ENVIRONMENTAL INTEGRITY PROJECT

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October 31, 2024

Michael S. Regan, Administrator
U.S. Environmental Protection Agency
Office of the Administrator, Mail Code 1101A
1200 Pennsylvania Avenue NW
Washington, DC 20460
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Re: Petition to Identify Petcoke Calcining Facilities as a Category of Sources Discharging Toxic or Nonconventional Pollutants for Which ELGs Have Not Previously Been Published

Dear Administrator Regan:

Environmental Integrity Project, Center for Biological Diversity, Environmental Law & Policy Center, Clean Water Action, Food & Water Watch, Habitat Recovery Project, Healthy Gulf, Micah Six Eight Mission, RESTORE, Three Rivers Waterkeeper, Vessel Project of Louisiana, and Waterkeeper Alliance petition the Environmental Protection Agency (EPA or Agency) pursuant to Section 304(m)(1)(B) of the Clean Water Act to identify petcoke calcining facilities as a category of sources discharging toxic or nonconventional pollutants for which effluent limitation guidelines (ELGs) and new source performance standards (NSPS) have not previously been published. 33 USC § 1314(m)(1)(B). We further petition the Agency to, within three years of such identification, promulgate regulations establishing ELGs and NSPS for all classes of point sources discharged by petcoke calciners, including industrial stormwater. *Id.* § 1314(m)(1)(C).

We file this petition pursuant to the Administrative Procedure Act's requirement that "[e]ach agency shall give an interested person the right to petition for the issuance, amendment, or repeal of a rule." 5 USC § 553(e). EPA is required to respond to this petition in a timely manner. *Id.* § 555(b). In the event EPA seeks to deny the petition in whole or in part, it must provide "[p]rompt notice" to the petitioners with an explanation of its decision. *Id.* § 555(e).

1. Legal Standard

CWA Section 304(m)(1)(B) requires that EPA "publish in the Federal Register a plan which shall ... identify categories of sources discharging toxic or nonconventional pollutants for which guidelines under subsection (b)(2) of [section 304] and section 1316 of this title have not previously been published." 33 USC § 1314(m)(1)(B). Section 304(m) applies to "any non-trivial discharges from sources in a category." *S. Comm. on Env't & Pub. Works, 99th Cong., Report to Accompany S. 1128* (1985 CWA Amendments) 25 (Comm. Print 1985); *see also Our Children's Earth Foundation v. EPA*, 527 F.3d 842, 851–52 (9th Cir. 2008) (quoting same). EPA has similarly noted that Section 304(m) "requires the plan to identify categories of sources discharging non-trivial amounts of toxic or non-conventional pollutants for which EPA has not published effluent limitations guidelines under section 304(b)(2) or NSPS under section 306." 69 Fed. Reg. 53705, 53707 (Sept. 9, 2004) (emphasis added).

Once EPA has identified these categories in a Section 304(m) plan (referred to in this petition as an "ELG Plan"), EPA has a mandatory duty to establish a schedule for the promulgation of ELGs and NSPS for the new categories, "under which promulgation of such guidelines shall be no later than 3 years after the publication of the plan for categories identified in later published plans." 33 USC § 1314(m)(1)(C). "[T]he language of the CWA, when viewed in its entirety, is clear that the EPA must promulgate ELGs and NSPS for the point-source categories it lists in any plan it publishes under § 304(m)." *NRDC v. EPA,* 542 F.3d 1235, 1250 (9th Cir. 2008) (emphasis added). These ELGs and NSPS are to be promulgated for all "classes of point sources." 33 USC §§ 1311(b)(2), 1311(b)(2)(A), 1317(a)(2). ELGs and NSPS are not limited to industrial process water—they include, among other classes of point sources, industrial stormwater. 33 USC § 1342(p)(2)(B)*; see also NRDC v. Costle*, 568 F.2d 1369, 1374 (D.C. Cir. 1977) (holding EPA could not exempt industrial stormwater from permitting because the CWA required permits for point sources like industrial stormwater); *see also* 40 CFR Parts 411, 419, 434, 450 (categories including industrial stormwater ELGs).

2. Description of Category

Petcoke calciners heat "green" petroleum coke ("petcoke") in oxygen-deficient air kilns and furnaces to temperatures up to 2500°F. The volatile, high-heat hydrocarbons, residual water, and sulfur evaporate, resulting in a dense, rock-like calcined petcoke product. High-grade calcined petcoke with low residual sulfur and heavy metal contents that is capable of conducting electricity is used in the smelting process for metals such as aluminum and iron and in steel production. EPA Calcining Greenhouse Gas Technical Support Document at 3. These electricity-conducting devices made from high-grade calcined petcoke are called "anodes" for aluminum and "electrodes" for steel. Id.

Most petcoke calcining facilities are located at or near a petroleum refinery. EPA Calcining Greenhouse Gas Technical Support Document at 3. Eleven stand-alone calcining plants and at least one combined plant are currently operating in the United States and are listed below. Per the information provided in EPA's ECHO database, nine of the eleven stand-alone plants directly discharge to surface waters.

Table 1, Currently Operating Petcoke Calciners

Plant and location	Primary NPDES Permit	Direct Discharge to Surface Waters?	Stand-alone Plant?	Approx. Flow	Approx. Year Built
Rain CII Chalmette Calcining Plant, 700 Coke Plant Rd, Chalmette, LA 70043 (St. Bernard Parish) (AI #2557)	LA0081353[1]	Yes	Yes	1.5 MGD	1960s

[1] https://echo.epa.gov/detailed-facility-report?fid=110012818497&ej_type=sup&ej_compare=US

Plant and location	Primary NPDES Permit	Direct Discharge to Surface Waters?	Stand-alone Plant?	Approx. Flow	Approx. Year Built
Rain CII Gramercy Coke Plant, 1140 Jefferson Highway, Gramercy LA, 70052 (St. James Parish) (AI #32804)	LA0087777[2]	Yes	Yes	.56 MGD	1978
Rain CII Lake Charles Calcining Plant, 1920 Pak Tank Road, Sulphur LA 70665 (Calcasieu Parish) (AI #3439)	LA0054062[3]	Yes	Yes	1.59 MGD	1979
Rain CII Norco Coke Plant, 801 Prospect Ave, Norco, LA 70079 (St. Charles Parish) (AI #44866)	No active CWA permit[4]	Yes. Discharges to Shell refinery, LA0003522	Yes	N/A	1965
Rain CII Robinson Calcining Plant, 12187 E 950th Street, Robinson, IL 62454 (Crawford County)	IL0004065[5]	Yes	Yes	.29 MGD	Pre-1972
Rain CII Purvis Calcining Plant, 863 Old Richburg Rd, Purvis, MS 39475 (Lamar County) (AI #7112)	MS0001601[6]	Yes	Yes	.4 MGD	1959
Oxbow Baton Rouge Calcining Plant, 2200 Brooklawn Dr, Baton Rouge, LA 70807 (East Baton Rouge Parish) (AI #29884)	LA0000183[7]	Yes	Yes	.9 MGD	1962
Oxbow Port Arthur Calcining Plant A & B, 3901 Coke Dock Road, Pt. Arthur TX 77640 (Jefferson County) (RN100209287)	TX0068781[8]	Yes	Yes	.32 MGD	1935
Oxbow Kremlin Calcining Plant, 11826 N 30th St, Kremlin, OK 73753 (Garfield County) (DEQ AQS #40-047-0555, FA ID 801)	No active CWA permit[9]	No. Discharges to groundwater	Yes	N/A	1963
Seadrift Coke Plant, 8618 State Highway185 N, Port Lavaca TX 77979 (Calhoun County) (TCEQ # RN102147055; Primary ID 1370)	TX0090948[10]	Yes	Yes	.2 MGD	1983
Reynolds Metals Company (Alcoa) Lake Charles Carbon Plant 4040 West Tank Farm Road, Lake Charles LA 70605 (Calcasieu Parish) (AI #133)	LA0003735[11]	Yes	Yes	2 MGD	1969
BP Cherry Point #1, 2, 3, 4519 Grandview Rd, Blaine, WA 98230 (Whatcom County)	WA0022900[12]	Yes, but outfalls are combined with refinery	No		
Conoco Phillips Lake Charles, LA (Calcasieu Parish) (AI #2538)	LA0003026[13]	Yes, but outfalls are combined with refinery	No		

