



# GOLDEN RULES

Making the case for responsible mining



A REPORT BY EARTHWORKS AND OXFAM AMERICA

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Cover: Sadiola Gold Mine, Mali | Brett Eloff/Oxfam America

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Around the world, large-scale metals mining takes an enormous toll on the health of the environment and communities. Gold mining, in particular, is one of the dirtiest industries in the world. Massive open-pit mines, some measuring as much as two miles (3.2 kilometers) across, generate staggering quantities of waste—an average of 76 tons for every ounce of gold.<sup>1</sup>

In the US, metals mining is the leading contributor of toxic emissions to the environment.<sup>2</sup> And in countries such as Ghana, Romania, and the Philippines, mining has also been associated with human rights violations, the displacement of people from their homes, and the disruption of traditional livelihoods.



Godfried Ofori, a member of the Concerned Citizens Association of Prestea, Ghana, looks out over an open pit at the Bogoso/Prestea Mine.

## Introduction

Given the need to reduce the enormous footprint of the gold-mining industry, EARTHWORKS and Oxfam America teamed up to launch the No Dirty Gold campaign in 2004. The campaign seeks to clean up irresponsible mining practices and has called on manufacturers, retailers, and mining companies to respect human rights and environmental standards at gold and metals mining operations. More than 100,000 individuals have joined the campaign in urging companies to adopt such standards. And thus far, more than 25 jewelry companies have expressed their support for more responsible mining by endorsing the Golden Rules, a set of criteria for more responsible mining. This is significant, given that jewelry accounts for as much as 80 percent of gold consumption worldwide.<sup>3</sup>

### The Golden Rules

The Golden Rules are a set of criteria for more responsible mining. These criteria are based on broadly accepted international human rights laws and basic principles of sustainable development. The No Dirty Gold campaign developed the Golden Rules based on extensive reviews of documents and research prepared by the mining industry, civil society organizations, scientific researchers and technical experts, international bodies such as the UN, the World Bank's Extractive Industries Review, and other multistakeholder processes.

The No Dirty Gold campaign calls on mining companies to meet the following basic standards in their operations:

- Respect basic human rights as outlined in international conventions and laws.
- Obtain the free, prior, and informed consent (FPIC) of affected communities.
- Respect workers' rights and labor standards, including safe working conditions.
- Ensure that operations are not located in areas of armed or militarized conflict.
- Ensure that projects do not force communities off their lands.

- Refrain from dumping mine waste into oceans, rivers, lakes, or streams.
- Ensure that projects are not located in protected areas, fragile ecosystems, or other areas of high conservation or ecological value.
- Ensure that projects do not contaminate water, soil, or air with sulfuric acid drainage or other toxic chemicals.
- Cover all costs of closing down and cleaning up mine sites.
- Fully disclose information about social and environmental effects of projects.
- Allow independent verification of the above.

This report makes a case for more responsible mining and for adoption—at a minimum—of the Golden Rules criteria. The case studies that follow look at existing, proposed, or closed mines that violate one or more of the Golden Rules; their dirty practices risk tainting the reputation of mining companies and associated industries such as the jewelry industry. “Golden Rules: Making the case for responsible mining” is not an attempt to single out specific mining companies or imply that operations that have not been included are without problems. It is simply a snapshot of some of the more problematic practices that must be reformed in order to improve the mining industry’s record, to address consumers’ growing concerns, and to make real differences in the lives of affected communities.

While this report focuses on harmful mining practices, there are signs of change within the industry and examples of responsible practices at some operations. Through the Initiative for Responsible Mining Assurance (IRMA), mining companies, jewelers, community representatives, unions, and nongovernmental organizations are working to establish best practice standards for mining operations, as well as a system to independently verify compliance with those standards. If this initiative succeeds, consumers could purchase jewelry or other products that are independently certified as more responsibly produced. Such a scenario would benefit consumers, retailers, and mining companies.

The purpose of spotlighting the issues of concern is to create incentives that lead to change. There are also positive signs. For example, the world’s largest mining company, BHP Billiton, has stated it will no longer dump mine waste into rivers or off coastal waters.<sup>4</sup> BHP also supported a conflict resolution process with local communities at a former operation in Peru. Newmont Mining Corporation and other companies have publicly committed to disclosing revenue payments to governments. In 2007, the Newmont board supported a shareholder resolution to undertake an assessment of community relations at its mines. And to tap into metals already circulating in the economy, Xstrata Recycling, part of the Xstrata Mining group, is producing metals from electronics waste, such as cell phones and computers.

These first steps indicate that implementing the Golden Rules is technically possible—if companies have the will to act and support from their shareholders and consumers. Implemented as a whole, the Golden Rules can lead to meaningful improvements in the lives and health of communities and ecosystems in mining regions around the world.

We welcome feedback on these case studies. We are asking each of the companies represented in this report to engage with us and other stakeholders to discuss these case studies and look for ways to make progress with regard to these practices and broader company policy. We hope this will lead to constructive dialogue and real improvements on the ground.





MINERAL POLICY INSTITUTE

# GOLDEN RULE:

Respect basic human rights as outlined in international conventions and laws.

Some large-scale mining operations have been linked to human rights violations. These mining companies rely on local military, police forces, and private security contractors to protect their operations from community members and protestors who may be concerned about contamination of local waterways or loss of access to land. At several mine sites around the world, violent conflict has occurred between security forces and local people, in some cases resulting in serious human rights violations. The severest impacts have been felt by vulnerable groups such as indigenous people and women.

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Grasberg, the world's largest gold mine, is shown in the background. Ertsberg pit is in the foreground. Both are located in West Papua, Indonesia.

# Grasberg Mine

The Grasberg Mine, also known as the “Freeport Mine,” is located in the Indonesian province of West Papua and operated by US-based Freeport-McMoRan, which jointly owns the operation with United Kingdom-based Rio Tinto and the Indonesian government. It is the world’s largest gold-producing mining operation.<sup>5</sup> The mine is set high in the Jayawijaya Mountains, in an area of significant ecological and cultural sensitivity. The area is home to a number of indigenous groups, including the Amungme people, on whose land the mine was built, and the Kamoro people, whose land was appropriated in order to dispose of mine “tailings,” or liquefied mine waste. The borders of the Lorentz National Park, a pristine rain forest that is a UN World Heritage Site and one of the most biodiverse areas in the region, were moved to accommodate the mine.<sup>6</sup>

Grasberg has generated significant controversy because of its waste disposal methods, impacts on a sensitive ecosystem, lack of transparency, and conflicts with communities around human rights and other issues. The mine generates a staggering amount of waste—700,000 tons per day—and it is estimated that the mine will produce 6 to 7 billion tons of waste in its lifetime.<sup>7</sup> This may well be the largest volume of waste produced by any single industrial activity in the world.<sup>8</sup>



The Grasberg Mine will generate an estimated 6–7 billion tons of waste over its lifetime, much of which is being dumped into the Ajkwa River system.

It is also estimated that the mine waste will eventually destroy 90 square miles (233 square kilometers) of wetlands downriver from the mine.<sup>9</sup> And the mine waste, which washes out of the river and into Arafura coastal waters, is already affecting the estuaries of the Lorentz National Park, according to reports.<sup>10</sup> Local indigenous communities have strongly protested the environmental degradation that has destroyed their traditional lands and livelihoods.

To protect its operations, Freeport-McMoRan made payments of \$20 million to the Indonesian police and military—both of which have a very poor human rights record—between 1998 and 2004.<sup>11</sup> According to community records, 160 people were killed in the mine area and surroundings between 1975 and 1997.<sup>12</sup>

Freeport-McMoRan has consistently denied the severity of the human rights and environmental problems at Grasberg and thus far has not heeded government orders to reduce the impacts of the operation.<sup>13</sup> Meanwhile, local anger and frustration has intensified, leading to violent protests in March 2006, in which four police officers were killed.<sup>14</sup>



**Location:** West Papua, Indonesia

**Companies:** Freeport-McMoRan Copper & Gold Inc., Rio Tinto

### Major Problems:

- Providing financial support to police and military forces, which each have a history of human rights violations
- Dumping millions of tons of mining waste into the river, destroying an important estuary at the river’s mouth
- Harming the health and livelihoods of people living downstream who depend on river water

### Recommendation on Human Rights:

Freeport-McMoRan and other mining companies should implement policies to ensure that the mining operation and its security forces do not continue to perpetrate human rights violations or operate against the community’s wishes.



