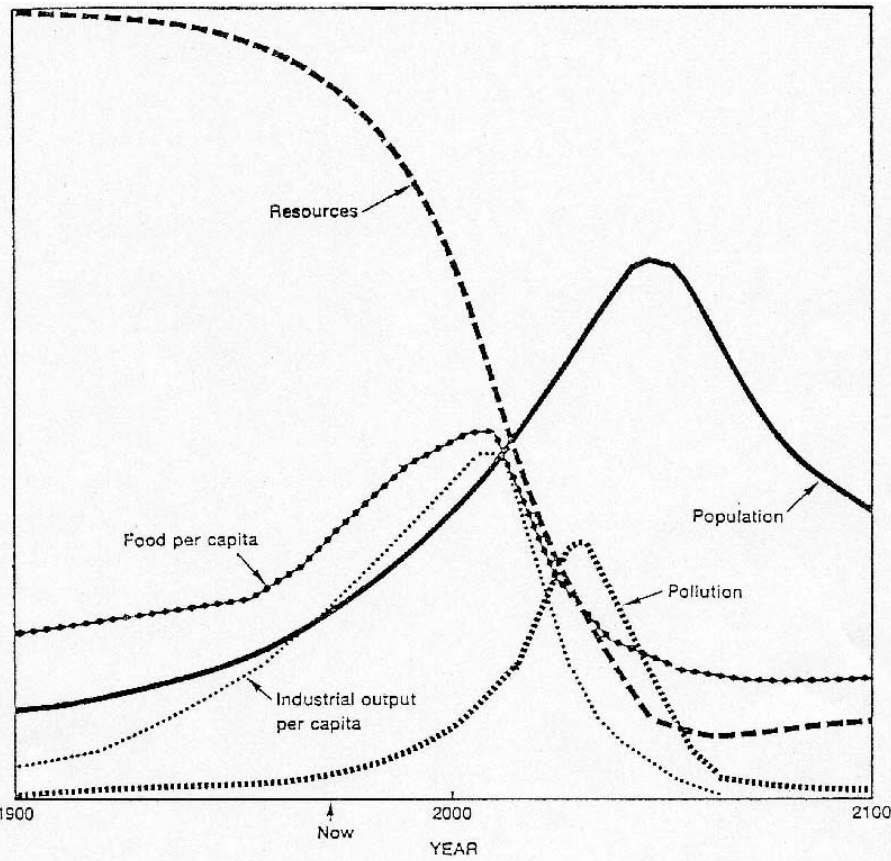
**University of Hawaii, Hilo**

**November 2007**

# Neither the Bible nor the Constitution give anyone the Right to Pollute or Waste



# Reuse, Recycling, & Composting: Reduce Resource Use & Greenhouse Gas Production



**Figure 10-2** World model standard run.  
 The "standard" world model run assumes no major change in the physical, economic, or social relationships that have historically governed the development of the world system. All variables plotted here follow historical values from 1900 to 1970. Food, industrial output, and population grow exponentially until the rapidly diminishing resource base forces a slowdown in industrial growth. Because of natural delays in the system, both population and pollution continue to increase for some time after the peak of industrialization. Population growth is finally halted by a rise in the death rate due to decreased food and medical services.  
 The horizontal scale in Figures 10-2 to 10-4 shows time in years from 1900 to 2100. With the computer the progress over time of five quantities has been plotted:

