

**Modern, Responsible Mining:  
A response to claims made about “sulfide mining”**

Information recently produced by some environmental advocacy organizations brings attention to several important issues related to mining, and in particular, to the mining of certain types of minerals known commonly as “hard rock” or nonferrous metallic minerals.

Protecting water quality, addressing economic sustainability and enforcing strict regulatory standards are legitimate priorities, and merit thorough attention by lawmakers, regulators, industry and stakeholders. Bringing attention to these issues is important. Successfully addressing them requires government, non-governmental organizations, communities and industry working cooperatively.

Metallic or “hard rock” minerals — copper, nickel, silver, and others — are critical to our quality of life — to our safety, health, comfort, and well-being. They are obtainable only through mining. Without mining, the ability to produce, transmit and use electricity would cease to exist, automobiles would be impossible to produce, and life saving medical advances would be a thing of the past. And, while recycling efforts recover some material, growing demand in industrialized nations and emerging economies around the world for these important metallic minerals far outpaces what can be generated through recycling.

Modern mining in the United States is scientifically and technologically advanced. The industry strives to be among the safest of any, while providing the resources society needs in a safe, responsible and affordable way.

The industry plays an important role in economic prosperity, supporting substantial employment with high wages, providing opportunities for related businesses, and contributing to community priorities. According to 2007 National Mining Association data, more than 376,000 people are employed directly by the industry nationwide, and earn 33 percent more than other industries on average. Additionally, each mining job results in 3 to 4 additional jobs required to support the industry, bringing total mining related jobs nationwide to 1.5 million. The industry produced \$98.4 billion worth of finished mineral, metal and fuel products, generated \$4.4 billion in taxes, and contributed \$73.2 million in community and charitable giving.

Today’s mining leaders recognize the need for balancing society’s need for minerals and metal resources and sustainability — imperative for future generations. Responsible mining practices, environmental protections, site reclamation, and greater involvement with communities in planning for mining activities, are just some of the ways in which the industry works today.

On the following pages are some facts and perspectives in response to issues raised in the discussion regarding mining of nonferrous metals.

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**Claim: “Sulfide mining” is a particular type of mining that is uniquely harmful to the environment and human health.**

The term “sulfide mining” is slang, not a scientific or industry term. It is a term used by mining opponents to elicit concern and to confuse people into thinking that a mining company is producing something other than the base minerals needed by society, like copper, nickel, silver and other important raw materials. These minerals occur in rock that naturally contains sulfides. They are also part of the geologic classification of minerals known as sulfides. Other than that, there is no basis for describing a copper, nickel or any other mineral mine as a “sulfide mine.”

**Claim: “Sulfide mining” produces acid rock drainage (sulfuric acid and heavy metals), polluting surface water and groundwater, and the wastewater produced by sulfide mines creates decades of pollution and require decades of treatment after closure.**

*Acid rock drainage* (ARD) is a term that refers to the weathering of sulfide ore when it is exposed to air and water. It is a naturally occurring process, often occurring in areas of hot springs (Yellowstone National Park), but also occurring as a result of human activities, such as mining, when not properly managed.

When dealt with properly ARD can be managed, minimized and prevented, and will not impact the environment. The well-documented occurrence of sulfide ore has led to improved mining techniques to control the conditions that lead to the development of acid rock drainage.

*Understanding the science of ARD.* Three essential ingredients are necessary to form ARD – essentially the dissolving of minerals from rock: sulfide minerals, water, and oxygen. Time is also a major factor in determining the rate at which dissolution occurs. **Without any one of the three ingredients, ARD will not form.**

*Mining industry practices for preventing or managing ARD.* Modern mining practices benefiting from experience, science and technological advances over the last 20 years have led to success in preventing, controlling and managing ARD. Prevention techniques, such as rock handling, storage, isolation from air and water, underwater submergence, limestone neutralization, and others have been successful in controlling ARD. Treatment programs for dealing with ARD when it occurs provide redundant protections to the environment. Water treatment facilities, neutralization and other systems are proven effective in ensuring water returned to the environment is ecologically safe. Diligent monitoring of mining sites ensures that if ARD is present, it is detected and dealt with.

*As a leader in the mining industry, Rio Tinto recognizes the need to protect water resources from the possible effects of acid rock drainage.* The following are some examples of where we have been successful in protecting groundwater and surface water quality by preventing and managing ARD conditions: