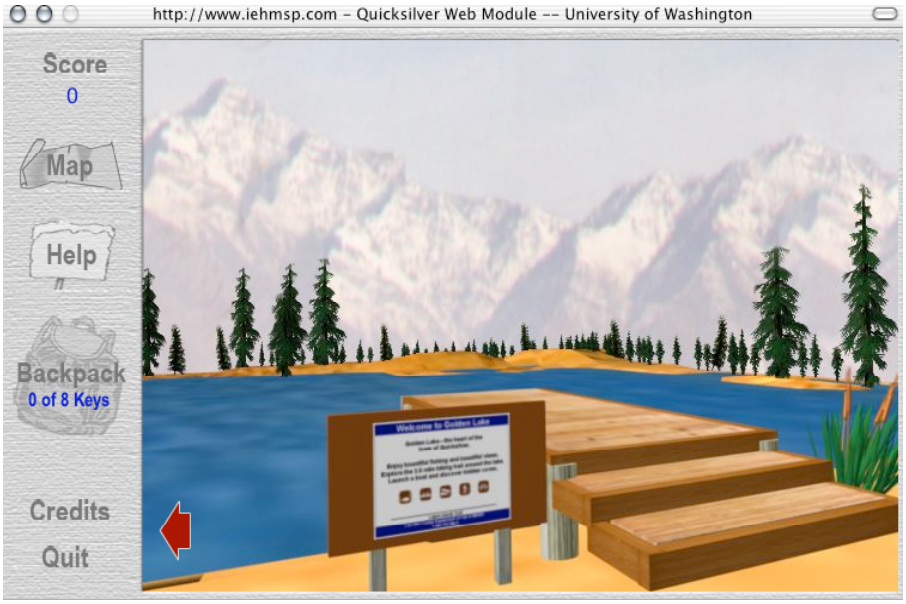
WHY HISTORY? and the Quicksilver Question Web Module

Classroom Based Assessment (CBA)
Middle School Bridging Document



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IEHMSP
INTEGRATED ENVIRONMENTAL HEALTH
MIDDLE SCHOOL PROJECT

For the Washington State middle school level **Why History? Classroom Based Assessment (CBA)**, students are asked to develop a position on how the knowledge of history helps them understand a current issue by analyzing related historical events.

By exploring free resources from the ***Quicksilver Question Web Module***, students unravel the legacy of mercury use through history and develop an understanding of its impact on today's human health. The *Quicksilver Question Web Module* is an innovative, online learning adventure that immerses your students in the investigation of mercury contamination. Set in a fictional Washington State town, your students visit people and places while investigating mercury use in historic gold mining operations.

To get started, first make sure to visit our CBA website at http://www.iehmsp.com/online/sscba/sscba.php for an explanation of how our materials can help you teach the Why History? CBA. The Quicksilver Question Web Module can be accessed for free from the IEHMSP web site at http://www.iehmsp.com/online/webModules/qsIntro.php. The *Quicksilver Question Web Module Manual* can also be downloaded from this website after creating a teacher log-in account. The information below will help you and your students understand how our curriculum meets the requirements of the CBA.

