Rendering and Pet Food: Keeping Animal Feed Sustainable

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Without rendering, all available space in landfills would be used within 4 years.

Rendering Is Recycling! www.nationalrenders.org
Why do you care?

- Huge amount of population growth projected
- Annual meat production is expected to rise...a lot
- ...along with the amount of pets, especially in the developing world

- But first...what is rendering?
By-products and rendering

• What is a “by-product”?
  – Simply put, a secondary product obtained during the manufacture of a principal commodity

• 2 types of renderers
  – Packer/renderers are packers that do their own rendering
  – Independent renderers are not associated with a particular packing plant
Rendering Plant
History of the Rendering Industry

• The rendering industry has a long history, from Native Americans using blood as fertilizer to tallow being used for candles and soap

• The real need for the industry came with increased animal production
  – Grocery stores
  – Fallen animals
  – Boxed beef
  What do you do with the extra?

• “The Invisible Industry” was born
U.S. Animal Agriculture Annual Production

- 35 million cattle (49% of live wt. not used for human food)
- 110 million hogs (44% not used for human food)
- 2 million sheep and lambs (46% not used for human food)
- 8.6 billion chickens (37% not used for human food)
- 280 million turkeys (36% not used for human food)
- 24 million ducks (30% not used for human food)

This amounts to approximately 50 billion lb. produced in the U.S.

Plus approximately 6 billion lb. produced in the Canada

2012 USDA slaughter numbers data; dressing percentage estimates from literature. Processing methods vary.
Raw Materials

• Offal
• Bones, fat, trimmings
• Blood
• Animals dead on arrival, in transit, or on farms
• Restaurant grease
  – 4.7 billion pounds of used restaurant grease
    • 2.4 billion lbs recycled by renderers
• Feathers
• Grocery store material
  – 2.7 billion lbs of meat and seafood lost in retail (expired or dated)
  – 1.9 billion lbs recycled by renderers
• Recalled product
From this:
To this:
“Edible” vs. “Not intended for human consumption”

- Edible foods can go into rendering.
- Once something goes to inedible rendering, it never goes back to human food—it’s a one-way street.
  - The lard you see in the grocery store came from the “edible” side of the plant, not from the rendering side.
Food Recovery Hierarchy

Source Reduction
Reduce the volume of surplus food generated

Feed Hungry People
Donate extra food to food banks, soup kitchens and shelters

Feed Animals
Divert food scraps to animal feed

Industrial Uses
Provide waste oils for rendering and fuel conversion and food scraps for digestion to recover energy

Composting
Create a nutrient-rich soil amendment

Landfill/Incineration
Last resort to disposal

Most Preferred

Least Preferred

www.epa.gov
Why do you care?

• Huge amount of population growth projected
• Annual meat production is expected to rise...a lot
  – ...along with the amount of pets
  – ...and meat eaters
• Sustainability matters—and we are already doing it
Pets

• In the US, cats and dogs are the post popular
  – About 45 million households have cats
  – About 57 million households have dogs
• Total expenditures on pets is around $60 billion dollars
• Dogs and cats belong to the order Carnivora
• Dogs can eat a balanced veg*n diet
• Cats are obligate carnivores

How would/do dogs and cats act in the wild?
What is sustainability?

• The Environmental Protection Agency definition:
• “Sustainability creates and maintains the conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic and other requirements of present and future generations.”
So why rendered ingredients?

- Poultry by product meal is more nutritious than poultry meal which is more nutritious than poultry (one example)
- Highly palatable
- Rendered ingredients=energy, flavor, texture, nutrients including minerals
  - Phosphorus rock is non-renewable and running out worldwide
Nutrition

• Main requirements are protein, energy, and minerals
• Rendered products are excellent sources of all three
Removing Animal Byproducts From Rations

- Fewer ingredient options
- Higher ration costs
- Fewer herd health benefits
- Little added animal health protection
- Lower overall industry sustainability
Safer environmentally

Cheap disposal methods like burial, abandonment, composting do little to kill pathogens, contaminate groundwater, and attract wildlife.

