

# Dirty Metals

Mining, Communities and the Environment



# Table of Contents

<b>About This Report</b> . . . . .	<b>page 1</b>
<b>From Open Pit to Wedding Ring: How Gold is Produced</b> . . . . .	<b>.2</b>
<b>Ruined Lands, Poisoned Waters</b> . . . . .	<b>.4</b>
<b>Facts on the Ground: The Ok Tedi Mine</b> . . . . .	<b>.7</b>
<b>Close-Up: Your Computer</b> . . . . .	<b>.8</b>
<b>Acid Mine Drainage: Pollution on a Millennial Scale</b> . . . . .	<b>.9</b>
<b>Facts on the Ground: The Yanacocha Mine</b> . . . . .	<b>.10</b>
<b>Tambogrande and Esquel:</b>	
<b>Two Communities Stand up to the Companies</b> . . . . .	<b>.11</b>
<b>Pouring Energy and Water into a Bottomless Pit</b> . . . . .	<b>.12</b>
<b>Close-Up: An Aluminum Can</b> . . . . .	<b>.13</b>
<b>Mining the Parks</b> . . . . .	<b>.14</b>
<b>Map: Mining Hotspots</b> . . . . .	<b>.16</b>
<b>Endangering Communities</b> . . . . .	<b>.18</b>
<b>How Mining Injures Women</b> . . . . .	<b>.21</b>
<b>The Toll on Indigenous Peoples</b> . . . . .	<b>.22</b>
<b>Facts on the Ground: The Western Shoshone People</b> . . . . .	<b>.23</b>
<b>Undermining the Rights and Safety of Workers</b> . . . . .	<b>.24</b>
<b>Small-Scale Mining, Large-Scale Risk</b> . . . . .	<b>.25</b>
<b>Metals and the Wealth of Nations</b> . . . . .	<b>.27</b>
<b>Close-Up: Your Cell Phone</b> . . . . .	<b>.28</b>
<b>Paying for the Clean-Up: No Guarantees</b> . . . . .	<b>.29</b>
<b>Towards a Saner Strategy</b> . . . . .	<b>.30</b>
<b>Notes</b> . . . . .	<b>.31</b>

Copyright © Earthworks, Oxfam America, 2004. Reproduction is permitted for educational or non-commercial purposes, provided credit is given to Earthworks and Oxfam America.

Cover photo credits: Jeff Atkinson/Oxfam Australia, CONACAMI, Tibor Kocsis, Earthworks

## The Metals Mining Industry

# A Few Highlights:



Tintaya mine, Peru

- 96 percent of US arsenic emissions
- 50 percent of all newly mined gold taken from native lands
- Groundwater thousands of times more acid than battery acid
- Implication in human rights abuses
- 79 tons of mine waste for every ounce of gold
- Employs only 0.09 percent of the global workforce
- Up to 10 percent of world energy consumption
- Craters blasted into officially protected natural areas

Photo: CONACAMI

## About This Report

The purpose of this report is to show you how much metal there is in your life—from the gold in your jewelry to the aluminum in your automobile—and to explain how it was produced. If you live in the United States, your annual consumption of “newly-mined” minerals (as opposed to those produced from recycling) comes to 21 metric tons\*—just over 57 kilos a day.<sup>1</sup> This report will show you what lies behind that stupendous lode of copper and tantalum, gold and platinum. We’ll explain how the mining of these and other metals damages landscapes, pollutes water, and poisons people. We’ll show you why modern, industrial mining is one of the world’s most destructive industries. And finally, we’ll show you what we as consumers and concerned citizens can do to clean it up.

\*All references to tons in this report are to metric tons.

# From Open Pit to Wedding Ring

## How Gold Is Produced

A golden wedding band, or some other piece of gold jewelry—for many people, these things are almost too valuable to put a price on. Perhaps you own such a ring yourself. But while the ring as a symbol may indeed be priceless, the gold certainly is not. Gold comes with a price—a heavy one. Gold mining costs the planet and its peoples far more than the metal itself is worth.

**3. CYANIDE LEACHING:** Once it's extracted, the ore is crushed, piled into huge heaps and sprayed with cyanide, which causes the gold to leach out of the ore. Some mines use several tons of cyanide per day. A rice-grain sized dose of cyanide can be fatal. The cyanide-contaminated waste ore is usually just abandoned. To produce enough gold for a ring, about 18 tons (20 short tons) of waste ore are created.

**2. WASTE ROCK:** An open pit mine generates huge piles of waste rock, which leach toxic metals and acid. Mine waste has turned groundwater thousands of times more acidic than battery acid. For more on waste rock, [see page 9](#).

**1. EXTRACTION:** Of all the gold in use or in storage today, two-thirds is newly mined—it came directly from the Earth. (The other third came from scrap or recycled sources.) Of that newly mined gold, two-thirds was extracted from immense, open-pit mines. Several of these craters have grown so large that they are now visible from outer space. For more on open-pit mining, [see page 4](#).

**4. SMELTING & REFINING:** The separated gold is then shipped to a smelter, where remaining impurities are removed under intense heat. The metals smelting industry (of which gold is but a small part) is a major consumer of energy and a major air polluter. For more on smelting, [see pages 6 and 13](#). For energy consumption, [see page 12](#).

**5. TRADE:** Once the gold has been purified, it can be traded. More than 80 percent of gold is used for jewelry; most of the rest is bought by investors or used in electronics.

**6. A RING MORE COSTLY THAN GOLD:** Jewelry manufacturing can be a lucrative business. In the United States, a piece of gold jewelry typically sells for four or more times the value of the gold it contains. Few jewelers are likely to be able to tell you where the gold in their products came from. There is a business that has yet to hold itself accountable for the damage done in creating its merchandise. The time has come to change that, and as a consumer, you can help make that happen. Please visit our website, at [www.nodirtygold.org](http://www.nodirtygold.org), to learn more about what you can do.<sup>2</sup>