

## TECHNICAL SUPPORT DOCUMENT FOR US ARMY-YUMA PROVING GROUND AIR QUALITY PERMIT #43492

### I. INTRODUCTION

US Army-Yuma Proving Ground (YPG), the Permittee, has the mission to plan, conduct and analyze military material tests in development and production phases; review plans and monitor development testing conducted by developers, producers, and contactors; provide technical support, guidance, and services to federal agencies and branches of military; and conduct operational testing and troop training exercises.

YPG is authorized to carry out activities such as the operation of boilers, heaters, and generators, deflagration testing, fire training, petroleum storage and transfers (under and above ground storage tanks), surface coating and miscellaneous chemical use (painting operations, parts washer), carpentry and woodworking activities, waste disposal (landfill, open burn/open detonation, and sewage lagoons), abrasive-blasting, welding operations, water treatment plants, soil vapor extraction units, handling of refrigerants, handling of inert munitions, laboratories, plasma cutting table, etc.

#### A. Company Information

1. Facility Name: US Army- Yuma Proving Ground (YPG)
2. Facility/Mailing Address: 301 C Street, Yuma, AZ 85365-9498

#### B. Attainment Classification

YPG is located in Yuma County. A portion of the facility is located in a 'non-attainment' area for PM<sub>10</sub>. The area is classified as attainment or unclassifiable for all other pollutants.

### II. EMISSIONS

YPG is classified as a Class I Major Source pursuant to A.A.C. R18-2-101.64. The definition of "Major Source" in A.A.C. R 18-2-401.9 states that the prevention of significant deterioration (PSD) major source threshold is 100 tons per year for a source classified as a categorical source and 250 tons per year for a source not classified as a categorical source listed in A.A.C. R-18-2-401.2. The activities at YPG do not fall within the listed categorical sources. Potential emissions of nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), and volatile organic compounds (VOC) each exceed 100 tons per year (tpy). YPG is taking voluntary limits on the operation of internal combustion engines to stay below the 250 tons per year threshold for PSD review. The source will emit particulate matter with an aerodynamic diameter less than 10 microns at a rate less than the non-attainment area New Source Review threshold of 100 tons per year. The source has a potential to emit 11 tpy of hazardous air pollutants (HAPS). Potential

emission of hydrogen chloride is limited to 9.00 tpy. YPG is an area source of HAPs because emissions of any single HAP and facility wide totals are below 10 tons per year and 25 tons per year respectively.

Facility wide emissions from YPG are listed in the following table:

**TABLE 1: POTENTIAL ANNUAL EMISSIONS**

POLLUTANTS	EMISSIONS
	TONS PER YEAR
NO <sub>x</sub>	223.05
CO	105.06
SO <sub>2</sub>	46.38
VOC	122.41
PM <sub>10</sub>	27.35
Total HAPs	10.94
Hydrochloric Acid	9.00

**IV. APPLICABLE REGULATIONS**

**TABLE 2: VERIFICATION OF APPLICABLE REGULATIONS**

Unit	Date of Manufacture/ Construction	Control Device	Rule	Verification
Boilers	1952, 1953, 1954, 1955, 1958, 1960, 1961, 1965, 1970, 1971, 1974, 1975, 1979, 1986, 1990, 1997, 2006	N/A	A.A.C. R18-2-724	NSPS Subpart Dc is applicable to boilers with capacity between 10 MMBtu/hr - 100 MMBtu/hr, and manufactured after June 1989. There are two boilers which are manufactured after June 1989. Capacity of each of these two boilers is below 10 MMBtu/hr and therefore Subpart Dc is not applicable. Thus, A.A.C. R18-2-724 is applicable to all the boilers.

**TABLE 2: VERIFICATION OF APPLICABLE REGULATIONS (continued)**

Unit	Date of Manufacture/ Construction	Control Device	Rule	Verification
Internal Combustion Engines	Various, 1960, 1973, 1974, 1975, 1979, 1982, 1989, 1990, 1992, 1995, 1997, 1999, 2000, 2002, 2003, 2004, 2005, 2006, 2007, 2009.	N/A	<p>NSPS Subpart III</p> <p>A.A.C. R18-2-719</p> <p>National Emission Standards for Hazardous Air Pollutants (NESHAP) Subpart ZZZZ</p>	<p>Applicability date for NSPS Subpart III for compression ignition engines is April 11, 2006. Some ICEs at the facility are manufactured after this date and NSPS Subpart III is applicable for those ICEs. For other ICEs manufactured before this date, A.A.C. R18-2-719 is applicable.</p> <p>NSPS Subpart JJJJ is applicable to spark ignition engines manufactured after July 1, 2008. Subpart JJJJ is not applicable since the propane and gasoline fired engines are manufactured prior to the date of applicability.</p> <p>US Army is an area source for HAPs. Since the construction of some of the Stationary RICE located at an area source of HAPs commenced before June 12, 2006, these are termed as 'Existing'. {40 CFR 63.6590 (a) (1) (iii)}. Since these are emergency and non-emergency engines, requirements of Subpart ZZZZ are applicable.</p> <p>The four ICEs using gasoline and propane are exempt from the applicability of Subpart ZZZZ.</p> <p>There are some ICEs that started construction after June 12, 2006, and are termed as 'New' {40 CFR 63.6590 (a)(2)(iii)}. For the 'New' RICE, NSPS Subpart III is applicable. Therefore no further requirements of NESHAP, 40 CFR 63 Subpart ZZZZ are applicable {40 CFR 63.6590(c)}.</p>

