

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

November 1, 1977

OFFICE OF ENFORCEMENT

MEMORANDUM

SUBJECT: PSD Applicability Determination - ARCO Petroleum Refinery

FROM: Director, Division of Stationary Source Enforcement

TO: Lloyd A. Reed, Director Enforcement Division - Region X

This is in response to a telephone conversation between Dick Bauer of your staff and Rich Biondi of my staff concerning the applicability of the regulations for the prevention of significant deterioration (PSD) to the ARCO refinery. This memo is intended to clarify a determination made by this Office on September 28, 1977, concerning this facility. This clarification has been necessitated by the recent events concerning the interpretation as to the effectiveness of Section 165 of the 1977 Clean Air Act, as amended.

An October 6, 1977, memo from Messrs. Hawkins and Durning states EPA's position requiring the immediate application of Section 165. Since that time EPA has further considered this point and has determined that Section 165 will be effective only after proposal and promulgation of these changes in 40 CFR 51 and 52. A memorandum providing further guidance is attached.

The effect of all this on the ARCO facility will be that the Cherry Point refinery will not be subject to PSD if ARCO can demonstrate that the operation of the coke calciner will not result in a net increase in emissions of sulfur dioxide and/or particulate matter from the entire refinery. That is, if ARCO can control other facilities within their refinery to such an extent so as to totally offset the emissions of particulate matter and sulfur dioxide caused by the operation of the coke calciner, they will not be subject to the PSD requirements. This presumes that ARCO receives its permit before the revision to our PSD regulations which will expand the categories covered (approximately March 1, 1978) and they commence construction before the new PSD plan submissions are due from the States.

If you have any additional questions or comments please contact Rich Biondi (755-2564) of my staff.

Edward E. Reich

Attachment

cc: Mike Trutna - CPDD  
Dick Bauer - Region X

MEMORANDUM

DATE: Sep 28, 1977

SUBJECT: PSD Applicability Determination - ARCO Petroleum Refinery

FROM: Director  
Division of Stationary Source Enforcement

TO: Gary L. O'Neal, Director  
Surveillance and Analysis Division-Region X

Mark Hooper, Chief  
Air Technical Compliance Section-Region X

Lloyd A. Reed, Director  
Enforcement Division-Region X

This is in response to several memos from your office dated June 17, August 19, and August 24, 1977 concerning the proposed construction of a coke calciner at ARCO's petroleum refinery in Cherry Point, Washington. Rich Biondi of my staff has been in contact with Paul Boys and Dick Bauer of your staffs as well as members of Dick Rhoads' staff in the Control Programs Development Division in Durham, N.C. After considerable discussion between all interested parties, the relevant questions appear to be as follows:

- (1) Is the proposed coke calciner subject to the requirements of PSD?
- (2) Can ARCO delay installation of control equipment in compliance with the BACT requirements, until some time after commencement of operation?
- (3) Can the source avoid application of the PSD regulations by controlling the new facility and some existing facilities so as to negate any increased emissions?

I will respond to these questions in the order presented in this memo.

1. The petroleum coke calciner, if constructed, would be a part of the overall existing ARCO petroleum refinery and is therefore a potential modification of the petroleum refinery. The determination of whether this new facility, does in fact constitute a modification would depend on whether there would be a potential increase of 100 tons per year or more of an air pollutant from the petroleum refinery. The use of potential emissions is a change from the present Part 52 requirements. However, this has been necessitated by the Clean Air Act Amendments of 1977.

2. The PSD regulations have two major requirements (1) that the source install BACT and (2) that the source not violate the applicable air quality increment. In order to assure that both these requirements are satisfied, EPA requires a preconstruction review. This preconstruction review requires EPA to respond to the application for construction, based on the effect of the emissions from the source and all other sources added to or subtracted from the emission inventory since December 31, 1974. We must (1) be assured that the source will be in compliance with all emission limits at the time it commences operation, and (2) be able to predict the anticipated impact on air quality. Not only will the allowance of a compliance schedule make this latter prediction much more difficult, it will also interfere with EPA's ability to perform subsequent PSD review of sources locating in the area of this proposed source. Any extension of time allotted to this one source will necessarily affect our ability to grant subsequent permit approvals, and may delay the construction of these subsequent new source applicants. We cannot provide for thisphased in construction of additional sources within the scope of Section 52.21 and must, therefore, disapprove any method which would provide for delayed compliance.

