SOUTHERN ARIZONA VA HEALTH CARE SYSTEM

AIR QUALITY PERMIT 1906

TECHNICAL SUPPORT DOCUMENT (TSD)

I. GENERAL COMMENTS:

A. Company Information

1. Source Name: Southern Arizona VA Healthcare System
2. Source Address: 3601 S. 6th Ave.

B. Background

The facility operates under the following industrial classification: General Medical and Surgical Hospitals – SIC code 8062 (NAICS 622110)

The Southern VA Healthcare facility currently operates under a Class II air quality permit. It is considered a true minor source of criteria pollutants, and an area source of HAPs.

This TSD was updated for the renewal of the permit. The renewal application was received on January 14, 2015. The renewal also includes a minor revision application received February 4, 2016.

C. Attainment Classification

The Southern VA Healthcare facility is located in an area that is in attainment for all pollutants.

II. SOURCE DESCRIPTION

A. Process Description

The Southern VA Healthcare facility operates 3 steam supply boilers, 2 hot water boilers, 11 large capacity (> 600 hp) emergency generators, and 4 small capacity (< 600 hp) emergency generators. 6 portable generators were listed in the application but these units are not sources required to be permitted.

The steam supply boilers are dual fired boilers that can fire natural gas or distillate fuel oil (incl. diesel). The emergency generators are all fired with diesel fuel.

B. Operating Capacity and Schedule

The operating schedule at the facility is not limited and the facility and equipment is permitted for operation 7/days/week, 24 hours a day, 365 days a year

C. Air Pollution Control Equipment

No post combustion air pollution control equipment is being operated on the boilers or stationary rotating machinery.

Proposed TSD

III. REGULATORY HISTORY

The Southern VA Healthcare facility is currently in compliance with all Pima County Code requirements.

IV. EMISSIONS ESTIMATES

Emission estimates were derived using emission factors from AP-42 tables. AP-42 tables 3.3-1 thru 3 and 3.4-1 thru 4 (Diesel Industrial Engines and Large Stationary Diesel Engines) were used for emergency generator emission factors. For the boilers, the emission factors for natural gas were used from AP-42 tables 1.3-1 and 2.

Federal requirements currently limit "emergency" designated generators to operate no more than 100 hours of operation for maintenance and readiness testing, while there is no limit on hours of operation during true emergencies.

In accordance with the federal limits, the controlled facility-wide PTE has been calculated using 100 hours of operation for each emergency generator.

The following tables outline the Southern VA Healthcare System facility's controlled potential to emit air pollutants.

Controlled [1] Facility-Wide Potential Emissions of Pollutants (tons/yr)										
Conventional or Criteria Air Pollutant								NSPS Pollutant	HAPs	
$PM_{2.5}$	PM_{10}	PM	NOx	VOC	CO	SO_2	Lead	N/A	Total	Single
2.49	3.39	5.04	37.87	11.68	19.79	86.95	ND [2]	N/A	< 7.84	< 7.5

1. Emergency generator engine PTE is calculated on limited operation of the emergency generators (100 hrs/year). Boiler PTE is calculated on unlimited operation while firing natural gas or distillate fuel oil (incl. diesel) containing less than 0.5% wt. Sulfur. Surface coating PTE is calculated based on a 2500 gallon limit for combined coatings and solvents usage (including architectural coatings) using worst case emissions of 8 lb VOC/gal and 6 lb HAP/gal.

2. No Data. These emissions are insignificant.

V. APPLICABLE REQUIREMENTS

40 CFR, Part 60 Standards of Performance for New Stationary Sources

Subpart A General Provisions
Subpart Dc NSPS for Small Industrial-Commercial-Institutional Steam Generating Units
Subpart IIII NSPS for Stationary Compression Ignition Internal Combustion Engines
Appendix A Test Methods

Pima County Code Title 17, Chapter 17.12 – Permits and Permit Revisions

Article I – General Provisions

17.12.010 Statutory Authority
17.12.020 Planning, Constructing, or Operating Without a Permit
17.12.040 Reporting requirements
17.12.045 Test methods and procedures
17.12.050 Performance tests
17.12.080 Permit Display or Posting

