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
Fenceline Monitors Result In Shorter Duration Emissions
But Calculations Based On Longer Time Period
Behaviors: *Driven by Technology*

- Maintenance procedures driving no fenceline hits
- Immediate electronic notification of fenceline 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 fenceline performance
- EHS&S quarterly reporting to Board of Directors
Sustainability

Technology → Behaviors → Results