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Paul Kawolis, owner of Linder's Used Auto Parts, walks through the company's auto graveyard. [T&G Staff/Steve Lanava]



By **Jim Morrison, Correspondent**
Posted Feb 10, 2019 at 6:00 AM



Currency fluctuations, international political uncertainties and now tariffs that are hitting recycling businesses and consumers hard. A WPI engineering professor said the tariffs could turn out to be good for the recycling industry, if they are seen as a wake-up call.

Brajendra Mishra is the Kenneth G. Merriam Professor of Mechanical Engineering at Worcester Polytechnic Institute. He said the U.S. recycling industry essentially collects glass, paper, metals and electronic scrap (e-scrap), does some sorting but then ships it all overseas to countries with lower labor costs to finish the sorting and convert the materials back into something that can be used in a new product. He said that's a missed opportunity for the U.S.

Mr. Mishra said there are already a few U.S. companies that fully recycle these waste materials into something that can be used in a new product, but only on a small scale. He said he believes advances in modern technology will allow U.S. companies to profitably and sustainably scale the recycling of U.S. paper, glass, metals and e-scrap into new materials, thus avoiding the often-expensive vagaries of international trade.

"There is a California company called CarbonLite," Mr. Mishra said. "They take plastics, sort them, wash it, remove the labels and adhesives, shred it, melt it and turn it into pellets. The pellets go back to manufacturers. They do it and do it profitably. People have to appreciate that recycling always saves energy, is good for the environment and in most cases will make money."

But plastics, especially No. 5 plastics, are profitable. No. 5 plastics are found in some yogurt containers, syrup and ketchup bottles, caps, straws and medicine bottles, and can be recycled through some curbside programs.

Paper is much less profitable, and glass has always been difficult to recycle into new materials. Mr. Mishra said in these cases, it might make sense for the government to step in.

"In cases where recycling is not profitable, like glass and paper, the government should step up and provide subsidies in those areas. Like the subsidy we provide for solar panels because we know it is good for the environment."

The environmental argument is a strong one. For example, Mr. Mishra said there is currently more gold in electronic scrap than there is in all of the known ore in the ground. And the environmental impact of reclaiming gold from e-scrap is far less than the cost of digging it up and processing it.

"A ton of ore will give you 35 or so grams of gold," Mishra said. "A ton of cellphones will give you 350 grams of gold plus significant amounts of silver, cobalt, copper and other precious metals. We are getting better about recycling cellphones and a lot of other things, but the majority of e-scrap is going into landfills. E-scrap can and should be reused endlessly."

Electronics Recycling International, which specializes in e-scrap and has offices in Holliston, did not respond to an interview request for this story.

Mr. Mishra said that if car manufacturers, for example, were made responsible for the entire life cycle of the materials in the cars, they could open ancillary metals reclamation and recycling units that would provide the raw materials for making new cars as well,

balancing out the hurdles in that industry.

"If a manufacturer like GM, which just laid off a lot of workers had something like this to go along with their business, they wouldn't have to lay people off," Mr. Mishra said.

Paul Kawolis, president of Linder's Inc. in Worcester, which sells used cars and car parts, and recycles cars, said the prices he gets for the crushed cars have dropped 15 percent for each of the last two months largely because the strength of the dollar against the Euro is driving buyers toward Russia. He said he'd love to be able to sell his car scrap to U.S. buyers.

"That would be an advantage," Mr. Kawolis said. "We'd have a more stable market. We'd be trading in the same currency and avoiding tariffs and international politics. That would take some of the bumps out of the business."

Mr. Kawolis said China stopped buying crushed car bodies about five years ago. That's when he started selling them to India. Turkey has been buying more crushed cars as the country is ramping up its steel production, but Mr. Kawolis said Turkey didn't buy any crushed cars last month, which further depressed the price he can get for crushed cars.

The China Council for International Cooperation on Environment and Development (CCICED) released a paper stating that a further stop to materials imports will be in place by 2019. This international advisory body, which includes some top Chinese officials, signals that recycling restrictions from China may become even tighter in the future.

Lynn Rubinstein, executive director of the Northeast Recycling Council, said the ban hit the paper recycling industry particularly hard.

"Mixed paper took the most painful hit with China's ban. Its price went from over \$100 a ton to zero, to having to pay people to take it. Some states gave permission to put it in a landfill. That's the most alarming trigger point. We did this to ourselves."

Rubinstein said the United States had a vibrant paper recycling industry in the 1990s. Then China opened up state-of-the-art facilities and began buying U.S. paper. Most American facilities closed. Today, there are no paper recycling companies in Massachusetts. She said new companies are beginning to open in the U.S. but it can be cost-prohibitive in the expensive Northeast.

"The amount of financial investment required to buy modern processing equipment is staggering," Ms. Rubinstein said. "Companies are buying closed paper mills, but they also have to buy tens of millions in equipment, develop business relationships. They're expensive and complicated to get going. Permitting issues in the Northeast are very expensive."

Mr. Mishra said the U.S. should make recycling independence a goal alongside energy independence.

"We are focused here on developing the technology that will help the recycling companies compete with those in other countries," Mr. Mishra said. "We can do it. How will we scale it and make it profitable? That's a math problem. The cost of not doing it is enormous. That waste has to go somewhere."



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