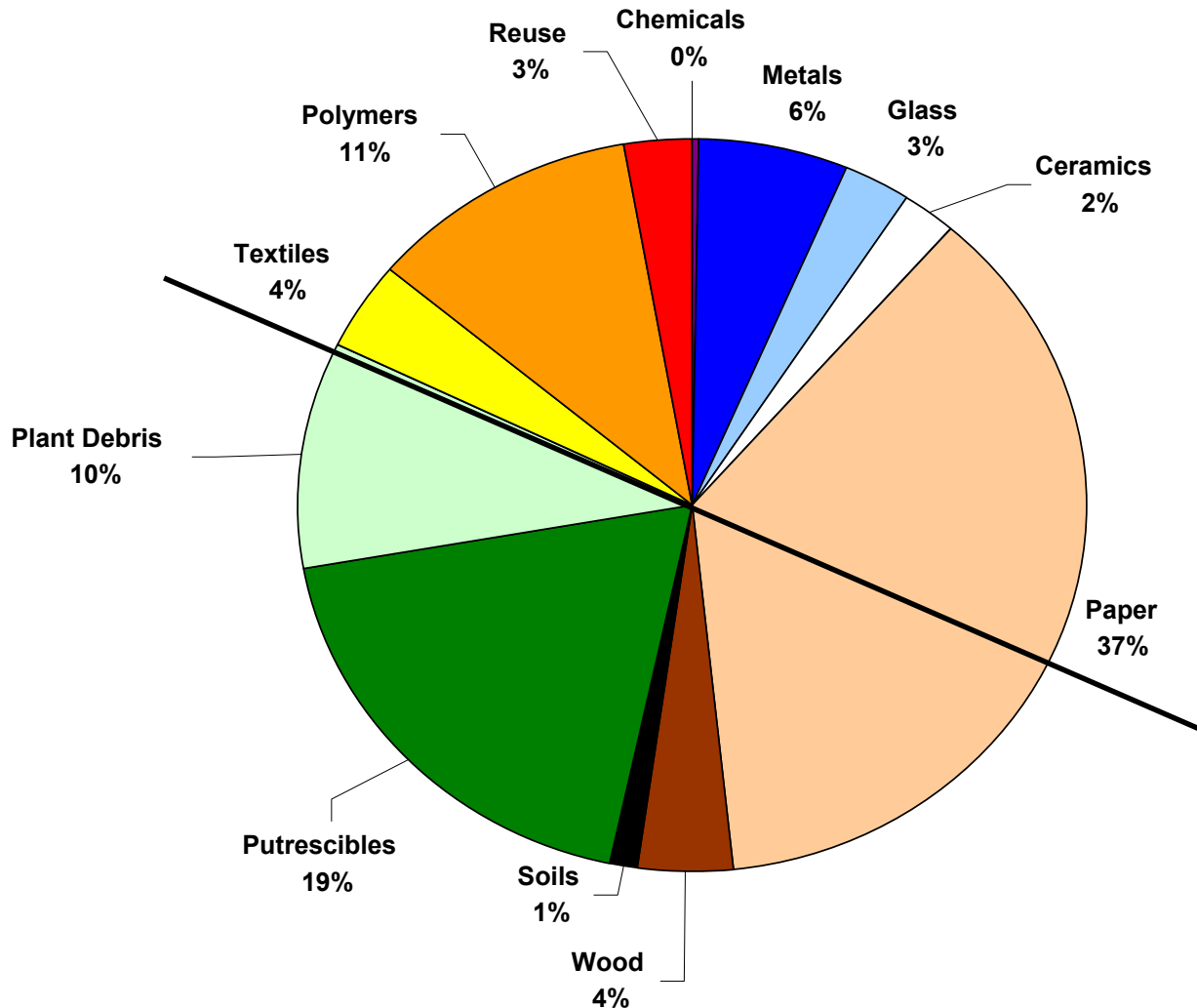
- population (total number of persons)
- ..... industrial output per capita (dollar equivalent/person/year)
- food per capita (kilogram-grain equivalent/person/year)
- ..... pollution (multiple of 1970 level)
- nonrenewable resources (fraction of 1900 reserves remaining)

	Aluminum	Steel	Paper	Glass
Energy Use	90-97%	47-74%	23-74%	4-32%
Air Pollution	95%	85%	74%	20%
Water Pollution	97%	76%	35%	
Mining Wastes		97%		80%
Water Use		40%	58%	50%

[1] R. Letcher and M. Shiel, "Source separation and Citizen Recycling", in William Robinson, ed., *The Solid Waste Handbook*, New York, 1986.

# Resources can be Sorted into Market Categories

*Note: Half of the Pie is Organic Material Suitable for Composting*



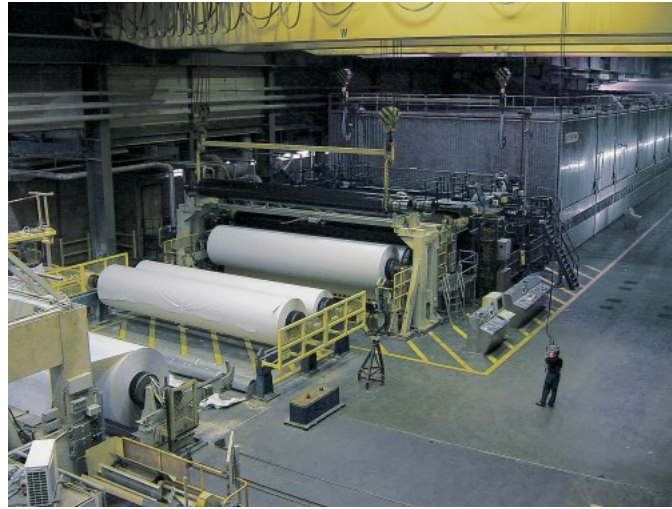
# These Materials Have a Value

Market Categories	%	Tons/Year	\$/ton	\$
1.Reuse	2.0	72,000	550	39,600,000
2.Paper	22.0	792,000	20	15,840,000
3.Plant Debris	5.5	198,000	7	1,386,000
4.Putrescibles	17.0	612,000	7	4,284,000
5.Wood	4.0	144,000	8	1,152,000
6.Ceramics	13.0	468,000	4	1,872,000
7.Soils	10.0	360,000	7	2,520,000
8.Metals	4.0	144,000	40	5,760,000
9.Glass	2.0	72,000	10	720,000
10.Polymers	8.0	288,000	100	28,800,000
11.Textiles	2.0	72,000	20	1,440,000
12.Chemicals	0.5	18,000	15	270,000
No market (diapers, treated wood, mistakes)	10.0	360,000		0
<b>TOTAL PER YEAR</b>	<b>100</b>	<b>3,600,000</b>		<b>\$103,644,000</b>

