



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

FEB 26 2009

REPLY TO THE ATTENTION OF:

AE-17J

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Claude Harmon, Manager
Health, Safety, Security & Environmental
Citgo Petroleum Corporation
135th Street & New Avenue
Lemont, Illinois 60439

Re: Finding of Violation and Notice of Violation

Dear Mr. Harmon:

This is to advise you that the U.S. Environmental Protection Agency has determined that Citgo Petroleum Corporation's facility in Lemont, Illinois (Citgo or facility) is in violation of the Clean Air Act (CAA) and associated state or local pollution control requirements. A list of the requirements violated is provided below. A Notice of Violation and Finding of Violation (NOV/FOV) for these violations is being issued and is enclosed for your review.

The CAA requires the development of Primary and Secondary National Ambient Air Quality Standards to protect public health and welfare. To attain and maintain these standards, each State is required to develop an implementation plan according to Section 7410, 42 U.S.C. § 7410. The Illinois State Implementation Plan (Illinois SIP) at IAC 218.441 prohibits the release of certain petroleum manufacturing waste gas streams to the environment unless they are appropriately controlled.

The CAA also requires that certain new sources comply with standards appropriate for the source's category. These New Source Performance Standards (NSPS) are required by Section 7411 of the CAA, 42 U.S.C. § 7411, with implementing regulations found at 40 CFR Part 60. The NSPS for Equipment Leaks of VOC in Petroleum Refineries, Subpart GGG, is found at 40 CFR § 60.590 and specifies control of equipment leaks.

The purpose of these requirements is to reduce emissions that can compromise public health and welfare. Specifically, these requirements ensure that volatile organic compounds and hazardous air pollutants are being controlled to reduce the potential harm to the human respiratory system and reduce the risk of cancer.

EPA finds that Citgo has violated the Illinois State Implementation Plan, its Title V Permit for facility 197090AAI issued on January 9, 2006, and the NSPS for Equipment Leaks of VOC in Petroleum Refineries at 40 CFR § 60.590. Since Citgo violated its Title V permit, it has also violated Title V of the CAA and its associated regulations which require compliance with the terms and conditions of Title V permits.

Section 113 of the CAA gives EPA several enforcement options to resolve these violations, including: issuing an administrative compliance order, issuing an administrative penalty order, bringing a judicial civil action, and bringing a judicial criminal action. The option we select, in part, depends on the efforts taken by Citgo to correct the alleged violations and the timeframe in which you can demonstrate and maintain continuous compliance with the requirements cited in the NOV/FOV.

We are offering you the opportunity to request a conference with us about the violations alleged in the NOV/FOV. A conference should be requested within 10 days following receipt of this notice. A conference should be held within 30 days following receipt of this notice. This conference will provide you a chance to present information on the identified violations, any efforts you have taken to comply and the steps you will take to prevent future violations. Please plan for your facility's technical and management personnel to take part in these discussions. You may have an attorney represent and accompany you at this conference.

The EPA contact in this matter is Brian Dickens. You may contact him at (312) 886-6073 if you wish to request a conference. EPA hopes that this NOV/FOV will encourage Citgo to comply with the requirements of the Clean Air Act.

Sincerely,


Cheryl L. Newton
Director
Air and Radiation Division

Enclosure

cc: Ray Pilapil
Illinois Environmental Protection Agency

United States Environmental Protection Agency
Region 5

IN THE MATTER OF:

Citgo Petroleum Corporation
Lemont, Illinois

Proceedings Pursuant to
the Clean Air Act,
42 U.S.C. §§ 7401 et seq.

FINDING OF VIOLATION

EPA-5-09-05-IL

NOTICE AND FINDING OF VIOLATION

Citgo Petroleum Corporation (you or Citgo) owns and operates a petroleum manufacturing facility at 135th Street and New Avenue in Lemont, Illinois. This facility is a petroleum refinery that includes five steam assisted flares.

EPA is sending this Notice and Finding of Violation (NOV/FOV) to you for not properly controlling emissions of organic material from three of your flares. The underlying statutory and regulatory requirements include provisions of the Clean Air Act (the Act or CAA), its implementing regulations and the Illinois Title V Permit Program.

