

Name: _____ Score: _____

Refrigerant Recovery and Recycling Quiz

Matching Questions

- | | |
|----------------------------|--|
| ____ 1. EPA Regulation 609 | A. The year R-12 was phased out and transitioned to R-134a |
| ____ 2. Year 2065 | B. Hydrofluoroolefins (R-1234yf) |
| ____ 3. Year 1994 | C. Global Warming Potential |
| ____ 4. HFC | D. Federal Clean Air Act – legislation dealing with servicing air conditioning systems |
| ____ 5. HFO | E. Chlorofluorocarbon (R-12) |
| ____ 6. CFC | F. Carbon Dioxide (CO ₂) refrigerant produced naturally in the environment |
| ____ 7. MVAC | G. Ozone Depleting Substance |
| ____ 8. R-744 | H. The year NASA forecast the ozone layer will return to its early 1980's status |
| ____ 9. ODC | I. Motor Vehicle Air Conditioning |
| ____ 10. GWP | J. Hydrofluorocarbons (R-134a) |

Short Answer Questions

11. Name three (3) health effects of excessive UV radiation caused by ozone depletion.

A. _____ B. _____ C. _____

12. How far is the ozone layer above the Earth's surface (approximately in miles)? _____

13. Name the chemical in ozone depleting refrigerants that reacts with oxygen when exposed to UV rays of the sun. _____

Using the chart below, answer the following questions...

ENVIRONMENTAL IMPACT OF MVAC REFRIGERANTS		
Refrigerant	Global Warming Potential	Ozone Depleting?
R-12 (CFC-12)	10,900	Yes
R-134a (HFC-134a)	1,430	No
R-152a	124	No
R-1234yf (HFO-1234yf)	4	No
R-744 (CO ₂)	1	No

14. What refrigerant has the lowest GWP? _____

15. What refrigerants are ozone depleting (Name all that apply)? _____

16. What refrigerant causes the most GWP? _____

17. What is the GWP for R-134a? _____

18. What is the GWP for R-152a? _____

19. What refrigerant has a GWP of 4? _____

20. What is the GWP for R-12? _____

Note: HCFC - Hydrochlorofluorocarbons such as R-22 used in stationary refrigeration and air conditioning systems

21. The three (3) latest alternative refrigerants approved by EPA in Section 609 for new vehicles and systems are R-134a, R-153a and R-744. Name one (1) advantage and one (1) disadvantage of each...

Types of Refrigerant	Advantage	Disadvantage
R-1234yf		
R-152a		
R-744		

True / False Questions

- ☐ 22. R-134a is ozone depleting.
☐ 23. GHG stands for Greenhouse Gas
☐ 24. R-12 played a major role in depleting Earth's atmosphere
☐ 25. SNAP means Significant New Alternatives Policy
☐ 26. R-744 is now being used by German Automakers

Multiple Choice Questions

- ☐ 27. Technician A says to prevent cross contamination of refrigerant, manufacturers use dedicated fittings when servicing the system. Technician B says R-744 is not used for retrofitting the A/C system with different refrigerants. Who is correct?
 a. Technician A only
 b. Technician B only
 c. Both Technician A and B
 d. Neither Technician A nor B
- ☐ 28. Air conditioning systems today are called thermal management system because:
 a. They provide passenger comfort
 b. They provide battery pack cooling on some vehicles
 c. They provide onboard computer cooling on some vehicles
 d. All of the above
- ☐ 29. Technician A says that a Class I Substance has an ozone depletion potential greater than 0.2 CFC's. Technician B says that a Class II Substance has an ozone depletion potential less than 0.2 CFC's. Who is correct?
 a. Technician A only
 b. Technician B only
 c. Both Technician A and B
 d. Neither Technician A nor B
- ☐ 30. The ASE Refrigerant Recovery and Recycling Program is EPA approved that accomplishes ALL of the following 609 Regulations EXCEPT:
 a. Anyone repairing or servicing MVAC must be trained and certified
 b. Releases all restrictions on ozone depleting refrigerants and allows Class I Venting into the atmosphere
 c. Prohibits the sale of Class I refrigerants smaller than 20 pounds to anyone not trained or certified
 d. Equipment must meet EPA-approved standards
- ☐ 31. Certifications earned by an approved ASE Refrigerant Recovery and Recycling program will meet the same requirements for ASE Technician Certification in Heating and Air Conditioning...
 a. True
 b. False

Essay Questions Part - I

32. EPA research suggest that greenhouse gases play a contributing role in global warming potential. In the questions below, tell the effects of harmful UV ray on the following...

- a. Vegetation and crops _____
- b. Air quality? _____
- c. Sea or ocean? _____

33. Section 609 of the Clean Air Act set standards for recovery / recycling equipment for the following standards: J1990 (R-12), J2788 (R-134a) and J2843 (R-1234yf). In the blanks below, name at least four (4) requirements found on all EPA certified A/C equipment labels...

- a. _____ b. _____ c. _____ d. _____

34. J2099 is the EPA Purity Standard for R-134a and R-1234yf. Name three (3) purity standard these refrigerants must meet (for example 50 ppm of what? 500 ppm of what? 1.5% of what?)...

- a. _____ b. _____ c. _____

35. What does Section 609 say about what you should do about contaminated refrigerant that is removed using recovery only equipment?

Items prohibited or allowed by 609 Regulations – Mark a “P” for Prohibited or “A” if Allowed...

- ____ a. Selling R-12 in containers less than 20 pounds to the public
- ____ b. Selling R-134a under 2 pounds credentials with self-sealing valves to the public
- ____ c. Using 609 MVAC credentials to purchase refrigerant for stationary A/C systems
- ____ d. Servicing MVAC systems after January 1, 2018 without EPA credentials
- ____ e. Purity standards of 98% must be maintained for MVAC vehicles
- ____ f. Restrictions and requirements on refrigerant removed prior to motor vehicle disposal
- ____ g. R-134a will be listed as unacceptable for newly manufactured light duty vehicles beginning model year 2021

Essay Questions – Part - II

1. When will HFC-134a (R-134a) be officially phased out for new manufactured vehicles?

MY 2026 _____ MY 2019 _____ MY 2015 _____

2. From the list below, select Acceptable EPA Approved Refrigerants that **do not allow** refrigerant retrofits to MVAC passenger vehicles, light, medium and heavy duty and off-road vehicles...

- ____ HFC – 134a ____ Freeze 12 ____ HFO – 1234yf
- ____ HFC – 152a ____ R-744 (Carbon Dioxide) ____ Free Zone (HCF Blend Delta)

3. A technician want to use HFC-134a from Self-Chilling Cans in a vending machine that was previously filled with HCFC-22. What reason does SNAP give as to why Self-Chilling Cans using HFC-134a is listed as Unacceptable Substitutes for ODS in Refrigeration and Air Conditioning systems?

4. List at least three (3) recordkeeping requirements of 609 Regulations for companies servicing MVAC systems?

- a. _____ c. _____
- b. _____

Compiled by
bbyrd2100@suddenlink.net