Rio Tinto

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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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Modern, Responsible Mining:
A response to claims made about "sulfide mining"

<u>Claim:</u> "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."

<u>Claim</u>: "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:

- Flambeau Mine in Wisconsin — where reclamation was completed more than 11 years ago, the company promised to protect the Flambeau River and that promise was kept. During its years of operation 1,000 water quality samples were drawn. The company's state of the art water treatment plant, located at the mine site processed 600 million gallons of water for safe return to the environment. Monitoring to date shows the Flambeau River is and remains protected. The Flambeau Mine successfully operated without a permit violation. In 2007 Flambeau received the Wisconsin Business Friend of the Environment Award from Wisconsin Manufacturers and Commerce, and in 2003 the Department of Interior Bureau of Land Management Hard Rock Mineral Award for Community Outreach and Economic Security.
- Ridgeway Mine in South Carolina — received the Mined Land Reclamation Award from the South Carolina Department of Health and Environmental Control (SCDHEC) as well as the prestigious Interstate Mining Compact Commission Annual Reclamation Award.
- Barney's Canyon Mine in Utah — reclamation was at the forefront of mine planning. Foresight of employees transformed waste rock into valleys and gentle sloping hillsides while incorporating water management and erosion control measures. Existing topsoil was removed and stored so reclamation could run concurrent with mining activities. Backhauls were used extensively to move stockpiled topsoil back to the site enabling the lowest possible fossil fuel consumption. In 2004, the Division of Oil Gas and Mining awarded Barney's Canyon their *Earth Day Award* for outstanding final reclamation and site restoration in the area of minerals.

Claim: Mineral exploration is being conducted in areas of cherished land and threatens the pristine wilderness.

Mineral exploration and production in the U.S. takes place in all 50 states, traditionally and often in remote or largely undeveloped areas where rock deposits exist. The Earth's geology dictates if and where certain types of minerals exist that may be of sufficient size and quality to mine. Mining companies use sophisticated technologies to identify where mineral deposits exist under the Earth's surface.

Rio Tinto is respectful of the natural environment and landscape. Having access to land is key to our business success. Our approach to development carefully considers the values and views of those with an interest in the area. It also considers wider environmental and social impacts. We consult with local communities to understand ways we can meet their needs and expectations. We also give priority to local communities for employment opportunities and support their community, educational and social programs. And, we strive to develop our sites in ways that preserve the existing landscape, or reclaim it once mining is complete.

At Flambeau, for example, a once 140-acre open pit mine has been restored successfully to a nature preserve, home to diverse wildlife and ecosystems. It serves as a valued natural area for the community, and a place where biodiversity learning takes place. For more information about the reclaimed Flambeau Mine, visit www.flambeaumine.com.

Claim: Sulfide mining has a hazardous track record in the U.S. and around the world, resulting in numerous environmental and economic catastrophes.

"Mining legacy" refers to adverse impacts of mining to the environment, as well as socio-economic conditions where mining has occurred in the past. Rio Tinto recognizes that this legacy continues to drive some perceptions about mining that we are committed to

addressing. We believe that the industry has a responsibility to work with other organizations to address the legacy issues so that broader appreciation of mining's critical role in advancing society can be recognized. Rio Tinto is working actively in this regard.

Modern mining practices, coupled with much stricter state and federal regulatory oversight, means mineral production today is far safer and protective of the environment. Rio Tinto seeks to work with communities to assist in contributions that extend the social and economic benefits of our mining operations beyond the life of those operations.

Claim: Mineral mining is a boom or bust industry. The prices of minerals are highly volatile; making metallic sulfide mines high-risk economic ventures.

Commodity prices rise and fall over time according to demand for metals by manufacturing industries. Basic laws of economics — supply and demand — play the primary role in the need for certain metals, just as these laws apply to other products and services in the marketplace.

As we are seeing currently, demand — and therefore prices — for some raw materials has fallen since mid-2008. That said, the demand for resources such as nickel, copper, iron ore, silver and other minerals, is expected to grow as local and global economies expand.

