

Scrub Chevron's catalytic cracking emissions to save lives in Richmond *now*

Chevron's fluid catalytic cracking unit (FCCU) is the dirtiest source of the deadliest air pollutant in Richmond. Its FCCU emits ≈ 270 tons of $PM_{2.5}$ each year, $\approx 60\%$ of all the $PM_{2.5}$ emitted by Chevron's oil refinery in Richmond.¹

$PM_{2.5}$ —particulate matter 2.5 microns in diameter or less—causes more than 90% of all deaths from air pollution and kills an estimated 2,000–3,000 people each year in the Bay Area.²

Everyone is exposed to this risk, yet low-income communities of color face disparately severe risk from refinery $PM_{2.5}$ emissions.³ Burning “heavy oil” in the Chevron Richmond refinery increases health-threatening concentrations of $PM_{2.5}$ inside Richmond residents' homes.⁴ That “heavy oil” includes pet coke Chevron burns in its FCCU.



Chevron Richmond Refinery Fluid Catalytic Cracking Unit (FCCU) during major repairs

Problem

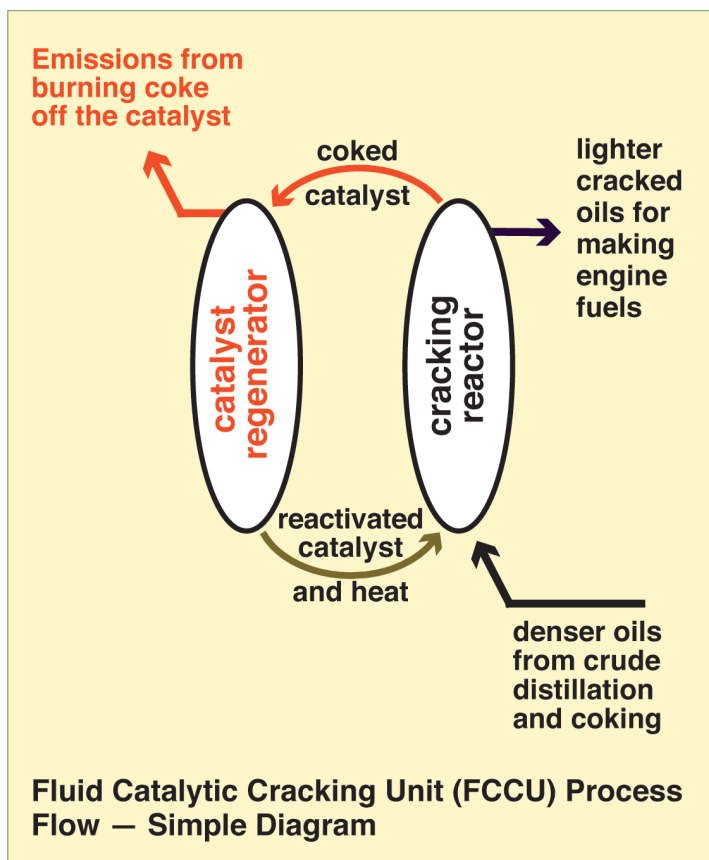
FCCUs burn the dirtiest fuel and send pollution into our air so refiners can make more gasoline, diesel, and jet fuel from low quality oil.

Petroleum coke, or “pet” coke, is a byproduct of refining dirty fuels. Pet coke deposits on the refining catalyst in FCCUs. FCCUs burn it off to reactivate the catalyst as well as to heat the FCCU. Pet coke is the dirtiest fuel burned in the Bay Area.

Chevron's FCCU in Richmond burns 650–900 tons of pet coke per day.⁵

At the same time, Chevron's FCCU uses an old, inadequately effective emission control scheme called “ammonia assist-electrostatic precipitation,” which also poses a serious explosion hazard during maintenance shutdowns and startups.

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Fluid Catalytic Cracking Unit (FCCU) Process Flow — Simple Diagram

Scrub Chevron's catalytic cracking emissions *NOW* continued

Solution

Wet scrubbing removes air pollutants from exhaust gases using water and chemicals called amines.

For example, requiring wet scrubbing on Valero's existing FCCU in Benicia reduced PM_{2.5} (and SO₂) emissions from that FCCU by more than 90%.⁵

By cutting 90% of the PM_{2.5} emitted from the Chevron Richmond refinery FCCU, wet scrubbing could save the lives of 16–18 people each year.⁶

Cost savings from averting these premature deaths could exceed the amortized cost of wet scrubbing by a factor of 6–16 times.⁶

Chevron can cut FCCU emissions. Others have.

Call to Action

Our local air officials can stop stalling on this life-saving protection. In fact, the State Air Resources Board has told them to start this FCCU cleanup work already—no later than March 2019.⁷

Join CBE to demand that the Bay Area Air Quality Management District (BAAQMD) strengthen its Rule 6-5 to require refinery FCCU emission cuts that can be achieved by wet scrubbing **NOW**.

Act now: Contact Andrés Soto (510.282.5363; andres@cbeval.org) or Zolboo Namkhaidorj (510.495.7959; zolboo@cbeval.org).

1. BAAQMD emission inventory, various years. 2. BAAQMD Clean Air Plan supporting documents, 2017. 3. Kuiper et al., 2017, BAAQMD Rule 12-16 development records. 4. Brody et al., 2009. DOI: 10.2015/AJPH.2008.149088. 5. Activity rate and source modification data, BAAQMD emission inventory, files, various years. 6. From 90% of 270 tons/yr; ref. 2 (76 deaths and 700 MM\$ associated costs averted/year by cutting PM_{2.5} 2.8–3.1 tons/d); and assuming 100–200 MM\$ scrubbing cost amortized over 10 yrs. 7. CARB Resolution 18-37 adopted 27 Sept. 2018.