ERNESTO CABELLOS/GUARANGO MOVIE AND VIDEO

## GOLDEN RULE:

### Obtain the free, prior, and informed consent (FPIC) of affected communities.

Communities around the world are increasingly resisting mine development that is carried out without their free, prior, and informed consent. The concept of FPIC, which gives communities a significant role in decision-making about a project that would affect them, is rooted in international human rights law, such as the International Labor Organization's Convention 169, and is also recognized by several national governments.<sup>15</sup> The World Bank, an important financial backer of mining projects, now recognizes what some see as a weaker form of FPIC, called "broad community support," in its policies.<sup>16</sup>

Under FPIC, a mine cannot begin operations, or expand existing ones, without the consent of local communities. Indigenous peoples and local communities argue that respect for FPIC is essential for protecting their ways of life and for ensuring that they play a meaningful role in determining the sort of development that is most appropriate in their area. For indigenous peoples, respect for FPIC is also a critical means of protecting sacred sites and lands that hold important cultural, spiritual, and historical significance and that make up a critical component of their indigenous identity.

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Thousands of people live near the Yanacocha Mine in Peru, Latin America's largest gold-mining operation.



# Yanacocha and Cortez Mines

Two ongoing struggles against the expansion of major mining projects illustrate the importance of FPIC and the protection of sacred sites. At Newmont’s giant Yanacocha Mine in northern Peru, South America’s largest gold mine, local residents have staged massive protests against the expansion of existing operations. In 2004, Newmont attempted to expand the mine to Cerro Quilish, a mountain that local communities believe is an important source of water for the area and a place of cultural and historical significance. The local municipality had declared Cerro Quilish, which contains an estimated three million ounces of gold, a protected area in 2000.<sup>17</sup>

In late 2004, thousands of local community members—men, women, and children—attempted to prevent the destruction of Cerro Quilish by blockading the main road leading to the mine. Over the course of two weeks, they endured tear gas, arrests, and violence from police.<sup>18</sup> This showdown forced the company to evacuate staff and temporarily suspend operations. Newmont issued a public statement saying it had not fully understood the degree of opposition to the expansion and would not plan to develop Cerro Quilish.<sup>19</sup>



The Western Shoshone people want to keep Mount Tenabo off-limits from mining.

In the days that followed, community members, local authorities, and leaders of civic and religious groups began a dialogue with the mining company and the mining ministry.<sup>20</sup> But protests over water resources resumed in August 2006, when one activist was killed in a clash with police. In May 2007, protests erupted again.<sup>21</sup> That same year, Newmont’s board and shareholders supported a resolution calling for a global review of the company’s relations with, and impacts on, affected communities. This review presents Newmont with an opportunity to evaluate seriously—and potentially improve—its performance with regard to community relations in Yanacocha and elsewhere.

Nearly 10 percent of the world’s gold production—and 64 percent of US production—comes from the lands of the Western Shoshone.<sup>22</sup> In northern Nevada, Mount Tenabo has been the spiritual home of the Western Shoshone people for millennia. Mount Tenabo also happens to be part of expansion plans for Barrick Gold’s Cortez Gold Mine. The Western Shoshone have pursued various legal means to protect the land from mining, including taking their case to international human rights bodies, which have in turn called on the US government to respect the full rights of this Native American people.<sup>23</sup>

In some cases, the most obvious costs of irresponsible mining on the lands of indigenous peoples may not necessarily be related to their finances or physical health. Instead, the Western Shoshone and many other indigenous peoples believe that the desecration of sacred lands and sites is a deeper offense, and one that threatens their cultural survival.

“In the past, our people experienced almost complete genocide; now we face the second half—a spiritual genocide from the destruction of our lands and the sites that anchor our beliefs,” said Carrie Dann, executive director of the Western Shoshone Defense Project.



**Locations:** Northern Peru and Nevada, USA

**Companies:** Newmont Mining Corporation, Barrick Gold Corporation

**Major Problems:**

- Failing to obtain community consent for mine expansion
- Ignoring community concerns about impacts on sacred and culturally sensitive sites

**Recommendation on Free, Prior, and Informed Consent:**

Newmont and all companies should adopt and implement global policies respecting FPIC.



CFMEU

## GOLDEN RULE:

Respect workers' rights and labor standards, including safe working conditions.

Mine workers face many serious threats to their health and safety. The risks of traumatic injury, hearing loss, heat stroke, radon exposure, lung disease, and exposure to chemicals such as cyanide are of grave concern.<sup>24</sup> Mining companies must limit the exposure of workers to these threats and must respect the rights of workers as outlined in the eight core conventions of the International Labor Organization.

The right to form a union is especially important for mine workers, given the often-dangerous nature of their work. They also need access to collective bargaining in order to establish fair compensation packages. If mining companies do not respect workers' rights to unionize, bargain collectively, and follow best labor standards, those companies threaten their workers' well-being—and violate the Golden Rules.

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Mine workers urge BHP Billiton to negotiate with their union.

# BHP Billiton Iron Ore Mines



Mine workers demonstrate against labor policies at BHP Billiton's Australian Iron Ore Mines.

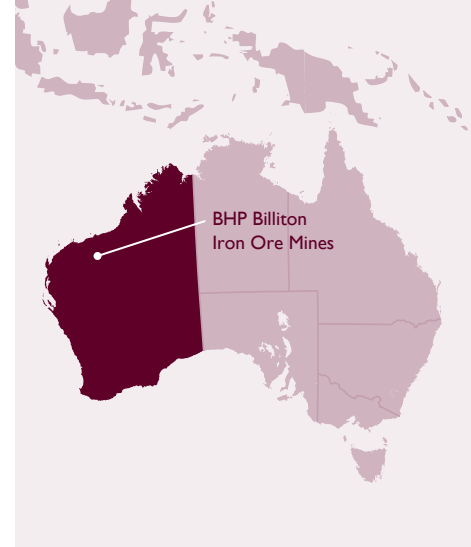
The Australian firm BHP Billiton, the world's largest mining company, owns several iron ore mines in the Pilbara region of western Australia. Together these mines are among the top three producers of iron ore in the world market. Unfortunately, the company's actions at these mines also violate basic labor rights.

After refusing to enter into negotiations for a new collective agreement to replace one expiring in 1999, the management of the BHP Billiton Iron Ore Mines in western Australia announced that they would no longer bargain with unions.<sup>25</sup> BHP Billiton also made it clear that workers would not receive pay raises unless they signed individual contracts that prevent collective bargaining.<sup>26</sup>

In addition to directly denying wage increases to union workers at these mines, BHP Billiton urged the Australian Fair Pay Commission to refuse a minimum wage increase to miners who collectively bargained.<sup>27</sup> In an apparent breach of an International Labor Organization Convention, they also required each new employee to sign a statutory individual employment contract, now known as an Australian Workplace Agreement (AWA), which prevented workers from bargaining collectively.<sup>28</sup> As one worker stated: "You don't have a choice. You either sign the agreement or you don't get a job, simple as that."<sup>29</sup>

Because of these workplace agreements, workers were denied the protection of a collective voice and hesitated to complain about unsafe conditions. Several workers felt pressure to keep quiet about safety concerns.<sup>30</sup> Some complained that the company's failure to provide lighting to assist truck drivers in dumping waste at night made many feel unsafe.<sup>31</sup> A mine foreman quit over the treatment he received after reporting a safety concern.<sup>32</sup> Tony Maher, president of the Construction, Forestry, Mining, and Energy Union (CFMEU), said: "At Mount Newman, they are dominated by AWAs; people don't have the protection of a union; they're not able to speak up on safety concerns."<sup>33</sup> These problems came on the heels of safety concerns and investigations triggered in 2004 by the death of three miners at BHP Billiton Mines in Pilbara.<sup>34</sup>

In June 2007, more than 100 workers signed a petition calling for improved standards and an end to the discrimination against unionized mine workers.<sup>35</sup> Although BHP Billiton declared that it would improve training and communication at the mines, it also lobbied officials to keep the anti-union laws allowing the individual contracts.<sup>36</sup>



