

# *FROM DIRTY TO CLEAN:*

**Finding solutions  
to clean water**

Can you clean  
the water before  
it reaches the  
end of the  
channel?



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Science Education

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# Water Contamination Information Sheet

- **Water contamination can be caused by direct or indirect sources**
  - **Direct Source**
    - dumping, pollution, oil spills, fracking or mining
  - **Indirect Source**
    - fertilizers, pesticides or chemicals from roads that are washed into the water by rain or snow
- **You can not always see contamination**
  - Metals, like lead, are dissolved in water making them unable to be visibly detected
- **Water contamination impacts entire ecosystems**
  - This includes plants, trees, and aquatic life, as well as the availability of drinking water
- **Sources of drinking water come from:**
  - Surface water (lakes, streams, rivers, and reservoirs)
  - Ground water
- **Passive remediation systems allow us to clean up our surface water so that ecosystems can be restored**

Information adapted from:

<https://www.nationalgeographic.com/environment/freshwater/pollution/>



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# Passive Remediation System

Start



Finish

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# *Remediation Options*





## ***Plants***

**Plants, like Cattails, can be used to polish systems by removing low levels of contamination**

**PRO: Cheap and easy to install; good at catching the last little bit of the metals left behind**

**CON: Least efficient; easily destroyed with large pieces of contamination**

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# *Remediation Options*







## ***Limestone***

**Limestone is used to increase the pH so that the water is no longer acidic**

**PRO: Is effective at raising the pH**

**CON: Not useful if the water is not acidic; does not remove metal contamination**



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# *Remediation Options*





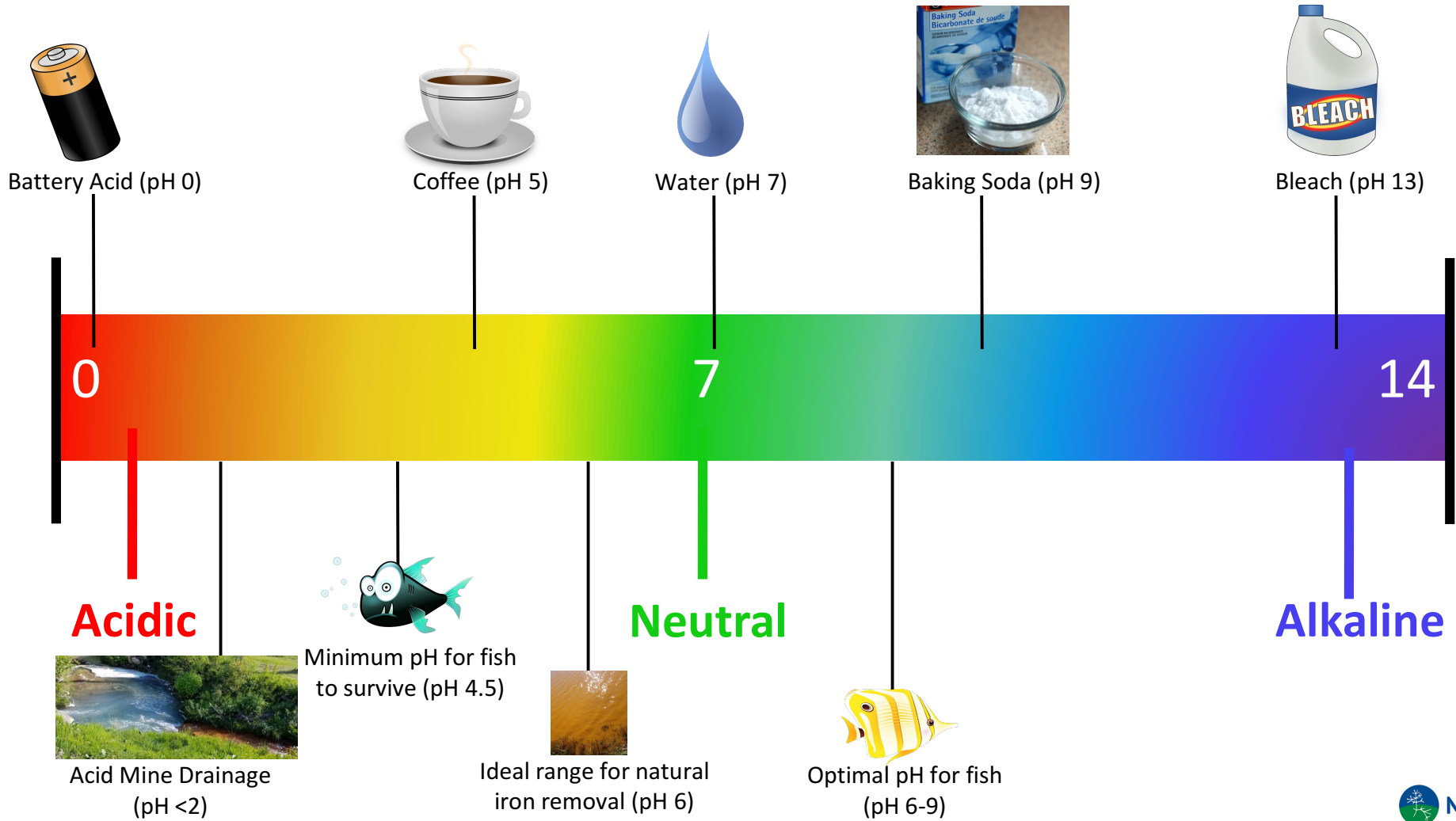
## ***Bacteria***

**Bacteria growing in the water and soil can be used to remove harmful metals from the water**

**PRO: Medium efficiency; can remove trace metals such as zinc, nickel, and lead. Also, can remove iron contamination.**

**CON: Requires long-term exposure (slow). Cannot always grow in high metal levels.**

# pH Scale



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# *pH Scale*

