Using Green Chemistry to Create a Safer and Healthier Company & World

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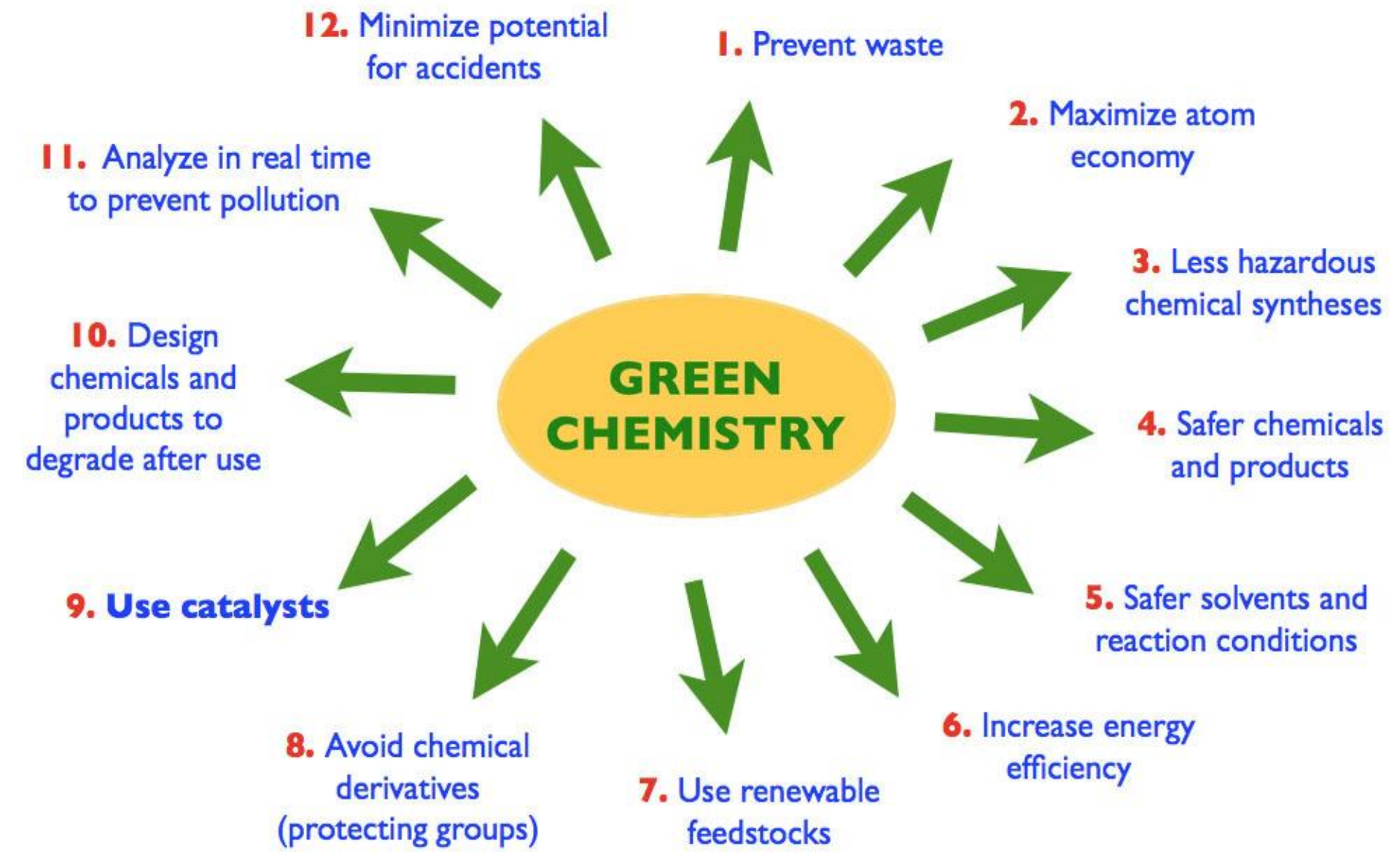
Industrial Hygiene Officer
What Do I Do?

- Make sure that worker hazards and risks are considered during design or re-design of production processes in accordance with green principles.
- Health gains, environmental benefits, and cost savings can be maximized when these hazards and risks are considered.
- AIHA: Industrial Hygiene: "The Right Thing To Do" (Video Clip)

Review of EPA Recommendations Based on Our Last Inspection

- Prevention = Proactive
- Environmental Committee: Long-lasting & Active
- Set up of an Environmental Management System (EMS) based on ISO 14001 guidelines
  - Will help to identify and eliminate systemic problems at ACME → Will reduce future violations
  - Use "Plan-Do-Check-Act" Cycle to set up EMS
- Consult with Pollution Prevention Institute
  - To obtain expert advice on "green chemistry" approaches to manufacturing

Using Green Chemistry Principles at ACME



Anastas and Warner (1998)

NYS Pollution Prevention Institute (NYSP2I)

- **NYSP2I mission is to make NYS more sustainable through**:
  - reductions in toxic chemical use
  - the efficient use of raw materials, energy and water
  - reductions in emissions to the environment and waste generation
- **Programs include**:
  - Technology research
  - Professional training
  - Academic educational programs

Green Chemistry, the Pollution Prevention Institute, and ACME

- **My Proposal**: to have NYSP2I partner with our company to develop a risk assessment tool that will focus on evaluating the environmental footprint of our chemical products.
- **This will help us to**:
  - improve production processes
  - enhance recycling and reuse
  - reduce the use of hazardous materials/chemicals.
  - identify and prioritize products according to their environmental risk which will guide us in our decision-making to improve the sustainability of our product portfolio.