[2] https://echo.epa.gov/detailed-facility-report?fid=110018914781
[3] https://echo.epa.gov/detailed-facility-report?fid=110015679853
[4] https://echo.epa.gov/detailed-facility-report?fid=110022810449&ej_type=sup&ej_compare=US
[5] https://echo.epa.gov/detailed-facility-report?fid=110018167053
[6] https://echo.epa.gov/detailed-facility-report?fid=110002206611&ej_type=sup&ej_compare=US
[7] https://echo.epa.gov/detailed-facility-report?fid=110003360372&ej_type=EJ
[8] https://echo.epa.gov/detailed-facility-report?fid=11002042502&ej_type=EJ
[9] https://echo.epa.gov/detailed-facility-report?fid=110007385374&ej_type=sup&ej_compare=US
[10] https://echo.epa.gov/detailed-facility-report?fid=110017798418&ej_type=sup&ej_compare=US
[11] https://echo.epa.gov/detailed-facility-report?fid=110000449499&ej_type=sup&ej_compare=US
[12] https://echo.epa.gov/detailed-facility-report?fid=110070752633&ej_type=sup&ej_compare=US
[13] https://echo.epa.gov/detailed-facility-report?fid=110000539757&ej_type=sup&ej_compare=US

See also EPA Calcining Greenhouse Gas Technical Support Document at 3, Table 1 (list of plants). Petcoke calciners are typically classified under the catch-all SIC code 2999, *Products of Petroleum & Coal, Not Elsewhere Classified*, though the Rain CII Robinson plant is classified as 3624, *Carbon And Graphite Products*.

3. Petcoke Calciners Must be Identified in EPA's ELG Plan Because They Are a Category of Sources Discharging Non-Trivial Amounts of Toxic or Nonconventional Pollutants For Which ELGs and NSPS Have Not Previously Been Published

CWA Section 304(m) requires that EPA's ELG Plan identifies categories of sources discharging non-trivial amounts of toxic or nonconventional pollutants for which EPA has not published ELGs or NSPS. 33 USC § 1314(m)(1); 69 Fed. Reg. at 53707; *S. Comm. on Env't & Pub. Works, 99th Cong., Report to Accompany S. 1128* (1985 CWA Amendments) 25 (Comm. Print 1985); *Our Children's Earth Foundation*, 527 F.3d at 851–52.

Petcoke calciners meet these criteria. First, EPA has never published ELGs for existing petcoke calciners or NSPS for new petcoke calciners. Second, petcoke calciners discharge non-trivial amounts of both toxic and nonconventional pollutants.

A. EPA Has Never Published ELGs or NSPS for Petcoke Calciners

The petcoke calcining category lacks both ELGs for existing sources and NSPS for new sources. Most existing petcoke calcining plants were built before EPA began developing ELGs in the 1970s and 1980s. *Supra*, Table 1. However, EPA appears to have overlooked the petcoke calcining industry. For instance, petcoke calcining plants are not on the list of 21 "primary industries," that formed the basis for most of the initial ELG categories. 40 CFR Pt. 122, App. A; *see also* 48 Fed. Reg. 14153 (Apr. 1, 1983) (last revision to list of primary industry categories).

EPA has never gone back to correct its mistake. Based on a search of the Federal Register and the original development documents for the petroleum refining ELGs, we found no evidence that EPA ever even considered establishing ELGs and NSPS for the petcoke calcining category. *See, e.g., EPA Petroleum Refineries Development Document* (1982).[14]

Nor have states stepped in and filled this gap with case-by-case technology-based limits under 40 CFR § 125.3(a). When "EPA-promulgated effluent limitations are inapplicable," the permitting agency is required to step in and, using the technology and cost factors listed in 40 C.F.R. § 125.3(c)(2) and 40 C.F.R. § 125.3(d)(3), establish case-by-case BAT limits for all pollutants expected to be present in the discharge. 40 C.F.R. § 125.3(c)(2); *see also Comment to 40 C.F.R. § 125.3* ("These factors must be considered in all cases, regardless of whether the permit is being issued by EPA or an approved State").

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[14] 1982 Refineries Development Doc EPA-HQ-OW-2018-0618-0304.pdf

There is significant evidence, as described in Section 3. B below, that petcoke calciners discharge non-trivial amounts of a number of toxic pollutants, including lead, mercury, molybdenum, nickel, vanadium, zinc, and Polycyclic Aromatic Hydrocarbons (PAHs). Despite this, state permitting agencies have failed to conduct the case-by-case analysis required by 40 CFR § 125.3(a) for these toxics. For example, Louisiana's fact sheet for the 2023 renewal of the Reynolds Metals Lake Charles Carbon Plant, LA0003735, does not include any kind of case-by-case analysis for these pollutants.[15] In fact, Louisiana does not even mention the lead, benzo[g,h, i]perylene, and PAHs discharged by the facility. *Id.*

As a result, the current permits for these facilities are inadequate and fail to protect federal waters. Five of the nine NPDES permits for stand-alone petcoke calciners lack <u>any</u> limits for toxic pollutants. Only <u>one</u> plant includes limits for any PAHs. <u>None</u> of the plants limit discharges of lead or vanadium.

Table 2, Effluent Limits in Standalone Calciner NPDES Permits

Petcoke Calcining Plant	**Primary NPDES Permit**	**Effluent Limits for Toxics in Primary Permit**	**Other Effluent Limits**
Rain CII Chalmette Calcining Plant	LA0081353	None	Carbon, total organic (TOC), pH, oil and grease
Rain CII Gramercy Coke Plant	LA0087777	None	pH, total suspended solids (TSS), TOC, oil and grease, BOD, temperature, fecal coliform
Rain CII Lake Charles Calcining Plant	LA0054062	Chromium, zinc	pH, TOC, oil and grease, TSS, chlorine, BOD, temperature, fecal coliform
Rain CII Robinson IL Calcining Plant	IL0004065	Copper, nickel	pH, temperature, TSS
Rain CII Purvis MS Calcining Plant	MS0001601	None	pH, temperature
Oxbow Baton Rouge Calcining Plant	LA0000183	None	TOC, oil and grease, pH, TSS, temperature
Oxbow Port Arthur Calcining Plant A & B	TX0068781	Copper, zinc	Temperature, pH, TSS, TOC, BOD, chlorine, E. coli
Seadrift Coke Plant	TX0090948	1,1,1-Trichloroethane, benzene, chromium, copper, Naphthalene, Phenanthrene, phenols, toluene	pH, TSS, oil and grease, TOC, Sulfate, COD, BOD, temperature, chlorine, E. coli, WET testing
Reynolds Metals Company Lake Charles Plant	LA0003735	None	COD, Oil and grease, pH, TSS

The monitoring requirements at petcoke calcining plants are similarly insufficient. As shown in Table 3 below, five of the nine permits do not require monitoring for <u>any</u> toxics. The only NPDES

[15] https://edms.deq.louisiana.gov/app/doc/view?doc=13996283

permit that includes monitoring for lead is the Rain CII Robinson petcoke calciner, NPDES Permit No. IL0004065.

