Some facts on the Threat of Lower Quality "Dirtier" Oil in the S.F. Bay Area Today

COMMUNITIES FOR A BETTER ENVIRONMENT

Big Oil plans to refine low quality oil

As we begin to use less oil,[1] oil companies plan to boost profits by refining lower quality, "price advantaged" tar sands oils from Latin America, Canada and elsewhere.[2] See Chart 1. Tar sands oils (heavy oil and natural bitumen, as defined by the USGS)[3] are much denser and more contaminated than conventional crude.

Low quality oil is drastically dirtier

Even before a full switch to tar sands, shifting to lower quality oil already has caused serious harm to refinery communities, workers, and the environment. For example:

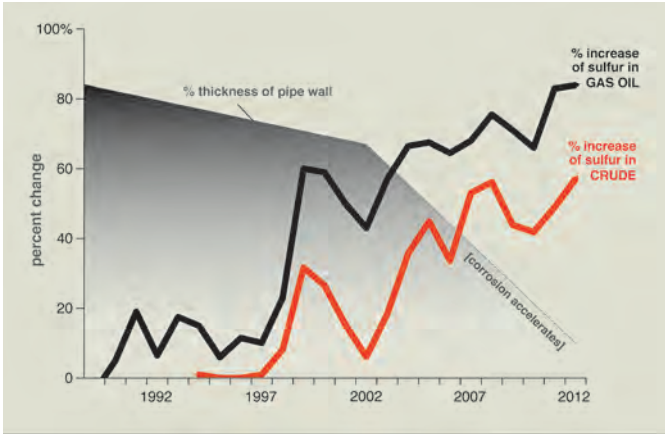
- Higher sulfur oil corroded the pipe that burst in a 2012 Richmond refinery fire that nearly killed 19 workers and sent 15,000 to hospitals.[4] See Chart 2. Denser oil contributed to a Martinez refinery fire that killed 4 in 1999.[5]
- Contaminated oil increased refinery selenium discharge by up to *ten times*, violating water quality standards in the San Francisco Bay.[6]
- Denser, higher sulfur oil nearly *doubled* refinery CO_2 emissions, in comparisons of actual, nationwide data.[7] See Chart 3. A full switch to tar sands is not shown—emissions from that would be *off the chart* to the right.

Bay Area impacts are being hidden

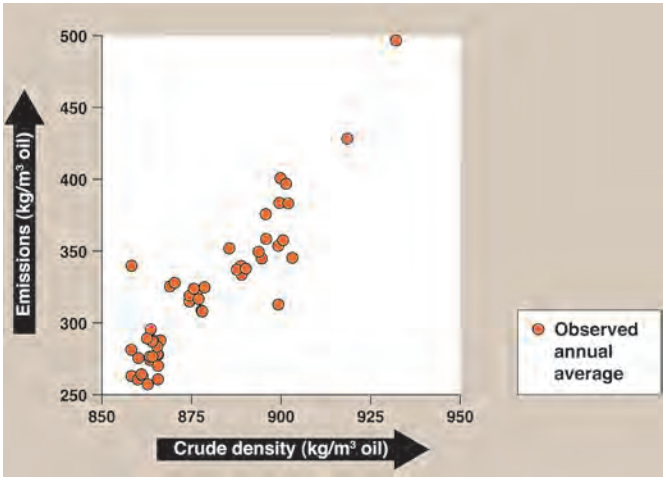
Big Oil is telling investors about this cheaper low-quality oil project but is hiding the low-quality part of it from environmental review. At least 5 companies propose pieces of this oil switch that could enable refining lower quality oil in the Bay Area now, but none of their environmental impact reports discloses that and addresses its potential impacts adequately, as of December 2013.[8] See Chart 4, next page.

