Table 1: Chemical compound of healthy cow urine

Ammonia nitrogen	1-1.7 ml/kg/day
Allantoin	20-60 ml/kg/day
Calcium	0.1-1.4 ml/ kg/day
Chloride	0.1-1.1 mmol/ kg/day
Creatinine	15-20 mg/ kg/day
Magnesium	3.7 mg/ kg/day
Potassium	0.08-0.15 mmol/ kg/day
Sodium	0.2-1.1 mmol/ kg/day
Sulphate	3-5 mg/ kg/day
Uric acid	1-4 mg/ kg/day
leucocyte	< 15 micro lt

The Sodium ,Pottasium , Calcium , And Magnesium Are Very Useful to decrease the pollution

2. EXPERIMENTATION

The Processing Of Cow Urine Involves The Elimination Of 95 Percent Of Water From The Cow Urine Along With Uric Acids. Finally We Get Residual Mixture Containing Of Magnesium, Calcium, Sodium, Pottasium An Some Other Elements. The Processing Is Done BySAND BATH TECHNIQUE

The sand bath technique is a laboratory method used to heat substances indirectly. Instead of directly heating a substance with a flame or other heat source, the substance is placed in a container that is then immersed in a bath of sand that has been heated to a desired temperature. The sand then transfers heat to the container and the substance within it.

To perform the sand bath technique, a container, such as a beaker or flask, is partially filled with the substance to be heated. The container is then placed in a larger container, such as a metal tray or ceramic dish, that is filled with sand. The sand is heated either in an oven or on a hot plate until it reaches the desired temperature.

Once the sand has reached the desired temperature, the container with the substance is placed in the sand bath and allowed to heat up. The sand will transfer heat to the container, and the substance within it will gradually increase in temperature. This method is particularly useful when working with temperature-sensitive substances, as it allows for more gentle and gradual heating than direct heating with a flame or other heat source.

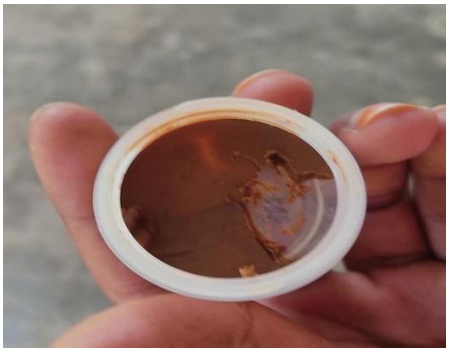
After the substance has been heated to the desired temperature, the container can be removed from the sand bath and allowed to cool. The sand can be reused for future sand baths, provided it has not been contaminated by the substance being heated.

In This Technique We Pour Cow Urine In A Beaker And Place It On A Sand Of 2 To 3 CmsThickness . When The Induction Heater Is On The Sand Receives Heat From The Heater And Delivers To The Beaker Containing Cow Urine .Then The Cow Urine Eliminates The Water In Form Of Evaporation . The Remaining Elements Are Settle Down At Thebottom.

Various amounts of cow urine were taken into beaker to get some information about the extraction of residue from that cow urine.

Being heated After some time a thin layer were formed on the top of cow urine.

After the heating of cow urine we have to collect the residual extracted from cow urine.



We got only 10 grams of cow urine residue for the 500 ml of cow urine at end of processing.

The residual item consists sodium, magnesium, potassium, and some other elements. The water and other uric acids are evaporated during heating.

BLENDING

Blending refers to the process of mixing two or more substances together to create a new mixture.

In this experiment we are blending the cow urine residue with petrol. we take 200 ml of petrol and adding 2gms of residue. But the residue takes long time over 7 to 10 days for dissolving. the below figure shows the dissolving of residue in petrol for 7 to 10 days.

So for reducing the time of mixing we add ethanol.

We took four samples

1. Normal petrol of 200 ml

2. Petrol of 200 ml +2 gms of cow urine residue + 10 %ethanol

3. Petrol of 200 ml +2 gms of cow urine residue + 20%ethanol

4. Petrol of 200 ml +2 gms of cow urine residue

When we add ethanol to the samples the residual amount gets dissolved with in less than couple of days. Also this ethanol helps the fuel to improve its characteristics.

CALORIFIC VALUE TESTING

In the properties of the fuel calorific value plays an vital role. Means a good fuel having high calorific value so we check our samples for checking its calorific value.so that we use bomb calorimeter for checking the values.

A bomb calorimeter is a device used to measure the heat of combustion of a substance by carrying out a controlled explosion of the substance in a closed chamber called a bomb. The bomb calorimeter consists of a steel container (the bomb) that is filled with a known amount of oxygen at high pressure. The substance being tested is placed inside the bomb and ignited by an electric spark. As the substance burns, it releases heat, which raises the temperature of the bomb and the surrounding water.

The change in temperature of the water is measured with a thermometer, and from this, the heat of combustion of the substance can be calculated using the principle of conservation of energy. The bomb calorimeter is an accurate and precise method for measuring the energy content of fuels and other substances, and is commonly used in the field of calorimetry.

Bomb calorimeters are used in a variety of fields, including biochemistry, food science, and materials science, to determine the energy content of substances and to study the behavior of materials under high-temperature and high-pressure conditions.

The bomb calorimeter provides a precise measurement of the heat of combustion of a substance because it involves a closed system in which all the heat produced by the combustion reaction is absorbed by the water and the bomb. The heat of combustion can then be used to calculate the energy content of the substance, which is an important parameter in a variety of applications, such as fuel production and food analysis.