Table 3, Toxic Pollutant Monitoring Requirements in Standalone Calciner NPDES Permits

Petcoke Calcining Plant	Primary NPDES Permit	Toxic Pollutants Monitored in Current Primary Permit
Rain CII Chalmette Calcining Plant	LA0081353	None
Rain CII Gramercy Coke Plant	LA0087777	None
Rain CII Lake Charles Calcining Plant	LA0054062	Chromium, zinc
Rain CII Robinson Calcining Plant	IL0004065	Arsenic, cadmium, chromium, copper, cyanide, barium, iron, lead, mercury, manganese, nickel, phenolics, selenium, silver, zinc
Rain CII Purvis Calcining Plant	MS0001601	None
Oxbow Baton Rouge Calcining Plant	LA0000183	None
Oxbow Port Arthur Calcining Plant A & B	TX0068781	Copper, zinc
Seadrift Coke Plant	TX0090948	1,1,1-Trichloroethane, benzene, chromium, copper, Naphthalene, Phenanthrene, phenols, toluene
Reynolds Metals Company Lake Charles Plant	LA0003735	None

Allowing pollution from these plants to be discharged without limits for metals and PAHs cannot be justified by technological or feasibility concerns. Chemical precipitation is a widely used, proven technology for the removal of metals like these from wastewater.[16] EPA's own Industrial Wastewater Treatment Technology Database (IWTT) includes examples from refineries and metals smelters treating PAHs through a treatment train of equalization, oil/water separation, and a membrane bioreactor.[17]

In sum, EPA has not published ELGs or NSPS for the petcoke calcining industry, and such uniform, national limits are sorely needed. 33 USC § 1314(m)(1).

B. Petcoke Calciners Discharge Non-Trivial Amounts of Toxic Pollutants

As described above, petcoke calciner plant permits lack comprehensive discharge monitoring for toxics – and some lack any toxic monitoring at all. There is information available about petcoke calciner discharges, however, including data regarding green petcoke makeup and calcining processes, Toxic Release Inventory (TRI) and air data specifically applying to particular wastestreams, and effluent data from the one calcining plant that monitors a number of toxics. This information together presents strong evidence that these plants, as required for listing

[16] *See, e.g.,* EPA, Wastewater Technology Fact Sheet, Chemical Precipitation (Sept. 2000), https://www3.epa.gov/npdes/pubs/chemical_precipitation.pdf

[17] https://watersgeo.epa.gov/iwtt/guided-search; *see also* Treatment Technology Descriptions, https://watersgeo.epa.gov/iwtt/treatment-technologies

under Section 304(m), discharge non-trivial amounts of many of the toxic pollutants, including, at a minimum, lead, nickel, mercury, molybdenum, vanadium, zinc, and PAHs.

i. Introduction - Green Petcoke Constituents and Petcoke Wastestreams

The raw material used at petcoke calciners is "green," or raw petcoke.[18] Green petcoke is the residual left behind after refineries extract gasoline, diesel, and other higher-value products from crude oil. *EPA Hazard Screening* at 3. It includes ash. *Id.* at 9.

While the exact components of green petcoke will depend upon the crude oil source, the data available shows that it consistently includes many toxic metals and a wide array of PAHs. Below is a list of the metals and PAHs found in green petcoke using two sources: the *EPA Hazard Screening*, a June 2011 screening-level hazard characterization for the category, and the "*Chicago Analysis*," a 2014 EPA analysis of samples taken from petcoke storage piles at KCBX facilities in southeast Chicago.[19] When constituents are listed in both documents, the chart states "both."

Figure 4, Constituents of Green Petcoke

Metals	**PAHs**
Antimony (EPA Hazard Screening)	1-Methyl naphthalene (both)
Aluminum (both)	2-methyl naphthalene (both)
Arsenic (EPA Hazard Screening)	Acenaphthene (EPA Hazard Screening)
Barium (both)	Acenaphthylene (EPA Hazard Screening)
Beryllium (EPA Hazard Screening)	Anthracene (both)
Bismuth (EPA Hazard Screening)	Benzo[a]anthracene (both)
Boron (EPA Hazard Screening)	Benzo[a]pyrene (both)
Cadmium (EPA Hazard Screening)	Benzo[b]fluoranthene (both)
Calcium (EPA Hazard Screening	Benzo(g,h,i)perylene (EPA Hazard Screening)
Chromium (both)	Chrysene (both)
Cobalt (EPA Hazard Screening)	Dibenzo[a,h]anthracene (both)
Copper (EPA Hazard Screening)	Dibenzo[g,h,i]perylene (Chicago Analysis)
Iron (both)	Dibenzo(a,h)anthracene (EPA Hazard Screening)
Lead (both)	Fluroanthene (EPA Hazard Screening)
Lithium (EPA Hazard Screening)	Indeno(1,2,3-cd)pyrene (EPA Hazard Screening)

[18] EPA, J*une 2011 Screening-Level Hazard Characterization for the Petroleum Coke Category* ("*EPA Hazard Screening*"), https://archive.epa.gov/epa/petroleum-coke-chicago/screening-level-hazard-characterization-petroleum-coke.html
[19] https://19january2017snapshot.epa.gov/petroleum-coke-chicago/lab-analyses-pet-coke-samples_.html

Metals	PAHs
Magnesium (both)	Naphthalene (both)
Manganese (both)	Phenanthrene (both)
Molybdenum (EPA Hazard Screening)	Pyrene (EPA Hazard Screening)
Nickel (both)	
Palladium (EPA Hazard Screening)	
Phosphorus (EPA Hazard Screening)	
Platinum (EPA Hazard Screening)	
Potassium (EPA Hazard Screening)	
Selenium (EPA Hazard Screening)	
Silicon (EPA Hazard Screening)	
Sodium (both)	
Strontium (Chicago Analysis)	
Sulfur (EPA Hazard Screening)	
Tin (EPA Hazard Screening)	
Titanium (both)	
Vanadium (both)	
Zinc (both)	

ii. Overview of Petcoke Calcining Plant Wastestreams

The wastestreams most likely to discharge non-trivial amounts of toxic and nonconventional pollutants can be roughly divided into two categories: 1) wastestreams that come into contact with green petcoke; and 2) wastestreams that are related to the calcining process itself. *Infra*, Table 5; Vizag at 2; *EPA Calcining Greenhouse Gas Technical Support Document* at 3.

As described in Table 5 below, the first category, wastestreams that come into contact with green petcoke, includes stormwater runoff from barges carrying green petcoke, stormwater runoff from storage pads containing green petcoke, wastewater used to suppress dust on green petcoke piles, and equipment washwater.

The second category, wastestreams that are related to the calcining process, includes wastestreams like cooling water and blowdown from air pollution controls, washwater to clean calcining kilns, and cooling water towers.

The large wastestreams discharged by each petcoke permit are listed below in Table 5.

Table 5, Wastestreams at Direct Discharging Stand-alone Petcoke Calcining Plants

Petcoke Calcining Plant	Primary NPDES Permit	Surface Water Wastestreams
Rain CII Chalmette Calcining Plant	LA0081353	Noncontact condenser cooling water, clarifier underflow, stormwater runoff, miscellaneous process, utility, and cooling waters, and green coke barge stormwater
Rain CII Gramercy Coke Plant	LA0087777	Quenching/cooling water streams, wet scrubber overflow, stormwater runoff, and green coke barge stormwater runoff
Rain CII Lake Charles Calcining Plant	LA0054062	Stormwater runoff, cooling tower blowdown, boiler blowdown, steam condensate, cooling water, dust suppression water, dewatering stormwater runoff from the barge cargo areas, stormwater runoff from the green coke storage pads, and wastewater from water treatment steam condensate
Rain CII Robinson Calcining Plant	IL0004065	Stormwater, cooling water outflow, and washdown water
Rain CII Purvis Calcining Plant	MS0001601	Cooling water and stormwater
Oxbow Baton Rouge Calcining Plant	LA0000183	Process water and stormwater, cooling water, stormwater runoff, dust suppression runoff, pad washdown water, miscellaneous wastewaters
Oxbow Port Arthur Calcining Plant A & B	TX0068781	Stormwater runoff from the production and service areas, the main raw coke storage areas, and the loading dock, dust suppression water runoff, and wastewater from vessel unloading
Seadrift Coke Plant	TX0090948	Washdown water, stormwater, cooling tower blowdown, boiler blowdown, dimineralizer wastewater, and drainage from the training grounds
Reynolds Metals Company Lake Charles Plant	LA0003735	Petcoke pile crusting agent spray water (dust suppression), petcoke barge dewatering waters, equipment and vehicle washdown, and stormwater runoff

iii. Industrial Stormwater and Other Wastestreams that Come Into Contact With Green Petcoke Include Non-Trivial Amounts of Toxic Pollutants

