



National Children's Science Congress

A programme of National Council for Science and Technology Communication
Department of Science and Technology, Govt. of India



Department of Science and Technology
Government of India

FOCAL THEME: SCIENCE FOR SUSTAINABLE LIVING.

SUB THEME: APPROPRIATE TECHNOLOGY (AT) FOR SUSTAINABLE LIVING.

TITLE: REUTILIZATION OF FOSSIL FUELS.

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NAME OF GUIDE TEACHER: MISS. SARITA VERMA

AIM:

1. To save fossil fuels and to reduce dependency on "NON – RENEWABLE RESOURCES".
2. To reduce respiratory diseases caused by AIR POLLUTION.
3. To reduce "GLOBAL WARMING".
4. To prevent "ACID RAIN".
5. To protect the species from EXTINCTION.

HYPOTHESIS: AIR POLLUTION is increasing day-by-day causing damage to the health of humans, animals and plants. It also cause BIRTH DEFECTS.

But the use of fossil fuels is increasing day-by-day, creating problems for the environment and polluting the atmosphere which is not a good sign. So we are presenting an efficient method for collecting the AIR POLLUTANTS from the vehicle's exhaust and converting it into FUEL FOR VEHICLES, INK FOR PRINTERS, CARBON PAPERS, etc.

CHAPRA CENTRAL SCHOOL

SURVEY

Due to this “ **CORONAVIRUS PANDEMIC (COVID-19)**”, we decided to conduct **ONLINE SURVEY** through **GOOGLE FORMS**. We then prepared our QUESTIONNAIRE and linked it with GOOGLE FORMS.

During our “Online Survey”;

i) We noticed in our 3rd Question that, out of 50 Respondents, 25 told that “VEHICLES” are the major cause of air pollution. This is the 50% of the total responses. 15 People (30%) told it is “INDUSTRIES”, 10 of the remaining (20%) told “ALL OF THESE” and NO ONE said “HOUSEHOLD SMOKE”.

This clearly represents that the **MAJORITY OF THE PEOPLE ARE AWARE OF AIR POLLUTION** caused by the burning of Fossil Fuels in Vehicles.

ii) But in our 18th Question, 31 People (62%) responded that **CARS & BIKES** should “**NOT BE BANNED**” from the city centers, 11 (22%) told “**YES, they should be BANNED**”. And the remaining 08 People (16%) told that “**THEIR USE SHOULD BE LIMITED**”.

❖ **This is not good enough because in Case (i), people are accepting that vehicles are the major cause of air pollution. On the other hand, In Case (ii), they are saying NOOT to ban pollution producing vehicles.**

EXPERIMENTS

So for the solution, we have done several experiments:

1. At first, we made a tool to collect the “SOLID UNBURNT CARBON PARTICLES” from the VEHICLES EXHAUST.
2. Now we made “BLACK INK” for DRAWING PURPOSE.
3. After this, we made a “CARBON PAPER” using the INK.
4. In the end, we created a “FUEL” to DRIVE VEHICLES using unburnt – carbon and Hydrogen Gas (H₂).

DATA ANALYSIS

Ques: According to you, which one of these is a major cause of pollution?

a) Industries b) Vehicles c) Household Smoke d) Other...

