



OPERATIONAL CONTROL PROCEDURE

Doc. No.: HSEOCP:25

Rev. No.: 00

Rev. Date: 10/01/2018

OCP No. : 25

VEHICLE & CRANE MAINTENANCE

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Purpose	To ensure proper maintenance of vehicles & cranes during usage to avoid pollution & adverse environmental impacts beyond permissible limits	Scope	ISG
Responsibility	Concerned HOD / Head/SOX		
Performance criteria	Exception reports on such incidents		
Cross reference	ISO : 14001		

PPEs and Precautions

	Insulated rubber gloves		Appropriate insulated rubber footwear		Good safety helmet secured with chin strap
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Procedures and Controls

S. No.	Activity	Responsibility
1.	INTRODUCTION: The exhaust fumes coming out of the tail pipe of vehicles, contain many polluting substances which is a major contributor for environmental damage and diseases. One research study says that 2.5 million people are estimated to die prematurely each year from pollution related ailments. It is estimated that currently our country is losing over 10 % of its G.D.P. in costs associated with damage to the environment and degradation of the country's natural resources. Air pollution and other health hazards caused by vehicles have reached an alarming proportion in the country. The vehicle population in the country has grown from 0.3 million (1951) to 25.34 million (1993) and contributing now around 50 to 60% of the total air pollution in the cities. This is mainly contributed by cars. Two wheelers, three wheelers as they have old and ill maintained engines, in which nearly 30% of the fuel remains unburned.	
2.	VEHICULAR POLLUTANTS The main pollution omitted in the automobile exhaust gases are carbon monoxide (CO), lead aerosol, nitrogen oxides, sulphur oxides and heterogeneous groups of hydrocarbons. Apart from this smoke (0.01 to 1 micron), Mists (2 to 200 micron) and particulate matter (1 to 200 micron) are also formed due to incomplete combustion and solid impurity contents of the fuel. In particular the diesel operated vehicles emit more toxic pollutants.	
3.	EFFECTS OF POLLUTANTS Human Health: - Carbon Monoxide: Hinders oxygen supply from blood into the tissues as	



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	a combines with the iron in the haemoglobin and thereby replacing oxygen in the haemoglobin, leading to variety of ailments. - Respirable particulate matter: 0.2 to 10 micron size of particulate matter can go directly into the lungs causing bronchial problems and allergic asthma. - Lead: It attacks the blood, kidneys and central nervous system. It can cause anaemia, kidney failure, permanent brain damage and finally death also. - Environment: The pollutants such as SO₂ & NO_x form acid rain and affect sometimes, vegetation, soil surfaces; darken sky through formation of smoke leading to limited visibility and corrode metals. The plants are damaged by acute injury in which pollutants attack the cells resulting in chronic effects related to disruption of chlorophyll synthesis and thereby affecting the net yield of crops/ fruits.	
4	SOURCES OF VEHICULAR POLLUTION Vehicular emissions originate from changes in driving cycle (transient of steady state). Engine conditions (injection and aspiration) techniques, maintenance, total mileage), fuel composition (sulphur content, aromaticity, volatility), incomplete combustion and air/fuel/ ratio. Main places where pollution originates from the vehicle include engine crankcase, exhaust system, the carburettor and the fuel tank. The emission of particulate matter increases with decrease in air/fuel ration, increase in load and temperature. Malfunction of engine devices, especially fuel injection system, increases the omission of the main exhaust components.	
5	POLLUTION CONTROL MEASURES Following measures may be adopted to reduce the emission: - Modification of engine design to improve fuel combustion efficiency - Thermal reactors for complete oxidation of CO & HC - Exhaust gas recirculation for ensuring complete combustion - Catalytic converter to reduce emissions for unburned HC and CO - Use of particle traps for removing particulate matter - Use of unleaded gasoline - Use of low sulphur diesel - Use of low smoke lube oil for 2-stroke and mixed lubricating engines. - Use of alternate & cleaner fuels (CNG LPG, Methanol etc.), - Adopting cleaner vehicle standards. - Improvement in traffic congestion - Introduction of efficient rapid mass transport systems. - Implementation of strict inspection/ maintenance programmes. - Driving vehicles at 50-60 KMPH Range - Avoiding idling at the traffic junctions/signals	



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6	Type of vehicle Diesel driven 2/3 wheeler petrol driven(Reference mass 'R' in kg) Rs. 150 150< Rs.350 Rs.350	CO 14g/KWH 12g/km 12.18(R- 150)/200 3g/km	HC 3.5g/KWH 8g/km 8+4(R-150)/200 12g/km	NO 8g/KWH	
7	Limits for petrol driven vehicles :-				
	Reference Mass rw in kg	Co (g/km)		HC (g/km)	
	Rw<1020	14.3		2.0	
	1020<rw s 1250	16.5		2.1	
	1250< rws 1470	18.8		2.1	
	1470<rw s 1700	20.7		2.3	
	1700<rw s 1930	22.9		2.5	
	1930<rw s2150	24.9		2.7	
	rw< 2150	27.1		2.9	
8.	PUC Check: All vehicles (one year after 1st registration) need to undergo the Pollution Under Control (PUC) test at the testing facilities authorised by RTO periodically and ensure the compliance with the emission limits. Compliance to BHARAT II or III norm may be adhered to if required contractually/Statutory obligation.				
9.	CRANE MAINTENANCE: All cranes are to be maintained by authorized maintenance agency of OEM. Records of maintenance are to be kept in each crane history cards. Disposal of wastes generated during crane maintenance are to be disposed as per waste disposal procedure.(ref OCP no 27). Care to be taken to collect lube oil/mobile in trays/bins during draining and refilling, to avoid land contamination and avoid fire hazards.				

Site Safety department to regularly maintain all vehicles and cranes operating at site and ensure their proper, safe and pollution free operation as per this OCP.

In addition, relevant records pertaining to actions taken to be prepared and kept.

Records:

Record Title	Record No.	Location	Responsibility	Retention Period



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Verification, Corrective and Preventive Action:

HOD / Site In-charge shall ensure effective implementation of the above procedure. In case of any deviation, shall take suitable corrective and preventive action.

Revision History

Revision Date	Revision No.	Old Text	New Text	Reason	Revised by (with sign)