**TABLE 2: VERIFICATION OF APPLICABLE REGULATIONS (continued)**

Unit	Date of Manufacture/ Construction	Control Device	Rule	Verification
Soil Vapor Extraction Units	2005	Catalytic Converter	A.A.C. R18-2-730	There are no state rules specifically applicable to soil vapor extraction units. Therefore A.A.C. R 18-2-730 for unclassified sources is applicable.
Storage Tanks and Gasoline Dispensing Facility (GDF)	1959, 1960, 1965, 1979, 1991, 1993, 1995, 1997, , 2000, 2005	Floating Roofs	A.A.C. R18-2-710  40 CFR 60 Subpart CCCCCC	NSPS Subparts K is applicable to storage tanks built during June 11, 1973, to May 19, 1978. Subpart Ka is applicable to storage tanks built during May 18, 1978, to July 23, 1984. 40 CFR Subpart Kb is applicable to storage tanks built after July 23, 1984 with capacity greater than 19,875 gallons. Storage tanks at this facility are built after this date but have capacities below 19,875 gallons. Therefore NSPS Subparts K, Ka, and Kb are not applicable.  A.A.C. R18-2-710 is applicable to storage tanks handling petroleum liquids, and, hence, applicable to gasoline storage tanks. NESHAP Subpart CCCCCC is applicable to gas dispensing facilities at YPG.

**TABLE 2: VERIFICATION OF APPLICABLE REGULATIONS (continued)**

Unit	Date of Manufacture/ Construction	Control Device	Rule	Verification
Landfill	1969	N/A	A.A.C. R18-2-731	<p>NSPS Subpart WWW is applicable to landfills that started operation on or after May 30, 1991. US Army Landfill has been operational since 1969. Therefore NSPS Subpart WWW is not applicable. NESHAP Subpart AAAA is applicable to landfills that have uncontrolled non-methane organic compounds (NMOC) emissions greater than 50 megagrams per year. NMOC emissions from the US Army landfill are only 20.5 megagrams per year. Therefore NESHAP Subpart AAAA is not applicable.</p> <p>A.A.C. R18-2-731 is applicable to existing Municipal Solid Waste Landfills at which construction, reconstruction, or modification began before May 31, 1991 and that started receiving waste any time since November 8, 1987. Landfill at YPG was constructed in the year 1969 and has been receiving waste since then. Consequently, the US Army landfill is subject to the requirements of A.A.C. R18-2-731. However, since the facility NMOC emissions are less than 50 megagrams per year, the only regulatory obligation is the submission of an initial design capacity report. This report was submitted by the facility in September, 1997.</p>
Open Burn/Open Detonation	NA	NA	Article 6	This is applicable to open burn and open detonation activities.

**TABLE 2: VERIFICATION OF APPLICABLE REGULATIONS (continued)**

Unit	Date of Manufacture/ Construction	Control Device	Rule	Verification
Miscellaneous Equipment like degreasers, wood working, metal shredders, etc.	1997	NA	A.A.C. R18-2-730	40 CFR 63 Part T is applicable to the degreasers using chlorinated solvents. This facility has voluntarily accepted the condition to not to use chlorinated solvents. Therefore 40 CFR 63 Subpart T is not applicable. There are no state rules specifically applicable to such miscellaneous activities. Therefore A.A.C. R 18-2-730 for unclassified sources is applicable.
Fugitive dust sources	NA	Water and other reasonable precautions	Article 6 and A.A.C. R18-2-702	These are applicable to fugitive dust sources at the facility.
Mobile sources	NA	Water Sprays/ Water Truck for dust control	Article 8	This Article is applicable to off-road mobile sources, which either move while emitting air pollutants or are frequently moved during the course of their utilization.
Spray painting operations	NA	NA	A.A.C. R-18-2-727	This standard is applicable to any spray painting operation.
Demolition/ renovation operations	NA	NA	A.A.C. R18-2-1101.A.8	This standard is applicable to any asbestos related demolition or renovation operations.

