



# What is it?

**Dr. Sherri “Sam” Mason**  
**State University of New York at Fredonia**  
**Chemistry & Environmental Sciences**

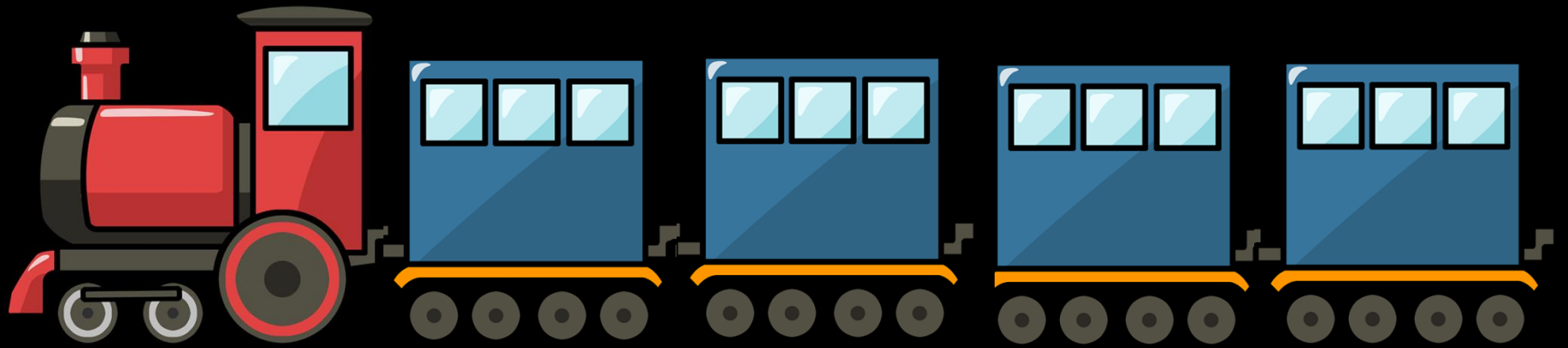
*Visual courtesy of **Plastics: A Toxic Love Story** by Susan Freinkel*