**Location:** Pilbara, western Australia

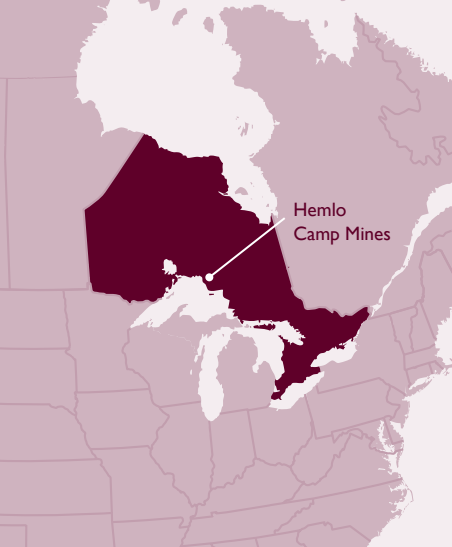
**Company:** BHP Billiton

## Major Problems:

- Refusing to bargain with unions
- Denying salary raises to unionized workers who chose to bargain collectively
- Requiring individual contracts limiting collective bargaining for new hires
- Discouraging workers from reporting safety problems

## Recommendation on Workers' Rights:

BHP Billiton and all companies should respect workers' rights to freely organize, form unions, and collectively bargain—without risking job security or other negative consequences of exercising such rights.



## Hemlo Camp Mines

The Hemlo Camp Mines of northern Ontario are productive gold mines that include the David Bell and Williams Mines (owned by Canadian firms Teck Cominco Ltd. and Barrick Gold Corporation) and the former Golden Giant Mine (owned by the US' Newmont Mining Corporation).<sup>37</sup> These mines illustrate what can happen when mining companies do not adequately protect workers from occupational health threats.

Over the years, an alarming number of miners at Hemlo Camp have contracted silicosis, a lung disease linked to silica dust exposure.<sup>38</sup> Inhaled silica particles cause inflammation in the lungs and lead to the development of fibrous masses that impede breathing.<sup>39</sup> Silicosis can cause tuberculosis and can also progress to lung cancer and death.<sup>40</sup> Mining for several types of minerals, including gold, can expose workers to silica dust, but this can be prevented with the appropriate safety measures.

Silicosis has long been a threat to miners' health in Ontario, but a recent resurgence in cases between 1991 and 2001 attracted the attention of local health and safety officials.<sup>41</sup> At least 16 Hemlo miners demonstrated symptoms of silicosis and filed for compensation during that time.<sup>42</sup>

Reports indicate that additional victims may have hidden their diagnosis in order to continue working in high-paying parts of the mine.<sup>43</sup> Bill Sullivan, a miner who contracted silicosis, explained the surprising nature of the disease's prevalence: "At our mine, everybody said silicosis was a thing of the past, and I believed that."<sup>44</sup>

The recent surge in cases of silicosis in the area is believed to have resulted from inadequate dust control in the mines and inadequate air quality and health monitoring.<sup>45</sup> Workers also raised concerns about the use of a new mine-filling product called paste fill, which can create silica dust if worked on when it is dry.<sup>46</sup> Workers diagnosed with silicosis by X-ray but without overt symptoms were also ineligible for reassignment to work with less exposure to silica.<sup>47</sup>

Excessive silica air pollution persisted in the mines at least into 2003. In response, the miners' union pressured the mining companies and Ontario government for compensation and reassignment for victims of silicosis.<sup>48</sup> But even an Ontario member of Parliament's call for a public inquiry into the lung disease prevalence at Hemlo was ignored.<sup>49</sup>

In response to the companies' refusal to recognize the validity of the workers' claims about silicosis, union official Harry Green explained that the workers "didn't get silicosis from walking on the frigging beach."<sup>50</sup>

**Location:** Ontario, Canada

**Companies:** Barrick Gold Corporation, Teck Cominco Ltd., Newmont Mining Corporation

**Major Problems:**

- Failing to adequately monitor silica dust conditions in mines
- Failing to adequately prevent exposure of mine workers to the risk of silicosis

**Recommendation on Workers' Health and Safety:**

Workers' health and safety must be protected at all mining operations. Independent inquiries should be conducted to assess health problems, implement relevant prevention measures, and ensure funding for assisting disabled or sick workers and their families.



Silicosis rates among workers have been unusually high at the Hemlo Camp Mines in Ontario, Canada.





DIEGO NEBEL/OXFAM AMERICA

A woman from a local community points towards the Tintaya Copper Mine in Peru. In 2004, after two years of dialogue, local community groups reached agreement with former mine-owner BHP Billiton to address longstanding grievances.



RICHARD WAINWRIGHT/CATHOLIC AGENCY FOR OVERSEAS DEVELOPMENT

# GOLDEN RULE:

Ensure that operations are not located in areas of armed or militarized conflict.

As in the case of “blood diamonds,” gold has fueled violent conflicts in parts of Africa and the Pacific. In Africa, the struggle for control of lucrative gold deposits has contributed to violence among armed factions. In at least one situation, a gold-mining company provided financial and logistical assistance to armed groups. On Papua New Guinea’s Bougainville Island, concerns among local populations about mining’s negative environmental impacts and lack of community benefits led a local group to take up arms and, ultimately, precipitated a civil war.

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Artisanal miners work near the Mongwalu Mine in the Democratic Republic of Congo, where gold mining has been linked to violent conflict.

# Mongbwalu Mine

The Mongbwalu Mine is located in the Ituri district in the eastern Democratic Republic of Congo (DRC), an area replete with diamonds, gold, and other mineral resources. Despite, or possibly because of, the riches in the ground, the area has also been cursed by continuous war since the ousting of the dictator Mobutu Sese Seko in 1997. Since that time, the area has been controlled by various rebel groups that are funded by the area's riches and driven by ethnic divisions. The diamonds and gold are typically smuggled over the border into Uganda, and from there they enter global markets. According to Human Rights Watch, the profits from the sale of these smuggled goods have helped to finance Ituri's warlords and to perpetuate the conflict.

AngloGold Ashanti (AGA), a major gold-mining company based in South Africa, obtained the Mongbwalu land concession in Ituri district in 1998. But a large-scale, cross-border war being waged in the DRC prevented the company from starting exploration work until 2003.<sup>51</sup> Even then after peace agreements were signed, and relative peace was restored to the western part of the country, the war between rebel groups for control of the eastern DRC continued to rage. In 2003, the Nationalist and Integrationist Front (FNI) had de facto control over the community of Mongbwalu, which included AGA's concession.<sup>52</sup>

A 2005 report, "The Curse of Gold," by Human Rights Watch, uncovered a relationship between AGA representatives and the FNI that included AGA's providing financial and logistical support in exchange for access to the mining concession and the security of AGA staff and installations.<sup>53</sup> While the company asserts that payments were made to the FNI under duress, the payments nonetheless represent a possible violation of UN Security Council Resolution 1493, which ordered that states ensure that "no direct or indirect assistance, especially military or financial assistance, [be] given to the movements and armed groups present in the DRC."<sup>54</sup> The Human Rights Watch report also states that AGA made efforts to lobby UN staff on behalf

of the FNI and to provide housing for the group's leader.<sup>55</sup>

In response to the allegations, AGA stated in 2004 that there was no "working or other relationship with the FNI."<sup>56</sup> But it later acknowledged that it had made certain payments in the past to the FNI, including one in January 2005 that was made under "protest and duress."<sup>57</sup> AGA also said that any contacts it had with the FNI leadership were "unavoidable."<sup>58</sup>

Throughout the duration of the relationship with AGA, the FNI was, according to Amnesty International, engaged in the "systematic extermination of people, civilians, or otherwise, on the basis of their ethnic identity."<sup>59</sup> Between June 2002 and September 2004, at least 2,000 civilians died in clashes between the FNI and other armed groups as they struggled for control of Mongbwalu and its assets.<sup>60</sup> The FNI brutality included campaigns of ethnic killing in and around Mongbwalu. Victims of the FNI attacks were often left dead in the streets with their arms tied and various body parts cut off.<sup>61</sup> Despite the violence inflicted by the FNI and other rebel groups and its detrimental impact, AGA deemed the risk of operating in a conflict zone as "manageable."<sup>62</sup>

Free presidential elections, implemented successfully in 2006, and the resulting election of Joseph Kabila began a slowly spreading peace in the DRC. Rebel violence continued in Ituri until April 2007 when Peter Karim, the commander of the FNI, one of the last remaining military groups in Ituri, surrendered to the DRC government with seven of his officers.<sup>63</sup> The region is still considered unstable because of the several hundred rebels who did not surrender, but there are no leaders of organized groups left.<sup>64</sup>

Despite the work of the UN peace-keeping mission to stabilize the area, much remains to be done.<sup>65</sup> AGA has the opportunity to reverse its past influence by assisting, financially and logistically, in the reconstruction of Mongbwalu's infrastructure and economy.