The heat absorbed by the water and the bomb (q) is calculated using the formula:

$q = Cp \times m \times \Delta T$
m = mass of water (in kg)
ΔT =temp difference between intial and final stages
$_{Cp}$ =specific heat at constant pressure

$cv = q/m_f$
cv = calorific value
m_f = mass of fuel(in kg)

1.normal petrol

ΔT = 4.90 degrees
M = 1.2 kg
Cp = 4.2

$q = Cp \times m \times \Delta T$
q = 1.2*4.2*4.90
q=24.696 Kj

$cv=q/m_f$
cv = 24.696/1\1000

cv = 24,696 kj/kg

2.petrol+cow urine residue+10%ethanol

ΔT = 4.89 degrees
M = 1.2 kg
Cp = 4.2

$q = Cp \times m \times \Delta T$
q = 1.2*4.2*4.89
q=24.645Kj

$cv=q/m_f$
cv = 24.645/1\1000

cv = 24,645 kj/kg

3.petrol+cow urine residue+20% ethanol

ΔT = 4.68 degrees
M = 1.2 kg
Cp = 4.2

$q = Cp \times m \times \Delta T$
q = 1.2*4.2*4.68
q=23.587 Kj

$cv=q/m_f$
cv = 23.587/1\1000

cv = 23,587 kj/kg

4.petrol+cow urine residue

ΔT = 4.58 degrees
M = 1.2 kg
Cp = 4.2

$q = Cp \times m \times \Delta T$
q = 1.2*4.2*4.58
q=23.0832 Kj

$cv=q/m_f$
cv = 23.0832/1\1000

cv = 23,083.2 kj/kg

In general the calorific value of a normal petrol is higher than our normal petrol sample because due to some in accuracy while testing. So we take our normal petrol sample as a reference pointto compare other values.

We get the closer value for the sample of having 10% ethanol with the normal petrol .with this we conclude that sample containing 10% ethanol is an good fuel.

After checking the calorific value for the samples we have to check the emissions in exhaust for that we check our samples on two stroke petrol engine.

POLLUTION CHECKING

Pollution checking is the main step in our experiment because based on this we have to compare the emissions of samples with normal petrol sample emissions. for this we choose an two stroke petrol engine.

Pollution checking is the process of measuring the emissions from a vehicle or any other source that may contribute to air pollution. The main pollutants that are checked during pollution testing include carbon monoxide (CO), hydrocarbons (HC), nitrogen oxides (NOx), and particulate matter (PM).

The pollution checking process may vary depending on the country, region, or local laws and regulations. However, here are some general steps involved in the pollution checking process:

1. Preparation: The vehicle or source being tested is prepared for testing by ensuring that the engine is in good condition and that all the emissions control systems are working properly.

2. Testing: The emissions are measured using specialized equipment, which can include a dynamometer (to simulate driving conditions), a tailpipe probe (to measure exhaust emissions), and other sensors and analyzers.

3. Data analysis: The emissions data collected during the testing is analyzed to determine the levels of pollutants that are being emitted. The results are compared against the local standards and regulations to determine whether the vehicle or source is compliant.

4. Certification: If the emissions levels are within the acceptable limits, the vehicle or source is certified as compliant. If the emissions levels are too high, the owner may be required to make repairs or modifications to reduce emissions and then re-test the vehicle or source.

OBESERVATIONS FROM THE TESTS CONDUCTED ON SAMPLES

1.NORMAL PETROL

	Regulation	Actual	
CO :-	3.5	0.347	%VOL
HC :-	4500	346	PPM
CO2 :-		0.30	%VOL
O2:-		21.24	%VOL
NOx :-		0	%VOL
Lambda :-		0.000	
PEF :-		0.547	
RPM :-		00000	
AFR :-		00000	
Oil Temp :-		00000	°C

2.PETROL+COW URINE RESIDUE+10%ETHANOL

	Regulation	Actual	
CO :-	3.5	0.173	%VOL
HC :-	4500	330	PPM
CO2 :-		0.00	%VOL
O2:-		21.04	%VOL
NOx :-		0	%VOL
Lambda :-		0.000	
PEF :-		0.547	
RPM :-		00000	
AFR :-		00000	
Oil Temp :-		00000	°C

3.PETROL+COW URINE RESIDUE+20%ETHANOL

	Regulation	Actual	
CO :-	3.5	0.595	%VOL
HC :-	4500	495	PPM
CO2 :-		0.70	%VOL
O2:-		21.88	%VOL
NOx :-		0	%VOL
Lambda :-		0.000	
PEF :-		0.545	
RPM :-		00000	
AFR :-		00000	
Oil Temp :-		00000	°C

4.PETROL+COW URINE RESIDUE

	Regulation	Actual	
CO :-	3.5	1.486	%VOL
HC :-	4500	2020	PPM
CO2 :-		4.30	%VOL
O2:-		21.68	%VOL
NOx :-		0	%VOL
Lambda :-		0.000	
PEF :-		0.541	
RPM :-		00000	
AFR :-		00000	
Oil Temp :-		00000	°C

So, when we compare all the samples with normal petrol sample we conclude that the sample having 10% ethanol produce or emits less emissions .the co and hc are reduced compare to normal petrol and o_2 level also slightly increased in the 10% ethanol sample. One of the main parameter co_2 is not produced in the 10% ethanol sample.

3. CONCLUSIONS

We conducted this experiment to reduce the emissions produced from the petrol engine. in some journal studies proven that the cow urine residue also increases the efficiency . but the processing of cow urine takes long time.it

is observed that the emissions in two stroke petrol engine was reduced.

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