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Oklahoma Cooperative Extension Service • Division of Agricultural Sciences and Natural Resources

“Where’s the Beef?”

The story of Beef By-products

“Where’s the Beef?”

This now-famous slogan of a popular hamburger chain is a question only partially answered by the commonly recognized products of beef, from hamburger to filet mignon. The beef cattle industry does provide a high-quality, readily available protein source for the American diet. Still, many people are not aware that the by-products of beef also contribute to vital, even life saving, goods and services. To illustrate, an 1150 pound market steer yields approximately 500 pounds of beef. Nearly all of the remaining weight is recovered as by-products. “Where’s the beef?” It is just about everywhere.

Edible By-products

Some edible beef by-products are fairly well known as variety meats. The nutritive value of liver, kidneys, brains, tripe, sweetbreads, and tongue has long been acknowledged. Other important edible by-products are less well known. Fats yield oleo stock and oleo oil for margarine and shortening. Oleo stearine is used in making chewing gum and certain candies. Gelatin produced from bones and skins is used in marshmallows, ice cream, canned meats, and gelatin desserts. Intestines may provide natural sausage casings.

Inedible By-products

You probably use at least one item containing inedible beef by-products every day, often without being aware of its existence in a particular product. For example, you probably know that the beef hide is used to make leather, but did you know that the hide also supplies felt and other textiles? It also provides a base for many ointments, binders for plaster and asphalt, and a base for the insulation material used to cool and heat your house. In addition, “camel hair” artists’ brushes are not really camel hair at all, but are made from the fine hair found in the ears of beef cattle. Footballs, which used to be called “pigskins,” are also generally produced from cattle hide.

Industrial oils and lubricants, tallow for tanning, soaps, lipsticks, face and hand creams, some medicines, and ingredients for explosives are produced from the inedible fats from beef. Fatty acids are used in the production of chemicals, biodegradable detergents, pesticides, and flotation agents. One fatty acid is used to make automobile tires run cooler and, therefore last longer.

Bones, horns, and hooves also supply important by-products. These include buttons, bone china, piano keys,

glues, fertilizer, neat’s-foot oil, gelatin for photographic film, paper, wallpaper, sandpaper, combs, toothbrushes, and violin string. Bone charcoal is vital in the production of high grade steel ball bearings.

Even inedible by-products of beef cattle are used to feed other animals. Beef fat, protein, and bone meals are used in feeding poultry, swine, dairy cattle, and domesticated fish. Now that’s food for thought!

Medical By-products

No story of beef by-products is complete without telling about the medicines produced from cattle. More than 100 individual drugs perform such important and varied functions as helping to make childbirth safer, settling an upset stomach, preventing blood clots in the circulatory system, “pepping up” a sluggish thyroid, controlling anemia, relieving some symptoms of hay fever and asthma, and helping babies digest milk. Insulin is perhaps the best-known pharmaceutical derived from cattle. There are 5 million diabetics in the United States, and 1.25 million of them require insulin daily. It takes the pancreases from 26 cattle to provide enough insulin to keep one diabetic person alive for a year.

Through genetic engineering techniques and other research developments, many of the drugs produced from cattle are now being chemically produced in the laboratory. These procedures are often less expensive than recovery from animal organs. However, synthesis has been only partial, and the animal sources remain extremely important in many situations.

Much of the material used for surgical sutures is derived from the intestines of meat animals.

There’s the Beef

This description of cattle by-products is by no means complete. In fact, new uses are discovered almost daily. But we hope that now when you hear “Where’s the beef?” you will think:

- It is in hospitals and drug stores.
- It is helping your car run better and your clothes get cleaner.
- It is in sporting goods, photographic equipment, and art supply shops.
- It is in firecrackers on the Fourth of July.
- It is in your garden keeping down insect infestations.
- It is in soap for washing your face.

- It is in hand and face creams.
- It is in the cosmetics you apply to soften and beautify your skin.

Indeed, it is just about everywhere.

Questions

1. List four variety meats provided by a beef animal.
2. List three things made from gelatin.
3. List eight products produced from the bones, horns, and hooves?
4. What are three functions of medicines produced from cattle?
5. Insulin for medical purposes can be obtained from which organ in cattle?
6. List a use for cattle intestines.
7. What is the source of hair for “camel hair” artists’ brushes?

Activities

The by-products story can be very interesting to the average consumer, who thinks a steer is all steaks and roasts. Brochures available from the National Live Stock Meat Board (“The Good Things We Get From Cattle Besides Beef”) and American National CattleWoman, Inc. (“When Is A Cow More Than A Cow?”) tell how the remainder of the animal is recovered as by-products, edible and inedible, from which are made a wide variety of foods, pharmaceuticals, cosmetics, and clothing.

To put together a program on by-products, take one of the brochures and read through it to find as many products as possible that are familiar to you. Then decide how best to present those by-products to your audience. Here are some examples:

School Groups- To illustrate by-products to a school group, take a grab bag full of common by-products and pull each one out of the bag. Have the class identify what they all have in common. They all originate from the beef animal. Then go on to explain (using the booklet) how each one is derived from beef. Here are examples for the grab bag:

Artists’ brushes	Felt-Suede
Buttons	Glue
Candies	Lipsticks
Chewing gum	Marshmallows
Face and hand cream	Sandpaper
Soaps	

Young Children- If it’s a group of young school children, the by-products could be put in a piñata. When it is broken open, you could ask what everything has in common; and then explain how they are all derived from beef cattle. Children could make the piñata before you come to their class.

