Polymers For Water Treatment FAQs

What are Polymers?

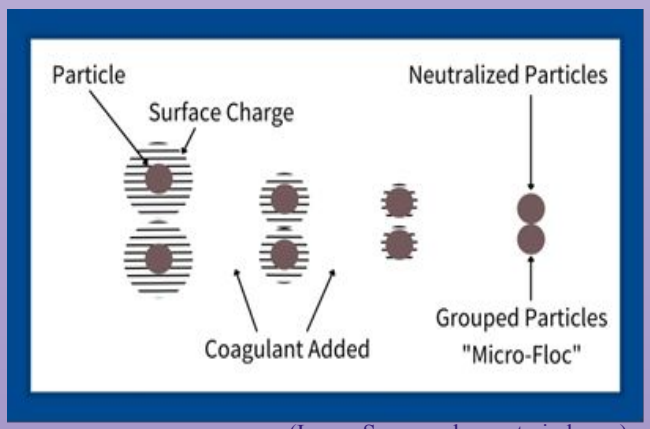
- Polymers are natural or synthetic substances composed of macromolecules which are multiples of simpler chemical units called monomers.
- Polymers help remove suspended solids and reduce sludge volumes in water treatment by increasing the size of flocculated particles, also known as flocs.
- Polymers reduce waste costs by separating particles from water and creating more concentrated mineral slurries for disposal or for processing within the WVWRI acid mine drainage treatment and rare earth element recovery process.

When are polymers used?

- The WVWRI uses polymers to expedite the rare earth element recovery process and in acid mine drainage treatment.
- Polymers are a commonly used in water treatment within applications such as sewage and acid mine drainage.
- Polymers can be used in mineral processing as a recovery reagent help reclaim valuable fine particles that would otherwise be lost.
- Polymers increase the of settling of sludge in clarifiers, this is especially important when a large amount of water needs to be processed.

How do polymers function?

- Acid mine drainage is negatively charged, while standard water treatment polymers are positively charged. This opposite charge encourages suspended metals to separate from the water.
- Polymers form long chains of metal solids which cluster together. This material is denser than the water, allowing for it to settle. This results in cleaner water and a sludge which contains the metals stuck to polymers.



(Image Source: clearwaterind.com)

What are the environmental hazards?

- The use of polymers in water treatment is not considered an environmental concern so long as proper concentrations are used.
- Natural polymers are environmentally preferred over synthetic polymers due to being more biodegradable.
- Polymers minimizes the risk of any contaminant solids passing through a treatment system to the environment. Furthermore, polymers do not alter the treated water or solids it contacts in any way that would create deleterious outcomes to the environment.

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