Greening Schools

Mercury
When Fun Turns Into Danger
Help Mike Get To The Hospital!

Author’s Cryptogram!

Greening Schools is a joint project between the Illinois Waste Management & Research Center and the Illinois Environmental Protection Agency. Greening Schools is dedicated to assisting schools with improving physical environmental conditions, while providing teachers with tools to introduce concepts of waste reduction and pollution prevention. Call 1 800 407 0261 or visit www.greeningschools.org
One early morning the children prepared for a long day at school...

Ann, have you seen my necklace I brought back from Mexico?

No! And I’m not gonna help you look for it. Your necklace has a vial of mercury. It can make you very sick.

Ann, are you jealous? Maybe you should’ve bought one for yourself. Oh boy! Here it is. I found it, with my name engraved and...

Oh! No!

Now look what you’ve done! There’s mercury all over the floor!

Now look what you’ve done! There’s mercury all over the floor!

Calm down, Ann! I’ll get the vacuum cleaner.

No! That’ll make it even worse by spreading the mercury vapors around the house. We can’t use a broom either!

OK then! I’ll clean it up with a rag.
Don’t touch it Tommy! Mercury can be absorbed through the skin.

Gee, Ann! How can we clean it up then!??

Very carefully, Tommy. I’ve been reading about mercury for a while now. This is some serious stuff. Open the windows and doors to air out the room.

Get an index card, some gloves, the plastic dustpan and a plastic jar with a screw on lid.

Aye, aye, sir!!

With gloves on, scoop up the mercury and put it in the jar.

OK! Then can we throw it away?

Ann, what are you doing with this!?? Do you know this is mercury? It’s very dangerous to your health. Did you touch it?

Nope! I think I will take it to my science teacher. I’m sure she’ll know what to do.
No, Ms. Reed. We put on gloves and used an index card to scoop it off the floor. Everything that was spilled has been collected in this jar. It didn’t even touch our shoes or clothes.

This is not good. I’m calling 911 right away, they will contact the fire department, the local poison control center or the public health board. I recommend that your parents buy sulfur powder at the local garden store. They should pour the powder over the area where the mercury was spilled. If the powder turns brown, then mercury is still present; if it doesn’t turn brown, then it’s OK. Remember—mercury can slip into small cracks or fissures between the tiles.

Meanwhile, not too far away...

**Hurry up Mike!** We’re gonna be late to class.

**Chill out, Bob!** We still have time. Come here, I want to show you something.

**Aww man!!** Let’s go. It’s just a lousy tool shed; nothing cool is in here!

**How do you know?** Let’s look around for a while. I’ll bet there’s some really cool stuff in here.

**Let’s check this out!**

**A tool shed!!** You wanna check out an old tool shed!!?

**Let’s look behind these boxes... Hey! What’s this? Check this out!**
Back in the classroom...

Wow! What's that!? Let me see!!

Hold on, Dude!

Wow! Check it out! It's shiny and it feels like liquid.

Cool! Give me some.

No way! I found it.

Back in the classroom...

What should we do next, teacher?

Nothing for now. The custodian took the jar and placed it in a locked storage room.

Ann, I'm impressed!! Pregnant women and children should avoid eating lake trout, walleye and northern pike. They should also limit or avoid eating fatty fish which may contain high levels of PCB's such as catfish and carp. Pregnant women, or women who are nursing a baby, should limit their consumption of fresh water fish, caught by friends or family to one meal per week.

For adults one meal is six ounces of cooked fish or eight ounces of uncooked fish. For a young child one meal is two ounces of cooked fish or three ounces of uncooked fish.

Salt water fish that should be avoided by pregnant women and children are shark, sword fish and king mackerel.

Here's an informative poster explaining how mercury affects you:

Ms. Reed, I was reading that pregnant women should be careful around mercury.
Some ways that mercury can become airborne are when coal or oil are burned as fuel in power plants, when volcanos erupt or when forests burn. Once in the air, mercury can fall onto the land through rain or through the natural pulling force of gravity. Erosion or rainfall can carry the mercury into lakes, rivers and oceans. Once in the water, mercury will settle onto the bottom. The mercury eventually contaminates plankton, which are tiny organisms in the water that fish eat. When the fish eat the plankton, the mercury in the plankton is passed on to the fish. Over time, as fish eat more plankton more mercury accumulates in those fish. People, in turn, can eat some of those contaminated fish. The more contaminated fish that people eat, the more mercury accumulates in their bodies. Over time, those people may suffer from mercury poisoning.