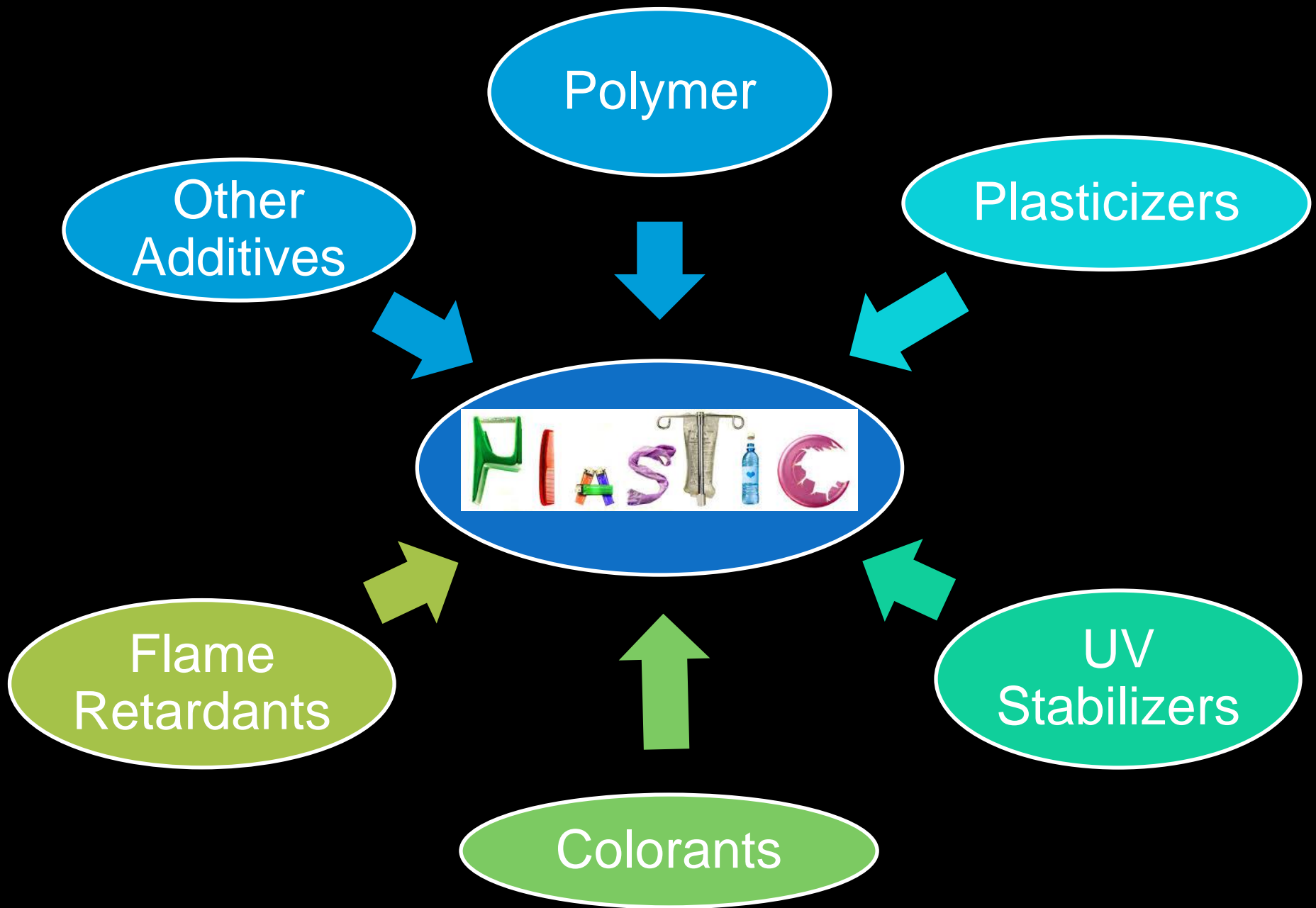
## ❖ Birth

- Celluloid – 1862 (1870)
  - first semi-synthetic plastic
- Bakelite – December 7, 1909
  - first U.S. patent for a fully synthetic plastic