# On a Global Scale, Discarded Resources are the Primary Feedstock for Manufacturing Products and Packages



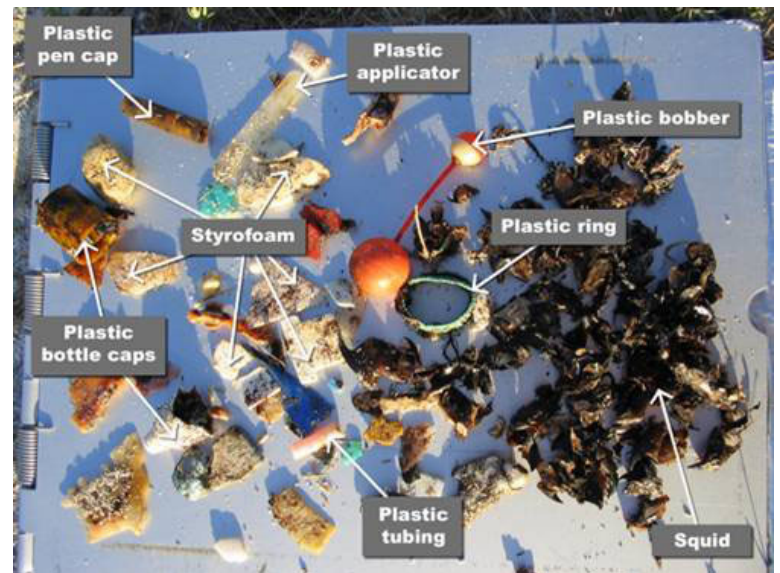
# There are Established Markets for Metal, Paper, Glass and Textiles



# Food Production and Soil Conditions are Driving Organic Materials Markets



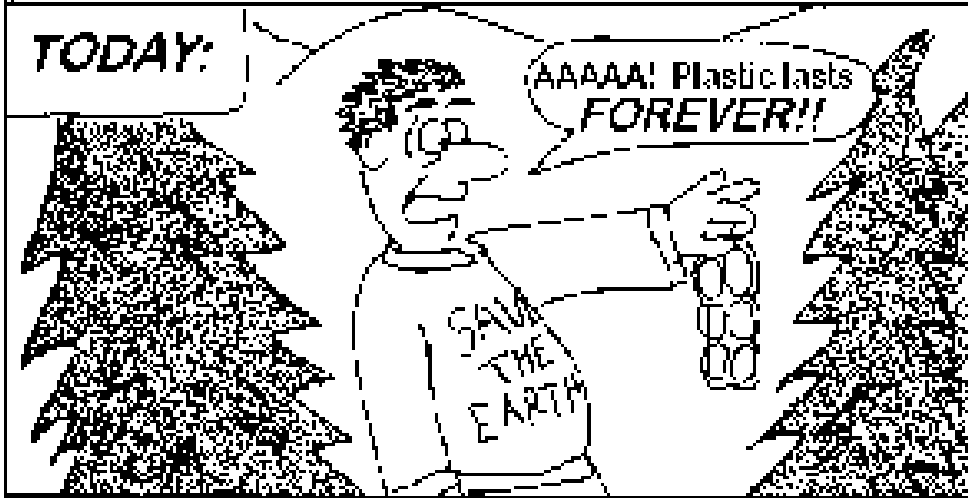
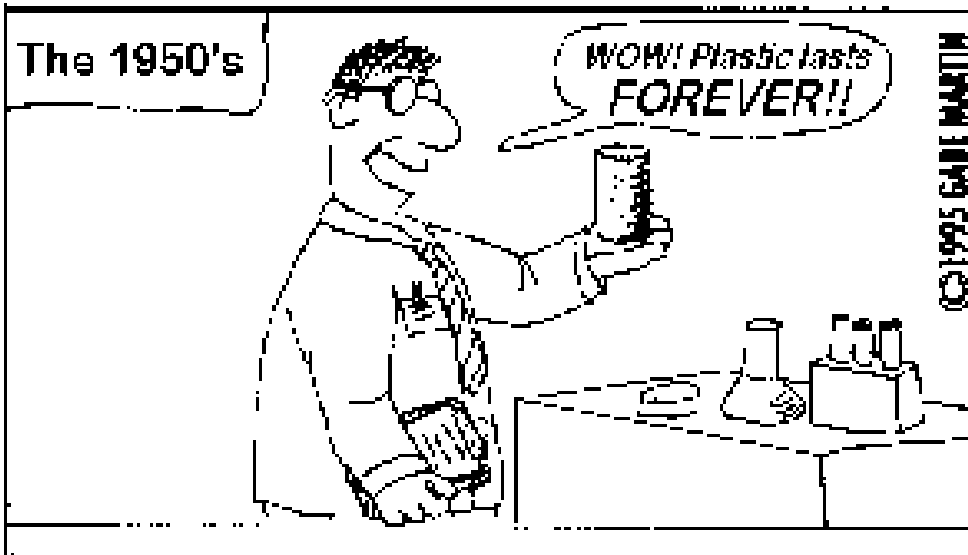
# Plastic is Increasingly taking the Place of other Materials for Durable Goods and Packaging



