

Yajna reduced Air and Water Pollution (Meghadri Gedda) in Visakhapatnam

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Abstract

Yajna or Agnihotra is a scientific process that has proved a number of times that the process reduces air pollution, water pollution, and helps improve health. We performed Yajna in Visakhapatnam from 18th to 27th May 2020. Our results indicate that the PM_{2.5} decreased by about 35% and PM₁₀ by about 26% when compared to May 2019 levels. Rainwater after the Yajna has a pH above 6.16 indicating that the air is having less amounts of CO₂, SO₂, and NO₂ due to reducing the pollutants by the Yajna process. The Meghadri Gedda reservoir showed improvement in Color from 6.6 to 6.0, TDS decreased from 286 to 266, pH changed from 8.39 to 8.03, and BOD decreased from 4.6 to less than 3 because of the Yajna and subsequent rainwater.

Keywords: Visakhapatnam gas leak, Yajna reduces pollution, Yajna can clean Waterbodies, Meghadri Gedda reservoir cleaning, Vedas World Inc.

1. Introduction

1.1 LG Polymers gas (Styrene) leak

The industrial accident at occurred at LG Polymers chemical plant in R.R. Venkatapuram near Gopalapatnam in the Greater Visakhapatnam region, A.P. India. Styrene gas leaked from the industry during the early morning of May 2020. According to National disaster response force (NDRF) there were 11 deaths and more than 1,000 people hospitalized due to the spread of the gas over a distance of about 3 kilometers.



Meghadri Gedda reservoir in Visakhapatnam (Photo | G Satyanarayana, EPS)

Figure-1 Courtesy The New Indian Express.

On 3rd June 2020, The New Indian Express¹ published news from the report given by NEERI (National Environmental Engineering Research Institute). According to the news, Water from the Meghadri Gedda Reservoir in Visakhapatnam

cannot be used directly for drinking or domestic purposes due to its moderate-to-high organic content, experts from The CSIR-National Environmental Engineering Research Institute (CSIR-NEERI) have said in their report submitted to the National Green Tribunal (NGT).

The team visited the site between May 12 and 16 and collected air and water samples to assess the concentration of styrene in the environment. Besides samples from 18 dug wells, four were collected from the reservoir, and one each from the lake, collection tank, fishpond and drain in the buffer zones (0.5 km, 1 km, 1.5 km, 2 km, 3 km, 4 km and 5 km radius) around the LG Polymers plant.

Table-1 NEERI report summary

Location	Styrene	pH	Dissolved solids	Hardness	Sodium concentration	Biological oxygen demand
Meghadri Gedda Reservoir	0.0015 mg/l	7.7	270 mg/l	88 mg/l	48 mg/l	4.6 mg/l
In other water samples	0.02 mg/l	-	-	-	-	-
In SGL-9	0.0345 mg/l	-	-	-	-	-

Most² pristine rivers will have a 5-day carbonaceous BOD below 1 mg/L. Moderately polluted rivers may have a BOD value in the range of 2 to 8 mg/L. Rivers may be considered severely polluted when BOD values exceed 8 mg/L. Therefore, Meghadri Gedda reservoir with BOD of 4.6 mg/L is moderately polluted as of 16th May 2020 due to Styrene gas leak on 7th May 2020.

1.2 Air pollution

Air pollution is a mixture of solid particles and gases in the atmosphere and according to the united states environmental protection agency the following are considered as the six common air pollutants. It is important that we reduce or eliminate the air pollution as it is very harmful for the health of humans, animals, and plants on the earth. We focused our experiments on reducing the particulate matter as it is the major pollutant that makes up the AQI (air quality index) in general and purification of Meghadri Gedda reservoir.

1.3 What are the Six Common³ Air Pollutants?

1. Ground Level Ozone, 2. Carbon Monoxide, 3. Sulphur Dioxide, 4. Nitrogen Oxides,
5. Particulate Matter, and 6. Lead

1.4 What is Air Quality Index (AQI)?

An air quality index (Table-2) is used by government agencies to communicate to the public how polluted the air currently is or how polluted it is forecast to become.