Some of the largest wastestreams impacting surface waters from petcoke calciners result from stormwater coming into contact with green petcoke. *Supra*, Table 5. These wastestreams include stormwater runoff from green petcoke storage piles and storage pads; equipment used to load, haul, and transport green petcoke; barges carrying green petcoke; road surfaces subject to spills of green petcoke during transport; and vessel unloading. *Id.*

As stormwater flows over an industrial site, it can "pick up pollutants like sediment, debris, and chemicals." *NPDES Electronic Reporting Rule*, 79 Fed. Reg. 71066 (Dec. 1, 2014). Here, industrial stormwater off petcoke calciner sites can pick up petcoke debris, petcoke ash, and the pollutants found in green petcoke.

EPA's Toxics Release Inventory (TRI) provides specific evidence that industrial stormwater from these plants contains many of the same toxic pollutants found in green petcoke itself, like lead, nickel, vanadium, and PAHs.[20] The TRI inventory was established under the Emergency Planning and Community Right to Know Act of 1986 (EPCRA) and expanded by the Pollution Prevention Act of 1990. 42 USC § 11023(a). EPCRA requires facilities in certain industries, including petcoke calcining,[21] to report annually on their toxic releases if they meet certain criteria. 40 CFR §§ 372.5, 372.22. These criteria include quantities of different pollutants. 40 CFR §§ 372.25, 372.28.

Of the nine stand-alone calcining plants that discharge directly to surface water, seven reported to EPA through the TRI that they have discharged vanadium, benzo[g,h,i]perylene, and PAHs to surface waters since 2019. Six plants reported also discharging lead. Four reported discharging mercury and nickel. These discharges were primarily from stormwater.

Table 6, TRI Pollutants in Petcoke Calcining Plants' Industrial Stormwater

Petcoke Calcining Plant	**Primary NPDES Permit**	**TRI Pollutants Discharged Since 2019**
Rain CII Chalmette Calcining Plant (stormwater)	LA0081353	Lead, mercury, nickel, Benzo[g,h,i]perylene, PAHs, vanadium[22]
Rain CII Gramercy Coke Plant (stormwater)	LA0087777	Lead, nickel, Benzo[g,h,i]perylene, PAHs, vanadium[23]
Rain CII Lake Charles Calcining Plant (stormwater)	LA0054062	Lead, mercury, nickel, Benzo[g,h,i]perylene, PAHs, vanadium[24]
Rain CII Robinson Calcining Plant (stormwater)	IL0004065	Lead, mercury, nickel, Benzo[g,h,i]perylene, PAHs, vanadium[25]
Rain CII Purvis Calcining Plant	MS0001601	No surface water pollutants disclosed in TRI[26]
Oxbow Baton Rouge Calcining Plant (stormwater)	LA0000183	Lead, mercury, Benzo[g,h,i]perylene, PAHs, vanadium[27]
Oxbow Port Arthur Calcining Plant A & B (stormwater)	TX0068781	Benzo[g,h,i]perylene, PAHs, vanadium[28]

[20] https://www.epa.gov/toxics-release-inventory-tri-program

[21] Petcoke calcining plants are generally classified under NAIC 324199, All Other Petroleum and Coal Products Manufacturing. All of the 324 NAIC Codes (Petroleum and Coal Products Manufacturing) are required to file TRI reports if they meet other thresholds. 40 CFR § 372.23.

[22] https://enviro.epa.gov/enviro/trisquery.dcn_details?tris_id=70043CHLMT7CKEP

[23] https://enviro.epa.gov/enviro/trisquery.dcn_details?tris_id=70052GRMRC114JE

[24] https://enviro.epa.gov/enviro/trisquery.dcn_details?tris_id=70665VNTRC1920P

[25] https://enviro.epa.gov/enviro/trisquery.dcn_details?tris_id=62454CCRBN12187

[26] https://enviro.epa.gov/enviro/trisquery.dcn_details?tris_id=3947WRNCCR863LD

[27] https://enviro.epa.gov/enviro/trisquery.dcn_details?tris_id=70807GRTLK2200B

[28] https://enviro.epa.gov/enviro/trisquery.dcn_details?tris_id=77640GRTLKCOKED

Petcoke Calcining Plant	Primary NPDES Permit	TRI Pollutants Discharged Since 2019
Seadrift Coke Plant	TX0090948	No surface water pollutants disclosed in TRI[29]
Reynolds Metals Company Lake Charles Carbon Plant (unspecified)	LA0003735	Lead, Benzo[g,h,i]perylene, PAHs[30]

The amount of these toxics each plant discharged varies significantly by year, but some quantities were quite large. For instance, in 2021, the Rain CII Lake Charles plant reported discharging 8.75 lbs. of nickel and the Oxbow Baton Rouge Calcining Plant reported discharging 100 lbs. of vanadium. In 2022, the Reynolds Alcoa Lake Charles Carbon Plant reported discharging 22 lbs. of PAHs.

The presence of these toxics in stormwater is almost surely due to stormwater coming into contact with green petcoke. First, the petcoke at these facilities is generally stored in large, outdoor piles that are exposed to precipitation.[31] When stormwater flows over such loose piles, it can pick up debris from that petcoke. *See* 79 Fed. Reg. 71066 (describing how stormwater can "pick up pollutants like sediment, debris, and chemicals"). Second, the toxics found in petcoke calciner stormwater are remarkably consistent at petcoke calciner sites and, with the exception of mercury, are all found in green petcoke. Third, if the toxics were naturally present in the environment at these sites, TRI rules would have allowed the plants to exempt them from reporting. 40 CFR § 372.38(c)(5).

This TRI data alone is grounds for concluding that calcining plants are discharging non-trivial amounts of lead, mercury, nickel, benzo[g,h,i]perylene, PAHs, and vanadium. In addition, for the same reasons that the toxics in the plant's stormwater are likely due to the stormwater's contact with green petcoke, the other wastestreams that come into contact with green petcoke are also likely to contain lead, nickel, benzo[g,h,i]perylene, PAHs, and vanadium. These wastestreams include wastewater that has been used to suppress dust on green petcoke piles and equipment and/or pad washdown water.