For Teachers: Step-by-Step Alignment

For the CBA, students will:	**Using the *Quicksilver Question Web Module*, your students can meet the requirements of the Why History? CBA.**
Present a position on how history helps us understand the present by exploring how historical events relate to a current issue. *(History 1.2.2a)*	The **Student Introduction**: **Environmental Health** provides students with the background knowledge and vocabulary they need about environmental health before proceeding with further research about the issue. The Student Introduction can be downloaded from the IEHMSP website at http://www.iehmsp.com/online/teachers/teacher_intro.php. A PowerPoint presentation is also available at this website for introducing environmental health concepts to your students. In the *Quicksilver Question Web Module*, students are presented with a realistic problem and then guided through the process of acquiring the tools necessary to understand and solve the problem. The accompanying **Student Handout** (included in the web module manual) and the **Pop Quiz** questions (embedded within the module itself) can both be used to assess student understanding of the material
Use evidence to support, identify, analyze, and explain causal factors contributing to the historical and current use of mercury. *(History 1.2.2b)*	The *Quicksilver Question Web Module* provides a variety of extension lesson plans that will prepare your students for investigating both past and current uses of mercury around the world. This lesson plans can be found in the *Quicksilver Web Module Manual*. • **Expedition Medicine:** Investigate how mercury is helping scientists solve a mystery of the Lewis and Clark expedition. (p. 45-54). • **Toxic Tales:** Uncover two historical cases of mercury poisoning: Minamata Bay in Japan and Iraqi wheat. (p. 89-96). • **Gold Mining in South America:** See how gold mining operations in South America are impacting the health of people and the environment. (p. 55-67). • **Up the Food Chain:** Play a fun game to understand how mercury moves up through the food chain. (p. 69-76). • **The Mercury Message:** Read a news story about Arkansas teenagers who discovered a barrel of abandoned mercury. (p. 79-88). • **Mercury in Your Everyday Life:** Recognize the many sources of mercury in your daily life. (p. 97-106).

Cites and explains pieces of evidence. *(Social Studies Skills 1.1.2d)*	The module and each extension activity are supported by a variety of primary and secondary sources. In addition, you will find environmental health resources and web site links listed on the IEHMSP web site.

For the Student: Checklist of CBA Components

CBA components:	The Quicksilver Question Web Module can help meet the requirements of the Why History? CBA.
Essential Question	• In order to understand the concepts and vocabulary used in the various materials, you should first read the document "Student Introduction: Environmental Health." • For an introduction to the ways that mercury is currently used around the world, look for current newspaper articles and scientific studies about this topic. The IEHMSP has several resources to help you locate articles and studies (*See the IEHMSP web site http://depts.washington.edu/iehmsp/*). As you examine the studies and articles, you can group the issues into different categories (environmental, social, political, economic, etc.). • Develop an essential question about mercury use and human health that uses historical events to understand this issue. By taking the time to develop an essential question, you will be better able to answer the "So What?" question when reporting your findings.
Key Concepts and Vocabulary	• Review key vocabulary and concepts from the document "Student Introduction: Environmental Health." Answer the Check Your Understanding Questions. • Access the Quicksilver Question Web Module from the IEHMSP website. As you work through the module, be sure to collect and read all eight key documents along the way.
Inquiry	• Identify historical events that relate to the current issue of mercury contamination. • Locate relevant primary and secondary sources from a variety of viewpoints that address the essential question. *(After you have found all the key documents in the module, return to the middle school and visit the computers in the library for a list of web site links to help conduct further research).* • Analyze and examine the sources using the Analyzing Sources page in the CBA Student Checklist. Prepare an annotated bibliography.
Synthesis and Organization	• Organize the information from research notes using the graphic organizer from the CBA to show the connection between the current issue and the historical events.
Position	• Analyze the current issue and related historical events. • Explain how each historical event relates to your understanding of that issue. • Support your analysis and explanations with evidence from cited research material. • Include an annotated bibliography.
Presentation	• Present your position and findings in an authentic setting.

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For Teachers

Suggested Research Topics about Mercury

As you guide your students toward researching historical and current uses of mercury, you may want to focus research along the lines of one of the following topics. After investigating the topic, students can then go on to develop their essential question.

- What historical events help us understand how mercury is currently used in Washington State (or the U.S. or the world)?
- What historical events help us understand the effects of mercury use on the citizens of Washington State (or the U.S. or the world)?
- What historical events help us understand current occupational exposures to mercury (how mercury is used at work in certain jobs)?
- What historical events help us understand how mercury use differs among cultural groups?
- What historical events help us understand the current problem with mercury in fish and seafood?
- What historical events help us understand current policies regulating the use and disposal of mercury?