Rio Tinto takes a long-term view, responsibly adapting to economic conditions, and investing in quality, profitable mining operations aimed at supplying resources in response to demand. This approach has contributed to our success as a business, as a quality employer, on behalf of shareholders, and as a partner with communities where our mining operations exist. In this way, Rio Tinto is able to work with communities to provide lasting benefits and support.

Claim: Metallic sulfide mining is very expensive and even more costly to close and clean up. Mining companies have a long track record of abandoning mines and leaving the mess behind for taxpayers to clean up.

Proper reclamation of mine sites is imperative. The fiduciary responsibility for reclamation should fall to mining companies, and not to taxpayers. In this light, it is important that regulations require mining companies to demonstrate financial strength before permits are issued. Further, as is common today, financial bonds should be required of companies in amounts necessary to assure reclamation activities can be undertaken if necessary. The Michigan Legislature in 2006 enacted regulations that require bonding based on projected costs associated with reclaiming a mine to pre-mining conditions or restoring a sustainable ecosystem. As in Minnesota, Michigan regulators have annual authority to review the bond amount and adjust it as appropriate, based on bona fide engineering cost projections.

Claim: No sulfide mine has ever failed to yield acid drainage and pollute.

Clean, safe water to support ecologic and human needs is important to everyone. Preventing adverse impacts from potential acid rock drainage pollution is a top priority in designing and managing modern mining facilities. Technologies and practices exist to prevent the conditions that can lead to the creation of acid rock drainage, capture water associated with mineral extraction and treat it for safe return to the environment. While no industrial activity is totally without impacts, the extraction of minerals today can be done in a manner that controls and minimizes adverse environmental impacts.

Numerous methods for managing sulfide materials have been developed to prevent ARD formation as well as water treatment methods if prevention is not obtainable. For example, in Michigan, Rio Tinto's Kennecott Eagle project has been designed with two separate but complementary systems to protect the environment from the potential impacts to surrounding water bodies.

The first system prevents water that comes into contact with rock during the mining process from going into the ground or nearby water bodies. The system uses double walled piping and lined containment facilities with leak detection and collection systems to prevent contact water from going into the ground or into nearby water bodies.

The second is an on-site water treatment plant that purifies water from the operational areas of the mine to better than drinking water quality standards before being discharged back to the environment. In fact, the water treatment plant that will be used at the Eagle Mine in Michigan uses advanced technologies that far surpass most typical municipal water treatment plants. The purified water will be tested and monitored by Michigan Department of Environmental Quality to ensure that it meets all legal safety and environmental requirements before it is released back into nature.

Claim: The natural resources landscape is the source of valuable environmental services that make a location an attractive place to live, work, and do business. Mining disrupts that natural environment.

Rio Tinto recognizes the importance of minimizing our footprint on the natural environment, and becoming part of the existing fabric of the communities where we work, while respecting their unique qualities.

We work to understand community priorities and expectations before we develop operations. We then design our operations and mine closure plans to meet the community's goals. Our mine sites in the U.S. are in locations where vibrant communities exist, and where the natural environment is part of the economic and social life-blood. We have been successful in developing positive and enduring relationships in these communities, contributing to their betterment.

One example is our Kennecott Utah Copper Bingham Canyon mining operation near Salt Lake City, Utah, where the company has more than 100 years of working with the community and state. In fact in the early 1990s, Kennecott, together with the area surrounding the mine, was threatened by the US Environmental Protection Agency with listing as a Superfund site. The cost of such a listing was high, not just in terms of the costs of the clean up itself — which the company agreed would be done — but in terms of the additional legal and administrative costs which typically accompany a listing, as well as possible damage to reputation. At the time, the additional cost of the listing was estimated by the company at between US$50 million and US$100 million. In the end, Kennecott was able to mobilize local community support to oppose the listing and to secure instead agreement on a clean-up program. The two thousand comments on the proposed listing received by the EPA from the community were the largest number ever received in relation to a Superfund listing and were pivotal to the successful outcome. To date, Kennecott has spent some US$300 million on clean-up around the Bingham Canyon mine, over 90% of which has gone to the clean-up program itself as opposed to legal costs and administration.

