

# Building a Sustainable Future

Tom Carter  
Staff Vice President  
Environment, Health and Safety  
Portland Cement Association

# Building a Sustainable Future

**Minimizing the Environmental Impact of  
Cement Manufacturing and Maximizing the  
Environmental Benefits of Cement Products**

## Presentation Overview

- **Environmental Sustainability**
  - Background
  - PCA and WBCSD Programs
  - Lifecycle Impact
- **Social Sustainability**
- **Economic Sustainability**
- **The Path Forward**

# What is Sustainability?

## Brundtland Definition:

**“development that meets the needs of the present without compromising the ability of future generations to meet their own needs”**

# Command and Control vs. Sustainability

## Command and Control

- Focus on smokestack/  
tailpipe emissions
- Regarded environmental  
improvement as costly
- Encourages adversarial  
system
- Effective for drastic  
pollution

## Sustainability

- Focus on product  
lifecycle
- Considers societal costs  
of health impacts
- Encourages cooperation  
and voluntary measures
- Effective where control  
system in place

# PCA Cement Manufacturing Sustainability Program

- Mission
- Voluntary principles
- Continuous improvement goals
- Environment and energy awards

## CMS Mission

To meet the rising demand for portland cement through environmentally and socially responsible business practices that use state-of-the-art technologies to continuously minimize emissions, promote a safe workplace, improve energy efficiency and conserve natural resources, and cost effectively produce a high-quality product

# CMS Principles

1. Safety and health of employees, neighbors, and customers
2. Pollution control
3. Waste management
4. Energy efficiency

## CMS Principles Continued

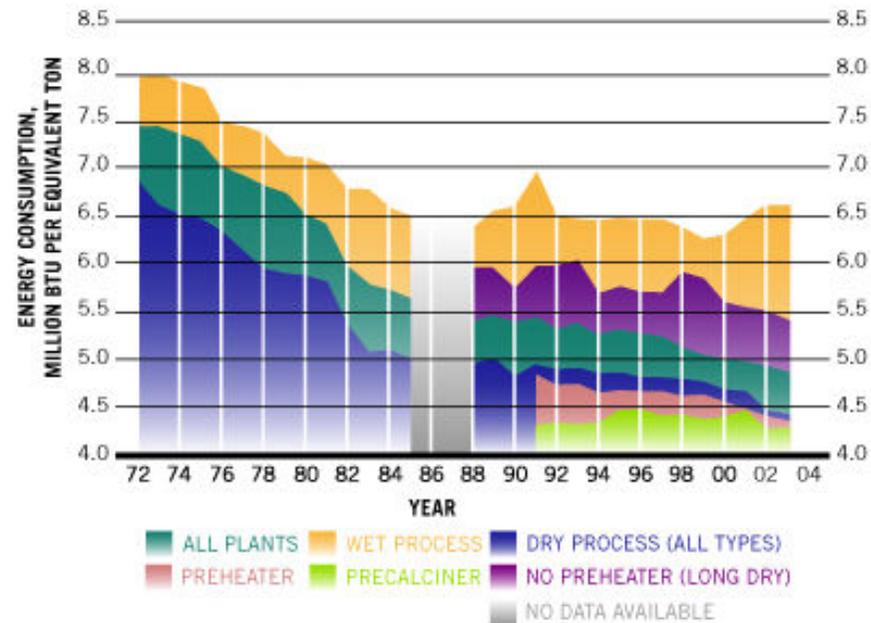
5. Waste reutilization
6. Responsible mining
7. Development of rational and effective laws and regulations

# Continuous Improvement Goals

1. Carbon dioxide emitted
2. Cement kilns dust wasted
3. Adoption of environmental management systems
4. Energy efficiency