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For Teachers

Curriculum Resources

Quicksilver Question Web Module

An innovative, interactive computer based curriculum designed to introduce your students to the environmental health topic of mercury use through history. In this student-centered problem-based learning exercise, students navigate through the information contained in a virtual town, collecting eight key documents. Along the way, they visit interactive virtual environments and obtain facts, information, perspectives and advice about how to formulate questions and evaluate health concerns. To access the free module and teacher's manual, visit the Quicksilver Question website at: http://www.iehmsp.com/online/webModules/qsIntro.php.

Quicksilver Question Enrichment Activities

A series of Enrichment Activities provides opportunities for deeper conceptual understanding of the information introduced in the Module. The eight Enrichment Activities are designed to be interdisciplinary, to encourage opportunities for team teaching and to provide problem-solving and project-based learning activities for students. The following four lesson plans are specifically helpful for teaching students about historical events related to mercury use. These lesson plans can be downloaded for free by registering as a teacher on the Quicksilver Question website at http://www.iehmsp.com/online/webModules/qsIntro.php

- **EXPEDITION MEDICINE**

  Students learn about the state of medical knowledge during the time of the Lewis and Clark Expedition. They develop a list of medicines and equipment to bring on a wilderness journey, and then compare their lists to items compiled by Lewis. The use of mercury-containing medicines has enabled archeologists to use privy pits as a way to locate the expedition's famous camps.

- **GOLD MINING IS SOUTH AMERICA**

  In this activity, students learn about artisanal gold mining operations in South America, a source of mercury poisoning for young children and for the adult workers. Then, students create a map that illustrates the distribution of artisanal gold mining operations across South America.

- **TOXIC TALES**

  Students learn about a historical case of mercury poisoning in Iraq caused by eating imported wheat seeds. Students learn about the use of symbols as a form of communication. They also learn about the international symbols for hazardous chemicals and design a label that could have been used to warn the Iraqi people about eating the wheat seeds.

- **MERCURY IN YOUR EVERYDAY LIFE**

  In this activity, students recognize the many sources of mercury in our daily lives. They examine a data table that illustrates the major sources of mercury pollution from human sources in Washington State.

EH Headlines weekly news dispatches
A weekly electronic news service of environmental health stories in the news. To sign up for this weekly service, go to http://mailman1.u.washington.edu/mailman/listinfo/ehvoicesemail or email Kristen Bergsman at crowtalk@u.washington.edu.

EH Headlines Database
A list of current environmental health news stories, organized by topic, including "mercury."
http://www.iehmsp.com/online/resources/EHheadlines_updated.php

EH News Sources and Links
A list of local and national news sources.
http://www.iehmsp.com/online/resources/news_sources_links.php

IEHMSP website resource links
A list of environmental health related websites, organized by topic, including "mercury."
http://www.iehmsp.com/online/resources/EH_websites_topic.php

Quicksilver Question Web Module Mercury Resources
A list of resources and news stories specifically related to the Quicksilver Question Web Module, including information on mercury, gold mining and fish.
http://www.iehmsp.com/online/webModules/qsResources.php

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For Students

Internet Resources for Researching Mercury

GENERAL MERCURY INFORMATION

"Mercury and P2 in the Environment."
Pollution Prevention Northwest. Spring 2003.
http://www.pprc.org/pubs/newsletter/news0303.html

ToxFAQs for Mercury
From the Agency for Toxic Substances and Disease Registry (ATSDR). Also available in Spanish.
http://www.atsdr.cdc.gov/tfacts46.html

U.S. Environmental Protections Agency Mercury Information.
http://www.epa.gov/mercury/

EPA Mercury Laws and Regulations
http://www.epa.gov/mercury/regs.htm

Mercury in the Environment
U.S. Geological Survey Fact Sheet.
http://www.usgs.gov/themes/factsheet/146-00/

What You Need to Know about Mercury Kid's Page.
U.S. Environmental Protection Agency.
http://www.epa.gov/superfund/kids/sup_fact/mercury1.htm

Mercury Risk Assessment
http://www1.umn.edu/eoh/hazards/hazardssite/mercury/mercriskassess.html

