

CHEMICALS

Success Story



WATER-WASHED OVERSPRAY PAINT RECOVERY

Process for Recovery and Reuse of Water-Washed Overspray Paint Reduces Waste

Benefits

- ◆ Reclaimed large quantities of oversprayed paint for reuse, eliminating landfilling millions of pounds of water-washed paint sludge annually
- ◆ Conservation of raw materials used to manufacture virgin paints and coatings
- ◆ A cost-effective method of treating a paint waste by-product, especially as landfill fees continue to increase

Applications

Industrial water-wash paint operations such as automotive and construction equipment assembly plants can use this process.

Project Partners

- ◆ Caterpillar Corp.
East Peoria, IL
- ◆ Illinois Department of Commerce and Community Affairs
Springfield, IL

In the earth-moving industry, few companies have achieved the international recognition of Caterpillar, Inc. At almost any excavation or construction site worldwide you can see the familiar big, yellow tractors created by Caterpillar. What might surprise you is that the protective paint applied to these earth-movers incorporates Caterpillar's own recycled paint material.

This new process began as a response to changing landfill regulations. Caterpillar sought ways to reduce the paint sludge it was carting to landfills and to help launch its efforts, the U.S. Department of Energy's NICE³ program (short for National Industrial Competitiveness through Energy, Environment, and Economics) awarded Caterpillar a \$285,000 matching grant. "Every good thing that has transpired for this project since the grant award can in some way be linked to the grant," says George Mitchell, Process Engineer at Caterpillar's Track-Type Tractors (TTT) Division. "One intangible benefit we received from partnering with DOE is significant third-party credibility. Because DOE endorsed the group's efforts, skeptics and others involved in this effort quickly came to realize that this project was more than a Caterpillar-only effort," he adds.

The great strides made by Caterpillar allow overspray paint sludge to be processed into pulverized paint pigment and subsequently reverted back to top quality paint. The process, which is nearing commercialization for use by other manufacturers, is the result of a nearly seven-year effort headed by John Spangler, Coatings Engineer at Caterpillar's TTT Division. Initially, Caterpillar reduced generation of the overspray at the source by increasing spray paint



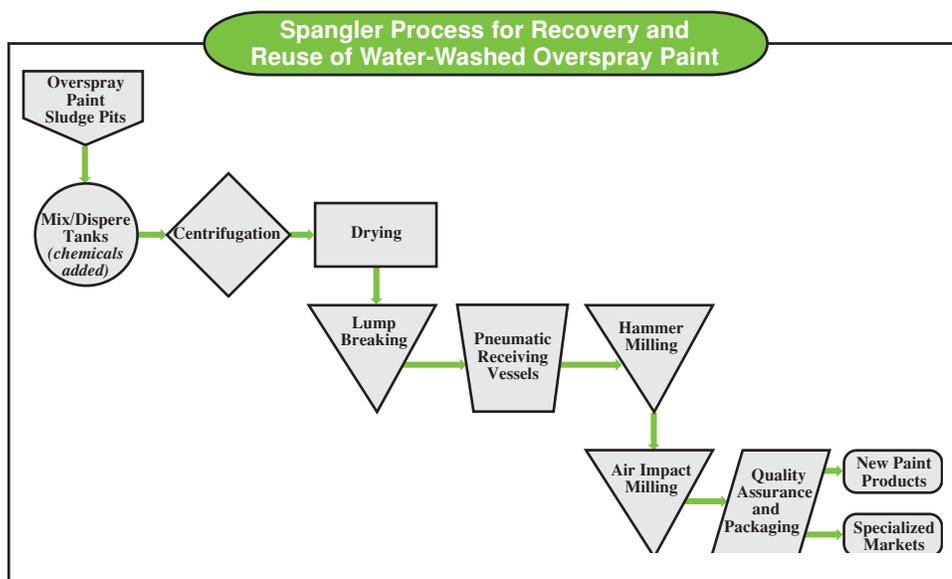
Caterpillar's Water-Washed Overspray Paint Recovery System



transfer efficiency through the installation of electrostatic spray equipment in all plant spray booths. This process improved overall efficiency, but only by 10 percent. Next, Caterpillar dewatered the paint sludge material on a continuous process basis, so that the collected material could pass the required paint filter test. That approach was abandoned after none of the dewatering devices tested produced significant yields of dewatered sludge material.

The new process makes the sticky, water-wash paint sludge easier to work with (detackification) by encapsulating the overspray paint with hydrophobic particles. This raw, detackified paint sludge is then transformed into a paint pigment replacement. The technology is extremely promising and likely will result in a new revenue stream and some new business for Caterpillar.

“Caterpillar is committed to improving the environment and minimizing waste. So consequently, we’re always examining new technologies. Since this technology supported itself, we would have proceeded with development without NICE³, but I am very happy that it worked out the way it did. We would have missed out on many benefits realized through our NICE³ involvement. In particular, the business contacts that NICE³ has helped us cultivate are impressive and beneficial to our efforts,” said Spangler. These contacts are helping Caterpillar bring this proprietary technology closer to commercialization.



INDUSTRY OF THE FUTURE — CHEMICALS

The chemical industry is one of several energy- and waste-intensive industries that participate in OIT's Industries of the Future initiative. In December 1996, the chemical industry published a report, entitled **Technology Vision 2020: The U.S. Chemical Industry**, that helps establish technical priorities for improving the industry's competitiveness and develops recommendations to strengthen cooperation among industry, government, and academia. It also provides direction for continuous improvement through step-change technology in new chemical science and engineering technology, supply chain management, information systems, and manufacturing operations.

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NICE³ – National Industrial Competitiveness through Energy, Environment, and Economics: An innovative, cost-sharing program to promote energy efficiency, clean production, and economic competitiveness in industry. This grant program provides funding to state and industry partnerships for projects that demonstrate advances in energy efficiency and clean production technologies. Awardees receive a one-time grant of up to \$525,000. Grants fund up to 50% of total project cost for up to 3 years.

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