Pasadena Citizens' Advisory Council

What Plants Do to Prevent, Control, and Reduce Emissions

September 28, 2021

As a prelude to the October 28, 2021 Annual Report on Emissions, Pasadena Citizens' Advisory Council (PCAC) plants shared examples of what they have done or planning to do to prevent, control and reduce emissions. More than 30 ideas were shared by 16 participating industrial facilities north of SH 225 in Pasadena.

- Use AVO (Auditory, Visual, Olfactory) techniques multiple times during a shift and investigate anything that is out of the norm.
- Steam injection valves are used on steam vents to recycle excess steam back into the process. This steam has a small amount of volatile organic chemicals (VOCs).
- Flammable gas monitors are positioned around the plant to quickly address spills.
- During the once every 10-year internal inspection of storage tanks, tanks are cleaned and then purged with nitrogen, to remove any remaining vapors. The nitrogen is then sent to the flare. The ten year time frame for internal inspections is the API (American Petroleum Institute) standard and external inspections are done on a more frequent basis.
- Use various types of equipment to reduce pollutants such as electrostatic precipitators, sulfur recovery unit, flares, and flare gas recovery unit.
- Installed carbon beds on atmospheric vents to capture pollutants.
- Actively monitoring flares by instrumentation can that determine what is being flared.
- LDAR (Leak Detection and Repair) program to monitor for any potential small leaks in piping and then repair.
- Modified production process to use less water initially and then recapture excess water at the end to reuse into the same process.
- Shrouds are placed over tanks while painting/coating maintenance activities are being performed.
- Installed domed roofs over tanks that help to reduce air emissions as well as rainwater falling on tanks that becomes wastewater to be disposed.
- Installed vapor control unit (VCU) for ship transfers where one hose pumps the product, and another hose captures the vapor and sends to VCU to be burned off, resulting in no emissions.
- Upgraded vapor control units (VCU) for tank transfers and added more to control tank emissions.
- Each employee is encouraged to have an environmental goal to carry out the plant goal of protecting the community.
- Modified Coker Drum Venting Process to use vacuum instead of high-pressure water to remove coke, thereby reducing emissions via steam venting.
- Company has committed capital expenditures to replace aging equipment with the newest technology and efficiency.
- Changing water seals to ones with a higher-pressure rating.
- Wet scrubbers are used to remove VOCs from the waste gas stream to reduce air emissions. The water is then sent to Gulf Coast Authority (GCA) for treatment.
- Vapor recovery system for storage tanks captures vapors and sends them back to the tank.
- Visually inspect the flare every morning to identify and troubleshoot any potential issues.

- Stormwater discharge sampling procedure: sample ahead of any anticipated rain at sample points before the permitted outfall so they can see if storms results in any spills.
- Modified procedures to load/unload catalyst more quickly during maintenance, shut down and start up activities, thus producing less emissions.
- Proper tuning of boiler heaters to improve combustion efficiency
- Third party is brought in to conduct vent stack testing and tuning to improve efficiency.
- Build and operate site to corporate standards which are more stringent than API standards.
- Use BTU analyzer to ensure complete combustion.
- Tanks are vented to a thermal oxidizer where NOx and VOCs are analyzed by a CEMS (continuous emissions monitoring system). The CEMS undergoes daily calibration checks and is calibrated quarterly.
- Use water scrubbers on tank vents and the resulting water is processed through the wastewater treatment system.
- Use burners that are designed and rated as emitting low NOx.
- Installed hydrocarbon detectors in various locations around the plant to detect liquid spills/releases.
- Marine based VCU which is inspected quarterly by a third party. Reduce temperature to reduce NOx emissions.
- Fence line monitoring for benzene helps find the source of those emissions more quickly, and whether the source is the plant or outside of the plant.
- 153 continuous LEL (lower explosive limit)/gas chromatographs around the process areas can send alarms to the control room.
- Baghouses are used in the production process to capture and reduce the particulate matter emitted. The differential pressure across the baghouses is monitored to determine the filter bag condition, and routine visible emission observations are conducted as defined in the plant permit.

Readers are welcome to attend PCAC meetings and email suggestions for the community-industry forum. Contact info@pasadenacac.org for details.