

Rendering's Role in Capturing Carbon Emissions

Congress has begun deliberations on instituting a national policy to reduce greenhouse gas (GHG) emissions while promoting clean technologies and economic growth. Numerous proposals have been introduced to date with most creating a cap and trade scheme based upon emission allowances.

A major factor in all of these discussions has been cost-containment and the need to minimize impacts on families and businesses. Most legislative proposals being debated allow for some type of offset program for projects that reduce, avoid, or sequester GHG emissions. Such a program would allow for these qualified, permanent emission reductions to count as emission "credits" and would assist covered entities in reaching compliance while promoting innovation in emission reduction.

Rendering and Its Role

Rendering, the process of converting animal by-products into fats and proteins, should be recognized as an important

GHG avoidance technology. Through the rendering process, inedible wastes that are rich in carbon and nitrogen are recycled into useable materials. The rendering process also averts the release of carbon dioxide (CO₂) and other GHGs that would otherwise be released into the air through the normal decomposition process. Rendering is the most efficient and environmentally sound disposal alternative.

If all carbon in these waste products were expressed as CO₂, using the U.S. Environmental Protection Agency (EPA) estimate of 5.46 metric tons per car, failure to remove these products from the waste stream would be the same as adding 3,201,986 cars to the nation's roads per year.

However, if 20 percent of the carbon in decaying organic material is expressed as methane and 10 percent of the nitrogen is expressed as nitrous oxide, then removing these products from the waste stream (because these GHGs have global warming potentials that are substantially

greater than CO₂) would be the same as removing 12,263,316 cars from the nation's roads annually.

Additionally, What More Could Be Done?

Approximately 55 percent of the cattle that die each year in the United States are not rendered, the bulk of which are deposited in landfills or otherwise left to decompose. According to the U.S. Department of Agriculture, approximately 4.3 million cattle died in 2007. Based on GHG measurements taken from composting studies, adding one metric ton of cattle carcasses to the compost pile results in two metric tons of CO₂ equivalents produced over and above any gases produced by decomposition of manure, bedding, or other organic material in the pile.

If GHG production is similar when carcasses decompose naturally in the environment, one adult dairy cow might be expected to add 1.2 metric tons of CO₂ equivalents to the environment.

Accounting for the discrepancy in mature cattle deaths versus calf deaths, the resulting release of CO₂ emissions from cattle not already rendered is approximately 492,000 tons per year. Using the EPA's estimate

for average emissions for vehicles, providing the incentives to render these additional animals would equate to taking an additional 82,000 cars off the road each year.

These estimates, however, assume that no methane or nitrous oxide gases are emitted during the decomposition process. If 20 percent of the carbon is released as methane rather than CO₂ and 10 percent of the nitrogen in a

Table 1. Carbon Removed in the Form of Rendered Products

	Production	% Carbon (metric tons)	Carbon (metric tons)	CO ₂ (metric tons)	CO ₂ (U.S. tons)
Animal fats	4,515,600	75.89	3,426,889	12,566,516	13,852,070
Meat and bone meal	2,314,600	24.27	561,661	2,059,629	2,270,329
Poultry by-product meal	1,153,500	28.68	330,801	1,213,057	1,337,153
Feather meal	600,900	37.50	225,350	826,364	910,901
Pork meal	720,711	25.59	184,427	676,300	745,486
Blood products	102,512	37.50	38,444	140,976	155,397
Total all products	9,407,823		4,767,571	17,482,842	19,271,337

Table 2. Nitrogen Removed in the Form of Rendered Products

	Production	% Protein	Nitrogen (metric tons)	Nitrogen (U.S. tons)
Meat and bone meal	2,314,600	55	203,685	224,522
Poultry by-product meal	1,153,500	65	119,964	132,236
Feather meal	600,900	85	81,722	90,083
Pork meal	720,711	58	66,882	73,724
Blood products	102,512	85	13,942	15,368
Total protein meals	4,892,223		486,195	535,933

carcass is given off as nitrous oxide, the annual global warming potential for carcasses that are not rendered increases to 2.1 million tons (1.9 million metric tons) or the equivalent emissions of approximately another 345,000 cars.

Recommendation

As Congress continues to consider the implementation of a national cap and trade scheme, the rendering industry should be considered a viable source of emission offsets. Allowing the rendering industry to participate would create financial incentives for farmers and ranchers to properly dispose of dead animals while avoiding additional GHGs, reducing concerns over the spread of disease, and freeing up limited landfill space.

Also, discriminating against products already recycled through rendering as “not new” technology, but recognizing protocols for placing fallen animals in anaerobic digesters or in landfills to trap and burn off the methane produced as “new” technology, would put rendering at a competitive disadvantage and drive these organic materials to a much less productive and environmentally disadvantageous end. The result would be awarding offsets for shifting carbon from recycling to disposal with no net reduction (and a probable increase) in GHG emissions. **R**