NORTHWEST OPACITY CERTIFICATION
An Enterprise of Yakima Regional Clean Air
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Visible Emission Certification
Training Exam

Name: _____ _____ Date: _____
(LAST) (FIRST)

❗ Multiple choice questions may have more than one correct answer. Mark all correct answers.

1. What are the "3 T's" of combustion

   _____ _____ _____

2. In actual field application, the distance between the viewing location and a stack where the point of emission is 33 feet above the observer should be:

   ☐ A. 25 feet to 50 feet
   ☐ B. 99 feet to ¼ mile
   ☐ C. ¼ mile to 1 mile
   ☐ D. 50 feet to ½ mile

3. The optimum location for reading a plume is:

   ☐ A. Looking down the length of the plume toward the stack
   ☐ B. Looking down the length of the plume away from the stack
   ☐ C. Perpendicular (at a 90 degree angle) to the plume
   ☐ D. At a 45 degree angle toward the plume axis

4. The optimum direction for reading a plume is with the observer:

   ☐ A. Facing into the sun
   ☐ B. Facing away from the sun
   ☐ C. Perpendicular (at a 90 degree angle) to the sun
   ☐ D. At a 45 degree angle toward the sun

5. Gases are commonly controlled by:

   ☐ A. Cyclones
   ☐ B. Wet scrubbers
   ☐ C. Electrostatic precipitators
   ☐ D. Baghouses

6. Visible emissions can consist of:

   ☐ A. Particles
   ☐ B. Liquid droplets
   ☐ C. Gases
   ☐ D. None of the above

7. When reading opacity, the observer should stare continually at the plume and record the average opacity for every 15 second period.

   ☐ True
   ☐ False

8. The opacity of a plume should be read at:

   ☐ A. The point of greatest opacity where water is not present
   ☐ B. The point of release for a detached dry plume
   ☐ C. The point of dissipation for an attached dry plume
   ☐ D. A point five stack heights from the end of the stack
   ☐ E. None of the above

9. Stack emissions are never read in the rain.

   ☐ True
   ☐ False

10. Good documentation of plume reading should:

    ☐ A. Describe the observer's position relative to the plume
    ☐ B. Indicate the time of day the observation was made
    ☐ C. Describe the appearance (e.g. color and shape) of the plume
    ☐ D. Describe the past opacity problems of the control equipment

11. An observer remains certified for what period after passing a Method 9 field test?

    ☐ A. 6 months
    ☐ B. 1 year
    ☐ C. 2 years

12. The <u>best</u> way to indicate an observation taken at 6:45 on a December evening at a location in Washington State is:

    ☐ A. 6:45 P.M.
    ☐ B. 1845
    ☐ C. 6:45 PST*
    ☐ D. 1845 PST*

    *Pacific Standard Time

13. Factors influencing plume opacity readings include:

- ☐ A. Particle size
- ☐ B. Plume background
- ☐ C. Path length
- ☐ D. Sun angle
- ☐ E. Lighting conditions

14. A 20% opacity obscures an observer's vision through the plume by 20%.

- ☐ True
- ☐ False

15. Visible emission readings cannot be directly and universally correlated to grain loadings in all stacks.

- ☐ True
- ☐ False

16. Combustion is the only source of visible emissions.

- ☐ True
- ☐ False

17. The particle diameter causing the greatest reduction in visibility is:

- ☐ A. 0 to 0.1 microns
- ☐ B. 0.1 to 1.0 microns
- ☐ C. 1.0 to 50 microns
- ☐ D. 50 to 500 microns

18. To make valid readings, an observer must use a Ringelmann Chart.

- ☐ True
- ☐ False

19. The greater slant angle would be had by an observer:

- ☐ A. 40 feet away from a 10 foot stack
- ☐ B. 100 feet away from a 75 foot stack
- ☐ C. 50 feet away from a 30 foot stack

20. The concept of visible emissions evaluation (opacity) can be applied to any color emission.

- ☐ True
- ☐ False

21. The opacity of a plume will appear the highest when the contrast between the plume and the background is the greatest.

- ☐ True
- ☐ False

22. Control equipment that may be expected to contribute water to a plume include a:

- ☐ A. Packed tower
- ☐ B. Cyclone
- ☐ C. Baghouse
- ☐ D. Spray washer
- ☐ E. Venturi scrubber

23. With the same mass emissions (pounds per day), the same volume of emissions, and identical material, a twenty foot diameter stack would produce the same opacity as a five foot diameter stack.

- ☐ True
- ☐ False

24. With the same stack diameter and constant mass emissions (pounds per day), opacity would:

- ☐ A. Increase if air volume increased
- ☐ B. Decrease if air volume increased
- ☐ C. Remain the same regardless of the change in air volume

Return test to Northwest Opacity Certification for grading. Tests may be returned via:

- Mail to NW Opacity Certification; 186 Iron Horse Ct Ste 101; Yakima, WA 98901-1468
- Telefacsimile to 509-834-2060
- Electronic mail to noc@yrcaa.org or by using the “Submit” button below (if form opened using Acrobat Reader)

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