**Location:** Ituri District, the eastern Democratic Republic of Congo

**Company:** AngloGold Ashanti Ltd.

### Major Problems:

Developing business ties with and supporting a militia group responsible for massive human rights violations in order to facilitate access to a lucrative mining concession

### Recommendation on Conflict Zones:

AngloGold Ashanti and other mining companies should adopt strict policies against operating in conflict zones and against conducting business with entities that directly or indirectly support conflict.





## **GOLDEN RULE:**

**Ensure that projects do not force communities off their lands.**

In places as diverse as Ghana and the Philippines, local communities, indigenous peoples, and individuals have been forcibly evicted from their lands to make way for mining projects. While most mining companies say they would wish to avoid such a situation, the industry as a whole has yet to establish a firm policy against this sort of eviction. Implementing such a policy would go a long way to reducing the social costs of mining.

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A proposed gold mine threatens to convert the village of Rosia Montana, Romania, into four open-pit mines.



# Rosia Montana Mine

The area of the proposed Rosia Montana Gold Mine is located in the Apuseni Mountains of west central Romania. If constructed by Canada's Gabriel Resources, Rosia Montana would become Europe's largest open-pit gold-mining operation and transform the densely inhabited Rosia Montana valley—the oldest documented settlement in Romania—into four open-pit mines.<sup>66</sup>

From the outset the venture has been beleaguered by scandals; operational problems; and vehement local, national, and international opposition. Opposition to the mine is based in part on the disastrous experience at the Baia Mare Gold Mine in Romania, where a cyanide spill in 2000 polluted the Tisza and Danube Rivers, contaminating the drinking water supplies of 2.5 million people and killing 1,200 tons of fish.<sup>67</sup> Romania's neighbor, Hungary, whose eastern rivers face the risk of pollution stemming from the mine, and the European Parliament are also concerned about the project's potential negative impacts.<sup>68</sup>

The plan calls for blasting the landscape to create four open-pit mines in the Rosia Montana Valley. Additionally, the neighboring valley of Corna would be used as a largely unlined disposal area for tailings containing residual cyanide, covering up to 1,500 acres (600 hectares) and held back by a 607-foot-high dam (185 meters).<sup>69</sup>



Residents march in support of protecting Rosia Montana and its people from mining.

The project has been heavily criticized by archaeologists who are worried about the potential destructive impact on the area's unique cultural and historical treasures dating back to Roman and pre-Roman times.<sup>70</sup>

“Rosia Montana is threatened by extinction under the banner of so-called ‘development,’ ” said Eugen David, president Alburnus Maior, a local community group representing hundreds of families who oppose the mine and refuse to sell their lands to the mining company.<sup>71</sup> Rosia Montana's churches, which are among the town's largest property owners, have likewise declared that they will not sell to the company.

While there are those who support the proposed mine, there is also strong opposition. Gabriel Resources' response to opposition has been the threat of forced expropriation from those property owners unwilling to sell their land.<sup>72</sup> Many financial institutions, including the World Bank, have recognized the severity of risks associated with forced displacement and advise their clients not to expropriate lands or use governmental authorities to remove people. A loan request by Gabriel Resources to the International Finance Corporation, the World Bank's private arm, was turned down in October 2002, resulting in a blow to the company's credibility.<sup>73</sup> In January 2007, 80 organizations across Romania, Hungary, the Czech Republic, Moldova, Canada, and the US released a statement of opposition to the Rosia Montana Mine, explicitly noting the potential destructive aspects of the mine.<sup>74</sup> In response to such concerns and objections to the mine, the government of Romania suspended environmental review of the project and revoked an archaeological permit in the fall of 2007.<sup>75</sup>



**Location:** Rosia Montana Valley, Romania

**Company:** Gabriel Resources Ltd.

### Major Problems:

- Threatening the forced displacement of inhabitants of the Rosia Montana Valley who refuse to sell their land
- Failing to obtain the FPIC of affected communities since the inception of the company's activities at Rosia Montana
- Risking contamination of water and soil with sulfuric acid and cyanide
- Threatening to destroy cultural sites and monuments protected under Romanian legislation

### Recommendation on Forced Displacement:

Companies should develop and adhere to policies against forced displacement at all of their operations.



CATHERINE COUMANS/MININGWATCH CANADA

## GOLDEN RULE:

Refrain from dumping mine waste into oceans, rivers, lakes, or streams.

The dumping of liquid mining waste, or tailings, into natural water bodies such as rivers and oceans is among the mining industry's most controversial practices and can have destructive impacts on water resources, ecosystems, and community health. Known euphemistically as "riverine tailings disposal" and "submarine tailings disposal," these practices are effectively banned in countries such as the US, Canada, and Australia because of the profound environmental damage they can cause. Yet mining companies from these same countries continue to use these practices in places such as the Philippines, Indonesia, and Papua New Guinea. On a positive note, some firms have banned riverine tailings disposal from their operations—this includes Australia's BHP Billiton, which has also adopted a policy against the use of tailings disposal in coastal waters.

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Mine waste being piped directly into shallow ocean waters at the Marcopper Mine in the Philippines.

# Marcopper, Minahasa Raya, and Batu Hijau Mines

Submarine tailings disposal—the dumping of mine waste into the sea or ocean through a submerged pipe—is a serious and growing threat, especially in the Asia-Pacific region, where ocean dumping most frequently occurs. The mountainous islands in this region are prone to earthquakes and high rainfall. Given the limited land space, the companies using ocean dumping sometimes justify the practice by saying that land-based waste-disposal systems are not practical.<sup>76</sup>

But ocean dumping—in both shallow coastal and deeper waters—is a significant ecological concern. Coastal waters are biologically the richest parts of the oceans. These same waters are where Placer Dome’s Marcopper Mine pumped 200 million tons of mine waste into a shallow bay over a period of 16 years, carpeting 30 square miles (80 square kilometers) of seabed, suffocating coral reefs and reef fish.<sup>77</sup>

Ocean dumping is also a public health concern. In the late 1990s, researchers investigating the deaths of three children in Marinduque Island, the Philippines, found dangerously high levels of lead and cyanide in their blood.<sup>78</sup> On the island of North Sulawesi in Indonesia, the fishing community of Buyat Bay alleges that toxic mine waste from Newmont’s Minahasa Raya Gold Mine has led to numerous health problems, including skin rashes and sores, severe headaches, tumors, and reproductive health problems.<sup>79</sup> PT Newmont Minahasa Raya, a subsidiary of Denver-based Newmont Mining Corporation, and its president were prosecuted by the Indonesian government over the pollution and illness charges but were acquitted in April 2007.<sup>80</sup> There is clearly a need to develop a more definitive assessment of human health risks of this controversial practice.

In response to public health and ecological concerns, some companies propose to turn to disposal strictly in deeper ocean waters. Some in the mining industry claim that in deeper waters, oxygen levels are low enough to substantially reduce the oxidation reactions that release heavy metals from the mine waste into the environment.<sup>81</sup> This is the practice being used by Newmont Mining on the Indonesian island of Sumbawa at its Batu Hijau Mine, which is vastly bigger than Minahasa Raya. However, deep-sea disposal remains controversial because so little is known about the ecology of the ocean floors, and because of the possibility that broken pipes, underwater currents, or geologic activity could disperse the waste into shallower waters.<sup>82</sup> In fact, Batu Hijau has had at least three pipe breaks since it opened in 1999.<sup>83</sup> The burden of proof in regard to deep-sea disposal remains on the proponents. There is currently insufficient scientific analysis to justify industry assertions that risks can be effectively managed or mitigated.



