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Caritas supports team working to make gold mining safer in Peru jungle

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PUERTO MALDONADO, Peru (CNS) -- In a small warehouse on the edge of this jungle town, three young men tinker with a system of pumps, hoses and bright blue plastic dishes mounted on metal bars.

They hope the odd-looking apparatus, designed to separate sand from flecks of gold, will reduce the impact of wildcat mining that is fouling rivers and streams in Peru's southeastern Madre de Dios (Mother of God) region, one of the most biologically diverse places in the world.

Richard Villavicencio, 22, pours sediment into a metal chute, and small jets of water force it around spirals cut into the bottom of the dishes. The lighter gold flecks wash into the next dish, leaving the heavier sand behind.

The principle is the same one used by the '49ers who panned for gold during the California Gold Rush.

It is based on a model developed in Canada, but Villavicencio, his brother Walter, 31, and Henry Arbex, 33, are working with the local office of Caritas Internationalis, the Catholic Church's aid and development agency, to fine-tune the design.

The original Canadian model worked well for the larger pieces of gold mined near the foothills of the Andes Mountains, Arbex said, but was less effective for the fine gold scooped from sediment downstream, where most miners work.

Mining in Madre de Dios is hard, dirty and dangerous. Miners pump tons of water and sediment over sluices, ending the day with a bucket of about 100 pounds of gold-bearing sand. They pour the sand into a barrel, add mercury, and mix the slurry with hands and feet. The gold adheres to the mercury, forming a lump.

The miners heat the lump with a blowtorch or over an open flame, vaporizing the mercury and leaving behind a small chunk of gold. Because they work without safety equipment, the miners inhale toxic mercury vapor. Wastewater, also containing mercury, often is spilled into rivers and streams, where it works its way into the food chain, posing a health hazard.

With mercury, miners can recover 85 to 90 percent of the gold in the sand, while the Caritas-designed machine captures only about 70 percent, Arbex said. He and the Villavicencio brothers are trying to make it more effective.

"Miners say they use mercury because it is cheap and easy to use," Arbex said. "We want the machine to at least equal what they can do with mercury."

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The new system does not wash away all the sand, so miners would still have to use mercury or some other substance to separate the gold from the last of the sediment, but in much smaller amounts that would be easier to control, he said.

Market forces may give the machine a boost. Much of the mercury used by miners in Madre de Dios and other parts of the Amazon basin is imported from the United States and Europe, which plan to ban mercury exports by the end of 2013.

Although some mercury might still come into the region from other sources, scarce supplies are likely to make it more expensive, pushing the miners' costs up and making the Caritas machine, which costs about \$1,500, more attractive.

Arbex said many miners are unaware of the health risks posed by mercury or think it will not affect them.

"They say they've been working with it for 20 years and have no health problems," he said. "People don't really understand what mercury does. They're only interested in making as much money as they can."

Richard Villavicencio hopes the machine will give church workers an opening to talk with miners about the health and environmental impacts of mining.

"It's important to tell them they should change, but you have to show them how to do it," he said. "You can't go to them with empty hands."

Villavicencio started working in mining camps when he was 14. At the time, he said, he did not understand how hazardous mercury could be or the lasting effects of mining on waterways and forests. Now he hopes that he and his brother can contribute to a solution.

"We want to counteract what we've done and contribute our grain of sand," he said.

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