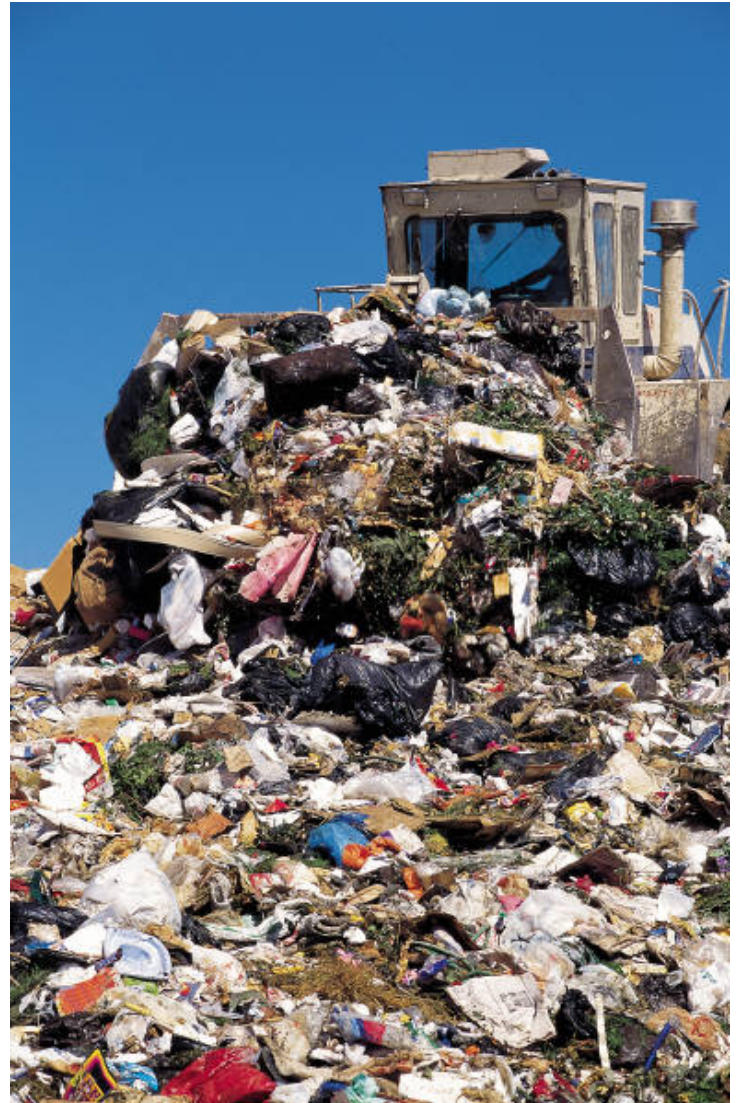
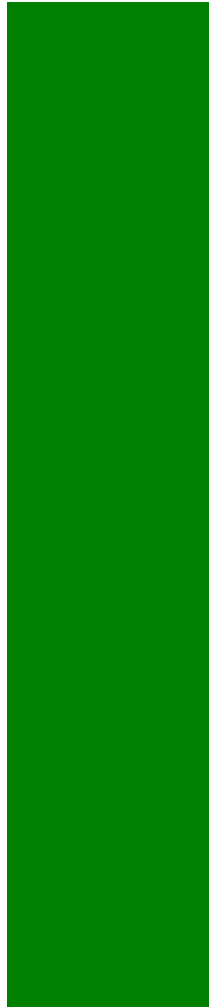
# Even without Industry Leadership, the Value of this Resource has Encouraged an Informal Collection System



