

Hydrotreat Phillips 66 Coker Off-Gas: Protect Health in Rodeo, Crockett and South Vallejo

Burning “fuel gas” created in refining emits ≈ 330 tons of sulfur dioxide from the Phillips 66 Rodeo refinery annually—twice as much as burning fuel gas emits from the Chevron Richmond, Tesoro Martinez, and Valero Benicia refineries combined.¹

Sulfur dioxide (SO_2) air pollution is harmful itself, and also forms deadly $\text{PM}_{2.5}$ —particulate matter 2.5 microns in diameter or less—in our air when SO_2 is emitted. Low-income communities and communities of color in Rodeo, Crockett, and South Vallejo face disparately severe health risks from the Rodeo refinery’s air pollution.

Problem

Phillips 66 is burning dirtier fuel gas because it is using coking to boost gasoline, diesel and jet fuel production from heavier, dirtier crude *and* it is not treating contaminants this sends into its fuel gas.

Delayed coking creates exceptionally polluting byproducts: petroleum coke, and coker off-gas. The fuel gas treatment Phillips 66 uses at Rodeo is not designed to remove the non-acidic sulfur compounds in the coker off-gas it burns as fuel.^{1,2}

Coker off-gas accounts for most of the SO_2 the Rodeo refinery emits from burning fuel gas.²

Solution

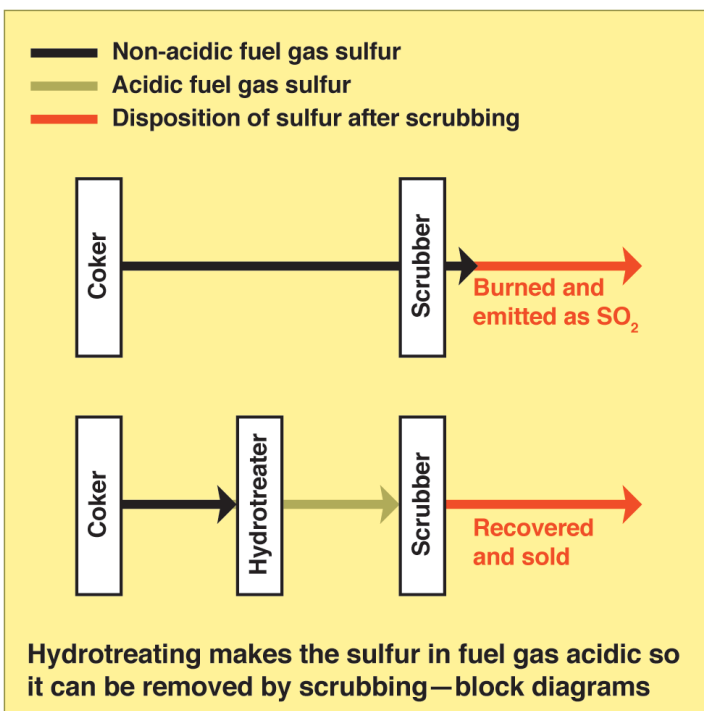
Phillips 66 can treat coker off-gas. Others do.

Hydrotreating its fuel gas could cut Rodeo refinery SO_2 emissions by ≈ 291 tons/year, the Bay Area Air Quality Management District (BAAQMD) estimates.¹ All other Bay Area refineries already use fuel gas hydrotreating, BAAQMD reports.¹

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Delayed Coker, Phillips 66 Refinery, Rodeo, CA



Hydrotreat Phillips 66 Coker Off-Gas: Protect Health *continued*

Toxic Injustice

In 2015 BAAQMD proposed to revise its Rule 9-1 to force the emissions cuts fuel gas hydrotreating can achieve.¹ But it never did.^{1,3} Instead, from then until now, BAAQMD has failed to adopt this needed health protection.

Meanwhile, the same fuel gas cleanup standard it proposed in 2015 has applied to Los Angeles Area refineries since 1994.¹ And, Phillips 66 told BAAQMD, the refiner *already had* the key equipment that it could re-purpose to hydrotreat its fuel gas on site at its Rodeo refinery—*since August 2012*.⁴

Phillips 66 had equipment to do the same retrofit other Bay Area refineries have already done. Emissions control this could provide was already required in Southern California. And yet that equipment sat unused in Rodeo. Since August 2012, by the BAAQMD's own 291 tons/year estimate,^{1,5} this neglect sent $\approx 1,940$ tons of SO_2 into nearby low-income, black, and brown communities' air.

PRP - Coker Fuel Gas Hydrotreater scc

New Coker Fuel Gas Hydrotreater to remove n

- Coker Propane / Butane contains contaminat: Sulfur)
- Hydrotreating will remove contaminates. Refin reduced by 75 %. Approx. 0.75 TPD reduction emissions
- Fuel Gas feed streams contain sufficient Hydr
- Re-use existing Hydrogen Plant Feed Compressor
- Re-use existing Hydrogen Plant feed system Hydrotreating Reactors
- Operate reactors around 280 PSI and 500 F

Excerpt from Phillips 66 presentation to BAAQMD dated 13 August 2012.⁴ It already had equipment it could use for fuel gas hydrotreating (*red underlining, added*).


reasonable extension of the October 1, 1993 deadline. The Air Pollution Control Officer may grant such extension, however, only if the refinery operator has made substantial progress in completing construction of its sulfur removal and recovery system by October 1, 1993.
(Adopted July 18, 1990; Amended March 15, 1995)

9-1-314 Refinery Fuel Gas Sulfur Limit: Effective [DATE], no person shall burn any refinery fuel gas having a fuel sulfur content in excess of 40 ppmv, calculated as H_2S , on a 3-hour rolling average basis.

9-1-400 ADMINISTRATIVE REQUIREMENTS

Excerpt from BAAQMD's 30 April 2015 Proposed Revisions to Rule 9-1.¹ The 40 ppmv fuel gas sulfur limit proposed (*blue text in original*) would have cut Rodeo refinery fuel gas sulfur (now ≈ 375 ppmv¹) by $\approx 89\%$.

"ppmv" means parts per million by volume of gas, so this 40 ppmv limit would limit sulfur to 40 out of each million parts of the total fuel gas volume that's burned



Take Action: Join CBE to demand that the Bay Area Air Quality Management District strengthen its Rule 9-1 to require refinery emission cuts that can be achieved by fuel gas hydrotreating **NOW**.

Email BAAQMD: Executive Officer **Jack Broadbent**; Board member **Mark Ross** (City of Martinez), and Board members **Karen Mitchoff**, and **John Gioia** (Contra Costa County). *Send your emails to them through the BAAQMD Board's Clerk, Marcy Hiratzka:* mhiratzka@baaqmd.gov

Send us a copy of your correspondence with BAAQMD, and get more involved: Andrés Soto, CBE Organizer; andres@cbeal.org and Zolboo Namkhaidorj, CBE Youth Organizer; zolboo@cbeal.org

(1) Bay Area Air Quality Management District (BAAQMD), 2015. Regulation 9, Rule 1 (Rule 9-1): 05-14-15 Draft Concept Paper and 4-30-15 Draft Proposed Revisions. (2) Phillips 66, 2013. Request for emission reduction credits, BAAQMD Permit Application #25199. (3) Rule 9-1 as of May 2019; www.baaqmd.gov/rules-and-compliance/current-rules. (4) Phillips 66 "Propane Recovery Project Overview" presented to BAAQMD, dated 13 Aug 2012. (5) $291 \div 12$ (tons/month) from Sep 2012 through Apr 2019.