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Exercise Number 2

Estimating CO2 Emission from Automobiles in Surigao City

I. Introduction

According to Environmental Pollution Center, “air pollution is probably one of the most serious environmental problems confronting our civilization today. Most often, it is caused by human activities such as mining, construction, transportation, industrial work, agriculture, smelting, etc. However, natural processes such as volcanic eruptions and wildfires may also pollute the air, but their occurrence is rare and they usually have a local effect, unlike human activities that are ubiquitous causes of air pollution and contribute to the global pollution of the air every single day.”

Additional explanation from Environmental Pollution Center, “air pollutants cannot be seen or smelled. However, that does not mean that they do not exist in high enough amounts to be health hazard. Additionally, a number of gases are linked to the so-called “greenhouse effect”, which means that those gases retain more heat and thus contribute to the overall global warming. The most common example of greenhouse gas is Carbon Dioxide, which is emitted from many industrial processes. Another example is Methane, which is also an explosive gas.”

Regarding to the CO2 emission in every vehicle, we should not know how much amount of gas released without collecting information of a vehicle and its characteristics. The exercise follows the objectives stated below.

1. To estimate the CO2 emission from automobiles.

2. To estimate the CO2 emission from motorcycles.

3. To determine the amount of CO2 releases from vehicles per year.

4. To determine the total amount of CO2 releases from vehicles; and

5. To propose some mitigating measures about this concern.

II. Methodology

The equipments used in this task were notebook, pen, camera, and identification card. The information gotten was recorded. Of 20 car and 20 motorcycle owners, almost half of them only interviewed. Other owner’s Certificate of Registration was depicted due to the unavailability of time. The CO2 emission per year and the total CO2 emission was calculated.

III. Results and Discussion

The destination started from Brgy. Rizal, then Brgy. Washington, and last was in Surigao City Terminal. It was around 2:00-3:00 in the afternoon when the exercise was conducted. During that time, the exercise had done early since lot of vehicles parked in the visited area.

Table 1. CO2 Emission from Car

Table one shows the data gathered from car.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Name/Type** | **Condition** | **Size** | **Age (Year)** | **Weight (Tons)** | **CO2 Emission per year** | **Total CO2 Emission** |
| *Toyota (Hiace Commuter)* | *Used but excellent* | *Medium* | *4* | *3.7* | *3.7* | *14.8* |
| *Toyota (Hiace Commuter)* | *Badly used* | *Medium* | *10* | *3.05* | *3.05* | *30.5* |
| *Toyota (Hiace Commuter)* | *New* | *Medium* | *1* | *3.05* | *3.05* | *3.05* |
| *Toyota (Hiace Commuter)* | *Used* | *Medium* | *9* | *3.05* | *3.05* | *27.45* |
| *Suzuki* | *Badly used* | *Small* | *18* | *1.47* | *1.47* | *26.46* |
| *Toyota (GL Grandia)* | *New* | *Medium* | *2* | *3.05* | *3.05* | *6.1* |
| *Hyundai (Galloper)* | *Used* | *Medium* | *9* | *2.7* | *2.7* | *24.3* |
| *Ford (Everest)* | *Used but excellent* | *Medium* | *6* | *2.5* | *2.5* | *15* |
| *Ford (Ranger)* | *Used* | *Medium* | *7* | *2.5* | *2.5* | *17.5* |
| *Nissan (Patrol)* | *Used* | *Medium* | *7* | *3.05* | *3.05* | *21.35* |
| *Toyota (Hiace Commuter* | *New* | *Medium* | *2* | *3.05* | *3.05* | *6.1* |
| *Kia (Rio)* | *Used* | *Medium* | *7* | *2.7* | *2.7* | *18.9* |
| *Isuzu (Mux)* | *New* | *Medium* | *3* | *2.5* | *2.5* | *7.5* |
| Vios | *Used but excellent* | *Medium* | *6* | *2.7* | *2.7* | *16.2* |
| *Toyota (Wigo)* | *New* | *Medium* | *2* | *2.7* | *2.7* | *5.4* |
| *Montero (GL-X)* | *New* | *Medium* | *2* | *2.05* | *2.05* | *4.1* |
| *Nissan (Xtrail)* | *Used* | *Medium* | *7* | *2.7* | *2.7* | *18.9* |
| *Hyundai(Accent)* | *Used* | *Medium* | *4* | *2.05* | *2.05* | *8.2* |
| *Kia ( Grand Carnival)* | *New* | *Medium* | *2* | *2.7* | *2.7* | *5.4* |
| *Isuzu ( MU-X)* | *Used but excellent* | *Medium* | *4* | *2.7* | *2.7* | *10.8* |

Mostly, the car names and models vary differently as well as their characteristics listed on the table. The larger and older the vehicle, the more CO2 emits to the atmosphere. In determining the value of total CO2 emits from automobiles, the lifetime of its vehicle is multiplied of its weight. In the data gathered, the vehicle which has the highest total amount of CO2 emission among cars is Toyota Hiace Commuter with 30.5 tons within 10 years of usage and 3.05 tons CO2 emission per year. However, the vehicle which has the lowest total amount of CO2 emission is also Toyota Hiace Commuter with the value of 3.05 tons and also 3.05 tons released yearly.

