

Test – DPM in Metal/Nonmetal Underground Mines

- 1) The underground M/NM mine DPM rule is performance oriented. T \_\_, F \_\_
- 2) Underground M/NM mines which use diesel equipment must measure and control DPM concentrations. T \_\_, F \_\_
- 3) The DPM permissible exposure limit (PEL) for M/NM mines is: a) not specified in the standard, b) temporarily 400 micrograms of total carbon per m<sup>3</sup> of air, c) expected to become 0.16 mg of total carbon per m<sup>3</sup> of air in the future.
- 4) Underground coal mines which use diesel equipment must measure DPM concentrations. T \_\_, F \_\_.
- 5) Underground M/NM mines which use diesel equipment must use fuel containing: a) less than 1 % sulfur, b) less than 0.5 % sulfur, c) less than 0.01 % sulfur, d) less than 0.05 % sulfur, e) no limit.
- 6) Fuel used in underground M/NM mines which use diesel equipment cannot have additives that are not EPA registered. T \_\_, F \_\_.
- 7) Diesel engines used in underground M/NM mines must be MSHA approved or must meet certain EPA DPM specifications. T \_\_, F \_\_.
- 8) Underground M/NM mines which use approved diesel engines must a) maintain the engines in approved condition, b) maintain the non-approved engines in accordance with manufacturer specifications, c) maintain any installed emission control devices in effective operating condition, d) none of the above.
- 9) Underground M/NM mines which use diesel equipment are required to have persons authorized to maintain diesel equipment who are qualified by training or experience for the maintenance tasks they perform. T \_\_, F \_\_.
- 10) Underground M/NM mines which use diesel equipment must train miners annually on a) DPM hazards, b) DPM controls, c) persons responsible for maintaining controls, d) actions miners must take to ensure proper functioning of controls, e) MSHA contact phone numbers, f) concentrations of DPM measured throughout the mine.
- 11) Underground M/NM mines which use diesel equipment must maintain DPM-related records. T \_\_, F \_\_.
- 12) The health effects of DPM have been found to include: a) suffocation, b) sensory irritations, c) respiratory symptoms, d) premature death, e) lung cancer, f) emphysema, g) CWP.
- 13) The law requires that the mine have a system for tagging out smoky diesel engines. T \_\_, F \_\_
- 14) The law requires compliance by a) all diesel engines in the mine, b) all diesel engines introduced Since September 2002.
- 15) If the mine can't reduce the miner's exposure to DPM, MSHA will: a) issue a citation, b) determine technological and economic feasibility of controls
- 16) A control is considered feasible if: a) it reduces exposure, b) it is technologically achievable, c) it is economically achievable, d) it meets all the requirements in a, b, and c
- 17) A control may be considered feasible even if it doesn't reduce DPM to concentrations below the maximum limit. T \_\_, F \_\_.
- 18) DPM samples collected by MSHA are analyzed for: a) total DPM, b) elemental carbon, c) total carbon.
- 19) MSHA citations are based on the inspector finding that a) the DPM concentration at a particular location exceeds the permissible exposure limit (PEL), b) The 8-hour time-weighted average concentration at a particular location exceeds the PEL, c) the 8-hour time-weighted average exposure to DPM exceeds the PEL, d) A miner's shift-weighted-average exposure to DPM over the workshift exceeds the PEL.
- 20) MSHA does not issue a citation for TC over the PEL, unless elemental carbon multiplied by 1.3 exceeds the PEL times the error factor (1.12). T \_\_, F \_\_

