



**Texas Petrochemicals**

# Solutions Module, C. Kirk Johnson

*Technology & Behaviors: A Combination for Sustainable Improved Environmental Performance*

**Shell Center for Sustainability, Rice University  
Houston, Texas  
October 16, 2008**

Quality Products. Dependable Services.

## Overview

### » Emissions Reduction

*Performance*  
*Commitments*

### » Technology

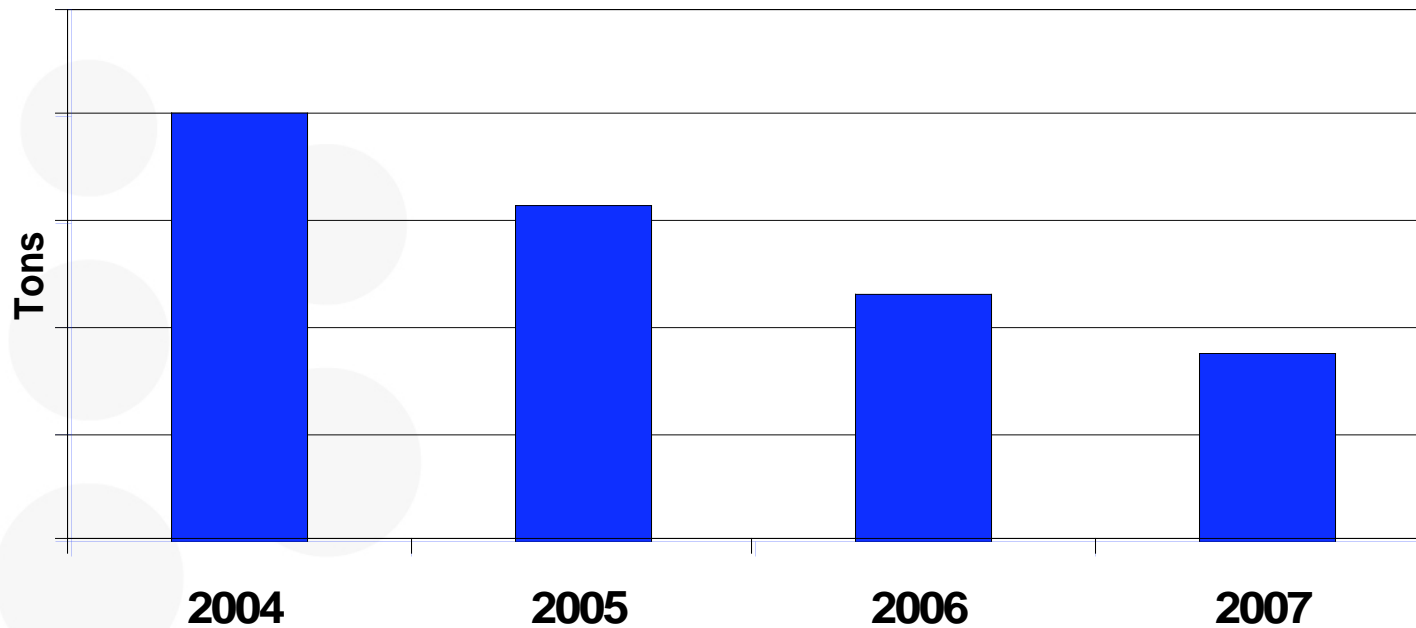
*Tools*  
*Impact on Performance*

### » Behaviors

*Performance*

### » Sustainability

## Houston Plant Butadiene Emissions



**Continuing to Drive Down Butadiene Emissions**

## Emissions Reduction Commitments

- » Use UltraRAE (portable spectrometer)
- » FLIR for LDAR monitoring
- » Cooling Tower monitoring
- » Install Flare Gas Recovery
- » Install Dry-break Loading Equipment at Rail Racks
- » Establish 250 ppm as leak level for repairs
- » Net Fenceline BD Concentration Goal 1 ppb / *Fenceline monitoring installation*

