

Name: DESK

Date: _____

Mod: _____

ID: Review

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1. List and explain the basic steps involved in nature's purification system (the hydrologic cycle)?

- Evaporation followed by condensation
- Bacterial Action
- Filtration by soil

2. Does this system work well anymore? Why or why not?

No

It is becoming overloaded by pollution and water usage.

3. How do municipal water purification and sewage treatment resemble nature's purification system?

They both use

- aeration
- filtration
- settling

4. How are they different from nature's purification system?

Municipalities add chlorine to the water. They also add fluorine, alum and adjust the pH.

5. a) What ions are found in hard water? b) What ion is found in soft water?

Ca^{2+} , Mg^{2+} , Fe^{3+}

Na^+

6. How does ion-exchange resin work?

The resin exchanges Na^+ ions for the hard ions Ca^{2+} , Mg^{2+} and Fe^{3+}

7. Name two disadvantages of hard water?

- mineral buildup in pipes

- poor suds from soap / poor cleaning action

8. Name 2 advantages to soft water.

- NO mineral deposits in/on pipes
- better cleaning with soap, more suds

9. Name 2 disadvantages to soft water.

- expensive to install
- ongoing maintenance

10. What does it mean to regenerate a water softener?

To take the hard ions OFF the resin and replace them with soft (Na^+) ions.

11. What are the 10 steps of water purification treatment?

1. Screening
2. Pre-chlorination
3. Flocculation
4. Settling
5. Sand Filtration
6. Post Chlorination
7. Aeration
8. pH Adjustment
9. Fluoridation
10. water softening

11. What is the major goal of wastewater (sewage) treatment?

prevent bacteria and viruses in human waste from infecting the public

12. What are the six steps of wastewater (sewage) treatment?

1. screening and grit removal
2. Primary settling
3. Aeration
4. Final settling
5. Disinfection
6. pH adjustment and removal of ions

12. What is chlorination?

adding chlorine to the water

13. Name 3 ways that chlorine can be added to our water supply.

1. chlorine gas
2. solution of sodium hypochlorite
3. dissolve calcium hypochlorite in water

14. What are THMs?

trihalomethanes

15. What is the concern regarding them? How can they be reduced in drinking water?

they cause cancer

a) use activated charcoal filters

b) use UV light instead of chlorine

16. What advantages does chlorinated water have over untreated water?

it kills bacteria and prevents disease

c) eliminate pre-chlorination

17. What are some disadvantages of using chlorinated water?

- could cause cancer by THM's
- expensive to use.

NOTE: You should also be able to describe the 10 steps to water treatment and the 6 steps to wastewater treatment.