Table 2. CO2 Emission from Motorcycle

This table shows the data gathered from motorcycles.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Name/Type** | **Condition** | **Size** | **Age (Year)** | **Weight (Tons**) | **CO2 Emission per year** | **CO2 Emission (Tons/Year)** |
| *Yamaha (STX 125 34C6)* | *New* | *Small* | *2* | *0.118* | *0.118* | *0.24* |
| *Honda (TMX 1559)* | *Used* | *Small* | *6* | *0.15* | *0.15* | *0.9* |
| *Mitsukoshi (WOLF 125)* | *Used* | *Small* | *5* | *0.257* | *0.257* | *1.39* |
| *Yamaha (STX 125T 34C2)* | *Used* | *Small* | *7* | *0.15* | *0.15* | *1.05* |
| *Yamaha (STX 125 34C4)* | *Used* | *Small* | *5* | *0.118* | *0.118* | *0.83* |
| *Yamaha (STX 125T 34C4)* | *Used* | *Small* | *6* | *0.125* | *0.125* | *1.5* |
| *Yamaha ( STX 7125 34C4)* | *Used* | *Small* | *5* | *0.118* | *0.118* | *0.59* |
| *Yamaha (STX 7125 34C2)* | *Used* | *Small* | *6* | *0.15* | *0.15* | *0.9* |
| *Yamaha (STX 125 34C2)* | *Used* | *Small* | *7* | *0.15* | *0.15* | *1.05* |
| *Yamaha (STX 125)* | *Badly used* | *Small* | *11* | *0.15* | *0.15* | *1.65* |
| *Yamaha (STX 125 34C2)* | *Used* | *Small* | *6* | *0.118* | *0.118* | *0.708* |
| *Yamaha (STX125T34C2)* | *Used* | *Small* | *7* | *0.15* | *0.15* | *1.05* |
| *Yamaha (STX 125T 34C2)* | *Used* | *Small* | *6* | *0.15* | *0.15* | *0.9* |
| *Kawasaki (CT20DUY)* | *Used* | *Small* | *7* | *0.239* | *0.239* | *1.67* |
| *Russi (CT20DY)* | *Used but excellent* | *Small* | *5* | *0.118* | *0.118* | *0.59* |
| *Honda ( STX 110T 225)* | *Used* | *Small* | *8* | *0.15* | *0.15* | *1.2* |
| *XRM ( STX 1250)* | *Used* | *Small* | *6* | *0.25* | *0.25* | *1.5* |
| *Yamaha* | *New* | *Small* | *2* | *0.15* | *0.15* | *0.3* |
| *Yamaha (STX 125T 34C3)* | *Used but excellent* | *Small* | *4* | *0.15* | *0.15* | *0.6* |
| *Yamaha (STX125 34C1)* | *Used but excellent* | *Small* | *3* | *0.118* | *0.118* | *0.354* |

Unlike from car names and models, motorcycles have almost the same names and characteristics. And the CO2 emission from motorcycles is lesser than cars. In the data gathered, the motorcycle that has the highest total CO2 emission is Kawasaki with the total amount of 1.67 tons and 0.239 CO2 emission per year. However, the motorcycle that has the lowest total amount of CO2 emission is Yamaha STX 125 34C6 with the total amount of 0.24 tons and 0.118 tons released yearly.

Mechanical technology has been widely used by the people nowadays. However, people didn’t think what would be the effect on it. As for them, having it can help your daily works especially in transportation. But the more we use, the more gas releases to atmosphere which can result air pollution.

As students, we should encourage everyone to maintain the moderate level of gas released to the atmosphere in order to avoid harmful effects on the environment. All of us should cooperate in doing the right way of handling our environment.

IV. Conclusion

From the result of both tables, car releases CO2 more than motorcycle. It has the total CO2 amount of 53.97 tons yearly while motorcycle has only 3.079 tons. The more we used vehicles, the larger amount of CO2 released into the atmosphere. Therefore, we conclude that people are the ones who destroy in our own environment.

VI. Recommendation

Every one of us should control using vehicles or other things that will produce large amount of gas to the atmosphere. On the other hand, we should practice having chemistry between people and environment to have a better, clean, and safe place to live.

VII. References

* Environmental Pollution Center. (n.d.). Informational purpose only. Retrieved from www.environmentalpollutioncenters.org/air/.