Table-2 AQI Values and Consequence

Air Quality Index Value	Consequence
301 – 500	Hazardous
201 – 300	Very Unhealthy
151 – 200	Unhealthy
101 – 150	Unhealthy for Sensitive Groups
51 – 100	Moderate
0 – 50	Good

1.5 Particulate Matter or PM

Most PM⁴ particles form in the atmosphere as a result of chemical reactions between pollutants. Particulate Matter is a mixture of solid particles and liquid droplets found in the air. Some PM can be seen with naked eye and some can only be seen with electron microscope. There are mainly two types of Particulate Matter and are called PM₁₀ and PM_{2.5}.

According to EPA, “PM₁₀ are inhalable particles that are 10 microns or less in diameter and PM_{2.5} are fine inhalable particles that are 2.5 microns or less in diameter”. According to EPA, “some sources of PM are those emitted directly from construction sites, unpaved roads, fields, smokestacks or fires. Most particles form in the atmosphere as a result of complex reactions of chemicals such as Sulphur dioxides and Nitrogen Oxides, which are pollutants emitted from power plants, industries, and automobiles”.

1.6 What are the Harmful Effects of PM?

According to EPA, “Particulate matter contains microscopic solids or liquid droplets that are so small that they can be inhaled and cause serious health problems. Some particles less than 10 micrometers in diameter can get deep into your lungs and some may even get into your bloodstream. Of these, particles less than 2.5 micrometers in diameter, also known as fine particles or PM_{2.5}, pose the greatest risk to health. Fine particles are also the main cause of reduced visibility (haze) in parts of the United States, including many of US treasured national parks and wilderness areas”.

1.7 Does wood combustion cause CO₂ (Carbon dioxide) pollution⁵?

The CO₂ in wood combustion emissions is considered “carbon-neutral” because the amount of CO₂ emitted during combustion is basically equivalent to the amount of CO₂ trees need to grow the same quantity of wood. Hence the combustion of wood does not contribute to the net increase in atmospheric levels of CO₂ (a greenhouse gas) as does the combustion of fossil fuels.

On Earth Day⁶, the U.S. Environmental Protection Agency announced a policy that incentivizes the destruction of US forests, in the name of fighting climate change. EPA Administrator Scott Pruitt decreed that burning wood for energy will be treated as “carbon neutral,” meaning that it adds no CO₂ to the atmosphere and falls into the same category of energy sources as solar and wind.



Figure-2

“Yajna” or “Agnihotra” is a Scientific process that is carefully carried by specialists who are well trained in executing the process. As shown in the above “Fig – 2”, a fire pit is prepared, and fire is kept inside the pit with the help of special sticks known as “Samidhas”. These “Samidhas” are obtained from various trees such as Ashwath (*Ficus Religiosa*), Udumbar (*Ficus Glomerata*), Palaash (*Butea Frondosa*), Shami (*Prosopis*), and Vikadgand (*Capparis Spinosa*) etc. Then cow ghee (Butter turns to ghee on heating), and other food materials, precious metals, and scented materials such as sandalwood, and herbs are kept in the fire at regular intervals.

The Yajna fire generally is between 200 to 1000 degrees Celsius and above. At this temperature generally all materials (eatables, and herbs etc.) are vaporized and the molecules or atoms or ions or nanoparticles rise high into the atmosphere. These molecules have high kinetic energy and travel long distances and climb great heights as the density of these vapors are lesser than the surrounding air. These minute particles have the capacity to interact with the atmospheric gases/particles and cause reduction in the pollution. For example, Sulphur dioxide can be removed using Carbon (Sappok and Walker)⁷.

Experimental results (Pushpendra K. Sharma et al)⁸ indicated that the pollutants like SO_x, NO_x, CO, and PM could be reduced by “Agnihotra” or “Yajna”. It was shown that SO_x reduced by about 51% and NO_x reduced by about 60% while RSPM and SPM were reduced by 9% and 65% respectively.

Using herbs and scented materials in the “Agnihotra” or “Yajna” give medicinal smoke to cure illness (Abdolali Mohagheghzadeh et al)⁹ such as pulmonary, neurological and dermatological apart from being beneficial to health and include smoke for social use. The authors also demonstrate that medicinal smoke can be extended to use in modern medicine as a form of drug delivery and is a promising source of new active natural ingredients.

In these Yajna’s four types of materials are used for offering in the fire (Yajna). (1) Scented materials such as Kasturi, saffron etcetera. (2) Sweet materials such as jaggery, honey etcetera, (3) Strength producing materials such as cow ghee, cow milk, rice etcetera. (4) Health preserving materials such as herbs and precious metals. These materials are acquired and purified before offering them in proper proportions in the Yajna. Because of this air and rainwater get purified and everyone gets pleasure. The above said materials when offered in the fire (Yajna), become minute and mix with the air. These materials in the vapor state clean the atmospheric air and reduce pollution.

