

The unseen danger from prolonged exposure by mechanic apprentices to the liberal use of petrol for hand washing

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Abstract

The density of vehicles and tricycles, in our nation is very high and most people in the community have an active vehicle for transportation. As is often reported, several families that can afford it do have more than one vehicle either a car or tricycle or perhaps a motorcycle for family use or for commercial purposes.

Notably, many of those vehicles are imported from abroad (overseas) as fairly used entities. Those already used vehicles are popularly referred to in our local parlance as “second hand” or as “tokunbo” vehicles. They do not come cheap in any ways. This implies that these vehicles may have multiple mechanical and electrical challenges, and they are usually sold as they were on arrival. The new buyer/owner would subsequently have to effect multiple repairs on their new purchase. These repairs are done by the ubiquitous mechanics that are readily found at every available space, ably assisted by their numerous apprentices that are being trained in the act of car maintenance. Here, works are done manually and everyone gets stained by the continuous close contact with car grease and several types of lubricants that are used in these mechanic workshops. Herein, lies the suspected health risk, because to clean off these dark stains, everyone washes off with petrol which readily cleanses off the oily stains. This short article is aimed at determining if this act of washing with petrol poses any long-term risk to the practitioners.

Keywords: Grease/lubricant stains; Hand wash; Petrol; Used vehicles

1. Introduction

The mechanic workshop are sited almost everywhere nationally and are easily accessible to the population. But, there is no national guidelines that governs these locations and so they are found even in residential quarters. They are universally patronized by vehicle owners who need their vehicles to be in top working conditions. These mechanics are quite good at their works and give adequate and oftentimes honest services at negotiable costs.

A workshop usually have a mechanic overall master, with an electrical section, panel-beating section and not commonly a spray-painter in one workshop. Each unit have its own apprentices who are learning under their different masters. These masters are ably assisted by a group of apprentices. They usually spend an agreed period of five to six years of hard work before they are granted freedom and become their own masters. They dutifully work on all vehicles that are brought to their workshop for repairs been closely guided by the training masters. In the course of these duties, every one of them gets stained by all the grease and other lubricants that are in different parts and joints of the cars’.

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Discussion

There is a large signpost located at the major entry point into a prominent city in the Niger-Delta Region of our nation that said “illegal mining of crude oil kills our fish and pollute the environment” and in that sign-post is a large number of dead fishes in blackish coloured water.

The calamitous death of marine life was due to the pollution of the water bodies by/with leaked crude oil from unregistered crude oil miners.

The leakages also affect landed properties and makes farming unproductive, making the inhabitants of these region faced with the double tragedy of both water and land pollution from leaked crude oil.

The properly mined crude oil is subsequently refined and processed by different technologies and methods into relevant products for industrial and home uses.

The derived products includes petrol, diesel, jet fuel, heating oil, liquefied petroleum gas(LPG), asphalt, petrochemical feed sticks, waxes and petrol coke(1-6). These products are of utmost importance in the day to day activities of daily life.

But the refining too impact negatively on the environment where they are located.

All of these petroleum products sticks to their bodies and are washed off after work. Ordinary water would not be able to clean them off and with past experiences learned on the job and from the teachings of their masters, petrol cleaning had been found perfectly adequate in washing off these stains. And they use petrol liberally to wash off stains from their hands and subsequently they use soaps with plain water to clean off. Here lies the suggested health risks. How much of the petrol and therefore its constituent hydrocarbons gets absorbed through the skin into the body? Will there be any long term effect from the quite prolonged exposures to these petroleum refinery products? These supposed products are both inhaled and can also be absorbed through the skin especially if there is any wounds on the skin which is often

seen in these youngsters. This short review was a search of literature to determine if there is any inherent life-threatening health risks in this work related exposure.

These negative effects may include air contamination with excessive carbon dioxide, sulphur oxide, and volatile organic components(VOC). The refineries also do require large volume of water for the good operations of all heavy machines, and the run-off may contaminate the water bodies and water beds nearby⁽⁵⁾. Associated with all these challenges is how to manage both the solid and liquid wastes from the refineries⁽⁵⁾.

Petrol is composed primarily of hydrocarbons and these include 25-40% of iso alkanes, 20-25% of aromatic hydrocarbon, 4-8% of alkanes(paraffin), 3-7% of cyclo alkanes and 1-4% of cyclo alkanes⁽⁷⁾.

Modern petrol is a complex mixture of as much as one hundred and fifty (150) different hydrocarbons. Major hydrocarbon content of petrol includes alkanes, aromatics, naphthalenes, alkenes in different proportions⁽⁸⁾.

Prolonged contact or exposure to petrol may cause health disorders that could be permanent. The organs mostly affected may include the central nervous system, the haemopoietic(blood), liver organ and the lungs⁽⁹⁾.

There is no conclusive evidence that prolonged exposure to petrol may lead to the development of malignant disease in human⁽⁹⁾.

We observed following several visits to our mechanics located at different places in our place of residence the liberal and casual manner that mechanic apprentices use petrol to wash off lubricant stains on their hands.

This was done with no thought to possible side-effect and apparently, these youngsters have not seen nor heard of any untoward effects of this particular activities of washing with petrol.

The symptoms demonstrated by sufferers of exposure to petrol depends on whether it is ingested orally or inhaled nasally or through skin contact. People can have his/her eyes damaged and lung from inhalation of fumes or vapours of petrol. Systems of petrol inhalation following petrol vapour exposure may include:

- Dizziness or light-headedness
- Headache
- Facial flushing
- Coughing or wheezing
- Impaired gait or staggering
- Slurred speech
- Hallucination
- Blurry vision
- Weakness
- Difficulty in breathing
- Seizures
- Coma
- Arrhythmia
- Heart failure ⁽¹⁰⁾.

The central nervous system can be depressed leading to mental dullness and behavioural changes⁽¹⁰⁾. There may also be:

- Irritability
- Memory loss
- Confusion

1.1. Symptoms of skin exposure to petrol

The skin does not absorb the hydrocarbon in petrol easily, but some symptoms may manifest;

- Mild skin irritation
- Skin inflammation
- Cracking or peeling of skin

- Temporary loss of vision
- Eye pain
- Eye discharge ^(10,9)

1.2. Symptoms of petrol ingestion

The intestinal system does not absorb petrol easily when compared to the pulmonary system that absorbs petrol easily and readily.

Symptoms that may manifest upon ingesting petrol may include:

- Vomiting
- Heartburn
- Drowsiness
- Vertigo
- Blurred speech
- Facial flushing
- Confusion
- Convulsion
- Loss of consciousness
- Long and internal organ bleeding
- Heart failure⁽¹⁰⁾.

Who is mostly exposed?

- Gas station workers
- Garage workers and mechanics
- Petrol pipeline workers
- Seaport workers
- Petrol tanker drivers
- Persons that service and remove underground gas storage tanker
- Gas refinery workers
- Farmers
- People that operate heavy machinery^(10,11).

So, apparently, our mechanic apprentices may not be at the risk of any major systemic complications from washing their hands with petrol repeatedly.

We still suggest though, that a more safer and cheaper ways of washing off stains be devised for their use since petrol is very expensive in our nation and it is almost always that it is the owner of the vehicles that pays for the buying of the petrol.

2. Conclusion

These mechanics should stop using petrol to wash their hands as a result of the immediate and long term effect. Other alternative should be sourced for such as detergents or better-still, wearing of gloves to protect the hands and other protective gadget.

Compliance with ethical standards

Acknowledgement

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Disclosure of conflict of interest

There is no conflict of interest

Statement of informed consent

"Informed consent was obtained from all individual participants included in the study."

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