NA= Not Applicable

## **V. PREVIOUS PERMITS**

US Army Yuma Proving Ground had two permits issued from ADEQ. Permit #1000097 was for the operation of two internal combustion engines. Permit #1001739 was a general permit for the operation of soil vapor extraction units. Beside these two permits, YPG has been obtaining Open Burn/Open Detonation permits from ADEQ every year. Through this permitting process, YPG is consolidating their operations under one Title V permit.

## **VI. PERIODIC MONITORING**

### **A. Boilers/Heaters**

1. The Permittee is required to conduct a monthly survey of visible emissions emanating from the stacks of the boilers at the facility. If the opacity of the emissions observed appears to exceed the opacity limit, the observer must conduct a certified EPA Reference Method 9 observation. The Permittee is required to keep records of the initial survey and any EPA Reference Method 9 observations performed. If the observation results in an exceedance of the opacity limit, the Permittee is required to take corrective action and log all such actions. Any exceedance must be reported to ADEQ as an “excess emission”.
2. The Permittee is required to maintain records of fuel supplier certifications for demonstrating compliance with sulfur content limit.

### **B. Internal Combustion Engines**

1. Hourly Limitations
  - a. The Permittee must maintain daily records of the hours of operation of ICEs for showing compliance with the respective hourly limitations.
  - b. The Permittee must install a non-resettable hour meter prior to startup of the emergency engines subject to NSPS Subpart III.

2. ICEs subject to New Source Performance Standards

The Permittee must maintain records of one of the following:

- a. Performance test results for each pollutant for the test conducted on a similar ICE;
- b. ICE manufacturer’s data indicating compliance with the standards;
- c. Control device vendor data indicating compliance with the standards.

3. ICES not subject to New Source Performance Standards
  - a. The Permittee must maintain records of fuel supplier certifications for demonstrating compliance with the sulfur dioxide limit.
  - b. The Permittee is required to conduct a monthly survey of visible emissions emanating from the ICES at the facility. If the opacity of the emissions observed appears to exceed the opacity limit, the observer must conduct a certified EPA Reference Method 9 observation. The Permittee is required to keep records of the initial survey and any EPA Reference Method 9 observations performed. If the observation results in an exceedance of the opacity limit, the Permittee is required to take corrective action and log all such actions. Any exceedance must be reported to ADEQ as an "excess emission".
4. ICES subject to National Ambient Standards for Hazardous Air Pollutants

The Permittee must operate and maintain the stationary reciprocating internal combustion engines (RICE) in accordance with either the manufacturer's emission related written instructions or the maintenance plan developed for the maintenance and operation of the engines consistent with good air pollution control practices for minimizing emissions.

**C. Soil Vapor Extraction Units**

The soil vapor extraction units at US Army Yuma Proving Ground must use only propane gas as fuel and the stack height must be more than 13 feet. The SVEU is required to use a catalytic oxidizer capable of achieving 90% destruction efficiency at all times. The temperature of exhaust gases from the SVEU must be equal to or greater than 600<sup>0</sup>F with a minimum velocity of 2.3 meters per second. The Permittee must monitor the temperature and velocity of the exhaust gases.

The Permittee is required to monitor and test the VOCs exiting the SVEU stacks to show compliance with the annual emission limits for VOCs and benzene.

**D. Gasoline Dispensing Facilities**

The Permittee must keep a monthly record of throughput to each GDF.

**E. Open Burn/ Open Detonation**

The Permittee must keep a daily record of the quantities of material subjected to open burning and open detonation for showing compliance with the voluntarily accepted limitations on emissions of 9 tons per year of HCl and 22.5 tons per year of HAPs. The Permittee must use an emission factor of 0.094 pounds of HCl emitted per pound of the material subjected to open burning

**F. Fugitive Dust Sources Monitoring**

Point source fugitive dust sources are subject to 20 percent opacity standard and non-point sources are subject to the 40 percent opacity standard and other Article 6 requirements. Periodic monitoring for the opacity standard entails a monthly visible emissions survey by a certified Method 9 observer. If the survey appears to indicate opacity in excess of the standard, a Method 9 observation will be required. If the Method 9 reading documents an opacity level higher than the standard, the facility will be required to take suitable corrective action and report the incident as an “excess emission”.

The Permit also contains applicable requirements for non-point source fugitive dust emissions. These regulations require the Permittee to employ various control methods to suppress particulate emissions. The permit lists the various methods of dust suppression that may be used. By not restricting the Permittee to use only one of the methods, the permit provides the flexibility required to facilitate employment of effective control measures.