When these materials are offered in the fire (Yajna), hot smoke and steam are produced. Due to heat these materials get dried by releasing the vapors from them. These vapors mixing with the air enters the atmosphere. In that vapor the water part is steam and particles mixed with steam part is smoke. These vapors and particles interact with the atmospheric particles and purify the air. These vapors and particles collect together and form clouds. Because of this we get good rains with purified water.

For the past 8 years (from 2012 to 2019) we performed the Yajna experiment in a large scale once each year at different times of the year and close to Atlanta, GA within a radius of 50 km. We have found (Venkata R Chaganti)¹⁰ that the vapors produced in the Yajna are capable of reducing PM (Particulate Matter) pollution in the atmosphere up to a period of 96 hours after the Yajna and the effect can be observed to a distance of 50 kilometers.

An ahuthi is the selected/allowed material that is offered in the fire pit or Yajna fire. Each ahuthi is equal to about 10 grams of either ghee, herbs, or cooked food like sweets etc. For our experiments we have offered anywhere from 5,000 to 10,000 ahuthis per day depending on the Yajna design. For this experiment we used cow ghee (clarified butter) and for each day the average ghee quantity had been about 15 kg and other materials.

We have analyzed (a) the AQI values before, during, and after the Yajna, (b) quality of the rainwater that is collected within three days after the Yajna at different locations within 30 km from the place of Yajna, (c) quality of water before and after the Yajna of the Meghadri Gedda reservoir that is at a distance of 8 km from the Yajna location, (d) compared the quality of water from Meghadri Gedda reservoir with NEERI water quality report that was collected before Yajna between 12th May and 16th May 2020.

1.8 Aim of this paper is to give evidence that “Yajna” or “Agnihotra” will reduce pollution in the air, and pollution in the water in Meghadri Gedda reservoir.

2. Materials and Methods

For this experiment a hollow cuboid Yajna Kunda (Firepit) with open top face is used. The top face is a square of side one meter and the depth of Yajna Kunda is about 60 cm. The following are the details of the materials used for the Yajna purpose.

Table-3 List of materials used in the Yajna

Parameter	Morning	Evening	Comments
Time period of Yajna	3 hours from Sunrise	2 hours before Sunset	± 10 minutes
Mango wood Sticks	12 kg	7 kg	± 2kg
Ghee (Cow)	12 L	8 L	± 1 L
Camphor	150 grams	100 grams	± 10 grams
Guduchi	0.7 kg	0.3 kg	± 50 grams
Saffron	0.6 gram	0.4 gram	± 0.01 grams
Commiphora Mukul	300 grams	200 grams	± 25 grams
Sandalwood	14 grams	6 grams	± 1 gram
Mace	60 grams	40 grams	± 3 grams
Nutmeg	60 grams	40 grams	± 3 grams
Tamala	150 grams	100 grams	± 10 grams
Khusa grass	300 grams	200 grams	± 20 grams
Cloves	100 grams	50 grams	± 5 grams
Cardamom	60 grams	40 grams	± 5 grams
Basil Seeds	60 grams	40 grams	± 5 grams
Ashwagandha	60 grams	40 grams	± 5 grams
Moringa Leaves	60 grams	40 grams	± 5 grams
Sesame seeds	0.6 kg	0.4 kg	± 25 grams
Sarsaparilla	60 grams	40 grams	± 5 grams
Moongdal	0.6 kg	0.4 kg	± 25 grams
Rice	0.6 kg	0.4 kg	± 25 grams
Turmeric	150 grams	100 grams	± 20 grams
Honey	300 grams	200 grams	± 25 grams
Red Spiderling leaves	60 grams	40 grams	± 5 grams
Peepul wood sticks	0.6 kg	0.4 kg	± 25 grams
Udumbar wood sticks	0.6 kg	0.4 kg	± 25 grams
Palash wood sticks	2 kg	1 kg	± 50 grams
Banyan wood sticks	2 kg	1 kg	± 50 grams

At first the above said materials (except Camphor, Ghee, honey, and sticks) are powdered and mixed well with some ghee and honey so that it becomes dough like. This dough is divided into three portions in three different containers and given to the three Vedic experts who perform the Yajna. These Vedic experts are well trained in the Yajna and are called as Ritviks. Along with this mix, Ghee is separately taken in three other containers and given to the Ritviks. Each Ritvik will have two containers one with Ghee and the other with the dough that was prepared. Apart from the containers the Ritviks will also have wood sticks that are properly made into pieces that would easily fit into the Yajna Kunda.

