How much applied phosphorus is not used by crops?
a. 20%
b. 40%
c. 50%
d. 80%
e. 99%

What percent of rice paddies in Japan are unusable due to metal contamination?
a. 10%
b. 20%
c. 30%
d. 40%
e. 50%

Describe/define Eutrophication.

What was the 2013 Minamata Convention and how did it affect Mercury emissions?

What causes Mad Hatter disease?
A. Lead
B. Mercury
C. Arsenic
D. Carbon

Which of these civilizations were NOT destroyed due to irrigation?
A. Hohokam
B. Mesopotamia
C. Romans
D. Aztecs

What is arsenic?

What happened at Minamata Bay and what did the convention after it try to do to help?

What is the best solution to soil salinization?
1. Plant trees
2. Flush the system with clean water
3. Improve the efficiency of the system

Mad hatter disease is caused by\_?
1. Mercury
2. Lead
3. Arsenic

What is soil salinization?

What are some lead impacts on humans?

How does lead affect people?
(short answer)

What is the Mad Hatters Disease?
(long answer)

How much sievert until you’re bones according to Henry’s presentation?
(MC)

What is a spillionaire according to Megan’s presentation?
(MC)

1. When are metals emitted?
a. Burning fossil fuels
b. Mining/smelting
c. Manufacturing of objects made with metal
d. Recycling products made with metal
e. All of the above

2. A metal that is a neurotoxin stored in bones that can lower IQ and was known to be toxic
by the Romans was:
a. Arsenic
b. Lead
c. Mercury

1. Explain one reason why mining can negatively impact the environment.

1. There were many repetitive problems and solutions throughout this course. Pick one thing that came up multiple times and list off a couple of the items we discussed about it.

Lead is stored in the bones
a. True
b. False

Who knew that lead was toxic
a. Egyptians
b. Romans
c. Greeks
d. French

How did using mercury to make hats negatively affect hat makers in the 18th to 20th centuries?

Explain the different between the 3 different types of mercury.

1. What is one way that metals are emitted?

2. What is the impact on soils?

3. What is arsenic considered?
A. Metaloid
B. Metal
C. Non metal
D. Transition metal

4. How is arsenic usually found?
A. a gas
B. a liquid
C. a solid
D. a compound

1. What is mercury?
a. Neurotoxin
b. Chemical element
c. Inorganic and organic compounds
d. A and C
e. B and C
f. A, B, and C

2. Where can you find arsenic?
a. Seafood
b. Drinking water
c. Food
d. All of the above
e. None of the above

3. Short answer: How does lead effect the body?

4. Essay question: how/why do metals effect the world and humans?

1. Metals are \_\_\_\_\_ and cannot \_\_\_\_\_.

2. Lead is stored in the
a. Tissue
b. Bones
c. Glands
d. Stomach

3. Explain the reason why the Hatter was Mad.

4. What are the two main issues with mining for metals?

● What factors contributed to the Exxon Valdez oil spill?
○ Reduced crew size
○ Bad training
○ Fatigue
○ Outdated Coast Guard radar
○ All of the above

● What factors lead to lead exposure?
○ Old houses
○ Poverty
○ Profession
○ A and B
○ A and C
○ B and C
○ All of the above

● Where did the phrase “mad as a hatter come from”?

● What negative effects on the environment does burning hydrocarbons cause, and what can we do to mitigate them?

1. How many microsieverts does a banana normally radiate?
a. .1
b. .2
c. .3
d. .4

2. The BLANK convention started the steps towards mercury legislation. What is BLANK?
a. Tokyo
b. Minamata
c. Hiroshima
d. Kyoto

3. Fill in the blank: lead lowers BLANK and increases mental deficiencies/issues.

4. Explain why metals can be so dangerous and give some examples

1. Metals are usually more reactive in
a. Acidic environments
b. Basic environments

2. What group of people experience the most radiation on average
a. Farmers
b. Smokers
c. Dam workers

3. Why was Silent Spring by Rachel Carson so successful?

4. Explain the environmental problems with mining.

1). What is one characteristic of metals that is often linked to toxicity?
a). density
b). salinity
c). pH
d). hardness

2). What are impacted parts of the environment when it comes to burning metal hydrocarbons?
a). Soils
b). Lake/ocean sediments
c). waters
d). all of the above

3). What common metal in excess is natural in our bodies but has been removed from gasoline,
paints, and is being replaced in piping?

4). How do activities like mining affect the environment and public health?

Where do toxic metals come from?
a. Natural deposits
b. Waste materials from mining
c. Burning coal
d. All the above

When was the treaty regulating industrial mercury waste adopted?
a. 1997
b. 2004
c. 2013
d. 2017

Short answer: Are metals always toxic, or in only certain conditions? What are those conditions?

Essay question: There are signs outside of beaches on lake Coeur d’Alene recommending that visitors do not disturb the sand. Why are those signs there?

1. What is Soil Salinization?
a. The accumulation of salt in soil
b. The accumulation of carbon dioxide in soil
c. When soil becomes acidic
d. When soil becomes alkaline

2. Mercury is found as \_\_\_\_\_.
a. Elemental or liquid mercury
b. Inorganic forms like mercurochrome
c. Organometallic form-methylmercury
d. All of the above

1. Give a brief description of “Mad Hatter Disease” and what makes it happen.

1. What emits different metals into the environment? Explore some different
methods of how it gets into the air and water. What is the number 1 contributor to metals in the environment?

1) How much radiation is in one banana?
a) 2 millirem
b) .1 microsieverts
c) Enough to kill a man
d) 100 microsieverts

2) What class of chemical does DDT fall under?
a) Insecticide
b) Pesticide
c) “Biocide”
d) All of the above
Short Answer:

1) What are “oil millionaires”? (include negative connotation)

1) Is science universal (meaning is science the same all over the Earth no matter the country or culture)?

Name a toxic metal and explain how it impacts people. Includes symptoms and which stage of life is most affected if necessary.

What is the Mad Hatter disease?
a. Being mad about not having the hat you want in your size
b. Inhaling mercury vapors and going mad
c. Wearing a mad hat
d. The hat collector issue

What can carry metals?
a. Your mom
b. mines
c. rivers
d. B and C
How do mines affect drinking water?