**VII. TESTING**

The Permittee must test the concentration of VOCs and benzene in the exhaust gases from the Soil Vapor Extraction Units every two weeks for the first six weeks; monthly for the following six months; and quarterly thereafter.

**VIII. NON ROAD ENGINES**

ADEQ is aware that YPG has a number of ICEs that are used in activities like cable pulling, compacting, stucco spraying, pressure washing, welding, compressing, concrete mixing, valve exercising, post hole digging, etc. These engines use diesel and gasoline as the fuel. Most of the gasoline fired engines are hand carried. In view of the activities these ICEs are used for, these are considered non road engines. The list of such engines has been provided by YPG in the permit application.

**IX. INSIGNIFICANT ACTIVITIES**

The applicant has requested the activities listed in following Table 3 to be deemed “insignificant activities”. According to A.A.C. R18-1-101(57), for an activity to be deemed insignificant, there should be no applicable requirement for the activity. This was the basis used to determine if the activities in the following list qualify as insignificant activities under Arizona law.

**Table 3: Proposed Insignificant Activities**

<b>Proposed Insignificant Activity</b>	<b>Yes/No</b>	<b>Reason</b>
Chlorination of non-process water	Yes	A.A.C. R18-2-101.57(j)
R & D laboratories –Laboratory equipment used exclusively for chemical and physical analysis	Yes	A.A.C. R18-2-101.57(i)

<b>Proposed Insignificant Activity</b>	<b>Yes/No</b>	<b>Reason</b>
Steam Cleaning	Yes	A.A.C. R18-2-101.57(j)
Pesticide and herbicide usage for maintenance purposes	Yes	A.A.C. R18-2-101.57(j)
Air Conditioning, cooling, heating, or ventilation equipment not designed to remove air contaminants generated by or released from associated or other equipment	Yes	A.A.C. R18-2-101.57(j)
Landscaping and site housekeeping equipment	Yes	A.A.C. R18-2-101.57(a)
Building maintenance and janitorial activities	Yes	A.A.C. R18-2-101.57(a)
Diesel fuel and fuel oil storage tanks with capacity of 40,000 gallons or less	Yes	A.A.C. R18-2-101.57(b)
Buffing, polishing, carving, cutting, drilling, machining, routing, sanding, sawing, surface grinding, precision parts, plastics, fiberboard, masonry, carbon, glass or wood, and associated venting hoods	Yes	A.A.C. R18-2-101.57(f)
Document disposal- paper shredding	No	Regulated activity pursuant to A.A.C. R18-2-730
Miscellaneous chemical sources- Emissions from lab used exclusively for chemical and physical analysis	Yes	A.A.C. R18-2-101.57(i)
Batch mixers with rated capacity of 5 cubic feet or less	Yes	A.A.C. R18-2-101.57(d)
Boilers and heaters utilized for enlisted barracks, credit union, main exchange, health clinic, chapel, vehicle maintenance shop, range operations control, etc.	No	Regulated activity pursuant to A.A.C. R18-2-724
Construction, repair, and maintenance of roads or other paved or open areas, unpaved private roadways	No	Regulated activity pursuant to A.A.C. R18-2-604 & 605

Proposed Insignificant Activity	Yes/No	Reason
Abrasive Blasting	No	Regulated activity pursuant to A.A.C. R18-2-726
Deflagration	No	Regulated activity pursuant to Article 6 of Arizona Administrative Code
Internal combustion engine driven compressors, generator sets, and water pumps used only for emergency replacement or stand by service	No	Subject to A.A.C. R18-2-719 or the NSPS
Hobby Shop Painting	No	Regulated activity pursuant to A.A.C. R18-2-727
Mobile sources	No	Regulated activity pursuant to Article 8 of Arizona Administrative Code

## X. LIST OF ABBREVIATIONS

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
AQD	Air Quality Division
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
EPA	Environmental Protection Agency
GDF	Gasoline Dispensing Facility
HAPs	Hazardous Air Pollutants
HCl	Hydrochloric Acid
hr.	Hour
ICE	Internal Combustion Engine
lb.	Pound
MMBtu	Million British Thermal Units
MW	Megawatts
NESHAP	National Emission Standards for Hazardous Air Pollutants
NSPS	New Source Performance Standards
NO <sub>x</sub>	Nitrogen Oxide
PM	Particulate Matter
PM <sub>10</sub>	Particulate Matter Nominally less than 10 Micrometers
PSD	Prevention of Significant Deterioration
PTE	Potential-to-Emit
RICE	Reciprocating Internal Combustion Engines
SO <sub>2</sub>	Sulfur Dioxide
SVEU	Soil Vapor Extraction Unit

TPY ..... Tons per Year  
VOC ..... Volatile Organic Compound  
YPG ..... Yuma Proving Ground