

STAR Program Presentation

Ø Zero Waste

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Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

Waste Types

Regard as hazardous waste if...

- Material is flammable, corrosive, reactive, or toxic.
- Contains any of the following metals:
arsenic, cadmium, lead, selenium,
barium, chromium, mercury, or silver.



Regard as mixed waste if...

- Contaminated with both hazardous and radioactive material.

Storage Areas



- ❖ **Satellite Accumulation Point:** Where hazardous waste is accumulated, but volume must not exceed 55 gallons of hazardous waste or 1 quart of acute hazardous waste (commercial chemical products that are subject to smaller amounts because of toxicity).
- ❖ **<90 Day Accumulation Area:** There is no limit to how much waste can be collected at the area, but it must depart from the area before 90 days is up. *The 90 day limit begins from the time the waste is placed in a disposal container.

Incorrect Waste Handling

Cannot do the following with hazardous waste:

- Treat (unless an acid @ <90 Day Accumulation Area), dilute, or reduce the volume of material
- Discard material into glass boxes or trashes
- Allow material to enter sanitary waste lines or storm sewers
- Bury the material or release it to the ground
- Allow material to be evaporated or dispersed into the atmosphere
- Remove material from SNL premises
- Bring any hazardous material into SNL premises

Reason for Regulation → History Bit

The Love Canal incident of 1978 is one of many examples of careless hazardous waste disposal. The story began with the construction of a working class neighborhood on the grounds of a once hazardous chemical dumping site. However, the results were the tragedy. Human exposure to the hazardous materials resulted in birth defects, cancer, and various other bodily defects.

Herald Journal- October 29,1978 →

"That place" was a cesspool of pungent rainwater tainted blue and beige. The nightmare, her daughter suffered from a long list of serious birth defects. Her parents, three doors away, were breathing toxic fumes one scientist calculated contained seven compounds at levels thousands of times above acceptable government standards.

Karen herself showed symptoms of a liver ailment possibly linked to chemicals.

"It was like living in hell." Karen says. "We had no backyard. A pool just popped out of the ground. The trees died. We had a redwood fence in the back, and the posts were eaten away by chemicals."

Love Canal is actually an abandoned landfill in the southeastern section of the City of Niagara Falls, near the Niagara River some seven miles upstream from The Falls.

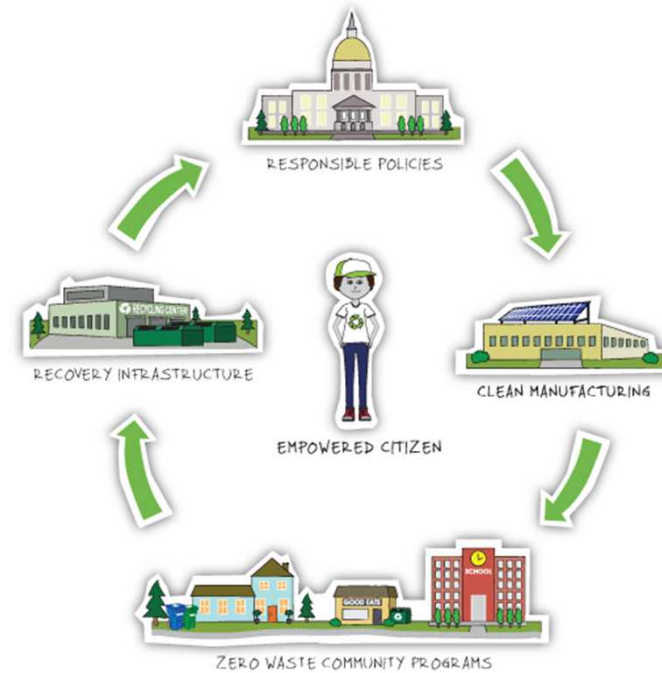
Previous vs. Futuristic Process

Linear → No



Linear, One-Way Production System

Circular → Yes





Dangers of Production-Consumption-Disposal System

- ❖ To briefly explain, natural resources are polluted through manufacturing and sent directly to landfill once the linear sequence is complete.
- ❖ If everyone followed this system, we would need the equivalent of **FIVE** planets to sustain life. **WE ONLY HAVE ONE!**

What are the consequences?

