



# Degradable Additives: A Threat to Plastics Recycling

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NC DNR Presentation

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# Clear Path Recycling

- Clear Path Recycling (CPR) was formed in 2009 as a joint venture between Shaw Industries and DAK Americas.
- CPR is an LLC operating independently to provide post-consumer PET recycled feedstocks (rPET).
- CPR began production in August 2010 and has been operating continuously since this time.
- Since CPR began operations in mid-2010, more than 2.5 billion bottles have been reclaimed (that could have gone to landfills).



# CPR's Impacts

- Direct capital investment in CPR exceeds \$35M.
- Over 120 direct manufacturing positions
- CPR utilizes more than 45 truckloads of raw materials each week.
- CPR Logistics involves an additional 5 support positions via a local freight mover.
- By reclaiming the PET and byproducts from the baled bottles, over 80% of the landfill impact is eliminated.
- CPR purchases a significant amount of the bottles it reclaims from North Carolina
- In 2011, more than 20% of the bottles came from NC.



# CPR Markets Served

- **Polyester:**
  - Fiber manufacture
    - Clear
    - Green
  - Strapping
  - Sheet and film
  - Recycled content resins
- **Byproducts**
  - Non-PET bales
  - Olefins recycled flake (caps, etc.)
  - Metal recycled streams (wire, Aluminum, etc.)



# Degradable Additives:

- **Oxo-degradable additives:**
  - According to the oxo-biodegradable plastics association: “degradation is possible by adding a chemical substance that decreases the material’s molecular weight over a given time period”.
- **Photo-degradable additives:**
  - these are intended to enhance the breakdown of the polymer molecule into smaller pieces of plastic.
- **Bio-degradable additives:**
  - these additives are intended to allow enzymes or other microscopic environmental conditions to break down the polymer molecules into smaller pieces of plastic.



# Impacts:

- Degradable additives aim to allow the plastic article to break down into smaller pieces to reduce the impact of plastics disposal.
- Degradable additives state that they require specific conditions to allow the degradation to take place – if the conditions are not present, the material will not degrade.
- As a recycling operation, our goal at CPR is to eliminate as many sources of degradation as possible as we recycle the plastic – the presence of degradable additives works against us.



# Recycling Impacts:

- Degradable additives, when present in the plastic stream, can and will be present in the plastic recycling feedstocks and products.
- Degradable additive manufacturers have not completed any studies that can demonstrate that the presence of these additive will not negatively impact the recyclers and/or the downstream uses of the products that contain the recycled plastics.
- Bottles containing these additives cannot be readily identified and removed from the recycling stream as a known contaminant.



# What does a biodegradable additive look like?

It looks like a regular plastic bottle.



But is it really recyclable?

**NO!**





# Threats to PET Recycling

- **rPET is used in many durable products:**
  - **Fiberfill** in furniture, car seats, etc.
    - Do we want the cushions, pillows or fabrics to disappear in our houses?
  - **Plastic strapping** is a common use
    - This strapping holds materials onto pallets and cannot fail without serious immediate consequences and safety implications.
  - **Carpets**
    - Carpet manufacturers provide definite warranties for their products, some as long as 15-20 years.



# What is the best alternative?

- **Recycling and recovery of the plastics**
  - Recycling conserves the energy put into the manufacture of the base resins
  - Recycling extends the life of the resins in the marketplace:
    - A plastic bottle may have an average shelf life of less than 6 months
    - Recycling that plastic bottle allows for the plastic to remain in use for years
  - Recycling uses 20% less energy than the manufacturing of new plastic
- **Degradable additives will not:**
  - Conserve the energy imparted into resin
  - Allow for continued use of resin through recycling



# Summary

- The action being taken by North Carolina to prevent the growth of degradable additives in plastics is the right action to take.
- North Carolina will continue to encourage the elimination of plastics in waste streams both within and outside of the state.
- North Carolina will help to protect and preserve the viability of the plastics recycling industries and the economic and environmental benefits they bring.