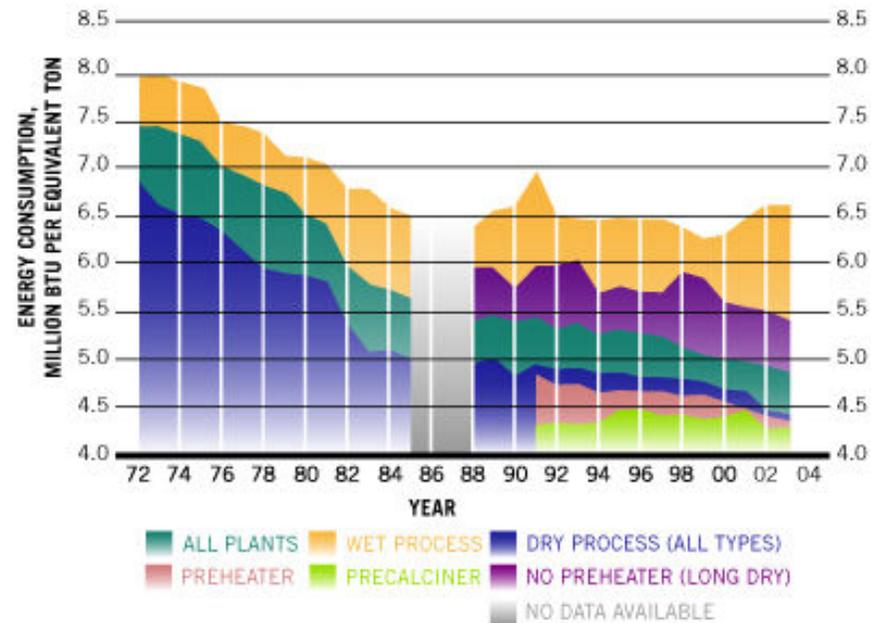
# U.S. Energy Use

ENERGY REDUCTION OF U.S. PORTLAND CEMENT PLANTS



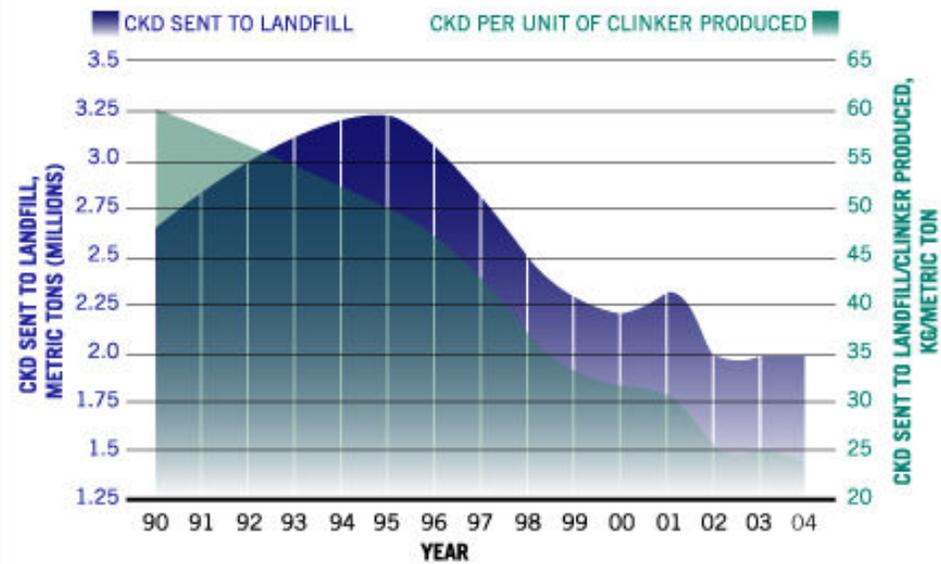
# U.S. Energy Use

ENERGY REDUCTION OF U.S. PORTLAND CEMENT PLANTS



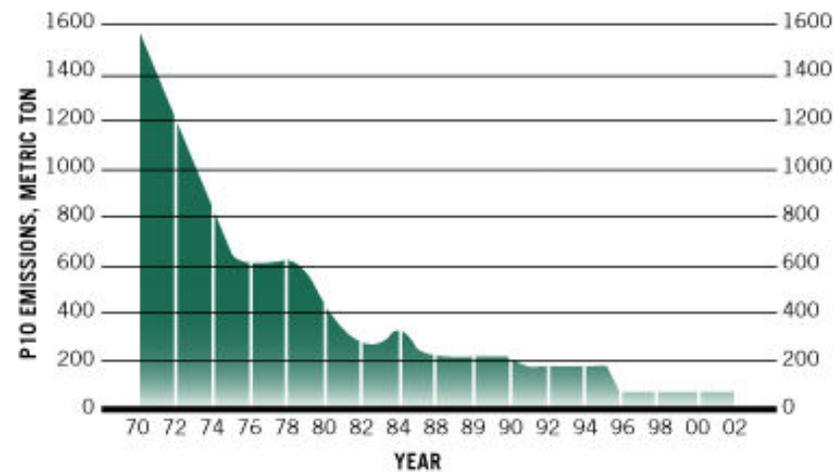
# CKD Disposal

**CEMENT KILN DUST SENT TO LANDFILLS AND  
CKD PER UNIT OF CLINKER PRODUCED**



# Particulate Matter Emissions

**USEPA ESTIMATED REDUCTION IN PARTICULATE MATTER EMISSIONS FROM PORTLAND CEMENT PLANTS**  
(Particulate matter equal to or less than 10 microns [pm10])



# Environment and Energy Awards

- Environmental Performance
- Land Stewardship
- Outreach
- Innovation
- Energy Efficiency
- Overall Environmental Excellence

# WBCSD Cement Sustainability Initiative

## Agenda:

- Climate protection and CO<sub>2</sub> management
- Responsible use of fuels and materials
- Employee health and safety
- Emission monitoring and reporting
- Impact on land and communities
- Communication

# Life Cycle Impact

## Cement and Concrete's Attributes:

- Durability
- Energy efficient structures and pavements
- Minimizing effect on urban heat island
- Manufacturing improvements
- Material recycling
- Concrete recyclability

# Social Sustainability

- Occupational health and safety
- Community health and safety
- Customer health and safety
- Community involvement

# Occupational Health and Safety

- PCA Occupational Health and Safety Committee
- Health and safety awards
- Safety information advisories

# Community Health and Safety

- Environmental controls
- Safe mining, material handling, and rail operation
- Employment, benefits, and community activities

# Customer Health and Safety

- Material Safety Data Sheets
- Customer guidance on product handling
- Cooperation with affiliated associations

# Economic Sustainability

How sustainability helps the bottom line:

- Cost savings from efficient and safe operations
- Stakeholder satisfaction
- Continued operations

# What's Next?

## The Path Forward:

- Moving beyond command-and-control
- Cooperation between traditional adversaries
- Education on cement and concrete's benefits
- Sharing information between countries