The dumping of mine waste into oceans threatens Papua New Guinea’s coral reefs.



**Location:** The Philippines and Indonesia

**Companies:** Placer Dome (now owned by Barrick Gold Corporation), Newmont Mining Corporation

**Major Problems:**

- Damaging aquatic ecosystems, including coral reefs, by dumping massive quantities of chemical-tainted mine waste off coastal waters
- Exposing fishing communities to health risks through consumption of contaminated fish and direct contact with polluted water

**Recommendation on Tailings Disposal:**

Companies should apply the precautionary principle when considering submarine or riverine tailings disposal, and adopt policies banning these controversial and destructive practices.



Porgera Gold Mine

## Porgera Gold Mine

Barrick Gold’s 5,600-acre (2,266-hectare) open-pit complex called the Porgera Mine, located in Enga, the highest and most rugged province in Papua New Guinea, dumps all of its liquid mine waste into tributaries of the Strickland River.<sup>84</sup> On its path to the Pacific Ocean, this river flows through some of the world’s most biologically diverse areas, as well as the homes of numerous indigenous groups. Many of these people continue to practice traditional subsistence livelihoods, relying on water from the Strickland River. Barrick acquired the majority interest in Porgera Mine through its acquisition of Placer Dome in late 2005.<sup>85</sup>

The Porgera Mine, originally an underground mine, began shifting to open-pit mining around 1993 and increased both its gold and tailings output gradually since then. The mine now removes over 210,000 tons of ore and waste per day from the mine.<sup>86</sup>

Additionally, the mine dumps its waste rock onto designated “erodible dumps”—piles of waste material that, with the force of gravity and the heavy rains of the region, gradually wash into the river over time. Between 10 million and 15

million tons of this waste rock enter the river system each year.<sup>87</sup> Independent scientific studies have found that river dumping has had serious impacts on the river system, and the studies’ authors have urged the company to review its waste disposal practices.<sup>88</sup>

Local indigenous people say the mine has done more than pollute their main water source. They say the mine is guilty of human rights abuses, specifically shootings, killings, and other abuse by the mine’s security forces. In 2005, Placer Dome, the mine’s former owner, acknowledged eight killings by security forces.<sup>89</sup> The company says the killings are linked to illegal mining by villagers on mine property, a contention disputed by local community representatives.<sup>90</sup>

**Location:** Enga province, Papua New Guinea

**Company:** Barrick Gold Corporation, Orogen Minerals Ltd.

**Major Problems:**

- Dumping millions of tons of mine waste into the Strickland River system each year
- Alleged human rights abuses, including shootings, by the mine’s security forces



OXFAM AUSTRALIA

Communities living near Papua New Guinea’s Porgera Gold Mine rely on the Strickland River system, into which the mine dumps millions of tons of mine waste each year.





DAVID SPROULE/OXFAM AUSTRALIA

Fishermen sail past mine-tailings discharge pipes at Calancan Bay on Marinduque Island in the Philippines. The Marcopper Mine pumped 200 million tons of waste into this shallow bay over a 16-year period.



ERIN MCKITTRICK

## **GOLDEN RULE:**

Ensure that projects are not located in protected areas, fragile ecosystems, or other areas of high conservation or ecological value.

As more accessible deposits of gold and other metals are depleted, mining companies are increasingly looking to mine in environmentally sensitive areas, including rain forests, forest reserves, and fragile mountain environments. Areas protected for cultural or historical reasons have also come under threat from mining. Such areas can never be fully restored to their pre-mining conditions, even with appropriate reclamation measures. In some cases, mining companies have sought to overturn local or national protected area designations in order to pursue development of valuable deposits.

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Alaska's Bristol Bay watershed, the site of the proposed Pebble Mine, supports the world's largest sockeye salmon run.

# Junín Mine

In 2004, a Canadian mining company called Ascendant Exploration (now Ascendant Copper) acquired the rights to a copper land concession in the Intag cloud forest region of Ecuador. Ascendant acquired the rights in order to mine the southern side of the Toisan, a mountain range that predates the Andes.<sup>91</sup> The Toisan forms a natural border between Intag and the Cotacachi-Cayapas Ecological Reserve. It is the largest protected area in western Ecuador.

The Intag cloud forest region, home to spectacled bears, howler monkeys, pumas, jaguar, the critically endangered brown-headed spider monkey, and a population of 18,000 peasant farmers, is an integral part of the last remaining stretch of these forests. Barely 10 percent of Ecuador's western forests remain.<sup>92</sup> The copper deposit itself lies under a 7,413-acre (3,000-hectare) community-owned nature reserve in Junín. For more than a decade, local communities and organizations have been working to protect this region from large-scale mining through peaceful resistance. Bishimetals, a subsidiary of the Japanese giant Mitsubishi Corporation, arrived in Intag in the early 1990s but left a few years later in the face of strong community resistance.<sup>93</sup>

The community of Junín, along with several other communities in the Intag region, remains strongly opposed to mining.<sup>94</sup> These communities have been working with local organizations to establish alternative forms of development, including an organic, shade-grown coffee cooperative, a community-run ecotourist project, and 15 community-based ecological reserves that protect local watersheds and the area's endangered biodiversity.<sup>95</sup>

Carlos Zorrilla, president of the community organization Defensa y Conservación Ecológica de Intag (DECOIN), says: "What is unique about Intag, and why it's especially important to stop this project, is because of the emergence of a sustainable society. Here, we are taking firm steps to reform development priorities and the way

we live off the earth." In support of DECOIN's efforts, Cotacachi County, which includes Intag, was declared an Ecological County by its own municipal government in 2000.<sup>96</sup> The measure, backed by a legally binding Municipal Ecological Ordinance, seeks to reorient development in the county by promoting sustainable activities.

Local residents report increasing levels of intimidation and harassment by mining proponents, including smear campaigns, death threats, assaults, and police raids. In July and August 2007, violence escalated in communities throughout Intag with a series of attacks against anti-mining activists.<sup>97</sup> While local police have yet to identify or charge those responsible for the recent attacks, the UN office of the High Commissioner for Human Rights is investigating allegations that mining proponents are targeting Ascendant's critics in order to stifle opposition.<sup>98</sup>

In August 2007, Ecuador's president called for a special assembly to review national policies, including its mining policy. The following month, the Ministry of Mines and Petroleum ordered Ascendant to suspend activities in Junín, arguing that the company had violated mining regulations.<sup>99</sup> The future of the forests of Intag could depend on the outcome of the review of the mining policy.



CARLOS ZORRILLA/DECOIN

Proposed copper mining threatens Ecuador's Intag cloud forest, home to spectacled bears, jaguars, and spider monkeys.



**Location:** Intag cloud forest, western Ecuador

**Company:** Ascendant Copper Corporation

### Major Problems:

- Planning to mine in a community-owned nature reserve, part of the last remaining stretches of the Intag cloud forest region and home to endemic and endangered species
- Undermining the local communities' attempt to develop the area in an ecologically beneficial manner
- Creating unrest through intimidation and harassment of local residents

### Recommendation on Protected or Sensitive Areas:

Companies should adopt policies and practices that protect environmentally or culturally significant areas—and recognize that there are some areas that must remain off-limits to mining. The commitments made by some companies to refrain from mining at World Heritage Sites are a step in the right direction.



