#### ADescription: Macintosh HD:Users:hirschn:Google Drive:fishmercuryicon.JPGssignment 1: The Mad Hatter – Teacher version

***Mercury in fiction: Human Health Effects***

Read Chapter 7 of Alice’s Adventures in Wonderland by Lewis Carroll. In this chapter, Alice meets the Mad Hatter. Once you have finished the chapter, answer the questions below.

1. **Where did the term “Mad Hatter” come from?**

When Lewis Carroll was writing Alice in Wonderland in 1865, people in Britain who made hats were called Hatters. They worked in in poorly ventilated rooms, using hot solutions of mercuric nitrate to shape wool felt hats which led them to having high mercury exposure. These Hatters or hat-makers commonly exhibited slurred speech, tremors, irritability, shyness, depression, and other neurological symptoms; hence the expression "mad as a hatter." The symptoms were associated with chronic occupational exposure to mercury.

1. **What are the symptoms of mercury poisoning?** (Hint: read “The Basics” about mercury and human health from the National Institutes of Health <http://kidsenvirohealth.nlm.nih.gov/subtopic/002/chemicals/017/mercury/> )
   1. Tremors (trembling)
   2. Psychosis (losing touch with reality)
   3. Changes in vision or hearing
   4. Memory loss
   5. Loss of appetite (not feeling hungry)
   6. Feeling irritated
2. **Write down three sentences or paragraphs from the chapter that show or describe a symptom of mercury exposure. After the sentence, write the symptom it is describing.**

Alice looked all round the table, but there was nothing on it but tea. [**Loss of appetite**]

“The Hatter was the first to break the silence. `What day of the month is it?' he said, turning to Alice: he had taken his watch out of his pocket, and was looking at it uneasily, shaking it every now and then, and holding it to his ear.” [**Memory loss**]

`Your hair wants cutting,' said the Hatter. He had been looking at Alice for some time with great curiosity, and this was his first speech.

`You should learn not to make personal remarks,' Alice said with some severity; `it's very rude.' [**Irritability**]

`Two days wrong!' sighed the Hatter. `I told you butter wouldn't suit the works!' he added looking angrily at the March Hare.

`It was the *best* butter,' the March Hare meekly replied.

`Yes, but some crumbs must have got in as well,' the Hatter grumbled: `you shouldn't have put it in with the bread-knife.'

The March Hare took the watch and looked at it gloomily: then he dipped it into his cup of tea, and looked at it again: but he could think of nothing better to say than his first remark, `It was the *best* butter, you know.' [**Irritability**]

Alice had been looking over his shoulder with some curiosity. `What a funny watch!' she remarked. `It tells the day of the month, and doesn't tell what o'clock it is!'

`Why should it?' muttered the Hatter. `Does *your* watch tell you what year it is?'

`Of course not,' Alice replied very readily: `but that's because it stays the same year for such a long time together.'

`Which is just the case with *mine*,' said the Hatter.

Alice felt dreadfully puzzled. The Hatter's remark seemed to have no sort of meaning in it, and yet it was certainly English. `I don't quite understand you,' she said, as politely as she could. [**Psychosis – losing touch with reality**]

`If you knew Time as well as I do,' said the Hatter, `you wouldn't talk about wasting *it*. It's *him*.'

`I don't know what you mean,' said Alice.

`Of course you don't!' the Hatter said, tossing his head contemptuously. `I dare say you never even spoke to Time!' [**Psychosis – losing touch with reality**]

`You can draw water out of a water-well,' said the Hatter; `so I should think you could draw treacle out of a treacle-well--eh, stupid?' [**Irritability**]

Map

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Supplemental Image 1: The packet structure of a prior austenite grain from the “large grained” sample, with corresponding (011) pole figure.

Map

Description automatically generated

Supplemental Image 2: A prior austenite grain from the “large grained” sample. (a) The “orange packet” is colored to show the lath and block structure. (b) The “yellow packet” is colored to show laths and blocks.

Map

Description automatically generated

Supplemental Image 3: A prior austenite grain from the “large grained” sample. (a) The “purple packet” is colored to show the lath and block structure. (b) The “gray packet” is colored to show laths and blocks.

Shape

Description automatically generated with low confidence

Supplemental Image 4: A prior austenite grain from the “large grained” sample; with corresponding (001) and (011) pole figures, each pole figure has been rotated to center the image.