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[29]https://enviro.epa.gov/enviro/trisquery.dcn_details?tris_id=77983RCCRBHWY18

[30] https://enviro.epa.gov/enviro/trisquery.dcn_details?tris_id=70605LKCHR3943G

[31] *See, e.g.,* Satellite Photo of Rain CII Lake Charles Calcining Plant, https://www.google.com/maps/place/1920+Paktank+Rd,+Sulphur,+LA+70665/@30.1482788,-93.3389578,948m/data=!3m1!1e3!4m6!3m5!1s0x863b898852bb4583:0xf109a78a4fc1a745!8m2!3d30.1485051!4d-93.3369777!16s%2Fg%2F11ggsb44k4?entry=ttu&g_ep=EgoyMDI0MDgyMy4wIKXMDSoASAFQAw%3D%3D; Satellite Photo of Oxbow Baton Rogue Plant, https://www.google.com/maps/place/2200+Brooklawn+Dr,+Baton+Rouge,+LA+70807/@30.5837541,-91.2443239,944m/data=!3m1!1e3!4m6!3m5!1s0x862420ef765ce5e3:0x572aa1cb5f74bce!8m2!3d30.5825946!4d-91.2401694!16s%2Fg%2F11cpgsd_38?entry=ttu&g_ep=EgoyMDI0MDgyMy4wIKXMDSoASAFQAw%3D%3D; *see also* U.S. Department Of Health and Human Services Agency for Toxic Substances and Disease Registry, Review of Analysis of Particulate Matter and Metal Exposures in Air, KCBX (aka, "Chicago Petroleum Coke" sites), Chicago, Cook County, Illinois (Aug. 22, 2016) (description of petcoke piles in Chicago), http://www.atsdr.cdc.gov/HAC/pha/KCBXPetroleumCoke/KCBX_Petroleum%20Coke_HC_508.pdf

In sum, petcoke calcining plants are discharging toxics like lead, mercury, nickel, benzo[g,h,i]perylene, PAHs, and vanadium through wastestreams coming into contact with green petcoke, particularly stormwater. These discharges are non-trivial - as discussed in more detail below, these toxics are harmful to humans and ecosystems even in small quantities. *Infra,* Section 3.B.v.

iv. Petcoke Calciner Wastestreams Related to Air Pollution Controls Include Non-Trivial Amounts of Toxic Pollutants

Other large wastestreams at petcoke calciners are related to the calcining plant's air emissions and air pollution controls. For instance, the Rain CII Gramercy Coke Plant discharges wet scrubber overflow while the Rain CII Lake Charles Calcining Plant and the Seadrift Coke Plant discharge boiler blowdown. *Supra*, Table 5, Wastestreams at Direct Discharging Stand-alone Petcoke Calcining Plants. A number of plants also discharge contact cooling waters and/or cooling tower blowdown, like the Rain CII Gramercy, Reynolds Lake Charles Carbon Plant, and Rain CII Robinson plants. *Id.*

Air pollutants present in emissions are also likely to be present in the related wastewater. For instance, in wet scrubbing processes, liquid or solid particles are removed from a gas stream by transferring them to a liquid, meaning that the pollutants present in air emissions from stacks with wet scrubbers will also be present in the overflow.[32] Similarly, pollutants present in air emissions from boilers are also likely to be present in the boiler blowdown since that blowdown includes steam condensate from boiler operations.[33] More generally, EPA has directed NPDES permit writers to consider air emissions data when identifying pollutants of concern in wastewater discharges.[34]

Here, the air data in Table 7 shows that petcoke calciners emit significant quantities of a number of toxics, including lead, vanadium, nickel, mercury, Benzo[g,h,i]perylene, and PAHs. In 2022, nine of the nine calcining plants that discharged to surface water emitted PAHs and benzo[g,h,i]perylene into the air, eight of the nine emitted lead and nickel, and seven emitted vanadium and mercury.[35]

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[32] https://www.epa.gov/air-emissions-monitoring-knowledge-base/monitoring-control-technique-wet-scrubber-particulate-0

[33] EPA, *Water Sense, 6.5 Boiler and Steam Systems* at 3, https://www.epa.gov/system/files/documents/2023-05/ws-commercial-watersense-at-work_Section_6.5_Boilers.pdf

[34] EPA, NPDES Permit Writers' Manual at 4-17, https://www.epa.gov/sites/default/files/2015-09/documents/pwm_chapt_04.pdf

[35] TRI POCs Calcining.xlsx (Air Data Tab).

Table 7, Air Pollution Emitted by Petcoke Calciners

Petcoke Calcining Plant	2022 State Emissions (2020 for Purvis) (lbs.)			2022 TRI - Total Air Releases (lbs.)					
	Lead	Nickel	Mercury	Vanadium	Nickel	Mercury	Lead	PAHs	Benzo[g,h,i]perylene
Rain CII Chalmette Calcining Plant	607.58	6,004.22	108.11	4,128.59	5,998.55	83.73	471.70	6.61	1.10
Rain CII Gramercy Coke Plant	137.78	2,104.55	0.57	4,863.63	2,104.55	0.57	137.77	3.91	0.24
Rain CII Lake Charles Calcining Plant	3.90	252.74	1.19	2,950.78	187.78	1.19	4.18	4.38	0.23
Rain CII Robinson Calcining Plant		2,200.00		5,922.90		0.18	17.91	0.94	0.07
Rain CII Purvis Calcining Plant	11.00	169.80		655.58	219.45	0.05	14.30	0.01	0.00008
Oxbow Baton Rouge Calcining Plant	541.75	7,964.77	0.00	23,039.00		4.60	510.07	14.50	1.75
Oxbow Port Arthur Calcining Plant A & B	1100.80	8,465.40	4.80	12,325.00		4.63	304.10	3.30	0.37
Seadrift Coke Plant	20.00	-	7.40					52	0.20
Reynolds Lake Charles Carbon Plant	104.44	2,616.62	0				104.70	0.50	0.09

This data shows that petcoke calciners regularly emit vanadium, nickel, mercury, lead, and PAHs into the air, and indicates that vanadium, nickel, mercury, lead, and PAHs are thus likely present in wastestreams associated with these air emissions, like wet scrubber and boiler blowdown. While not as large as the stormwater flows, these wastestreams still represent tens of thousands of gallons of effluent, and discharges of them containing these toxics are non-trivial.

v. The Rain CII Robinson Plant Discharges Non-Trivial Amounts of Toxic Pollutants

The small Rain CII Robinson Plant in Robinson, Illinois is the only stand-alone petcoke calciner whose permit requires monitoring for more than three toxic metals. The Robinson plant's effluent data from Outfall 1 (discharges of treated stormwater, cooling water overflow, and area washdown) demonstrates that the petcoke calciner discharges a non-trivial amount of a number of additional toxic pollutants, including barium, manganese, iron, selenium, zinc, and arsenic.[36]

Table 8, Rain CII Robinson Outfall 001 Discharges

Pollutants	2023 Total Pounds	2022 Total Pounds	2021 Total Pounds	2020 Total Pounds
Barium	9.63	254.96	57.62	4.81
Manganese	7.19	84.9	10.79	2.13
Iron	2.54	65.51	1.23	0.88
Selenium	1.23	34.23	0.16	0.17
Nickel	0.53	16.75	0	0.03
Zinc	0.46	2.35	-	0.02
Arsenic	0.3	1.33	-	-
Copper	0.2	1.01	-	-
Chromium	0.06	0.68	-	-
Lead	-	0.42	-	-
Chromium, Hexavalent	-	0.42	-	-

Based on this data, it is reasonable to assume that other petcoke calcining plants also discharge measurable quantities of barium, manganese, iron, and selenium. The Robinson plant's process is typical for a petcoke calciner, whereby green petcoke is fed into a two rotary kilns, then heated, then moved into a cooler where it is cooled/quenched with water.[37] *Compare* Rain CII IL0004065 Permit Application (Dec. 2023) at 4 (describing Robinson process) *with EPA Calcining Greenhouse Gas Technical Support Document* at 3 (describing general process). The Robinson plant does not appear to have any unusual characteristics that would impact what pollutants the plant discharged.

Other petcoke calcining plants may in fact discharge much larger quantities of barium, manganese, iron, and selenium. At .29 MGD, the Rain CII Robinson flow is far smaller than most petcoke calciners. For instance, it is a sixth of the size of the Reynolds Lake Charles Carbon Plant, which uses a similar calcining process. *Supra,* Table 1 (comparing flows); Reynolds Metals Lake Charles Carbon Plant, LA0003735 Fact Sheet.[38] Reynolds Fact Sheet. If the Reynolds plant discharged similar concentrations of these pollutants, it could discharge 6 times the amount of barium, manganese, iron, and selenium every year. This quantity of toxic pollution is also non-trivial.

