

Blood Mineral

by Joshua Kors

War rages in Africa over a remarkable metal used to make cell phones and MP3 players.

Ever wonder where the metal inside your MP3 player comes from? Chances are the source is an impoverished country in the heart of Africa: the Democratic Republic of the Congo.

Though Congo's people are desperately poor, their land is stunningly rich in diamonds, gold, silver, tin, uranium, and a mineral called coltan. To the untrained eye, coltan looks worthless. But it contains one of the most valuable metals on Earth: tantalum. It's that metal that helps power cell phones, MP3 players, and video game consoles.

"Coltan is vital to the function of modern society," says Andrew Campbell, a professor of mineralogy at the New Mexico Institute of Mining and Technology. "It is an incredibly precious mineral."

Precious and rare. Sixty-four percent of the world's coltan is underground in Congo. In recent years, the demand for cell phones has skyrocketed—and with it, the value of Congo's coltan. That rise in demand has sparked a mad scramble among corrupt governments, violent militias, and wealthy companies, all struggling to get their hands on the mineral. The result has been one of the bloodiest wars in world history. Since 1996, 6 million people have been killed. The International Rescue Committee estimates that 45,000 Congolese are dying every month.

Keith Harmon Snow has witnessed that bloodshed. Snow is an investigator for the United Nations. He was living in Congo with a family of poor peasants when the entire family was killed by soldiers from the neighboring nation of Rwanda.

"That's the way it is there. The militias control the land. They'll take a 9-year-old boy, put a gun to his head, and force him to dig up the coltan and haul it away," says Snow. "It's a slavery situation. They make sure no one steps out of line."

The militias are brutalizing the girls they find in Congo's villages too. "It's a war tactic," says Maurice Carney, cofounder of the aid organization Friends of the Congo. "The idea is to terrorize the communities that live on this resource-rich land, to move them off the land so the rebels can control it. Then they dig up the coltan and sell it to international corporations."

What Is Coltan?

Coltan is the informal name for *columbite-tantalite*, a dull black *mineral*. A mineral is a naturally occurring solid that forms geologically. It is classified on the basis of chemical makeup, crystal structure, and physical properties, such as hardness, color, and luster.

Coltan contains two precious metallic elements: niobium (once known as columbium) and tantalum. The two have similar chemical properties. For decades, scientists believed that they were the same

element. Today niobium is used to make airplane engines, rockets, and some coins. Tantalum is a key component in handheld devices, such as cell phones and MP3 players.

What makes tantalum useful in cell phones and other gadgets? All metals heat up when given an electrical charge, and electrical circuits can break down if they overheat. But tantalum easily releases its heat, allowing the circuitry in cell phones to function smoothly.

Electronics companies use tantalum to create *capacitors*, components that store an electrical charge. Companies have long used aluminum capacitors for major appliances, such as refrigerators, washing machines, and air conditioners. But aluminum capacitors aren't perfect. They can leak a high amount of electrical charge. When placed in hot environments, the amount of electricity the capacitors can hold drops dramatically.

Tantalum capacitors, though, leak less and hold a large amount of electricity even after years in a tight, hot cell phone or MP3 player. "Many metals can be used to conduct electricity-iron, aluminum, copper-but the tantalum you find in coltan is best at dissipating heat, which makes it perfect for certain electronics," says Campbell. "The tantalum found in coltan is what makes cell phones, computers, and all our other gadgets possible."



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Coltan and other valuable minerals in Sud-Kivu province lie close to the surface and are easily extracted. The process of weathering (the breakdown of rocks by chemical, mechanical, and organic processes) has worn down softer rock, exposing the harder metals, such as gold, tin, and coltan. In this photo, two boys search for gold in a stream.

Black Gold

The Congo war creates an obvious dilemma for consumers who need handheld devices but don't want to fund the militias who are brutalizing Congo's people. "It's hard to tell people, 'Don't buy a cell phone, an iPod, a computer.' But at least, people should know where those devices come from," says Snow.



Joe LeMonnier

Sud-Kivu province in Congo is rich in natural resources, such as coltan (niobium and tantalum), tin, gold, and uranium. It is an area of volcanism (volcanic activity). The process of volcanism brings magma (molten rock) to Earth's surface, where it cools and solidifies into igneous rock. Igneous rock is often rich in minerals containing valuable metals.

Congo is not the only place where coltan can be found. There are untapped reserves in Canada, Brazil, and Australia. The problem with those reserves, says Campbell, is that the coltan isn't nearly as easy to mine as it is in Congo.

Australia shut down its coltan mine in December 2008. The head of Australia's mining operation, Peter Robinson, says his mine just couldn't compete with the low price of Congo's coltan.

"When you dig, the metal you're looking for will always be a small percentage of what you dig up," says Campbell. "In a copper mine, for example, you'd be lucky if three-tenths of 1 percent of the rocks you dig up are copper. In a gold mine, it's way lower than that. And with coltan, the percentage is probably even lower."

That's why the abundant, highly concentrated coltan in Congo is so tantalizing to technology companies. "Coltan would be so much more expensive to mine in other countries," says Snow. "You'd have a lot more rock to sort through. And you wouldn't get the savings that come with slave labor."

Rebel Control

Even if Congo remains the center of the world's coltan operations, there are possibilities for reform there, Carney says. His group's mission is to help end the war and help Congo's people regain control of their nation's resources.

"The people of Congo deserve their fair share, but reform is tremendously difficult because politically the nation is so unstable," he says. "Militias control different coltan supply networks. They fight with each other. They trade with each other. Power shifts all the time. Then one person gets shot, and the whole network gets redefined."

Carney points out that while the violence and war crimes are horrific, the number of perpetrators is quite small. "Congo is a nation of 66 million people, and it is being held hostage by no more than

6,000 rebels," he says. "The only reason they have such firm control is because the people are so poor and the rebels are so well financed by companies outside the country who want access to their minerals."

For now the bloodshed and the rush to find more coltan continue. "This is what wars have been fought over for all of history: religion and resources," says Campbell. "People aren't going to stop buying cell phones." So the person who has the metal to make them "is going to hold a lot of wealth and a lot of power."

Africa at War

Congo's history was bloody and chaotic long before the coltan war began. For decades, the country lived under the brutal reign of Belgium's King Leopold II. In 1960, the nation won its independence, but its new prime minister, Patrice Lumumba, was murdered several months later.

That left Congo in the hands of Mobutu Sese Seko, a corrupt general who ruled it for more than 30 years. Seko crushed opposition to his power, stole billions from state-owned companies, and purchased a fleet of luxury cars while his people lived in poverty.

In 1994, simmering tensions between two ethnic groups in Rwanda, the Hutu and the Tutsi, culminated in civil war. The Hutu slaughtered 800,000 Tutsi in fewer than four months.

Two years later, Rwanda and nearby Uganda invaded Congo. Their aim was to eliminate the Hutu responsible for the Rwandan *genocide* (mass murder) and who were hiding in Congo's eastern forests. The invasion pushed Seko, Congo's dictator, from power. He was replaced by a rebel leader, Laurent Kabila, who was soon assassinated.

That instability set the stage for a broader, even bloodier battle. By 1998, forces from eight different nations were at war—a fight fueled by ethnic tensions, a thirst for power, and a hunger for Congo's vast natural resources. The coltan, gold, diamonds, tin, uranium, and other minerals in Congo's soil are worth approximately \$24 trillion, according to a recent report in *Africa Today*.