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EPA pouring chat back in old mines
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WACO, Mo. — The chat slides into the water, vanishing in a swirl of muddy bubbles.

Load after load is brought to the edge of the pit and carefully pushed into the chasm. It might take a while, but the plan is to fill the pit with waste rock from Waco's abandoned lead and zinc mines.

After that is done, state and federal environmental officials intend to sit back and watch what happens.

They want to know whether pouring tons and tons of chat into a water-filled pit will make a bad situation worse, or provide a way to clean up dozens of abandoned mining sites in Jasper and Newton counties.

If it works, the project could shave \$38 million from the U.S. Environmental Protection Agency's estimated cost of cleaning up the mining sites.

"We're putting 30,000 cubic yards of tailings into one pit south of Waco," said Mark Doolan, EPA project manager for the Jasper County Superfund Site.

"Once it's in the pit, we will use two monitoring wells and four monitoring pits to check for zinc movement. If this works, which we think it will, it will have important implications for the removal and disposal of all of the mine wastes."

If things go as planned, the waste rock will cause a slight increase in surface and ground-water contamination around the pit, then subside. The chat contains significant amounts of lead, zinc and cadmium. The heavy metals can be hazardous to humans and aquatic life.

"We expect some release of zinc into the ground water, but most of it will be tied up," Doolan said. "It will be placed in a low-oxygen environment, which we think will make the metals less reactive."

Experiments have shown that the release of the zinc should be insignificant in comparison with the amount of zinc already in the ground at the site. There also should be a buffering effect from the limestone rock, which should tend to neutralize any acidity, Doolan said.

The increase in contamination should stay within a few hundred yards of the pit, he said.

"The biggest concern with disposal is what will happen to the surface water," he said. "We don't want the mine water to reappear as surface water and show up in Turkey Creek or Spring River. We want it to be contained in the area around the pit."

Putting the mine waste back into the ground from where it came could be half as expensive as capping everything at the surface, Doolan said.

If the waste rock cannot be returned to the mines, the piles on the surface would be knocked down and covered with topsoil. That would cost an estimated \$79 million. Returning the waste rock to the ground would cost an estimated \$41 million.

The volume of chat and waste rock on the surface in Jasper County is estimated at 6 million cubic yards. The volume of surface waste in Newton County has not been assessed by the EPA, but it is estimated to be 2 million cubic yards.

"It will take a huge amount of topsoil to cover that much mine waste on the surface," Doolan said. "After we did it, we would not allow anyone to tear into the caps for fear of disturbing what has been covered.

"One thing about putting it into the ground: We know we have more pit volume than mine wastes."

The pits, once filled, would be covered with 4 to 5 feet of topsoil to prevent infiltration from above.

"It will be a better remedy all the way around, if we prove that it is safe for surface water," Doolan said.

The Missouri Department of Natural Resources believes experiments to test the theory are reliable, but it wants more proof.

The DNR requested the test study at Waco. It is being paid for by Sun Co., a petroleum holding company that is one of 16 companies that have been identified as potentially responsible parties for contamination problems left by the lead mining.

The company's work is being supervised by the EPA and the DNR.

"This type of cleanup has been done at other types of sites, but those sites do not pose the same geological setting as you would find here in the Ozarks," said David Moseby, project manager for the DNR. "The ground is karst or highly porous in nature. There are a lot of old mine workings. That means the surface water is connected to the ground water.

"When you bulldoze chat into a pit, you are introducing high concentrations of heavy metals into the ground water that could end up in the surface water."

The state also plans to do a dye-trace study, which would answer questions about the direction and speed at which any contamination would flow.

"We don't want these heavy metals to find an express lane to Center Creek," he said.

"Theoretically, the modeling showed that won't happen, but this is such a huge area and there is a point of no return once you do it that we need real data, not just modeling data."