- ❖ http://worldnews.nbcnews.com/_news/2012/05/09/11612593-study-plastic-in-great-pacific-garbage-patch-increases-100-fold?lite

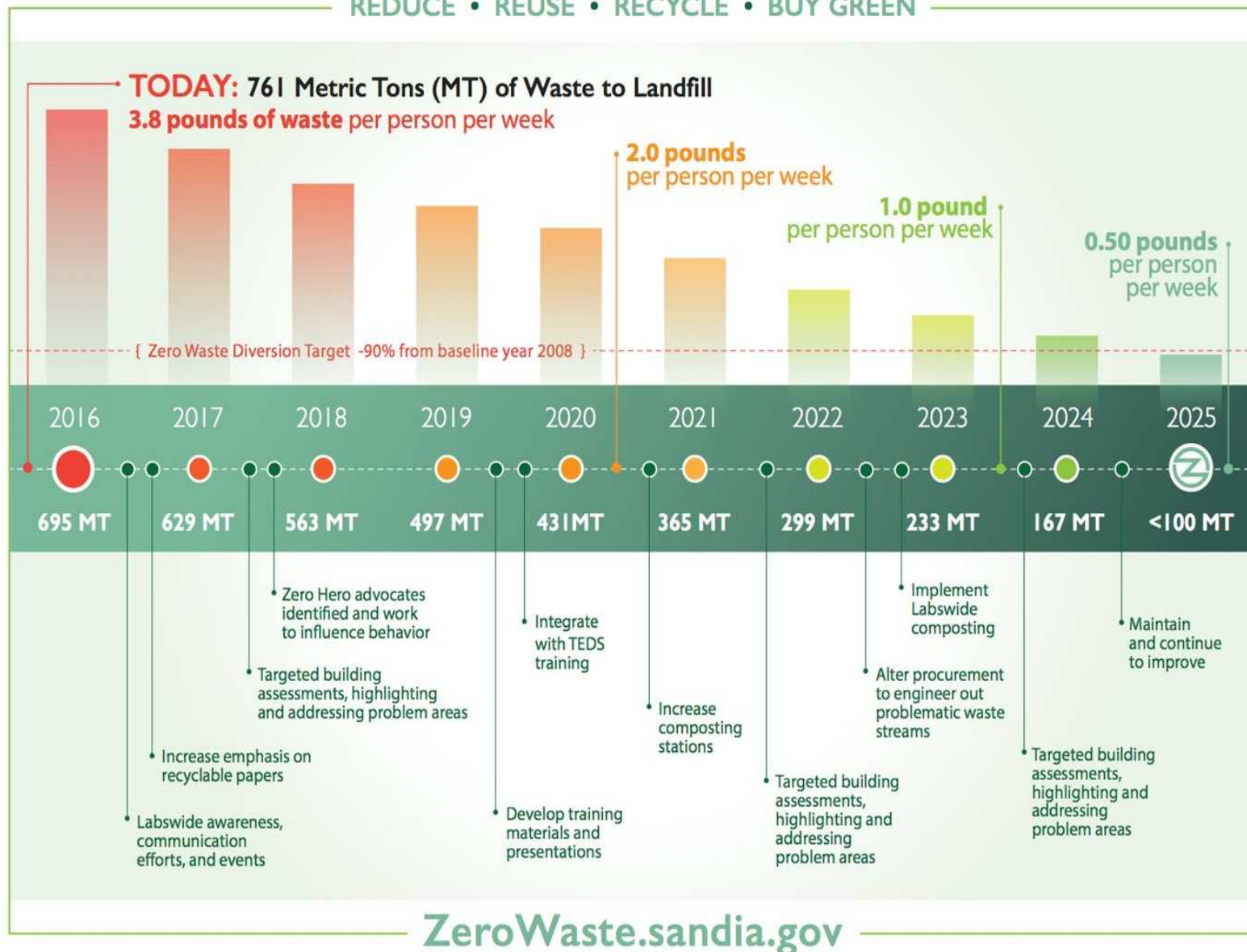
Ian Johnston. (Wednesday May 9, 2012). Study: Plastic in 'Great Pacific Garbage Patch' increases 100-fold. NBC News.

