



## Polluted Runoff: Nonpoint Source (NPS) Pollution

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# Abandoned Mine Drainage

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## Overview

Abandoned mine drainage is water that is polluted from contact with mining activity, and normally associated with coal mining. It is a common form of water pollution in areas where mining took place in the past. There are several issues with abandoned mines that impact water quality:



- acid mine drainage (the most prevalent; see below),
- alkaline mine drainage (this typically occurs when calcite or dolomite is present),
- metal mine drainage (high levels of lead or other metals drain from these abandoned mines).

Acid mine drainage is the formation and movement of highly acidic water rich in heavy metals. This acidic water forms through the chemical reaction of surface water (rainwater, snowmelt, pond water) and shallow subsurface water with rocks that contain sulfur-bearing minerals, resulting in sulfuric acid. Heavy metals can be leached from rocks that come in contact with the acid, a process that may be substantially enhanced by bacterial action. The resulting fluids may be highly toxic and, when mixed with groundwater, surface water and soil, may have harmful effects on humans, animals and plants.






Stream impacted by acid mine drainage from a Mid-Atlantic abandoned coal mine

## Information Resources and Centers

- [U.S. Department of Interior's Office of Surface Mining](#)  Resources, references and funding information for state and tribal professionals addressing surface mining issues.
- [Abandoned Mine Reclamation](#)  Pennsylvania Department of Environmental Protection - This site provides information on the chemistry of acid mine drainage and background and chemical information for passive treatment options available for acid mine drainage.

## Guidance Documents and Reports

-  [Acid Mine Drainage Prediction \(pdf\)](#) (218.87 KB, December 1994, EPA 530-R-94-036)  
This technical document provides a brief review of acid forming processes at mine sites, a summary of the current methods used to predict acid formation, selected state regulatory requirements, and case histories.
-  [Prevention of Acid Mine Drainage Generation from Open-pit Highwalls-Final Report Mine Waste Technology Program Activity III, Project 26 \(pdf\)](#) (1.58 MB, July 2005, EPA/600/R-05/060)  
This document summarizes the results of performance data on the ability of four technologies to prevent the generation of acid mine drainage (AMD) from an open-pit highwall.
-  [Abandoned Mine Site Characterization and Cleanup Handbook \(pdf\)](#) (641.9 KB, August 2000, EPA 910-B-00-001)  
This handbook is a resource for project managers working to address the environmental concerns posed by inactive mines and mineral processing sites. The focus of the handbook is the environmental hazards at abandoned mining sites.

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