## ❖ Modeled off of Natural **Polymers**









**PETE**



**HDPE**



**V**



**LDPE**



**PP**



**PS**

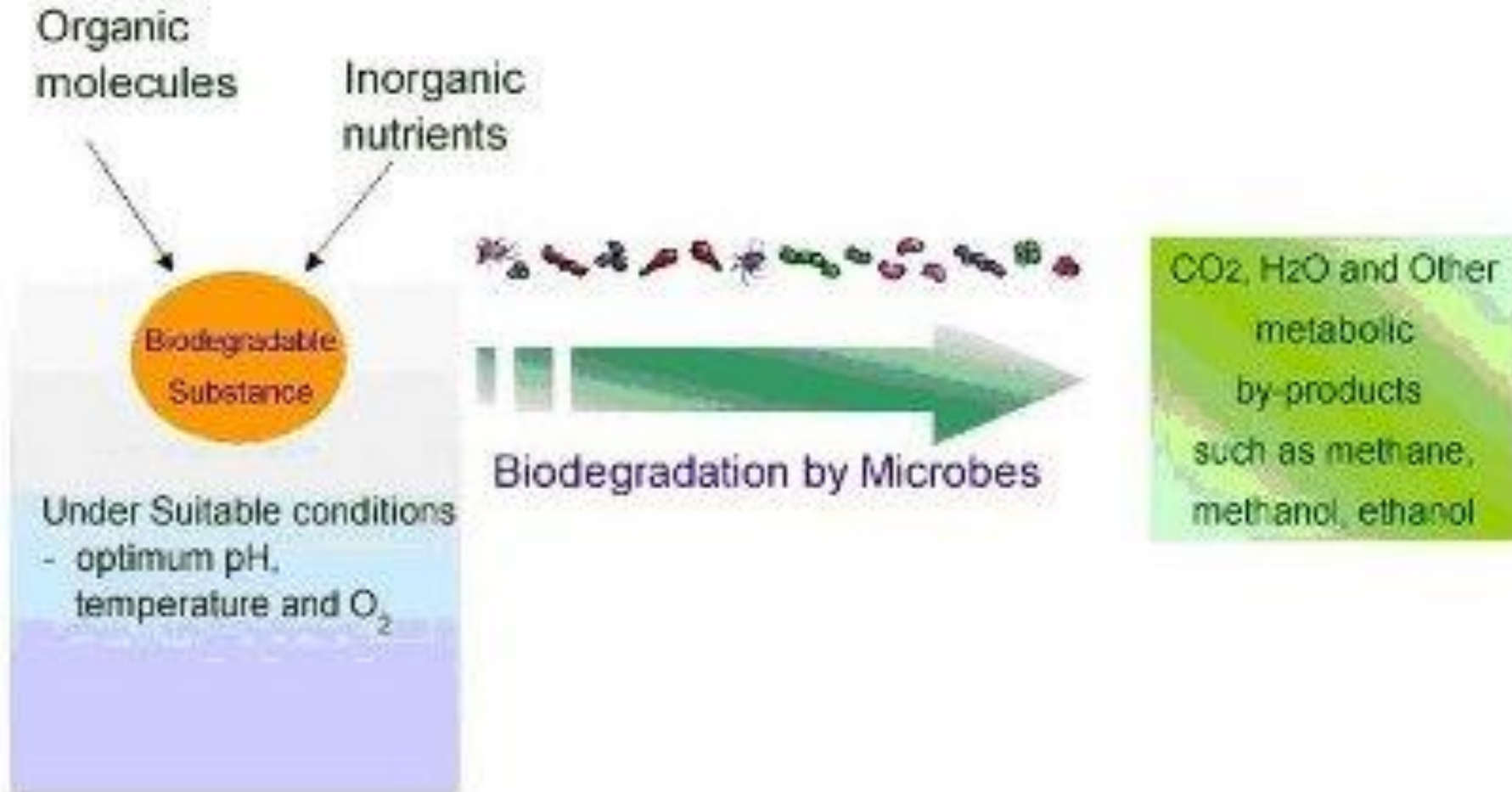


**OTHER**



- ❖ NOT a very recycle-able material
- ❖ <10% world-wide is recycled
- ❖ Doesn't **Biodegrade**

# Biodegrade



# HOW LONG UNTIL IT'S GONE?

Estimated decomposition rates of common marine debris items



Estimated individual item timelines depend on product composition and environmental conditions.

Source: NOAA (National Oceanic and Atmospheric Administration), US / Woods Hole Sea Grant, US  
Graphics: Oliver Lohé / Museum für Gestaltung Zurich, ZHdK



100% BIODEGRADABLE  
NATURAL SPRING WATER



**BIO GREENWARE**  
natural product association

# Bioplastics in Home Composting (77° F)

Plastic Bag

After 8 Weeks

After 25 Weeks

Novamont  
"Mater-Bi"



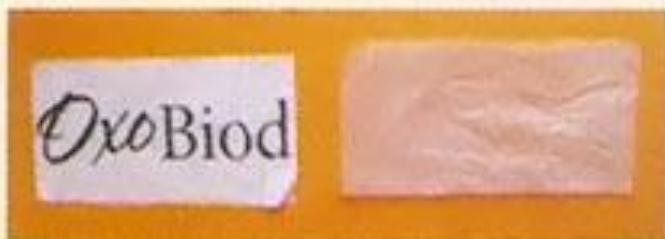
Heritage "BioTuf"



Indaco  
Manufacturing  
"Bag to Nature"



Oxo-Biodegradable  
(two samples)





**BPI** ®

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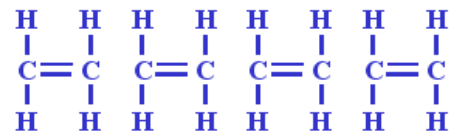
# COMPOSTABLE

IN INDUSTRIAL FACILITIES

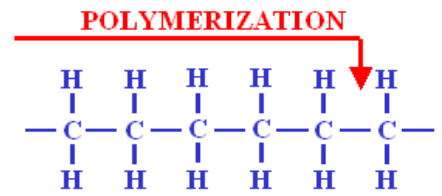
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Check locally, as these do not exist in many communities. **Not suitable for backyard composting.** CERT # SAMPLE





ETHYLENE



POLYETHYLENE

## ❖ Birth

- Celluloid – 1862 (1870)
  - first semi-synthetic plastic
- Bakelite – December 7, 1909
  - first U.S. patent for a synthetic plastic



## ❖ World War II



**1955**  
**LIFE**  
**Magazine**  
**“Throwaway**  
**Living”**



**Throwaway Living**

DISPOSABLE ITEMS CUT DOWN HOUSEHOLD CHORES

**DISPOSABLE ITEMS CUT DOWN HOUSEHOLD CHORES**

# World plastics production grows

1950 1976 1989 2002 2009 2010 2011 2012

1,7

47

99

204

250

270

280

2012

288

Mtonne

300

250

200

150

100

50

year

1950

1960

1970

1980

1990

2000

2010

2020

WORLD  
PLASTICS  
PRODUCTION

EUROPEAN  
PLASTICS  
PRODUCTION

## Where does it go?

- ~50% landfill
- <10% recycled
- “unaccounted for”

**Source:**

**PlasticsEurope,  
Plastics – The Facts 2013**