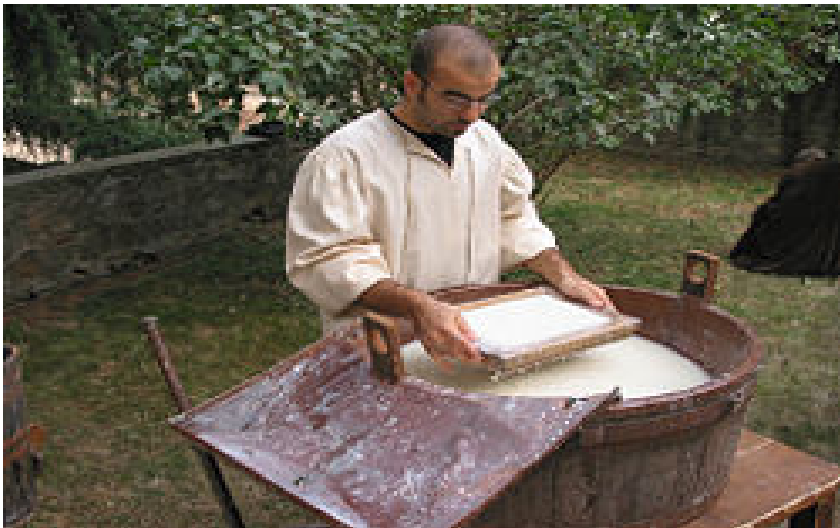
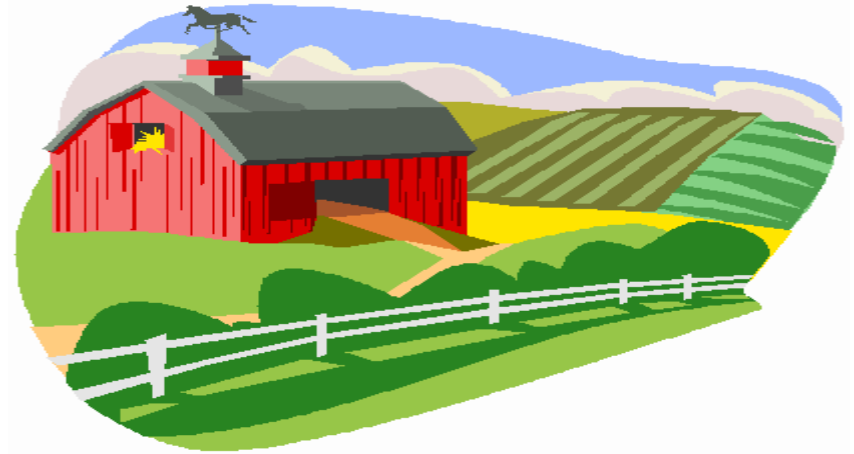
# But The Fact is that Recycling is Rarely Included as a Priority in the Design of Packages and Products



# And in Increasing Amounts, Plastic Materials End Up in Landfill, Incinerators, and the Environment, if not by Design, then as an Unintended Consequence



**Before WW II all Discards, in most of the world, was either Fed to Animals, Composted or Recycled. We Managed our Resources out of Necessity.**



# Today Most Plastic is Disposed of in Publicly Funded Incinerators, Landfills and the Environment



# This Unintended Consequence has turned into a Global Life Threatening Health Crisis



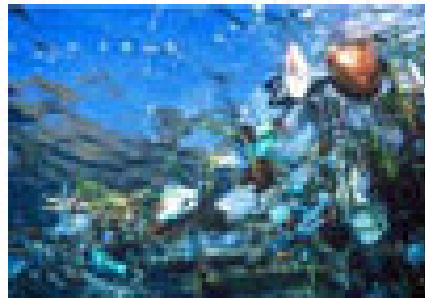
# The Plastic Industry Must Develop a Closed Loop Recovery System for Products and Packages and Include Recovery in the Product Design.



**By Adding Value to the Package and Product and Creating the Closed Circle Economy the Industry can take Responsibility for Managing their Resources, Conserve what is a non Renewable Resource and Protect their Brand.**



# Overcome the Throwaway Mentality by Adding Value to the Material and Offering Convenient and Available Recovery Programs