- 21) Substances which may be part of the measured TC, but are not from DPM are known as \_\_\_\_\_
- 22) Changing the number of hours a worker spends on equipment is an example of an \_\_\_\_\_ control.
- 23) Filtering diesel exhaust is an example of an \_\_\_\_\_ control.
- 24) Job rotation is an acceptable means of compliance with the M/NM DPM standard. T \_\_, F \_\_
- 25) a)10, b)25, c)50, d)100 % is considered to be a significant reduction in DPM.
- 26) Respiratory protection, when required by MSHA as an interim measure, requires the full implementation of a respiratory protection program meeting the requirements of ANSI Z88.2-1969 including written SOP's, fit testing, storage/cleaning, training, surveillance etc. T \_\_, F \_\_.
- 27) A miner put into a respiratory protection program must continue to wear a respirator a) during any future work at the particular occupation and location, b) until the mines measurements show that the overexposure condition is remedied, c) as long as the miner works in the same occupation at the same location in the mine and until MSHA's measurements show that the overexposure condition has been corrected.
- 28) MSHA specifies the type of respirator that must be worn. T \_\_, F \_\_
- 29) Diesel particulate filters are estimated by MSHA to be 50, 60, 70, 80, 90, 95, 99 % efficient.
- 30) A variety of new engines are available that reduce DPM emissions to less than a) 100, b) 10, c) 0.1 grams per brake horsepower hour.
- 31) Oxidation catalytic converters are designed to control DPM. T \_\_, F \_\_
- 32) Ceramic DPM filters: a) require the exhaust to pass through porous ceramic filter media, b) are cleaned by washing in a solvent, c) are cleaned by heating them.
- 33) Passive regeneration of a ceramic wall-flow DPM filter refers to: a) burning off collected DPM using an electrical element, b) burning off collected DPM during normal operation of the diesel powered equipment, c) Replacing the filter element.
- 34) Active regeneration is used when the exhaust temperature is not hot enough to effect passive regeneration. T \_\_, F \_\_
- 35) Passive regeneration usually needs a catalyst. T \_\_, F \_\_
- 36) Uncontrolled ceramic filter regeneration is a desirable condition to achieve. T \_\_, F \_\_
- 37) High exhaust backpressure can ruin the engine and the ceramic filter. T \_\_, F \_\_
- 38) MSHA bases its determination of noncompliance on a) a single measurement, b) multiple measurements and statistical calculations.
- 39) All diesel fuel sold in the U.S. for on-highway vehicles is low sulfur. T \_\_, F \_\_
- 40) The equipment operator can tag out the equipment if he observes: a) unusual visible smoke, b) unusual odor, c) obvious defects in the exhaust emissions control system affecting emissions, d) obvious or visible defects in the engine affecting emissions.
- 41) A piece of equipment that has been tagged must be examined: a) immediately, b) during the same shift, c) during the next shift a qualified mechanic is scheduled to work.
- 42) An approved diesel engine is an engine that is approved under Part 7 or Part 36 of 30 CFR. T \_\_, F \_\_
- 43) Tailpipe emission testing is required at the mine site. T \_\_, F \_\_
- 44) DPM training must be conducted: a) monthly, b) semi-annually, c) annually, d) every 5 years.
- 45) DPM training must be done by a certified MSHA instructor. T \_\_, F \_\_
- 46) DPM monitoring is required: a) weekly, b) monthly, c) semi-annually, d) annually, e) as often as necessary to ensure compliance.
- 47) MSHA enforcement of miner exposure to DPM in M/NM mines is based on personal sampling using a) a personal sampling pump, b) a 10 mm Dorr Oliver nylon cyclone, c) a special cassette containing an impactor and tandem quartz-fiber filter, d) an analytical procedure to measure the "total carbon" content collected on the filter.

- 48) Total carbon as determined by MSHA is assumed to be equal to the elemental carbon concentration measured multiplied by 1.3 or to the sum of elemental and organic carbon concentrations measured, whichever is lowest. T \_\_, F \_\_
- 49) Mine operators are required to allow employees to observe monitoring, but are not required to pay them during this time. T \_\_, F \_\_
- 50) Operator monitoring: a) must be performed by a mechanical engineer or person designated by him/her, b) sampling methods must be the same as those used by MSHA c) must be preceded by prior notice of date, time and location to affected miners and their representatives, d) interested effected miners or their representatives must be offered the opportunity to observe monitoring, e) results must be retained for 5 years.
- 51) An operator must post his sampling results as soon it has been decided what corrective action is taken. T \_\_, F \_\_
- 52) MSHA can issue a citation based on the operator's monitoring: a) if an overexposure is indicated, b) if the mine operator failed to take corrective action in an overexposure situation.
- 53) Corrective action must be initiated: a) by the next workshift, b) by the next day, c) by the next week.
- 54) Required records and the length of time they must be kept include: a) a complete chemical analysis of the fuel for 1 year \_\_, b) approved application for extension of time to comply with exposure limits for duration of extension \_\_, c) engine inventory \_\_, d) engines added to inventory \_\_ e) fuel purchase records noting sulfur content for 1 year \_\_, f) maintenance log for 1 year after tagging \_\_, g) how the engine was used for 1 year from date of use \_\_, h) evidence of competence to do maintenance for 1 year after maintenance done \_\_, i) annual training provided to potentially exposed miners for 1 year beyond training date \_\_, j) record of corrective action until citation is terminated \_\_, k) sampling method used to effectively evaluate particulate concentration and sample results for 5 years from sample date \_\_.
- 55) MSHA uses an impactor in sampling DPM to: a) collect the DPM, b) collect the respirable particulate matter that is not DPM.
- 56) Total carbon as measured using the currently accepted DPM sampling method includes carbonate carbon. True \_\_, False \_\_

#### ANSWERS

1)T, 2)T, 3)bc, 4)F, 5)d, 6)T, 7)T, 8)abc, 9)F, 10)abcd, 11)T, 12)bcde, 13)T, 14)b, 15)b, 16)d, 17)T, 18)c, 19)d, 20)T, 21)interferences, 22)administrative, 23)engineering, 24)F, 25)b, 26)T, 27)c, 28)T, 29)80, 30)c, 31)F, 32)ac, 33)b, 34)T, 35)T, 36)F, 37)T, 38)a, 39)T, 40)abcd, 41)c, 42)T, 43)F, 44)c, 45)F, 46)e, 47)abcd, 48)T, 49)T, 50)cde, 51)T, 52)b, 53)a, 54)bcdefhijk, 55)b, 56)F