Proposed Akyem Mine

**Location:** Ajenjua Bepo Forest Reserve, Ghana

**Company:** Newmont Mining Corporation

**Major Problems:**

Threatening to damage portions of one of Ghana's last remaining forests, which is home to 83 species of birds and endangered mammals

## Akyem Mine

One of Ghana's last remaining forests, the Ajenjua Bepo Forest Reserve, sits atop a large gold deposit. Newmont Mining wants to develop an enormous open pit in the forest, one that would measure 1.65 miles long (2.6 kilometers), a half mile across (.8 kilometers), and more than a quarter mile deep (402 meters). The proposed pit's dimensions, as well as how the pit will be reclaimed after mining, have sparked off controversy that has led to a delay in the mine's permitting process.<sup>100</sup> If developed, Akyem would become the largest open-pit mine in Ghana and would destroy some 183 acres (74 hectares) of forest in the reserve.<sup>101</sup>

Much of Ghana's forested land has been denuded over the past 40 years. Only 2.9 million acres (1.2 million hectares), or less than 11 percent of the original forest cover, remain, most of which can be found in the country's forest reserves.<sup>102</sup> The forests are part of the Guinean Forests of West Africa biodiversity hotspot and endangered ecoregion.<sup>103</sup> Ghana's leading environmental groups argue that these forest reserves should remain off-limits to mining.<sup>104</sup> They also point to the diversity of species that the Ajenjua Bepo Forest Reserve supports, in particular the 83 species of birds, as well as threatened and endangered species such as Pohle's fruit bat, Zenker's fruit bat, and Pel's flying squirrel.<sup>105</sup> The forest reserves of Ghana are also extremely important for protecting many rare and threatened plant species.<sup>106</sup>

Communities living around the forest fear the mine will pollute their water sources by destroying forests and by releasing chemical contaminants.<sup>107</sup> "Our fears keep mounting every minute. We know that the mine will cause irreversible harm to the streams and rivers in the area. These water bodies are our lifeline. They support the livelihoods of hundreds of people here," said Kofi Ansah, a 50-year-old farmer in Yayaaso, a village near the site of the proposed mine.<sup>108</sup> By destroying the forests, the mine



UTE HAUSMAN/FOODFIRST INFORMATION AND ACTION NETWORK

Newmont is planning to build the Akyem Gold Mine in the village of Yayaaso near Ghana's Ajenjua Bepo Forest Reserve.

would also make it difficult for communities to find forest products that they depend on.<sup>109</sup>

The controversy around Akyem is emblematic of the larger struggle to save Ghana's last remaining forests. Opponents of the mine point out that allowing Akyem to go forward could set the precedent for other mines to follow suit. Civil society groups have warned that mining companies have identified at least five other Ghanaian forest reserves for mining development.<sup>110</sup> In spite of a recommendation by the Forestry Commission Board to deny mining in the forest reserves, work continues on the project proposals.<sup>111</sup>

"For us here, the forest reserve that Newmont wants to mine is far more important to us for its ecological values in the long term than for the short-term profit of this mining company," said Akosua Nsia, also of Yayaaso.<sup>112</sup>



# Pebble Mine

Southwest Alaska's Bristol Bay watershed is a tremendously productive ecosystem vital to Alaska's commercial and recreational economies. The watershed is at risk of destruction because of the proposed development of a massive copper-gold mine and associated mining district. Multinational firm Anglo American is partnering with the small Canadian firm Northern Dynasty to develop the proposed gold mine at the headwaters of the watershed, which is on Alaska State lands.

If developed, the Pebble Mine could be the largest mine in North America, covering over 15 square miles (39 square kilometers) of land and generating more than 3 billion tons of mine waste over its life.<sup>113</sup> The waste will be impounded in a seismically active area behind a number of dams. If built to the proposed dimensions, two of these dams will be the largest in the world—far bigger than the giant Three Gorges Dam in China.<sup>114</sup>

The mine will also require the construction of a 100-mile (161-kilometer) road and massive power plant. The company proposes to withdraw more than 70 million gallons (265 million liters) of water per day, nearly three times the amount of water used in the city of Anchorage, from the Koktuli and Upper Talarik watersheds—which are key salmon spawning streams.<sup>115</sup>

The Bristol Bay watershed supports the world's largest sockeye salmon run and commercial sockeye salmon fishery.<sup>116</sup> Salmon, caribou, moose, and the many other fish and wildlife resources of the Bristol Bay watershed are also vital to the subsistence way of life of Alaska Native people in the region. On average, individuals in Bristol Bay communities harvest 2.4 million pounds (1.1 million kilos) of salmon per year, or 315 pounds (143 kilos) per person, as their main source of food.<sup>117</sup> The harvesting and processing of Bristol Bay fish generates nearly \$320 million a year and provides jobs for some 12,500 people.<sup>118</sup>

The Pebble Project and associated development are opposed by a strong and diverse constituency. The Alaska Inter-Tribal Council, a consortium of 231 federally recognized tribes in Alaska, and many tribal governments of the region have all passed resolutions against the project.<sup>119</sup> Commercial salmon fishing businesses, premier Alaska hunting and fishing lodges, fishing and conservation groups, and the Alaska Wilderness Recreation and Tourism Association have expressed opposition, as has Alaska's senior US senator, Ted Stevens.<sup>120</sup>

Bobby Andrew, spokesperson for Nunamta Aulukestai (Caretakers of Our Land)—an association of eight native village corporations in Bristol Bay—said this about the project: “The risks are too high to mine in a sensitive and pristine area such as our region with the five species of salmon, all the freshwater fish, wildlife resources, edible plants and berries, water and air quality, environment, and the health of our residents and subsistence hunters.”



**Location:** Bristol Bay, southwest Alaska, USA

**Companies:** Anglo American P.L.C., Northern Dynasty Minerals Ltd.

### Major Problems:

- Proposing construction of what would be the largest mine and waste impoundment facility in North America
- Threatening to damage an environmentally sensitive and economically important ecosystem formally recognized as a Fishery Reserve



Sockeye salmon migrating to spawning grounds in southwest Alaska. These fisheries are threatened by the proposed Pebble Mine.



## GOLDEN RULE:

Ensure that projects do not contaminate water, soil, or air with sulfuric acid drainage or other toxic chemicals.

Large mines use, generate, and dispose of large amounts of toxic chemicals. Acid mine drainage (AMD) is a chronic problem at many mines globally. The problem occurs when sulfide rocks are exposed to oxygen and water, producing sulfuric acid.<sup>121</sup> AMD can destroy stream ecosystems.<sup>122</sup> The acid can lead to long-term contamination of groundwater and surface water.<sup>123</sup> Many open-pit gold mines also use hundreds of thousands of gallons of cyanide every day to leach gold out of mined ore. Cyanide is acutely toxic to humans and wildlife and can decimate aquatic life.<sup>124</sup>

In addition, gold mining is one of the single largest sources of mercury pollution globally. This includes mercury used at small-scale mining operations in many countries as well as atmospheric mercury emissions from the processing and smelting of gold ore produced at large-scale mines.

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The Ankobra River, which provides drinking water and fish to the Dumase community in Ghana, was contaminated by a cyanide spill from the Bogoso/Prestea Mine.

# Zortman-Landusky Mine



The exposed rock of the Zortman-Landusky Mine in Montana continues to discharge polluting acid, even though it has been nonoperational since 1998.

The Zortman-Landusky Mine, owned by Zortman Mining Inc., a fully owned subsidiary of Pegasus Gold Inc., is located between the towns of Zortman and Landusky in north-central Montana. Although mining began at the site in 1979 and ended in 1998, AMD problems continue today—and are expected to continue for many decades.<sup>125</sup>

The mine was originally permitted to mine oxide ores, which are less likely to generate acid. In 1993, the US Environmental Protection Agency (EPA) found that the mine had been mining acid-prone sulfide ores. Mine discharges contained high levels of heavy metals and were highly acidic—in one case, as acidic as vinegar.<sup>126</sup>

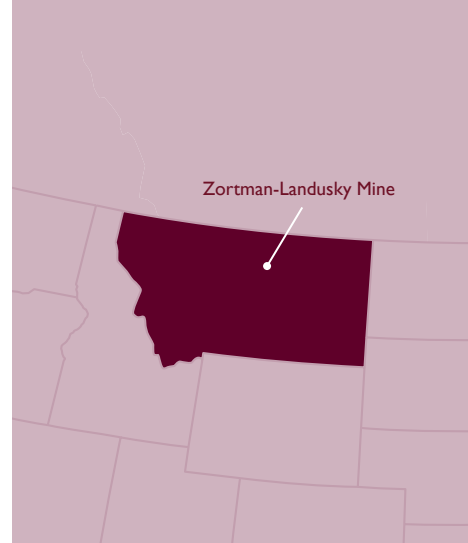
Poor cyanide management at the mine also led to environmental contamination from this toxic chemical. As early as 1982, shortly after the mine opened, 782 gallons (2,960 liters) of cyanide-tainted solution leaked from a containment pond.<sup>127</sup> A few months later, the mine released 52,000 gallons (196,841 liters) of cyanide solution onto lands, streams and drinking water when a pipe ruptured.<sup>128</sup> Eight more cyanide leaks occurred over the next several years, killing

fish and wildlife.<sup>129</sup>

The mine also affected indigenous people living nearby. The mine borders the Fort Belknap Indian Reservation of the Assiniboine and Gros Ventre Tribes. Pollution from the mine presents an ongoing threat to important water resources.<sup>130</sup> And the mine has damaged Spirit Mountain, a site held sacred by tribal members.<sup>131</sup>