SANDIA'S JOURNEY TO ZERO WASTE

REDUCE • REUSE • RECYCLE • BUY GREEN

Zero Waste Goal

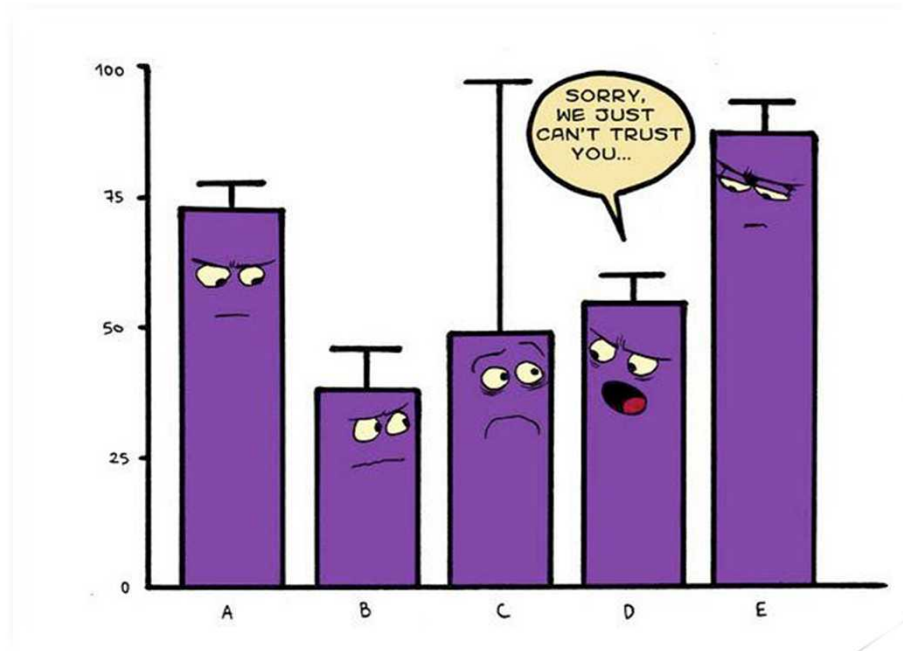
The goal of the “Zero Waste” project is to create a >90% diversion by 2025; meaning 90% or more waste is either being reused or recycled.



