



**SINGLE STREAM: DIVERTING RECYCLING OR FIXER-UPPER?
QUESTIONS AND CONVERSATIONS**

**Susan Kinsella
Conservatree**

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Intro

For nearly 20 years, I've been working on developing markets for recycled paper. These days, every paper company makes at least some recycled paper and the quality is top notch.

Also for the past two years, I've been working on creating consistent directions among environmental groups working on paper issues. Where before there were constant arguments among environmental groups about which kind of paper was best, and that led to widely conflicting messages to purchasers and also to paper manufacturers, now there is increasingly broad agreement that recycled content is the foundation for environmentally sustainable paper.

So I thought we were really getting somewhere – until I started hearing about increasing problems at the paper mills with the recovered fiber they were getting to make recycled paper, particularly from single stream programs. "Uh-oh," I thought. "We can't let this be a roadblock."

So for the past two years my colleague, Gerard Gleason, and I have been talking with well over 100 people who are at critical positions throughout the paper recycling system about single stream collection and processing. These include people from local government, collectors, MRF operators, equipment manufacturers, paper brokers, and paper mills. Today I want to tell you what we've been finding and hearing.

I. What Is Single Stream?

A. Single Stream Programs

First of all, there's no consistency in what is labeled "single stream." What *we* mean by it is a program that collects paper fiber and all kinds of containers together in one cart. But we found some people who call their fiber-only collection single stream, and others who do not collect glass, or who collect glass separately, such as Portland, Oregon. Then there are programs that are collecting *more* than fiber and containers, such as San Jose's, which adds used clothes and small electrical appliances to their single stream system. But generally about 80% of the materials collected in residential recycling programs is paper fiber and the percentage from office collections is even higher.

B. Who Does Collecting and Processing?

There are also differences in who does the collecting and processing. Some municipalities do their own. Many contract both out. Sacramento does their own collection but contracts out the processing. Some paper companies, including Weyerhaeuser, have also been involved in collection and/or processing for quite a while, and more are beginning to do their own now.

C. Diversity in Processing

We also found significant differences in single stream processing facilities. Some were built specifically to sort single stream materials. Others had been originally built for source separation programs and then were retrofitted to handle single stream. Some that were built for source separation are *not* retrofitted, yet are struggling to handle this new mixed material. The furthest extreme we found was dirty MRFs that take garbage and then try to sort recyclables out of it.

In this wide diversity of programs called single stream, we found some that were quite good and some that were quite bad. This, by the way, seems to be true of many source separation programs also. But we're highlighting single stream programs because of the way they've been accelerating an already existing downward spiral in recovered paper quality and because of the role they play in rapidly rising exports.

With no consensus on what single stream is or how it's done, no wonder there are so many conflicting messages about it, ranging from some people saying single stream is a disaster all the way to others saying it's just fine.

We found that, indeed, the diversity in the range of programs called single stream creates the potential for understanding better what works and what doesn't, and then creating better programs.

D. Are There Really Problems?

Meanwhile, though, we find that a major obstacle to correcting the problems is convincing people that there really *are* problems. I've been surprised by how many have told us, "Leave this alone! Single stream is a done deal. Get over it and deal with it." We even had people call us up and scream at us about it. Of course, that's a red flag that, in fact, something about this issue really *needs* to be worked out.

I wondered why some people want to squelch discussion. We understand why local governments and collectors love single stream – they save money and they collect more volume. We also recognize that enormous investments have gone into trucks and processing facilities to handle single stream. So I suspect that many people may be afraid this is an either-or situation – if we don't embrace single stream, the only alternative might be going back to the non-automated bin system they used before.

But what if there's another way? What if, instead, we could evolve the current programs into ones that really work for everyone? If there actually are problems with single stream, then shutting down discussion prevents us from solving them. And not solving those problems is exactly what will ultimately threaten single stream.

So we decided to accept the proposition that single stream is here to stay and set out to get a better picture of what that might mean for paper recycling. I don't presume to be able to give you answers so much as I want to ask a number of questions I think we all need to be thinking about and discussing.

II. Questions and Issues

A. So my first question is: **What is the goal of recycling?** The answer 20 years ago used to be "conservation of natural resources." But over the past two years, the answer we were more likely to hear was "diversion." Laws like California's AB 939 even require local governments to meet specific diversion percentages or face fines.