Note: Don’t stop eating fish. It is a good source of protein and is low in saturated fat. You can still get the benefits of eating fish by wisely choosing safer types of fish, safer places to catch fish and using moderation in how much you eat.

How does mercury affect you? Mercury poisoning can cause damage to the central nervous system, the kidneys and liver, and badly affect a child’s development. Ultimately, it can even lead to death.

Remember: There is no method of cooking or cleaning fish that will reduce the amount of mercury.
While Ms. Reed is talking about mercury, Mike and Bobby are now at school...

C’mon Mike! Give me some! You have plenty in the jar.

Nope! I have plans for this stuff and I need every drop of it.

So I’ll just put this away in my locker. Let’s go, class has started.

Mike and Bobby are now at school...

Hi Mike! Hi Bobby!

Boy, do you guys look guilty! What are you guys up to?

Nothing Ann! Really! But soon, I’m gonna be famous. I’ve discovered this cool mystery liquid that you can do a lot of things with.

You? Famous?!

That’s a joke!! What are you talking

Ahhh! Don’t be so nosy, Ann!!! At the right time you’ll know what I’m up to. And Bobby, make sure you keep your mouth shut and don’t say a word to anyone. Now, if you’ll excuse me, this genius can no longer be bothered because he has lots of work to do in his lab.
Tommy and Ann did not pay too much attention to Mike’s fantastic dreams because they were deep in thought about what they had just learned about mercury.

I didn’t know how serious mercury contamination could be.

We need to educate people about this substance.

What are you guys talking about?

Tommy and Ann did not pay too much attention to Mike’s fantastic dreams because they were deep in thought about what they had just learned about mercury.

Tommy and Ann did not pay too much attention to Mike’s fantastic dreams because they were deep in thought about what they had just learned about mercury.

Tommy and Ann did not pay too much attention to Mike’s fantastic dreams because they were deep in thought about what they had just learned about mercury.

Tommy and Ann did not pay too much attention to Mike’s fantastic dreams because they were deep in thought about what they had just learned about mercury.

Mike’s mind was in the clouds. He had something no one else did—mercury!!!!

Without knowing it was mercury, he was endangering his health by...

shining copper coins and other copper objects with mercury...

leaving mercury exposed to the air to see if evaporation occurs...

...smelling it!!
His handwriting was no longer legible. He had difficulty hearing and his speech became slurred. He was weak and he wobbled while he walked.

Although the children were very excited about Mike’s discovery, they did notice some changes in his behavior. His handwriting was no longer legible.

During a test, he didn’t answer any of the questions. He couldn’t remember what he had for breakfast.

No one knew that Mike brought mercury to school until Ann and Tommy realized to their horror that mercury was everywhere.

What are you doing? Don’t you know the dangers of mercury?!

Quick, get Ms. Reed!

Is this mercury?!
Not everyone was happy that school was temporarily closing.

Shorty after, poison control center personnel entered the school to investigate who had come in contact with mercury…

Where did you say you found the mercury?

Why? Is it dangerous? I don’t feel a thing.

The effects aren’t immediate. It depends on the amount of mercury and how close you came into contact with it.

We have to close the school for a few days.

Wow! Is mercury so dangerous that the school has to be closed down?

Gee! I’m glad Mike was too selfish to share his mercury with me.

I hope Mike is OK.

I just heard Mike’s been taken to the hospital for observation.

What can we do?
I learned that mercury, also known as quicksilver, is a naturally occurring element. Because it is an element, its properties never break down. It can be found in a mineral named cinnabar and in small amounts in oceans, rocks and soil. It becomes airborne when rocks break down, volcanos erupt, and soil decomposes. It then circulates and is redistributed throughout the environment.

What I’ve always said: learn about the dangers of mercury, this never would have happened... remember that knowledge is power.

There’s lots of information in the library and on the internet.

That’s right! You all should do research and present your findings when school re-opens.

Yes ma’am!! Let’s get to work!!

www.glrppr.org
Great Lakes Regional Pollution Prevention Roundtable

OK class. Who wants to present first?
I found out that mercury, aside from its toxic effects, has been very useful for industrial purposes. It has been used for hundreds of years. For example, it’s useful for controlling mildew in paints, killing weeds, and is also used in hospital machinery. It is currently used by some dentists in some of their procedures.