Regulatory and Statutory Authority

The regulations and permit conditions relevant to this NOV/FOV are as follows:

1. The Illinois State Implementation Plan (Illinois SIP) at IAC 218.441 prohibits the release of petroleum manufacturing waste gas streams containing more than 100 ppm organic material unless the waste stream is reduced to less than 8 lb/hr or 10 ppm of organic material, or treated with a device that achieves a combustion efficiency of 85% or more. This provision is incorporated into Citgo's Title V permit for facility 197090AAI at section 5.3.9.
2. Equipment within the HF Alkylation Unit is subject to the leak detection and repair provisions of the New Source Performance Standards (NSPS) for Equipment Leaks of VOC in Petroleum Refineries, Subpart GGG, found at 40 C.F.R. § 60.590. The applicability of Subpart GGG is set forth in Citgo's Title V permit for facility 197090AAI at section 7.8.3 (e).

3. The NSPS provisions at Subpart GGG reference the Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry, Subpart VV, found at 40 C.F.R § 60.480.
4. The Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry at 40 C.F.R. § 60.482-10(e) state, "Owners or operators of control devices used to comply with the provisions of this subpart shall monitor these control devices [flares] to ensure they are operated and maintained in conformance with their designs". This requirement can be found in Citgo's Title V permit at section 7.8.8 (e)(i).
5. On March 7, 1995, EPA gave the Illinois Title V Clean Air Act Permit Program (CAAPP) interim approval as a 40 C.F.R. Part 70 permit program under the authority of Section 502 of the Act, 42 U.S.C. § 7661(a) (60 Fed. Reg. 12478). On December 4, 2001, EPA gave the Illinois Title V CAAPP final approval as a 40 C.F.R. Part 70 permit program (66 Fed. Reg. 62946). The regulation at 40 C.F.R. § 70.6(b)(1) specifies that all terms and conditions in a permit issued under a Part 70 program are enforceable by EPA under the Act. Citgo was issued Title V permit for source ID 197090AAI on August 10, 2000. The Title V permit was renewed on January 9, 2006.

Explanation of Violations

6. Citgo uses flares, including Flares 1, 4 and 5, to control emissions. Flare 5 receives waste gases and process leaks from the HF Alkylation unit. All three flares are steam-assisted, which means that steam is added to the waste, or vent gas stream to enhance combustion and prevent the formation of smoke. Steam is added in proportion to the amount of vent gas. It is common practice to measure the amount of steam as a ratio of the mass of steam per unit mass of vent gas (lb/lb).
7. In March 1997, the American Petroleum Institute (API) released a report entitled "Guide for Pressure-Relieving and Depressuring Systems." The document discusses proper practices for venting organic material. With respect to smoke suppression at steam-assisted flares, the authors of the document state, "the amount of steam required is primarily a function of the gas composition, flow rate and steam pressure and flare tip design and is normally in the range of 0.25 to 1.0. (lb/lb)"
8. In July 1983, EPA released report EPA 600/2-83-052, titled Flare Efficiency Study. This study, partially funded by EPA and the Chemical Manufacturers Association (CMA), included various tests to determine the combustion efficiency and hydrocarbon destruction efficiency of flares under a variety of operating conditions. Certain tests were conducted on a steam-assisted flare provided by John Zink Company. The tests performed included a wide range of steam flows and steam-to-vent gas ratios. The data collected showed decreasing combustion efficiencies when the steam-to-vent gas ratio was above 3.5. The tests showed the following efficiencies at the following steam-to-vent gas ratios:

Pounds of Steam to One Pound of Vent Gas	Combustion Efficiency (%)
3.45	99.7
5.67	82.18
6.86	68.95

The report concluded that excessive steam-to-vent gas ratios caused steam quenching of the flame during the tests which resulted in lower combustion efficiency.