But is it true that if something is kept out of a landfill, it can be considered "recycled"?

We interviewed representatives from virtually all the paper mills west of the Rockies and repeatedly we heard that in the bales they receive from single stream processors were significant percentages of plastic, glass, aluminum cans and other non-fiber materials - sometimes as much as 20% of the bale.

People from the plastics industry visited the paper mills and estimated that millions and millions of pounds of plastic containers are ending up at the paper mills instead of at the plastics recyclers. These are plastics that cannot be made into recycled products, even though they were collected for recycling. In California, these containers also will not show up in the state's bottle bill recovery rate calculations, even though residents thought they recycled them.

Some local governments counted these non-fiber recyclables as "diverted." But they didn't get made into recycled products because they went to the wrong kind of mill. In fact, most had to be landfilled by the paper mills.

So I ask you, does this meet your definition of recycling? Does it even meet your definition of diversion? I'm not talking about a legal definition, I'm asking you to think about what you think a healthy recycling system looks like, and then think about whether this sounds like a characteristic of a healthy recycling system.

B. When Is Something Recycled?

Of course, this raises the question of when should we count something as "recycled"?

Is it when it's "diverted," even if eventually it's landfilled?

Is it when it reaches a manufacturer, even if it cannot be used by them?

Or is it when it actually gets used to make a product?

Well, what about this notion of recycling having to do with conserving natural resources? When I first got into recycling 20 years ago, we promoted recycling and recycled paper because its production reduced demand on forests, on water, and on energy and it reduced pollution. Then the Mobro Barge brought the benefits of recycling much closer to home. We realized recycling also reduced the need for landfills.

But were we *too* persuasive about how recycling reduces landfill demand? I have to say I have been dismayed in our interviews with how many recyclers in all sectors of the system don't see a connection between recycling and the environment, or they think the connection is too "last century."

But the connection is real. Recycling is critical to environmental sustainability.

C. Commercial Collection

There's a push now from AF&PA and EPA to get more recovered paper out of office buildings. That's where we can get the cleanest postconsumer paper. Yet now recyclers are increasingly collecting office papers as single stream. Sometimes they mix it with residential single stream. Sometimes they mix it with brown fibers like corrugated. Sometimes processors just pull fiber out of the garbage from buildings.

But each type of paper mill needs a different type of recovered fiber. Very, very few can take a full range of commercial fiber all mixed together. For example, printing and writing mills and tissue mills use office papers to make their recycled products, but they cannot use them if newspapers, paperboard and corrugated boxes are mixed in. If the bales coming from office buildings are so mixed up that those mills can't use them – then we've just eliminated recycling from 1/3 of the paper industry.

As it stands now, the printing and office paper industry uses less than 5% recycled fiber, and less than 10% of its products have any recycled fiber in them. Clearly, there's a lot more room for recycling in that part of the industry. Not only that, but most printing and office papers can be recycled many more times than the papers in any other part of the paper industry, which means that their positive impact on the environment can be 10 times as great as in many other sectors. Why would recyclers want to throw away that opportunity?

The tissue industry has the highest average recycled content, close to 60%, even though many of its most advertised products have none. Tissue products such as toilet paper, paper towels and facial tissue are made to be disposable after one use. They're perfect for using recycled content and saving forests. Why would recyclers want to throw that away? But if your program commingles all the fiber from commercial sources, or worse, mixes it with residential, that's exactly what you're doing.

D. Residential Single Stream

What about residential single stream programs? These are providing fiber to newsprint mills and construction products, among others. We've talked to people from nearly 70 paper mills and visited many of them. They tell us that the costs to them of single stream are multiple and not so obvious as you might think.

In fact, AF&PA released a study in March that found that the cost for manufacturing products increased by \$8/ton when using materials from single stream processors. Even though single stream tended to *reduce* the cost of curbside collection by \$15/ton, it increased the *overall* cost of recycling by \$3/ton.