3. ARCO will not be able to avoid application of the PSD regulations by totally negating the increase in the emissions caused by the construction of the coke calciner, as long as the coke calciner has the potential to emit 100 tons per year of any air pollutant.

If you have any questions or comments, please contact Rich Biondi (755- 2564) of my staff.

Edward E. Reich

cc: Dick Rhoads - CPDD  
Mike Trutna - CPDD  
Dick Stoll - OGC

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 24, 1977

SUBJECT: Request for Applicability Determination - Under PSD Regulations

FROM: Lloyd A. Reed  
Director, Enforcement Division M/S 517

TO: Edward E. Reich, Director  
DSSE, EN-341

Region X is currently reviewing an application from ARCO for a permit under PSD to install a coke calciner at its Ferndale, Washington refinery. Please provide this office with a determination whether the installation of a coke calciner at a petroleum refinery constitutes a modification subject to the currently effective PSD regulations. It does appear to Region X staff that the PSD regulations do not apply in this case. This determination is needed in this office by August 31, 1977.

cc: D. E. Cooper  
Bob Courson  
Clark Gaulding

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
Region X - 1200 6th Ave., Seattle, WA 98101

DATE: August 19, 1977

SUBJECT: ARCO Application for PSD Permit to Construct Petroleum Coke Calciner at its Cherry Point, Washington Refinery

FROM: Mark H. Hooper, Chief Air Technical Compliance Section M/S 513

TO: Michael Trutna  
Office of Air Quality Planning and Standards, EPA  
Research Triangle Park, N.C.

Richard Biondi  
Stationary Source Enforcement Division, EPA EN-341  
Washington, D.C.

On August 11, 1977 ARCO submitted to EPA an application to construct a petroleum coke calciner at its Cherry Point, Washington refinery under the PSD regulations. The low sulfur petroleum coke product, which will be produced, will be used by the several aluminum plants in the Northwest to make carbon anodes for aluminum reduction. The sulfur content of this petroleum coke, which will then be available on a long-term basis, will be considerably less than that of the petroleum coke currently being used, resulting in a considerable environmental benefit because of the reduced SO<sub>2</sub> emissions from the production of anodes.

As I indicated to you in our telephone conversation today, ARCO has made a firm commitment to construct the process, operate the process, obtain the engineering design data for the scrubber and install the scrubber. Based on the current estimate of the exhaust gas properties, application of BACT will result in an emission concentration that will not exceed 1200 ppm SO<sub>2</sub>. This level of emission will not violate the increment. The acquisition of operating data to be used in specifying the design parameters of the scrubber is expected to result in an emission concentration that is considerably less than 1200 ppm. As a result it will be easier to allow further development due to reduced usage of the increment over BACT. Region X staff believe that allowing this phased approach will provide a net benefit to air quality through (1) a significant reduction in SO<sub>2</sub> emissions from the affected aluminum refineries and (2) an emission rate from the coke calciner that is representative of control that is better than BACT.

Because of the environmental benefits to be derived from the construction of the petroleum coke calciner and allowing a phased approach to the installation of the scrubber, Region X proposes to approve ARCO's

application to construct under PSD provided concurrence can be obtained from CPDD and DSSE. The concurrence of your divisions is hereby requested. As you are aware, the review clock started on August 11. Your response is needed before August 31. If you have any questions concerning this request, please call Dick Bauer or me at 399-1387.

cc: R. R. Bauer  
D. E. Cooper  
Bob Courson

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Date: June 17, 1977

SUBJECT: ARCO PSD Assistance

FROM: Gary L. O'Neal, Director  
Surveillance & Analysis Division

TO: Dick Rhoads, Director CPDD Division  
EPA, OAQPS  
Research Triangle Park, NC 27711

This memo confirms a recent phone conversation on 6/13/77 between Paul Boys and Mike Trutna concerning the PSD review of the ARCO coke calciner. As a result of that conversation there are several questions that need to be addressed. I request that you or the appropriate person in OAQPS or DSSE provide us with guidance on each of the questions listed below.