Chemical Product Risk Prioritization Framework

- **The Framework will**:
  - Provide a method to quantify strategic risks of a chemical and identify if the risk is currently or expected to decrease, increase, or stay the same
  - Provide a method for chemical manufacturers to identify high risk substances and prioritize them for action
  - Incorporate ease of substitution of a chemical with a less risky counterpart
  - Ensure that our company is spending our time and resources on those chemicals which contribute the most risk and will target those for replacement or reduction.
  - Be used to support chemical product design

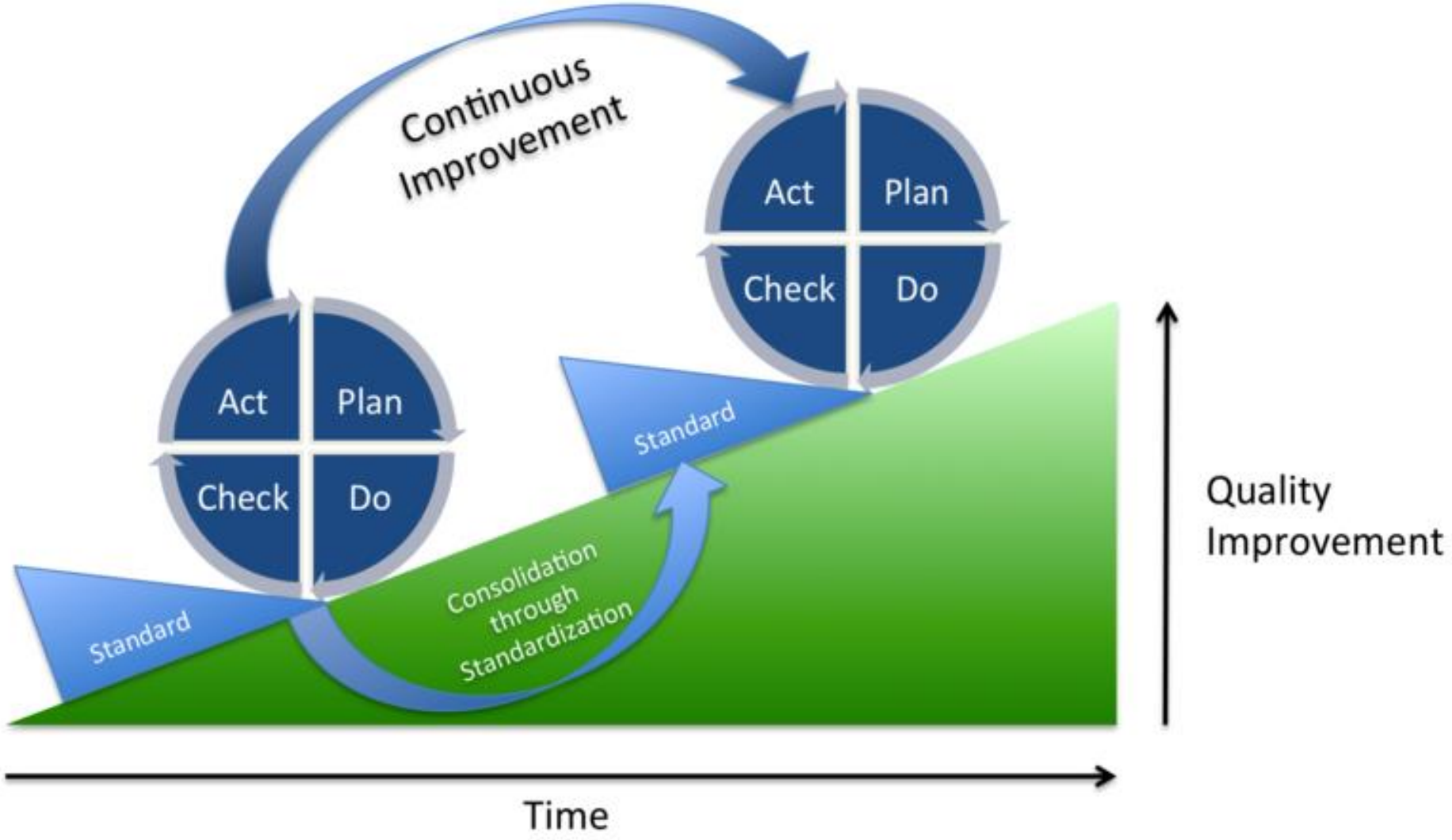
Benefits of Green Chemistry for ACME

- **Human Health**:
  - Cleaner air and water due to less hazardous chemicals
  - Increased safety for our workers due to less potential for accidents and less use of toxic materials
- **Environment**:
  - Green chemicals either degrade to innocuous products or are recovered for further use
  - Less chemical disruption of ecosystems
- **Economy & Business of our Company**:
  - Higher yields for chemical reactions, consuming smaller amounts of feedstock to obtain the same amount of product
  - Reduced waste will eliminate costly waste disposal
  - Better performance so that less product is needed to achieve the same function
  - Increased consumer sales by earning and displaying a safer-product label

BENEFITS OF GREEN CHEMISTRY

- Business benefits of green chemistry include: improved resource efficiency and lower raw material and utility bills
- Reduced waste treatment and disposal costs.
- Ability to capitalize on the environmental technology marketplace by designing new, 'greener' products
- Improved health and safety for staff and customers
- Environmental benefits include: fewer raw materials and natural resources used.
- Lower levels of chemicals released to the environment
- Cleaner production technologies
- Reduced emissions and product impacts

Follows the ISO 14001 Model



SOURCES

- https://www.osha.gov/Publications/OSHA3143/OSHA3143.htm#Industrial
- http://www.epa.gov/ems
- http://www.rit.edu/affiliate/nysp2i/

THE END