Let me give you some examples of mill costs that we found:

- Paper mills pay for fiber bales based on weight. When 20% of the bale is glass, plastic, metals and other non-fibers, it means they pay for a whole bale of fiber but get only 80% of it. That makes all the fiber more expensive.
- Then their machinery gets beat up as these non-fiber materials go through it, and paper machinery is some of the most expensive production machinery in the world.
- They have to pay for increased maintenance and parts.
- Many have made significant investments in more heavy-duty cleaning equipment.
- We heard more than one real-life story about the glass, plastic and metals from single stream bales becoming so overwhelming that they clogged the pulping system and shut the mill down. Downtime costs several thousand dollars an hour, in addition to lost revenue from the products that aren't getting made, and it can take hours or even days to clean it out.
- Even when they don't shut the mill down, the mill then has to pay to get rid of the non-paper material. We've seen 30-40 yard roll-offs filling with ground-up gunk from these contaminants. Typical was the mill that told us they normally have to pay to have their roll-off emptied once or twice a week, but when they tried running single stream, they had to pay to empty it three or more times a day.

- Then there's the risk of losing customers. If the newsprint or tissue has glass in it, or the cereal box has pinholes or blemishes from polystyrene that got through, the mill risks losing customers to virgin paper producers. And that hurts not only that mill and maybe that product, but the reputation of all recycled products which, in turn, undermines future recovered fiber markets.
- If the mill is determined to avoid these problems, it may only buy preconsumer fiber, which is much more expensive but much cleaner. But of course preconsumer fiber is only a small fraction compared to the amount of postconsumer fiber that's available, so that limits how much recycling they can do, as well as any likelihood for them to increase recycling in the future.
- Or, if a mill can't find the quality of fiber they need locally, they may go hundreds of miles away to get good residential fiber, which adds hefty transportation costs.
- Oh, and despite these increased costs from the fiber quality, the recycling mill can't raise its finished product price because it has to compete against virgin paper mills making the same products.

One newsprint mill paper buyer we talked to said that, while single stream saves collection companies money, it shifts those costs to the mills. He said that the ONP that ostensibly costs \$90-100/ton ACTUALLY costs \$140-160/ton by the time it gets to the paper machine because of all the clean-up costs it requires.

So if you were running a paper mill and faced these kinds of cost issues, would you be concerned about the quality of collection programs?

Even many of the local governments acknowledge the downgrade in quality. Newsprint mills want #8 or #7 news, and many can deal with some #6 news. But some local government representatives were unphased when they told us their programs were producing #4 news – which doesn't exist in the ISRI standards – or even #2 news.

E. Off To Asia

Now I think there'd be no question that we'd have to deal with these quality issues except that increasingly there is a big "out" and that is China.

When I talk about these problems, people often ask, "Why are you worried about this? The market will take care of itself. If the mills want cleaner material, they can just pay more for it." But I kept hearing from people at the mills that the market is not working the way you would expect. We were told by several mills that when they insisted on cleaner fiber and even would pay more for it, the supplier refused, saying that he could sell it with no problem, without cleaning it up, to China.

In fact, it was very common for collectors and paper brokers to tell us it didn't even matter to them if U.S. mills closed because of recycled fiber quality problems. "All our manufacturing industries are moving overseas anyway," they told us. "If the mills can't compete, they SHOULD close."

But is it a good idea for us to put all our eggs in overseas baskets?

Here are some questions I think it's important to think more about:

How long can we count on the accelerated demand from China to last? We might look at past experience for guidance. Japan bought huge amounts of U.S. recovered paper to jumpstart the modernization of its paper industry in the 1960s, and Korea and Taiwan did the same in the 1970s. All of them sustained demand for a few years, but then dropped to lower levels when they had

developed enough to have their own recovered paper systems. China is already developing its own internal recovery programs and they are also planting plantations of fast-growing trees. They expect to have some of their own sources of virgin fiber within just a few years. Meanwhile, they have bought into Asian virgin paper companies and are importing logs from Russia. What will happen to our recovered paper markets when China's system evolves and its needs change?

Some brokers assure us that will never happen. They point to China's huge population, and say that India, Thailand, Bangladesh and Africa are next. They say the new global reality is that we'll get most of our finished paper from other countries.

What do you think about that?

If all our products are coming from other countries, how could we prevent being held hostage to their demands and to the vagaries of their markets?

The Asian export market is based on the availability of shipping containers, which varies by season and a number of other factors. What happens if there's a dock strike? What happens when the cost of the fossil fuels the ships use shoots up quickly, as many predict will happen in the next few years?