Examples for the piñata:

Artists’ brushes	Marshmallows
Candies made from oleo stearine	Small comb
Chewing gum	Small hand creams
Gelatin desserts	Small soaps
	Toothbrushes

Women’s Clubs- To talk about by-products, have each woman put her purse on the table. Call out common by-products by name and have the women take those items out of their purses. Then ask if anyone know what everything has in common and proceed to explain they are all derived from beef. Examples for purses:

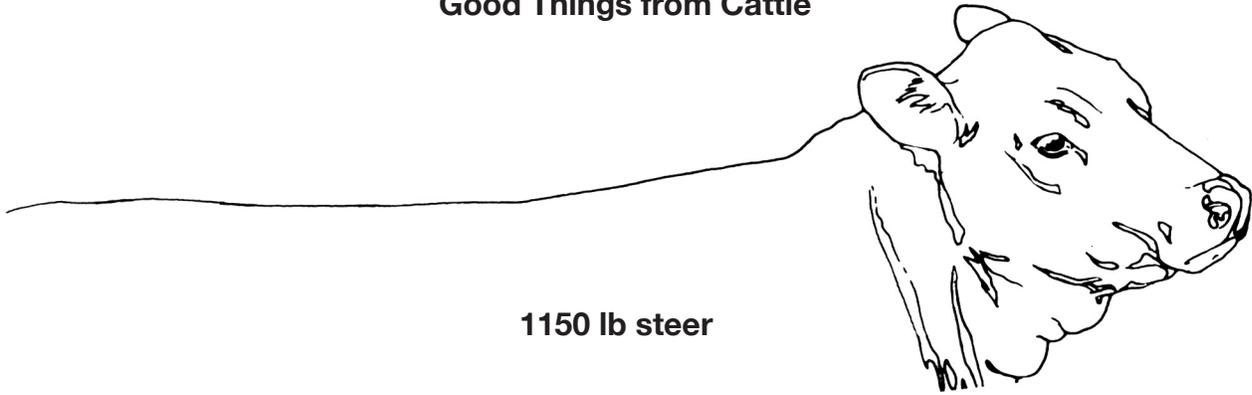
Artists’ brushes	Lipsticks
Chewing gum	Soap
Face and hand creams	Suede-Felt
Insulin	Toothbrush

Fairs and Conventions- Collects as many by-products as possible to display and make labels that are large enough for public viewing. Handout by-products brochure.

Resources

Local Extension educators at the county Cooperative Extension office
 “A Steer’s Not All Steak,” Beef Industry Council, National Live Stock and Meat Board.
 “When Is A Cow More Than A Cow?” American National CattleWomen, Inc.

Good Things from Cattle



1150 lb steer

Edible By-products

Variety Meats

Liver
 Brains
 Tongue
 Heart
 Oxtail
 Kidney
 Tripe (stomach)
 Sweetbreads thymus
 and/or pancreas

Others and (Product Uses)

Fats

- Oleo stock (Margarine and bakers' shortening)
- Oleo oil (margarine and bakers' shortening)
- Oleo stearine (chewing gum and candies)

Gelatin (marshmallows, ice cream, canned meats, candies)

Intestines (natural sausage casings)

500 lbs Retail Beef

Steaks
 Roasts
 Ground beef

Inedible By-products and Product Uses

Hide

- leather (sports equipment)
- Binders (plaster and asphalt)
- Hair (insulation, "camel hair" brushes)

Fats (industrial oils, lubricants, soap)

- Glycerine (explosives, cosmetics)
- Fatty acids (shaving cream, candles, detergents)

Bones, Horns, and Hooves

(buttons, bone china, piano keys, glues, adhesives, animal feeds, photographic film, sandpaper)

Some Pharmaceuticals - Sources and Uses

From the pancreas

- Insulin - treats diabetes
- Pancreatin - aids digestion
- Glucagon - treats hypoglycemia
- Trypsin and Chymotrypsin - promotes healing of wounds

From the blood

- Thrombin - blood coagulant

From the bone

- Bone marrow - treats blood disorders
- Soft cartilage - plastic surgery

From the pituitary gland

- Corticotropin (ACTH) - treats arthritis and allergies
- Thyrotropin (TSH) - stimulates thyroid gland

From the liver

- Heparin - anticoagulant
- Liver extract - treats anemia

From the stomach

- Rennet - aids in digestion of milk

From the adrenal glands

- Epinephrine - some relief from asthma and allergies

The Oklahoma Cooperative Extension Service

Bringing the University to You!

The Cooperative Extension Service is the largest, most successful informal educational organization in the world. It is a nationwide system funded and guided by a partnership of federal, state, and local governments that delivers information to help people help themselves through the land-grant university system.

Extension carries out programs in the broad categories of agriculture, natural resources and environment; family and consumer sciences; 4-H and other youth; and community resource development. Extension staff members live and work among the people they serve to help stimulate and educate Americans to plan ahead and cope with their problems.

Some characteristics of the Cooperative Extension system are:

- The federal, state, and local governments cooperatively share in its financial support and program direction.
- It is administered by the land-grant university as designated by the state legislature through an Extension director.
- Extension programs are nonpolitical, objective, and research-based information.
- It provides practical, problem-oriented education for people of all ages. It is designated to take the knowledge of the university to those persons who do not or cannot participate in the formal classroom instruction of the university.
- It utilizes research from university, government, and other sources to help people make their own decisions.
- More than a million volunteers help multiply the impact of the Extension professional staff.
- It dispenses no funds to the public.
- It is not a regulatory agency, but it does inform people of regulations and of their options in meeting them.
- Local programs are developed and carried out in full recognition of national problems and goals.
- The Extension staff educates people through personal contacts, meetings, demonstrations, and the mass media.
- Extension has the built-in flexibility to adjust its programs and subject matter to meet new needs. Activities shift from year to year as citizen groups and Extension workers close to the problems advise changes.

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