## **Technology: *Tools to Aid in Finding Emissions***

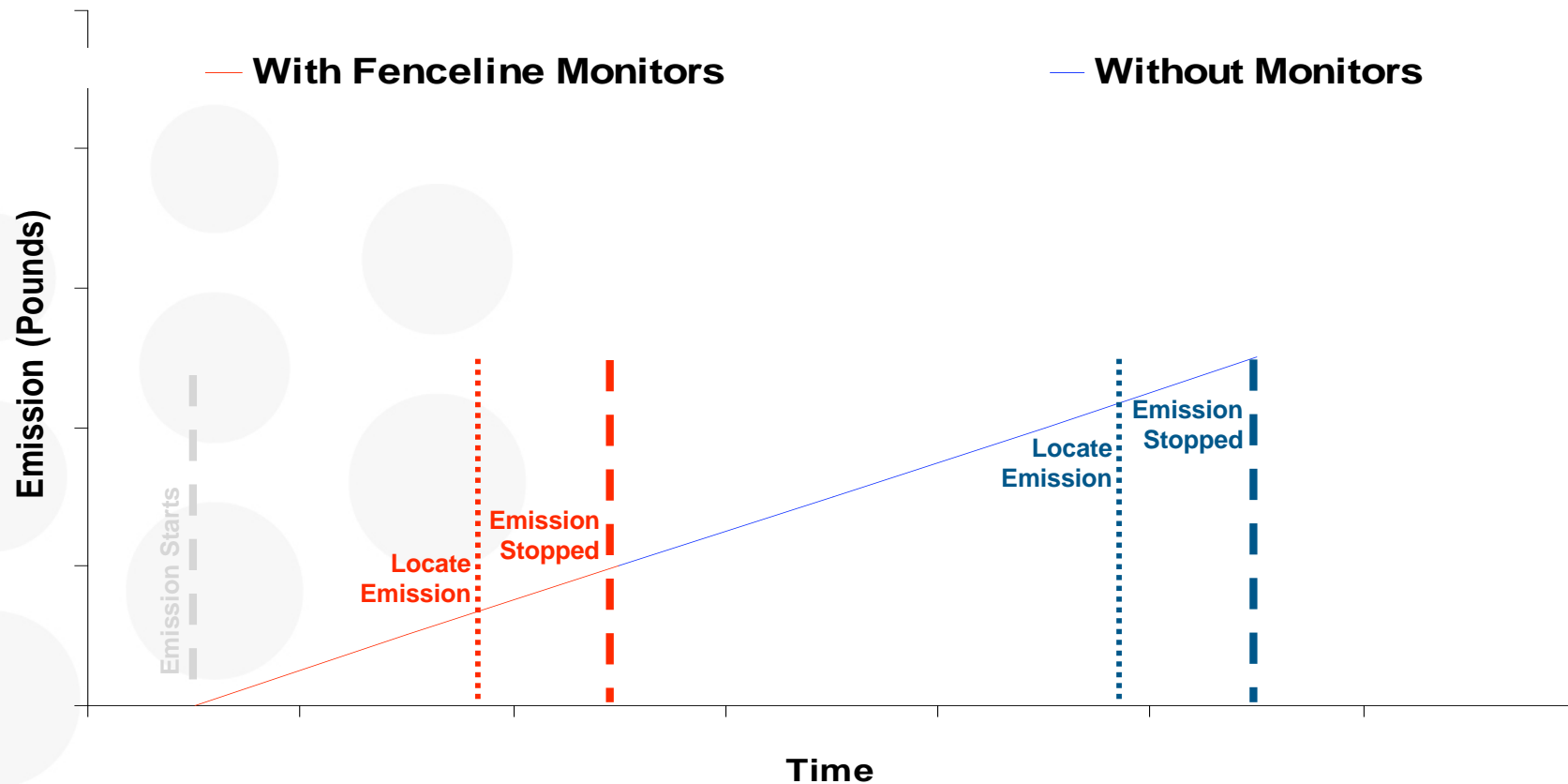
### **» Tools**

- **Cutting-edge Fenceline Technology (infrared)**
- **UltraRAE (combination filter tube and photo ionization detector)**
- **COSMO (photo ionization detector)**
- **Toxic Vapor Analyzer (flame ionization detector)**
- **FLIR Camera (forward-looking infrared camera)**
- **MSA Sirius (photo ionization detector)**

### **» Use of Tools**

- **Measures 1,3-Butadiene**
- **Measures Total Volatile Organic Compounds**
- **Used to help determine the general area of the source or the actual source of the fenceline triggers**

## Technology: *Impact on Performance*



**Fenceline Monitors Result In Shorter Duration Emissions  
But Calculations Based On Longer Time Period**

## **Behaviors: *Driven by Technology***

- » Maintenance procedures driving no fence line hits
- » Immediate electronic notification of fence line hits
- » Full out effort to identify leaker(s)
- » Third party support to search for leaks
- » Management led audits of the facility
- » Prompt requirement for Root Cause Investigation (RCI) completion
- » Emergency maintenance work request to address leaks
- » Enhanced mechanical integrity program
- » Daily and weekly management reports on environmental performance
- » Dedicated site-specific environmental improvement team
- » Daily review of fence line performance
- » EHS&S quarterly reporting to Board of Directors

## Sustainability