Rendering breaks disease systems while capturing carbon and other GHG.
Rendering’s Cycle of Sustainability

Darling and the rendering industry have been the gatekeepers of food safety and the environment for decades, offering a sanitary and eco-friendly way to dispose of the massive amount of meat and food by-products produced every year.
Rendering breaks disease cycle

- Protects surface and groundwater from pathogens
- Used by federal agencies to eradicate diseases in animals
- Some other disposal methods use bacteria to decompose material

Rendering is the “Gate Keeper”
What is fed to animals if by-products are not used?

- Unused by-products = wasted food
- Food suitable for humans would be used for pets
  - More acres, resources needed for food
  - Higher food prices
  - Less food availability
Decreased Use of Virgin Ingredients

• Recycling products that do not compete for human food resources and would otherwise be wasted and sparing the amount of extra ingredients and the land, water, and nutrients to produce them is the epitome of a sustainable process

• RENDERING HELPS YOUR PRODUCT BE MORE SUSTAINABLE
What More Could be Done?

- Nearly all by-products from commercial food animal slaughter, including offal, fat, and carcass trimmings are rendered, but 4.3% is landfilled and 1.2% is composted.

- As meat production increases to meet global demand, rendering by-products should be chosen over less sustainable disposal options.
Sustainability Questions

- What happens to all this material if not used for animals?
- What is fed to animals if by-products are not used?
- How much more productive capacity would be needed to feed pets food that is suitable for people?
What about other options?

• Biosecurity
• Regulated emissions, discharges, and disposal
<table>
<thead>
<tr>
<th>Item</th>
<th>Composting</th>
<th>Digester</th>
<th>Rendering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controlled consistent process?</td>
<td>Little</td>
<td>Moderate</td>
<td>Full control</td>
</tr>
<tr>
<td>Timely processing of raw materials?</td>
<td>Weeks/months</td>
<td>10 + days</td>
<td>Same day</td>
</tr>
<tr>
<td>Take surges/changes in raw materials?</td>
<td>Limits</td>
<td>Limits</td>
<td>Routine</td>
</tr>
<tr>
<td>GHG emitted?</td>
<td>Yes</td>
<td>$\text{CO}_2$</td>
<td>Avoided</td>
</tr>
<tr>
<td>Wastewater controlled?</td>
<td>Not all</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>End products regulated?</td>
<td>Minimal</td>
<td>?? ??</td>
<td>Yes</td>
</tr>
<tr>
<td>Safely handle inedible meats?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Process regulated?</td>
<td>Little</td>
<td>Little</td>
<td>Yes</td>
</tr>
<tr>
<td>Kills pathogens reliably?</td>
<td>Spotty</td>
<td>Not all</td>
<td>Yes</td>
</tr>
<tr>
<td>End products safe for animals</td>
<td>Hazard$^2$</td>
<td>NA</td>
<td>Yes$^3$</td>
</tr>
<tr>
<td>Solids suitable for land application?</td>
<td>Fertilizer</td>
<td>Toxic to plants?$^4$</td>
<td>Fertilizer</td>
</tr>
<tr>
<td>Source of biofuel</td>
<td>Uses energy$^1$</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Sustainable</td>
<td>For plant material</td>
<td>? If energy cheap</td>
<td>$&gt; 100$ years old</td>
</tr>
</tbody>
</table>

$^1$ Compost and digester comparisons from Mata-Alvarez and Llabres, 2000

$^2$ If meat included in compost, potential violation of 21CFR 589.2000/2001 & Swine Health Protection Act

$^3$ Use for animals regulated. Certain products can not be fed to cattle and other ruminants

$^4$ If energy cheap
Questions I get asked

• Is rendering regulated?

• Are you sure there isn’t (blank) in there?
I’m interested, now what?
Communications

Without rendering, all available space in landfills would be used within 4 years

(Rendering Is Recycling! www.nationalrenderers.org)

Rendering: The Sustainable Solution

Published on Jun 28, 2013
Rendering is a vital part of sustainable agricultural production. Renderers take the parts of animals that North Americans choose not to utilize and make them into valuable products like livestock feed, pet food, biofuel, fertilizer, and other industrial products. The truth about rendering is much different than you may have been

Rendering: La solución sostenible

Last 365 days (Apr 27, 2013 – Apr 26, 2014)
## Rendering Is Recycling

Rendering is an environmentally friendly way to recycle material that would be wasted.