Ritviks performing the Yajna, sit one on each side of the Yajna Kunda and offer Ghee, dough, and sticks into the Yajna Kunda at regular intervals of time and with specified amount of each substance. At first some sticks are placed and then fire is established in the Yajna Kunda by placing a piece of lit camphor. The fire is let increase to certain extent by offering Ghee at regular intervals of time. This time period is decided by the length of the Mantra (stanza) that is chanted by the Ritviks. When the fire is sufficient then the materials are offered in proper proportions at regular intervals of time that is decided by the length of the Mantras chanting.

3. Results and Discussion

During May 2020 India was in complete lockdown till 18th May 2020. So was Visakhapatnam city in Andhra Pradesh state of India. Therefore, the pollution levels will be less when compared to previous year. On May 18, 2020 the government announced relaxed lockdown and the public activities started to a large extent except schools, religious places, and cinema theaters etc. All the industrial activities, offices, traffic, and most of the market activities resumed. We did Yajna from 18th May to 27th May every day for about five hours (3 hours in the morning after Sunrise and 2 hours before Sunset) except on 27th May on which we did only in the morning.

Based on the similarity conditions we will compare the following data during the Yajna period with that of May 2019 month data at the same location (Visakhapatnam) in order to show that Yajna removes air pollution, and water pollution in the surroundings of the Yajna.

1. PM_{2.5} (Particulate Matter 2.5 microns) during the Yajna period with that of May 2019 month data at the same location (Visakhapatnam).
2. PM₁₀ (Particulate Matter 10 microns) during the Yajna period with that of May 2019 month data at the same location (Visakhapatnam).
3. CO (Carbon Monoxide) during the Yajna period with that of May 2019 month data at the same location (Visakhapatnam).
4. SO₂ (Sulphur Dioxide) during the Yajna period with that of May 2019 month data at the same location (Visakhapatnam).
5. NO_x (Nitrogen Oxides) during the Yajna period with that of May 2019 month data at the same location (Visakhapatnam).
6. Rainwater collected within three days of the Yajna in the Visakhapatnam region and analyze the report to check the air and water pollution.
7. Surface water at Meghadri Gedda reservoir (collected between 12th and 16th May 2020) before the Yajna given by NEERI (National Environmental Engineering Research Institute, India) and compare the parameters with surface water at Meghadri Gedda reservoir collected after the Yajna on 30th May 2020.

Table – 4 Maximum permissible values for pollutants (EPA USA)¹¹

Parameter	Permissible Value (Primary)
PM _{2.5}	12 ug/m ³
PM ₁₀	54 ug/m ³
SO ₂	35 ppb = 91 ug/m ³
NO ₂	53 ppb = 99.7 ug/m ³
CO	4.4 ppm = 5.03 mg/m ³
Ozone	0.054 ppm = 106 ug/m ³

Concentration¹² (mg/m³) = 0.0409 x ppm x molecular weight

Table -5 Maximum permissible levels for pollutants (India)¹³

Pollutant	Time weighted Average	Concentration in Ambient Air	
		Industrial, residential, rural, and other areas	
PM2.5 (ug/m3)	Annual		40
	24 hours		60
PM10 (ug/m3)	Annual		60
	24 hours		100
SO2 (ug/m3)	Annual		50
	24 hours		80
NO2 (ug/m3)	Annual		40
	24 hours		80
Carbon Monoxide (mg/m3)	8 hours		2
	1 hour		4
Ozone (ug/m3)	8 hours		100
	1 hour		180

Table – 6 Comparison of average Pollutants values during the Yajna with average values of May 2019. Data collected from Central Control Room for Air Quality Management – All India¹⁴