In the 1800’s, hat factories used mercury. As a result, almost all of their workers had strange and unpredictable behavior.

When Lewis Carroll wrote “Alice’s Adventures in Wonderland,” he introduced a character named the “Mad Hatter.” The Mad Hatter’s behavior was typical among the hat factory workers in England at that time because many suffered from mercury poisoning.

There’s a long history of folk remedies that use mercury. People didn’t know its effects and it is still used today.

I found that many things around the house could contain small amounts of mercury. As we learn more of its dangers, some states have begun banning sales of mercury thermometers.

In 1972 a family from Alamogordo, New Mexico, fed their hogs with mercury pesticide treated grain. When they ate the hogs, mercury’s effects became apparent. Four children suffered severe nerve damage and an infant came into the world blind and mentally impaired.
After hearing this story, the class became silent. Everybody was thinking about Mike…

Why is everyone so quiet? I’m still here!! MIKE!!!!!!

YEAH! I am under medical observation and they haven’t found anything wrong. I feel fine now that I’ve had a week’s vacation.

And the symptoms you had?

Clearly, Mike’s symptoms could have stemmed from many things. That is why it is important that medical doctors should do the evaluation. Only they can determine whether you have been contaminated.

The doctor said that extreme exhaustion and lack of sleep gave me symptoms similar to mercury poisoning…

None of this would have happened if I had known more about mercury. The more you know, the better off you are.

Now that we know about mercury, it’s our responsibility to make sure we educate those who don’t know about its dangers.

What should the rest of us do if we find mercury in our house?

You’ve got to call 911. They’ll call the fire department, the local poison control center or the public health board. They’ll know what to do.
So class, I’ve got to congratulate all of you for a job well done.

And Mike, you qualify as our expert!

We’ve all learned about mercury.

This comic was printed with soy ink on recycled chlorine-free paper.

We would like to thank U.S. EPA, the University of Texas at El Paso, the Illinois WMRC, Illinois EPA, and the Great Lakes Regional Pollution Prevention Roundtable for their support in the creation of this informational booklet. Reprints have been made possible by Greening Schools (www.greeningschools.org)

Special Thanks to:
Rita Grusenmeyer and her eighth grade Earth Science classes for taking time to assist us with comments and suggestions. Santa Teresa Middle School, Santa Teresa, New Mexico.

Team Members:
Ed Gonzalez—Southwest Pollution Prevention Ctr.
Jan Harmon—Paso del Norte Health Foundation
Gina Meza—U.T. of Houston School of Public Health
Salvador Saenz—Artist
Vicki Harder, Ph.D.—Dept. of Geological Sciences, New Mexico State University
Lee Bondurant—Guillen Middle School,
El Paso Independent School District
Down
1. When burned, this substance can release mercury. It is sometimes used as fuel to make electricity.
2. Mercury is a naturally-occurring _______.
3. When in water, mercury can contaminate plankton, which in turn, can contaminate _______.
4. Mercury can often be found in this mineral.
6. Mercury affects your Central _______ System, which consists of your brain and spinal cord.
8. Scientific symbol for mercury.
9. Mercury can be found in these units that are used to power radios, watches, games, etc. when an electrical outlet is not available.
11. Mercury is sometimes used by some people as a substitute for conventional medicine. This is usually known as a _______.
12. Mercury poisoning will affect your _______, which are considered the filters of your body.
14. Mercury is considered a heavy _______.
16. What type of jewelry, mainly coming from Mexico, sometimes contains mercury?

Across
5. When these natural phenomena erupt, mercury is emitted into the air.
7. If you find mercury in your school, who is the first person you should inform?
10. This famous character from “Alice in Wonderland” suffered from mercury poisoning.
13. Common nickname for mercury.
15. Mercury can sometimes be found in this device (depends on type) that measures your body’s temperature.
17. Mercury can also (depending on type) be found in this device that controls the temperature in your home or school.
18. In this profession, mercury has been very useful during the process of filling cavities.


Other links exist at some of the above sites.

The Great Lakes Regional Pollution Prevention Roundtable provides a listing of additional sources of mercury-related issues and facts.