

## Technology Brief

# CORE SAMPLING OF BALED FIBER, RIGID PLASTICS AND FILM PLASTICS

The Clean Washington Center (CWC) is working to demonstrate and evaluate a coring technology for inspection of baled recycled materials, including paper and fiber, rigid plastics and film plastics. The core drilling unit simply extracts one or more cylindrical core samples from a bale of material, so that material on the inside of the bale can be inspected without breaking the bale apart.

Current methods to sample baled recycled paper and plastic for detection or measurement of contamination require a labor-intensive breakdown of the bale for sorting, moisture detection, or other testing. After inspection, the residuals must usually be re-baled or discarded. These techniques prohibit cost-effective, routine sampling.

Core drilling equipment for baled material is currently being manufactured and sold by two companies outside the United States, one in Sweden and one in Germany. The majority of application sites are recycled paper mills that are using the coring equipment for sampling recycled fiber bales. One mill has reported improved quality control and significant cost savings in fiber inspection.

To gain credibility in the recycling industry within the U.S., the core sampling method must be verified at a few high-volume industrial consumer(s) or processor(s) of baled paper and/or plastic. Additionally, the equipment and data tracking system

must be affordable, justifiable, and



### Key Words

<b>Materials:</b>	Baled fiber and baled plastics.
<b>Technologies:</b>	Sampling baled recycled commodities.
<b>Applications:</b>	Quality control for recycled material suppliers and processors.
<b>Market Goals:</b>	Assess industry interest in the sampling equipment.
<b>Abstract:</b>	A coring technology is being developed and evaluated for improved sampling and inspection of baled materials.

fairly simple to operate and maintain.

The CWC The Clean Washington Center is working under a grant from the Environmental Protection Agency (EPA), to develop the equipment and evaluate its performance and cost-effectiveness in the field. As of April 1997, the core drilling unit is being designed, manufactured and alpha-tested by a subcontractor, Pacific Testing Laboratories/Professional Service Industries.

Following successful alpha-testing, the equipment will be installed and evaluated at two beta-test sites for comparison of current bale inspection methods to the coring technology. Evaluation measures will include (but are not limited to): inspection costs (time and materials), statistical representatives of samples, and quality control and data monitoring.

Many usability issues are being considered during this preliminary design and alpha-testing phase. For instance;

- What diameter and length core sample is required to achieve a representative sample of the bale?
- How does the diameter and shape of the cutting edge of the drilling bit affect the extracted sample (e.g., will the friction or shearing action tear the outer diameter of the sample so that the sample contents are unrecognizable?)
- Will different drilling bit designs and materials be more effective for the different baled materials (e.g., fiber versus rigid plastics versus film plastic)
- How can heat generation be minimized during the drilling cycle? Too much heat exposure to the sample may result in moisture evaporation, or degradation or melding of the outer diameter of the plastics samples.
- How will the samples be inspected, retained, and data recorded for simple reporting to suppliers or customers on bale or lot quality?
- Would the equipment be most useful if installed for in-line inspection, or is a portable unit preferable?

The beta-testing will help address these issues and others that arise during the evaluation phase. Learnings from the beta-testing will be incorporated into published report including design and usability recommendations.

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#### ***For More Information***

For a copy of the report, *Core Sampling of Baled Fiber, Rigid Plastics, and Film Plastics (PL-97-4)*, use the CWC Publication Order Form. For more information call CWC at: (206) 443-7746, email [info@cw.org](mailto:info@cw.org), or visit the CWC Internet Website at [www.cw.org](http://www.cw.org).

This technology brief was prepared by CWC, Managing Partner of the **Recycling Technology Assistance Partnership (ReTAP)**. ReTAP is an affiliate of the national Manufacturing Extension Partnership (MEP), a program of the U.S. Commerce Department's National Institute of Standards and Technology. ReTAP is also funded by the U.S. Environmental Protection Agency and the American Plastics Council.

**CWC is a division of the Pacific NorthWest Economic Region, 2200 Alaskan Way, Suite 460, Seattle, Washington, 98121**