S.No	Measurement Period		Average Values of Pollutants					
	From 00:00 hours	To 23:59 hours	PM _{2.5} (ug/m ³)	PM ₁₀ (ug/m ³)	SO ₂ (ug/m ³)	NO ₂ (ug/m ³)	CO (mg/m ³)	Ozone (ug/m ³)
1	1st May 2019	31st May 2019	42.19	140.76	8.15	30.50	0.83	20.78
2	19th May 2020	27th May 2020	27.62	104.05	8.94	31.29	0.16	29.87
3	Permissible Values USA ¹¹		12	54	91	99.7	5.03	106
4	Permissible levels India ¹³		40	60	50	40	2	100

Table – 7 Pollutant values on 20th and 21st May 2020 due to the Cyclone Amphan. Data collected from Central Control Room for Air Quality Management – All India¹⁴

Location	Measurement Period		Average Values of Pollutants					
	From 00:00 hours	To 23:59 hours	PM _{2.5} (ug/m ³)	PM ₁₀ (ug/m ³)	SO ₂ (ug/m ³)	NO ₂ (ug/m ³)	CO (mg/m ³)	Ozone (ug/m ³)
L-1	20th May 2020	21st May 2020	55.38	176.29	10.10	53.72	0.11	35.64
L-2	20th May 2020	21st May 2020	42.83	120.81	12.90	18.53	0.82	92.43
L-3	Permissible Values ¹¹		12	54	91	99.7	5.03	106
L-4	Permissible levels India ¹³		40	60	50	40	2	100

L-1 = Visakhapatnam, L-2 = Rajamahendravaram

Table – 8 Comparison of average Pollutant values during Yajna (without Cyclone days) with 2019 May average values. Data collected from Central Control Room for Air Quality Management – All India¹⁴

S.No	Measurement Period		Average Values of Pollutants					
	From 00:00 hours	To 23:59 hours	PM _{2.5} (ug/m ³)	PM ₁₀ (ug/m ³)	SO ₂ (ug/m ³)	NO ₂ (ug/m ³)	CO (mg/m ³)	Ozone (ug/m ³)
1	1st May 2019	31st May 2019	42.19	140.76	8.15	33.36	0.83	20.78

2	19th May 2020	27th May 2020	19.68	83.41	8.62	24.88	0.18	19.68
3	Permissible Values ¹¹		12	54	91	99.7	5.03	106
4	Permissible levels India ¹³		40	60	50	40	2	100

Table – 9 Comparison of Meghadri Gedda reservoir water before and after Yajna

Tested by	Date Collected	Parameters Tested and their values					
		pH	Dissolved solids	Color (Hazen)	Hardness as CaCO ₃	Sodium mg/l	Biological oxygen demand
NEERI	12 th – 16 th May 2020	7.7	270 mg/l	-	88 mg/l	48	4.6 mg/l
SV Enviro Labs & Consultants	19 th May 2020	8.39	286 mg/l	6.6	130 mg/l	-	-
SV Enviro Labs & Consultants	29 th May 2020 – 1st June 2020	8.03	266 mg/l	6.0	121 mg/l	39.9	< 3.0 mg/l

Table – 10 Analysis of rainwater collected in Visakhapatnam two days (May 29th, 2020) after the Yajna

Location	Parameters			
	Color	pH	TDS	COD
Meghadri Gedda	< 1.0 Hazen	6.16	69 mg/l	< 10 mg/l
Akkayapalem	< 1.0 Hazen	6.44	45.9 mg/l	< 10 mg/l

From the above we can see that Table-4 gives us the permissible levels of air pollutants according to USA and Table -5 gives us the permissible levels of air pollutants according to India.

Table-6 gives that six pollutants data for May 2019 in (3rd row) and during Yajna period May 2020 (4th row). Rows 5 and 6 give permissible values according to USA and India. On comparison we see that except PM_{2.5} and PM₁₀ all others are below the permissible levels both during May 2019 and Yajna period. Therefore, we will consider only PM_{2.5} and PM₁₀ for comparison for May 2019 and Yajna period. We see that the during the Yajna period, the average values of PM_{2.5} is about 35% lesser than May 2019 average values and 31% lesser than permissible levels in India. Similarly, for PM₁₀, the average values during Yajna period is 26% lesser than that of the average values of May 2019. Conclusion is that in spite of the Amphan Cyclone the average values of PM_{2.5} and PM₁₀ during Yajna period (18th to 27th May 2020) have come down when compared to that of May 2019.

If we ignore the rise in values due to Cyclone Amphan as seen in Table-7, then we can consider Table-8 for comparison. From Table-8 we see that the average PM_{2.5} values during Yajna period are less than 53% when compared to May 2019. Similarly, PM₁₀ values during Yajna period are less than 40.74% when compared to May 2019.