[36] https://echo.epa.gov/trends/loading-tool/reports/dmr-pollutant-loading?permit_id=IL0004065&year=2022
[37] Rain CII IL0004065 Permit Application (Dec. 2023) at 4.
[38] https://edms.deq.louisiana.gov/app/doc/view?doc=13996283

vi. Petcoke Calcining Plants Discharge Toxic Pollutants that Are Harmful at Low Levels

As noted, because the NPDES permits for petcoke calciners contain inadequate monitoring, we do not know the total quantities of toxic pollutants discharged by these plants. Even if petcoke calciners discharge only very small quantities of toxics like lead, mercury, nickel, vanadium, and PAHs, however, these discharges would still be non-trivial because these toxics are harmful at very low levels.

1. Lead

Lead can cause a range of reproductive, cognitive, neurological, cardiovascular, and kidney problems even at low levels.[39] EPA has classified lead as a probable carcinogen.[40] Researchers believe that heavy metals like lead damage cells and organs because of "oxidative stress," or imbalances between antioxidants, which are key to maintaining immunity, and free radicals, molecules that cause chemical reactions that are damaging to the human body.[41] EPA has established an action level of 15 ug/L for lead in drinking water. 40 CFR § 141.2. There is no maximum contaminant limit (MCL) for lead in drinking water because there is no safe level of lead in drinking water. *See* 40 CFR Part 141 Subpart I.

Lead also harms aquatic life in even small quantities. To protect them, EPA established an acute lead freshwater water quality criteria at 65 ug/L and a very low chronic freshwater water quality criteria of 2.5 ug/L.[42]

2. Mercury

Mercury is a highly toxic, mobile, bioaccumulative, and environmentally persistent heavy metal. Mercury does not degrade in the environment and there is no treatment method to remove it from wastewater completely.[43] Mercury is a neurotoxin, causing problems such as loss of peripheral vision, cognitive impairment, muscle weakness, and trouble speaking, hearing, and walking.[44] Long-term exposure to elevated levels of mercury in drinking water can cause kidney damage.[45]

The primary way people ingest mercury in water is by eating fish in which the metal has bioaccumulated,[46] but drinking water can also contain mercury. The drinking water MCL for

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[39] EPA, "Basic Information about Lead in Drinking Water," https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water

[40] Agency for Toxic Substances and Disease Registry, ToxFAQs, Lead, https://www.atsdr.cdc.gov/toxfaqs/tfacts13.pdf

[41] Monisha Jaishankar, Tenzen Tseten, Naresh Anbalagan, Blessy B. Mathew, Krisnamurthy N. Beeregowda, "Toxicity mechanism and health effects of some heavy metals," Interdisciplinary Toxicology, Vol. 7, Issue 2, 2014, doi: 10.2478/intox-2014-0009; Pan Chen, Julia Bornhorst, M. Diana Neely, and Daiana S. Avila, Mechanisms and Disease Pathogenesis Underlying Metal-Induced Oxidative Stress," Oxidative Medicine and Cellular Longevity, 2018, https://doi.org/10.1155/2018/7612172

[42] https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table

[43] Western Lake Superior Sanitary District, Blueprint for Mercury Elimination, 2002, https://wlssd.com/wp-content/uploads/2014/12/Revised-Blueprint-for-Mercu.pdf

[44] EPA, "Health Effects of Exposures to Mercury," https://www.epa.gov/mercury/health-effects-exposures-mercury

[45] EPA, "National Primary Drinking Water Standards," https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations

[46] U.S. Geological Society, "Mercury Contamination of Aquatic Environments,"

mercury is .002 mg/L.[47] To protect both fish and those consuming fish, EPA established an acute lead freshwater water quality criteria at 1.4 ug/L and a very low chronic freshwater water quality criteria of .77 ug/L.

Mercury can also directly harm birds. If birds eat fish with high levels of mercury in their tissue, those birds will absorb that mercury into their bodies, which can significantly impair their reproduction.[48]

3. Nickel

Nickel is a metal that appears in the environment in the form of several compounds and salts that can be both soluble and insoluble in water.[49] Soluble forms of nickel can dissolve or bind with particulate matter in water; while nickel doesn't bioaccumulate in aquatic systems or fish, it is easily taken up by soils, sediments, and plants.[50]

According to EPA, long-term exposure through ingestion can lead to decreased body weight and heart and liver damage.[51] Ingestion by people with nickel sensitivity can result in contact dermatitis, Herpes, candidiasis, and even neurological effects.[52]

Since the 1980s, a range of animal laboratory studies on nickel ingestion have demonstrated negative effects on reproduction, liver and kidney function, and weight maintenance.[53] Additional studies have linked acute oral exposure in people (including workers) to gastrointestinal symptoms such as abdominal pain, diarrhea, and nausea.[54]

Low levels of nickel can harm aquatic life. To protect fish and other aquatic life, EPA established an acute lead freshwater water quality criteria at 470 ug/L and a chronic freshwater water quality criteria of 52 ug/L.[55]

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[47] https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations

[48] USGS, *Mercury Found in Birds Across Western North America,* https://www.usgs.gov/programs/cmhrp/news/mercury-found-birds-across-western-north-america#:~:text=Overall%2C%20using%20blood%2Dequivalent%20mercury,%C2%B5g%2Fg%20wet%20weight).

[49] Giuseppi Genchi, Alessia Carocci, Graziantonio Lauria, Maria Stefania Sinicropi, and Alessia Cantolano, "Nickel: Human Health and Environmental Toxicology," International Journal of Environmental Research and Public Health, 2020, doi: 10.3390/ijerph17030679

[50] Agency for Toxic Substances and Disease Registry, ToxGuide for Nickel, 2023, https://www.atsdr.cdc.gov/toxguides/toxguide-15.pdf.

[51] EPA, Technical Fact Sheet on Nickel (archived document), National Primary Drinking Water Regulations, 1994, https://archive.epa.gov/water/archive/web/pdf/archived-technical-fact-sheet-on-nickel.pdf

[52] European Food Safety Association Panel on Contaminants in the Food Chain, "Scientific Opinion on the risks to public health related to the presence of nickel in food and drinking water," 2015, *EFSA Journal,* https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2015.4002

[53] Agency for Toxic Substances and Disease Registry, Toxicological Profile for Nickel, draft for public comment, August 2023, https://www.atsdr.cdc.gov/toxprofiles/tp15.pdf

[54] European Food Safety Association Panel on Contaminants in the Food Chain, "Update of the risk assessment of nickel in food and drinking water," *EFSA Journal,* 2020, doi: 10.2903/j.efsa.2020.6268

[55] EPA, "National Recommended Water Quality Criteria, Aquatic Life Criteria Table," https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table

4. *Vanadium*

Vanadium is a trace metal that cannot be destroyed in the environment, but can change its form; in water, vanadium can dissolve or attach to particles.[56] Much of the concern over vanadium's health effects are linked to its association with the production of heavy crude oil and derivative products (such as petcoke) and the metal's presence in the atmosphere.[57] A recent review of vanadium indicates that it has accumulated in land and water sources due to human activity.[58]

Vanadium can bioaccumulate through soil and plants and be ingested by people who eat seafood with high levels, with subsequent health effects including nausea, stomach cramps, and diarrhea.[59] Some laboratory studies with animals indicate that ingesting vanadium compounds can lower red blood cell count, increase blood pressure, and have mild neurological effects.[60] Studies have also shown that rats and mice given vanadium compounds experienced blood disorders, reduced weight, and reproductive problems.[61] In 2022, EPA included a chemical form of vanadium in its list of contaminants that could potentially require regulation under the Safe Drinking Water Act.[62]

