

Close Reading Comprehension Questions for Lead in Drinking Water

Question Set 1

- 1-A According to Dr. Mona Hanna-Attisha, what happened when the city of Flint, Michigan had high levels of lead in city drinking water?
- The city of Flint, Michigan was in the news.
 - The proportion of children with elevated levels of lead in their blood doubled.
 - The city of Flint, Michigan switched water supplies.
 - The danger of lead to infants and young children was reported.
- 1-B The answer to the previous question is based upon
- The opening sentence that states "Starting in early 2015, Flint, Michigan entered the news spotlight for having high levels of lead in their drinking water."
 - The statements at the beginning and end of the first paragraph that Flint, Michigan entered the news for having high levels of lead after the city switched water sources.
 - The statement that Dr. Hanna-Atiisha found the proportion of children with elevated levels of lead in their blood doubled after the city switched water sources.
 - The statements that children face dangers when exposed to lead, even at low levels, which appear to be permanent.

Question Set 2

- 2-A According to the Center for Disease Control, CDC, what are the biggest sources of environmental lead contamination?
- Lead in soil and drinking water.
 - Lead-based paint in homes built before 1970 and lead in soil.
 - Lead-based paint in homes built before 1970 and lead in gasoline before 1996.
 - Lead in water systems and tap water samples.
- 2-B The answer to the previous question is based upon
- The understanding that soil and water are both part of the environment.
 - The USA Today news network review of EPA data reporting 2000 water systems with elevated tap water lead levels.
 - The statements about previous uses of lead being in paint in homes built before 1970 and lead being added to gasoline before 1996.
 - The statement the CDC lists the sources as lead-based paint and lead in soil.

Question Set 3

- 3-A According to the article, from 1960 to today what happened to blood lead levels in children?
- The average blood lead level decreased by half every ten years.
 - The blood lead level considered hazardous to children increased from 5 to 60 micrograms per deciliter of blood.
 - The amount of lead that is fatal to children decreased from 60 to 5 micrograms of lead per deciliter of blood.
 - The blood lead level for notification and action decreased to 5 micrograms per deciliter of blood.
- 3-B The answer to the previous question is based upon
- The graph showing blood lead levels considered harmful to children.
 - The increasing sequence of 5, 10, 20, 30 and 60 in the graph of blood lead levels considered harmful to children.
 - The decreasing sequence of 60, 30, 20, 10 and 5 in the graph of blood lead levels considered harmful to children.
 - The statement that "In May 2012 the CDC announced 5 micrograms per deciliter of blood is now the level of notification and follow-up action."

Question Set 4

- 4-A Why is calcium essential for human health?
- Calcium is in cells.
 - Calcium is found in bones and teeth.
 - Blood, muscle, and neurons all are found on top of bone.
 - Calcium does more than exist in bone and teeth, it helps blood, muscles and neurons work.
- 4-B The answer to the previous question is based upon
- The diagram of blood on top of muscle on top of neuron on top of bone.
 - The statement "You may have been told to drink or eat calcium-rich food for strong bones and teeth."
 - The statement about the many jobs of calcium including blood coagulation, muscle contraction, nerve cell function, and being a component of bones and teeth.
 - The statement that once in cells, lead interferes with normal cell functions that depend on calcium.

Question Set 5

- 5-A What form of lead is present in drinking water?
- Metallic lead.
 - Neutral lead atoms.
 - Lead 2+ ions.
 - Compounds of lead metal atoms.

- 5-B The answer to the previous question is based upon
- In the before picture diagram, the Pb circle from the lead pipe goes into water.
 - The statement "A lead sinker would be pretty useless if it dissolved in water."
 - The statement "The pictures below show how lead atoms from a pipe can become ions and get into the water."
 - The statement "An atom becomes an ion through a chemical reaction."

Question Set 6

- 6-A How does lead mimic calcium in the body?
- Lead atoms substitute for calcium atoms.
 - Lead ions substitute for calcium atoms.
 - Lead atoms substitute for calcium ions.
 - Lead ions substitute for calcium ions.
- 6-B The answer to the previous question is based upon
- The statement that lead can mimic calcium in cells because lead and calcium are both metals that readily form an ion with a charge of 2+.
 - The statement that lead is toxic because it is very similar to another metal, calcium.
 - The picture of a small piece of lead metal called a sinker and the statement that calcium is a metal found in group 2A on the periodic table.
 - The diagrams of a calcium atom, calcium ion, lead atom, and lead ion.