### What Materials Are Rendered?

- **Packing Plants**
  - 147.2 MILLION head of cattle, calves, hogs & sheep are slaughtered annually in the US.
  - 10 BILLION chickens and turkeys are processed each year in the US.
  - APPROXIMATELY 50% of the animal is considered inedible by Americans and goes to renderers including: bones, fat, blood, feathers & some internal organs.

- **Farms**
  - Some animals die on the farm from injury, old age, or other issues.
  - Renderers prevent this from becoming a public health hazard by eliminating pathogens in the rendering process.
  - Fallen animals only represent about 4.5% of rendered product.

- **Grocery Stores generate**
  - 1.92 BILLION pounds of scraps, fat, bone, expired meat & used cooking oil annually.

### What Are the Products of Rendering?

- Renderers collect:
  - 56 BILLION POUNDS of raw materials every year in the U.S. and Canada.
  - That amount would quickly overwhelm landfills without rendering!

- Renderers recycle these materials into:
  - 10 BILLION POUNDS of fat and oil products
  - & 9 BILLION POUNDS of protein products annually

- Rendered products are ingredients in:
  - Pet food
  - Food for cattle, pigs, sheep, poultry, fish and other livestock
  - Biofuel
  - Fertilizer
  - Plus Other products like soaps, lubricants, detergents, and more.

### Rendering is Green!

- **Rendering is recycling!** Carbon- and nitrogen-rich materials are recycled into useable products.

- **Rendering reduces greenhouse gases.** Carbon dioxide, methane, and other greenhouse gas emissions from natural decomposition like in a compost pile or landfill are avoided.

- **A single decomposing dairy cow releases 1.2 METRIC TONS of carbon dioxide. Rendering avoids this!**

- **Rendering these animal tissues has the same effect on greenhouse gas emissions as removing 12,263,316 CARS FROM THE ROAD**
Rendering is Recycling

Rendering is an environmentally friendly way to recycle material that would be wasted.

What materials are rendered?

- Packing Plants: 147.2 million head of cattle, calves, hogs, and sheep are slaughtered annually in the US.
- Farms: 10 billion chickens and turkeys are processed each year in the US.
- Grocery Stores generate: 1.92 billion pounds of scraps, fat, bone, expired meat, and used cooking oil annually.

Approximately 50% of the animal is considered edible by Americans and goes to renderers including: bone, fat, blood, feathers & some internal organs.

Farms: Some animals die on the farm from injury, old age, or other issues. Renderers prevent this from becoming a public health hazard by eliminating pathogens in the rendering process. Fallen animals only represent about 4.5% of rendered product.

Renderers collect: 4.4 billion pounds of used cooking oil per year in the US and Canada.

What are the products of rendering?

- Renderers collect: 56 billion pounds of raw materials every year in the US and Canada.
- Renderers recycle these materials into:
  - 10 billion pounds of fat and oil products
  - 9 billion pounds of protein products annually

Rendered products are ingredients in:

- Pet & livestock feed
- Biobutanol
- Fertilizer
- Plus other products like soaps, lubricants, detergents, and more.

Rendering is green!

Rendering is recycling!

- Carbon- and nitrogen-rich materials are recycled into useable products.
- Rendering reduces greenhouse gases. Carbon dioxide, methane, and other greenhouse gas emissions from natural decomposition like in a compost pile or landfills are avoided.

Rendering avoids this:

- A single decomposing dairy cow releases 1.2 metric tons of carbon dioxide.
- 12,263,316 cars from the road

Rendering is safe & essential

- Protects the environment
- Protects human health
- Protects animal health
- Sustainable and contributes to sustainability of animal agriculture
- Essential link in food chain

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Render magazine

Catering to the Pet Food Market

AVMA Discourages Raw Pet Food Diets
Latin America’s Role Over the Next Decade

Salmonella Detectives
Research validates safety of animal proteins

Rendered Proteins Not to Blame For Salmonella outbreak in eggs
Nutrient-based Feed Formulation: Strategies for Cost Reduction
Additional information in a book available from the National Renderers Association

Free download: nationalrenderers.org under “Publications”
Published February 20, 2015

Rendered ingredients significantly influence sustainability, quality, and safety of pet food

D. L. Meeker and J. L. Meisinger

Journal of Animal Science

https://www.animalsciencepublications.org/publications/jas/abstracts/0/0/jas.2014-8524
Questions?

THE ORIGINAL RECYCLERS

Website: NationalRenderers.org
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