Table-9 gives the Meghadri Gedda reservoir water parameters (a) after the Styrene gas leak, (b) before the Yajna and, (c) after the Yajna and after the rain on 29th May. The interesting parameters are pH, TDS, Color, and BOD.

We see that the pH value has risen from 7.7 to 8.39 before the Yajna (reasons unknown) and after the Yajna it has fallen from 8.39 to 8.03. This could be possible due to rainwater as the pH of rainwater is 6.16 at Meghadri Gedda.

Total dissolved solids (TDS) have risen from 270 to 286 before the Yajna (reasons unknown) and it has fallen back to 266 after the Yajna. This could be possible due to rainwater as the TDS of the rainwater at Meghadri Gedda is 69 mg/l (Table-10).

The color has decreased from 6.6 to 6.0 after the Yajna. Lesser the color better is the purity of water for drinking purposes.

According to the NEERI report¹ at BOD (Biological Oxygen Demand) of 4.6 it is found that 40% of animal life died and recommended to lower the BOD by “either activated carbon adoption method or combined ozone activated carbon method can be used to remove the organic content in the reservoir”.

After the Yajna and rainwater the BOD levels have come down from 4.6 to less than 3 indicating that there is a decrease in organic material and impurities in water. Since there is no treatment done to the reservoir water as per the recommendations of NEERI, the question arises as to how the Color, TDS, pH, and BOD have come down. The only obvious reason that we can find is the Yajna and rainwater after the are responsible in purifying the Meghadri Gedda reservoir.

As we can see from Table-10 the pH of rainwater collected at two locations is found to be 6.16 and 6.44. According to EPA¹⁵ the rainwater has a pH between 5 and 5.5 due to CO₂ in the air. If there is excess SO₂ and NO₂ then the pH may fall well below 5. But the rainwater collected at the two locations after the Yajna indicate that the it has a higher pH than the normal rainwater. This indicates that the CO₂, SO₂, and NO₂ in the air have become less than normal. This is indicated by the less quantity in the air pollutants after the Yajna as indicated by the Table-6 and Table-8.

4. Conclusions

1. Yajna reduced the PM_{2.5} and PM₁₀ levels by about 35% and 26% when compared to 2019 levels in the air in and around Visakhapatnam.
2. Yajna reduced the pollutants in spite of the cyclone Amphan.
3. Rainwater after the Yajna has a pH above 6.16 indicating that the air is having less amounts of CO₂, SO₂, and NO₂ due to reducing the pollutants by the Yajna process.
4. Due to Yajna and rainwater the Color, TDS, pH, and BOD of the Meghadri Gedda reservoir have come down indicating the increase in purity of the reservoir.
5. Yajna is a scientific process that reduces air pollution and increases the purity of waterbodies.

Appendix



SV ENVIRO LABS & CONSULTANTS
(Environmental Engineers & Consultants in Pollution Control)

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Ref: SVELC/MR /20-06/04

Date: 05-06-2020

NAME AND ADDRESS : M/s. VEDAS WORLD INC.
ACTIVITY : YAGNA - VISAKHAPATNAM
SAMPLE PARTICULARS : SURFACE WATER
SOURCE OF COLLECTION : Meghadrigedda reservoir
DATE OF RECEIPT : 01-06-2020

TEST REPORT

S.No	Parameter	Unit	Result	IS 10500: 2012 Specification
1.	Temperature	°C	28.5	-
2.	Electrical Conductivity	µmhos	467	-
3.	Iron as Fe	mg/l	0.22	0.3
4.	Manganese as Mn	mg/l	< 0.01	-
5.	Copper as Cu	mg/l	< 0.01	0.05
6.	Zinc as Zn	mg/l	0.03	5.0
7.	Chemical Oxygen Demand	mg/l	< 10	-
8.	Biochemical Oxygen Demand	mg/l	< 3	-
9.	Aluminum	mg/l	< 0.01	0.03
10.	Antimony	mg/l	< 0.01	-
11.	Arsenic	mg/l	< 0.01	0.01
12.	Barium	mg/l	< 0.01	0.7
13.	Boron	mg/l	< 0.01	0.5
14.	Cadmium	mg/l	< 0.01	0.003
15.	Chromium	mg/l	< 0.01	0.05
16.	Hexavalent Chromium	mg/l	< 0.01	-
17.	Lead	mg/l	< 0.01	0.01
18.	Mercury	mg/l	< 0.001	0.001
19.	Molybdenum	mg/l	< 0.01	0.07
20.	Nickel	mg/l	< 0.01	0.02
21.	Potassium	mg/l	5.42	-
22.	Salinity	mg/l	79.4	-
23.	Silver	mg/l	< 0.01	0.1
24.	Sodium	mg/l	39.9	-

