

Name:

Period:

Endangered Elements

1. These elements aren't going extinct because atoms generally last _____.
2. If elements are essentially "indestructible", why do scientists consider these ones "endangered"?
3. List the SYMBOLS of the ten most endangered elements.
4. How many elements are in a typical smart-phone?
5. What part of a smart-phone depends on indium? What other metal is involved in this?
6. The U.S.G.S. predicts that we will run out of "extractable" indium in how long?
7. "Extractable" indium is in the earth's crust. Its abundance is how many parts per million?
8. What percent of indium is currently recycled?
9. Manufacturers ask that old cell phones be "recycled" rather than thrown away. If matter (including indium) cannot be created or destroyed, throwing an old phone away does not "use up" its indium. Why is sending a phone to the landfill a bad choice, if the indium isn't destroyed by throwing it away?
10. How do you think throwing away old cell phones this year will affect the price of a new cell phone five years from now? Why?
11. Once helium enters Earth's atmosphere, it is basically:
12. How common is helium in the universe?
13. How common is helium on Earth?
14. Where is the world's largest helium reserve?
15. How many years' worth of helium do we have left?
16. In addition to balloons, helium is also used for _____ and _____.
17. Like indium, we should also recycle helium. Why aren't we recycling helium yet?
18. No _____ would exist without phosphorus.
19. The most important product containing phosphorus is _____.

20. Not enough phosphorus means not enough _____ which means not enough _____.
21. We cannot keep _____ for phosphorus in the same spots, but we may be able to _____ it.
22. Where does “used” phosphorus end up?
23. Why is hydrogen a bad idea for filling birthday balloons?
24. What element could replace helium in an MRI?
25. What element could replace helium in welding?

Fluoridation

26. The main constituent of tooth enamel is called:
27. We try to convert the main constituent of tooth enamel into: _____ (because it is stronger and more resistant to _____ conditions.
28. How many countries artificially fluoridate water?
29. How many countries have natural fluoridation in their water?
30. What two food items other than water are fluoridated in some countries?
31. Fluoridation and fluoridated toothpastes have contributed to declining _____ worldwide.
32. Some people fear fluoridation because they think it causes cancer. Does it?
33. Does fluoridation cause decreased IQ or Down Syndrome?
34. Fluoride CAN cause fluorosis—Skeletal Fluorosis or Mild Fluorosis.
- a. Mild Fluorosis *could* result from drinking fluoridated water. Would this cause any serious health problems?
 - b. Skeletal fluorosis only occurs when excess fluoride (10-20 mg/day) has been ingested over a long period.
 - i. How long does a person have to ingest excess fluoride in order to cause skeletal problems?
 - ii. Calculate the total fluoride-per-day ingested by a person who:
 - 1. Drinks TWO-TIMES the recommended daily allowance of fluoridated water each day
 - 2. Brushes his/her teeth FIVE times per day.
 - iii. Does your answer to either of the previous question fall in the fluoride danger-zone? (10-20 mg/day)