Proposed TSD

Article II – Individual Source Permits

17.12.165 Permit application processing procedures for Class II and Class III permits
17.12.185 Permit contents for Class II and Class III permits
17.12.235 Facility Changes that require a permit revision
17.12.240 Procedures for certain changes that do not require a permit revision Class II or Class III
17.12.255 Minor Permit Revision
17.12.260 Significant Permit Revision
17.12.270 Permit Reopenings – Revocation and reissuance – Termination
17.12.350 Material permit condition

Article VI – Individual Source Permits

17.12.520 Fees related to Class II and Class III permits

Pima County Code Title 17, Chapter 17.16 – Emission Limiting Standards

Article I – General Provisions

17.16.010 Local rules and standards; Applicability of more than one standard
17.16.020 Noncompliance with applicable standards
17.16.030 Odor limiting standards

Article II – Visible Emission Standards

17.16.040 Standards and applicability (includes NESHAP)
17.16.050 Visibility limiting standard

Article IV – New and Existing Stationary Source Performance Standards

17.16.130 Applicability
17.16.165 Standards of performance for fossil-fuel fired industrial commercial equipment
17.16.230 Standards of performance for storage vessels for petroleum liquids
17.16.340 Standards of performance for stationary rotating machinery
17.16.400 Organic solvents and other organic materials
17.16.430 Standards of performance for unclassified sources

Pima County Code Title 17, Chapter 17.20 – Emissions Source Testing and Monitoring

17.20.010 Source sampling, monitoring and testing
17.20.040 Concealment of emissions

Pima County Code Title 17, Chapter 17.24: – Emissions Source Recordkeeping and Reporting

17.24.020 Recordkeeping for compliance determination

VI. REQUIREMENTS SPECIFICALLY IDENTIFIED AS NON-APPLICABLE

1. In accordance with 40 CFR 63.6585(f)(3), NESHAP Subpart ZZZZ does not apply to institutional generators that are not operated for more than 100 hours for maintenance and readiness testing.

2. 40 CFR Part 63, Subpart JJJJJJ has been identified as non-applicable since the boilers will be operated as gas-fired boilers. Should the boilers switch to fuel oil use and become subject to Subpart JJJJJJ in the oil firing subcategory as defined in 40 CFR 63.11237 a significant permit revision will be required and compliance with Subpart JJJJJ will be required within 180 days of the effective date of the fuel switch.

Proposed TSD

VII. PERMIT CHANGES and APPLICABILITY DETERMINATIONS

A. Permit and Permit Summary

The Specific Conditions have been organized into permit sections specific to the equipment and emission source categories at the facility.

B. General Applicability (Section 1):

This Section of the permit provides a reference for the PCC and federal rules that apply to the facility and operations, and to help organize the permit sections. Specific Conditions relating to the applicability of permitted facility sources are included in Section 6.

C. Facility-Wide Operations (Section 2):

This Section incorporates the facility wide provisions applicable to all sources at the facility and is used to streamline provisions that may apply to the specific sources and operations in other Sections of the permit. The facility-wide provisions include the following: operating limitations, general control standards, materials handling standards, odor limiting standards, surface coating operations, opacity limits, visibility limiting standard, and asbestos requirements for demolition and renovation activities. This Section also includes the facility-wide provisions for recordkeeping, reporting, facility changes, and testing.

D. Fossil Fuel Fired Industrial and Commercial Equipment (Boilers and Heaters) (Section 3):

This Section incorporates applicable PCC requirements and operating limitations for boilers, heaters, and fuel fired equipment to avoid certain requirements in PCC 17.16.165, 40 CFR Part 60, NSPS Subpart Dc, and 40 CFR Part 63, NESHAP Subpart JJJJJJ for certain classes of boilers. The specific applicability is provided in Section 6 and indicated in the equipment list in Attachment 2.

The listed larger capacity dual fired steam supply boilers in the equipment list are limited to firing natural gas, distillate fuel oil (incl. diesel), or both subject to limitations. The specific definition for natural gas in this Section is taken from the NESHAP standard and is a broad definition that also includes LPG or Propane for use in temporary boilers or as an alternate fuel if required.

The fuel oils fired in the boilers are limited to distillate fuels which are limited by ASTM fuel standards to contain no more than 0.5% weight Sulfur (5000 ppm_{mass}) [ref. 40 CFR 63.11237, distillate fuel oil definition and ASTM D 396]. The permit limits the fuel sulfur content to avoid triggering certain federal and other applicable requirements for certain classes of boilers.