# Product and Packaging must be Safe, Sustainable and Recyclable

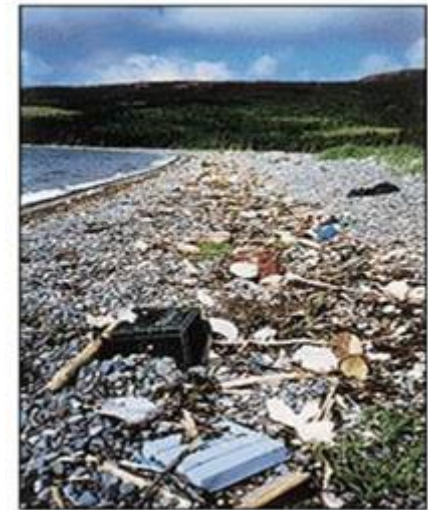
## Precautionary Principle



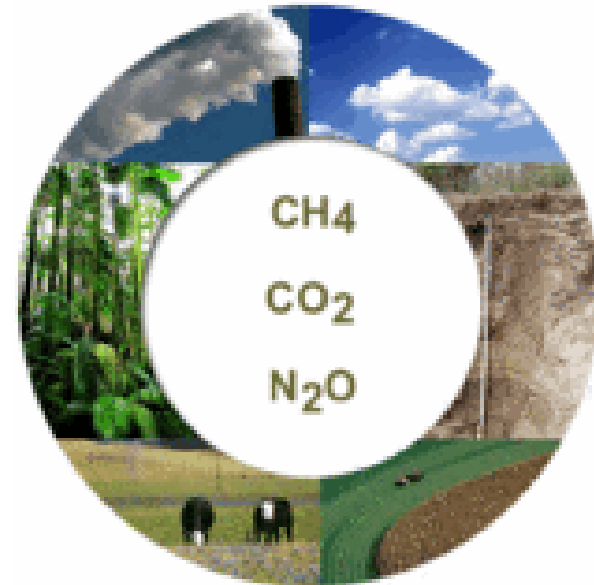
## Sustainability



## Producer Responsibility

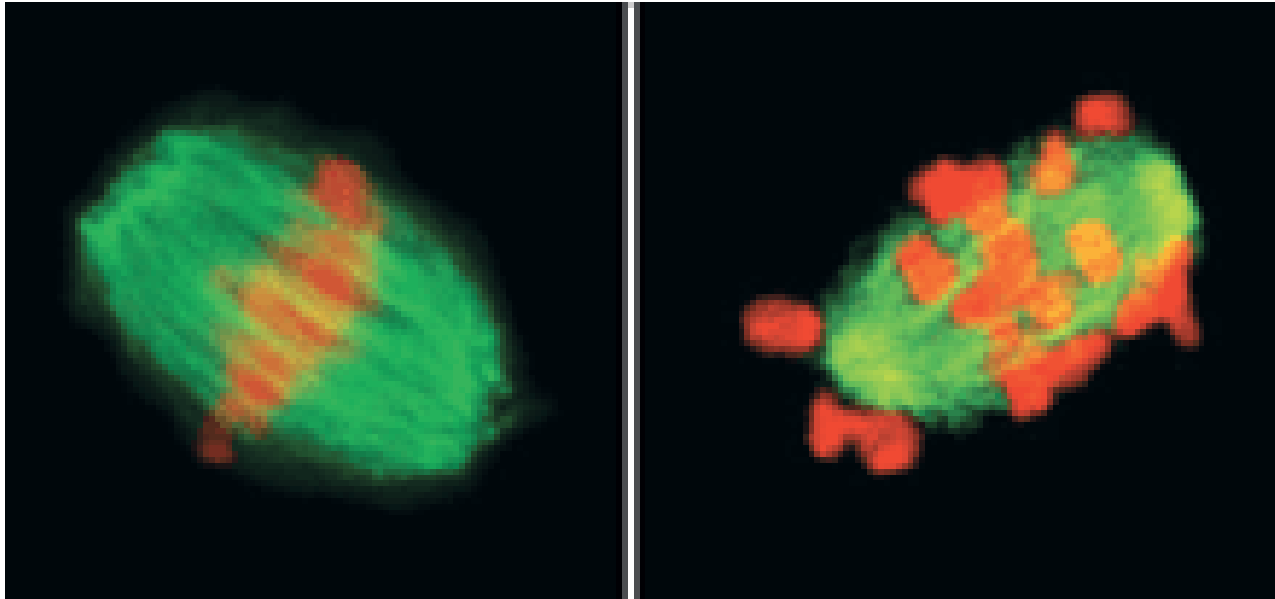


# Make Products and Packages Safely (Clean Production) so as to not Harm Employees, Customers and the Environment (Precautionary Principle)