In 1993, Montana sued the mine for violating the Montana Water Quality Act; later, the EPA sued the mine for violating the federal Clean Water Act. The Fort Belknap tribes also sued for damage to their historic water rights and to obtain better water quality monitoring. Under the over \$30 million settlement, the company was required to conduct remediation work including water treatment and monitoring.<sup>132</sup>

In 1998, Pegasus suddenly filed for bankruptcy, leaving the state with a large, unfunded mine cleanup burden.<sup>133</sup> The \$30 million that Pegasus had posted as a bond to fund mine reclamation was inadequate; by 2006, over \$45 million had already gone into cleanup, and an additional \$33 million was still needed.<sup>134</sup> The State of Montana will place \$1.5 million a year into a trust to guarantee future treatment past 2017, when current cleanup funds run out.<sup>135</sup>



**Location:** Little Rocky Mountains, Montana, USA

**Companies:** Zortman Mining Inc. (a fully owned subsidiary of Pegasus Gold Inc.)

## Major Problems:

- Generating acid drainage that led to long-term stream contamination
- Spilling cyanide into water systems used by the nearby community
- Failing to clean up the mine and its waste or provide adequate funds for cleanup
- Causing damage to a mountain held sacred by indigenous communities in the region

## Recommendation on Toxic Chemicals:

Mining companies should implement best practices and allow independent audits of their management of chemicals used in processing or generated as byproducts—and recognize that some areas may be too sensitive for the use of these chemicals.



Bogoso/Prestea Mine

## Bogoso/Prestea Mine

Residents of Prestea and other neighboring towns in western Ghana, such as Himan and Dumase, say that mining has made their communities virtually uninhabitable since operations began in 2001. Water pollution is a major concern.<sup>136</sup> The dumping of waste rock has covered up natural springs and farmlands; two cyanide spills in 2004 and 2006 contaminated local rivers and streams that provide drinking water and fish for the communities.<sup>137</sup>

**Location:** Prestea, Wassa West district of western Ghana

**Company:** Golden Star Resources Ltd.

### Major Problems:

- Repeated cyanide spills contaminating community water resources
- Waste rock dumping impeding access to important water sources and arable land
- Inadequate compensation provided to people affected by the mining operations

The community of Dumase, in particular, has been severely affected by the cyanide spills. In both instances, some villagers had already consumed water or fish from the river before being informed by the company of the cyanide spill. No independent health investigation has taken place despite community members reporting symptoms such as dizziness, headaches, stomach aches, and itching.<sup>138</sup>

The second cyanide spill occurred just three months after Golden Star signed the “International Cyanide Management Code for the Manufacture, Transport, and Use of Cyanide in the Production of Gold” (Cyanide Code). The Cyanide Code is a voluntary mining industry program intended to improve the management of cyanide from mining operations. The Cyanide Code’s credibility and legitimacy are damaged when companies such as Golden Star are able to get away with poor cyanide management and repeated spills.<sup>139</sup>

Protests by residents have sometimes been met with violent suppression. On June 13, 2005, security forces fired into a crowd of nearly 5,000 people who had gathered in Prestea for a demonstration. Seven people were injured, including a 12-year-old boy.<sup>140</sup> In September 2005, in response to protest and concerns raised, the Ghanaian Environmental Protection Agency ordered the mine to shut down its northern pit until it moved the police station and built a



Cyanide spills have polluted drinking water sources near the Bogoso/Prestea Mine in Ghana.

bypass road and a fence around the mine, actions the mine had promised a year prior. The pit was shut down for only one month before it reopened.<sup>141</sup> In 2006, the mine generated US \$8.4 million in revenue from gold sales, yet community members contend that the company still did not clean up its operations.<sup>142</sup>

Nana Korkye II, the former chief of Dumase, said in 2006 that he still received complaints of sickness from some of the people who were affected by the 2004 cyanide spill and was frustrated by the lack of action by the company and the government. “Is it a crime to sit on gold? Do we have to suffer such dehumanizing acts because of their profits?” he asked.<sup>143</sup>



# Jerritt Canyon Mine

The Jerritt Canyon Mine, owned by Yukon-Nevada Gold Corporation (previously by Queenstake Resources) in Nevada, represents a serious case of mercury air pollution by a mining company. Mercury is a potent neurotoxin for humans. It can cause brain damage and learning disabilities in babies and young children and can cause heart, kidney, lung, and immune system disease.<sup>144</sup> It increases in concentration up the food chain and persists in the environment. From the elemental form released in gold mines, it is often converted into the dangerous organic compound methylmercury. Both forms can be highly toxic to aquatic life and devastating to water fowl.<sup>145</sup>

The mining industry was not required to report mercury air emissions to the EPA until 1998. That year, Jerritt Canyon Mine's report showed that emissions of mercury at the mine were alarmingly high, at 9,400 pounds (4,264 kilos).<sup>146</sup> This was over 30 times the average coal-fired power plant's emissions of about 250 pounds (113 kilos).<sup>147</sup>

To reduce these emissions, the State of Nevada and the EPA engaged the worst four Nevada mines, including Jerritt Canyon, in a voluntary agreement in 2001.<sup>148</sup> Nevada mines represented 9–11 percent of total US atmospheric mercury emissions.<sup>149</sup> Jerritt Canyon ranked as the single greatest source of airborne mercury pollution in the US.<sup>150</sup> After the agreement with the EPA and the State of Nevada, however, self-reported emissions by Jerritt Canyon appeared to fall dramatically.<sup>151</sup>

Despite this, evidence of mercury contamination into the environment from Nevada gold mines was rapidly mounting. Researchers found high mercury concentrations in fish in Salmon Falls Creek Reservoir, one of Idaho's top fishing spots, near the Nevada border.<sup>152</sup> An Idaho-based atmospheric scientist researching regional air emissions found that mercury levels in the air were dramatically higher when winds blew into

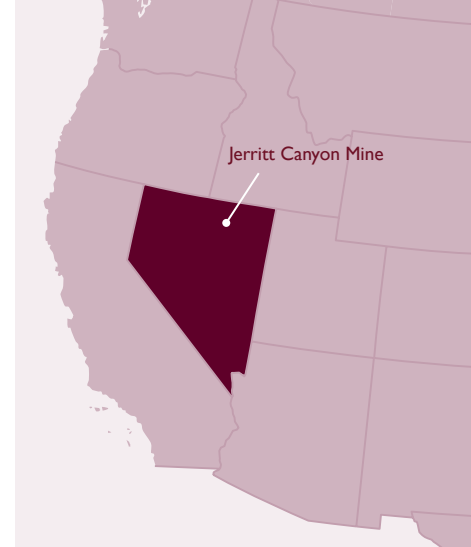
Idaho from the Nevada and Jerritt Canyon area.<sup>153</sup> He stated, "The mines are the only sources big enough to cause those peaks." Utah officials also detected mercury contamination in two species of waterfowl and in lakes, including the highest contamination in the nation in the Great Salt Lake. The Nevada gold mines were a suspected source.<sup>154</sup> Because of this, the States of Utah and Idaho and environmental organizations have put pressure on Nevada to clean up its act regarding mercury. In 2006, Nevada initiated a new state program mandating monitoring of mercury emissions and pollution control for reducing emissions.<sup>155</sup>

In February 2006, this new Nevada State program discovered that the Jerritt Canyon emissions were higher than reported and that the company was partially bypassing pollution monitoring equipment on its smokestacks.<sup>156</sup> The company smokestack configuration prevented accurate measurement of mercury emissions, and the company had been vastly underreporting its mercury emissions.<sup>157</sup>

In response, the state took its first enforcement action under Nevada's new mercury regulations.<sup>158</sup> The company was forced to correct the configuration of its smokestacks to ensure correct measurement of its emissions.<sup>159</sup> In addition, the company faces the prospect of a legal suit over its misleading conduct.<sup>160</sup>



In 2004, Nevada's Jerritt Canyon Mine was the single largest emitter of airborne mercury in the US.