5. *PAHs and Benzo(g,h,i)perylene*

PAHs are a large group of carcinogenic organic compounds, which originated from incomplete combustion or pyrolysis of organic matter. There are over 100 distinct PAHs, which are often detected in complex combinations.[63] PAHs accumulate in sediments, aquatic organisms, and plants.[64] The primary PAH reported by petcoke plants, benzo(g,h, i)perylene, binds to sediments and particles in water.[65]

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[56] Agency for Toxic Substances and Disease Registry, Public Health Statement, Vanadium, https://www.atsdr.cdc.gov/ToxProfiles/tp58-c1.pdf

[57] Schlesinger, William H., Klein, Emily M., and Vengosh, Avner. "Global Biogeochemical Cycle of Vanadium," *Proceedings of the National Academy of Sciences*, Dec. 11, 2017, https://www.pnas.org/doi/full/10.1073/pnas.1715500114

[58] James A. J. Watt, Ian T. Burke, Ron A. Edwards et al., "Vanadium: A Re-emerging Environmental Hazard," *Environmental Science & Technology,* 2018, https://doi.org/10.1021/acs.est.8b05560

[59] Agency for Toxic Substances and Disease Registry, ToxFAQs for Vanadium, https://wwwn.cdc.gov/TSP/ToxFAQs/ToxFAQsDetails.aspx?faqid=275&toxid=50#.

[60] Agency for Toxic Substances and Disease Registry, ToxFAQs for Vanadium, https://wwwn.cdc.gov/TSP/ToxFAQs/ToxFAQsDetails.aspx?faqid=275&toxid=50#.

[61] National Toxicology Program, NTP Technical Report on the Toxicity Studies of Sodium Metavanadate (CASRN 13718-26-8) and Vanadyl Sulfate (CASRN 27774-13-6) Administered in Drinking Water to Sprague Dawley (Hsd:Sprague Dawley® SD®) Rats and B6C3F1/N Mice, 2023, https://www.ncbi.nlm.nih.gov/books/NBK588884/

[62] EPA, Technical Support Document for the Final Fifth Contaminant Candidate List, October 2022, https://www.epa.gov/ccl/ccl-5-technical-support-documents.

[63] Agency for Toxic Substances and Disease Registry, Public Health Statement for Polycyclic Aromatic Hydrocarbons (PAHs), https://wwwn.cdc.gov/TSP/PHS/PHS.aspx?phsid=120&toxid=25

[64] Agency for Toxic Substances and Disease Registry, "Where are PAHs found?", https://www.atsdr.cdc.gov/csem/polycyclic-aromatic-hydrocarbons/where_are_pahs_found.html

[65] Swedish Pollutant Release and Transfer Register, "Benzo(g,h,i)perylene, a PAH," https://utslappisiffror.naturvardsverket.se/en/Substances/Other-organic-substances/BenzoGHIperylene/

Depending on the dose, chronic exposure to PAHs can have negative renal, gastrointestinal, and dermatologic effects.[66] PAHs have been detected in some U.S. drinking water supplies.[67]

C. Petcoke Calciners Discharge Non-Trivial Amounts of Nonconventional Pollutants

Petcoke calcining plants also discharge nonconventional pollutants. A number of plants monitor the quantity of total organic carbon (TOC) discharged, for instance, which is the amount of carbon atoms tied up in organic compounds in a water sample and a non-specific indicator of water quality. Increases in organic carbon can decrease the quantity of oxygen in water to the point of anoxia (oxygen deficiency), which can significantly harm aquatic life.[68] It can also indicate high levels of other pollutants.

While not all facilities monitor for TOC, the ECHO pollution loading data from the plants that do show that all standalone petcoke calciners required to monitor for TOC discharged at least 1,000 lbs. of TOC, with a mean average of 22,477 lbs. TOC in 2022 and 13,204 lbs. in 2023. This constitutes non-trivial quantities of a nonconventional pollutant.

Table 9, TOC at Petcoke Calciners

Operator & Plant	Primary NPDES Permit	2022 Total Organic Carbon lbs.	2023 Total Organic Carbon lbs.
Rain CII Chalmette Calcining Plant	LA0081353	50,413	34,438
Rain CII Gramercy Coke Plant	LA0087777	47,865	18,760
Rain CII Lake Charles Calcining Plant	LA0054062	24,315	17,985
Rain CII Robinson Calcining Plant	IL0004065	Not monitored	Not monitored
Rain CII Purvis Calcining Plant	MS0001601	Not monitored	Not monitored
Oxbow Baton Rouge Calcining Plant	LA0000183	3,330	2,470
Oxbow Port Arthur Calcining Plant A & B	TX0068781	7,880	4,162
Seadrift Coke Plant	TX0090948	1,056	1,530
Reynolds Lake Charles Carbon Plant	LA0003735	Not monitored	Not monitored

In addition, the small Rain CII Robinson plant reported discharging 1,177.82 lbs. of fluoride in 2022. This discharge is also non-trivial. Fluoride is a neurotoxin and levels of fluoride exposure above 1.5 milligrams of fluoride per liter in drinking water are associated with lower IQs in children.[69] Fluoride can also adversely affect aquatic life. [70] For instance, fluoride levels above

[66] Agency for Toxic Substances and Disease Registry, "What Health Effects are Associated with PAH Exposure?", https://www.atsdr.cdc.gov/csem/polycyclic-aromatic-hydrocarbons/health_effects.html

[67] Agency for Toxic Substances and Disease Registry, Public Health Statement for Polycyclic Aromatic Hydrocarbons (PAHs), https://wwwn.cdc.gov/TSP/PHS/PHS.aspx?phsid=120&toxid=25

[68] Akhil Shetty, Ajay Goyal, *Total organic carbon analysis in water – A review of current methods*, Vol. 65, Part 8, 2022, https://www.sciencedirect.com/science/article/pii/S2214785322047952.

[69] National Toxicology Program, *NTP Monograph on the State of the Science Concerning Fluoride Exposure and Neurodevelopment and Cognition: A Systematic Review* (Aug. 2024), https://ntp.niehs.nih.gov/go/mgraph08abs

[70] John W. Osterman, MD, SCD, *Evaluating the Impact of Municipal Water Fluoridation on the Aquatic Environment*, American Journal of Public Health 1990, Vol. 80, No. 10 ("Osterman"), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1404812/.

2.7-4.7 mg/L are associated with decreased survival and prolonged hatching time in trout. Osterman at 1.

D. Petcoke Calciner Discharges are Also Non-Trivial Because of Their Community and Environmental Impacts

Petcoke calciner discharges of toxic and nonconventional pollutants are also non-trivial because of the impacts of these discharges upon communities and the environment. First, many of the toxics discharged by petcoke calciners are harmful at even low levels. *Supra,* Section 3.B.v. Second, petcoke calcining plants are often located in economically disadvantaged communities already overburdened by historic and current pollution from other industrial facilities like petrochemical processing and oil refining. Third, petcoke calciner discharges can contribute to impairments of the receiving water's uses, like aquatic life.

i. Petcoke Calciners Contribute to Cumulative Environmental Harms in Overburdened Communities

Most petcoke calciners are located in vulnerable communities. Data from the federal Climate and Economic Justice Screening Tool (CEJST) and EPA's Environmental Justice Screening Tool (EJScreen) show that residents living within three miles of nine of the calcining plants are considered "disadvantaged," with 35 percent living in poverty and 45 percent people of color when taken together.[71] This means those living near petcoke calciners experience persistent and significant health impacts, a high risk of climate disruption, and socioeconomic challenges. In addition, a higher proportion of residents living near seven of the plants are low-income than the national average of 31 percent, while the areas near four of the plants have a higher proportion of people of color than the national average of 39 percent.[72]

The areas around petcoke calciners are also overburdened by pollution. Petcoke calcining plants are usually part of highly industrialized areas with multiple sources of toxic pollution, as is evidenced by the large number of nearby facilities reporting toxic releases in Table 9 below.