The permit limits the Permittee to use liquid fuel oil only during periods of gas curtailment, gas supply interruption, startups, or periodic testing on liquid fuel to avoid triggering tune up requirements for boilers that are considered oil fired boilers subject to 40 CFR Part 63, Subpart JJJJJJ.

E. Stationary Rotating Machinery (Section 4):

This Section contains requirements for internal combustion engines that are not subject to NSPS or NESHAP requirements.

F. NSPS for Stationary Internal Combustion Engines 'ICE' (Section 5):

This Section incorporates specific federal emission limits and requirements for installation and operation of compression ignition engines subject to 40 CFR Part 60, NSPS Subpart IIII. The federal requirements limit operation of emergency engines to less than 100 hours per calendar year for maintenance and testing and less than 50 of the 100 hours per year for non-emergency situations if they qualify per 40 CFR 60.4211(f)(3)(i). There are no limitations for the use of the emergency generators

Proposed TSD

for true emergencies.

G. Emissions from New and Existing Nonpoint Sources (Section 6):

This section of the permit contains fugitive dust control standards and describes reasonably necessary and feasible precautions for the control of fugitive dust and airborne particulate matter to comply with conditions 10 and 11 of the permit.

H. Specific Applicability Provisions (Section 7):

1. This Section of the permit includes specific conditions on the applicability of permitted facility sources and relates the applicability to source categories, affected facilities, equipment, emission sources, installations, activities and operations at the facility.

2. Applicable steam generating units (boilers) that comply with Section 3 of the permit shall be considered to be compliant with 40 CFR 60, Subpart Dc, 40 CFR 63, Subpart JJJJJJ, and PCC 17.16.165. The facility is required to submit a significant revision in if the facility desires to fire fuels in the boilers other than those allowed in Section 3 or switching to fuel oil use and status as an oil fired boiler in accordance with 40 CFR 63, Subpart JJJJJJ.

VII. Periodic Monitoring

This is a Class II/III permit and as such does not include the mandatory submittal of a semiannual summary report of required monitoring or an annual compliance certification to the Control Officer. The permit requires the facility to maintain the required periodic monitoring records on site and their submittal as requested by the Control Officer in order to demonstrate compliance.

IX. Control Technology Determination

No control technologies needed to be determined; the source is not subject to RACT, BACT or LAER.

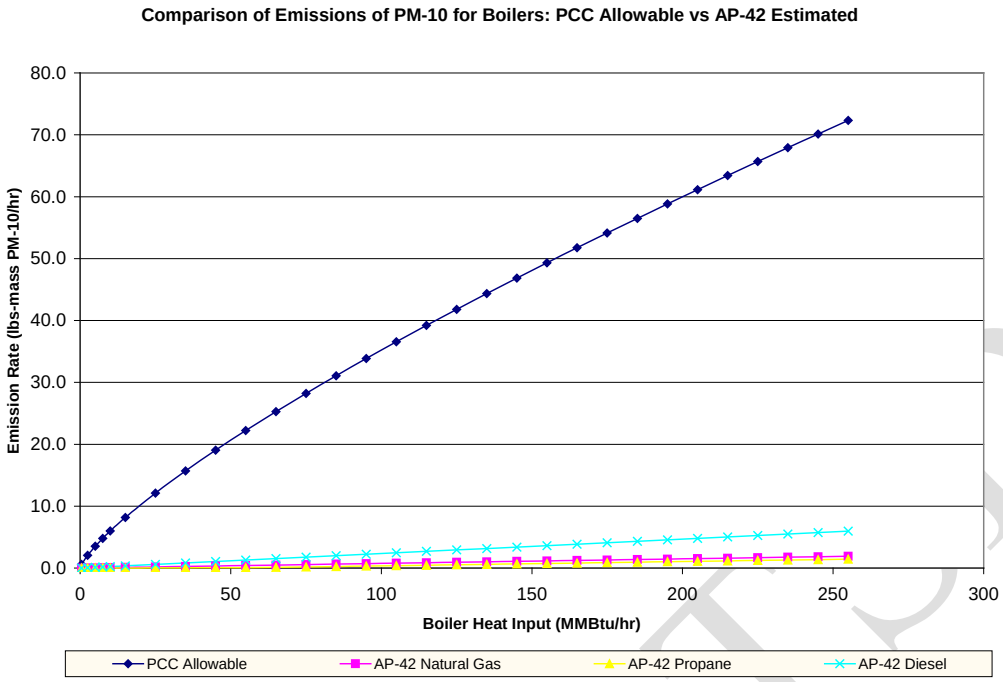
X. Exclusion of PCC Particulate Matter Discharge Rate Standards