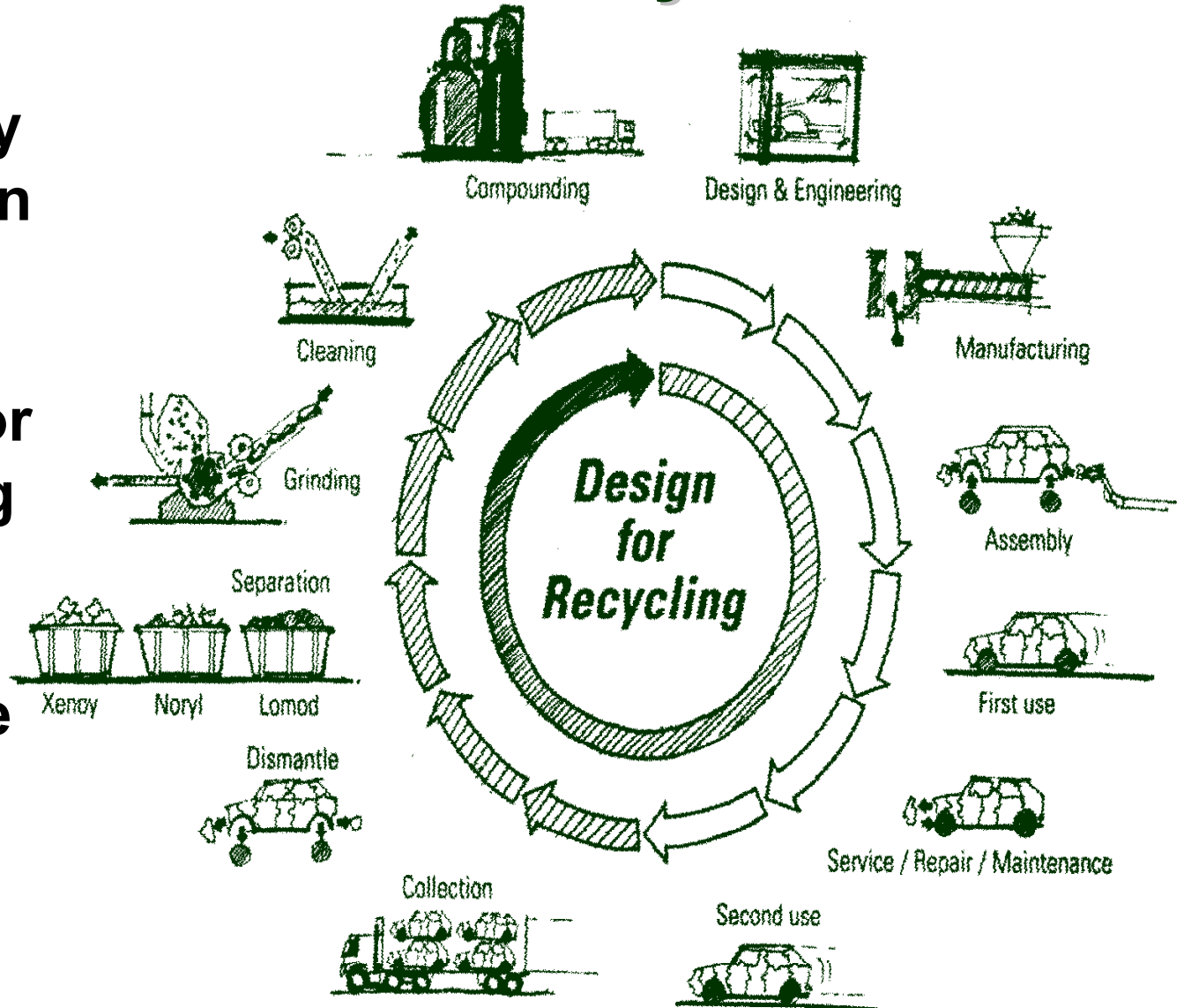
**Products must be tested as a precautionary principal for human impacts before allowed to be distributed, for example;**

- **Bisphenol-A** from drinking water bottles produced *aneuploidy*. Exposure levels as low as 20 ng/g body wt. (ppb) for one week produced *aneuploidy*.
- Aneuploidy is an important cause of birth defects in humans, including Down's syndrome, mental retardation and miscarriages



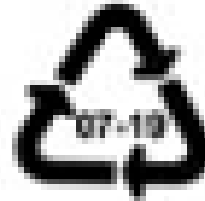
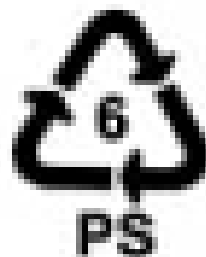
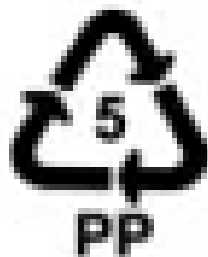
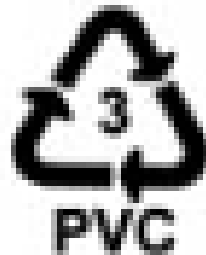
# UP-Stream: Sustainability

The industry must design packages and products for dismantling and recycling and include post consumer content



**Plastic Resin Types Must be Labeled on the Product or Package and There Must be a Recovery Market provided by the Manufacturer (post consumer content)**

**Polymer  
ID Codes**





**The manufacturing systems must be clean without residual runoff.**



# If the Industry Takes the Lead The Workers will Follow

## The World of Yesterday



LANDFILL  
CIRCA 1999

### **LANDFILL**

**CIRCA 1999**

A hole in the ground where valuable resources were needlessly buried.

This practice was ended in the early 2000's with the introduction of **ZERO WASTE.**

# The Way of the Future is Zero Waste

One of these things is not like the others...



...one of these things just doesn't belong.

