

CARD SORT Task Card
In a Time of Drought

TASK PROBLEM:

Develop a model that shows how wastewater is treated so that it can be reused as a drinkable source of water.

Focus Question: How are scientists cleaning water to address California's drought?

Directions:

1. Use the the following resources to sort the Substances in Wastewater cards by size, going from smallest to largest.
 - a. **Periodic table showing relative size** - an arrangement of the chemical elements that make up all living and nonliving matter
 - b. **The Scale of the Universe 2 animation** - a tool to show the relative size of different objects, including microscopic ones.
Go to <http://htwins.net/scale2/>. Press **start** to begin.

** Write Size in Meters
(Convert as shown in class)*

Use the scroll bar to zoom in and out.

Click on objects to learn more.

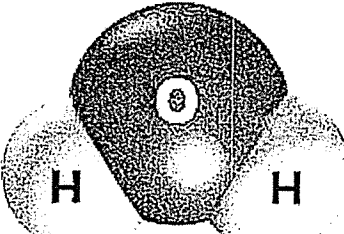
2. Record the the name of each common substance in wastewater, in order from smallest to largest, in your notebook. Label the **largest** object and **smallest** object.

Some common substances in wastewater are:

- | | |
|------------------------------|-------------------------------------|
| • water (H ₂ O) | • food, like rice |
| • nitrate (NO ₃) | • carbon dioxide (CO ₂) |
| • bacteria, like E. Coli | • sand |
| • viruses | • toilet paper |
| • hair | • protozoa, like amoeba |
| • parts of salt (Na and Cl) | |

Write SIZES of Each Substance!!

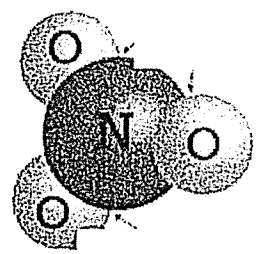
WATER MOLECULE



2.8×10^{-7} meter

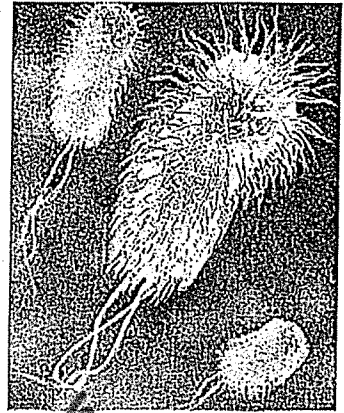
H₂O

NO₃

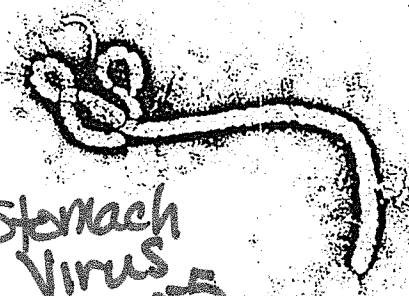


Nitrate

5.2×10^{-8} meters



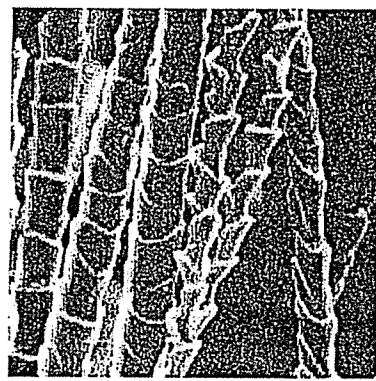
2×10^{-6} m E. Coli



Stomach Virus

4.4×10^{-5}

Virus



Hair

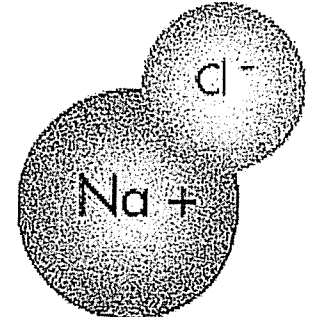

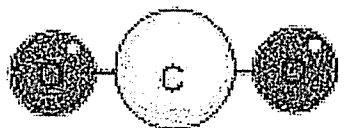


Table Salt

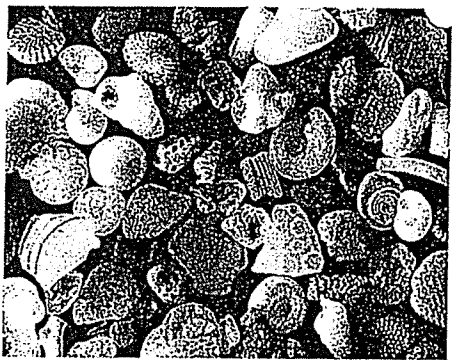


Grain of rice

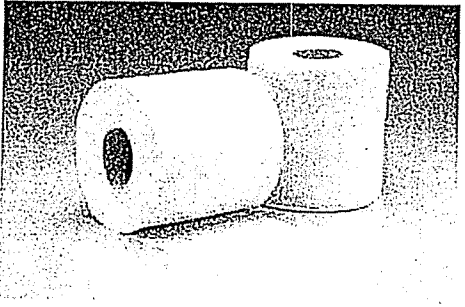


Carbon Dioxide


1.16×10^{-10} meter



Sand



Toilet paper



Amoeba