Environmental Health Perspectives: Measuring Mercury
http://ehp.niehs.nih.gov/docs/1996/104-8/focus.html

NIEHS: Mercury Information
http://cerhr.niehs.nih.gov/genpub/topics/mercury.html

Radio Segment: Mercury and the Environment
5/24/05 A Marketplace radio story about the use of mercury in chlorine production factories and the problems with fugitive mercury emissions.
http://marketplace.publicradio.org/shows/2005/05/24/PM200505244.html

Radio Segment: Alabama Town's Streets Laden with Mercury
3/27/05 A radio segment about the people of McIntosh, Ala., who recently learned that their streets are paved with mercury. It seems someone paved those streets with a compound that included a byproduct of chlorine production at a nearby chemical plant.
http://www.npr.org/templates/story/story.php?storyId=4563159

Radio Segment: A Look at Mercury Pollution
3/11/05 A new study finds widespread mercury pollution in the Northeast -- in amounts greater than expected, as well as in some unexpected locations, including fish and

songbirds. This radio segment focuses on the mercury pollution, which is largely attributed to Midwestern power plant emissions.
http://www.npr.org/templates/story/story.php?storyId=4531481

Mercury Risk Assessment
http://www1.umn.edu/eoh/hazards/hazardssite/mercury/mercriskassess.html

Environmental Health Perspectives: Measuring Mercury
http://ehp.niehs.nih.gov/docs/1996/104-8/focus.html

MERCURY SPILLS IN SCHOOLS

Mercury Message
"The Mercury Message" lesson plan in *Quicksilver Question Web Module*, pg. 79-88.

Mercury in Schools Program
http://www.mercuryinschools.uwex.edu/

King County's Rehab the Lab Program
http://www.govlink.org/hazwaste/schoolyouth/rehab/

National Alert: A Warning about Continuing Patterns of Metallic Mercury Exposure
http://www.atsdr.cdc.gov/alerts/970626.html

EPA Mercury in Schools Case Studies
http://www.epa.gov/mercury/casestudies.htm

EPA Mercury in Schools Information
http://www.epa.gov/mercury/schools.htm

Mercury Spill Sends Pupils to Shower
10/16/91 Seattle Times
http://seattlepi.nwsource.com/archives/1991/9110160076.asp

Mercury Spill Students were not Exposed to Serious Health Threat
11/4/91 Seattle Times
http://seattlepi.nwsource.com/archives/1991/9111040020.asp

Mercury Spill Shuts Detroit School
5/11/00 Detroit Free Press
http://www.freep.com/news/locway/spill9_20000509.htm

Cleanup of Mercury at Junior High
4/1/03 Connecticut Department of Environmental Protection
http://dep.state.ct.us/whatshap/press/2003/mf0401.htm

Mercury Scare Worries Metro School Officials
5/24/00 Detroit News
http://www.detnews.com/2000/schools/0005/24/c01-62308.htm

Wisconsin School Spills
Wisconsin Department of Natural Resources
http://www.dnr.state.wi.us/org/caer/cea/mercury/schoolspills.htm

Mercury Contamination Plagues D.C. Schools
3/8/05 This radio segment focuses on a team from the Environmental Protection Agency who undertakes the difficult task of cleaning up spilled mercury at Cardozo High School in Washington, D.C. Many cases of mercury spills are intentional, and officials are trying to find alternatives to prevent "toxic vandalism" and access to mercury in schools.
http://www.npr.org/templates/story/story.php?storyId=4526345

MERCURY IN FISH

Up the Food Chain
"Up the Food Chain" lesson plan in *Quicksilver Question Web Module* pg. 69-76.

