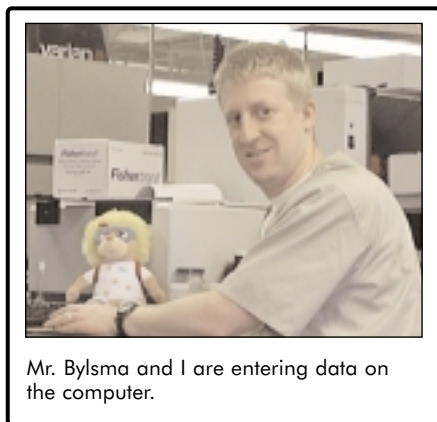


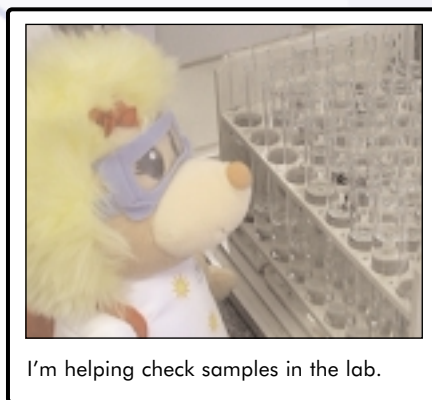
Featured Chemist: Mr. Steve Bylsma

Prein and Newhof Environmental Laboratory, Grand Rapids, MI

Mr. Bylsma works at Prein and Newhof Environmental Laboratory. He tests water! I was so excited since it was April, and we were working hard at the American Chemical Society getting ready for Chemists Celebrate Earth Day with its "What do you know about H₂O?" theme. Mr. Bylsma sure knows a lot about water! I couldn't wait to get into the laboratory, where he does most of his work, and learn all about his job. Before we left to go to the laboratory, I got to have a lot of fun visiting with his two year old son, Joel.



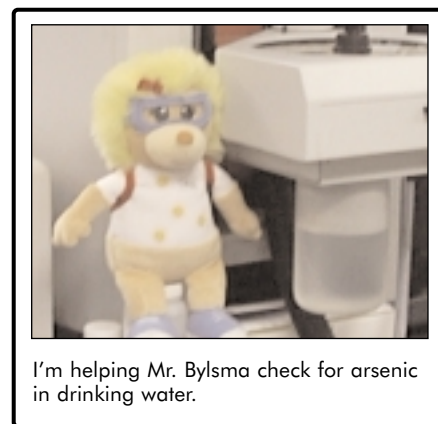
Mr. Bylsma and I are entering data on the computer.



I'm helping check samples in the lab.

When we got to the lab Mr. Bylsma first showed me how he tests our drinking water to make sure it is safe. What an important job that is! I'm a very thirsty mole and love to drink cold water to help cool me down after digging holes! I never knew so much chemistry was used to test water. He also showed me how he tests groundwater. Groundwater is all of the water that is below the dirt, which actually is in underground rivers and lakes! If you aren't connected to city water but have a well, you are drinking groundwater. He also tests waters from the lakes and rivers so we all can swim and play in them. Chemistry used in testing our water keeps us all safe and healthy!

The two instruments I watched Mr. Bylsma use were called an ICP and a graphite furnace. The ICP "sips" the water through a tube into the machine. (This reminded me of one of my favorite things, a big straw for drinking my milk!) The water goes through the tube and into a VERY hot flame. It is at 3000 degrees Fahrenheit! That is definitely too hot for little moles and children to get near! You have to wear very special gloves if you are anywhere near this flame so you can protect your hands. This flame turns the water into little bits and pieces of what was in the water and the instrument can



I'm helping Mr. Bylsma check for arsenic in drinking water.





measure what they are. It mostly looks for metals. The other instrument, called a graphite furnace, does the same thing except there is no flame used. Mr. Bylsma puts the sample into a little graphite tube. Graphite is the gray colored "stuff" in pencils. The tube heats up to about 1500 degrees centigrade. (Remember we had to be very careful around the heat)! By heating up the water to this temperature, the water turns into vapor and the instrument measures what is left. You can see water vapor when you boil macaroni! It is the steam that is above the pot when it is boiling. Both of the instruments can see very little amounts. If you put a drop of something into a bathtub full of water, Mr. Bylsma can find it using the ICP. If you put a drop of something into a swimming pool of water, he can find it with the graphite furnace.



I am helping Mr. Bylsma get the sample prepared for analysis.

One of my favorite parts of the trip was being able to wear my safety goggles and safety gloves just like Mr. Bylsma. Even though he is only testing water, there are a lot of chemicals that he needs to use to do these tests and instruments that get VERY hot. He said it was very important to protect our eyes and hands while we worked. Safety is the

most important part of being a great laboratory chemist.

I never knew there was so much chemistry used in testing water. What a great way to spend Chemists Celebrate Earth Day! Now when I think of "What do I know about H₂O?," I can remember my exciting visit with Steve Bylsma and Prein and Newhof Environmental Laboratory. Meg A. Mole now knows A LOT about H₂O! If you have any questions about my visit, you can write to me at meg@acs.org.

Personal Profile: Mr. Steve Bylsma

What is your favorite food?
Hamburgers

What is your favorite color?
Purple

When is your birthday?
July 12

What is your favorite pastime?
Fishing

Can you tell me a little about your family?

I have been married to my wife, Rosie, for three years I have a son, Joel, who was 2 in March and he will have a new baby brother. I came from a family of 9 and am the second oldest.

What kinds of science experiments did you do when you were young?

I had basic little chemistry kits and did the experiments in them.

What made you decide to go into science?

It was what I did well in school and I enjoyed hands on work.

Where would a child come in contact with some aspect of your work?

When you go to the park to go swimming, when you take a drink out of your kitchen faucet.