The applicable PCC rule for limiting the maximum particulate matter discharge rates is not normally included in Class II and III area source permits as explained below.

- For particulate matter sources, the calculated maximum particulate matter discharge rate, as provided in Title 17, yields maximum rates that far exceed the emissions expected from most typical area sources. For example a 200 ton/hour process source, which is typical for an average construction aggregate screening operation, would be limited to a maximum particulate matter discharge rate of 40.4 lbs/hour or 177 tons/year. This limit far exceeds estimated emissions from typical sources using EPA AP-42 emission factors and the source is far more likely to exceed opacity and visibility limiting standards well before reaching this limit.

- With regard to fuel burning equipment, PCC 17.16.165.C limits the emissions of particulate matter from commercial and industrial fossil-fuel fired equipment (including but not limited to boilers). This limit is not normally included in permits because allowable emissions are consistently over an entire order of magnitude higher than EPA AP-42 estimated potential emissions. The chart below, illustrates the point.

Proposed TSD



Comparative Chart of Allowable Particulate Emissions Under Pima County Code, Title 17, and Estimated Potential Emissions based on EPA AP-42 Estimates for External Combustion Sources. Allowable emissions are consistently over ten times estimated potential emissions. Therefore, it is not necessary to include the standard in the permit explicitly, but by reference in Attachment 1.

XI. Exclusion of PCC Sulfur Dioxide Emission Standards

Compliance with the fuel sulfur limitation requirements in the permit shall ensure compliance with the Sulfur Dioxide Standards of PCC 17.16.165.E and 17.16.340.F; which limit the emission of SO_2 to 1.0 pound per million BTU of heat input when burning low sulfur fuel. The definition of low sulfur fuel (PCC 17.04.340.A. "Low Sulfur Fuel") is fuel oil containing less than 0.9 percent sulfur by weight. "High Sulfur Fuel" is defined as fuel oil containing 0.9% wt. or more Sulfur. In accordance with EPA AP-42 Appendix A, page A-5, the heating value of diesel fuel is estimated at 137,000 BTU per gallon. Thus, 1 million BTU of heat input is equivalent to 7.3 gallons of diesel. At 7.05 lbs per gallon, 51.47 lbs of diesel will produce 1 million BTU. At 0.9% 51.47 lbs of diesel contains 0.46 lbs of sulfur. Combined with Oxygen to form SO_2, and assuming 100% of the sulfur in the fuel forms SO_2, this would yield 0.92 lb SO_2 per 1MMBtu. Thus, low sulfur fuel oil will produce 0.92 lbs of SO_2 per million BTU of heat input. This is roughly 8% less than the prescribed 1.0 pound SO_2 per million BTU limit.

An excess emissions report is required to be submitted to the control officer should the fuel oils fired in stationary rotating machinery contain 0.9% wt. Sulfur or greater since the permit explicitly prohibits the use of high sulfur oil by the Permittee.

Natural gas, gasoline, No. 1 and 2 distillate fuel oils, jet fuel, and diesel delivered to Pima County consistently show sulfur levels below this limit as shown in fuel supplier certifications which verify the sulfur content of the fuel fired. The equipment specific sulfur content limitations in the permit and the prohibition to use high sulfur oil allow for the omission of PCC 17.16.165.E and PCC 17.16.340.F; these rules are incorporated by reference in Attachment 1 of the permit.

XII. Exclusion of Per Gallon Surface Coating VOC limit at in PCC 17.16.400.C.5

PDEQ has determined that PCC 17.400.C.5 does not apply to the Permittee because the facility does not meet the definition of a facility engaged in the industrial coating of miscellaneous metal parts and products that falls under SIC Code Major Groups 33 through 39.

Proposed TSD