Note: All the above parameters are tested as per APHA methods, 23rd Edition, 2017

CHECKED BY 



SV ENVIRO LABS & CONSULTANTS 



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Ref: SVELC/MR /20-06/04

Date: 03-06-2020

NAME AND ADDRESS : M/s. VEDAS WORLD INC.
 ACTIVITY : YAGNA - VISAKHAPATNAM
 SAMPLE PARTICULARS : SURFACE WATER
 SOURCE OF COLLECTION : MEGHADRIGEDDA RESORVOIR
 DATE OF COLLECTION : 01-06-2020

TEST REPORT

S.No	Parameter	Unit	Result	Method Followed	IS 10500:2012 Specifications
1.	Colour	Hazen	6.0	APHA,2120-C, 23 rd Edition	5.0
2.	Odour	-	Agreeable	APHA,2150, 23 rd Edition	Agreeable
4.	Turbidity	NTU	11.8	APHA,2130-B, 23 rd Edition	1.0
5.	pH	-	8.03	APHA,4500-H+B, 23 rd Edition	6.5 – 8.5
6.	Total Dissolved Solids	mg/l	266	APHA,2540-C, 23 rd Edition	500
7.	Total Alkalinity as CaCO ₃	mg/l	167	APHA,2320-B, 23 rd Edition	200
8.	Total Hardness as CaCO ₃	mg/l	121	APHA,2340-C, 23 rd Edition	200
9.	Calcium as Ca	mg/l	24.4	APHA,3500-Ca B, 23 rd Edition	75
10.	Magnesium as Mg	mg/l	14.5	APHA,3500-Mg B, 23 rd Edition	30
11.	Chlorides as Cl	mg/l	44.0	APHA,4500-Cl B, 23 rd Edition	250
12.	Nitrates as NO ₃ ⁻	mg/l	0.30	APHA,4500 NO ₃ ⁻ B & C, 23 rd Edition	45
13.	Nitrites as NO ₂ ⁻	mg/l	<0.01	APHA,4500 NO ₂ ⁻ B, 23 rd Edition	-
14.	Sulphates as SO ₄	mg/l	8.4	APHA,4500-SO ₄ ²⁻ E, 23 rd Edition	200
15.	Ammonical Nitrogen	mg/l	<0.01	APHA,4500-NH ₃ F, 23 rd Edition	-
16.	Polynuclear aromatic Hydrocarbons as PAH	mg/l	<0.0001	APHA,6440-C, 23 rd Edition	0.0001

CHECKED BY 



AUTHORIZED SIGNATORY 



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Ref: SVELC/MR /20-05/03

Date: 03-06-2020

NAME AND ADDRESS : M/s. VEDAS WORLD INC.
 ACTIVITY : YAGNA - VISAKHAPATNAM
 SAMPLE PARTICULARS : RAIN WATER
 SOURCE OF COLLECTION : Akkayapalem
 DATE OF RECEIPT : 30-05-2020

TEST REPORT

S.No	Parameter	Unit	Result	IS 10500: 2012 Specification
1.	Colour	Hazen	< 1.0	5.0
2.	Odour	-	Agreeable	Agreeable
3.	Turbidity	NTU	4.79	1.0
4.	Temperature	°C	28.0	-
5.	pH	-	6.44	6.5-8.5
6.	Electrical Conductivity	µmhos	82.1	-
7.	Total Dissolved Solids	mg/l	45.9	500
8.	Acidity	mg/l	-1.0	-
9.	Total Alkalinity as CaCO ₃	mg/l	12.0	200
10.	Sulfate as SO ₄	mg/l	9.2	200
11.	Nitrate Nitrogen as N	mg/l	2.1	45.0
12.	Iron as Fe	mg/l	< 0.01	0.3
13.	Manganese as Mn	mg/l	< 0.01	-
14.	Copper as Cu	mg/l	< 0.01	0.05
15.	Zinc as Zn	mg/l	0.061	5.0
16.	Chemical Oxygen Demand	mg/l	< 10.0	-
17.	Aluminum	mg/l	< 0.01	0.03
18.	Antimony	mg/l	< 0.01	-
19.	Arsenic	mg/l	< 0.01	0.01
20.	Barium	mg/l	< 0.01	0.7
21.	Boron	mg/l	< 0.01	0.5
22.	Cadmium	mg/l	< 0.01	0.003
23.	Chromium	mg/l	< 0.01	0.05
24.	Lead	mg/l	< 0.01	0.01
25.	Mercury	mg/l	< 0.01	0.001
26.	Molybdenum	mg/l	< 0.01	0.07
27.	Nickel	mg/l	< 0.01	0.02





