Abandoned Mine Drainage (AMD)

Abandoned Mine Drainage (**AMD**) is drainage flowing from, or caused by, **deep mining, surface mining** or **coal refuse piles**. Drainage may be acidic or alkaline, with elevated levels of dissolved metals.

pyrite (in coal) + oxygen + water = iron hydroxide (rust) + sulfuric acid

Where Does AMD Originate?

SURFACE MINING — past unregulated strip mining
DEEP MINING — underground tunnels
BORE HOLES — a hole drilled to relieve pressure in deep mines
REFUSE PILES— waste coal otherwise known as bony piles

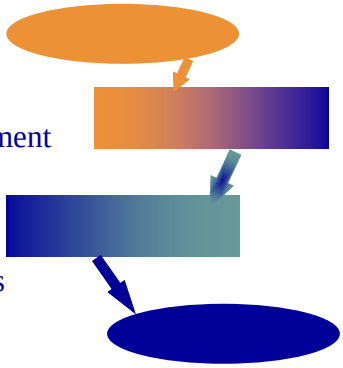
What are the Indicators of AMD?

1. Little or no evidence of aquatic life
2. Toxic chemical readings in the stream
3. Stream bottom coating (armoring)/and or
4. Stream discoloration
5. Colors that indicate metals are present:
   - Orange — evidence of iron
   - Gray / White — evidence of aluminum
   - Black — evidence of manganese

How is AMD Treated?

Two Methods:

1. *ACTIVE TREATMENT*— acidic discharges are neutralized by the addition of strong alkaline chemicals such as: lime, or ammonia. High cost is associated with operation and maintenance.
2. *PASSIVE TREATMENT*– naturally occurring chemical and biological reactions are established in a controlled environment. Lower cost than active treatment with low maintenance.
   - AMD passes through one or several of these systems:
     - wetlands - including marshes, swamps, or bogs
     - open limestone channels- ditches lined with limestone sand
     - diversion wells- a holding tank filled with crushed lime
     - anoxic limestone drains – beds of buried limestone



The Goal of AMD Treatment is to restore an aquatic system to its natural state. Monitoring the chemistry, aquatic life, and stream flow rates, before and after restoration, offers many opportunities for volunteers and environmental education programs. Stream monitoring establishes the necessary data to prioritize sites for clean-up and monitors the effectivness of current treatment systems.

How Can You Help?

Volunteer for: watershed associations, local government agencies, and stream monitoring programs For more information, call the Kiski-Conemaugh Stream Team at: (814) 532-5049.

Financial and other support for this project has been made possible through a grant provided by the Pennsylvania Association of Conservation Districts, Inc., the Department of Environmental Protection's Bureau of Watershed conservation , and EPA's Section 319 Program. Created by the Stream Team.

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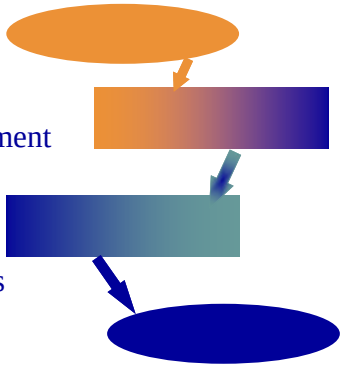

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