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The Nature of Science and Math: Analyzing the Presence in Everyday Communication

Scientific Investigations Use a Variety of Methods: This article addresses how the Environmental Protection Agency, EPA, has designed a plan to eliminate the hazardous chemicals in the North Alabama water. The EPA used a method called maximum contaminant level process. This process will allow the water treatment plant to monitor, detect, and address unhealthy chemicals in the water. The 3M company developed a chemical compound that is known as “forever chemicals” or PFAS. It was found that the PFAS can be useful for making non-stick or stain-resistant materials, but PFAS is harmful when consumed internally.

Scientific Knowledge is Open to Revision in Light of New Evidence: 3M has been producing the PFAS for decades in Decatur, Alabama. The EPA has now discovered that there are health risks with consumption of PFAS. Some states have set limits on the amount of PFAS chemicals allowed in drinking water. In light of the contamination problem in northern Alabama, the state has now been able to change some water sources or mix in alternate water sources to reduce the PFAS concentration level.

Science Addresses Questions about the Natural and Material World: This article addresses both of these points. It addresses our natural world by talking about how the water contamination negatively effects people’s health and environment. The article mainly focuses on the contaminated water in Alabama, but it also mentions how other states have been impacted. I found it interesting that the article tells what the chemicals were used for such as Teflon, Scotchgard, stain-resistant carpets, waterproof clothing, food packaging, and fire-fighting foams. You can clearly see how certain chemical compounds can benefit our material world, but also if not treated carefully can cause harm to nature and people.

Make sense of problems and persevere in solving them: The problem highlighted in this article is the amount of PFAS found in drinking water. The Toxic Substances and Disease Registry provided a measurement on how much of the chemical is considered toxic. Because of this water contamination problem in Decatur, AL the West Morgan East Lawrence Water and Sewer Authority, WMEL, had to figure out what the cost would be to solve this problem. Then, WMEL had to figure out the cost for a temporary filter and a reverse-osmosis filter.

Reason abstractly and quantitatively: First the article points out that the EPA has found that some people have had specific health issues related to the exposure of the hazardous chemicals. However, the article does not give a percentage of how many people in the North Alabama have had health issues related to water contamination. I thought this would be interesting to know this information since the article pointed out that lifetime exposure to the chemicals can cause harm to people and 3M has been producing the PFAS for decades.

Attend to precision: The EPA was the first to pinpoint the exact concentration level of the chemical that would be harmful, 70 parts per trillion. The EPA was able to find that eight water systems in Alabama had PFAS higher than 70 parts per trillion. Two years later, the Agency for Toxic Substances and Disease Registry went even further to give a specific number for minimal risk level. Because of the nature of this article, it was important to show the mathematical precision to the readers.

References: Pillion, D. (2019, February 14). EPA 'moving forward' to limit PFAS chemicals found in Alabama tap water. Retrieved June 04, 2019, from https://www.al.com/news/2019/02/epa-moving-forward-to-limit-pfas-chemicals-found-in-alabama-tap-water.html

References link: EPA 'moving forward' to limit PFAS chemicals found in Alabama tap water