Question Set 7

- 7-A What is the effect of cross-linking by metal ions in alginate?
- With crosslinking the alginate color changes from clear to opaque.
 - With crosslinking the alginate changes from readily flowing to getting thick.
 - With crosslinking the alginate changes from thick and gooey to thin and flowing easily.
 - With crosslinking the alginate takes up more space.
- 7-B The answer to the previous question is based upon
- The picture of the calcium alginate showing a gel with more open space.
 - The statement that in water, sodium alginate strands flow freely around each other.
 - The statement that adding sodium alginate to liquids containing 2+ ions of copper, iron, or lead results in the alginate forming a gel.
 - The statement that calcium 2+ ions form connections or bridges between compounds, called crosslinking.

Question Set 8

8-A Which of the following chemical mixtures is expected to produce a positive test result with the addition of sodium alginate?

Sodium ions, Na 1+ and chloride ions, Cl-

Calcium ions, Ca 2+ and chloride ions, Cl-

Iron ions, Fe 2+ and chloride ions, Cl-

- All three materials (sodium ions and chloride ions, calcium ions and chloride ions, and iron ions and chloride ions) are expected to produce a positive test.
- None of the materials will produce a positive test.
- Two of the mixtures, (calcium ions and chloride ions and iron ions and chloride ions) will produce a positive test, but sodium ions and chloride ions will not produce a positive test.
- Only one of the mixtures, sodium ions and chloride ions, will produce a positive test but the other two (calcium ions and chloride ions and iron ions and chloride ions) will not give a positive test.

8-B The answer to the previous question is based upon

- The crosslinking diagram showing calcium ions over the arrow in the crosslinking scheme.
- The crosslinking diagram showing an excess of sodium ions attached to the polymer strands.
- The statement that sodium alginate can test whether 2+ ions are in a liquid.
- The statement that adding sodium alginate to liquids containing 2+ ions of calcium, copper, iron, or lead results in the alginate forming a gel, which is a positive crosslinking test.

Question Set 9

9-A The Cheesy Hamburger Skillet recipe fits with the dietary advice offered by Dr. Mona Hanna-Attisha because:

- Dr. Hanna-Attisha recommends diets low in lead and the recipe is low in lead.
- Dr. Hanna-Attisha recommends diets high in calcium, iron, and vitamin C, and the recipe is high in these.
- Dr. Hanna Attisha recommends families cook, and the recipe is family friendly.
- Dr. Hanna Attisha recommends the specific foods of bell peppers, tomatoes, cheese, and beef.

9-B The answer to the previous question is based upon

- The statement that in environments with more risk of lead exposure, food choices can actually help fight the effects.
- The connection between Dr. Hanna-Attisha who reported on elevated blood lead levels being from Flint and the Hurley Medical Center from Flint creating the "Nutrition and Lead Recipe Guide."
- The statement that Dr. Hanna Attisha recommends diets rich in calcium, iron, and vitamin C and statements that the recipe contains 21% calcium, 24% iron, and 386 % Vitamin C.
- The statement that Vitamin C, the nutrient present in the greatest amount in the recipe, keeps iron in the +2 ion form where it is better absorbed by the body.

Question Set 10

- 10-A What is the reason that Bethany Thayer supports diets high in calcium, iron, and vitamin C, but also encourages keeping food in young children's stomachs with frequent smaller meals if children are exposed to lead in their environment?
- Having food present in the stomach reduces the absorption of lead that could occur if a child drinks lead-contaminated water.
 - Having food present in the stomach increases the surface area of the stomach where lead can be absorbed from drinking water.
 - Having food present in the stomach releases less lead from bones.
 - Having food present in the stomach increases the action of lead on the stomach.
- 10-B The answer to the previous question is based upon
- The two paragraph headings that it is best to "Absorb less lead" and "Release less lead."
 - The statement that in environments with more risk of lead exposure, food choice can actually help fight the effects.
 - The statements that just having food in your stomach will decrease the absorption of lead, and eating frequent smaller meals keeps food in the stomach longer.
 - The knowledge that food in the stomach will increase the surface area of the stomach and its contents.