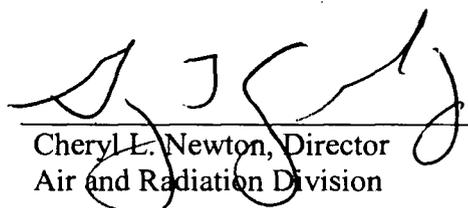
9. EPA has identified other publicly available studies and EPA reports that evaluate how flare combustion efficiency is affected by steam addition. The conclusions of these studies support those of EPA 600/2-83-052.
10. On December 21, 2007, and February 18, 2008, Citgo provided information to EPA in response to an EPA information request, including design documents and operating data on Flares 1, 4, and 5 for the period from November 1, 2004 to December 4, 2007.
11. Citgo provided its Process Specification sheet for Flare 1 that sets forth the design vent gas flow rate and associated steam flow rate. Citgo also provided its Data Sheet for Flare 1 that specifies the design minimum steam addition rate for low vent gas flow conditions. According to the operating data that Citgo provided, during low vent gas flow conditions Citgo supplied steam in excess of the minimum steam addition rate set forth in the Data Sheet. In fact, Citgo set the minimum steam flow at a value more than twice the design minimum. By supplying excess steam, Citgo reduced the combustion efficiency of Flare 1 on various days in 2005, 2006, and 2007 below 85% and released a waste gas stream to the environment with an organic material concentration greater than 10 ppm and at a rate exceeding 8 lb/hr.
12. Citgo provided its Operations Manual for Flare 4 that sets forth the design vent gas flow rate and associated steam flow rate. It states in the Operations Manual for Flare 4 that, "Normal steam to hydrocarbon ratios are in the order of 0.2 to 0.4." According to the operating data that Citgo provided, Citgo supplied steam to the flare far in excess of the recommended ratio, and added more steam than was prescribed by the Operations Manual for particular hydrocarbon flow rates. This failure to adhere to the flare's design criteria on various days in 2004, 2005, 2006 and 2007 reduced the combustion efficiency of Flare 4 below 85% and released a waste gas stream to the environment with an organic concentration greater than 10 ppm and at a rate exceeding 8 lb/hr.

13. Citgo provided its Flare System Specification Sheet for Flare 5 that sets forth a minimum flow of steam through the steam ring and center steam injection point during standby or low vent gas flow conditions. The Flare System Specification Sheet for Flare 5 also sets out a maximum allowable design amount of steam. According to the operating data that Citgo provided, Citgo supplied much more steam than was required for low vent gas flow conditions and on at least two occasions supplied more steam than the maximum required under the highest flow conditions. This failure to adhere to the flare's design on various days in 2006 and 2007 reduced the combustion efficiency of Flare 5 below 85% and released a waste gas stream to the environment with an organic concentration greater than 10 ppm and at a rate exceeding 8 lb/hr.

Environmental Impact of Violations

14. These violations have caused or can cause excess emissions of volatile organic compounds (VOC) and/or hazardous air pollutants (HAP). VOC cause ground level ozone, which can irritate the human respiratory system and reduce lung function.

2/26/09
Date


Cheryl L. Newton, Director
Air and Radiation Division

ACTING

CERTIFICATE OF MAILING

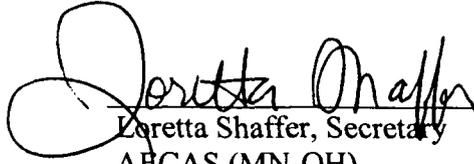
I, Loretta Shaffer, certify that I sent a Notice and Finding of Violation, No. EPA-5-09-05-IL, by Certified Mail, Return Receipt Requested, to:

Claude Harmon, Manager
Health, Safety, Security & Environmental
Citgo Petroleum Corporation
135th Street & New Avenue
Lemont, Illinois 60439

I also certify that I sent copies of the Finding of Violation and Notice of Violation by first class mail to:

Ray Pilapil, Manager
Compliance and Enforcement Section
Illinois Environmental Protection Agency
1012 North Grand Avenue East
Springfield, Illinois 62702

on the 27 day of Feb, 2009.


Loretta Shaffer, Secretary
AECAS (MN-OH)

CERTIFIED MAIL RECEIPT NUMBER: 7001 0320 0006 0186 0507