Table 9. Key socioeconomic indicators of residents within a 3-mile radius around calcining facilities

Plant Name	Location	Within 3-mile Radius of Facility				
		Population	% Low Income	% People of Color	# Disadvantaged Census Tracts	# Facilities reporting toxic releases
Rain CII Carbon Chalmette	St. Bernard Parish, LA	64,601	40%	63%	26	12

[71] CEJST is a publicly available tool developed by the U.S. Council on Environmental Quality, which provides an assessment of several environmental and socioeconomic conditions at the census tract level. *See* Council on Environmental Quality, Climate and Economic Justice Screening Tool, https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5 . EJScreen is a publicly available tool developed by the Environmental Protection Agency. See EJScreen: Environmental Justice Screening and Mapping Tool, https://www.epa.gov/ejscreen.

[72] Based on the U.S. Census Bureau's American Community Survey 2017-2021 5-Year Estimates. EJScreen defines "low-income" as a household in which income is less than or equal to twice the federal poverty level.

Plant Name	Location	Within 3-mile Radius of Facility				
		Population	% Low Income	% People of Color	# Disadvantaged Census Tracts	# Facilities reporting toxic releases
Rain CII Carbon Gramercy	St. James Parish, LA	9,486	35%	56%	4	9
Rain CII Carbon Lake Charles	Calcasieu Parish, LA	4,578	9%	4%	1	9
Rain CII Carbon Norco	St. Charles Parish, LA	12,950	24%	24%	2	14
Reynolds Lake Charles Carbon Plant	Calcasieu Parish, LA	6,687	14%	11%	0	5
Conoco Phillips Lake Charles Refinery	Calcasieu Parish, LA	10,486	30%	16%	3	26
Oxbow Baton Rouge	East Baton Rouge, LA	1,379	49%	87%	2	11
Oxbow Port Arthur	Jefferson County, TX	2,744	65%	96%	5	12
Seadrift Coke	Calhoun County, TX	92	18%	32%	2	4
Oxbow Kremlin	Garfield County, OK	745	6%	11%	0	1
Purvis Calcining Plant	Lamar County, MS	3,992	34%	14%	2	3
Robinson Calcining Plant	Crawford County, IL	8,260	29%	13%	1	8
BP Cherry Point Refinery	Whatcom County, WA	4,357	33%	22%	0	5
Total		128,314	35%	45%	48	119
Sources: Environmental Justice Screening and Mapping Tool, Council on Environmental Quality, Climate and Economic Justice Screening Tool, and EPA's Toxics Release Inventory. The total population figure is lower than all the separate figures summed due to overlap in the 3-mile radius around two of the facilities in Calcasieu Parish, LA.						

Petcoke calciner discharges contribute in these areas to significant cumulative pollution, and their discharges should be considered in terms of their contributions to the cumulative pollution impacts to populations and waters in these areas. Discharges that contribute to cumulative harms in this way are non-trivial.

ii. Petcoke Calciner Toxic and Nonconventional Discharges Can Contribute to Water Quality Impairment

At least one of the nine calcining petcoke plants is also contributing to a water quality impairment. The Oxbow Baton Rouge petcoke calcining plant discharges to Devil's Swamp Lake and Bayou Baton Rouge (LA070203), which is impaired for fish and wildlife propagation due in part to exceedances of mercury, lead, and oil and grease.[73] The Oxbow plant has reported discharging mercury and lead into this segment through the TRI, meaning the plant is contributing directly to the water's impairment. *Supra*, Table 6. In addition, the Rain CII Gramercy plant discharges to a segment of the Blind River (LA040403) impaired for fish propagation by mercury, which the plant may discharge based on its air emissions. *Supra,* Table 7.

4. <u>EPA Must Establish ELGs for Petcoke Calciners Three Years After Identifying the Category in the ELG Plan</u>

There is no question that petcoke calciners discharge non-trivial amounts of nonconventional or toxic pollutants, and the Agency must promulgate effluent limits for the point sources within the category. ELGs "are required for any category of sources discharging significant amounts of toxic pollutants. In this use, 'significant amounts' does not require the Administrator to make any determination of environmental harm; <u>any non-trivial discharges from sources in a category must lead to effluent guidelines</u>." S. Comm. on Env't & Pub. Works, 99th Cong., Report to Accompany S. 1128 (1985 Clean Water Act Amendments) 25 (Comm. Print 1985) (emphasis added); *see also Our Children's Earth Foundation*, 527 F.3d at 851–52 (quoting same).

Moreover, EPA must promulgate these ELGs, "3 years after the publication of the plan for categories identified in later published plans." 33 USC § 1314(m)(1)(C). "[T]he language of the CWA, when viewed in its entirety, is clear that the EPA must promulgate ELGs and NSPSs for the point-source categories it lists in any plan it publishes under § 304(m)." *NRDC*, 542 F.3d at 1250.

These ELGs for existing sources in turn must reflect the pollution reductions that can be achieved by the best available economically achievable treatment technologies ("BAT"). 33 USC §§ 1251(a)(1), 1311(b)(2), 1317(a)(2); *see also Sw. Elec. Power Co. v. EPA,* 920 F.3d 999, 1005 (5th Cir. 2019) (explaining that the CWA is "'technology-forcing,' meaning it seeks to 'press development of new, more efficient and effective [pollution-control] technologies'") (alteration in original) (citing *NRDC v. EPA*, 822 F.2d 104, 123 (D.C. Cir. 1987)). These technology-based BAT limits must be based, at a minimum, "on the performance of the single best-performing plant in an industrial field." *Sw. Elec. Power Co.*, 920 F.3d at 1006 (citing *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d 177, 226 (5th Cir. 1989)); *see also Kennecott v. EPA*, 780 F.2d 445, 448 (4th Cir. 1985) ("In setting BAT, EPA uses not the average plant, but the optimally operating plant, the pilot plan which acts as a beacon to show what is possible.").

5. <u>Conclusion</u>

Petcoke calcining plants lack ELGs and NSPS, and their discharges of toxic and nonconventional pollutants are non-trivial. EPA is thus required to identify the category in its next ELG Plan under CWA Section 304(m)(1)(B).

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[73] https://deq.louisiana.gov/page/2022-water-quality-inventory-integrated-report-305b303d

Petcoke calciners discharge non-trivial quantities of toxics. The raw material used at petcoke calcining plants is green petcoke, which contains a number of toxic metals and PAHs. Some of the largest wastestreams at petcoke calcining facilities, like industrial stormwater, equipment washdown water, and dust control wastewater, come into direct contact with this green petcoke, picking up ash, petcoke debris, and toxics before it is discharged into surface waters. In fact, petcoke calciners reported to EPA that stormwater at their facilities contains a number of toxic pollutants that are also present in green petcoke, including lead, nickel, vanadium, and PAHs. In addition, air emissions released from these plants provides additional evidence that other wastestreams at petcoke calcining plants associated with air pollution controls also contain lead, nickel, mercury, vanadium, and PAHs. Finally, the Rain CII Robinson discharge data shows that other petcoke calciners are also likely discharging other toxic pollutants, like barium, iron, manganese, and selenium.

All of these toxic discharges are non-trivial. Even if the discharges of these toxics are relatively small, the toxics at issue here, including lead, mercury, nickel, vanadium, and PAHs, are harmful to humans and/or aquatic organisms at very low levels. Petcoke calciners are also discharging these toxic pollutants into waters in already-overburdened, vulnerable communities.

Petcoke calciners also discharge large, non-trivial quantities of nonconventional pollutants like TOC.

EPA must identify petcoke calcining plants in the upcoming ELG Plan 16, then promulgate ELGs for the category within three years reflecting the best available economically achievable treatment technologies as required by Section 304(m)(1)(C).

Please reach out with any questions or if you seek additional information.

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