‘Waste Not, Want Not’

For 180 years, the North American rendering industry has empowered society to follow this wise advice. With little fanfare, the industry has been a major force in ensuring a clean and healthy environment — recycling the things we don’t want to eat, such as bones, grease or hides, into usable, valuable products for consumers long before the word “recycling” popped into the press.

From its roots in creating tallow for soaps and candles and hides for leather, the North American rendering industry has responded to the changes in society — in what we eat, how we clean ourselves and our homes, what we feed our pets, what we use to build and beautify our environments.

25 Million Tons, and What Do You Get?

Every year the North American rendering industry recycles some 50 billion pounds — some 25 million short tons or 80-90% of discarded animal material from the livestock and poultry farming and processing, food processing, supermarket and restaurant industries. Without renderers, consider where this material would end up — and at what cost to public health, the environment and taxpayers. Instead, using high-tech controls that run high-temperature cookers, centrifuges and presses, renderers turn this material into valuable ingredients — high-quality fats and proteins.

Other industries rely on these ingredients for products that are important to people today — including soaps, paints, varnishes, cosmetics, pharmaceuticals, crayons, leather, textiles, lubricants, rubber products, plastics, agricultural fertilizers and explosives. Farmers rely on the ingredients for meat and poultry production. In fact, the rendering industry returns the majority of its finished products to the feed and pet food industry. Renderers produce high-energy fats and high-quality protein ingredients that supplement animal diets as guided by government regulations. These ingredients lead to more efficient production of beef, veal, pork, poultry, eggs, fish, and milk.

An informational video explaining the process, history, uses, benefits, and more, of the rendering industry is available at the website www.nationalrenderers.org.

$5.5-Billion Industry that Balances Trade, Helps Communities

The economic impact of the rendering industry is significant, and the manufacture and trade in rendered products is critical to North America’s agricultural economy and balance of trade. In recent years, the U.S. exports average approximately
24% of the total production of renderers. More than 14% of rendered animal proteins are exported and over 30% of rendered fat is sold overseas. Important export markets are Mexico, China, Indonesia, and Canada.

For communities, this recycling of perishable by-products significantly reduces their solid waste and the cost to manage it. The rendering plants also contribute to local tax bases, supporting local services and infrastructures. Perhaps most importantly rendering plants offer much needed employment opportunities in rural areas.

**Rendering Plants Are High-Tech, Low-Touch**

About 250 rendering plants operate in North America. Approximately 95 of these are associated with a slaughtering facility (packer/renderers) and process only the facility’s by-products. The other 155 are independent facilities that gather raw material from other processors, supermarkets, butcher shops and restaurants.

The modern rendering plant is a high-tech, low-touch system far removed from the early days when workers were more exposed to the raw material and used simple boiling and separation, or “wet rendering.” Today plants use dry rendering, a process that releases fat by dehydrating raw material in a batch or continuous cooker. This cooking and drying process yields fat of varying grades and also protein meals for animals and poultry. It eliminates the direct contact of raw material with added water and live steam, thus avoiding the possibility of contaminated wastewater from the processing.

**Batch Cooking**

In batch cooking, a vessel is filled with raw material and sealed. The material is processed under controlled conditions using times and temperatures related to the type of raw material. The cooked material's temperature ranges from 250°F to 275°F. It is discharged to the percolator drain pan where a perforated screen allows the fat to drain away from the protein solids, also known as tankage.

After about one hour of draining, the solids still contain about 25% fat. They are conveyed to the screw press to complete the separation of fat from solids. The final protein solids have residual fat content of 9% to 13%, which varies from the content of the raw material, such as beef, poultry and fish. The protein solids are known as cracklings, which are then screened and ground with a hammer mill to produce protein meal. After the product is discharged, the cycle is repeated.

**Continuous Cooking**

The first continuous rendering system was developed in the early 1960s. With this method, the raw material is fed semi-continuously to the cooker and the cooked material is discharged at a constant rate. A continuous rendering system normally consists of a large cooking unit, whereas the batch system consists of one to 12 smaller cooking units. This system usually has a higher capacity than the batch process and enables more material to be processed in less time.
Computerized Control Centers

Most rendering plants contain a process control center located inside an environmentally controlled room. Operators use a keyboard to alter control of the process if needed. The data acquisition system collects all desired process data and stores it for recall as a diagnostic and trouble-shooting tool.

Odors

Odor is the primary nuisance from rendering. Odors come primarily from the cooking of the raw material. Plants use air “scrubbers” to remove the odors where they occur. No federal regulations control the emission of these odors. Instead, state and local air pollution control agencies regulate the plants using various measures to determine if the odor is a “nuisance” and requires a plant to fix the problem.

Product Quality

Rendered product quality relies on a combination of plant efficiency and monitoring using both voluntary and government standards. The raw product must be heated as quickly as possible to prevent enzymes and bacteria from degrading the fat and protein. So that it will cook uniformly, raw product is chopped into pieces about an inch in diameter or smaller, which also helps to increase the production rate and decrease energy costs.

Various product safety controls are used voluntarily throughout the industry — for example, Hazard Analysis Critical Control Point (HACCP) monitoring and good manufacturing practices (GMPs). These procedures ensure that rendered materials are produced in a sanitary and wholesome way. The cooking destroys all bacteria and other pathogens, but the resulting meals must be stored, handled and distributed under carefully controlled conditions to prevent post-process recontamination. Renderers follow certain standards to eliminate this possibility. For example, they perform microbiological tests to verify processes and hygiene as recommended by the Animal Protein Producers Industry (APPI) committee. Use of APPI standards provides assurance to the customers for rendered meal products.

Rendering Offers Diverse Job Opportunities

Rendering is a highly specialized manufacturing process that demands people skilled and experienced in many fields who also learn skills unique to rendering while on the job. In the industry’s independent sector, many companies have a proud tradition of family ownership over several generations. In this industry one finds people with great pride in their contribution to their communities, agricultural production and consumer goods manufacturing.

Rendering companies offer good jobs in many business fields — including computer programming, information systems, data processing, accounting and finance, quality control, marketing, risk management, customer and community relations, human resources, office administration, secretarial services, engineering and legal
counsel. Renderers also employ plant managers, lab technicians, chemists, nutritionists, mechanics, boiler operators, skinners, hide handlers, truck dispatchers and drivers, security guards, environmental scientists and maintenance workers.

Working conditions in plants have improved considerably over the past quarter century. Modern North American rendering plants adhere strictly to worker safety and health regulations. As North American renderers continue to advance in technology and quality control — and as the world’s growing population increases demand for rendered products — employees can expect a bright future in this industry.

**The Industry’s Future**

With 95% of the world’s population outside North America, growth for the industry will mainly be in overseas markets that lack the agricultural infrastructure to produce consistent quality products competitive with imports, or in established markets that will find North American products cost-effective relative to alternatives.

Industry analysts suggest that the rendering industry will continue to consolidate through mergers and acquisitions, similar to other industries. Renderers will continue to upgrade existing plants to improve efficiency, working conditions and quality control. They will also improve product quality and develop new value-added products, such as nutritionally improved animal meals and biofuels. And, too, they will continue to focus on “biosecurity,” developing progressive programs to eliminate the possibility of biological hazards throughout their processing.