Continued next page

1. "Refining Advantaged Crude," Phillips 66 (2013)[2]



2. Higher sulfur oil accelerates corrosion of a pipe that bursts in a disastrous 2012 refinery fire[4]



3. Denser oil increases refinery CO_2 emissions[7]

1904 Franklin Street, Suite 600 • Oakland, CA 94612 • T (510) 302-0430 • F (510) 302-0437

In Southern California: 6325 Pacific Blvd., Suite 300 • Huntington Park, CA 90255 • (323) 826-9771

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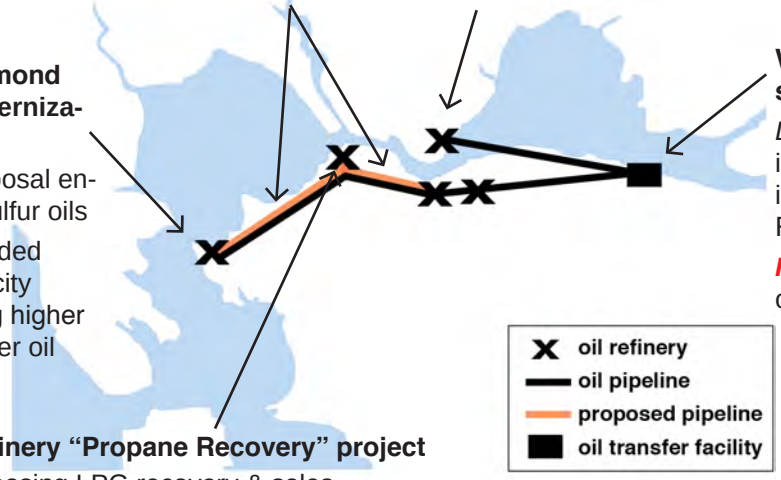
Chart 4. Pieces of the oil switch that Big Oil could sneak into the S.F. Bay Area now[8]

Praxair "Contra Costa Pipeline" project
Disclosed: Increasing hydrogen (H_2) supply
Hidden: H_2 enables refining "dirtier" oil

Valero Benicia Refinery "Crude by Rail" project
Disclosed: Increasing use of "North American" oil
Hidden: Enables refining cheaper tar sands oil

Chevron Richmond Refinery "Modernization" project
Disclosed: Proposal enabling higher sulfur oils
Hidden: Expanded hydrogen capacity enables refining higher sulfur and denser oil

WesPac "Energy Infrastructure" project
Disclosed: Increasing oil imports via boat and train into pipelines leading from Pittsburg CA to refineries
Hidden: Enables refining of cheaper tar sands oil



Phillips 66 Refinery "Propane Recovery" project
Disclosed: Increasing LPG recovery & sales
Hidden: Requires refining "dirtier" oil

Phillips 66 San Francisco Refinery (SFR) "Propane Recovery" project

DISCLOSED: Increasing capacity to recover, store, ship & sell more LPG

HIDDEN: Increasing capacity to make LPG by coking dense oils & distilling diluent used to carry bitumen in tar sands "dilbit" oils

Equipment to collect, handle liquefied petroleum gas (LPG) ← **Oil processing for products in SFR (Rodeo & Santa Maria)** ← **Oil feedstock imports into SFR (Rodeo & Santa Maria)**

HIDDEN: Data showing the SFR does not make enough LPG for the project now

HIDDEN: Increasing capacity to bring tar sands oils into SFR by wharf and rail

Notes: (1) Californians used 11% less gasoline and 12% less No. 2 distillate (diesel) during Aug 2012–Jul 2013 than during Aug 2006–Jul 2007: www.eia.gov/dnav/pet/pet_sum_mkt_dcu_SCA_m.htm. **(2)** Example of disclosures to investors, from: http://www.phillips66.com/EN/investor/presentations_ccalls/Documents/barclays2013_finalv2.pdf. **(3)** U.S. Geological Survey: http://pubs.usgs.gov/of/2007/1084. **(4)** U.S. Chemical Safety Board, http://www.csb.gov/chevron-refinery-fire; chart from CBE 4/19/13 testimony before the CSB. **(5)** U.S. Chemical Safety Board, http://www.csb.gov/tosco-avon-refinery-petroleum-naphtha-fire; see esp. Final Investigation Report, pages 48–54, 69–70. **(6)** CBE, 1994. *Dirty Crude;* CBE Report No. 94-1. **(7)** Karras, 2010 *Environ Sci Technol* 44(24): 9584–9589, DOI 10.1021/es1019965; and Union of Concerned Scientists, 2011. *Oil Refinery CO_2 Performance Measurement;* www.ucsusa.org. **(8)** See expert reports of I. Goodman and B. Rowan (Benicia File 12PLN-00063), P. Fox (Benicia File 12PLN-00063, CC County File LP12-2073), and G. Karras (County files LP072009, LP12-2073, Pittsburg File SCH 201107053); see also *CBE v City of Richmond* 184 Cal_App.4th; Chevron's 5/23/11 revised application to Richmond.