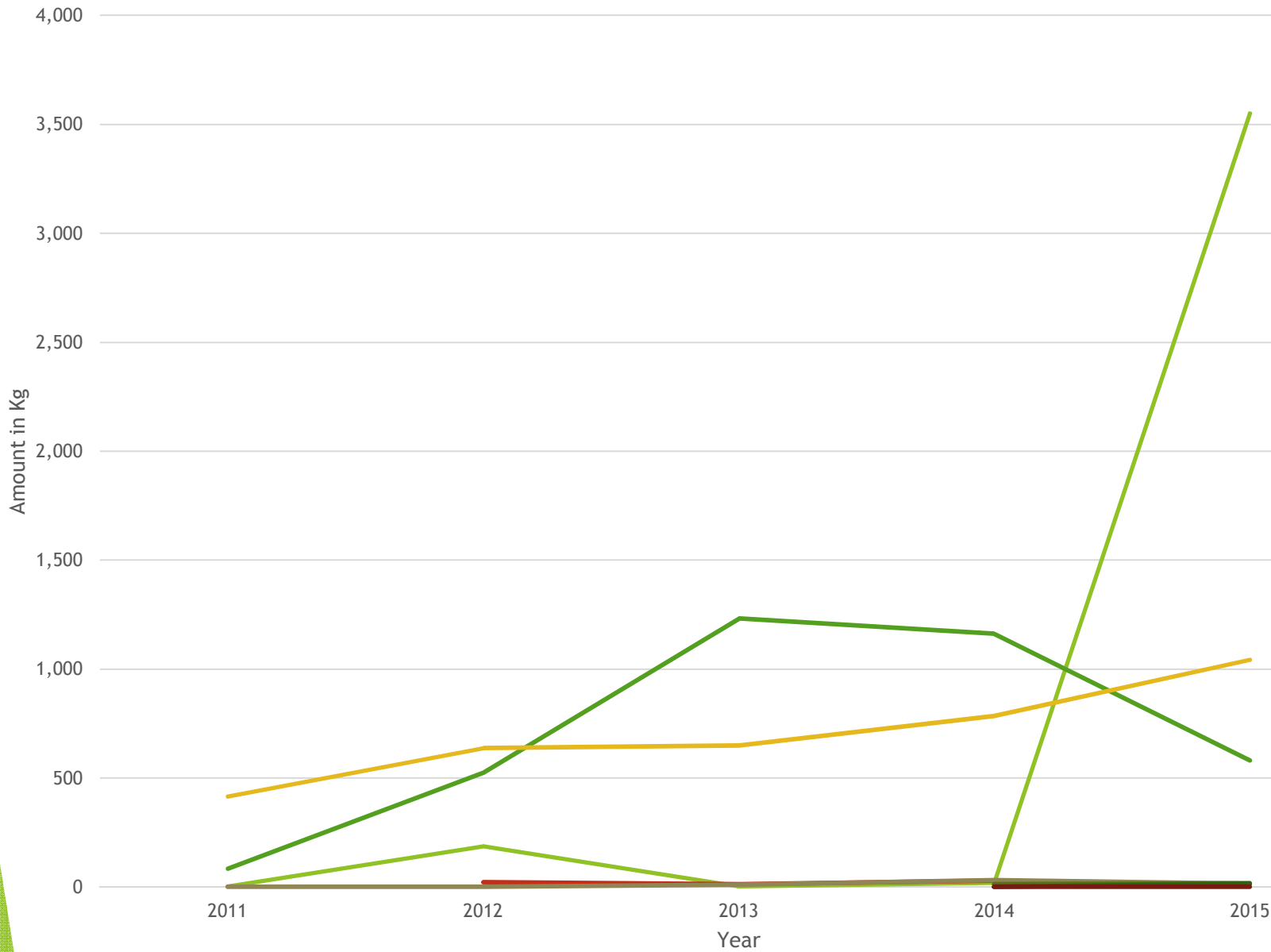
Data Analysis

Knowing the generation and purpose of the utilized waste is the first step toward zero waste.

Quantity and frequency of accumulation also become major factors when prioritizing what waste streams and generators should be targeted.



Acidic Waste Accumulated at <90-Day AA (2011-2015)



Helpful when identifying top generators at <90 day AA who are consistently submitting acidic RCRA waste between the years of 2011 and 2015.

- B:858N
- B:870
- B:878
- B:9925
- B:518
- B:894
- B:954
- B:876
- B:983
- B:905
- B:967

My Project

The product of my project identified top waste streams, as well as waste stream generators that need to be converted to a Zero Waste lifestyle. Addressing the few 20% will resolve 80% of the overall problem (Pareto's Principle or 80-20 Rule).

REDUCE

REDUCE WASTE OR THE NEED TO RECYCLE BY NOT CREATING IT IN THE FIRST PLACE

REUSE

REUSE MATERIALS BEFORE RECYCLING OR DISCARDING

RECYCLE

TRANSFORM MATERIAL INTO ANOTHER USABLE MATERIAL

TREATMENT

REDUCE VOLUME OR TOXICITY

DISPOSAL

STORE OR BURY WASTE

One Earth, Zero Waste

How can you contribute?

- Purchase reusable items. Buy **GREEN!**
- Reduce the amount of material you use at any time possible. **DO NOT** be wasteful!
- Place used, recyclable materials into any specified recycling bin.