The Flambeau Mine is another example where we have worked with the community to provide lasting economic benefit long after the mine has closed. At the community's request, the company developed an 80 acre extension to the Ladysmith Industrial development Park, the creation of 425,000 square feet of manufacturing space, and a new public library. A Northwest Regional Planning Commission Socioeconomic Study conducted in 2005 after the Flambeau Mine had been closed for several years, found that 70 percent of those surveyed agreed that the Flambeau Mining Company improved the well being of people in the area, and more than 75 percent said they would invite the company's return if the opportunity were presented.

Claim: Copper and other nonferrous mining will hardly be a savior for Minnesota.

Several current and prospective projects in Minnesota, as well as ongoing active exploration efforts in the state, present opportunities to grow Minnesota's mining sector, adding new job creation with high wage impact to complement other existing or emerging economic sectors.

Michigan's mining sector contributes substantially to the livelihood of the state's families, communities. According to United States Geological Survey records, approximately 31,850 jobs are generated by the mining industry, with per capita wages topping $60,000 annually – 43 percent higher than the state average private sector annual wage. Michigan's mining sector plays a significant role in the national economy. In 2007, Michigan's mining industry generated $5.6 billion in total output.

Claim: A mining company that owns or controls mineral rights to a property can mine private land without the owner's permission.

A mining company has no right to enter or mine private land if it does not either own or have lease rights to the minerals on that private land. In all situations, mining companies work closely with landowners to obtain their permission before initiating any exploration or operation activities. In cases where the mineral ownership rights have been severed from the surface ownership rights, often the mineral estate is held to be the dominant estate. However, mining companies always strive to maintain positive relationship with landowners, as access to land for exploration and possible mine development is critical, and can bring benefits to the surface owner as well as to the mining company.

According to the Michigan Department of Natural Resources and Environment (DNRE), private parties own the vast majority of minerals in the state, while the State of Michigan controls around 6% of all rights. Royalties from mineral leases are managed by the Michigan Resources Trust Fund for outdoor recreational projects throughout the State.

Claim: Wisconsin now has a moratorium on sulfide mining; to date no sulfide mining permits have been issued.

Since the Wisconsin Legislature in 1997 enacted Act 171, updating the state's metallic mining statute, no mining company has applied for permits. In that sense, it is true that no nonferrous mining permits have been issued.

Wisconsin's metallic mining law is rigorous, but accepting of mine applicants that can meet regulatory standards. Wisconsin law established two stringent criteria that applicants for a mining permit must meet to demonstrate that nonferrous mining can be done in a way that is protective of the environment.

The first requirement is to provide evidence to the Wisconsin DNR that an example mine operated for at least 10 years with no violations or significant pollution due to acid rock drainage or the release of heavy metals. The second requirement calls upon the applicant to demonstrate that an example mine has been closed for at least 10 years with no violations or significant pollution due to acid rock drainage or the release of heavy metals.

Several U.S. metallic mining operations would meet the provisions contained in the Wisconsin mining law, including Flambeau Mine.

Claim: Mining of sulfide ores is a particularly harmful type of mining that has not been conducted in Michigan before.

Mining of metallic minerals, such as copper, nickel, silver, gold and others has occurred for centuries dating back to the Bronze Age and continues today as these metals play a critical role in the manufacturing of a wide range of products and technologies. Today's mining practices, coupled with strict regulatory oversight and enforcement ensure that metallic mining is conducted according to permit conditions and in way that is protective of water, air, land, ecosystems and humans.

Ongoing exploration activities in Michigan by mining companies have identified potential deposits of metallic minerals that may be attractive to extract. Doing so would increase supply of these important minerals, create additional economic development and job creation for Michigan, and generate new revenues for local and state coffers.

It is the responsibility of the State Legislature, Michigan DNRE, mining interests, community and environmental organization leaders to ensure that there are comprehensive laws and regulations that clearly set forth the parameters for mining metallic minerals. Michigan's new mining law, Part 632, is a result of this collaborative effort. It is then incumbent upon mining companies and communities to work cooperatively in the best long-term interests of everyone.