Annotated Bibliography

1. Awasthi, Ashwani, et al. "Physico-chemical analysis of Ken river water in Panna District Madhya Pradesh, India." *Research Journal of Science and Technology*, 2018. *Academic OneFile*, http://link.galegroup.com/apps/doc/A545767608/AONE?u=lom_fraser&sid=AONE&xid=8d85d086. Accessed 17 Sept. 2018.

Summary:

This experiment was performed by Ashwani Awasthi and colleagues pertaining to the water pollution in the country of Madhya Pradesh, India. This article analyzes the water quality of and around the Ken River in India. The Ken River is a source of drinking water for several animal species. Authors Awasthi, Tripathi, and Tiwari tested various water samples from the river and the area surrounding it to determine the fitness or unfitness of the water compared to the quality standards set by the World Health Organization. It was found that the water was contaminated with fecal coliform bacteria. The purpose of this experiment was to help the regulatory authorities and policy makers take action towards purifying the river Ken basin.

Critique:

This article was published in the *Research Journal of Science and Technology* by Athena Information Solutions Pvt. Ltd., which is India's largest content licensing and distribution network. Author Ashwani is from the Department of Energy and Environment at the Faculty of Science and Environment in India. The text is peer-

reviewed and the references listed were credible and properly cited. There is no bias evident within the text due to conclusions being drawn based on collected data.

This article relates to the research being conducted by demonstrating the need for cheaper and more efficient water filtration systems. The discovery of bacteria in the Ken River proves that drinking water around the globe is contaminated with harmful bacteria, potentially affecting the health of the person or animal drinking it.

2. Budiyono, Td Kusworo, and J Supriyadi Dc Hakika. “Enhanced Separation Performance of Cellulose Acetate Membrane For Brackish Water Separation Using Modification of Additives and Thermal Annealing.” *International Journal of Waste Resources*, vol. 04, no. 01, 2014, doi:10.4172/2252-5211.1000131.

Summary:

In the journal, researchers were testing the effects of the addition of polyethylene glycol and the thermal annealing process on the permeability of a cellulose acetate membrane. This research was conducted in order to improve water filtration methods using this type of membrane. As polluted water is a growing issue, it is important to find new technology to address the problem. In the research, the cellulose membranes were created by dispersing the cellulose acetate polymers into the solvent and stirring for six hours. After that, distilled water was added, and soon, the solution was spread over a glass plate to form the membrane. Next, to test the effects of the thermal annealing process, the membranes were dried in an oven for varying times at varying temperatures. These times were five, ten, and fifteen seconds, and the temperatures were 60ºC and 70ºC. The permeability of the membrane was found by filtering brackish water, which is water that contains more salt than freshwater but not as much as saltwater. It was concluded that the addition of polyethylene glycol and the thermal annealing process helped to improve the performance of the cellulose acetate membrane.

Critique:

The journal was written by TD Kusworo and associates from the Department of Chemical Engineering at the Diponegoro University located in Indonesia. The article was

peer-reviewed and cited numerous sources throughout the text. There was no apparent bias as the scientists were not persuading readers but informing them on the results of the addition of polyethylene glycol and the thermal annealing process on the performance of the membrane.

Both this article and the upcoming research test the permeability of a cellulose acetate membrane. In contrast, this study followed how the performance was enhanced with the addition of chemicals and heat. The upcoming research will simply evaluate the pure cellulose acetate membrane's performance. The study measured the concentration of brackish water before and after it passed through the membrane, which inspired the future research to measure the concentration of color pigment in the water before and after it passes through the membrane. A similar process will be followed for the upcoming research.

3. Han, Baixin, et al. “Preparation and Characterization of Cellulose Acetate/Carboxymethyl Cellulose Acetate Blend Ultrafiltration Membranes.” *Desalination*, vol. 311, 2013, pp. 80–89., doi:10.1016/j.desal.2012.11.002.

Summary:

In the research, cellulose acetate and carboxymethyl cellulose sodium were blended together to create a blend membrane. This was done in order to create a membrane that retained the positive qualities of each chemicals and lessened the limitations of each. In many industries, membrane separation is used to separate and concentrate high molecular weight species, yet fouling has become an obstacle for the use of the membrane. Using this research, the scientists were hoping to create a blend membrane that could help the growing issue of fouling, which is the accumulation of unwanted material on solid surfaces and can harm the object’s functionality. By conducting a variety of tests on the blend membrane, such as determining the pure water flex, which is the rate at which water permeates the membrane, the researchers were able to conclude that the blend membrane had enhanced antifouling properties.

Critique:

The research was conducted by Baixin Han and associates at the Beijing Institute of Technology in Beijing, China. It is a peer-reviewed source that has countless references, which are cited throughout the journal. The article had no apparent bias as the researchers were attempting to determine if blend membranes could aid in the issue of fouling and were not trying to persuade readers.

In both the article and the upcoming research, cellulose acetate membranes were created; however, in the article it was a blend cellulose acetate membrane. This meant it was blended with another chemical to improve the quality of the membrane. Part of the procedure found in the article will be used as a reference. In the procedure, the membrane solution was spread over a glass plate to form the membrane and later rinsed with distilled water. A similar technique will be followed in the upcoming research.

4. Hoslett, John, et al. "Surface water filtration using granular media and membranes: A review." *The Science of the Total Environment*, vol. 639, 2018, p. 1268. *Academic OneFile*, http://link.galegroup.com/apps/doc/A543057498/AONE?u=lom_fraser&sid=AONE&xid=ae5ce144. Accessed 19 Sept. 2018.

Summary:

This experiment was conducted by John Hoslett and colleagues to analyze membrane and filtration methods for the removal of pollutants such as bacteria, viruses, and heavy metals from surface water. The purpose of this experiment was to find cost-effective alternatives for water purification in the form of microfiltration and ultrafiltration membranes to make clean water more accessible to developing countries. Microfiltration and utra-filtration are used as a preliminary treatment before the process of nanofiltration and reverse osmosis. This is done to reduce the possibility of fouling occurring during the removal of pollutants. Developing countries tend to face pollution due to outdated water networks. If there were a method such as microfiltration that could be used on a large scale, more people from those countries would have access to drinking water.

Critique:

John Hoslett is from the College of Engineering, Design and Physical Sciences at Brunel University London, which is one of the largest engineering schools in London. This article was accepted and published in *The Science of the Total Environment.* No bias appears to be present in the article due to the conclusions being drawn from data and

observations, and the references used are credible and cited correctly throughout the text. The article is a peer-reviewed source.

This experiment relates to the research being conducted because of their use of microfiltration membranes to remove bacteria from water. Though the membranes used did not consist of cellulose acetate, it was determined that microfiltration would indeed be a cost-effective method for removing bacteria and viruses from drinking water.

Name(s): Hannah Rehman & Paige Showers

Annotated Bibliography Rubric

Value: 60 points

8 Sources / 5 Peer reviewed (FYI: 6 must be cited in paper + 1 professional contact must be cited)

Please copy and paste this rubric at the end of your Annotated Bibliography document.

Points will be deducted for each missing or incorrect element.

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_____MLA 8th Edition Citation correctly formatted (with URLs/ no date accessed). See this helpful video (https://youtu.be/baTARdUdnfQ?t=6m23s) for everything you need to know about MLA 8th edition. Do NOT trust the auto-create sources; they may not be updated in the 8th Edition.

_____Sources ordered alphabetically by signal word. Each source begins a new page.

_____ Summary (Main idea, evidence or methodology used – BE SPECIFIC! What was done? What are the main arguments? What is the point of this book or article? What topics are covered? If someone asked what this article/book is about, what would you say? This is usually ½ page – 1 page/single spaced).

_____Critique (Evaluate the source. Clearly state and HIGHLIGHT if the sources is peer-reviewed. Is there sufficient evidence for the claims? Who is the author? Who are they associated with? What makes him/her an authority? MOST IMPORTANTLY- *How is this source useful to your research?* Be specific!! Please do not simply say the source is useful. Tell me how. And, if the source is not useful, it should not be included in your annotated bibliography.)

_____Proper grammar and mechanics.