# It is Time for Citizen Action

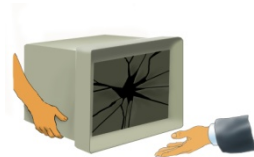


Changing the Rules

Jobs from Discards



Resource Recovery Centers



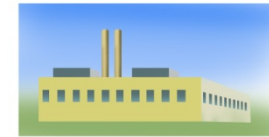
Producer Responsibility



Empowered Consumer



Distribution

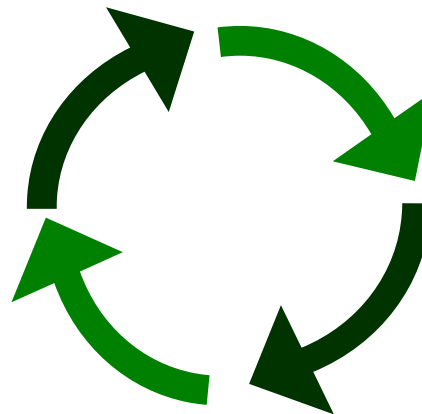


Clean Production

Design for the Environment



Shifting Subsidies



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[www.ecocycle/zerowaste/zwsystem](http://www.ecocycle/zerowaste/zwsystem)

# Zero Waste - How to Make It Happen

- Technical Assistance, Training and Funding to Develop Infrastructure
- Focus on Resource Management
- Partnerships with Stakeholders
- Standards and Policies to Support ZW
- ZW Public Awareness
- State and Federal Legislation

# Local Government Incentives

- Restructure Marketplace
- Revise To Encourage Waste Prevention, More Reuse, Recycling & Composting:
  - RFPs & Contracts, Rates, Ordinances, Land Use Permits, Facility Permits, General Plans, Zoning, Policies, & Definitions
- Tax Bads, Not Goods

# Is Zero Waste for You?

- Enlist Reuse, Recycling, Composting Industry, Local Governments & Environmental Leaders To Pursue
- Work Collaboratively With Manufacturers And Retail-find Your Friends And Develop New Models
- **IF NOT ZERO WASTE, HOW MUCH WASTE ARE YOU FOR?**

# **zerowastesandiego.org**

**Landfilling is a long-term liability, produces dangerous greenhouse gases, and wastes taxpayer dollars.**

**The following programs and policies offer economic sustainability, improved quality of life for residents, and a healthier, cleaner environment.**

- Pass the required recycling ordinance to allow recycling for all residents and businesses
- Transform the Landfill into a Resource Recovery Park
- Phase out compostable materials from the landfill
- C&D Ordinance
- Implement a public education program to maximize recovery of revenue-generating recyclables

**The most logical way to extend the life of the Landfill is to convert as many discarded resources as possible into revenue.**

# Richard V. Anthony

GrassRoots Recycling Network

([www.grrn.org](http://www.grrn.org))

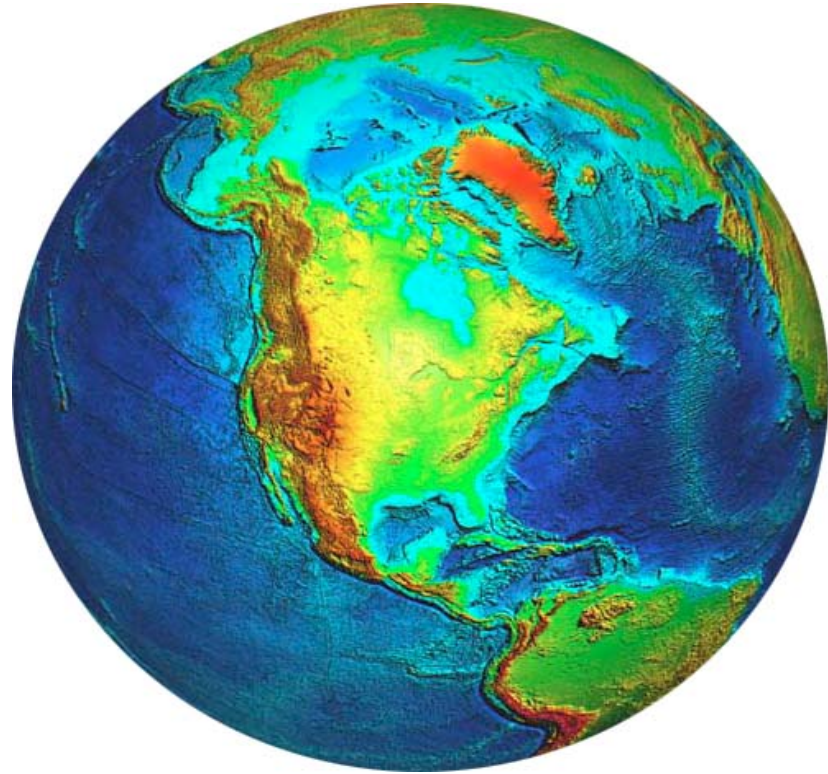
[ricanthony@aol.com](mailto:ricanthony@aol.com)

[www.richardanthonyassociates.com](http://www.richardanthonyassociates.com)

and

[www.grrn.org/zerowaste/business/](http://www.grrn.org/zerowaste/business/)

# Our Resources Are Not Infinite



*Richard Anthony Associates*