**Location:** Elko, Nevada, USA

**Company:** Yukon-Nevada Gold Corporation

**Major Problems:**

- Failing to limit mercury atmospheric emissions
- Contributing to contamination of large water bodies and fisheries with mercury
- Failing to accurately monitor and report mercury atmospheric emissions



EARTHWORKS

# GOLDEN RULE:

## Cover all costs of closing down and cleaning up mine sites.

Given the enormous environmental footprint of large, open-pit mines, properly closing down and cleaning up such mine sites can be extraordinarily expensive, running into billions of dollars in some cases. All too frequently, mining companies do not provide adequate bonds or funds for cleanup and governments are left with a massive cleanup bill when mining companies leave the site or go bankrupt. This is particularly worrying in developing countries, where laws on mine closure rarely exist and where cash-strapped governments often simply do not have the resources, capacity, or political will to ensure that mine closure costs will be covered adequately. This is also a serious problem in the US, where taxpayers face the potential of more than \$1 billion in unfunded cleanup costs for mine sites in the western part of the country.<sup>161</sup>

While the following case study discusses a now-defunct mine, the problem of inadequate financial coverage for mine cleanup is an active concern at mines around the world.

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<sup>161</sup> The Summitville Mine in Colorado (shown in an aerial view) stuck taxpayers with an enormous bill after its Canadian owner failed to cover cleanup costs.

# Summitville Mine

Summitville, a 1,400-acre (567-hectare) gold and silver mine located in the southern San Juan Mountains of Colorado, was a disaster from the very start. It leaked cyanide for years, wreaking havoc on mountain ecosystems. Even now, years after its construction and abandonment, what is left of the mine site continues to damage the environment and cost taxpayers money.

In 1984, the State of Colorado issued a permit to Galactic Resources, a Canadian mineral mining company owned by Robert M. Friedland, to operate an open-pit gold mine. The mine used cyanide “heap-leaching”—a technique in which huge piles of crushed ore are placed on a surface called a “leach pad” and soaked with cyanide solution in order to extract gold. However, technical experts argued that this technology was not appropriate, given environmental conditions: the mine was situated at approximately 11,500 feet (3,500 meters) in altitude in an avalanche-prone area that receives over 400 inches (1,000 centimeters) of snowfall annually.<sup>162</sup>

Galactic Resources did not adequately plan for or address the potential for leakage in its design of the mine and containment structures. The liners on the heap-leach pad began chronically leaking cyanide soon after mining began.<sup>163</sup> Additionally, acidic runoff, created when minerals exposed in the mining process are oxidized by exposure to oxygenated water, flowed from numerous sources at the mine site. Pollution from the mine essentially killed a 17-mile (27-kilometer) stretch of the Alamosa River, a river important to the lives and livelihoods of people downstream.<sup>164</sup> “I don’t think I’ll see fish in there again in my lifetime. Someone has to hold these mining companies accountable,” said activist Cindy Medina.<sup>165</sup>

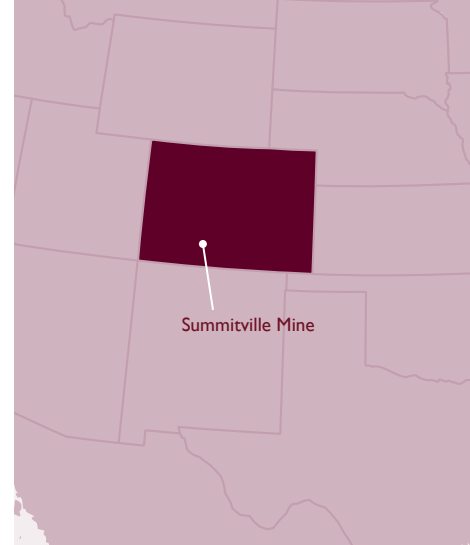
In late 1992, Galactic Resources declared bankruptcy, forcing the EPA and the State of Colorado to assume responsibility for cleanup of the now-abandoned mine site. The EPA found leaks in six separate places, together releasing 3,000 gallons (11,356 liters) a minute

of potentially toxic fluids. It also found that the 127-foot-deep (39 meters) cyanide containment area around the leach pad was within five feet of overflowing.<sup>166</sup>

When Galactic Resources declared bankruptcy, the existing financial assurance required by the State of Colorado was only \$4.5 million. The first year’s costs to manage the site alone exceeded the amount of available financial assurance. According to the EPA, up until 2005, about \$210 million had been spent on cleanup, most of which came from public funds.<sup>167</sup>

Meanwhile, over a decade later, the final remediation plan for Summitville is incomplete and funding is still inadequate. As of 2005, the mine site continued to discharge contaminated water in the Alamosa River watershed—exceeding water contamination standards on a regular basis.<sup>168</sup> EPA reports from 2005 show that acid mine drainage continues to require extensive treatment in order to lower the pH and precipitate the dissolved metals before being released down the mountainside.<sup>169</sup>

In the aftermath of the Summitville disaster, the US Bureau of Land Management and states such as Montana and New Mexico strengthened their reclamation bonding requirements. Such standards need to be strengthened and enforced in all areas where mining takes place. The Summitville Mine bankruptcy demonstrates why regulators should require mining companies to post concrete financial assurances—before mining operations begin. While Galactic Resources declared bankruptcy in 1992, Galactic’s owner, Friedland, continues to open new mines elsewhere in the world—in places with far less oversight, such as Mongolia. Galactic made costly mistakes without experiencing commensurate repercussions, extensively damaging the environment and leaving the public to pay for the cleanup.



**Location:** Colorado, USA

**Company:** Galactic Resources Ltd.

### Major Problems:

- Destroying drinking water sources and the environment with cyanide and other chemicals
- Shirking responsibility to pay for cleanup and sticking taxpayers with a massive cleanup bill

### Recommendation on Financial Guarantees and Mine Closure:

Before developing a mining operation, companies should adopt and implement company-wide policies that provide adequate, guaranteed, and independently verified financial assurances and require responsible reclamation and mine closure.

# Following the rules: An agenda for action

The cases presented in this report illustrate some of the problems that modern large-scale mining can cause. But they also help point the way forward. When these harmful practices are avoided and proactive steps are taken to protect human rights and the environment, mining can have a much smaller ecological and social footprint.

Making more responsible mining a reality will require concerted action all along the minerals supply chain—from consumers, manufacturers, retailers, mining companies, and financial institutions.

Each of these stakeholders has a key role to play in addressing the kinds of social and environmental concerns outlined in this report:

- **Consumers** can demand that jewelry companies and other retailers use gold that has been produced in accordance with the Golden Rules criteria. They can lend their support to reform efforts by signing the No Dirty Gold campaign pledge at [www.nodirtygold.org/pledge](http://www.nodirtygold.org/pledge), which calls on jewelers to provide gold that has been more responsibly produced. Consumers can also insist on independent, third-party certification of adherence to these and other best practices.
- **Jewelers** can formally endorse the Golden Rules criteria and support efforts, such as the IRMA ([www.responsiblemining.net](http://www.responsiblemining.net)), to create an independent mechanism for certifying and verifying more responsible mining practices. When independent certification becomes available, **manufacturers** and **retailers** can switch to more responsibly produced sources of gold and other metals.
- **Mining companies** can support the IRMA process and commit to implementing the Golden Rules, including respecting key principles such as FPIC and ending destructive practices such as dumping mine waste into rivers, oceans, and lakes.

These steps alone will not prevent all the damage that large-scale mining can cause. But taken together, they can help reduce mining's impacts on communities and the environment—and can help ensure a more sustainable future for all of us.



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## About the No Dirty Gold campaign

In 2004, the environmental and human rights organization EARTHWORKS, the relief and development organization Oxfam America, and their partners launched the No Dirty Gold campaign. The campaign seeks to clean up irresponsible mining practices and has called on manufacturers, retailers, and mining companies to commit verifiably to human rights and environmental standards at gold and metals mining operations. For more information about the campaign, go to [www.nodirtygold.org](http://www.nodirtygold.org).

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