National Fish Consumption Advisories
U.S. Environmental Protection Agency
http://www.epa.gov/mercury/advisories.htm

"Mercury Contamination of Aquatic Ecosystems."
U.S. Geological Survey Fact Sheet, FS-216-95
http://wi.water.usgs.gov/pubs/FS-216-95/

FDA Advisories on Fish and Mercury.
http://www.cfsan.fda.gov/~lrd/pestadd.html#metals

"Fish and Shellfish Consumption Advisories in Washington State Due to Chemical Contamination."
Washington State Department of Health. Includes advisories specific to mercury for Eagle Harbor, Lake Roosevelt, Lake Whatcom, Sinclair Inlet and the Duwamish River.
http://www.doh.wa.gov/ehp/oehas/EHA_fish_adv.htm

Commentary: Risky Food
1/22/04 From mad cow to mercury poisoning, it's hard to tell what's safe to eat from one moment to the next. Commentator David Ropeik, communications director at the Harvard Center for Risk Analysis, advises weighing the risks and benefits before ruling out potentially healthy foods.
http://www.npr.org/templates/story/story.php?storyId=1611069

EPA Mercury Laws and Regulations
http://www.epa.gov/mercury/regs.htm

MERCURY POISONING CASE STUDIES

Mad Hatter

Mercury and the Mad Hatter
http://www.hgtech.com/Information/Mad%20Hatter.htm

The Mad Matter Mercury Mystery
http://www.seagrant.uconn.edu/HATTER.HTML

Get the Mercury Out
http://faculty.washington.edu/chudler/merc.html

Minamata Bay

National Institute for Minamata Disease
http://www.nimd.go.jp/english/index.html

Industrial Pollution in Japan: Chapter 4, Minamata Disease
http://www.unu.edu/unupress/unupbooks/uu35ie/uu35ie0c.htm

The Poisoniong of Minamata
http://www1.umn.edu/ships/ethics/minamata.htm

Epidemiology of Minamata Disease Lecture
http://www.pitt.edu/~super1/lecture/lec0361/index.htm

History of Minamata Disease
http://www.env.go.jp/en/topic/minamata2002/

Ritual Use of Mercury

EPA Task Force on Ritualistic Use of Mercury
http://www.epa.gov/opptintr/cahp/actlocal/merc.html

The Ritual Uses of Mercury
Living on Earth radio show. January 23, 2004 archived show.
http://www.loe.org/ETS/organizations.php3?action=printContentItem&orgid=33&typeID=18&itemID=188

Ritual Use of Mercury Assessment and Education Project
http://www.jsi.com/resources/pubs/ Docs/MercuryAssessment_Report.pdf

Health Concerns about Mercury Necklaces
http://www.doh.wa.gov/ehp/ts/IAQ/MercuryNecklaces.html

Iraqi Wheat Poisoning

Toxic Tales
"Toxic Tales" lesson plan in *Quicksilver Question Web Module*, pg. 89-96.

Northern Iraq Case Study
http://danpatch.ecn.purdue.edu/~epados/mercbuild/src/iraq.htm

Lewis and Clark Expedition

Expedition Medicine
"Expedition Medicine" lesson plan in Quicksilver Question Web Module, pg.45-54.

Poop Leads UW Team to Possible Discovery
http://archives.thedaily.washington.edu/1998/100598/lewis.html

Hunting for Lewis and Clark's Winter Camp
http://depts.washington.edu/~uweek/archives/1998.10.OCT_01/_article8.html

Medicine and Health on the Lewis and Clark Expedition
http://hsc.virginia.edu/hs-library/historical/lewis_clark/

Medical Supplies of the Lewis and Clark Expedition
http://www.nps.gov/jeff/LewisClark2/CorpsOfDiscovery/Preparing/Medicine/Medicine.htm

Mercury in South American Gold Mining
Gold Mining in South America
"Gold Mining in South America" lesson plan in Quicksilver Question Web Module, pg. 55-68.

Mercury in Artisanal Gold Mining in Latin America: Facts, Fantasies and Solutions
UNIDO Expert Group Meeting, 1997
http://www.facome.uqam.ca/facome/pdf/veiga_02.pdf

Mercury Migration: Ending Mercury Use in Artisanal Gold Mining
Ban Mercury Working Group
http://www.ban.org/Ban-Hg-Wg/Briefing%20Papers/endingmerc.pdf

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