And what about this idea of getting all our recycled newsprint and printing and office paper from other countries? A considerable amount of China's virgin fiber currently is coming from endangered forests in Southeast Asia and Russia. Does adding recycled content make that okay? Is that the kind of paper American paper purchasers will want to buy? Increasingly, I see major corporations insisting on more environmentally sustainable fiber.

F. Impact on U.S. Mills

A number of collectors and brokers insist the American mills have no choice but to deal with whatever quality of fiber they get. But the fact is, paper mills *don't* have to deal with it.

They don't think of themselves as making "recycled paper" or "virgin paper." They're just making paper and they have a number of different sources they can use to make it. Many recycling mills also run virgin pulp. They can increase it or even switch over completely to it if that makes more economic sense.

The mistake I hear many recyclers make is to assume that the competition for a recycled paper mill is another recycled paper mill. But for most of them, their competition is a virgin paper mill. If the recycling mill can't produce high quality products at competitive prices, there's usually a virgin paper mill ready and willing to swoop down and take its market – and that is not good news for us recyclers.

The paper industry has been closing their older and less efficient mills over the past few years. I've noticed that when they close down virgin paper production at one mill, they often transfer it to a newer virgin paper mill. But when they close recycling mills, that recycled production – and that recovered paper market – is just gone. Why would recyclers want to encourage that to happen?

G. What If Domestic Mills Close?

But let's bring it closer to home. Is it true that it doesn't matter if we lose domestic recycling mills?

Is the only way to measure cost the pricetag on products? Should our only concern be to buy cheaper and cheaper products?

What is the cost of losing a manufacturing or converting facility in your town? What does it do to the fabric of your community?

And what does it do to our recycling system if we lose more recycled products so people can't find them so easily anymore? Isn't all of this part of the price we pay?

What happens when overseas demand changes and we come back to our local paper markets – but find that, in the interim, mills have closed? Or that our MRFs are now tooled to make low quality bales of recovered fiber because they can be hand-sorted in Asia, but our mills here can't take those?

Even before we get to *that*, what happens when more and more local governments get on the bandwagon and convert to single stream and the limited number of paper mills that can take mixed bales of recovered fiber are saturated? What is the future then for our community recycling programs?

III. Conclusion

I'm worried. It seems to me that we have way too much focus on the short-term and not near enough on the long-term health of our system. An American paper broker who represents an Asian paper buyer told us, "Asians are long-term thinkers. But *we* don't think long-term." Is that true of us as recyclers?

I don't hear people evaluating choices based on the health of the *whole* recycling system, only on what each choice will do for them. But recycling is a collaborative system. All the different sectors in recycling have to cooperate with each other in order to further their own long-term self-interest.

If single stream is here to stay, we have a lot of catching up to do. We need the collectors and equipment manufacturers to work much more closely with the manufacturing mills to make sure that the materials they're recovering are usable for the manufacture of a wide range of recycled products – products that support our Buy Recycled policies.

We need local government people to learn more about what the industry needs. Take a tour through your local paper mill or boxboard converter and talk to the people there about what they need to make their products. Visit a plastics recycling facility. Go see glass being made.

We need to expand our concept of "diversion" to embrace focus on quality and environmental benefits. Why do recyclers put so much focus on *collecting* materials and so little on what's needed to manufacture recycled products that customers will be happy to buy? Putting the focus on what's needed to manufacture these products is what will reliably drive the diversion from landfills that we want.

We can analyze and learn from the mis-steps that have been made and design better systems for recycling. The fact that there are single stream programs that are much better than others and that even some of the paper companies have ventured into single stream processing suggests that we can solve the problems that have been cropping up – *if* we face them instead of deny them.

I think that local governments are at the epicenter of ensuring long-term health for our North American recycling system, and that they can do that through their program design and contract terms. Conservatree has been collecting ideas for best practices in our interviews over the past year. We've teamed up with Richard Gertman at Environmental Planning Consultants and expect to be able to make specific best practices recommendations in the next few months.

In the meantime, we all *need* to be discussing single stream and all the issues that surround it, then solving the problems. That's what I think will make single stream work for the healthy and long-term recycling future that we all want.