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Ref: SVELC/MR /20-05/02

Date: 03-06-2020

NAME AND ADDRESS : M/s. VEDAS WORLD INC.
 ACTIVITY : YAGNA - VISAKHAPATNAM
 SAMPLE PARTICULARS : RAIN WATER
 SOURCE OF COLLECTION : Meghadrigedda
 DATE OF RECEIPT : 30-05-2020

TEST REPORT

S.No	Parameter	Unit	Result	IS 10500: 2012 Specification
1.	Colour	Hazen	< 1.0	5.0
2.	Odour	-	Agreeable	Agreeable
3.	Turbidity	NTU	2.79	1.0
4.	Temperature	°C	28.0	-
5.	pH	-	6.16	6.5-8.5
6.	Electrical Conductivity	µmhos	126	-
7.	Total Dissolved Solids	mg/l	69	500
8.	Acidity	mg/l	-32.0	-
9.	Total Alkalinity as CaCO ₃	mg/l	21.0	200
10.	Total Hardness as CaCO ₃	mg/l	34.0	200
11.	Chloride as Cl	mg/l	13.2	250
12.	Sulfate as SO ₄	mg/l	17.9	200
13.	Nitrate Nitrogen as N	mg/l	7.05	45.0
14.	Iron as Fe	mg/l	< 0.01	0.3
15.	Manganese as Mn	mg/l	< 0.01	-
16.	Copper as Cu	mg/l	< 0.01	0.05
17.	Zinc as Zn	mg/l	0.064	5.0
18.	Chemical Oxygen Demand	mg/l	< 10.0	-
19.	Aluminum	mg/l	< 0.01	0.03
20.	Antimony	mg/l	< 0.01	-
21.	Arsenic	mg/l	< 0.01	0.01
22.	Barium	mg/l	< 0.01	0.7
23.	Boron	mg/l	< 0.01	0.5
24.	Cadmium	mg/l	< 0.01	0.003
25.	Calcium	mg/l	12.02	75
26.	Chromium	mg/l	< 0.01	0.05
27.	Hexavalent Chromium	mg/l	< 0.01	-



Acknowledgments

I am thankful to Vedas World Team who worked hard to see the project is executed properly. I am indebted to Vedas World Secretary Mr. Shastry Munnagala who coordinated the project between Vedas World and Visakhapatnam Ritviks and made this project possible. I thank the Ritvik Narasimha Sharma who did the Yajna without flaws and collected the required materials and other Ritviks necessary for the Yajna. Special thanks to Sri Lalitha Shanthi Durga Devi Temple, Sheela Nagar, Visakhapatnam, AP, who provided the premises for doing the Yajna process. I am also thankful to the donors who helped us in performing this Yajna by providing partial financial support.

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Author

Dr. Venkata R Chaganti is a doctorate in condensed matter physics from Georgia State University. Apart from the University’s research in Quantum dots, he did independent research in Vedas and Shastras for the past 30+ years. He worked on Science in Vedas and Shastras that became unavailable to the present society. One such aspect is removing air pollution with the help of Vedic Yajnas. For the past 8 years he worked on Vedic Yajnas and pollution removal by registering a nonprofit organization called Vedas World Inc and has a website www.vedas.us that is maintained from 2010. At present the small group of Vedas World Inc is determined to show their research work in Yajnas and removing air pollution by showing Vedas World Inc’s solution. Vedas World Inc has conducted Yajna experiment once every year from 2012 to 2019. The procedure and results are given separately for each year. These Yajnas are conducted within a radius of 30 miles from Atlanta, GA USA.

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