1. Available SO<sub>2</sub> Control Systems for a Coke Calciner (BACT).

To our knowledge there are currently no SO<sub>2</sub> control systems installed on rotary hearth coke calciners in this country. However, the characteristics of the exhaust gas stream from ARCO's proposed coke calciner are similar to other processes particularly industrial boilers) which do have SO<sub>2</sub> control systems. The parameters of the exhaust stream are:

100,000 scfm	(wet basis, 60 degrees F, total volumetric flow rate from two equal sized calciners)
400 degrees Fahrenheit	(temperature to control device)
1125 - 1425 ppm SO <sub>2</sub>	(dry basis at 7% O <sub>2</sub> )
100 mg/nm <sup>3</sup> particulate	(0.044 gr/scf)

Several sources with similar exhaust gas streams are controlled with SO<sub>2</sub> scrubbers as summarized in the draft PEDCo report entitle "Non-Utility SO<sub>x</sub> Control Systems - November, 1976." In order to determine what is BACT for the proposed coke calciner we need your input to the following:

Can a SO<sub>2</sub> control system be applied to the proposed coke calciner?

What level of control can be achieved through the use of the systems?

What are the capital and operating costs for the control systems?

It is our opinion that a detailed engineering evaluation of applicable SO<sub>2</sub> control systems will be necessary before the review of this PSD application can be completed. One possibility for accomplishing such a study would be through the DSSE contract with PEDCo

which has done considerable work in non-utility SO<sub>2</sub> control technology. Hopefully such a study could serve as a technical basis for transfer of SO<sub>2</sub> control technology to other sources not covered by NSPS. Please determine the feasibility of carrying out an in-depth engineering evaluation of SO<sub>2</sub> control for coke calciners either in-house or through a contract. As you realize, EPA is under a severe time constraint once the official ARCO PSD application is received (expected about 7/1/77).

2. Feasibility of a Compliance Schedule for a PSD Source.

The company has proposed an alternative approach to making a final BACT determination at this time which raises a policy question for EPA. Basically, the company proposes to continue evaluation of available SO<sub>2</sub> control systems. At some time in the future (as yet unspecified) the company would install the SO<sub>2</sub> control system that is judged to be the most appropriate for their source. The question to EPA is:

Under what circumstances, if any, can a source be approved under the BACT portion of the PSD regulation if they agree to a compliance schedule for installation of an SO<sub>2</sub> control system at a specified date which is later than the plant start-up date?

Factor relevant to the ARCO case are:

- a. No SO<sub>2</sub> control systems are currently applied to the type of process proposed by the applicant. In this case the process is a rotary hearth petroleum coke calciner.
- b. Exact data are not available for the flue gas characteristics since this type of process using coke from Alaskan crude is not in operation anywhere at this time.
- c. SO<sub>2</sub> control systems are used on similar gas streams such as from industrial boilers.
- d. The company's economic decision on whether to build the plant depends largely on the cost of a SO<sub>2</sub> control system. The company states that the uncertainty of the control system technology and cost for their process would probably cause them not to build the project at this time.
- e. The calcined coke from this plant will be about 2.6% S. This plant would provide 1600 T/D of coke which is enough to supply all the aluminum smelters in Washington and Oregon. Projections of future coke sulfur levels indicate that the sulfur level may exceed 3% by the 1980's. Therefore, if this plant is installed there will be a ceiling on coke sulfur levels for this area and a subsequent benefit of limiting SO<sub>2</sub> emissions from aluminum smelters.

- f. This plant will allow the refinery to shut down some of their power boilers with a net reduction in particulate emissions. The boiler shutdown does eliminate the SO<sub>2</sub> emissions from the boilers, but the increase in SO<sub>2</sub> emissions from the coke cleaner more than off-sets the reduction from the boiler shutdown.
- g. The company has previously followed the compliance schedule approach with the local control agency with respect to the tail gas scrubber on their sulfur plant. At the time the refinery was built in 1971, the tail gas units were just being introduced on a commercial scale. The early units experienced operating problems, breakdowns, and high cost. The company has recently installed a tail gas unit which they claim is more reliable and cheaper than they could have installed in 1971. The company states that the current question of SO<sub>2</sub> control from the coke calciner is analogous to the sulfur plant tail gas experience, and that they could be expected to follow a similar process toward eventual control.

Your early response to these issues, particularly the availability of contract assistance in the BACT process, will be appreciated. If you have questions, contact Paul Boys at (FTS) 399-1106.

cc: Ed Reich, DSSE  
Myra Cypser, DSSE  
Mike Trutna, OAQPS  
Bob Courson, EPA  
Clark Gaulding, EPA  
Dick Bauer, EPA