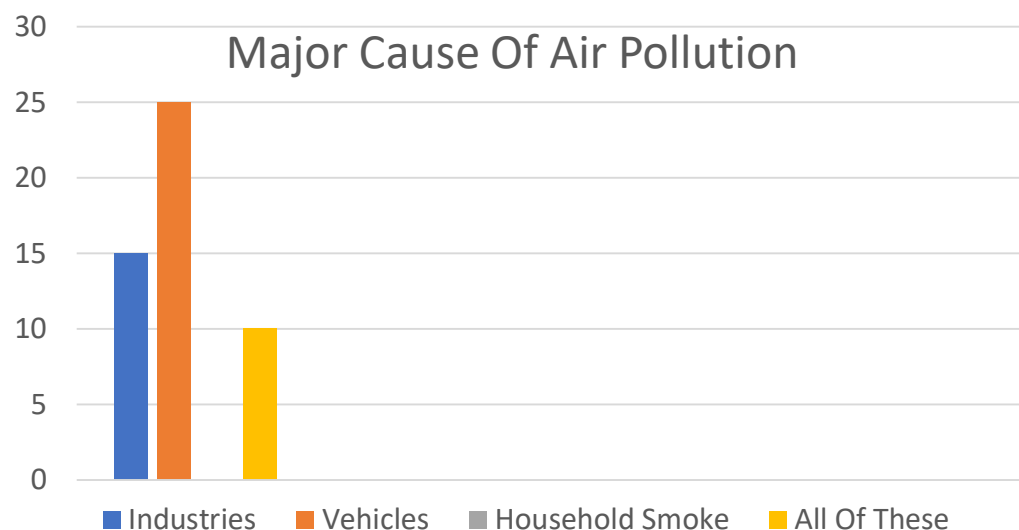
➤ Response we get;

Industries (15 out off 50)

Vehicles (25 out off 50)

Household Smoke (0 out off 50)

Other: All Of These (10 out off 50)



Ques: Do you think Cars & Bikes should be banned from the city centers?

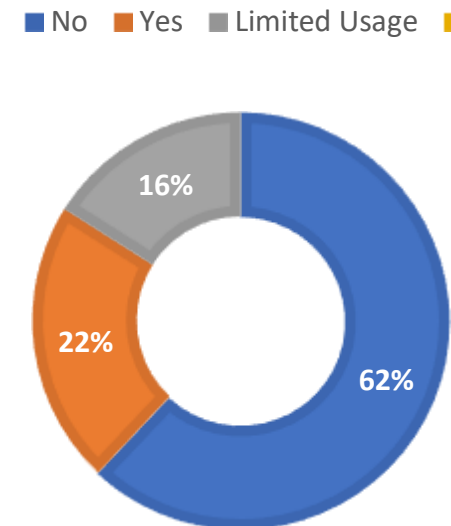
➤ Response we get;

No (31 out off 50)

Yes (11 out off 50)

Limited Usage (08 out off 50)

BAN ON MOTOR VEHICLES



In our OFFLINE SURVEY of 5 Petrol Pumps in Chapra, we found that the average cost of PETROL per litre is Rs. 86.004 and that of /diesel is Rs. 78.754

But in case of the fuel made by us;

It took us Rs. 29 to make out the fuel. Let's say Rs. 30

On comparing the amount used to get 1 Litre of Fuel (FUEL in the sense that is capable of running a motor-bike comfortably); we get:

➤ PETROL – OUR FUEL = MONEY SAVED

=> Rs. (86.004-30)= Rs. 56.004

> DIESEL – OUR FUEL = MONEY SAVED

=> Rs. (78.754-30) = Rs. 48.754

CONCLUSION, RESULT & FUTURE PLAN

Conclusion

From all the 50 Online Surveys, we found that most of the people are aware of AIR POLLUTION but don't want that the Motor vehicles should be banned.



Some of our FUTURE PLANS are:

1. We will make people aware about AIR POLLUTION and how they can harm us.
2. An efficient production of Fuel:

With this novel method, methane could be produced from the Carbon, we collected and as well as Carbon Dioxide (CO₂) collected from the atmosphere.

The most important fact about this method is that this can be achieved at a very reasonable temperature i.e: 100°C.

Now this methane can be easily used as fuel for motor vehicle. For this, a small gas kit have to be planted in the vehicle costing about Rs. 2000

This may be used as a substitute for CNG and in that vehicle it can be directly be used without any investment.

Also we would request the government to:-

1. Make laws on industries so that smoke can be purified before being released into the air.
2. Promote electric-powered vehicles so that neither people face inconvenience not environment is endangered.

Result

We observed that when we put the tools to collect the solid unburnt carbon particles, in around 4 HOURS, almost 40 grams of pollutants was collected which is enough to form INK and CARBON PAPER.

In order to make fuel, we mixed the air pollutant with DISTILLED WATER and poured it into a bike. Also by the reaction of CAUSTIC SODA, WATER & ALUMINIUM, huge amount of Hydrogen H₂